

Computer Applications in Business PYQ 2018

Q1(A) Fill in the blanks :

(i) performs the function of multiprogramming.

(ii)..... displays information such as

Instructions, messages about the state of the computer, or location of the cursor in the Windows

(iii)allows us to navigate from one web page to another.

(iv) OLE stands for

B) Answer in one line:

(i) What is Ribbon?

(ii) What is template?

(iii) Explain audit trials.

Answers.

A) Fill in the blanks:

(i) Operating system performs the function of multiprogramming.

(ii) Taskbar displays information such as instructions, messages about the state of the computer, or location of the cursor in the Windows.

(iii) Hyperlink allows us to navigate from one web page to another.

(iv) OLE stands for Object Linking and Embedding.

B) Answer in one line:

(i) Ribbon is a graphical user interface element in Microsoft Office applications that organizes commands into a series of tabs.

(ii) Template is a pre-designed file or document that serves as a starting point for creating new documents with a similar format or structure.

(iii) Audit trials refer to the process of recording and reviewing a log of activities or changes made in a system or application to track and monitor user actions for security or compliance purposes.

Q2. What is Operating System (OS)? Explain its functions.

Ans. An Operating System (OS) is a software that manages the hardware and software resources of a computer system and provides an interface for users to interact with the computer. It acts as an intermediary between the user, application software, and computer hardware, and coordinates the execution of tasks, manages system resources, and provides various services to enable efficient and effective computer operation.

The functions of an Operating System (OS) can vary depending on the specific type and version of the OS, but generally, they include the following:

Process Management: The OS manages processes, which are instances of executing programs, and provides mechanisms for creating, scheduling, terminating, and inter-process communication (IPC) among processes. It also manages system resources such as CPU, memory, and input/output (I/O) devices to ensure efficient utilization.

Memory Management: The OS manages computer memory, including allocating and deallocating memory for processes, managing virtual memory, and handling memory protection to prevent unauthorized access to memory areas.

File System Management: The OS provides a file system for organizing and managing files and directories on storage devices, including file creation, deletion, reading, writing, and access control. It also manages file caching, buffering, and I/O operations.

Device Management: The OS manages input and output devices such as keyboards, mice, printers, and storage devices, including device drivers, device allocation, and handling device interrupts.

User Interface: The OS provides a user interface for users to interact with the computer system, which can be command-line interface (CLI), graphical user interface (GUI), or a combination of both. It allows users to run applications, manage files, configure system settings, and perform other tasks.

Security: The OS provides mechanisms for ensuring system security, including user authentication, access control, and data protection to prevent unauthorized access, data breaches, and other security threats.

Networking: The OS provides networking capabilities for communication and data transfer over networks, including managing network protocols, connections, and network resources.

Error Handling: The OS monitors system activities and handles errors and exceptions that may occur during system operation, such as hardware failures, software errors, and application crashes.

System Services: The OS provides various system services, such as timekeeping, event logging, performance monitoring, and system configuration, to support system management and administration.

Overall, the Operating System plays a critical role in managing and controlling computer resources, providing an interface for users and applications, and ensuring efficient and secure operation of computer systems.

OR

Q2. Examine the role of the following in a computer network:

(i) Repeaters

(ii) Hub

(iii) Switch.

Ans. (i) Repeaters: Repeaters are devices used in computer networks to extend the length of a network segment by regenerating or amplifying signals. They operate at the physical layer (Layer 1) of the OSI model and are used to overcome the limitations of signal degradation and attenuation that can occur over long distances in network cables. Repeaters receive incoming signals, amplify them, and then retransmit them to the connected network segment. However, they do not have any intelligence to filter or manage network traffic.

(ii) Hub: Hubs are simple devices used in computer networks to connect multiple devices together in a local area network (LAN). They operate at the physical layer (Layer 1) of the OSI model and are essentially multi-port repeaters that amplify and broadcast incoming signals to all connected devices. However, like repeaters, hubs also do not have any intelligence to filter or manage network traffic. Therefore, all devices connected to a hub share the same bandwidth, and collisions can occur if multiple devices transmit data simultaneously, leading to network congestion and reduced network performance.

