

Unit 2: Web Application

Assignment Solutions

Multiple-Choice Questions (MCQs)

- Which of the following is required to establish a computer network?
 - Two or more computers
 - Connections between computers
 - Information and resources to share
 - All of these

Ans. d

- Which of the following features is supported by a network?
 - Resource-sharing
 - Data security
 - Centralized management
 - All of these

Ans. d

- Which of the following classifies a network spanning a city?

a. LAN	b. MAN
c. WAN	d. Peer-to-peer

Ans. b

- Which of the following network topologies connects all the resources to a common channel?

a. Bus	b. Star
c. Ring	d. Comet

Ans. a

- Which of the following denies access to a service or system by a legitimate user?

a. Trojan Horse	b. Worm
c. DoS	d. Man-in-the-middle

Ans. c

Very Short Answer Questions

- What is LAN?

Ans. LAN is a localized network. This type of network is useful when you want to connect two different departments in a building.

- Define peer-to-peer network.

Ans. In this type of network, all the connected computers are equal, i.e., none of the computers is the sole in-charge of the operations of the network.

- What do you understand by a client-based network?

Ans. A client-based network is a more refined server-based network which employs the processing power of a client workstation to execute some functions locally and requesting further processing from the server.

- What is network topology?

Ans. Network topology refers to the basic geometric layout according to which the server and clients are connected via a channel.

- Define the Internet.

Ans. The Internet is defined as a worldwide network of computers connected to each other for sharing information.

Short Answer Questions-I

- Why do we need accessibility options?

Ans. Web applications are primarily designed to work on every platform irrespective of the location, hardware, software, or language. Also, the Web applications are designed to be used by multiple users irrespective of their hearing, sight, or cognitive ability. Web accessibility is essential to make Web applications and websites accessible to a wider audience. In other words, Web accessibility ensures that people can perceive, navigate, understand, and interact with the Web application.

- How can you categorize the accessibility features available in Windows 7?

Ans. Windows 7 generally provides some common accessibility features which can be categorized as:

- Accessibility features for visually impaired users: People with limited eyesight can benefit from features like text-to-speech, enlarged cursor, and high-contrast themes.
- Accessibility features for low-hearing or deaf users: Features like closed-captioning help in visually conveying the information to deaf users.
- Accessibility features for limited mobility users: Keyboard shortcuts and sticky keys help people with limited mobility in effectively using the computer.

- Enlist some differences between server-based and client-based networks.

Ans. A server-based network provides greater security and centralized control where a dedicated server controls all the network operations. A client-based network is a more refined server-based network which employs the processing power of a client workstation to execute some functions locally and requests further processing from the server.

Short Answer Questions-II

1. Enlist the differences between the bus, ring, and star topologies.

Ans. The following points describe the differences between three topologies:

- The Bus topology is most commonly used in LANs wherein the server, clients, and shared resources are all directly connected to a single common channel known as the bus. The channel runs through the network from one end to another.
- In the Ring topology, all the computers are connected in a large closed-loop circuit so that each computer is linked to two adjacent computers on either side. In this topology, the message sent by a sender is received by every client in the network; however, the message can only be read by the receiver to whom it is addressed.
- In the Star topology, all clients are individually connected to a centrally located server via a direct channel. This topology was commonly used with the mainframe computers. The entire communication over the network takes place through the central server.

2. Enlist seven layers of the OSI model.

Ans. The following are the seven layers of the OSI model:

- Layer 7- Application layer
- Layer 6 -Presentation layer
- Layer 5 -Session layer
- Layer 4 -Transport layer
- Layer 3 -Network layer
- Layer 2 -Data Link layer
- Layer 1- Physical layer

3. How does instant messaging work?

Ans. To use instant messaging services, users need to install an instant messaging software application, and log in to the application using their correct credentials. Once a user logs in, the connection information such as port number and IP address of the user are sent to the IM server. The server, in turn, creates a temporary file holding the information of the client. In case the server finds an online connection, it sends the information back to the client. Also, the server sends the information about the client to the online contact. The information exchange allows both the users to communicate with each other either directly or via the server.

4. Write a short note on instant messaging architecture.

Ans. In most cases, IM systems work in the client-server architecture for sending and receiving messages and other IM operations. In this case, all the messages exchanged between users are directed via the server. In this model, when a user wants to communicate with another user, both must connect to the same IM service using their credentials. Once logged in, messages will be exchanged between the two through the server on the basis of their privacy settings. The client-server instant messaging architecture can be symmetric, wherein each server in the group performs identical operations. Alternatively, the architecture can be asymmetric, wherein each server is dedicated to perform a specific activity like logging in, managing users, or forwarding a message.

5. How does an IM deal with an automatic sign-in issue?

Ans. In instant messaging, the authentication process uses the Single Sign-On (SSO) mechanism in which the user is authenticated only

once and automatically logged in to the system.

To overcome the issue of automatic sign in, IM systems employ Completely Automated Public Turing test to tell Computers and Humans Apart or CAPTCHA.

