Biyani's Think Tank

Concept based notes

System Analysis and Design

(BCA Part-II)

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Preface

I am glad to present this book, especially designed to serve the needs of the students. The book has been written keeping in mind the general weakness in understanding the fundamental concepts of the topics. The book is self-explanatory and adopts the “Teach Yourself” style. It is based on question-answer pattern. The language of book is quite easy and understandable based on scientific approach.

Any further improvement in the contents of the book by making corrections, omission and inclusion is keen to be achieved based on suggestions from the readers for which the author shall be obliged.

I acknowledge special thanks to Mr. Rajeev Biyani, *Chairman* & Dr. Sanjay Biyani, *Director* (*Acad.*) Biyani Group of Colleges, who are the backbones and main concept provider and also have been constant source of motivation throughout this Endeavour. They played an active role in coordinating the various stages of this Endeavour and spearheaded the publishing work.

I look forward to receiving valuable suggestions from professors of various educational institutions, other faculty members and students for improvement of the quality of the book. The reader may feel free to send in their comments and suggestions to the under mentioned address.

Author

Syllabus

B.C.A. Part-II

System Analysis and Design

Introduction to System Design Environment : Systems Development Approaches-Function Oriented, Object Oriented Development Process, Methodologies, Tools , Modeling Methods, Processing Types and Systems, Batch Processing, Real Time Processing, Management Process, Management, System Analysis, Programmers, Computer Operators, End Users, System Structure, People Processes and Data, Databases, Personal Systems, Centralized Systems, Data Warehousing, Data Mining, Distributed Systems, Evolution of Distributed Processing, Client Server Systems, Agent Oriented Systems.

System Development Life Cycle, Linear or Waterfall Cycle, Linear Cycle Phase Problem Definition, System Specification, System Design, System Development, Testing, Maintenance Problem with Linear Life Cycle, Iterative Cycles, Spiral Model Requirements Analysis, Importance of Communication, Identifying Requirements, Data and Fact Gathering Techniques, Feasibility Studies, Introduction to Prototyping, Rapid Prototyping Tools, Benefits of Prototyping.

Interface Design Tools, User Interface Evaluations, Introduction to Process Modeling, Introduction to Data Modeling.

System Design Techniques, Document Flow Diagrams, Documents, Physical Movement of Documents, Usefulness of Document Flow Diagram, Data Flow Diagrams, DFD Notation, Context Diagram DFD Leveling, Process Descriptions Structured English, Decision Trees and Decision Tables, Entity Relationship Diagrams, Entities, Attributes, Relationship, Degree, Optionality, Resolving Many to Many Relationship, Exclusive Relationship, Structure Charts, Modules, Parameter Passing, Execution Sequence, Structured Design, Conversion from Data Flow Diagrams to Structure Charts.

System Implementation, Maintenance and Documentation, Testing, Evaluation, Maintenance Activities, Documentation, Document Configuration Maintaining a Configuration.

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Content

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Chapter-1

Introduction to System

Q.1 Define System and explain its characteristics.

Ans.: A System means an organised relationship among functioning units or components. It is an orderly grouping of interdependent components linked together according to a plan to achieve a specific objective. The elements of the system are as under :

(1) **Outputs and Inputs :** A major objective of a system is to produce an output that has value to its user. Whatever the nature of the output, it must be in line with the expectations of the intended user. Inputs are the elements that enter the system for processing and output is the outcome of the processing.

(2) **Processors :** The processor is the element of the system that involves the actual transformation of input into output. It is the operational component of a system. Processors modify the input totally or partially.

(3) **Control :** The control element guides the system. It is the decision-making subsystem that controls the pattern of activities governing input, processing and output.

(4) **Feedback :** Control in a dynamic system is achieved by feedback. Feedback measures output against a standard in some form that includes communication and control. Feedback may be positive or negative, routine or informational.

(5) **Environment :** It is the source of external elements that impinge on the system. It determines how a system must function.

(6) **Boundaries and Interfaces :** A system should be defined by its boundaries- the limits that identify its components, processes and interrelationships when it interfaces with another system.

The characteristics of a system are as under :

(1) **Organisation :** It implies structure and order. It is the arrangement of components that helps to achieve objectives.

(2) **Interaction :** It refers to the manner in which each component functions with other component of the system. In an organisation, for example, purchasing must interact with production, advertising with sales, etc.

(3) **Interdependence :** It means that parts of the organisation or computer system depend on one another. They are coordinated and linked together according to a plan. One subsystem depends on the input of another subsystem for proper functioning.

(4) **Integration :** It refers to the completeness of systems. It is concerned with how a system is tied together. It is more than sharing a physical part or location. It means that parts of a system work together within the system even though each part performs a unique function.

(5) **Central Objective :** Objectives may be real or stated. Although a stated objective may be the real objective, it is not uncommon for an organisation to state one objective and operate to achieve another.

Q.2 Explain the different types of Processing Systems.

Ans.: **Batch processing** is execution of a series of programs ("jobs") on a computer without human interaction. Batch jobs are set up so they can be run to completion without human interaction, so all input data is preselected through scripts or command-line parameters. This is in contrast to "online" or interactive programs which prompt the user for such input.

Batch processing has these benefits :

- It allows sharing of computer resources among many users,
- It shifts the time of job processing to when the computing resources are less busy,
- It avoids idling the computing resources with minute-by-minute human interaction and supervision,
- By keeping high overall rate of utilization, it better amortizes the cost of a computer, especially an expensive one.

Distributed computing deals with hardware and software systems containing more than one processing element or storage element, concurrent processes, or multiple programs, running under a loosely or tightly controlled regime.

In distributed computing a program is split up into parts that run simultaneously on multiple computers communicating over a network. Distributed computing is a form of parallel computing, but parallel computing is most commonly used to describe program parts running simultaneously on multiple processors in the same computer. Both types of processing require dividing a program into parts that can run simultaneously, but distributed programs often must deal with heterogeneous environments, network links of varying latencies, and unpredictable failures in the network or the computers.

Distributed programming typically falls into one of several basic architectures or categories: Client-server, 3-tier architecture, N-tier architecture, Distributed objects, loose coupling, or tight coupling.

- **Client - Server :** Smart client code contacts the server for data, then formats and displays it to the user. Input at the client is committed back to the server when it represents a permanent change.
- **3-tier Architecture :** Three tier systems move the client intelligence to a middle tier so that stateless clients can be used. This simplifies application deployment. Most web applications are 3-Tier.
- **N-tier Architecture :** N-Tier refers typically to web applications which further forward their requests to other enterprise services. This type of application is the one most responsible for the success of application servers.
- **Tightly Coupled (Clustered) :** Refers typically to a cluster of machines that closely work together, running a shared process in parallel. The task is subdivided in parts that are made individually by each one and then put back together to make the final result.
- **Peer-to-Peer :** an architecture where there is no special machine or machines that provide a service or manage the network resources. Instead all responsibilities are uniformly divided among all machines, known as peers. Peers can serve both as clients and servers

The time between the presentation of a set of inputs and the appearance of all the associated outputs is called the response time. A **real-time system** is one that must satisfy explicit bounded response time constraints to avoid failure. Equivalently, a real-time system is one whose logical correctness is based both on the correctness of the outputs and their timeliness. Notice that response times of, for example, microseconds are not needed to characterize a real-time system - it simply must have response times that are constrained and thus predictable. In fact, the misconception that real-time systems must be "fast" is because in most instances, the deadlines are on the order of microseconds. But the timeliness constraints or deadlines are generally a reflection of the underlying physical process being controlled. For example, in image processing involving screen update for viewing continuous motion, the deadlines are on the order of 30 microseconds.

An important concept in real-time systems is the notion of an event, that is, any occurrence that results in a change in the sequential flow of program execution. Events can be divided into two categories: synchronous and asynchronous. Synchronous events are those that occur at predictable times such as execution of a conditional branch instruction or hardware trap. Asynchronous events occur at unpredictable points in the flow-of-control and are usually caused by external sources such as a clock signal. Both types of events can be signaled to the CPU by hardware signals

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Chapter-2

System Development

Q.1 Describe System Development Life Cycle and explain its various phases.

Ans.: The Systems Development Life Cycle (SDLC) is a conceptual model used in project management that describes the stages involved in an information system development project from an initial feasibility study through maintenance of the completed application. Various SDLC methodologies have been developed to guide the processes involved including the waterfall model (the original SDLC method), rapid application development (RAD), joint application development (JAD), the fountain model and the spiral model. Mostly, several models are combined into some sort of hybrid methodology. Documentation is crucial regardless of the type of model chosen or devised for any application, and is usually done in parallel with the development process. Some methods work better for specific types of projects, but in the final analysis, the most important factor for the success of a project may be how closely particular plan was followed.

Feasibility : The feasibility study is used to determine if the project should get the go-ahead. If the project is to proceed, the feasibility study will produce a project plan and budget estimates for the future stages of development.

Requirement Analysis and Design : Analysis gathers the requirements for the system. This stage includes a detailed study of the business needs of the organization. Options for changing the business process may be considered. Design focuses on high level design like, what programs are needed and how are they going to interact, low-level design (how the individual programs are going to work), interface design (what are the interfaces going to look like) and data design (what data will be required). During these phases, the software's overall structure is defined. Analysis and Design are very crucial in the whole development cycle. Any glitch in the design phase could be very expensive to solve in the later stage of the software development. Much care is taken during this phase. The logical system of the product is developed in this phase.

Implementation : In this phase the designs are translated into code. Computer programs are written using a conventional programming language or an application generator. Programming tools like Compilers, Interpreters, Debuggers are used to generate the code. Different high level programming languages like C, C++, Pascal, Java are used for coding. With respect to the type of application, the right programming language is chosen.

Testing : In this phase the system is tested. Normally programs are written as a series of individual modules, these are subject to separate and detailed test. The system is then tested as a whole. The separate modules are brought together and tested as a complete system. The system is tested to ensure that interfaces between modules work (integration testing), the system works on the intended platform and with the expected volume of data (volume testing) and that the system does what the user requires (acceptance/beta testing).

Maintenance : Inevitably the system will need maintenance. Software will definitely undergo change once it is delivered to the customer. There are many reasons for the change. Change could happen because of some unexpected input values into the system. In addition, the changes in the system could directly affect the software operations. The software should be developed to accommodate changes that could happen during the post implementation period.

Q.2 What is the role of a Systems Analyst?

Ans.: System Analysts bridges the gap that always exists between those who need computer-based business solutions. They understand both business and computing. They study business problems and opportunities and then transform business and information requirements into specifications for information systems that will be implemented by various technical specialists including computer programmers. System Analysts initiate change within an organization. Every new system changes the business. System Analyst is basically a problem solver.

An analyst must possess various skills to effectively carry out the job. Specifically, they may be divided, into two categories: Interpersonal and technical skills. Both are required for system development. *Interpersonal* skills deal with, relationships and the interface .of the analyst with people in business. They are useful in establishing trust's resolving conflict, and communicating information. Technical skills, on the other hand, focus an procedures and techniques for operations analysis, systems analysis, and computer science

The **interpersonal skills** relevant to systems work include the following :

- Communication
- Understanding
- Foresightedness and Vision
- Adaptability and Flexibility Skills
- Teaching
- Selling
- Patience and Rationality
- Management Skills
- Leadership Quality
- Training and Documentation Capability

Technical skills include :

- Creativity-
- Problem solving-
- Project management-
- Dynamic interface-
- Questioning attitude and inquiring mind-
- Knowledge-

Q.3 Explain the Waterfall Model.

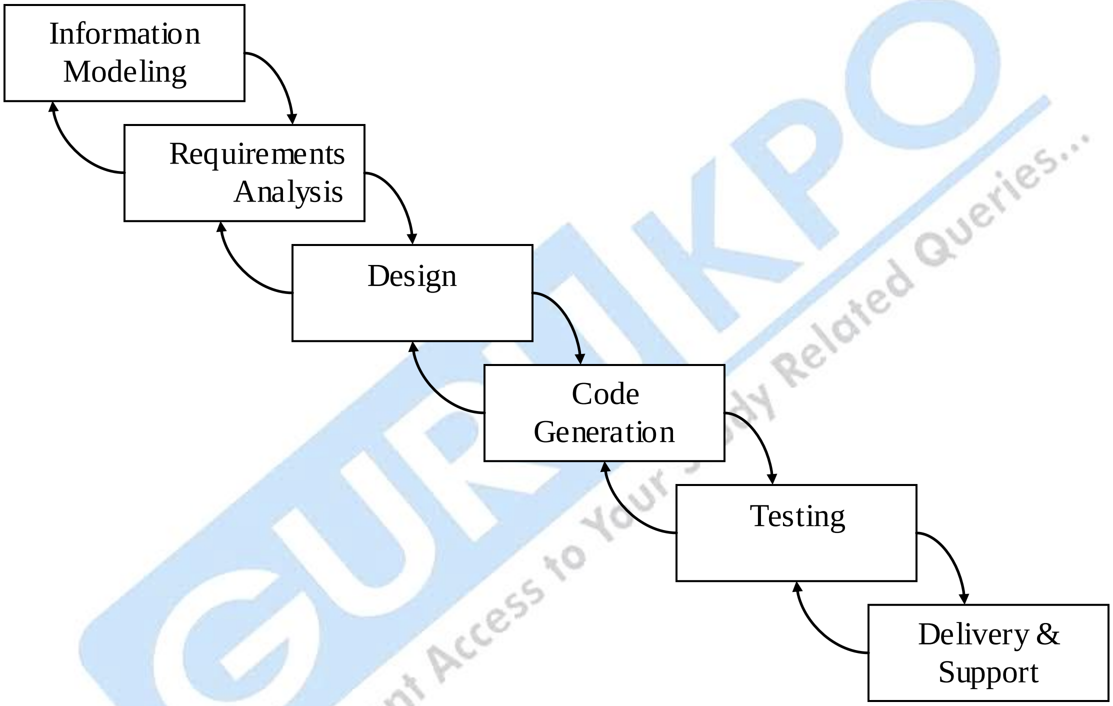
OR

Describe the Classic Life Cycle Model.

OR

Explain the Linear Sequential Model.

Ans.: Sometimes called the *classic life cycle or the linear sequential model,* the *waterfall model* is a systematic, sequential approach to software development in which development is seen as flowing downwards (like a waterfall) that begins at the system level and progresses through analysis, design, coding, testing and support. To follow the waterfall model, one proceeds from one phase to the next in a sequential manner. For example, one first completes "requirements specification". When the requirements are fully completed, one proceeds to design. The software is designed (on paper) and this design should be a plan for implementing the requirements given. When the design is fully completed, an implementation of that design, i.e. coding of the design is made by programmers. After the implementation phases are complete, the software product is tested and debugged; any faults introduced in earlier phases are removed here. Then the software product is installed, and later maintained to add any new functions that the user needs and remove bugs. Thus in a waterfall model, we can move to the next step only when the previous step is completed and removed of all errors. There is no jumping back and forth or overlap between the steps in a waterfall model.



The model consists of six distinct stages, namely :

(1) In the *Information Modelling* phase

(a) Work begins by gathering information related to the existing system. This will consists of all items consisting of hardware, people, databases etc.

(2) In the *requirements analysis* phase

(a) The problem is specified along with the desired objectives (goals).

(b) The constraints are identified.

(c) All information about the functions, behaviour, and performance are documented and checked by the customers.

(3) In the *design phase*, all inputs, computations and outputs of the system should be converted into a software model so that it can be coded by programmers. The hardware requirements are also determined at this stage along with a picture of the overall system architecture.

(4) In the *code generation* phase, the design has to be translated into a machine-readable form using any of the programming languages available that is suitable for the project.

(5) In the *testing* phase stage

(a) Once code is generated, testing begins.

(b) It focuses on all the statements of the software and removes all errors.

(c) It ensures that proper input will produce actual results.

(d) Detailed documentation from the design phase can significantly reduce the coding effort.

(6) The *delivery and support* phase consists of delivering the final product to the customer and then taking care of the maintenance of the product. In this phase the software is updated to :

(a) Meet the changing customer needs

(b) Adapted to accommodate changes in the external environment

(c) Correct errors that were not previously known in the testing phases

(d) Enhancing the efficiency of the software

Q.4 Explain the Prototyping Process Model.

Ans.: The prototyping model begins with the requirements gathering. The developer and the customer meet and define the objectives for the software, identify the needs, etc. A 'quick design' is then created. This design focuses on those aspects of the software that will be visible to the customer. It then leads to the construction of a prototype. The prototype is then checked by the customer and any modifications or changes that are required are made to the prototype. Looping takes place in this process and better versions of the prototype are created. These are continuously shown to the user so that any new changes can be updated in the prototype. This process continues till the user is satisfied with the system. Once a user is satisfied, the prototype is converted to the actual system with all considerations for quality and security.

The prototype is considered as the 'first system'. It is advantageous because both the customers and the developers get a feel of the actual system. But there are certain problems with the prototyping model too.

(1) The prototype is usually created without taking into consideration overall software quality.

(2) When the customer sees a working model in the form of a prototype, and then is told that the actual software is not created, the customer can get irritated.

(3) Since the prototype is to be created quickly, the developer will use whatever choices he has at that particular time (eg, he may not know a good programming language, but later may learn. He then cannot change the whole system for the new programming language). Thus the prototype may be created with less-than-ideal choices.

Q.5 Describe the Rapid Application Development Model. State its disadvantages.

Ans.: Rapid Application Development (RAD) is an incremental software development process model that focuses on a very short development cycle. The RAD model is a 'high-speed' version of the linear sequential model. It enables a development team to create a fully functional system within a very short time period (e.g. 60 to 90 days).

Business Modeling : The information flow among business functions is modeled in a way that answers the following questions :

What information drives the business process?

What information is generated?

Who generates it?

Where does the information go?

Who processes it?

Data Modeling : It gives all the details about what data is to be used in the project. All the information found in the business modeling phase is refined into a set of data objects and the characteristics and the relationships between these objects are defined.

Process Modeling : Here all the processes are defined that are needed to use the data objects to create the system. Processing descriptions are created for adding, modifying, deleting, or retrieving a data object.

Application Generation : RAD makes use of the fourth generation techniques and tools like VB, VC++, Delphi etc rather than creating software using conventional third generation programming languages. The RAD reuses existing program components (when possible) or creates reusable components (when necessary). In all cases, automated tools (CASE tools) are used to facilitate construction of the software.

Testing and Turnover : Since the RAD process emphasizes reuse, many of the program components have already been tested. This minimizes the testing and development time.

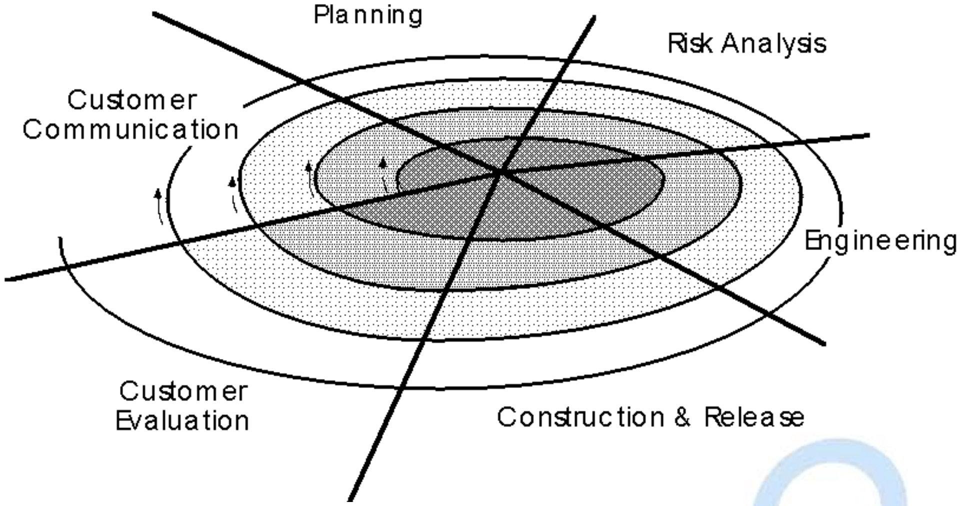
If a business application can be divided into modules, so that each major function can be completed within the development cycle, then it is a candidate for the RAD model. In this case, each team can be assigned a model, which is then integrated to form a whole.

Disadvantages :

- For Large projects, RAD requires sufficient resources to create the right number of RAD teams.
- If a system cannot be properly divided into modules, building components for RAD will be problematic
- RAD is not appropriate when technical risks are high, e.g. this occurs when a new application makes heavy use of new technology.

Q.6 Explain the Spiral Model. What are the advantages of this model?

Ans.: The spiral model, combines the iterative nature of prototyping with the controlled and systematic aspects of the waterfall model, therein providing the potential for rapid development of incremental versions of the software. In this model the software is developed in a series of incremental releases with the early stages being either paper models or prototypes. Later iterations become increasingly more complete versions of the product.



As illustrated, the model is divided into a number of task regions.

These regions are :

(1) The **customer communication** task – to establish effective communication between developer and customer.

(2) The **planning** task – to define resources, time lines and other project related information..

(3) The **risk analysis** task – to assess both technical and management risks.

(4) The **engineering** task – to build one or more representations (prototypes) of the application.

(5) The **construction and release** task – to construct, test, install and provide user support (e.g., documentation and training).

(6) The **customer evaluation** task – to obtain customer feedback based on the evaluation of the software representation created during the engineering stage and implemented during the install stage.

The evolutionary process begins at the centre position and moves in a clockwise direction. Each traversal of the spiral typically results in a deliverable. For example, the first and second spiral traversals may result in the production of a product specification and a prototype, respectively. Subsequent traversals may then produce more sophisticated versions of the software.

An important distinction between the spiral model and other software models is the explicit consideration of risk. There are no fixed phases such as specification or design phases in the model and it encompasses other process models. For example, prototyping may be used in one spiral to resolve requirement uncertainties and hence reduce risks. This may then be followed by a conventional waterfall development.

Advantages of the Spiral Model :

- The spiral model is a realistic approach to the development of large-scale software products because the software evolves as the process progresses. In addition, the developer and the client better understand and react to risks at each evolutionary level.
- The model uses prototyping as a risk reduction mechanism and allows for the development of prototypes at any stage of the evolutionary development.
- It maintains a systematic stepwise approach, like the classic life cycle model, but incorporates it into an iterative framework that more reflect the real world.
- If employed correctly, this model should reduce risks before they become problematic, as consideration of technical risks are considered at all stages.

Q.7 Explain Information Gathering Process for System Development.