(iii) Switch: Switches are more sophisticated devices used in computer networks to connect multiple devices together in a LAN. They operate at the data link layer (Layer 2) of the OSI model and are capable of making intelligent decisions based on the MAC (Media Access Control) addresses of connected devices. Switches maintain a MAC address table that maps MAC addresses to the corresponding switch ports, allowing them to selectively forward data packets only to the appropriate destination devices, instead of broadcasting them to all devices like hubs. This helps in reducing network collisions and improving network performance.

Switches also support full-duplex communication, allowing devices to transmit and receive data simultaneously without collisions, further enhancing network efficiency. Additionally, switches can segment network traffic into separate virtual LANs (VLANs) to isolate network traffic and enhance network security. Managed switches also provide additional features such as Quality of Service (QoS), port mirroring, and SNMP (Simple Network Management Protocol) support for advanced network management and troubleshooting.

In summary, while repeaters and hubs are simple devices used for basic network connectivity, switches are more advanced devices that provide intelligent and efficient network traffic management, leading to improved network performance, reduced collisions, and enhanced network security. Switches have largely replaced hubs and repeaters in modern computer networks due to their superior capabilities and features.

Q3. What do you mean by normalization? Explain first three normal forms of a relational database.

Ans. Normalization is the process of organizing and structuring the data in a relational database to eliminate redundancy and ensure data integrity, consistency, and efficiency. It involves breaking

down a database table into smaller, more manageable tables to eliminate redundancy and dependencies among data, which can improve database performance and reduce the risk of data anomalies.

There are several levels of normalization, known as normal forms, with each normal form addressing a specific type of data redundancy. The first three normal forms, commonly referred to as 1NF, 2NF, and 3NF, are widely used in relational database design. Here's a brief explanation of each:

First Normal Form (1NF): In 1NF, the table must have a primary key, and all columns in the table must contain atomic (indivisible) values. This means that each column should contain only a single value, and there should be no repeating groups or arrays within a column. Additionally, there should be no duplicate rows in the table.

Second Normal Form (2NF): In 2NF, the table must already be in 1NF, and all non-primary key columns must be fully dependent on the entire primary key. This means that each non-primary key column should depend on the entire primary key, and not just a part of it. If a non-primary key column depends on only a part of the primary key, it should be moved to a separate table with that part of the primary key as its primary key, and a foreign key relationship should be established between the two tables.

Third Normal Form (3NF): In 3NF, the table must already be in 2NF, and all columns that are not part of the primary key should be independent of each other, meaning that there should be no transitive dependencies. This means that if a column depends on another non-primary key column, it should be moved to a separate table with the dependent column as its primary key, and a foreign key relationship should be established between the two tables.

By normalizing a relational database to at least 3NF, redundancy is minimized, and the relationships between tables are properly established through primary key and foreign key relationships, which helps ensure data integrity, consistency, and efficiency in the database.

OR

Q3. What is meant by wide area network? How does it differ from local area network?

Ans. A wide area network (WAN) is a type of computer network that spans a large geographic area, typically covering multiple locations, cities, or even countries. WANs are used to connect networks across long distances and allow for communication and data exchange between different sites or locations of an organization.

WANs are designed to cover large geographical areas and typically use external telecommunication links, such as leased lines, fiber-optic cables, satellite links, or microwave connections, to connect geographically dispersed locations. WANs are often owned, operated, and maintained by telecommunication companies or Internet Service Providers (ISPs).

In contrast, a local area network (LAN) is a type of computer network that covers a smaller geographic area, typically within a single building, office, or campus. LANs are used for communication and data exchange among devices in close proximity, such as computers, printers, and servers, within a specific location or area.

The main differences between WANs and LANs are:

Geographical coverage: WANs cover large geographic areas that can span across different locations or even countries, while LANs cover smaller geographic areas within a single location.

