Distributed Media Application

Group No : B28

Group Members:

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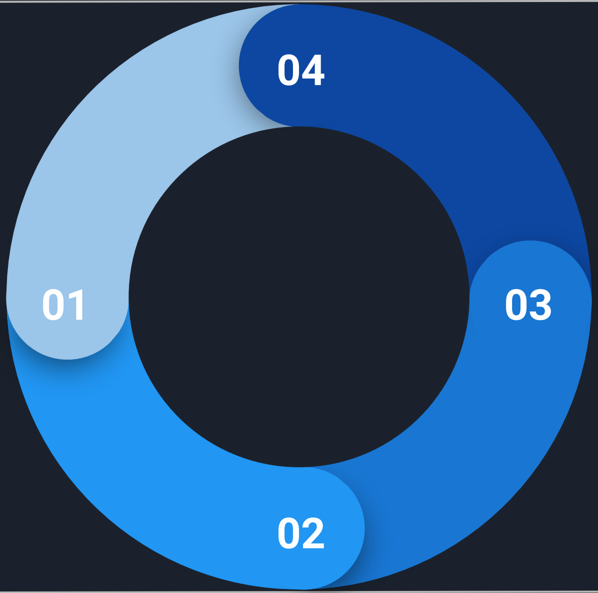
Problem Statement:

Implementing a ***client-server system*** for a multimedia application. ***One or more clients*** should connect with the server and request for an audio / video file (mp3/mp4). The server should ***receive and process message in an order,*** provide the file so the client can download.

Motivation Behind the Project:

- To provide a way for users to access multimedia files from a central location.
    - This would make it easier for users to download the files they need, and it would also free up space on their devices.
- To improve the performance of multimedia applications.
    - By having the server handle the processing of the files, the clients can focus on displaying the content.
- To make it easier to manage multimedia files.
    - The server can be used to store, organize, and update the files.

Technologies Used:



Python

Socket Programming

Multi - Threading

Queueing

Technologies Used:

- Python:

  Specific benefits of using Python for distributed media application development:

  1)Simplicity 2) Versatility 3) Library ecosystem

- Multi - Threading:

  The server code uses multi-threading to handle multiple client requests concurrently. Each client request is added to a queue, and a new thread is created to handle each request, allowing the server to handle multiple requests at the same time.

Technologies Used:

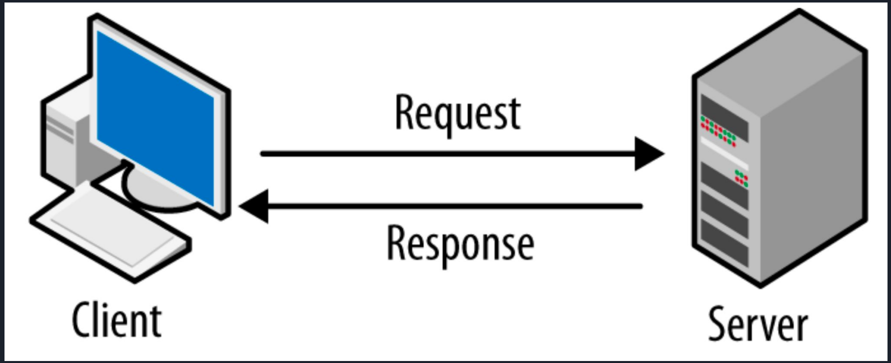
- ## Socket Programming:

  Our program demonstrates the use of Python's socket module to establish a connection between a client and server. This allows data to be transferred between the two over a network.

- ## Queueing:

  At the server-side, a queue is utilized to store incoming requests from clients. A thread is then initiated to process these requests in the order they were received from the queue.

System Architecture:



- **Client :** Represents individual users and runs a client-side application for sending and receiving messages.
- **Server :** Manages client interactions, maintains client connections, and provides files (audio, video, text)as an intermediary.

Communication between client and server

- The server application starts and waits for incoming client connections.
- One or more clients connect to the server and request a multimedia file.
- The server receives the request and places it in a queue.
- The server uses a separate thread or process to process requests from the queue in order, sending the requested files to the clients that made the requests.
- The clients receive the file(s) and download them to their local systems.
- The clients can then play the downloaded multimedia files using a suitable player application.

Key Takeaways:

1

How to handle multiple clients concurrently

2

How to establish connection using socket programming

3

Coordination and Collaborative Teamwork

Conclusion

- In conclusion, the distributed media application provides a reliable and efficient way for clients to access and download multimedia files from a centralized server.
- The use of Python programming language allowed us to create a scalable, flexible, and easy-to-use system that can handle multiple client requests simultaneously.
- By using techniques like multi-threading, socket programming, and queuing, we were able to build a robust system that can handle different types of multimedia files and ensure that the files are delivered in the correct order to the clients.

THANK YOU!