OR

Explain Fact Finding Method of System Analysis.

Ans.: Fact finding means learning as much as possible about the present system. The tools used in information gathering or fact finding are

(1) **Review of Written Documents :** In all organizations documents such as forms, records, reports, manuals, etc are available. These help in determining how the present system runs. The process of fact finding includes collection of all possible documents and evaluating them. Unfortunately, most manuals are not up to date and may not be readable. The analyst needs to find out how the forms are filled out, what changes need to be made and how easy they are to read.

(2) **On-Site Observation :** The purpose of on-site observation is to get as close as possible to the real system being studied. It is the process of recognizing and noting people, objects and occurrences to obtain information. As an observer the analyst must follow a set of rules. He/she must listen than talk and not give advice or pass a moral

judgment, must not argue or show friendliness towards others. The following questions can serve as a guide for on-site observations:

- What kind of system is it? What does it do?
- Who runs the system? Who are the important people in it?
- What is the history of the system?

(3) **Interviews :** An interview is a face to face interpersonal situation in which a person called the interviewer asks a person being interviewed, questions designed to gather information about a problem. The analyst or interviewer can schedule interviews with key personnel of the organization. The analyst also needs to conduct detailed interviews with all the people who will actually use the system. This will provide all the details the analyst needs and also remove any fear from the users that the computers will replace the. Interviews help gather vital facts about the existing problems, such as lack of quality control or security, etc. Interviewing needs a friendly atmosphere so that the interviewer can ask questions properly, obtain reliable and correct answers and record the answers accurately and completely.

(4) **Questionnaires :** A questionnaire is a tool that has questions to which individuals respond. A questionnaire has the following advantages:

- It is economical and requires less skill than an interview.
- It can be used to gather data from large number of people simultaneously
- It is a uniform method in which all question asked are the same to all people
- The users are happy as they know that the answers they give are confidential
- User get time to think about the questions and so can give more accurate results than in an interview

Q.8 What is Feasibility? Describe the different types of Feasibility.

Ans.: Feasibility is the determination of whether or not a project is worth doing. The process followed in making this determination is called feasibility study. A feasibility study is carried out to select the best system that meets performance requirements. When conducting feasibility study, an analyst can consider 7 types of feasibility:

- **Technical Feasibility :** It is concerned with specifying the equipment and the computer system that will satisfy and support the proposed user requirements. Here we need to consider the configuration of the system which tells the analyst how many work stations are required, how the units are interconnected so that they can operate and communicate smoothly.
- **Operation Feasibility :** It is related to human organizational aspects. The points to be considered here are – what changes will be brought with the system?, what new skills will be required?, do the existing staff members have these skills and can they be trained?
- **Economic Feasibility :** It is the most frequently used technique for evaluating a proposed system. It is also called Cost/Benefit Analysis. It is used to determine the benefits and savings that are expected from the proposed system and compare them with the costs. If benefits are more than the cost, the proposed system is given an OK.
- **Social Feasibility :** It is a determination of whether the proposed system will be acceptable to the people or not. It finds out the probability of the project being accepted by the group of people who are directly affected by the changed system.
- **Management Feasibility :** It is a determination of whether the proposed system is acceptable to the management of the organization. The project may be rejected, if the management does not accept the proposed system.
- **Legal Feasibility :** It is a determination of whether the proposed project is under legal obligation of known Acts, Statutes, etc.
- **Time Feasibility :** It is a determination of whether the project will be completed within a specified time period. If the project takes too much time, it is likely to be rejected.

Q.9 What is Cost/Benefit Analysis? Explain its procedure.

Ans.: The costs associated with the system are expenses or losses arising from developing and using a system. But the benefits are the advantages received from installing and using this system. Cost/Benefit analysis is a procedure that gives a picture of the various costs, benefits and rules associated with a system. The determination of costs and benefits is done in the following steps :

(1) Identify the costs and benefits of a project.

(2) Categorize the costs and benefits for analysis: The different categories of costs and benefits are :

  (a) Tangible or Intangible

  (b) Direct or Indirect

  (c) Fixed or Variable

(3) Select a method of evaluation: When all data is identified and categorized, the analyst must select a method of evaluation. The methods are :

  (a) Net Benefit analysis

  (b) Present value analysis

  (c) Net Present value

  (d) Payback analysis

  (e) Break even analysis

  (f) Cash flow analysis

(4) Get the result of analysis and Take action.

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Chapter-3

Data Modeling

Q.1 Explain Data Modeling and ER diagram with example.

Ans.: **Data Modeling :** It gives answers to questions regarding the data that is to be used in the application. We come to know the data objects, where they are stored, what is the relationship between objects, etc. Data modeling uses an Entity Relationship diagram to solve these questions. An Entity Relationship diagram will focus on all data that are entered, stored, transformed and produced within an application. The data model consists of three interrelated information – data objects, attributes that describe the data objects and relationships that connect data objects to one another.

Data Objects : A data object is something that has a number of different properties or attributes and that can be understood by software. For example a person or a car can be viewed as data objects. Data objects are related to one another. E.g. **person** can *own* **car**, where the relationship *own* denotes a connection between **person** and **car**. A data object reflects only data and not the operation that can be done on that data.

Attributes : Attributes define the properties of a data object. They can be used to name an instance of the data object, describe the instance or make reference to another instance in another table (e.g. attribute Owner). One or more attributes that uniquely identifies one and only one instance of an entity is defined as an identifier or primary key. E.g. employee no is a primary key for an employee.

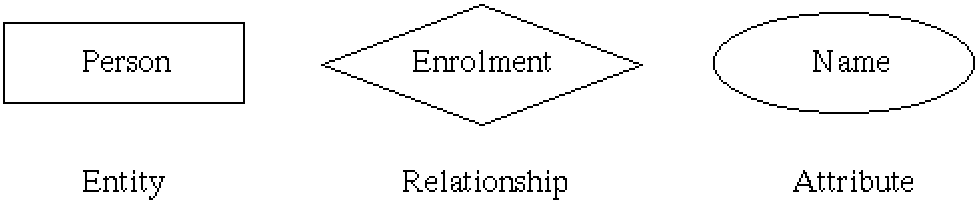
Relationships : Data objects are connected to one another in different ways. Consider two data objects – book and bookstore. A connection is established between book and bookstore because the two objects are related.

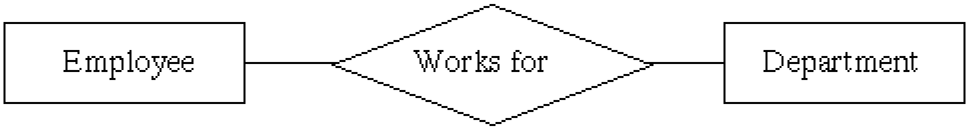
Entity – Relationship Diagrams : The object-relationship pair can be represented graphically using an ER diagram. An entity represents an object.

Examples: a computer, an employee, a song, a mathematical theorem. Entities are represented as rectangles.

A relationship captures how two or more entities are related to one another. Examples: an *owns* relationship between a company and a computer, a *supervises* relationship between an employee and a department, a *performs* relationship between an artist and a song. Relationships are represented as diamonds, connected by lines to each of the entities in the relationship.

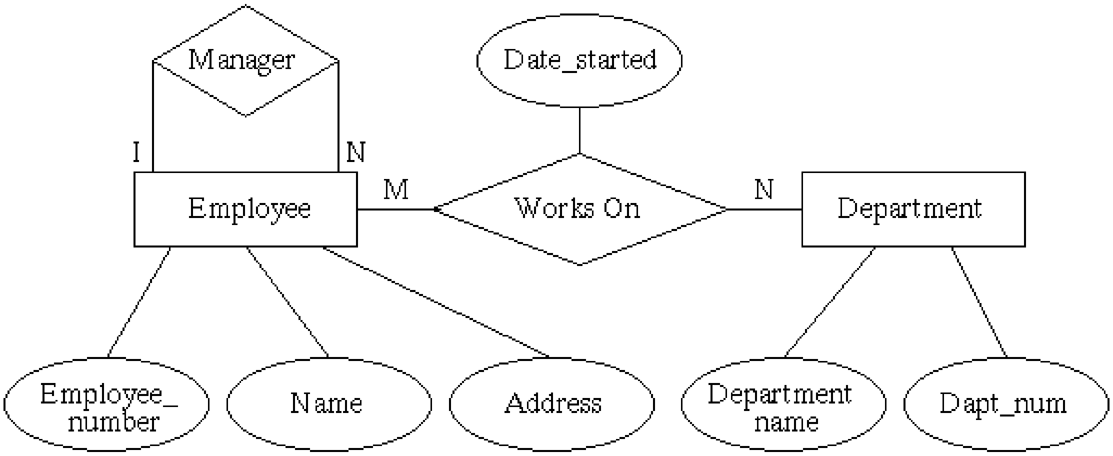
Entities and relationships can both have attributes. Examples: an employee entity might have an employee ID number attribute; the *proved* relationship may have a *date* attribute. Attributes are represented as ellipses connected to their entity by a line.





A Simple E-R Diagram

The following E-R diagram gives the attributes as well.



An E-R Diagram with Attributes

Q.2 In context with an ER diagram explain Cardinality and Modality. Give example.

Ans.: **Cardinality :** The elements of data modeling – data objects, attributes and relationships provide information only about which objects are related to one another. But this information is not sufficient for software engineering purpose. Cardinality specifies how many instances or occurrences of object X are related to how many occurrences of object Y. Cardinality is usually expressed as 'one' or 'many'. Thus two objects can be related as

(1) **One-to-One (1:1) :** An occurrence of object A can relate to one and only one occurrence of object B and an occurrence of B can relate to only one occurrence of A.

(2) **One-to-Many (1:N) :** One occurrence of object A can relate to one or many occurrences of object B but an occurrence of B can relate to only one occurrence of A. E.g. mother can have many children, but a child can have only one mother.

(3) **Many-to-Many (M:N) :** An occurrence of object A can relate to one or many occurrences of object B and an occurrence of B can relate to only one or many occurrences of A. E.g. an uncle can have many nieces and a niece can have many uncles.

Cardinality defines the maximum number of objects that can participate in a relationship. It does not tell whether or not a data object must participate in the relationship.

Modality : If a particular relationship is optional or not needed then we say that the modality of that relationship is 0. The modality is 1 if an occurrence of the relationship is necessary.

Example : Consider 2 data objects Patient and Doctor. The relationship between the two data objects is *Treats.* A doctor needs a patient to treat, so the modality is 1 while it is not necessary for a patient to be treated by a doctor (he can be treated with home remedies too). So here the modality is 0.

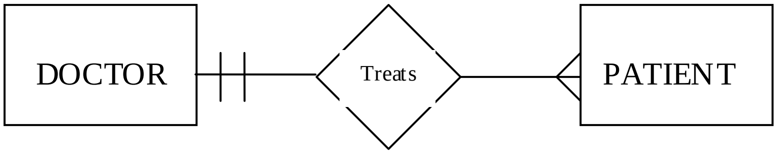
When we need to specify cardinality we use the symbols

- One = a line or dash |
- Many = crow's feet ←

To specify modality we use the symbols

- One = a line or dash |
- Zero = a circle o

The following ER diagram specifies cardinality and modality.



The symbols on the relationship line that is closest to the data object will denote cardinality and the next will denote modality.

Q.3 What is a Data Dictionary? Give an example.

Ans.: A Data Dictionary (DD) is a structured repository of data about data. It is a set of accurate definitions of all DFD data elements and data structures. A data dictionary defines each term encountered during the analysis and design of a new system. Data dictionary is the place where we keep the details of the contents of data flows, data stores & processes.

Without a data dictionary the development of large systems becomes difficult. The data dictionary is an effective solution to the problem of complicated nature. The main purpose of a data dictionary is to provide a source of reference in which the analyst, the user, the designer can look up & find out its content and any other relevant information.

The main advantage of a DD is the documentation. It is a valuable reference to the organization which helps in communication between the analyst and the user. It is also important in building a database.

The Data Dictionary notations are

= is composed of

+ AND

( ) Optional value

[ ] Either/Or

{} iteration

** comment

@ identifier (key field)

| separates alternative choices in the [] construct

Examples of Data dictionary –

Name = Courtesy-Title + First-Name + (Middle-Name) + Last-Name

Courtesy-Title = [Mr. | Miss | Mrs. | Ms. | Dr. | Prof.]

First-Name = { Legal-Character }

Last-Name = { Legal-Character }

Legal-Character = [A-Z | a-z |0-9| ' | - | |]

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Chapter-4

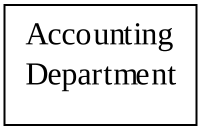
Process Modeling

Q.1 With examples explain what is a Data Flow Diagram.

Ans.: A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. It describes the system's data and how the processes transform the data in a graphical manner. Data flow diagrams can be used to provide a clear representation of any business function. It starts with an overall picture of the business and continues by analyzing each of the functional areas of interest. It uses a top-down approach to show all the levels of the functions of the system. Initially a **context diagram** is drawn, which is a simple representation of the entire system under investigation. This is followed by a level 1 diagram; which provides an overview of the major functional areas of the business. The level 1 diagram identifies the major business processes at a high level and any of these processes can then be analyzed further - giving rise to a corresponding level 2 business process diagram. This process of more detailed analysis can then continue – through level 3, 4 and so on.

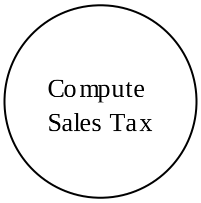
DFD Notation :

A rectangle



It denotes an external entity. It defines a source or destination of system data. It can represent a person, group of people, department, or some other system.

A circle



It denotes a process or activity. It is also known as a bubble. It shows how the system transforms inputs into outputs. Each process is named.

Customer

A line with an arrowhead ⟶

It denotes the direction of data flow. The input to, or output from, a given process, which is associated with each arrow in a DFD.

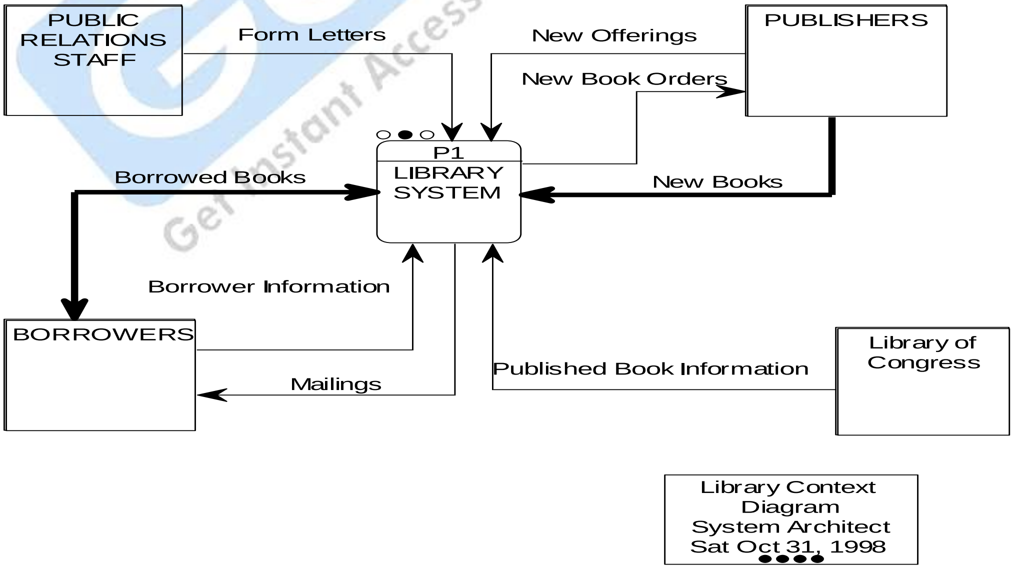
Open Rectangle

CUSTOMER

It denotes a store that is used to model collection of data. It may refer to files or databases, or data stored on punched cards, optical disk, etc. It is shown by two parallel lines with the name of the data store between them

Context Diagrams :

Library Context Diagram



The context diagram shown on this screen represents a book lending library. The library receives details of books, and orders books from one or more book suppliers. Books may be reserved and borrowed by members of the public, who are required to give a borrower number. The library will notify borrowers when a reserved book becomes available or when a borrowed book becomes overdue. In addition to supplying books, a book supplier will furnish details of specific books in response to library enquiries. After the context model is created the process is exploded to the next level to show the major processes in the system. Depending upon the complexity of the system each of these processes can also be exploded into their own process model. This continues until the goal of each process accomplishing a single function is reached. Because of this approach the context model is referred to as Level 0 (Zero) DFD, the next as Level 1 DFD, etc.

Q.2 Briefly describe a Decision Tree with example.

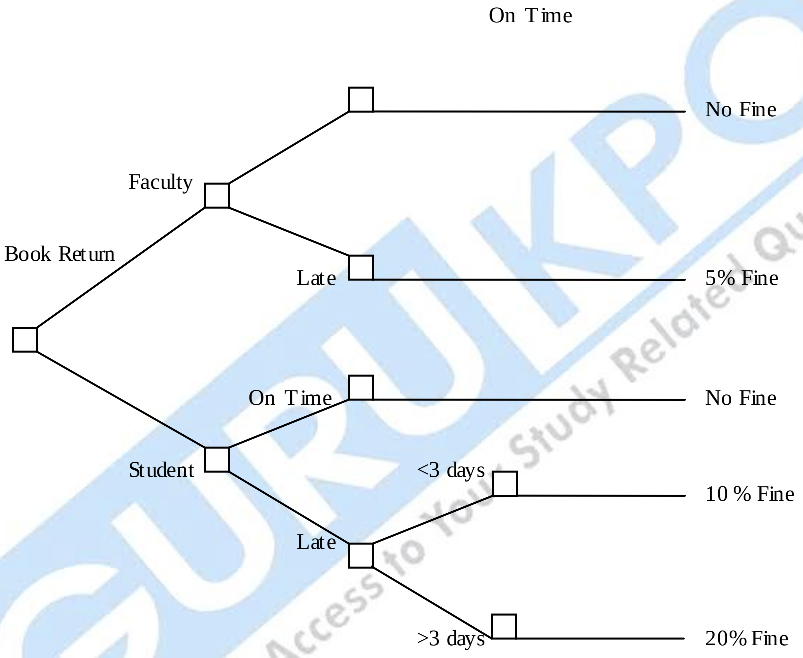
Ans.: Decision tree are graphical representation methods of representing a sequence of logical decisions. It is mainly used when decisions need to be taken or for defining policies. A decision tree has as many branches as there are logical alternatives. It is easy to construct, easy to read and easy to update. A decision tree is used to identify the strategy most likely to reach a goal. It is also used as a means for calculating probabilities or making financial or number based decisions. A decision making tree is essentially a diagram that represents, in a specially organized way, the decisions, the main external or other events that introduce uncertainty, as well as possible outcomes of all those decisions and events.

Q.3 How to draw a Decision Tree?

Ans.: You start a decision tree with a decision that needs to be made. This decision is represented by a small square towards the left of a large piece of paper. From this box draw out lines towards the right for each possible solution, and write that solution along the line. At the end of each solution line, consider the results. If the result of taking that decision is uncertain, draw a small circle. If the result is another decision that needs to be made, draw another square. **Squares represent decisions; circles represent uncertainty or random factors.** Write the decision or factor to be considered above the square or circle. If you have completed the solution at the end of the line, just leave it blank. Starting from the new decision squares on your diagram, draw out lines representing the options that could be taken. From the circles, draw out lines representing possible outcomes. Again mark a brief note on the line saying what it means. Keep on doing this until you have drawn down as many of the possible outcomes and decisions as you can see leading on from your original decision.

Example : Book return policy in library

If a Faculty returns a book late, a fine of 5% of the book rate is charged. If a Student returns a book late by 3 days, fine is 10%, else 20% of book rate.



Q.4 What are Decision Tables? Explain with example.

Ans.: **Decision tables** are a precise yet compact way to model complicated logic. Decision tables, like if-then-else and switch-case statements, associate conditions with actions to perform. But, unlike the control structures found in traditional programming languages, decision tables can associate many independent conditions with several actions in an elegant way. Decision tables are typically divided into four quadrants, as shown below.

The four quadrants	
Conditions	Condition alternatives
Actions	Action entries

Each decision corresponds to a variable, relation or predicate whose possible values are listed among the condition alternatives. Each action is a procedure or operation to perform, and the entries specify whether (or in what order) the action is to be performed for the set of condition alternatives the entry corresponds to. Many decision tables include in their condition alternatives the **don't care** symbol, a hyphen. Using don't cares can simplify decision tables, especially when a given condition has little influence on the actions to be performed. In some cases, entire conditions thought to be important initially are found to be irrelevant when none of the conditions influence which actions are performed. The limited-entry decision table is the simplest to describe. The condition alternatives are simple boolean values, and the action entries are check-marks, representing which of the actions in a given column are to be performed.

A technical support company writes a decision table to diagnose printer problems based upon symptoms described to them over the phone from their clients.

Printer troubleshooter									
		Rules							
Conditions	Printer does not print	Y	Y	Y	Y	N	N	N	N
	A red light is flashing	Y	Y	N	N	Y	Y	N	N
	Printer is unrecognized	Y	N	Y	N	Y	N	Y	N
Actions	Check the power cable			X					
	Check the printer-computer cable	X		X					

	Ensure printer software is installed	X		X		X		X	
	Check/replace ink	X	X			X	X		
	Check for paper jam		X		X				

Decision tables make it easy to observe that all possible conditions are accounted for. In the example above, every possible combination of the three conditions is given. In decision tables, when conditions are omitted, it is obvious even at a glance that logic is missing. Compare this to traditional control structures, where it is not easy to notice gaps in program logic with a mere glance --- sometimes it is difficult to follow which conditions correspond to which actions!

Just as decision tables make it easy to audit control logic, decision tables demand that a programmer think of all possible conditions. With traditional control structures, it is easy to forget about corner cases, especially when the else statement is optional. Since logic is so important to programming, decision tables are an excellent tool for designing control logic.

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Chapter-5

Object Modeling

Q.1 What is Structured English?

Ans.: Structured English or pseudo code or program design language (PDL) uses the vocabulary of English and the syntax of a structured programming. Structured English looks like a modern programming language. The difference between structured English and a real programming language is in the use of narrative text which is placed within the structured English statements. Structured English cannot be compiled. It should have the following characteristics:

- A fixed syntax of keywords used for structured constructs, data declaration
- A free syntax of natural language that describes processing
- Data declaration facilities that include simple(array) and complex(linked list or tree) data structures
- Facility to declare subprograms and call them

Decisions in Structured English are made through IF, THEN, ELSE, SO, etc.

