

Architecture Pattern



Course Name: **Software Development Project**

Course No: **CSE 3106**

Submitted to:

Dr. Amit Kumar Mondal

Associate Professor

Computer Science & Engineering Discipline,

Khulna University, Khulna.

Submitted by:

Name: Sidratul Muntaha

Student ID: 210208

Name: Taohiduzzaman Firoz

Student ID: 210232

Project Title: Ima-Mod

Subject: Pipe and Flow architecture for Image Editing Software Development

Description:

A pipe and flow architecture in image editing software involves organizing the image processing tasks into a series of interconnected components arranged in a sequential manner. Each component represents a specific editing operation, such as cropping, resizing, or applying filters, and processes the image data as it flows through the pipeline. This architecture promotes modularity, reusability, and flexibility, allowing for efficient data processing, improved performance, and customizable editing workflows. Components can execute tasks concurrently for parallel processing, and asynchronous processing can handle long-running operations without blocking the user interface. Overall, the pipe and flow architecture provides a structured approach to developing image editing software, enabling developers to create powerful and responsive editing experiences for users.

Pipe And Flow Architecture Details:**1. Pipeline Design:**

- The pipeline consists of a series of interconnected components, each responsible for a specific image processing task.
- Components can represent various editing operations such as cropping, resizing, applying filters, etc.

- These components are arranged in a sequential manner, forming a flow where the output of one component serves as the input to the next.

2. Data Flow:

- Image data flows through the pipeline, undergoing successive transformations at each component.
- Each component in the pipeline performs a specific task on the input data and passes the processed data to the next component.
- The flow of data is typically unidirectional, ensuring a clear and predictable path for processing.

3. Parallel Processing:

- In some cases, certain editing operations can be parallelized for improved performance.
- Components within the pipeline can execute concurrently, processing different parts of the image simultaneously.
- Parallel processing can be beneficial for computationally intensive tasks such as applying complex filters or performing batch operations on multiple images.

4. Modularity and Reusability:

- The pipe and flow architecture promotes modularity and reusability of components within the pipeline.
- Each component is designed to perform a specific task independently, making it easier to maintain and extend the software.

By adopting a pipe and flow architecture, image editing software can achieve efficient data processing, improved performance, and enhanced flexibility, ultimately providing users with a powerful and customizable editing experience.

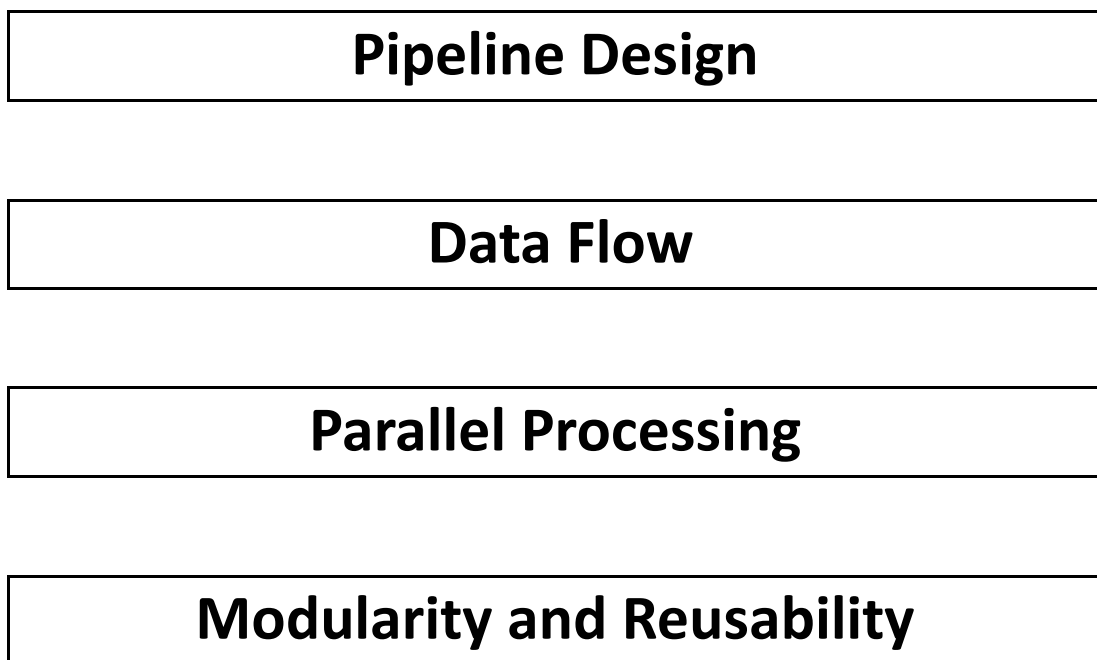


Figure: Diagram of Pipe and Flow Architecture Pattern