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.

□ □ □

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.

———

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 ( )

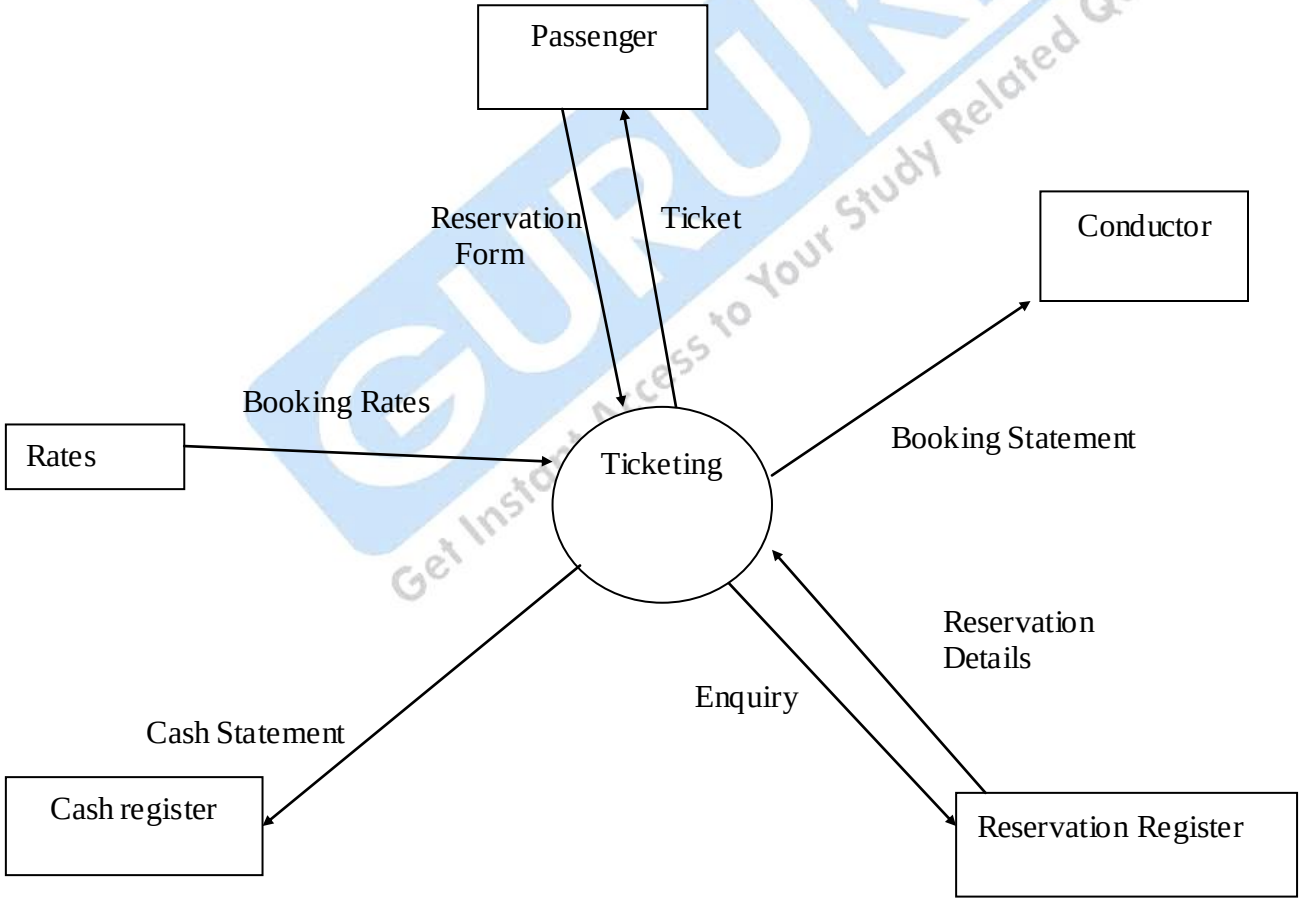
CASE STUDY

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