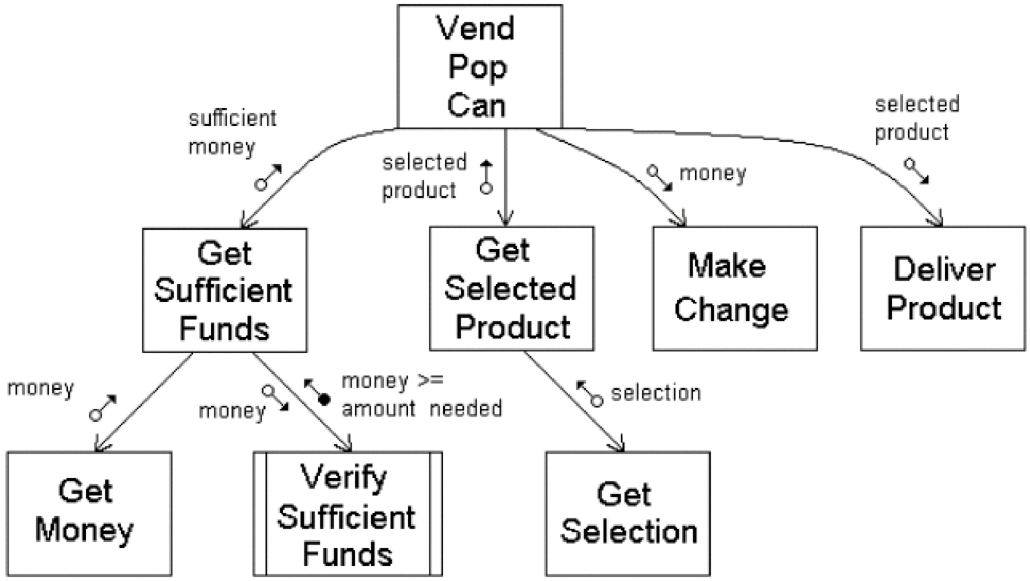
Q.2 What are Structure Charts? Describe.

Ans.: **Structure Chart :** A hierarchical diagram showing the relationships between the modules of a computer program. A module is the basic component of a structure chart and is used to identify a function. Modules are relatively simple and independent components. Higher-level modules are "control" modules that control the flow of execution. Lower level modules are "worker bee" modules and contain the program logic to actually perform the functions.

The vertical lines connecting the modules indicate the calling structure from the high-level modules to the lower-level modules. The little arrows next to the lines show the data that is passed between modules and represent the inputs and outputs of each module. At the structure chart level, we are not concerned with what is happening inside the module yet. We only want to know that somehow it does the function indicated by its name using the input data and producing the output data. A program call is when one module invokes a lower-level module to perform a needed service or calculation. Program call: The transfer of control from a module to a subordinate module to perform a requested service. The arrows with the open circle, called data couples, represent data being passed into and out of the module. A data couple can be an individual data item (e.g., a flag or a customer account number) or a higher-level data structure (e.g., an array, record, or other data structure). The arrow with the darkened circle is a “flag.” A flag is purely internal information that is used between modules to indicate some result. Data couples: The individual data items that are passed between modules in a program call.

A basic idea of structured programming is that each module only has to do a very specific function. The module at the very top of the tree is the “boss” module. Its functions will be to call the modules on the next tier, pass information to them, and receive information back. The function of each middle-level module is to control the processing of the modules below it. Each has control logic and any error-handling logic that is not handled by the lower-level module. The modules at the extremities, or the leaves, contain the actual algorithms to carry out the functions of the program.

Structure charts are developed to design a hierarchy of modules for a program. A structure chart is in the form of a tree with a root module and branches. A subtree is simply a branch that has been separated from the overall tree. When the subtree is placed back in the larger tree, the root of the subtree becomes just another branch in the overall tree.



Q.3 What is a HIPO Chart? Explain.

Ans.: HIPO charts show relationships between modules. It describes the data input and output from the processes and defines the data flow. It provides a structure by which the functions of a system can be understood. It also provides a visual description of input to be used and output to be produced for each level of the diagram. It makes the transformation from input to output data visible.

There are two parts to a HIPO chart, a hierarchy chart and an IPO chart.

The **hierarchy chart** is useful for showing hierarchy of procedures within a program. Hierarchy charts are also called structure charts, top-down charts, or VTOC (Visual Table of Contents) charts. All these names refer to planning diagrams that are similar to a company's organization chart. Hierarchy charts depict the organization of a program but omit the specific processing logic. They describe what each part, or module, of the program does and how the modules relate to each other.

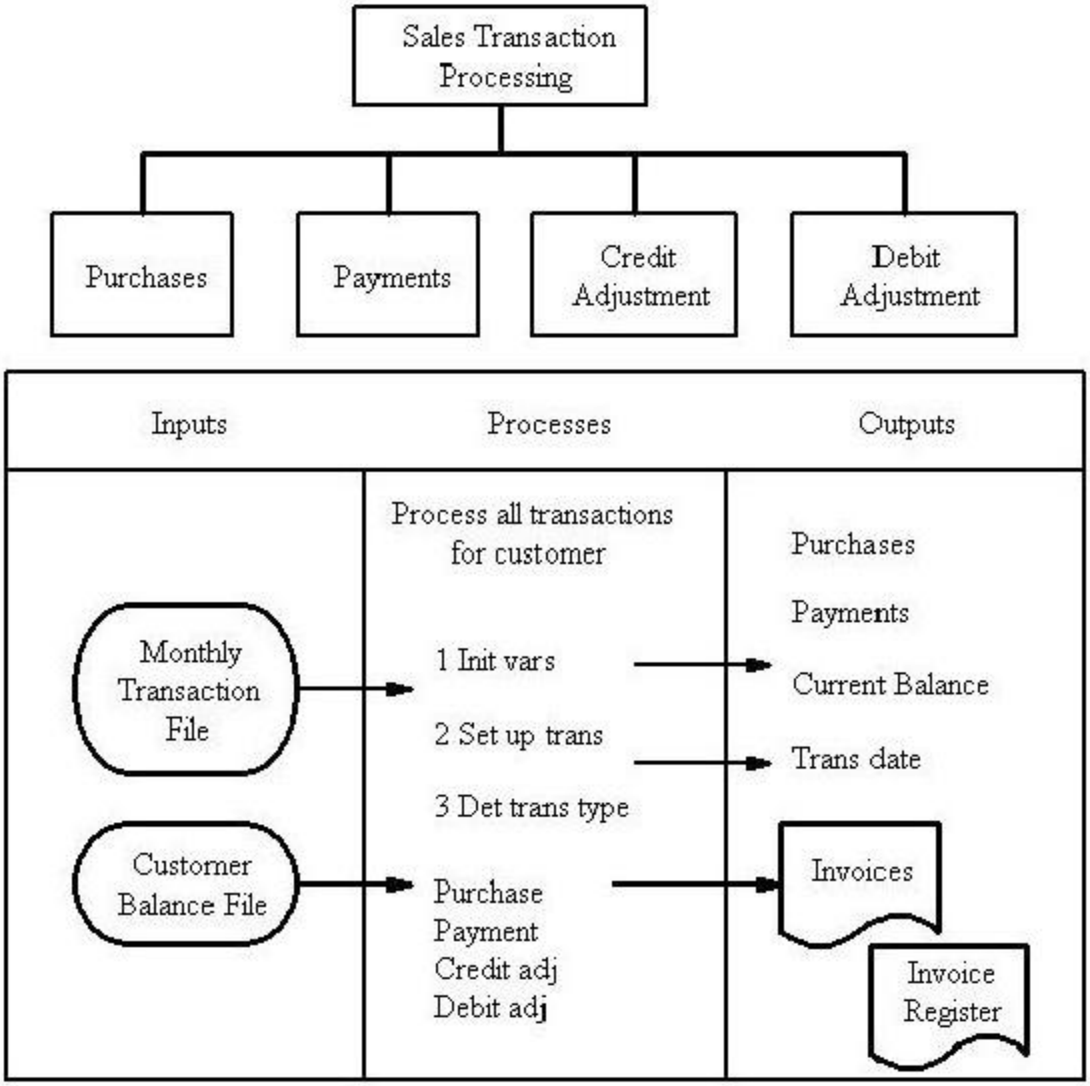
The **IPO** chart describes the system in terms of its inputs, outputs and the processes that are performed on the inputs to transform them into outputs. It provides the following :

(a) The Input section that contains the data items used by the process steps.

(b) The Output section that contains the data items created by the process steps.

(c) Process section that contains numbered steps that describe the functions to be performed. Arrows connect them to the output steps and the input/output data items.

The IPO chart is in the form of a table with three columns, one for each of Input, Output and Process. The flow between screens is indicated by the use of arrows.



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Chapter-6

Important Terms for System Analysis & Design

Q.1 Explain Input Design.

Ans.: Inaccurate input data are the most common cause of errors in data processing. Errors entered by data entry operators can be controlled by input design. Input design is the process of converting user-originated inputs to a computer based format. In the system design phase, the expanded data flow diagram identifies logical data flows, data stores, sources and destinations. The goal of designing input data is to make data entry as easy, logical and free from errors as possible. In entering data, operators need to know the following:

(1) The allocated space for each field.

(2) Field sequence, which must match that in the source document.

(3) The format in which data fields are entered.

Source data are input into the system in a variety of ways, the media and devices used are Punch cards, Key-to-diskette, MICR, OCR, Optical bar code readers, CRT screens, etc. We also input data online. The three major approaches for entering data into the computer are menus, formatted forms and prompts. Menu is a selection list that simplifies computer data access or entry. Instead of remembering what to enter, the user chooses from a list of options and types the option letter associated with it. A formatted form is a preprinted form or a template that requests the user to enter data in appropriate locations. It is a fill-in-the-blank type form. In prompt the system displays one inquiry at a time, asking the user for a response.

Q.2 Explain Output Design.

Ans.: Computer output is the most important and direct source of information to the user. Efficient, intelligible output design should improve the systems relationships with the user and help in decision making. A major form of output is a hard copy from the printer. Printouts should be designed around the output requirements of the user. The output devices to consider depend of factors such as compatibility of the device with the system, response time requirements, expected print quality and number of copies needed. The media devices used are MICR, Line, matrix and daisy wheel printers, Computer output microfilm, CRT screen, graph plotters and audio response. The output design considerations are as under :

(1) Give each output a specific name or title

(2) Provide a sample of the output layout, including areas where printing may appear and the location of each field

(3) State whether each output field is to include significant zeros, spaces, etc.

(4) Specify the procedure for proving the accuracy of output data.

In online applications, information is displayed oin the screen. The layout sheet for displayed output is similar to the layout chart used for designing input.

Q.3 Describe File Structure and Organisation.

Ans.: Given that a file consists, generally speaking, of a collection of records, a key element in file management is the way in which the records themselves are organized inside the file, since this heavily affects system performances ad far as record finding and access. Note carefully that by ``organization'' we refer here to the *logical* arrangement of the records in the file (their ordering or, more generally, the presence of ``closeness'' relations between them based on their content), and not instead to the physical layout of the file as stored on a storage media, To prevent confusion, the latter is referred to by the expression ``record blocking'', and will be treated later on.

Choosing a file organization is a design decision, hence it must be done having in mind the achievement of good performance with respect to the most likely usage of the file. The criteria usually considered important are :

(1) Fast access to single record or collection of related recors.

(2) Easy record adding/update/removal, without disrupting.

(3) Storage efficiency.

(4) Redundance as a warranty against data corruption.

Needless to say, these requirements are in contrast with each other for all but the most trivial situations, and it's the designer job to find a good compromise among them, yielding and adequate solution to the problem at hand. For example, easiness of adding. is not an issue when defining the data organization of a CD-ROM product, whereas fast access is, given the huge amount of data that this media can store. However, as it will become apparent shortly, fast access techniques are based on the use of additional information about the records, which in turn competes with the high volumes of data to be stored.

Sequential : This is the most common structure for large files that are typically processed in their entirety, and it's at the heart of the more complex schemes. In this scheme, all the records have the same size and the same field format, with the fields having fixed size as well. The records are sorted in the file according to the content of a field of a scalar type, called ``key''. The key must identify uniquely a records, hence different record have diferent keys. This organization is well suited for batch processing of the entire file, without adding or deleting items: this kind of operation can take advantage of the fixed size of records and file; moreover, this organization is easily stored both on disk and tape. The key ordering, along with the fixed record size, makes this organization amenable to dicotomic search. However, adding and deleting records to this kind of file is a tricky process: the logical sequence of records tipycally matches their physical layout on the media storage, so to ease file navigation, hence adding a record and maintaining the key order requires a reorganization of the whole file. The usual solution is to make use of a ``log file'' (also called ``transaction file''), structured as a pile, to perform this kind of modification, and periodically perform a batch update on the master file.

Indexed Sequential : An index file can be used to effectively overcome the above mentioned problem, and to speed up the key search as well. The simplest indexing structure is the single-level one: a file whose records are pairs key-pointer, where the pointer is the position in the data file of the record with the given key. Only a subset of data records, evenly spaced along the data file, are indexed, so to mark intervals of data records.

A key search then proceeds as follows: the search key is compared with the index ones to find the highest index key preceding the search one, and a linear search is performed from the record the index key points onward, until the search key is matched or until the record pointed by the next index entry is reached. In spite of the double file access (index + data) needed by this kind of search, the decrease in access time with respect to a sequential file is significant. Consider, for example, the case of simple linear search on a file with 1,000 records. With the sequential organization, an average of 500 key comparisons are necessary (assuming uniformly distributed search key among the data ones). However, using and evenly spaced index with 100 entries, the number of comparisons is reduced to 50 in the index file plus 50 in the data file: a 5:1 reduction in the number of operations. This scheme can obviously be hyerarchically extended: an index is a sequential file in itself, amenable to be indexed in turn by a second-level index, and so on, thus exploiting more and more the hyerarchical decomposition of the searches to decrease the access time. Obviously, if the layering of indexes is pushed too far, a point is reached when the advantages of indexing are hampered by the increased storage costs, and by the index access times as well.

Q.4 Explain Normalization.

Ans.: **Normalization** is the process of taking data from a problem and reducing it to a set of relations while ensuring data integrity and eliminating data redundancy

- **Data Integrity :** All of the data in the database are consistent, and satisfy all integrity constraints.
- **Data Redundancy :** If data in the database can be found in two different locations (direct redundancy) or if data can be calculated from other data items (indirect redundancy) then the data is said to contain redundancy.

Data should only be stored once and avoid storing data that can be calculated from other data already held in the database. During the process of normalization redundancy must be removed, but not at the expense of breaking data integrity rules.

If redundancy exists in the database then problems can arise when the database is in normal operation :

- When data is inserted the data must be duplicated correctly in all places where there is redundancy. For instance, if two tables exist for in a database, and both tables contain the employee name, then creating a new employee entry requires that both tables be updated with the employee name.

- When data is modified in the database, if the data being changed has redundancy, then all versions of the redundant data must be updated simultaneously. So in the employee example a change to the employee name must happen in both tables simultaneously.

The removal of redundancy helps to prevent insertion, deletion, and update errors, since the data is only available in one attribute of one table in the database.

The data in the database can be considered to be in one of a number of `normal forms'. Basically the normal form of the data indicates how much redundancy is in that data. The normal forms have a strict ordering :

(1) 1st Normal Form :

- A relation is in 1NF if it contains no repeating groups.
- To convert an unnormalized relation to 1NF either :
  - Flatten the table and change the primary key, or
  - Decompose the relation into smaller relations, one for the repeating groups and one for the non-repeating groups.
- Remember to put the primary key from the original relation into both new relations.
- This option is liable to give the best results.

(2) **2nd Normal Form :**

- A relation is in 2NF if it contains no repeating groups and no partial key functional dependencies.
- **Rule :** A relation in 1NF with a single key field must be in 2NF.
- To convert a relation with partial functional dependencies to 2NF, create a set of new relations :
  - One relation for the attributes that is fully dependent upon the key.
  - One relation for each part of the key that has partially dependent attributes

(3) **3rd Normal Form :**

- A relation is in 3NF if it contains no repeating groups, no partial functional dependencies, and no transitive functional dependencies
- To convert a relation with transitive functional dependencies to 3NF, remove the attributes involved in the transitive dependency and put them in a new relation.
- **Rule :** A relation in 2NF with only one non-key attribute must be in 3NF.
- In a normalized relation a non-key field must provide a fact about the key, the whole key and nothing but the key.
- Relations in 3NF are sufficient for most practical database design problems. However, 3NF does not guarantee that all anomalies have been removed.

(4) **BCNF :**

- When a relation has more than one candidate key, anomalies may result even though the relation is in 3NF.
- 3NF does not deal satisfactorily with the case of a relation with overlapping candidate keys i.e. composite candidate keys with at least one attribute in common.
- BCNF is based on the concept of a *determinant*.
- A determinant is any attribute (simple or composite) on which some other attribute is fully functionally dependent.
- A relation is in BCNF is, and only if, every determinant is a candidate key.

Q.5 Explain Database Design.

Ans.: **Database design** is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity. The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an Object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the Database Management System or DBMS. The process of doing database design generally consists of a number of steps which will be carried out by the database designer. Not all of these steps will be necessary in all cases. Usually, the designer must :

- Determine the data to be stored in the database.
- Determine the relationships between the different data elements.
- Superimpose a logical structure upon the data on the basis of these relationships.

Within the relational model the final step can generally be broken down into two further steps, that of determining the grouping of information within the system, generally determining what are the basic objects about which information is being stored, and then determining the relationships between these groups of information, or objects. This step is not necessary with an Object database. The tree structure of data may enforce a hierarchical model organization, with a parent-child relationship table. An Object database will simply use a one-to-many relationship between instances of an object class. It also introduces the concept of a hierarchical relationship between object classes, termed inheritance.

Q.6 What is a Structured Walk Through?

Ans.: A structured walkthrough is an organized procedure for a group of members to review and discuss the technical aspects of software development work. The major objectives of a structured walkthrough are to find errors and to improve the quality of the product. Errors can be in the form of poorly stated requirements and inefficient code. Structured walkthroughs must not be used to discuss solutions for the errors that are found. *The basic purpose of a* walkthrough *is error detection, not error correction.* When the walkthrough is completed, the team is responsible for taking the necessary actions to correct the errors. The team may hold private conversations with reviewers or conduct follow-up meetings to discuss potential solutions. Structured walkthroughs should be conducted during all stages of the system lifecycle. Structured walkthroughs are appropriate for reviewing the technical accuracy and completeness of system development work, project management tools, and other types of documents (e.g., technical operating procedures). The walkthroughs should be scheduled to review small, meaningful pieces of work. The progress made in each lifecycle stage should determine the frequency of the walkthroughs.

Benefits : Structured walkthroughs provide the following benefits :

- Save time and money by finding and correcting errors earlier in the lifecycle.
- Validate and improve the related lifecycle work products.
- Keep the project team informed of the development progress.

Q.7 Explain System Testing.

Ans.: Once source code has been generated, software must be tested to remove and correct as many errors as possible before delivery to the customer. The goal of system testing is to design a series of test cases that have a high likelihood of finding errors. Testing is the process of examining a product to determine what defects it contains. An information system is an integrated collection of software components. Components can be tested individually or in groups, or the entire system can be tested as a whole. Testing is necessary for the success of the system. A small system error can explode into a much larger problem.

The proper choice of test data is as important as the test itself. If the test data that is inputted is not valid or according to the requirements, the reliability of the output will be low. Test data may be artificial or live. Artificial data is created only for testing purposes. Live data on the other hand, is taken from the users actual files. So there can be bias toward correct values. The design of tests for software products is also a very important topic. The designs may be White Box testing or Black Box testing.

Q.8 What is Unit Testing?

Ans.: A strategy for software testing may be viewed as a spiral. Unit testing begins at the center of the spiral. Testing progresses by moving outward to integration testing, then towards validation testing and finally system testing.

Unit testing is the process of testing individual code modules before they are integrated with other modules. The unit being testing can be a function, subroutine, procedure or method. Units can also be very small groups of interrelated modules that are always executed as a group. The goal of unit testing is to identify and fix as many errors as possible before modules are combined into large units. Errors become more difficult and expensive to locate and fix when many modules are combined. Here the module interface is tested to see that information flows in and out of the program unit properly. It makes use of white box testing. Because a component is not a stand-alone program, a driver and/or stub software must be developed for each unit test. A driver is like a main program that accepts test case data, passes the data to the component and prints the results. A stub replaces modules that are subordinate the component to be tested. It uses the subordinate modules interface, does data manipulation, prints the result of entry and then returns control to the module undergoing the test.

Q.9 Explain the different conversion methods during the System Implementation Phase.

Ans.: Implementation involves all those activities that take place, to convert from the old system to the new one. The news system may be completely new, replacing an existing manual or automated system or it may be a major modification to an existing system.

Conversion is the process of changing from the old system to the new one. It must be properly planned and executed. Four common methods are used for this purpose. They are :

(1) **Parallel Systems :** The most secure method of converting from an old to new system is to run both systems in parallel. Under this approach, users continue to operate the old system in the usual manner but they also start using the new system. This method is the safest because it ensures that in case of any problems in the new system, the organization can still fall back to the old system without loss of time or money. The disadvantages are that it doubles the operating cost and that the new system may not get a fair trial.

(2) **Direct Conversion :** This method converts from the old to the new system abruptly, sometimes over a week end or even overnight. The old system is used until a planned conversion day, when it is replaced by the new system. There are no parallel activities.

The main disadvantages of this approach are: no other system to fall back on, if problems arise, secondly careful planning is required.

(3) **Pilot System :** Pilot approach is often preferred in the case when the new system involves new techniques or some drastic changes in the organization performance. In this method, a working version of the system is implemented in one part of the organization, such as a single department. Based on the feedback, changes are made and the system is then installed in the remaining departments of the organization, either all at once or gradually.

(4) **Phase-In Method :** This method is used when it is not possible to install a new system throughout an organization all at once. The conversion of files, training of personnel, etc may force the process of implementation over a period of time, ranging from weeks to months.

Q.10 Breifly describe what is Software Quality Assurance.

