28 Lecture - CS410

Important Subjective

****Question 1:****

Explain the concept of asynchronous programming in the context of network programming.

****Answer:****

Asynchronous programming allows tasks to execute concurrently without waiting for each other. In network programming, this means that a program can perform multiple tasks simultaneously, such as sending and receiving data, improving overall efficiency.

****Question 2:****

What is a REST API, and how does it differ from other types of APIs?

****Answer:****

A REST (Representational State Transfer) API is a standardized approach for building web services that use HTTP methods to interact with resources. It emphasizes simplicity and statelessness. Other APIs may use different protocols and communication methods.

****Question 3:****

Describe the purpose of SSL/TLS in network communication.

****Answer:****

SSL (Secure Sockets Layer) and its successor TLS (Transport Layer Security) are encryption protocols that ensure secure and encrypted communication over a network, protecting data from unauthorized access or tampering.

****Question 4:****

Explain the OAuth authentication process and its significance in network security.

Answer:

OAuth (Open Authorization) is a protocol that allows third-party applications to access user data without exposing user credentials. It enhances network security by providing controlled access to resources while keeping sensitive information secure.

Question 5:

What is a distributed application, and how does it differ from a traditional application?

***Answer:**

A distributed application is one that is split into separate components running on different machines, often communicating over a network. This differs from a traditional application that runs on a single machine.

Question 6:

How does FTP (File Transfer Protocol) work, and what is its role in network programming?

Answer:

FTP is a protocol used for transferring files between computers over a network. It involves a client-server architecture where the client requests files from the server. It is commonly used for secure and efficient file transfer.

Question 7:

Discuss the importance of error handling in network programming.

Answer:

Error handling is crucial to network programming as it ensures graceful handling of unexpected situations, such as connection failures or data corruption. Proper error handling enhances the reliability and stability of networked applications.

Question 8:

Explain the role of WebSockets in real-time communication.

Answer:

WebSockets enable bidirectional communication between a client and a server over a single, long-lived connection. They are ideal for real-time applications such as instant messaging, online gaming, and live notifications.

Question 9:

Describe how API rate limiting works and its significance in API usage.

Answer:

API rate limiting restricts the number of requests a client can make to an API within a specified time frame. It prevents abuse, ensures fair usage, and maintains the API's performance and availability.

Question 10:

Discuss the advantages and disadvantages of using synchronous versus asynchronous programming in network applications.

Answer:

Synchronous programming simplifies code but can lead to slower performance. Asynchronous programming improves efficiency by allowing concurrent tasks but can be more complex to implement and debug.