Connectivity: WANs use external telecommunication links to connect geographically dispersed locations, while LANs typically use Ethernet or Wi-Fi technologies for local connectivity.

Ownership and maintenance: WANs are often owned, operated, and maintained by telecommunication companies or ISPs, while LANs are usually owned, operated, and maintained by the organization or entity that uses them.

Bandwidth and speed: WANs may have lower bandwidth and slower speeds compared to LANs due to the longer distances and external telecommunication links involved in their connectivity.

Cost: WANs are typically more expensive to set up and maintain compared to LANs, as they involve external telecommunication links and may require additional hardware, software, and services from telecommunication providers.

In summary, WANs are designed to connect networks across long distances, spanning multiple locations or even countries, while LANs are designed for local connectivity within a smaller geographic area. WANs are typically more complex, expensive, and require external telecommunication links, while LANs are relatively simpler and more cost-effective for local communication and data exchange.

Q4. Explain the two fundamental integrity rules.

Ans. The two fundamental integrity rules in the context of databases are:

Entity Integrity Rule: The entity integrity rule states that each row (or record) in a relational database table must have a unique identifier, known as a primary key, that uniquely identifies that row. In other words, no two rows in a table can have the same primary key value. The primary key is used to uniquely identify and distinguish each row in the table, and it serves as a basis for establishing relationships with other tables in the database. The entity integrity rule ensures that each row in a table is uniquely identifiable and eliminates duplicate data, which helps maintain data integrity and consistency in the database.

Referential Integrity Rule: The referential integrity rule states that relationships between tables in a relational database must be maintained consistently. It ensures that foreign key values in a table must either match a primary key value in another related table or be NULL. In other words, if a table has a foreign key column that refers to a primary key in another table (referred to as the parent table), the foreign key value in the referencing table (referred to as the child table) must either match a valid primary key value in the parent table or be NULL. This rule helps maintain consistency and accuracy of data relationships between tables, prevents orphans (rows in child tables with no corresponding rows in parent tables), and allows for proper navigation and retrieval of related data in a relational database.

Enforcing these two integrity rules in a relational database helps ensure the accuracy, consistency, and reliability of data stored in the database, and helps prevent data anomalies, such as duplication, inconsistencies, and orphans, that can lead to data integrity issues and unreliable query results.

OR

Q4. Explain the various keys of a relation used in RDBMS.

Ans. In a relational database management system (RDBMS), various types of keys are used to uniquely identify and establish relationships between data records in different tables. These keys play a crucial role in maintaining data integrity and consistency. The most commonly used keys in RDBMS are:

Primary Key: A primary key is a unique identifier for a particular record or row in a table. It uniquely identifies each row in a table and ensures that no two rows have the same key value. A primary key can be composed of one or more columns in a table, and it must be unique and not null. It is used as a basis for establishing relationships with other tables in the database.

Foreign Key: A foreign key is a column or a set of columns in a table that refers to the primary key of another table. It establishes a relationship between two tables in a database. The foreign key in one table refers to the primary key in another table, and it is used to maintain referential integrity, which ensures that the relationships between tables are maintained consistently.

Unique Key: A unique key is a column or a set of columns in a table that must have unique values, just like a primary key. However, unlike a primary key, a table can have multiple unique keys. Unique keys are used to enforce uniqueness of values in a column or a set of columns, and they can be used as an alternative to primary keys in certain cases.

Candidate Key: A candidate key is a column or a set of columns in a table that could potentially be used as a primary key. It is a unique key that satisfies the requirements of a primary key, but it has not been chosen as the primary key for the table. A table can have multiple candidate keys, and one of them is chosen as the primary key.

Alternate Key: An alternate key is a candidate key that is not chosen as the primary key for a table. It is an alternative to the primary key, and it can be used to uniquely identify records in a table just like a primary key or a unique key.

These different types of keys are used in relational databases to establish relationships between tables, enforce data integrity, ensure uniqueness of values, and provide a means for uniquely identifying records in tables. Proper use of keys is essential for designing efficient and reliable relational databases.