Ans.: Quality is a characteristic and attribute of something, which is measurable. There can be two types of quality: *quality of design* – it is the characteristics that the designers specify which will include the materials used, performance specifications, etc. and *quality of conformance* – which is the degree to which the design specifications are followed during the manufacturing process. Software Quality Assurance (SQA) consists of a means of monitoring the software engineering processes to ensure quality. It provides management with the data necessary to be informed about product quality. Software today is being developed in rapid speeds and this affects its quality. Software that is developed needs to meet certain standards for it to be certified and used by users. Software quality assurance is thus useful to keep the software development process in check and see that quality products are created for the market. Just as a team of members that are used for the development process, a SQA group is a group that assists the software team in achieving a high quality end product.

The software life cycle includes various stages of development, and each stage has a goal of quality assurance. Several factors determine the quality of a system. Among them are correctness, reliability, efficiency, usability, accuracy, etc. There are three levels of quality assurance: testing, validation and certification.

In system testing, the goal is to remove the errors in the software. This is extremely difficult and time-consuming. The system needs to be put through a "fail-test" so that we know what will make the system fail. A successful test is one that can uncover the errors so that the system can then be corrected to reach a good level of quality.

System validation checks the quality of the software in both simulated and live environments. First the software is passed through the simulated environment (not live) where the errors and failures are checked based on artificial data and user requirements. This is also known as *alpha testing*. The software is tested and verified and all changes are then made to the software. This modified software is them sent through the second phase that is the live environment. This is called *beta testing* where the software is sent to the user's site. Here the system will go through actual user data and requirements. After a scheduled time, failures and errors are documented and final correction and enhancements are made before the software is released for use.

The third level is to certify that the program or software package is correct and conforms to all standards. Nowadays, there is trend towards buying of ready-to-use software. So certification is of utmost importance. A package that is certified goes through a team of specialists who test, review, and determine how well it meets the vendor's claims. Certification is actually issued after the package passes the test.

Q.11 Explain Software Maintenance. Describe its classification.

Ans.: The last part of the system development life cycle is system maintenance which is actually the implementation of the post-implementation plan. When systems are installed, they are generally used for long periods. This period of use brings with it the need to continually maintain the system. Maintenance accounts for 50-80% if the total system development. Maintenance is not as rewarding and exciting as developing systems.

Maintenance can be classified as :

(1) **Corrective :** It means repairing, processing or performance failures or making changes because of previously uncorrected problems.

(2) **Adaptive :** It means changing the program functions.

(3) **Perfective :** It means enhancing the performance or modifying the programs to respond to the users additional or changing needs

The greatest amount of time is spent on perfective. Maintenance covers a wide range of activities including correcting coding and design errors, updating documentation and test data.

Q.12 Describe the different types of Documentation.

Ans.: There are five types of documentation :

(1) **Program :** Before a program is developed, the systems analyst should provide the programmer with the required documentation. The logic in some programs is best described by a flowchart. Sometimes decision tables are also useful. The main responsibility in documentation is to provide enough information to enable future programmers to understand and make necessary changes. Since programmers do not retain their jobs for a very long time, it becomes necessary that there be some kind of documentation that will be useful for the new programmers who are assigned the same system.

(2) **Operations :** For smooth running of the system, the data entry operator must have complete knowledge about the job. The instructions must be in a form that is easily accessible to the console operator and written in simple and understandable style.

(3) **User :** System users should have a manual that describes everything the users must know to do their job correctly. Users require two general type of information: complete details to handle everything the system processes, and an overall picture of the system.

(4) **Management :** The documentation required by management differs a lot from that required by users. The manual should enable management to perform three functions:

(a) Evaluate progress on the development of system.

(b) Monitor the existing systems.

(c) Understand the objectives and methods of the new and existing system.

(5) **Systems :** This manual document the complete life cycle of the system. If documents the results of the feasibility study, the team assigned, etc.

It also documents the file specification, transaction specification and output specification.

Q.13 What are CASE Tools?

Ans.: Use of automated tools to improve the speed and quality of system development work is very essential and important. One type of automated tool is a CASE tool. CASE tools are specifically designed to help system analysts complete system development tasks. A CASE tools contains a database of information about the project, called a repository. The repository stores information about the system, including models, descriptions and references that link the various models together. The CASE tool can check the models to make sure they are complete and follow the correct diagramming rules. If system information is stored in a repository, the development team can use the information in a variety of ways. Every time a team member adds information about the system, it is immediately available for everyone else.

CASE tools are often categorized as Upper CASE or Lower CASE tools. Upper CASE tools provide support for analysts during the analysis and design phases. Lower CASE tools provide support for implementation, generating programs based on specifications in the repository. CASE tools that combine support for the full life cycle are called Integrated CASE or ICASE tools.

Around the CASE repository is a collection of tools or facilities for creating system models and documentation. To use the repository, the CASE tools provide some combination of the following facilities :

(1) Diagramming Tools

(2) Design Generator and Code Generator

(3) Testing Tools

(4) Quality Management Tools

(5) Reverse-Engineering Tools

Q.14 What is Data Warehousing?

Ans.: A data warehouse is a repository of all the data of an organization. It contains data that is necessary and useful for the management's decision support system. A data analyst can perform complex queries and analysis, such as data mining, on the data in the warehouse, without slowing down the operational system. The data warehouse is :

Subject-Oriented : The data in the database is organized so that all the data elements relating to the same real-world event or object are linked together;

Time-Variant : The changes to the data in the database are tracked and recorded so that reports can be produced showing changes over time;

Non-Volatile : Data in the database is never over-written or deleted - once committed, the data is static, read-only, but retained for future reporting; and

Integrated : The database contains data from most or all of an organization's operational applications, and that this data is made consistent.

The data warehouse architecture consists of various interconnected elements which are: 1) Operational and external database layer: the source data for the data warehouse. 2) Informational access layer: the tools, the end user access to extract and analyze the data. 3) Data Access Layer: the interface between the operational and informational access layer. 4) Metadata Layer: The data directory or repository of metadata information. The goal of a data warehouse is to bring data together from a variety of existing databases to support management and reporting needs. The generally accepted principle is that data should be stored at its most elemental level because this provides for the most useful and flexible basis for use in reporting and information analysis.

There are many advantages to using a data warehouse, some of them are :

- Data warehouses enhance end-user access to a wide variety of data.
- Decision support system users can obtain specified trend reports, e.g. the item with the most sales in a particular area within the last two years.
- Data warehouses can significantly enable commercial business applications, particularly customer relationship management (CRM) systems.

Q.15 Explain Data Mining.

Ans.: Data mining, *the extraction of hidden predictive information from large databases*, is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. Data mining tools can answer business questions that traditionally were too time-consuming to resolve. Data mining is ready for application in the business community because it is supported by three technologies that are now sufficiently mature:

- Massive Data Collection
- Powerful Multiprocessor Computers
- Data Mining Algorithms

Computers are loaded up with lots of information about a variety of situations where an answer is known and then the data mining software on the computer must run through that data and distill the characteristics of the data that should go into the model. Once the model is built it can then be used in similar situations where you don't know the answer.

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BACHELOR OF COMPUTER APPLICATIONS
(Part II) EXAMINATION
(Faculty of Science)

(Three – Year Scheme of 10+2+3 Pattern)

PAPER 217
SYSTEM ANALYSIS AND DESIGN

Year - 2011

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. A central repository of records is known as:
   (a) Data warehousing
   (b) Client-server system
   (c) Data-mining
   (d) Distributed system ( )

2. A……………………is a set of components that work together to accomplish one or more common goals.
   (a) System (b) Flowcharts
   (c) Algorithm (d) None of the above ( )

3. CPM chart is example of:
   (a) Schematic model
   (b) Flow system model
   (c) Static model
   (d) Dynamic model ( )

4. Which is not the phase of SDLC?
   (a) Feasibility study
   (b) Design
   (c) Analysis
   (d) Presentation ( )

5. In which phase on SDLC the user actually start using the system?
   (a) Implementation (b) Design

(c) Maintenance (d) Analysis ( )

6. One of the important objective of system analysis is to:
(a) Train managers in mathematical analysis
(b) Run simulation programs
(c) Understand a complex system and modify it in some way
(d) Understand computer hardware required ( )

7. DSS is typically used for:
(a) Operational decisions
(b) Tactical decisions
(c) Strategic decision
(d) All of the above ( )

8. A distinct object in a system is known as:
(a) Degree
(b) Attributes
(c) Parameter
(d) Entity ( )

9. Data and fact gathering techniques include:
(a) Interviews
(b) Questionnaires
(c) Both (a) and (b)
(d) None of the above ( )

10. The following is not a component of a DFD:
(a) External entity
(b) Recursion
(c) Data at rest/Data store
(d) All of the above ( )

11. The difference between Decision Table and Decision Tree is:
(a) Value of end user
(b) Form and representation
(c) One shows logic and second shows process
(d) None of the above ( )

12. Prototype is a :
(a) Mini model of the existing system
(b) Mini model of the proposed system
(c) Working model of the existing system
(d) None of the above ( )

13. The focus of quality assurance is:

(a) Process (b) Design
(c) Operations (d) None of the above ( )

14. The most risky form of changeover is:
(a) Abrupt changeover
(b) Parallel Conversion
(c) Gradual changeover
(d) All of the above ( )

15. The difference between program testing and system testing is:
(a) Program testing is more comprehensive than system testing
(b) System testing focuses on testing the interfaces between programs, whereas program testing focuses on individual programs
(c) System testing of concerned with testing of all aspects of a system including job designs and reward system designs
(d) Programmers have no involvement is system testing, whereas designers are involved in program testing ( )

16. The phase of system development associated with creation of the test date is:
(a) System design
(b) Physical design
(c) System acceptance
(d) Logical design ( )

17. The source of threats to system security:
(a) Error and omissions (b) Utilization of the system
(c) Firewall (d) Risk Analysis ( )

18. Loss of data integrity implies that data is:
(a) Not suitable for running in an integrated environment
(b) Inconsistent
(c) Repeated
(d) Outdated ( )

19. Prototyping means:
(a) Creating, developing and refining a working model of the final operational system
(b) Testing the computer system
(c) Designing the computer system
(d) None of the above ( )

20. An aid to system design should primarily :
(a) Help in documentation
(b) Generate code
(c) Help in analysis of both data and activities

(d) None of the above ( )

21. A distinct object in a system is known as:
(a) Degree
(b) Attribute
(c) Parameter
(d) Entity ( )

22. "SQA" stands for:
(a) Software Quality Assistant
(b) Software Quality Accuracy
(c) Software Quality Assurance
(d) None of the above ( )

23. Backup and recovery procedures are necessary to:
(a) Reorganize the disk
(b) Control the DBA
(c) Handle corrupt or irretrievable files
(d) None of the above ( )

24. Top level managers requires:
(a) Strategic information
(b) Tactical information
(c) Operational Information
(d) None of the above ( )

25. Which of the following is a tactical decision?
(a) Budget allocation (b) Diversification
(c) Workshop location (d) None of the above ( )

26. Schedule of delivery is an example of:
(a) Transaction based system
(b) Decision support
(c) Both of the above
(d) None of the above ( )

27. A data dictionary is:
(a) A comprehensive integration collection of data about data
(b) A dictionary or algorithm for obtaining the address of logical records on a storage device
(c) The relationship among the different field of data in a secondary storage
(d) None of the above ( )

28. The most important aspect of system design focus on:
(a) Economic feasibility

(b) Technical feasibility
(c) Operational feasibility
(d) All of the above ( )

29. Corrective system maintenance means:
(a) Repair processing of performance failure
(b) Enhancement the performance of the system
(c) Updating system documentation
(d) Changing the program function at the user's request ( )

30. Which of the following best defines coupling?
(a) Amount of interconnection between modular in a system
(b) Degree to which all the part of a module contribute to a single identifiable function
(c) Extent to which the effects of a decision remain within a module's scope of control
(d) None of the above ( )

31. When there are several functions in a module which are related to the flow of control between them, the cohesion is:
(a) Temporal
(b) Procedural
(c) Functional
(d) None of the above ( )

32. The overall logical structure of a database can be expressed graphically by:
(a) Data Flowchart
(b) Flowchart
(c) Directed graph
(d) E-R diagram ( )

33. Level 0 DFD depict the system in:
(a) One part (b) Two Parts
(c) Three parts (d) None of the above ( )

34. Site visits are conducted:
(i) To understand similar system
(ii) To find faults of the other systems
(iii) To prove that system if necessary
(iv) None of the above ( )

35. One of the important objective of system analysis is to:
(a) Train managers in mathematical analysis
(b) run simulation programs
(c) Understand a complex system and modify it in some way

(d) Understand the required computer hardware ( )

36. Which of the following technical skills are essential for a system analyst?
(a) Java programming
(b) Networking
(c) Problem solving approach
(d) Linux ( )

37. Which of the following is not a tool of data collection?
(a) On-site observation
(b) Program flowcharts
(c) Interviews
(d) Questionnaires ( )

38. File conversion is part of :
(a) System cut over
(b) Day to day activity
(c) System design
(d) None of the above ( )

39. Which is not a basic principle of successful system?
(a) System should give visible benefits
(b) System should be abstract
(c) System should be well documented
(d) System should be of use of the user ( )

40. Which of the following are the tools of SDLC?
(a) HIPO
(b) DFD
(c) CASE
(d) All of the above ( )

Answer Key

1. ( )	2. ( )	3. ( )	4.( )	5. ( )	6. ( )	7. ( )	8. ( )	9. ( )	10. ( )
11. ( )	12.( )	13. ( )	14. ( )	15. ( )	16. ( )	17. ( )	18. ( )	19. ( )	20. ( )
21. ( )	22. ( )	23. ( )	24. ( )	25. ( )	26. ( )	27. ( )	28. ( )	29. ( )	30. ( )
31. ( )	32. ( )	33. ( )	34. ( )	35. ( )	36. ( )	37. ( )	38. ( )	39. ( )	40. ( )

DESCRIPTIVE PART - II

Year 2011

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each.

1. (a) Define system. What are the various types of system ? Explain
   (b) What are agent oriented system and what are its important characteristics?

2. (a) Distinguish between Batch processing and real time processing.
   (b) What is the approach which is used in Function Oriented Approach of System Development.

3. (a) What is Feasibility Study? Discus the role of feasibility studies and prototyping in system analysis and design.
   (b) Explain with suitable example as to how data flow diagram and system flow charts are used in system design and development.

4. (a) Explain the factors related of software quality.
   (b) Explain the different categories of system maintenance in brief.

5. (a) What do you mean by implementation? Discuss its all tasks and activities.
   (b) What are the criteria for a vendor selection?

6. Write short notes on any three of the following;
   (a) Waterfall cycle
   (b) HIPO
   (c) Data Mining
   (d) Cost benefit analysis.

SYSTEM ANALYSIS AND DESIGN

OBJECTIVE PART- I

Year - 2010

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. Which of the following technical skills is essential for a system analyst?
   (a) Knowledge of networking
   (b) Knowledge of operating system
   (c) Problem solving approach
   (d) None of the above ( )

2. Which one of the following is not a Top Management function?
   (a) Planning
   (b) Organizing
   (c) Decision making
   (d) Day to day operation ( )

3. An entity one of the following is not a Top Management functions?
   (a) All entities are so same type
   (b) May be of same type or may be of different type
   (c) Both a and b
   (d) Neither (a) nor (b) ( )

4. "SQL" stands for:
   (a) Software Quality Accuracy
   (b) Maybe same type or may be of different type
   (c) Both a and b
   (d) Neither a nor b ( )

5. A central repository of records is known as:
   (a) Data warehousing (b) Client server system
   (c) Data mining (d) Distributed System ( )

6. System Development Cycle is also known as:

(a) Problem solving cycle (b) Product life cycle
(c) Hardware cycle (d) Software cycle ( )

7. A computer which requests another computer is:
(a) Server
(b) Multiplexer
(c) Client
(d) None of the above ( )

8. System testing is an important par of:
(a) Model building
(b) Quality assurance
(c) Generating information
(d) None of the above ( )

9. Risk analysis includes:
(a) Manpower risk
(b) Technology risk
(c) Customer/user risk
(d) Environment risk ( )

10. Deductive database and expert system are mainly used for:
(a) Replacing the functionality of a real expert
(b) Hypothesis testing
(c) Knowledge discovery
(d) All of the above ( )

11. Error and fraud in any computer system can be detected through:
(a) Usage of password
(b) Network security
(c) Audit trails
(d) None of the above ( )

12. Which is the characteristics of data in a DBMD?
(a) Consistency (b) Security
(c) Independence (d) All of the above ( )

13. Which tool is used for analysis of data flow:
(a) Data flow diagram (b) Data dictionary
(c) Flow chart (d) All of the above ( )

14. Storage of information in graphs video, voice is:
(a) Multimedia (b) Cookies
(c) Text file (d) All of the above ( )

15. Decision tables is:
(a) table containing decision
(b) methods
(c) none of the various programming analysis tools
(d) debugging tool ( )

16. A distinct object in a system is known is:
(a) Degree
(b) Attribute
(c) Parameter
(d) Entity ( )

17. An unstructured tool for information gathering can be:
(a) prototyping (b) questionnaires
(c) observation (d) all of the above ( )

18. ....is the process of collecting organizing, storing and maintaining complete historical record of programs.
(a) Documentation (b) Testing
(c) Debugging (d) None of the above ( )

19. Cost benefit analysis is performed during be:
(a) Analysis phase
(b) Design phase
(c) Implementation
(d) None of the above ( )

20. In terms of total software cost, maintenance costs appear to constitute about:
(a) 5%–20%
(b) 20% – 40%
(c) 40% – 80%
(d) 80% – 90% ( )

21. CASE is stand for:
(a) Computer Assisted Software Engineering
(b) Computer and Software Engineering
(c) Computer Aided Software Engineering
(d) None of the above ( )

22. Pseudo code is:
(a) Programmer (b) IBA
(c) User (d) System Analyst ( )

23. A system that groups a number of transaction for later processing is known is:
(a) Programmer

(b) IBA
(c) User
(d) System Analyst ( )

24. A person who analysis the way the system works and its problem is:
(a) Client server (b) On line system
(c) Real time system (d) Batch system ( )

25. Which of the following areas should be addressed while designing a system:
(a) Problem domain (b) Human interface
(c) Task management (d) Data management ( )

26. Top level manager uses:
(a) Strategic information
(b) Tactical information
(c) Operational information
(d) None of the above ( )

27. Entities, attributes and relationship are associated with:
(a) Logical concept of data
(b) Physical concept of data
(c) Person of organization
(d) None of the above ( )

28. Prototyping aims at:
(a) End user understanding and approval
(b) Program logic
(c) Planning of data flow organization
(d) None of the above ( )

29. File conversion is part of:
(a) System cut over
(b) System design
(c) Day to day activity
(d) None of the above ( )

30. DSS role is:
(a) Trial and error search for solutions
(b) Planning
(c) Analyzing alternatives
(d) (a) (b) and (c) of the above ( )

31. Tangible benefits by their very nature, require:
(a) Subjective evaluation
(b) Quantifiable evaluation

(c) Feasible evolution
(d) None of the above ( )

32. The components that make up any system is known is:
(a) Data
(b) Boundary
(c) Description
(d) Information ( )

33. In a DBMS two records types and their relationship are called:
(a) Schema (b) Segment
(c) Set (d) Database record ( )

34. Data integrity stands for:
(a) Validated data
(b) Data stored in different files showing consistency
(c) Data field integrated to provide summary
(d) None of the above ( )

35. Hashing procedure is used in:
(a) Random files
(b) Sequential files
(c) Indexed relationship, field and record type
(d) None of the above ( )

36. A DDL is:
(a) Establishes relationship, field and record type
(b) Helps maintaining data in database
(c) Create database
(d) None of the above ( )

37. Which of the following are tools of SASD?
(a) HIPO
(b) CASE
(c) DFD
(d) All of the above ( )

38. Which of the following is not part of SDLC?
(a) Audit
(b) Reliability
(c) Security
(d) None of the above ( )

39. ....means changing from one system to another:
(a) Manipulations

(b) Conversion
(c) Requirement
(d) Designing ( )

40. The full form of CPM is:
(a) Critical path method
(b) Critical program methodology
(c) Computer program and maintenance
(d) Complicated path method ( )

Answer Key

1. (c)	2. (d)	3. (a)	4. (c)	5. (a)	6. (b)	7. (c)	8. (b)	9. (b)	10. (d)
11. (c)	12. d)	13. (d)	14. (a)	15. (c)	16. (d)	17. (c)	18. (a)	19. (a)	20. (c)
21. (c)	22. (c)	23. (d)	24. (d)	25. (a)	26. (a)	27. (a)	28. (a)	29. (b)	30. (d)
31. (a)	32. (a)	33. (c)	34. (b)	35. (a)	36. (c)	37. (d)	38. (c)	39. (b)	40. (a)

DESCRIPTIVE PART - II

Year 2010

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each *each.*

Q.1 (a) What are structured analysis and data structured?

(b) What is the relationship that Data Structure have with Data Element, Data Flows and Data Stores?

Q.2 Explain the following:
(a) Project
(b) Project Scheduling
(c) Critical Path
(d) Project Review
(e) System

Q.3 Distinguish between the following:

(a) Structured charts and DFDs
(b) Open ended and close ended question

(c) Validation and verification

Q.4 (a) Specify the purpose of system testing.

(b) Explain different fact finding techniques.

Q.5 What type of design methodologies are used in system design?

Q.6 Explain the various tools of rapid prototyping? List the various benefits of prototyping.