Long Answer Questions

1. Write a detailed note on the accessibility features enlisted in the Ease of Access Center in Windows 7.

Ans. The basic accessibility features listed under the Explore all settings section on the Ease of Access Center are as follows:

- Use the computer without a display: This feature is very useful for people who are unable to view things on the screen.
- Make the computer easier to use: This feature lets you adjust various settings related to the display of the computer screen. It is useful for the people having eyesight problem.
- Use the computer without a mouse or keyboard: This feature is useful for people who are not capable enough or have some kind of difficulty in using the keyboard or mouse.
- Make the mouse easier to use: This feature is helpful in deciding the looks of a pointer on screen or making it appear larger on screen so that a person with a weak eyesight can see the pointer on screen.
- Make the keyboard easier to use: This feature is useful for making the usage of keyboard easier for people who are experiencing difficulty in using the keyboard normally.
- Use text or visual alternatives for sounds: This feature is helpful for those who cannot hear or face some kind of difficulty in hearing sounds clearly.

2. Write down some benefits and risks involved in networking.

Ans. The following are the advantages of networking:

- Communication: Interconnected computers can communicate with each other using special technologies.
- Data sharing: Interconnected computers can share data over the Internet easily and quickly.
- Resource sharing: Interconnected computers can share hardware devices such as a color printer.
- Internet access sharing: All the interconnected computers can share a common high-speed Internet connection by sharing the bandwidth.
- Data security: A business network allows administered officials to share critical data of a company more securely.
- Performance enhancement: In some cases, networking can ensure performance enhancement by sharing the computation modules between various networked computers.

Despite so many advantages, networking also involves some challenges and risks:

- Setup Cost: Setting up a network involves investing in software and hardware equipment, which is expensive.
- Administration Cost: Networked computers require ongoing management and administration.
- Undesirable sharing: Sometimes people may share undesirable data such as a virus that causes more harm than good.
- Undesirable behavior: The ease of sharing with networking also allows people to misuse company resources by downloading illicit material.
- Data Security: A network that is not properly secured may put critical shared data at risk. Hackers may target and misuse the insecure data with unauthorized access.

3. Write a detailed note on the types of networks.

Ans. Computer networks are classified on the basis of geography as well as roles of the components. On the basis of geography, networks are classified as follows:

- Local Area Network (LAN): LAN is a localized network. This type of network is useful when you want to connect two different departments in a building.
- Metropolitan Area Network (MAN): MAN is a bigger version of LAN. MAN covers a larger area than LAN, but smaller than WAN. MAN generally connects two or more LANs or Campus Area Networks (CANs).
- Wide Area Network (WAN): WAN is a type of network used to cover a wide geographical area or region. It links different metropolitan cities, countries and national boundaries.

On the basis of component role, networks are classified as follows:

- Peer-to-peer network: In this type of network, all the connected computers are equal, i.e., none of the computers is the sole in-charge of the operations of the network.
- Server-based network: This type of network provides greater security and centralized control where a dedicated server controls all the network operations.
- Client-based network: This is a more refined server-based network which employs the processing power of a client workstation to execute some functions locally and requesting further processing from the server.

4. How can you start a blog?

Ans. The following are the steps involved in creating a blog:

1. Type the address of the Web-hosting site in the Address bar of your Web browser. E.g. Wordpress.com
2. Click the Get Started button
3. Enter a site name for your blog.
4. Enter the Education in the "What will be your site" about text box.
5. Select the Offer education, training, or mentoring check box.
6. Click the Continue button.
7. Enter the domain for your site.
8. Click the Select button for selecting free domain.
9. Click the Start with free button to select a plan. The Create your account page appears.
10. Enter your email address, user name.
11. Enter a username.
12. Click the Continue button.
13. Follow the instructions as prompted.
14. Click the Add button besides Blog Posts option.
15. Enter the Title and Content for your Blog.
16. Click the Publish button.

5. How does an online transaction work?

Ans. Processing of payment takes place in two stages. This includes authorization for payment approval and settlement to transfer

money to the receiver's account. Authorization process involves the following steps:

- A customer purchases an item on a website using a debit card or credit card.
- The payment information is received by the payment gateway which encrypts the received data to ensure privacy and forwards the same to the payment processing system.
- The payment processor sends a payment request to the issuing bank of the customer to ensure the customer has enough credit in his account to pay the bills.
- The issuing bank responds with an approval or a denial.
- The payment processor forwards the answer back to you confirming the approval of sale and informs the bank of the merchant to credit your account.

The entire authorization process executes in a few seconds. After authorization, the settlement process involves the following steps:

- The issuing bank of the cardholder transfers funds to the bank of the merchant which deposits the amount in the merchant's bank account.
- Funds are available to the merchant and you are notified with a credit account confirmation message.
- Sometimes the settlement process may take a couple of days for effective completion and payment transfer. In some cases, the bank may retain a partial amount called reserve in case the customer returns the purchased goods in future.

6. What are the potential threats affecting the Internet? How can you resolve them?

Ans. The following are some of the potential threats affecting the Internet:

- Malicious software: Malicious software, often called Malware, may disrupt the operations of your computer, gain access to your privacy information, and may gather sensitive data.
- Denial-of-Service Attack: The DoS attack makes a computer's resources unavailable to the user.
- Phishing: This attack targets online users to extract sensitive information, like username, password, or credit card information.
- Application Vulnerability: Some applications that access user resources may have security vulnerabilities like flawed authentication checks and memory safety bugs.

Some remedies for resolving the Internet security threats that may affect a computer system include:

- Encryption: In this method, the data is encoded in a manner so that it can only be read by an authorized user.
- Digital Signature: The digital signatures help in authenticating the content by verifying the author, signature date, and signature time.
- Firewall: A firewall serves as a barrier between the Internet and LAN.
- Antivirus Software: These are security programs for protecting a programmable device from security threats that work by detecting and eliminating malware and viruses.