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SYSTEM ANALYSIS AND DESIGN

OBJECTIVE PART- I

Year - 2009

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. Which of the following technical skills is essential for a system analyst?
(a) Knowledge of networking
(b) Knowledge of operating system
(c) Problem solving approach
(d) None of the above ( )

2. The first step in SDLC is:
(a) Preliminary investigation and analysis
(b) System design
(c) Database Design
(d) None of the above ( )

3. Which one of the following is not a Top Management function?
(a) Planning
(b) Organizing
(c) Decision-making
(d) Day to day operation ( )

4. Data dictionary keeps details of the content of:
(a) Data Flow (b) Data stores
(c) Both a and b (d) Neither a nor b ( )

5. Structured programming involves:
(a) Functional modularization (b) Localization of error
(c) Decentralized programming (d) All of the above ( )

6. Tangible benefits by their very nature, require:
(a) Subjective evaluation (b) Quantifiable evaluation
(c) Feasible evaluation (d) None of the above ( )

7. An entity set of ER-Diagram, is a set of entities.
(a) All entities are of same type
(b) May be of same type or may be of different type

(c) Both a and b
(d) Neither a nor b ( )

8. "SQA" stands for:
(a) Software Quality Accuracy
(b) Software Quality Assistant
(c) Software Quality Assurance
(d) None of the above ( )

9. A set of predefined steps for building a systems is :
(a) Linear cycle
(b) Water full cycle
(c) Both a and b
(d) None of the above ( )

10. The full form of CPM is:
(a) Critical path methods
(b) Critical program methodology
(c) Computer program and maintenance
(d) Complicated path method ( )

11. A central repository of records is known as:
(a) Data warehousing
(b) Client server system
(c) Data mining
(d) Distributed system ( )

12. System development cycle is also known as:
(a) Problem solving cycle (b) Product life cycle
(c) Hardware Cycle (d) Software cycle ( )

13. A method to illustrate how data flows in a system is known as:
(a) Data flow diagram (b) Pseudo-code
(c) Decision-support systems (d) None of the above ( )

14. A distinct object in a system is known as:
(a) Degree (b) Attribute
(c) Parameter (d) Entity ( )

15. A diagram that shows the inputs and outputs of a system is known as:
(a) Document flow diagram (b) context diagram
(c) Process diagram (d) None of the above ( )

16. A computer which requests another computer is:
(a) Server

(b) Multiplexer
(c) Client
(d) None of the above ( )

17. A step in the development process is :
(a) Set (b) Subset
(c) Break (d) Phase ( )

18. System testing in an important part of:
(a) Model building (b) Quality assurance
(c) Generating information's (d) None of the above ( )

19. Adapting an object for use in an application is known is:
(a) conversation
(b) Data mining
(c) Collaboration
(d) Customization ( )

20. The detailed study of the present system is referred to as:
(a) System planning
(b) System analysis
(c) Feasibility study
(d) System design. ( )

21. Management is linked to information by:
(a) Decision (b) Data
(c) Both a and b (d) Neither a nor b ( )

22. Which of the following is a tactical decision?
(a) Diversification (b) Data
(c) Both a and b (d) Neither a nor b ( )

23. Waterfall model follows;
(a) systematic approach
(b) Sequential approach
(c) Both a and b
(d) None of the above ( )

24. When the customer wants quick delivery, which model is best suited?
(a) Prototype model (b) Waterfall model
(c) DSDM (d) None of the above ( )

25. LOC stands for:
(a) Line of code (b) Label of code
(c) Both a and b (d) None of the above ( )

26. Tools used in requirements are:
(a) Prototypes
(b) Use case
(c) Data flow diagram
(d) Transition process diagram ( )

27. Which of the following is not an element in the physical DFD?
(a) Internal/External entity
(b) Data flows
(c) Processors
(d) Flowchart ( )

28. A DFD is:
(a) Mainly used at the system specification stage
(b) The primary output of the system specification stage
(c) The modern version of a flowchart
(d) None of the above ( )

29. A software design description document only includes;

(a) Data dictionary
(b) ER diagram
(c) DFD
(d) All of the above ( )

30. Same types of attribute is called:
(a) Attribute set (b) Domain
(c) Entity set (d) None of the above ( )

31. Once the software is installed and deployed it enters the:
(a) Implementation phase
(b) System design phase
(c) Maintenance
(d) None of the above ( )

32. Risk analysis includes:
(a) Manpower risk
(b) Technology risk
(c) Customer/user risk
(d) Environment risk
(e) All of the above ( )

33. Which set of properties that should be specified as a part of an architectural design?

(a) Structured Properties (b) Extra-functional properties
(c) Families of related systems (d) All of the above ( )

34. FTR stands for:
(a) Formal Testing Review
(b) Formal Technical Review
(c) Formal Technical Relation
(d) None of the above ( )

35. Validation testing includes:
(a) Recovery testing
(b) Stress testing
(c) Alpha and Beta testing
(d) Security testing ( )

36. System testing includes:
(a) Recovery testing
(b) Stress testing
(c) Security testing
(d) All of the nonve ( )

37. Project manager is responsible for:
(a) Successful execution of the implementation phase
(b) Accomplishing assigned tasks
(c) Preparing soliciting document
(d) None of the above ( )

38. Client-server database consists of:
(a) Client application
(b) Database server
(c) Middleware
(d) All of the above ( )

39. Which of the following is false?
(a) Data mining support massive data collection
(b) Data mining support powerful multiprocessor computer
(c) Data mining support, data mining algorithms
(d) None of the above ( )

40. Deductive database and expert systems are mainly used for:
(a) Replacing the functionality of a real expert
(b) Hypothesis testing
(c) Knowledge discovery
(d) All of the above ( )

Answer Key

1. (b)	2. (c)	3. (d)	4. (b)	5. (c)	6. (c	7. (c)	8. (c)	9. (c)	10. (b)
11. (a)	12. a)	13. (b)	14. (c)	15. (d)	16. (d)	17. (c)	18. (b)	19. (c)	20. (a)
21. (b)	22. (c)	23. (a)	24. (b)	25. (d)	26. (a)	27. (b)	28. (a)	29. (a)	30. (c)
31. (b)	32. (c)	33. (a)	34. (a)	35. (b)	36. (d)	37. (a)	38. (c)	39. (a)	40. (b)

DESCRIPTIVE PART - II

Year 2009

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each

Q.1 (a) What is SDLC? Discuss its all stages in brief.

Q.2 (a) Define the term system.

(b) What are the various elements of system?

Q.3 (a) What is Preliminary Analysis?

(b) What do you mean by Cost Benefit Analysis and discuss all types of benefits?

Q.4 (a) Why is necessary requirement Analysis? Discuss all types involved in requirement analysis process.

(b) What is fact finding?

Q.5 Explain the difference between:

(i) Structured and unstructured interviewing

(ii) Open ended and close ended questions

(iii) Physical and abstract system

(iv) Batch processing and Real time processing.

Q.6 Write notes on any the following:

(a) Requirement Analysis

(b) Data Warehousing

(c) System Analysis

(d) Client/Server System

SYSTEM ANALYSIS AND DESIGN

OBJECTIVE PART- I

Year - 2008

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. Which is the system development approach?
(a) Data modeling (b) Function oriented
(c) Process modeling (d) None of these ( )

2. Which is the characteristic of data in a DBMS?
(a) Consistency
(b) Security
(c) Independence
(d) All of the above ( )

3. Error and fraud in any computer system can be detected through:
(a) Usage of password (b) Network security
(c) Audit trails (d) None of the above ( )

4. What is decision table?
(a) A graphic method for describing the logic of decisions
(b) Data dictionary
(c) Flow chart
(d) None of these ( )

5. Which tool is used for analysis of data flow?
(a) Data flow diagram (b) Data dictionary

(c) Flow chart (d) All of the above ( )

6. How many types of relationships can be defined between two or more entities.
(a) 2 (b) 3
(c) 1 (d) None of the above ( )

7. The characteristic of data in a database is:
(a) Shared
(b) Security
(c) Persistence
(d) All of the above ( )

8. The rectangular is used in DFD:
(a) Read/write data
(b) Processing
(c) Decision-making
(d) None of these ( )

9. Which is a desirable feature of good quality design?
(a) Flexible
(b) Portable
(c) Secure
(d) All of the above ( )

10. Which tool is used for analysis of data flow?
(a) Data dictionary
(b) Structured English
(c) Decision Tables
(d) None of these ( )

11. A person who analyze the way the system works and its problems is:
(a) Programmer
(b) DBA
(c) User
(d) System analyst ( )

12. Storage of information in graphs, video, voice etc. is:
(a) Multimedia
(b) Cookies
(c) Text file
(d) None of the above ( )

13. The sequence of steps followed in a system study is :
(a) Problem definition, system design, system analysis, programming and implementation

(b) Problem definition, system analysis, programming and implementation
(c) System analysis, system design and system implementation
(d) Problem, definition, system analysis, system design, programming analysis, program preparation and implementation ( )

14. Decision table is:
(a) A table containing decisions
(b) A method to analyze how to get decision
(c) One of the various programming analysis tools
(d) A debugging tool ( )

15. Decision tables are made prior to making a/an:
(a) Flowchart (b) Algorithm
(c) Program (d) Task analysis ( )

16. We task the help of flowcharts:
(a) To decide the sequence of steps involved in finding the solution
(b) As an addition to making algorithm
(c) To prepare decision tables
(d) None of the above ( )

17. A district object in a system is known is:
(a) Degree (b) Attribute
(c) Parameter (d) Entity ( )

18. A system that groups a number of transaction for later processing is known is:
(a) Client Server (b) Batch system
(c) Online system (d) Real time system ( )

19. Which of the following items are discussed during the system implementation phase of the application:
(a) Program specification
(b) Software specification
(c) Software maintenance
(d) All of the above ( )

20. A system flow chart describes the:
(a) details of each program module
(b) line diagram for particular program
(c) data files and operations and decision for a particular program
(d) sequence of operations techniques is used to simplify defining problem ( )

21. Which of the following techniques is used to simplify defining problems by both system analysis and programmers:
(a) Documentation

(b) Decision tables
(c) Sub-routine
(d) Decision instruction ( )

22. The normal starting point of any system design is to:
(a) determine the input requirement
(b) determine the output requirement
(c) establish data entry procedures
(d) determine data entry requirement ( )

23. Which of the following is not true about distributed processing:
(a) They are modular
(b) They are more reliable
(c) Maintenance costs are high
(d) Response is slow ( )

24. Which of the following technical skills is essential for a system analyst:
(a) Knowledge of networking
(b) Knowledge of operating system
(c) Problem solving approach
(d) None of the above ( )

25. An unstructured tools for information gathering can be:
(a) prototyping
(b) questionnaires ( )

26. The components of a distributed system are connected by a :
(a) Multiplexer
(b) Communication controller
(c) Network
(d) Switcher ( )

27. Entities attributes and relationships are associated with:
(a) Logical concept of data
(b) Physical concept of data
(c) Person of an organization
(d) None of the above ( )

28. Prototype is:
(a) minimodel of the existing system
(b) minimodel of tthe proposed system
(c) working model of the existing system
(d) none of the above ( )

29. ....is a collection of computer based information that is critical to successful execution of enterprise initiatives.

(a) data mining
(b) data warehouse
(c) both a and b
(d) None ( )

30. A/An............is a set of components that work together to accomplish one or more common goals.
(a) System
(b) Flow chart
(c) Algorithm
(d) None ( )

31. The feasibility report consists of:
(a) General specification for the new system
(b) Economic analysis of costs and justification for expenditure
(c) Technical considerations
(d) All of the above ( )

32. A....................is a structured repository of data.
(a) Data flow diagram
(b) Data dictionary
(c) Structure chart
(d) None ( )

33. An association among entities is caused a :
(a) Attribute
(b) Relationship
(c) Redundancy
(d) None ( )

34. ....are a fundamental tool of a structured desing.
(a) Structure charts
(b) Data structure diagrams
(c) Case tools
(d) None of the above ( )

35. Which of the following appropriately explains the desirable characteristic of a good system design?
(a) Modular approach
(c) Proper documentation
(a) Neither a nor b
(c) Both a and b ( )

36. Design specifications do not normally include:
(a) Output requirements
(b) Input and storage requirements
(c) Control Provisions
(d) Blueprints showing the layout hardware ( )

37. ....is a network that describes data flows and transformations throughout a system:
(a) Data flow diagram
(b) Data dictionary
(c) Structure charts
(d) None ( )

38. In development of an applications systems, which accesses data under a DBMS, the user vies the database as a:
(a) Group of files
(b) Logical Structure
(c) Random storage structure
(d) None of the above ( )

39. A set of prerecorded instructions executed by a computer is called the:
(a) Action
(b) Hardware
(c) Program
(d) None of these ( )

40. ....is the process of collecting, organizing, storing and maintaining a complete historical record of programs.
(a) Documentation
(b) Testing
(c) Debugging
(d) None of these ( )

Answer Key

1. (b)	2. (d)	3. (c)	4. (c)	5. (a)	6. (b)	7. (d)	8. (d)	9. (b)	10. (b)
11. (d)	12. (a)	13. (a)	14. (c)	15. (b)	16. (b)	17. (c)	18. (a)	19. (c)	20. (d)
21. (b)	22. (d)	23. (a)	24. (a)	25. (a)	26. (c)	27. (d)	28. (c)	29. (b)	30. (c)
31. (d)	32. (a)	33. (a)	34. (b)	35. (b)	36. (a)	37. (c)	38. (c)	39. (b)	40. (a)

DESCRIPTIVE PART - II

Year 2008

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each.

Q.1 Write short notes on:

(i) Client-server System (ii) Batch processing (iii) Data mining

Q.2 (a) Discuss the various data and fact gathering techniques.

(b) Explain the prototyping and benefits of prototyping.

Q.3 Briefly explain the following:

(i) Data flow Diagram (ii) Documentation (iii) Attributes

Q.4 (a) Explain briefly the various phases of system development life cycle.

(b) What is the purpose of distributed processing ? Explain.

Q.5 Write short notes on:

(i) Data modeling (ii) System development approaches (iii) Decision tables

Q.6 Briefly explain the following:

(i) System implementation

(ii) Entity relationship diagram

(iii) Linear life cycle

SYSTEM ANALYSIS AND DESIGN

OBJECTIVE PART- I

Year - 2007

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. The basic objective of system analysis is to:
   (a) Understand computer hardware by opening the system unit
   (b) Train manager in mathematical analysis
   (c) Run simulation program
   (d) Understand a current system and modify it in same way ( )

2. A zero level! DFD describes:
   (a) Overview of processes, inputs and outputs
   (b) Fully blown by system design
   (c) The system design can not be spilt further
   (d) None of these ( )

3. Which of the following is not part of the SDLC?
   (a) Feasibility study
   (b) System design
   (c) Unit testing
   (d) None of these ( )

4. Cost-benefit analysis is performed during the:
   (a) Analysis phase
   (b) Design phase
   (c) Implementation phase
   (d) None of these ( )

5. Which of the following is most likely to be used to describe conditional logic?
   (a) Decision table
   (b) Data flow diagram
   (c) Structured English
   (d) All of the above ( )

6. Which of the following technical skills are essential for a system analyst?
   (a) Knowledge of networking
   (b) Knowledge of operating system

(c) Problem solving approach
(d) None of these ( )

7. The entity-relationship diagram:
(a) Depicts how data is transformed as it moves through the system
(b) Depicts relationship between data object
(c) Describes how the system behaves as a consequences of external events
(d) None of these ( )

8. The data dictionary consists of:
(a) Definition of all data elements in data flow diagram
(b) Process Specifications
(c) Key field of the database
(d) None of these ( )

9. The system design:
(a) Documents the user requirement
(b) Defines the architecture of the system
(c) Is carried out before the systems design
(d) None the these ( )

10. In terms of total software cost, maintenance costs appear to constitute about:
(a) 5% – 20%
(b) 20% – 40%
(c) 40% – 80%
(d) 80% – 90% ( )

11. Risk analysis is a part of which software development process:
(a) Waterfall model
(b) Prototype model
(c) Spiral model
(d) None of these ( )

12. In which phase of SDLC, the modules are tested against specification produced during design for the module?
(a) Analysis phase
(b) Design phase
(c) Coding Phase
(d) None of these ( )

13. How many types of relationship can be defined between two or more entities?
(a) 2 (b) 3
(c) 1 (d) None of these ( )

14. An unstructured tool for information gathering can be:
(a) Prototyping
(b) Questionnaires
(c) Observation
(d) All of these ( )

15. A knowledge is being discovered from a large volume of data, the method used is known is:
(a) Data warehousing (b) Data mining
(c) Data counting (d) None of these ( )

16. The type of organization, in which a single index for each key type exists and records are not necessarily stored in particular sequence:
(a) Index sequential method
(b) Inverted list organization
(c) Chaining
(d) None of these ( )

17. Loss of data integrity implies that data is:
(a) Inconsistent (b) Repeated
(c) Outdated (d) None of these ( )

18. A CASE is:
(a) Computer assisted software engineering
(b) Computer and software engineering
(c) Prepare, connect, execute, fetchrow, finish, disconnect
(d) None of these ( )

19. A support system that is related to the higher level of management is:
(a) Data support system
(b) Digital support system
(c) Decision support system
(d) None of these ( )

20. The main advantage of normalized relations in relations DBMS is taht they:
(a) Are highly secure
(b) De not suffer from anomalies during deleted and update operations
(c) Occupy minimal storage
(d) All of the above ( )

21. A diagram that shows the input of output of a system is known as:
(a) Document flow diagram
(b) Process diagram
(c) Context diagram
(d) None of these ( )

22. Which of the following are tools of SASD?
    (a) HIPO
    (b) Case
    (c) DFD
    (d) All of the these ( )

23. Which of the following appropriately explains the desirable characteristic of a good system design?
    (a) Modular approach
    (b) Proper documentation
    (c) Neither a nor b
    (d) both a and b ( )

24. A typical data processing context, where master files are updated to produce desired output, is known is:
    (a) Validation checking
    (b) Transaction processing
    (c) Normalization process
    (d) None of these ( )

25. Whether a proposed system can provide right information for the organizations personnel, falls under the study of:
    (a) Economic feasibility
    (b) Operational feasibility
    (c) Technical feasibility
    (d) All of these ( )

26. Stub is met within the context of:
    (a) Data communication
    (b) Testing of module
    (c) Random access
    (d) None of these ( )

27. Entities, attributes and relationship are associated with:
    (a) Logical concept of data
    (b) Physical concept of data
    (c) Persons of an organization
    (d) None of these ( )

28. Decision tables link conditions and:
    (a) Tables
    (b) Programs
    (c) Actions
    (d) None of these ( )

29. Pseudo code is:
(a) False logic
(b) Programming aid
(c) Both a and b
(d) Neither a nor b ( )

30. Design specification do not normally include:
(a) Output requirements
(b) Input and storage requirements
(c) Control provisions
(d) Blueprints showing the layout of hardware ( )

31. The sequence of steps of following in a system study is:
(a) Problem definition, system design, system analysis, programming and implementing
(b) Problem definition, system design, system analysis, programming and implementing
(c) System analysis system design and system implementation
(d) Problem definition, system analysis, system design, programming and implementing ( )

32. The phase of system development associated with creation of test data is:
(a) System analysis
(b) Physical design
(c) System acceptance
(d) Logical design ( )

33. Prototype is a :
(a) Minimodel of the existing system
(b) Minimodel of the proposed system
(c) Working model of the existing system
(d) None of these ( )

34. In development of an application system, which accesses data under a DBMS, the user views the database as a:
(a) Group of files
(b) Logical structure
(c) Random storage structure
(d) None of these ( )

35. A distinct object in a system in known is:
(a) Degree
(b) Attribute
(c) Parameter

(d) Entity ( )

36. A person who analysis the way the system works and its problem is:
(a) Programmer
(b) DBA
(c) User
(d) System analyst ( )

37. A system that groups a number of transaction for later processing is known is:
(a) Client Server
(b) Post on Point
(c) Post Office Protocol
(d) Post of Protocol ( )

38. ....is an application layer protocol that establishes, maintains and terminates a multimedia session.
(a) SIP
(b) RTCP
(c) DCT
(d) JPEG ( )

39. <Frameset Cols = "33%, 33%, 33%">
(a) Divides the browser screen into three equal horizontal sections
(b) Divides the browser screen into three equal vertical section
(c) Divides the browser screen into three horizontal sections
(d) Divides the browser screen into three vertical section ( )

40. A..............can forward or block packets based on the information in the network layer and transport layer headers.
(a) Proxy farewell (b) Packet-filter fire well
(c) Message Digest (d) Private Key ( )

Answer Key

1. (c)	2. (b)	3. (b)	4. (d)	5. (d)	6. (d)	7. (b)	8. (c)	9. (b)	10. (a)
11. (b)	12. (d)	13. (d)	14. (d)	15. (b)	16. (b)	17. (b)	18. (d)	19. (c)	20. (a)
21. (b)	22. (b)	23. (a)	24. (a)	25. (c)	26. (c)	27. (a)	28. (d)	29. (a)	30. (a)
31. (d)	32. (a)	33. (c)	34. (b)	35. (d)	36. (c)	37. (c)	38. (b)	39. (d)	40. (b)

DESCRIPTIVE PART - II

Year 2007

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each.

Q.1 Explain with suitable examples as to how data flow diagram and system flow charts are used in system design and development.

Q.2 Write notes on any three:

(i) Requirement analysis

(ii) System analysis

(iii) Data warehousing

(iv) Client/Server System

Q.3 What is SDLC? Discuss different phases of SDLC in detail.

Q.4 What is Entity Relationship Diagram? Draw an ERD on a car insurance company and discuss in detail.

Q.5 Distinguish between the following:

(a) White box testing and black box testing.

(b) Validation and Verification

(c) Batch Processing & Real Time Processing.

Q.6 What is feasibility study? Discuss the role of feasibility studies and prototyping in system analysis and designs.

SYSTEM ANALYSIS AND DESIGN

OBJECTIVE PART- I

Year - 2006

Time allowed : One Hour **Maximum Marks : 20**

The question paper contains 40 multiple choice questions with four choices and student will have to pick the correct one (each carrying ½ mark).

1. Which of the following is supported in Java?
   (a) Operator overloading
   (b) Pointers
   (c) Multiples Inheritance
   (d) Conditional Operator ( )

2. Which of the following is not a characteristic of HTTP?
   (a) Stateless protocol
   (b) Connection oriented
   (c) Object-oriented protocol
   (d) None of the above ( )

3. HTTP is a ....layer protocol:
   (a) Network
   (b) Transport
   (c) Application
   (d) Presentation ( )

4. A periodic signal completes one cycle in 0.001 seconds. What is the frequency?
   (a) Get
   (b) Post
   (c) Find
   (d) Put ( )

5. Which of the following is true with respect to cookies?
   (a) They allow Microsoft to look at your hard driver
   (b) They taste yummy and best served with milk
   (c) They serve as the virtual machine to run Java applets
   (d) They allow server programs to store and retrieve info on the client side ( )

6. Dynamic HTML can:
   (a) Create a ticker that automatically refreshes its content
   (b) Create 3 - D Elements which can overlap
   (c) Animate text and images without an animated gif file

(d) All of the above ( )

7. Which of the following is not internet security requirement?
(a) Protecting confidentiality of private information
(b) Preventing unauthorized modification information
(c) Counting the number of customers accessing the internet
(d) Presenting the availability of system resources ( )

8. When a person uses a regular modem to make a connection to an internet service provider through POTS, the data travels over a:
(a) Dedicated circuit
(b) Dialed circuit
(c) ISDN circuit
(d) VPN circuit ( )

9. Mobile nodes are assigned:
(a) Three IP addresses
(b) Two IP address
(c) One IP address
(d) None of the above ( )

10. Which of the following is not an attribute of the <TR> tag?
(a) ALIGN (b) STYLE
(c) CHR (d) VALIGN ( )

11. Consider the following sets A and B:
AISMTP, HTTP, FTP, TELNET, NNTP, UUCP
B {Remote login, News groups, Webpages, Email, File upload}
Which of the following illustrate the best combinations of an elements of a with an element of B?
(a) {SMTP-News group, HTTP-Web Pages, FTP-Email TELNET. File uplaod, NNTP-Remote Logn}
(b) {SMTP-WebPages, HTTP-Newsgroups, FTP-File upload, TELNET- Remote login}
(c) SMTP-Email, HTTP-WebPages, TP-File upload, TELNET-Remote login, NNTP- Newsgroups}
(d) {SMTP-Email, HTTP,File upload, FTP-Newsgroups, TELNET-Remote login} ( )

12. Consider the following JavaScript code line document write (7/2) identify the correct statement (s) from among the following statement:
(a) The output is 7/2
(b) The output is 3
(c) This output is 3.5
(d) The java script code produces an error message ( )

13. Which of the following is a correct statement?
    (a) JavaScript is a strongly typed language
    (b) DOM stands for document object model
    (c) The java script function prompt ( ) can be used to display a confirmation dialog box ( )
    (d) The java script exist statement can be used in return a result from a function.

14. In HTML, which pair of tags is used to define a table row and table cell respectively?
    (a) TH, TR
    (b) TD, TR
    (c) TR, TH
    (d) TR, TD ( )

15. http://www.google.com/images/logo.gif is a URL, Then
    (a) http://www.google.com/images/is the pathname where the file logo.gif is stored
    (b) google.com is the internet domain name of the server where the file logo.gif is stored
    (c) www.google.com is the internet domain name of the server where the file logo.gif is stored
    (d) The above URL is a relative URL ( )

16. MIME stands for:
    (a) Multipurpose Internet Mail Extension
    (b) Multipurpose Internet Management Extension
    (c) Multipurpose Internet Media Extension
    (d) Multipurpose Internet Multimedia Extension ( )

17. Which of the following environment variable must be used by a CGI script in order to produce a browser dependent output?
    (a) HTTP_ACCEPT
    (b) HTTP_USERAGENT
    (c) REQUEST_METHOD
    (d) HTTP_FROM ( )

18. Which of the following represent images, sound and vidio files respectively?
    (a) Myfile.mid, myfie,avi,myfile,gif
    (b) Myfile.gif,myfile,mid,myfile.avi
    (c) Myfile.gif,myfile.png,myfile.avi
    (d) Myfile.avi,myfile,gif.myfile.mid ( )

19. A linked page opens is new window when target property of anchor tag is set to:
    (a) _blank
    (b) _parent

(c) _child

(d) _mainframe ( )

20. Select the odd one:

(a) <font>

(b) FTP

(c) <title>

(d) <> ( )

21. <Frameset Rows="33%, 33%, 33%>

(a) Divides the browser screen into three equal horizontal sections

(b) Divides the browser screen into three equal vertical sections

(c) Divides the browser screen into three horizontal sections

(d) Divides the browser screen into three vertical sections ( )

22. Which of the following is not Internet Related?

(a) POP3

(b) FTP

(c) x-400

(d) HTML ( )

23. Which of the following is a web-server?

(a) Microsoft IE

(b) Netscape Navigator

(c) Opera

(d) IIS ( )

24. <Form> tag's..............attribute specifies the CGI Script to which the data should be submitted:

(a) Post

(b) Action

(c) methods

(d) get ( )

25. Which protocol cannot be used on the internet?

(a) IPX

(b) DNS

(c) POP3

(d) TCP ( )

26. What is the term for two modems establishing communication with each other?

(a) Interconnecting (b)Connecting

(c) Pinging (d)Handshaking ( )

27. Which of the following factors does impact the amount of bandwidth customer require to access the Internet over DSL?
(a) Type of application
(b) Length of user session
(c) Use of e-mail
(d) Necessity of web server to promote business information ( )

28. In JPEG image format, compression ratio of upto-can be achieved without losing image quality:
(a) 80 : 1
(b) 60 : 1
(c) 40 : 1
(d) 20 :1 ( )

29. Which of the following statement is not true?
(a) Analog modems are inexpensive
(b) ISDN difficult to install
(c) Leased lines are expensive
(d) Analog modems offer high speed access ( )

30. Which of the following is not a Traditional internet access method?
(a) Analog dial up modems
(b) ISDN
(c) Leased Lines
(d) DSL ( )

31. Which of the following domain names would most likely use a country domain to resolve its IP address?
(a) chal.at ae.fhda.edu (b) gsfe.nasa.gov
(c) kenz.acct.sony.in (d) mae.eng.sony.com ( )

32. Which of the following is an address revolver in an internet?
(a) DNS client
(b) DNS Server
(c) Host Machine
(d) Root Server ( )

33. MPEG divides frames into three categories:
(a) I-Frames, frames, B-Frames
(b) I-Frames, A-Frames, B-Frames
(c) I-Frames, U-Frames, B-Frames
(d) I-Frames, T-frames, B-Frames ( )

34. Which of the following protocol is used to serve steaming audio/video?
(a) SMTP

(b) HHTP
(c) FTP
(d) RTSP ( )

35. JPEG encoding involves ....a process that reveals the redundancies in a block.
(a) Blocking (b) The DCT
(c) Quantization (d) Vectorization ( )

36. A client machine usually need............to sent email:
(a) Only SMTP
(b) Only POP
(c) Both SMTP and POP
(d) None of the above ( )

37. Protocols for internet Telephony are:
(a) SIP and H.323 (b) RSTP and SRTF
(c) RSTP and RTCP (d) None of the above ( )

38. ....is a device at the telephone company site that can packetize data to be sent to the ISP server.
(a) A SDLAM (b) An ADSL Modem
(c) A filter (d) A splitter ( )

39. A paired HTML tag ends with:
(a) <\tag_name> (b) </tag_name>
(c) <tag_name> (d) <tag_name/> ( )

40. An applet is:
(a) A stand alone java program
(b) An animation tool
(c) A java program run able only in a browser
(d) A server ( )

Answer Key

1. (d)	2. (c)	3. (c)	4. (b)	5. (d)	6. (d)	7. (c)	8. (a)	9. (b)	10. (c)
11. (c)	12. (c)	13. (b)	14. (d)	15. (a)	16. (a)	17. (b)	18. (b)	19. (a)	20.(b)
21. (a)	22. (c)	23. (d)	24. (c)	25. (b)	26. (d)	27. (c)	28. (d)	29. (d)	30. (a)
31. (c)	32. (b)	33. (a)	34. (d)	35. (c)	36. (a)	37. (a)	38. (b)	39. (b)	40. (c)

DESCRIPTIVE PART - II

Year 2006

Time allowed : 2 Hours ***Maximum Marks : 30***

Attempt any four questions out of the six. All questions carry 7½ marks each

Q.1 (a) What are Structured Analysis and Data Structures?

(b) What is the relationship, that Data Structures have with Data Elements, Data flow and Data shores?

Q.2 What is System Development Life Cycle? How does it relate to system design.

Q.3 Explain the following:

(a) Project

(b) Project Scheduling

(c) Critical Path

(d) Project Review

(e) Milestones

(f) Check Points

Q.4 Describe the following:

(a) Requirement Analysis

(b) Decision Tree

(c) Documentation

(d) Entity Relationship Diagram

(e) Documentation

Q.5 Explain the various tools of rapid prototyping. List the various benefits of prototyping.

Q.6 Discuss the limitations of management information system. do you thinks they have been overcome with the help of DSS? Comment.

KEY TERMS

Abstract Class A class that has no direct instances, but whose descendants may have direct instances.

Abstract operation Defines the form or protocol of the operation, but not its implementation.

Acceptance testing The process whereby actual users test a completed information system, the end result of which is the users acceptance of the system.

Access method An operating system algorithm for storing and locating data in secondary memory.

Action stubs That part of a decision table that lists the actions that result for a given set of conditions.

Activation The time period during which an object performs an operation.

Actor An external entity that interacts with the system (similar to an external entity in data flow diagramming).

Adaptive maintenance Changes made to a system to evolve its functionality to changing business needs or technologies.

Afferent module A module of a structure chart related to input to the system.

Affinity clustering The process of arranging planning matrix information so that clusters of information with some predetermined level or type of affinity are placed next to each other on a matrix report.

Aggregation A part-of relationship between a component object and an aggregate object.

Alias An alternative name given to an attribute.

Alpha testing User testing of a completed information system using simulated data.

Analysis The third phase of the SDLC in which the current system is studied and alternative replacement systems are proposed.

Analysis tools CASE tools that enable automatic checking for incomplete, inconsistent, or incorrect specifications in diagrams, forms, and reports.

Anomalies Errors or inconsistencies that may result when a user attempts to update a table that contains redundant data. There are three types of anomalies: insertion, deletion, and modification anomalies.

Application independence The separation of data and the definition of data from the applications that use these data.

Application program interface (API) Software which allows a specific front-end program development platform to communicate with a particular back-end database engine, even when the front-end and back-end were not built to be compatible.

Application server A computing server where data analysis functions primarily reside.

Application software Computer software designed to support organizational functions or processes.

Association A relationship between object classes

Association class An association that has attributes or operations of its own, or that participates in relationships with other classes.

Association role The end of an association which connects it to a class.

Associative entity An entity type that associates the instances of one or more entity types and contains attributes that are peculiar to the relationship between those entity instances. Also called a gerund.

Asynchronous message A message in which the sender does not have to wait for the recipient to handle the message.

Attribute A named property or characteristic of an entity that is of interest to the organization.

Audit trail A list of changes to a data file which allows business transactions to be traced. Both the updating and use of data should be recorded in the audit trail, since the consequences of bad data should be discovered and corrected.

Authorization rules Controls incorporated to restrict access to systems and data and also to restrict the actions that people may take once in the system.

Backward recovery (rollback) An approach to rebuilding a file in which before images of changed records are restored to the file in reverse order until some earlier state is achieved.

Balancing The conservation of inputs and outputs to a data flow diagram process when that process is decomposed to a lower level.

Baseline modules Software modules that have been tested, documented, and approved to be included in the most recently created version of a system.

Baseline Project Plan A major outcome and deliverable from the project initiation and planning phase which contains the best estimate of a projectâs scope, benefits, costs, risks, and resource requirements.

Batch processing Information that is collected or generated at some predetermined time interval and can be accessed via hard copy or on-line devices.

Behavior Represents how an object acts and reacts.

Beta testing User testing of a completed information system using real data in the real user environment.

Binary relationship A relationship between instances of two entity types. This is the most common type of relationship encountered in data modeling.

Biometric device An instrument that detects personal characteristics such as fingerprints, voice prints, retina prints, or signature dynamics.

Blocking factor The number of physical records per page.

Bottom-up planning A generic information systems planning methodology that identifies and defines IS development projects based upon solving operational business problems or taking advantage of some business opportunities.

Boundary The line that marks the inside and outside of a system and which sets off the system from its environment.

Build routines Guidelines that list the instructions to construct an executable system from the baseline source code.

Business case The justification for an information system, presented in terms of the tangible and intangible economic benefits and costs, and the technical and organizational feasibility of the proposed system.

Business Process Reengineering (BPR) The search for, and implementation of, radical change in business processes to achieve breakthrough improvements in products and services.

Business rules Specifications that preserve the integrity of a conceptual or logical data model.

Calculated field A field which can be derived from other database fields. Also called computed or derived field.

Candidate key An attribute (or combination of attributes) that uniquely identifies each instance of an entity type.

Cardinality The number of instances of entity B that can (or must) be associated with each instance of entity A.

Central transform The area of a transform-centered information system where the most important derivation of new information takes place.

Class diagram Shows the static structure of an object-oriented model: the object classes, their internal structure, and the relationships in which they participate.

Class-scope attribute An attribute of a class that specifies a value common to an entire class, rather than a specific value for an instance.

Client The (front-end) portion of the client/server database system that provides the user interface and data manipulation functions.

Client/server architecture A LAN-based computing environment in which a central database server or engine performs all database commands sent to it from client workstations, and application programs on each client concentrate on user interface functions.

Closed-ended questions Questions in interviews and on questionnaires that ask those responding to choose from among a set of prespecified responses.

Closed system A system that is cut off from its environment and does not interact with it.

Code generators CASE tools that enable the automatic generation of program and database definition code directly from the design documents, diagrams, forms, and reports stored in the reposito

Cohesion The extent to which a system or a subsystem performs a single function.

Command language interaction A human-computer interaction method where users enter explicit statements into a system to invoke operations.

Competitive strategy The method by which an organization attempts to achieve its mission and objectives.

Component An irreducible part or aggregation of parts that make up a system, also called a subsystem.

Component diagram Shows the software components or modules and their dependencies.

Composition A part object that belongs to only one whole object and lives and dies with the whole.

Computer-aided software engineering (CASE) Software tools that provide automated support for some portion of the systems development process.

Computing infrastructure All the resources and practices required to help people adequately use computer systems to do their primary work.

Conceptual data model A detailed model that captures the overall structure of organizational data while being independent of any database management system or other implementation considerations.

Concrete class A class that can have direct instances.

Concurrency control A method for preventing loss of data integrity due to interference between users in a multiuser environment.

Condition stubs That part of a decision table that lists the conditions relevant to the decision.

Configuration management The process of assuring that only authorized changes are made to a system.

Constraint A limit to what a system can accomplish.

Constructor operation An operation that creates a new instance of a class.

Context diagram An overview of an organizational system that shows the system boundary, external entities that interact with the system, and the major information flows between the entities and the system.

Corporate strategic planning An ongoing process that defines the mission, objectives, and strategies of an organization.

Corrective maintenance Changes made to a system to repair flaws in its design, coding, or implementation.

Coupling The extent to which subsystems depend on each other.

Critical path scheduling A scheduling technique where the order and duration of a sequence of activities directly affect the completion date of a project.

Cross life cycle CASE CASE tools designed to support activities that occur across multiple phases of the systems development life cycle.

Cross referencing A feature performed by a data dictionary that enables one description of a data item to be stored and accessed by all individuals so that a single definition for a data item is established and used.

Data Raw facts about people, objects, and events in an organization.

Data compression technique Pattern matching and other methods which replace repeating strings of characters with codes of shorter length.

Data couple A diagrammatic representation of the data exchanged between two modules in a structure chart.

Data dictionary The repository of all data definitions for all organizational applications.

Data flow Data in motion, moving from one place in a system to another.

Data flow diagram A picture of the movement of data between external entities and the processes and data stores within a system.

Data-oriented approach An overall strategy of information systems development that focuses on the ideal organization of data rather than where and how data are used.

Data store Data at rest, which may take the form of many different physical representations.

Data type A detailed coding scheme recognized by system software for representing organizational data.

Database A shared collection of logically related data designed to meet the information needs of multiple users in an organization.

Database engine The (back-end) portion of the client/server database system running on the server and providing database processing and shared access functions.

Database management system (DBMS) Software that is used to create, maintain, and provide controlled access to user databases.

Decision support systems (DSS) Computer-based systems designed to help organization members make decisions; usually composed of a database, model base, and dialogue system.

Decision table A matrix representation of the logic of a decision, which specifies the possible conditions for the decision and the resulting actions.

Decision tree A graphical representation of a decision situation in which decision points (nodes) are connected together by arcs (one for each alternative on a decision) and terminate in ovals (the action which is the result of all of the decisions made on the path that leads to that oval).

Default value A value a field will assume unless an explicit value is entered for that field.

Degree The number of entity types that participate in a relationship.

Design strategy A high-level statement about the approach to developing an information system. It includes statements on the systemâs functionality, hardware and system software platform, and method for acquisition.

Desk checking A testing technique in which the program code is sequentially executed manually by the reviewer.

DFD completeness The extent to which all necessary components of a data flow diagram have been included and fully described.

DFD consistency The extent to which information contained on one level of a set of nested data flow diagrams is also included on other levels.

Diagramming tools CASE tools that support the creation of graphical representations of various system elements such as process flow, data relationships, and program structures.

Dialogue The sequence of interaction between a user and a system.

Dialogue diagramming A formal method for designing and representing human-computer dialogues using box and line diagrams.

Direct installation Changing over from the old information system to a new one by turning off the old system when the new one is turned on.

Discount rate The rate of return used to compute the present value of future cash flows.

Disruptive technologies Technologies that enable the breaking of long-held business rules that inhibit organizations from making radical business changes.

Distributed database A single logical database that is spread across computers in multiple locations which are connected by a data communications link.

Documentation *See* External documentation, Internal documentation, System documentation, User documentation.

Documentation generators CASE tools that enable the easy production of both technical and user documentation in standard formats.

Domain The set of all data types and values that an attribute can assume.

Drop-down menu A menu positioning method that places the access point of the menu near the top line of the display; when accessed, menus open by dropping down onto the display.

DSS generators General purpose computer-based tools used to develop specific decision support systems.

Economic feasibility A process of identifying the financial benefits and costs associated with a development project.

Efferent module A module of a structure chart related to output from the system.

Electronic performance support system (EPSS) Component of a software package or application in which training and educational information is embedded. An EPSS can take several forms, including a tutorial, an expert system shell, and hypertext jumps to reference material.

Encapsulation The technique of hiding the internal implementation details of an object from its external view.

Encryption The coding (or scrambling) of data so that they cannot be read by humans.

End users Non-information-system professionals in an organization who specify the business requirements for and use software applications. End users often request new or modified applications, test and approve applications, and may serve on project teams as business experts.

End-user development An approach to systems development in which users who are not computer experts satisfy their own computing needs through the use of high-level software and languages such as electronic spreadsheets and relational database management systems.

Entity instance (instance) A single occurrence of an entity type.

Entity-relationship data model (E-R model) A detailed, logical representation of the entities, associations, and data elements for an organization or business area.

Entity-relationshipÊdiagramÊ(E-RÊdiagram) A graphical representation of an E-R model.

Entity type A collection of entities that share common properties or characteristics.

Environment Everything external to a system which interacts with the system.

Event Something that takes place at a certain point in time; a noteworthy occurrence that triggers a state transition.

Exclusive relationships A set of relationships for which an entity instance can participate in only one of the relationships at a time.

Executive support systems Computer-based systems developed to support the information-intensive but limited-time decision making of executives (also referred to as executive information systems).

Expert systems Computer-based systems designed to mimic the performance of human experts.

External documentation System documentation that includes the outcome of structured diagramming techniques such as data flow and entity-relationship diagrams.

External information Information that is collected from or created for individuals and groups external to an organization.

Feasibility *See* Economic feasibility, Legal and contractual feasibility, Operational feasibility, Political feasibility, Schedule feasibility, Technical feasibility.

Field The smallest unit of named application data recognized by system software.

File organization A technique for physically arranging the records of a file on secondary storage devices.

File server A device that manages file operations and is shared by each client PC attached to a LAN.

First normal form (1NF) A relation that contains no repeating data.

Flag A diagrammatic representation of a message passed between two modules.

Foreign key An attribute that appears as a nonkey attribute in one relation and as a primary key attribute (or part of a primary key) in another relation.

Form A business document that contains some pre-defined data and may include some areas where additional data are to be filled in. An instance of a form is typically based on one database record.

Form and report generators CASE tools that support the creation of system forms and reports in order to prototype how systems will "look and feel" to users.

Form interaction A highly intuitive human-computer interaction method whereby data fields are formatted in a manner similar to paper-based forms.

Formal system The official way a system works as described in organizational documentation.

Forward recovery (rollforward) An approach to rebuilding a file in which one starts with an earlier version of the file and either reruns prior transactions or replaces a record with its image after each transaction.

Functional decomposition An iterative process of breaking the description of a system down into finer and finer detail which creates a set of charts in which one process on a given chart is explained in greater detail on another chart.

Functional dependency A particular relationship between two attributes. For any relation R, attribute B is functionally dependent on attribute A if, for every valid instance of A, that value of A uniquely determines the value of B. The functional dependence of B on A is represented as A > B.

Gantt chart A graphical representation of a project that shows each task activity as a horizontal bar whose length is proportional to its time for completion.

Hashed file organization The address for each record is determined using a hashing algorithm.

Hashing algorithm A routine that converts a primary key value into a relative record number (or relative file address).

Help desk A single point of contact for all user inquiries and problems about a particular information system or for all users in a particular department.

Homonym A single name that is used for two or more different attributes (for example, the term invoice to refer to both a customer invoice and a supplier invoice).

Horizontal partitioning Distributing the rows of a table into several separate tables.

I-CASE An automated systems development environment that provides numerous tools to create diagrams, forms, and reports; provides analysis, reporting, and code generation facilities; and seamlessly shares and integrates data across and between tools.

Icon Graphical pictures that represent specific functions within a system.

Identifier A candidate key that has been selected as the unique, identifying characteristic for an entity type.

Implementation The sixth phase of the SDLC in which the information system is coded, tested, installed, and supported in the organization.

Incremental commitment A strategy in systems analysis and design in which the project is reviewed after each phase and continuation of the project is rejustified in each of these reviews.

Index A table or other data structure used to determine the location of rows in a file that satisfy some condition.

Indexed file organization The records are either stored sequentially or non sequentially and an index is created that allows software to locate individual records.

Indifferent condition In a decision table, a condition whose value does not affect which actions are taken for two or more rules.

Informal system The way a system actually works.

Information Data that have been processed and presented in a form suitable for human interpretation, often with the purpose of revealing trends or patterns.

Information center An organizational unit whose mission is to support users in exploiting information technology.

Information repository Automated tools to manage and control access to organizational business information and application portfolios as components within a comprehensive repository.

Information systems analysis and design The complex organizational process whereby computer-based information systems are developed and maintained.

Information systems planning (ISP) An orderly means of assessing the information needs of an organization and defining the systems, databases, and technologies that will best satisfy those needs.

Inheritance The property that occurs when entity types or object classes are arranged in a hierarchy and each entity type or object class assumes the attributes and methods of its ancestors; that is, those higher up in the hierarchy. Inheritance allows new but related classes to be derived from existing classes.

Input Whatever a system takes from its environment in order to fulfill its purpose.

Inspections A testing technique in which participants examine program code for predictable language-specific errors.

Installation The organizational process of changing over from the current information system to a new one.

Intangible benefit A benefit derived from the creation of an information system that cannot be easily measured in dollars or with certainty. (6) *See also* Tangible benefit.

Intangible cost A cost associated with an information system that cannot be easily measured in terms of dollars or with certainty.

Integration testing The process of bringing together all of the modules that a program comprises for testing purposes. Modules are typically integrated in a top-down, incremental fashion.

Interface In systems theory, the point of contact where a system meets its environment or where subsystems meet each other.

Internal documentation System documentation that is part of the program source code or is generated at compile time.

Internal information Information that is collected, generated, or consumed within an organization.

Interrelated components Dependence of one subsystem on one or more subsystems.

JAD session leader The trained individual who plans and leads Joint Application Design sessions.

Joint Application Design (JAD) A structured process in which users, managers, and analysts work together for several days in a series of intensive meetings to specify or review system requirements.

Key business processes The structured, measured set of activities designed to produce a specific output for a particular customer or market.

Knowledge engineersÊ Computer professionals whose job it is to elicit knowledge from domain experts in order to develop expert systems. (Website)

Legal and contractual feasibility The process of assessing potential legal and contractual ramifications due to the construction of a system.

Level-0 diagram A data flow diagram that represents a systems major processes, data flows, and data stores at a high level of detail.

Level-n diagram A DFD that is the result of n nested decompositions of a series of subprocesses from a process on a level-0 diagram.

Local area network (LAN) The cabling, hardware, and software used to connect workstations, computers, and file servers located in a confined geographical area (typically within one building or campus).

Location transparency A design goal for a distributed database which says that a user (or user program) requesting data need not know at which site those data are located.

Logical database model A description of data using a notation that corresponds to an organization of data used by database management systems.

Logical design The fourth phase of the SDLC in which all functional features of the system chosen for development in analysis are described independently of any computer platform.

Logical system description Description of a system that focuses on the systems function and purpose without regard to how the system will be physically implemented.

Lower CASE CASE tools designed to support the implementation and maintenance phases of the systems development life cycle.

Maintainability The ease with which software can be understood, corrected, adapted, and enhanced.

Maintenance The final phase of the SDLC in which an information system is systematically repaired and improved; or changes made to a system to fix or enhance its functionality.

Management information systems (MIS) Computer-based systems designed to provide standard reports for managers about transaction data.

Mean time between failures (MTBF) A measurement of error occurrences that can be tracked over time to indicate the quality of a system.

Menu interaction A human-computer interaction method where a list of system options is provided and a specific command is invoked by user selection of a menu option.

Method The implementation of an operation.

Middleware A combination of hardware, software, and communication technologies that bring together data management, presentation, and analysis into a three-tiered client/server environment.

Mission statement A statement that makes it clear what business a company is in.

Modularity Dividing a system up into chunks or modules of a relatively uniform size.

Module A self-contained component of a system, defined by function.

Multiple classification Shows that an object is an instance of more than one class.

Multiplicity Indicates how many objects participate in a given relationship.

Multivalued attribute An attribute that may take on more than one value for each entity instance.

Natural language interaction A human-computer interaction method where inputs to and outputs from a computer-based application are in a conventional speaking language such as English.

Normal form A state of a relation that can be determined by applying simple rules regarding dependencies to that relation.

Normalization The process of converting com-plex data structures into simple, stable data structures.

Null value A special field value, distinct from 0, blank, or any other value, that indicates that the value for the field is missing or otherwise unknown.

Object An entity that has a well-defined role in the application domain and has state, behavior, and identity.

Object-based interaction A human-computer interaction method where symbols are used to represent commands or functions.

Object class (class) A set of objects that share a common structure and a common behavior.

Object diagram A graph of instances that are compatible with a given class diagram.

Object-oriented analysis and design (OOAD) Systems development methodologies and techniques based on objects rather than data or processes.

Objective statements A series of statements that express organizations qualitative and quantitative goals for reaching a desired future position.

On-line processing The collection and delivery of the most recent available information, typically through an on-line workstation. (14)

One-time cost A cost associated with project start-up and development, or system start-up. (6)

Open-ended questions Questions in interviews and on questionnaires that have no prespecified answers.

Open system A system that interacts freely with its environment, taking input and returning output.

Operation A function or a service that is provided by all the instances of a class.

Operational feasibility The process of assessing the degree to which a proposed system solves business problems or takes advantage of business opportunities.

Output Whatever a system returns to its environment in order to fulfill its purpose.

Outsourcing The practice of turning over responsibility of some to all of an organizationâs information systems applications and operations to an outside firm.

Overriding The process of replacing a method inherited from a super class by a more specific implementation of that method in a subclass.

Package A set of cohesive, tightly coupled classes representing a subsystem.

Page The amount of data read or written in one secondary memory (disk) input or output operation. For I/O with a magnetic tape, the equivalent term is record block.

Parallel installation Running the old information system and the new one at the same time until management decides the old system can be turned off.

Partial functional dependency A dependency in which one or more nonkey attributes are functionally dependent on part, but not all, of the primary key.

Participatory Design (PD) A systems development approach that originated in Northern Europe in which users and the improvement in their work lives are the central focus.

Perfective maintenance Changes made to a system to add new features or to improve performance.

PERT chart A diagram that depicts project activities and their inter-relationships. PERT stands for Program Evaluation Review Technique.

Phased installation Changing from the old information system to the new one incrementally, starting with one or a few functional components and then gradually extending the installation to cover the whole new system.

Physical design The fifth phase of the SDLC in which the logical specifications of the system from logical design are transformed into technology-specific details from which all programming and system construction can be accomplished.

Physical file A named set of contiguous records.

Physical record A group of fields stored in adjacent memory locations and retrieved together as a unit.

Physical system description Description of a system that focuses on how the system will be materially constructed.

Picture (or template) A pattern of codes that restricts the width and possible values for each position of a field.

Pointer A field of data that can be used to locate a related field or record of data.

Political feasibility The process of evaluating how key stakeholders within the organization view the proposed system.

Polymorphism The same operation may apply to two or more classes in different ways.

Pop-up menu A menu positioning method that places a menu near the current cursor position.

Present value The current value of a future cash flow.

Preventive maintenance Changes made to a system to avoid possible future problems.

Primitive DFD The lowest level of decomposition for a data flow diagram.

Process The work or actions performed on data so that they are transformed, stored, or distributed.

Process-oriented approach An overall strategy to information systems development that focuses on how and when data are moved through and changed by an information system.

Processing logic The steps by which data are transformed or moved and a description of the events that trigger these steps.

Project A planned undertaking of related activities to reach an objective that has a beginning and an end.

Project close-down The final phase of the project management process that focuses on bringing a project to an end.

Project execution The third phase of the project management process in which the plans created in the prior phases (project initiation and planning) are put into action.

Project identification and selection The first phase of the SDLC in which an organizations total information system needs are identified, analyzed, prioritized, and arranged.

Project initiation The first phase of the project management process in which activities are performed to assess the size, scope, and complexity of the project and to establish procedures to support later project activities.

Project initiation and planning The second phase of the SDLC in which a potential information systems project is explained and an argument for continuing or not continuing with the project is presented; a detailed plan is also developed for conducting the remaining phases of the SDLC for the proposed system.

Project management A controlled process of initiating, planning, executing, and closing down a project.

Project manager An individual with a diverse set of skills--management, leadership, technical, conflict management, and customer relationship--who is responsible for initiating, planning, executing, and closing down a project.

Project planning The second phase of the project management process which focuses on defining clear, discrete activities and the work needed to complete each activity within a single project.

Project workbook An on-line or hard copy repository for all project correspondence, inputs, outputs, deliverables, procedures, and standards that is used for performing project audits, orientation of new team members, communication with management and customers, scoping future projects, and performing post-project reviews.

Prototyping An iterative process of systems development in which requirements are converted to a working system which is continually revised through close work between an analyst and users.

Pseudocode A method for representing the instructions in a module with language very similar to computer programming code.

Purpose The overall goal or function of a system.

Query operation An operation that accesses the state of an object but does not alter the state.

Rapid Application Development (RAD) Systems development methodology created to radically decrease the time needed to design and implement information systems. RAD relies on extensive user involvement, Joint Application Design sessions, prototyping, integrated CASE tools, and code generators.

Record partitioning The process of splitting logical records into separate physical segments based on affinity of use.

Recurring cost A cost resulting from the ongoing evolution and use of a system.

Recursive foreign key A foreign key in a relation that references the primary key values of that same relation.

Reengineering Automated tools that read program source code as input, perform an analysis of the programs data and logic, and then automatically, or interactively with a systems analyst, alter an existing system in an effort to improve its quality or performance.

Referential integrity An integrity constraint specifying that the value (or existence) of an attribute in one relation depends on the value (or existence) of an attribute in the same or another relation.

Relation A named, two-dimensional table of data. Each relation consists of a set of named columns and an arbitrary number of unnamed rows.

Relational database model A data model that represents data in the form of tables or relations.

Relationship An association between the instances of one or more entity types that is of interest to the organization.

Repeating group A set of two or more multi valued attributes that are logically related.

Report A business document that contains only pre-defined data; that is, it is a passive document used solely for reading or viewing. A report typically contains data from many unrelated records or transactions.

Repository A centralized database that contains all diagrams, form and report definitions, data structure, data definitions, process flows and logic, and definitions of other organizational and system components; it provides a set of mechanisms and structures to achieve seamless data-to-tool and data-to-data integration.

Resource Any person, group of people, piece of equipment, or material used in accomplishing an activity.

Reusability The ability to design software modules in a manner so that they can be used again and again in different systems without significant modification.

Reverse engineering Automated tools that read program source code as input and create graphical and textual representations of program design-level information such as program control structures, data structures, logical flow, and data flow.

Rules That part of a decision table that specifies which actions are to be followed for a given set of conditions.

Schedule feasibility The process of assessing the degree to which the potential timeframe and completion dates for all major activities within a project meet organizational deadlines and constraints for affecting change.

Scribe The person who makes detailed notes of the happenings at a Joint Application Design session.

Second normal form (2NF) A relation is in second normal form if it is in first normal form and every non key attribute is fully functionally dependent on the primary key. Thus no non key attribute is functionally dependent on part (but not all) of the primary key.

Secondary key One or a combination of fields for which more than one record may have the same combination of values.

Sequence diagram Depicts the interactions among objects during a certain period of time.

Sequential file organization The records in the file are stored in sequence according to a primary key value.

Single location installation Trying out a new information system at one site and using the experience to decide if and how the new system should be deployed throughout the organization.

Slack time The amount of time that an activity can be delayed without delaying the project.

Smart card A thin plastic card the size of a credit card with an embedded microprocessor and memory.

Source/sink The origin and/or destination of data, sometimes referred to as external entities.

Stakeholder A person who has an interest in an existing or new information system. A stakeholder is someone who is involved in the development of a system, in the use of a system, or someone who has authority over the parts of the organization affected by the system.

State Encompasses an objects properties (attributes and relationships) and the values those properties have.

State diagram A model of the states of an object and the events that cause the object to change from one state to another.

State transition Changes in the attributes of an object or in the links an object has with other objects.

Statement of Work (SOW) Document prepared for the customer during project initiation and planning that describes what the project will deliver and outlines generally at a high level all work required to complete the project.

Structure chart Hierarchical diagram that shows how an information system is organized.

Structured English Modified form of the English language used to specify the logic of information system processes. Although there is no single standard, Structured English typically relies on action verbs and noun phrases and contains no adjectives or adverbs.

Stub testing A technique used in testing modules, especially where modules are written and tested in a top-down fashion, where a few lines of code are used to substitute for subordinate modules.

Support Providing ongoing educational and problem solving assistance to information system users. For in-house developed systems, support materials and jobs will have to be prepared or designed as part of the implementation process.

Synchronous message A type of message in which the caller has to wait for the receiving object to finish executing the called operation before it can resume execution itself.

Synonyms Two different names that are used to refer to the same data item (for example, car and automobile).

System An inter-related set of components, with an identifiable boundary, working together for some purpose.

System documentation Detailed information about a systems design specifications, its internal workings, and its functionality.

System librarian A person responsible for controlling the checking-out and checking-in of baseline modules for a system when a system is being developed or maintained.

System testing The bringing together of all the programs that a system comprises for testing purposes. Programs are typically integrated in a top-down, incremental fashion.

Systems analyst The organizational role most responsible for the analysis and design of information systems.

Systems development life cycle (SDLC) The traditional methodology used to develop, maintain, and replace information systems.

Systems development methodology A standard process followed in an organization to conduct all the steps necessary to analyze, design, implement, and maintain information systems.

Tangible benefit A benefit derived from the creation of an information system that can be measured in dollars and with certainty.

Tangible cost A cost associated with an information system that can be measured in terms of dollars and with certainty.

Technical feasibility A process of assessing the development organizations ability to construct a proposed system.

Ternary relationship A simultaneous relationship among instances of three entity types.

Third normal form (3NF) A relation is in third normal form if it is in second normal form and no transitive dependencies exist.

Three-tiered client/server Advanced client/server architectures in which there are three logical and distinct applications--data management, presentation, and analysis--which are combined to create a single information system.

Top-down planning A generic information systems planning methodology that attempts to gain a broad understanding of the information system needs of the entire organization.

Transaction analysis The process of turning data flow diagrams of a transaction-centered system into structure charts.

Transaction-centered system An information system that has as its focus the dispatch of data to their appropriate locations for processing.

Transaction processing systems (TPS) Computer-based versions of manual organization systems dedicated to handling the organizations transactions; e.g., payroll.

Transactions Individual, simple events in the life of an organization that contain data about organizational activity.

Transform analysis The process of turning data flow diagrams of a transform-centered system into structure charts.

Transform-centered system An information system that has as its focus the derivation of new information from existing data.

Transitive dependency A functional dependency between two (or more) non key attributes in a relation.

Triggering operation (trigger) An assertion or rule that governs the validity of data manipulation operations such as insert, update, and delete.

Turnaround document Information that is delivered to an external customer as an output that can be returned to provide new information as an input to an information system.

Unary relationship (recursive relationship) A relationship between the instances of one entity type.

Unit testing Method in which each module is tested alone in an attempt to discover any errors in its code.

Update operation An operation that alters the state of an object.

Upper CASE CASE tools designed to support information planning and the project identification and selection, project initiation and planning, analysis, and design phases of the systems development life cycle.

Usability An overall evaluation of how a system performs in supporting a particular user for a particular task.

Use case A complete sequence of related actions initiated by an actor, it represents a specific way of using the system.

Use-case diagram A diagram that depicts the use cases and actors for a system.

User documentation Written or other visual information about an application system, how it works, and how to use it.

Value chain analysis The process of analyzing an organizations activities to determine where value is added to products and/or services and the cost are incurred for doing so; usually also includes a comparison with the activities, added value, and costs of other organizations for the purpose of making improvements in the organizations operations and performance.

Vertical partitioning Distributing the columns of a table into several separate tables.

View A subset of the database that is presented to one or more users.

Walkthrough A peer group review of any product created during the systems development process. Also called structured walkthrough.

Well-structured relation A relation that contains a minimum amount of redundancy and allows users to insert, modify, and delete the rows in a table without errors or inconsistencies.

Work breakdown structure The process of dividing the project into manageable tasks and logically ordering them to ensure a smooth evolution between tasks.

Multiple Choice Questions

1. Which of the following is supported in Java?
   (a) Operator overloading
   (b) Pointers
   (c) Multiples Inheritance
   (d) **Conditional Operator**
   ( )

2. Which of the following is not a characteristic of HTTP?
   (a) Stateless protocol
   (b) Connection oriented
   (c) **Object-oriented protocol**
   (d) None of the above ( )

3. HTTP is a ....layer protocol:
   (a) Network
   (b) Transport .
   (c) **Application**
   (d) Presentation ( )

4. A periodic signal completes one cycle in 0.001 seconds. What is the frequency?
   (a) Get
   (b) **Post**
   (c) Find
   (d) Put ( )

5. Which of the following is true with respect to cookies?
   (a) They allow Microsoft to look at your hard driver
   (b) They taste yummy and best served with milk
   (c) They serve as the virtual machine to run Java applets
   (d) **They allow server programs to store and retrieve info on the client side**
   ( )

6. Dynamic HTML can:
   (a) Create a ticker that automatically refreshes its content
   (b) Create 3 - D Elements which can overlap
   (c) Animate text and images without an animated gif file
   (d) **All of the above** ( )

7. Which of the following is not internet security requirement?
   (a) Protecting confidentiality of private information
   (b) Preventing unauthorized modification information
   (c) **Counting the number of customers accessing the internet**

(d) Presenting the availability of system resources ( )

8. When a person uses a regular modem to make a connection to an internet service provider through POTS, the data travels over a:
(a) **Dedicated circuit**
(b) Dialed circuit
(c) ISDN circuit
(d) VPN circuit ( )

9. Mobile nodes are assigned:
(a) Three IP addresses
(b) **Two IP address**
(c) One IP address
(d) None of the above ( )

10. Which of the following is not an attribute of the <TR> tag?
(a) ALIGN (b) STYLE
(c) **CHR** (d) VALIGN ( )

11. Consider the following sets A and B:
AISMTP, HTTP, FTP, TELNET, NNTP, UUCP
B {Remote login, News groups, Webpages, Email, File upload}
Which of the following illustrate the best combinations of an elements of a with an element of B?
(a) {SMTP-News group, HTTP-Web Pages, FTP-Email TELNET. File uplaod, NNTP-Remote Logn}
(b) {SMTP-WebPages, HTTP-Newsgroups, FTP-File upload, TELNET- Remote login}
(c) **SMTP-Email, HTTP-WebPages, TP-File upload, TELNET-Remote login, NNTP- Newsgroups}**
(d) {SMTP-Email, HTTP,File upload, FTP-Newsgroups, TELNET-Remote login} ( )

12. Consider the following JavaScript code line document write (7/2) identify the correct statement (s) from among the following statement:
(a) The output is 7/2
(b) The output is 3
(c) **This output is 3.5**
(d) The java script code produces an error message ( )

13. Which of the following is a correct statement?
(a) JavaScript is a strongly typed language
(b) **DOM stands for document object model**
(c) The java script function prompt ( ) can be used to display a confirmation dialog box ( )

(d) The java script exist statement can be used in return a result from a function.

14. In HTML, which pair of tags is used to define a table row and table cell respectively?
(a) TH, TR
(b) TD, TR
(c) TR, TH
(d) **TR, TD** ( )

15. http://www.google.com/images/logo.gif is a URL, Then
(a) **http://www.google.com/images/is the pathname where the file logo.gif is stored**
(b) google.com is the internet domain name of the server where the file logo.gif is stored
(c) www.google.com is the internet domain name of the server where the file logo.gif is stored
(d) The above URL is a relative URL ( )

16. MIME stands for:
(a) **Multipurpose Internet Mail Extension**
(b) Multipurpose Internet Management Extension
(c) Multipurpose Internet Media Extension
(d) Multipurpose Internet Multimedia Extension ( )

17. Which of the following environment variable must be used by a CGI script in order to produce a browser dependent output?
(a) HTTP_ACCEPT
(b) **HTTP_USERAGENT**
(c) REQUEST_METHOD
(d) HTTP_FROM ( )

18. Which of the following represent images, sound and vidio files respectively?
(a) Myfile.mid, myfie,avi,myfile,gif
(b) **Myfile.gif,myfile,mid,myfile.avi**
(c) Myfile.gif,myfile.png,myfile.avi
(d) Myfile.avi,myfile,gif.myfile.mid ( )

19. A linked page opens is new window when target property of anchor tag is set to:
(a) **_blank**
(b) _parent
(c) _child
(d) _mainframe ( )

20. Select the odd one:
(a) <font>
(b) **FTP**

(c) <title>
(d) <> ( )

21. <Frameset Rows="33%, 33%, 33%>
(a) **Divides the browser screen into three equal horizontal sections**
(b) Divides the browser screen into three equal vertical sections
(c) Divides the browser screen into three horizontal sections
(d) Divides the browser screen into three vertical sections ( )

22. Which of the following is not Internet Related?
(a) POP3
(b) FTP
(c) **x-400**
(d) HTML ( )

23. Which of the following is a web-server?
(a) Microsoft IE
(b) Netscape Navigator
(c) Opera
(d) **IIS** ( )

24. <Form> tag's..............attribute specifies the CGI Script to which the data should be submitted:
(a) Post
(b) Action
(c) **methods**
(d) get ( )

25. Which protocol cannot be used on the internet?
(a) IPX
(b) **DNS**
(c) POP3
(d) TCP ( )

26. What is the term for two modems establishing communication with each other?
(a) Interconnecting (b)Connecting
(c) Pinging (d)**Handshaking** ( )

27. Which of the following factors does impact the amount of bandwidth customer require to access the Internet over DSL?
(a) Type of application
(b) Length of user session
(c) **Use of e-mail**
(d) Necessity of web server to promote business information ( )

28. In JPEG image format, compression ratio of upto-can be achieved without losing image quality:
(a) 80 : 1
(b) 60 : 1
(c) 40 : 1
(d) **20 :1** ( )

29. Which of the following statement is not true?
(a) Analog modems are inexpensive
(b) ISDN difficult to install
(c) Leased lines are expensive
(d) **Analog modems offer high speed access** ( )

30. Which of the following is not a Traditional internet access method?
(a) **Analog dial up modems**
(b) ISDN
(c) Leased Lines
(d) DSL ( )

31. Which of the following domain names would most likely use a country domain to resolve its IP address?
(a) chal.at ae.fhda.edu (b) gsfe.nasa.gov
(c) **kenz.acct.sony.in** (d) mae.eng.sony.com ( )

32. Which of the following is an address revolver in an internet?
(a) DNS client
(b) **DNS Server**
(c) Host Machine
(d) Root Server ( )

33. MPEG divides frames into three categories:
(a) **I-Frames, frames, B-Frames**
(b) I-Frames, A-Frames, B-Frames
(c) I-Frames, U-Frames, B-Frames
(d) I-Frames, T-frames, B-Frames ( )

34. Which of the following protocol is used to serve steaming audio/video?
(a) SMTP
(b) HHTP
(c) FTP
(d) **RTSP** ( )

35. JPEG encoding involves ....a process that reveals the redundancies in a block.
(a) Blocking (b) The DCT
(c) **Quantization** (d) Vectorization ( )

36. A client machine usually need............to sent email:
    (a) **Only SMTP**
    (b) Only POP
    (c) Both SMTP and POP
    (d) None of the above ( )

37. Protocols for internet Telephony are:
    (a) **SIP and H.323** (b) RSTP and SRTF
    (c) RSTP and RTCP (d) None of the above ( )

38. ....is a device at the telephone company site that can packetize data to be sent to the ISP server.
    (a) A SDLAM (b) **An ADSL Modem**
    (c) A filter (d) A splitter ( )

39. A paired HTML tag ends with:
    (a) <\tag_name> (b) **</tag_name>**
    (c) <tag_name> (d) <tag_name/> ( )

40. An applet is:
    (a) A stand alone java program
    (b) An animation tool
    (c) **A java program run able only in a browser**
    (d) A server ( )

41. The basic objective of system analysis is to:
    (a) Understand computer hardware by opening the system unit
    (b) Train manager in mathematical analysis
    (c) **Run simulation program**
    (d) Understand a current system and modify it in same way ( )

42. A zero level! DFD describes:
    (a) Overview of processes, inputs and outputs
    (b) **Fully blown by system design**
    (c) The system design can not be spilt further
    (d) None of these ( )

43. Which of the following is not part of the SDLC?
    (a) Feasibility study
    (b) **System design**
    (c) Unit testing
    (d) None of these ( )

44. Cost-benefit analysis is performed during the:

(a) Analysis phase
(b) Design phase
(c) Implementation phase
(d) **None of these** ( )

45. Which of the following is most likely to be used to describe conditional logic?
(a) Decision table
(b) Data flow diagram
(c) Structured English
(d) **All of the above** ( )

46. Which of the following technical skills are essential for a system analyst?
(a) Knowledge of networking
(b) Knowledge of operating system
(c) Problem solving approach
(d) **None of these** ( )

47. The entity-relationship diagram:
(a) Depicts how data is transformed as it moves through the system
(b) **Depicts relationship between data object**
(c) Describes how the system behaves as a consequences of external events
(d) None of these ( )

48. The data dictionary consists of:
(a) Definition of all data elements in data flow diagram
(b) Process Specifications
(c) **Key field of the database**
(d) None of these ( )

49. The system design:
(a) Documents the user requirement
(b) **Defines the architecture of the system**
(c) Is carried out before the systems design
(d) None the these ( )

50. In terms of total software cost, maintenance costs appear to constitute about:
(a) **5% – 20%**
(b) 20% – 40%
(c) 40% – 80%
(d) 80% – 90% ( )

51. Risk analysis is a part of which software development process:
(a) Waterfall model
(b) **Prototype model**
(c) Spiral model

(d) None of these ( )

52. In which phase of SDLC, the modules are tested against specification produced during design for the module?
(a) Analysis phase
(b) Design phase
(c) Coding Phase
(d) **None of these** ( )

53. How many types of relationship can be defined between two or more entities?
(a) 2 (b) 3
(c) 1 (d) **None of these** ( )

54. An unstructured tool for information gathering can be:
(a) Prototyping
(b) Questionnaires
(c) Observation
(d) **All of these** ( )

55. A knowledge is being discovered from a large volume of data, the method used is known is:
(a) Data warehousing (b) **Data mining**
(c) Data counting (d) None of these ( )

56. The type of organization, in which a single index for each key type exists and records are not necessarily stored in particular sequence:
(a) Index sequential method
(b) **Inverted list organization**
(c) Chaining
(d) None of these ( )

57. Loss of data integrity implies that data is:
(a) Inconsistent (b) **Repeated**
(c) Outdated (d) None of these ( )

58. A CASE is:
(a) Computer assisted software engineering
(b) Computer and software engineering
(c) Prepare, connect, execute, fetchrow, finish, disconnect
(d) **None of these** ( )

59. A support system that is related to the higher level of management is:
(a) Data support system
(b) Digital support system
(c) **Decision support system**

(d) None of these ( )

60. The main advantage of normalized relations in relations DBMS is taht they:
(a) **Are highly secure**
(b) De not suffer from anomalies during deleted and update operations
(c) Occupy minimal storage
(d) All of the above ( )

61. A diagram that shows the input of output of a system is known as:
(a) Document flow diagram
(b) **Process diagram**
(c) Context diagram
(d) None of these ( )

62. Which of the following are tools of SASD?
(a) HIPO
(b) **Case**
(c) DFD
(d) All of the these ( )

63. Which of the following appropriately explains the desirable characteristic of a good system design?
(a) **Modular approach**
(b) Proper documentation
(c) Neither a nor b
(d) both a and b ( )

64. A typical data processing context, where master files are updated to produce desired output, is known is:
(a) **Validation checking**
(b) Transaction processing
(c) Normalization process
(d) None of these ( )

65. Whether a proposed system can provide right information for the organizations personnel, falls under the study of:
(a) Economic feasibility
(b) Operational feasibility
(c) **Technical feasibility**
(d) All of these ( )

66. Stub is met within the context of:
(a) Data communication
(b) Testing of module
(c) **Random access**

(d) None of these ( )

67. Entities, attributes and relationship are associated with:
(a) **Logical concept of data**
(b) Physical concept of data
(c) Persons of an organization
(d) None of these ( )

68. Decision tables link conditions and:
(a) Tables
(b) Programs
(c) Actions
(d) **None of these** ( )

69. Pseudo code is:
(a) **False logic**
(b) Programming aid
(c) Both a and b
(d) Neither a nor b ( )

70. Design specification do not normally include:
(a) **Output requirements**
(b) Input and storage requirements
(c) Control provisions
(d) Blueprints showing the layout of hardware ( )

71. The sequence of steps of following in a system study is:
(a) Problem definition, system design, system analysis, programming and implementing
(b) Problem definition, system design, system analysis, programming and implementing
(c) System analysis system design and system implementation
(d) **Problem definition, system analysis, system design, programming and implementing**
( )

72. The phase of system development associated with creation of test data is:
(a) **System analysis**
(b) Physical design
(c) System acceptance
(d) Logical design ( )

73. Prototype is a :
(a) Minimodel of the existing system
(b) Minimodel of the proposed system

(c) **Working model of the existing system**
(d) None of these ( )

74. In development of an application system, which accesses data under a DBMS, the user views the database as a:
(a) Group of files
(b) **Logical structure**
(c) Random storage structure
(d) None of these ( )

75. A distinct object in a system in known is:
(a) Degree
(b) Attribute
(c) Parameter
(d) **Entity** ( )

76. A person who analysis the way the system works and its problem is:
(a) Programmer
(b) DBA
(c) **User**
(d) System analyst ( )

77. A system that groups a number of transaction for later processing is known is:
(a) Client Server
(b) Post on Point
(c) **Post Office Protocol**
(d) Post of Protocol ( )

78. ....is an application layer protocol that establishes, maintains and terminates a multimedia session.
(a) SIP
(b) **RTCP**
(c) DCT
(d) JPEG ( )

79. <Frameset Cols = "33%, 33%, 33%">
(a) Divides the browser screen into three equal horizontal sections
(b) Divides the browser screen into three equal vertical section
(c) Divides the browser screen into three horizontal sections
(d) **Divides the browser screen into three vertical section** ( )

80. A..............can forward or block packets based on the information in the network layer and transport layer headers.
(a) Proxy farewell (b) **Packet-filter fire well**
(c) Message Digest (d) Private Key ( )

81. Which is the system development approach?
(a) Data modeling (b) **Function oriented**
(c) Process modeling (d) None of these ( )

82. Which is the characteristic of data in a DBMS?
(a) Consistency
(b) Security
(c) Independence
(d) **All of the above** ( )

83. Error and fraud in any computer system can be detected through:
(a) Usage of password (b) Network security
(c) **Audit trails** (d) None of the above ( )

84. What is decision table?
(a) A graphic method for describing the logic of decisions
(b) Data dictionary
(c) **Flow chart**
(d) None of these ( )

85. Which tool is used for analysis of data flow?
(a) **Data flow diagram** (b) Data dictionary
(c) Flow chart (d) All of the above ( )

86. How many types of relationships can be defined between two or more entities.
(a) 2 (b) **3**
(c) 1 (d) None of the above ( )

87. The characteristic of data in a database is:
(a) Shared
(b) Security
(c) Persistence
(d) **All of the above** ( )

88. The rectangular is used in DFD:
(a) Read/write data
(b) Processing
(c) Decision-making
(d) **None of these** ( )

89. Which is a desirable feature of good quality design?
(a) Flexible
(b) **Portable**

(c) Secure
(d) All of the above ( )

90. Which tool is used for analysis of data flow?
(a) Data dictionary
(b) **Structured English**
(c) Decision Tables
(d) None of these ( )

91. A person who analyze the way the system works and its problems is:
(a) Programmer
(b) DBA
(c) User
(d) **System analyst** ( )

92. Storage of information in graphs, video, voice etc. is:
(a) **Multimedia**
(b) Cookies
(c) Text file
(d) None of the above ( )

93. The sequence of steps followed in a system study is :
(a) **Problem definition, system design, system analysis, programming and implementation**
(b) Problem definition, system analysis, programming and implementation
(c) System analysis, system design and system implementation
(d) Problem, definition, system analysis, system design, programming analysis, program preparation and implementation ( )

94. Decision table is:
(a) A table containing decisions
(b) A method to analyze how to get decision
(c) **One of the various programming analysis tools**
(d) A debugging tool ( )

95. Decision tables are made prior to making a/an:
(a) Flowchart (b) **Algorithm**
(c) Program (d) Task analysis ( )

96. We task the help of flowcharts:
(a) To decide the sequence of steps involved in finding the solution
(b) **As an addition to making algorithm**
(c) To prepare decision tables
(d) None of the above ( )

97. A district object in a system is known is:
(a) Degree (b) Attribute
(c) **Parameter** (d) Entity ( )

98. A system that groups a number of transaction for later processing is known is:
(a) **Client Server** (b) Batch system
(c) Online system (d) Real time system ( )

99. Which of the following items are discussed during the system implementation phase of the application:
(a) Program specification
(b) Software specification
(c) **Software maintenance**
(d) All of the above ( )

100. A system flow chart describes the:
(a) details of each program module
(b) line diagram for particular program
(c) data files and operations and decision for a particular program
(d) **sequence of operations techniques is used to simplify defining problem**
( )

101. Which of the following techniques is used to simplify defining problems by both system analysis and programmers:
(a) Documentation
(b) **Decision tables**
(c) Sub-routine
(d) Decision instruction ( )

102. The normal starting point of any system design is to:
(a) determine the input requirement
(b) determine the output requirement
(c) establish data entry procedures
(d) **determine data entry requirement** ( )

103. Which of the following is not true about distributed processing:
(a) **They are modular**
(b) They are more reliable
(c) Maintenance costs are high
(d) Response is slow ( )

104. Which of the following technical skills is essential for a system analyst:
(a) **Knowledge of networking**
(b) Knowledge of operating system
(c) Problem solving approach

(d) None of the above ( )

105. An unstructured tools for information gathering can be:
(a) **prototyping**
(b) questionnaires ( )

106. The components of a distributed system are connected by a :
(a) Multiplexer
(b) Communication controller
(c) **Network**
(d) Switcher ( )

107. Entities attributes and relationships are associated with:
(a) Logical concept of data
(b) Physical concept of data
(c) Person of an organization
(d) **None of the above** ( )

108. Prototype is:
(a) Mini model of the existing system
(b) Mini model of the proposed system
(c) **Working model of the existing system**
(d) None of the above ( )

109. ....is a collection of computer based information that is critical to successful execution of enterprise initiatives.
(a) data mining
(b) **data warehouse**
(c) both a and b
(d) None ( )

110. A/An............is a set of components that work together to accomplish one or more common goals.
(a) System
(b) Flow chart
(c) **Algorithm**
(d) None ( )

111. The feasibility report consists of:
(a) General specification for the new system
(b) Economic analysis of costs and justification for expenditure
(c) Technical considerations
(d) **All of the above** ( )

112. A....................is a structured repository of data.
(a) **Data flow diagram**

(b) Data dictionary
(c) Structure chart
(d) None ( )

113. An association among entities is caused a :
(a) **Attribute**
(b) Relationship
(c) Redundancy
(d) None ( )

114. ....are a fundamental tool of a structured desing.
(a) Structure charts
(b) **Data structure diagrams**
(c) Case tools
(d) None of the above ( )

115. Which of the following appropriately explains the desirable characteristic of a good system design?
(a) Modular approach
(c) **Proper documentation**
(a) Neither a nor b
(c) Both a and b ( )

116. Design specifications do not normally include:
(a) **Output requirements**
(b) Input and storage requirements
(c) Control Provisions
(d) Blueprints showing the layout hardware ( )

117. ....is a network that describes data flows and transformations throughout a system:
(a) Data flow diagram
(b) Data dictionary
(c) **Structure charts**
(d) None ( )

118. In development of an applications systems, which accesses data under a DBMS, the user vies the database as a:
(a) Group of files
(b) Logical Structure
(c) **Random storage structure**
(d) None of the above ( )

119. A set of prerecorded instructions executed by a computer is called the:
    (a) Action
    (b) **Hardware**
    (c) Program
    (d) None of these ( )

220. ....is the process of collecting, organizing, storing and maintaining a complete historical record of programs.
    (a) **Documentation**
    (b) Testing
    (c) Debugging
    (d) None of these ( )

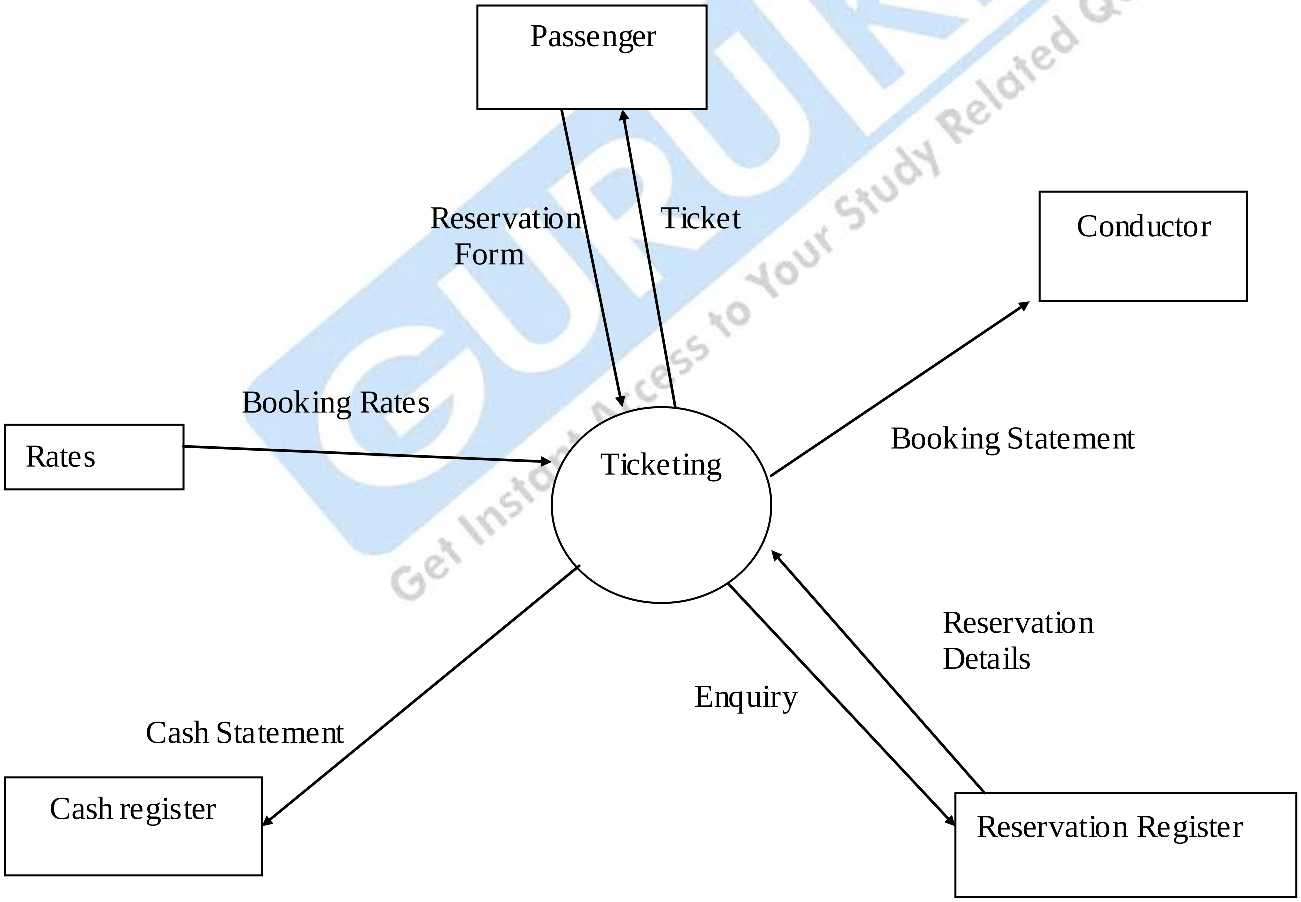
CASE STUDY

CASE 1: A Railway reservation system functions as follows:

The passenger fills in a reservation form giving his/her particulars and source and destination details. The counter clerk ensures whether seats is available or not from the reservation register. if seat is not available ,the form is returned back to the passenger. Otherwise the clerk will prepare the tickets, compute the charges for the tickets and a booking statement is composed. One copy of the booking statement is retained as office copy, one is given to the train conductor and one copy is pasted on the compartment. A cash statement is prepared at the end of each shift.

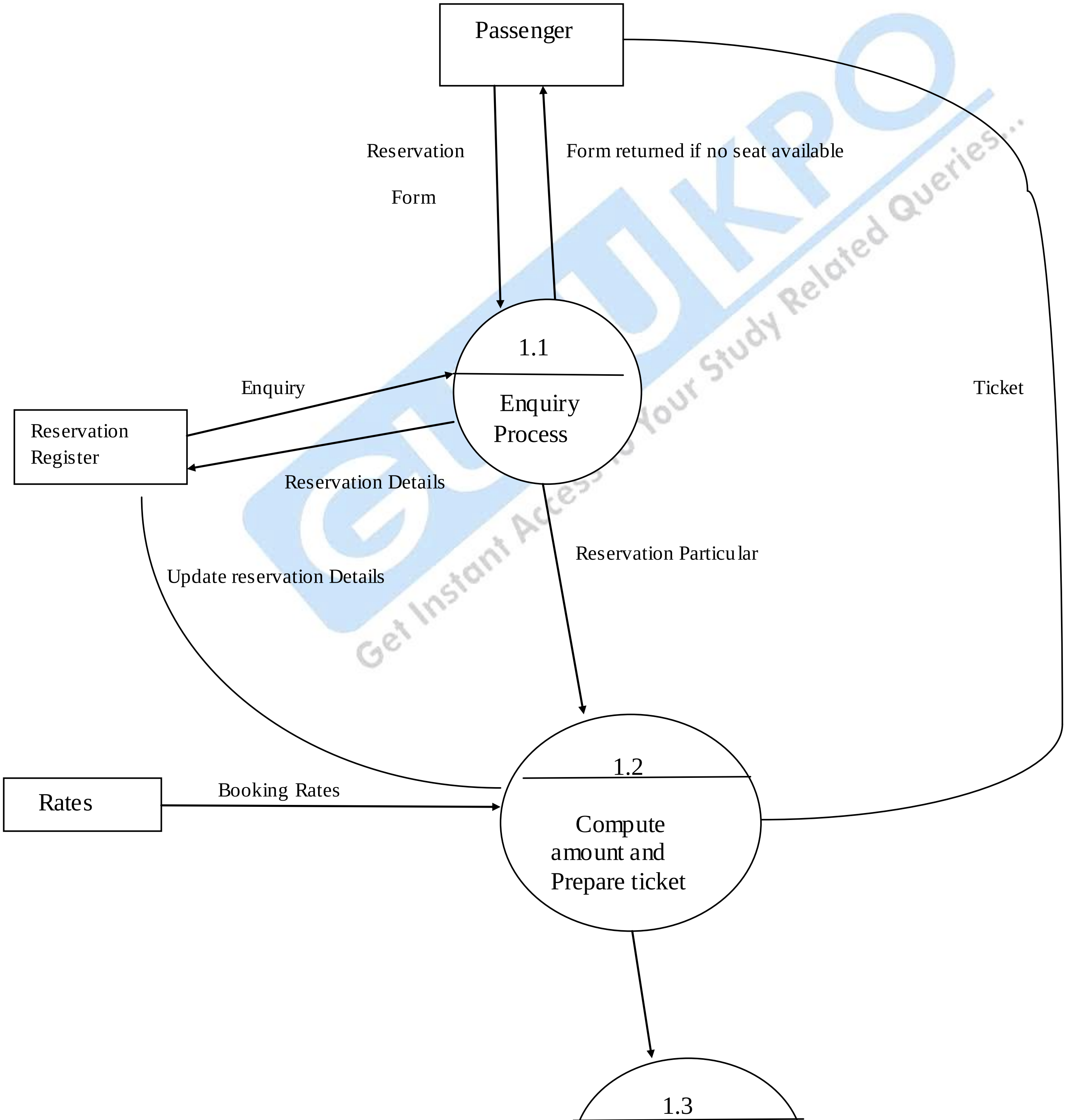
PREPARE A DATAFLOW DIAGRAM FOR THE ABOVE SYSTEM

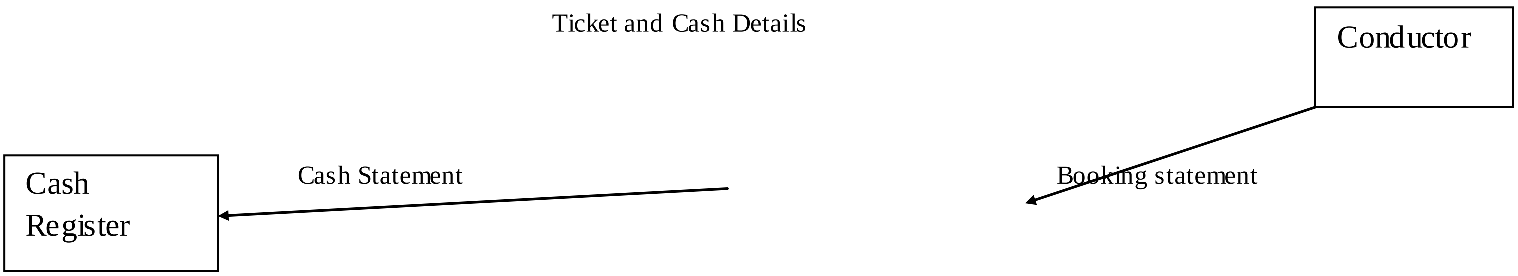
SOLUTION:



Context Diagram for Railway Reservation System

First Level Data Flow Diagram




Ticket and Cash Details
Conductor
Cash Register
Cash Statement
Booking statement