Description of the application

The proposed application is a robust and scalable software solution designed to deliver comprehensive stock market analysis and data management. It provides users with access to detailed, historical daily stock data for all publicly traded companies over at least the last ten years, enabling both real-time insights and long-term trend analysis. The application is built with a focus on flexibility, performance, and maintainability, ensuring it meets the needs of diverse users.

The architecture of the application integrates multiple design approaches to optimize functionality and ensure seamless operation. A **Pipe-and-Filter architecture** forms the backbone of the data processing pipeline, automating the retrieval, cleansing, transformation, and storage of stock data. Automated filters streamline the extraction process, ensuring that data is consistently formatted and ready for analysis. Additionally, a **Layered architecture** separates the data access, business logic, and presentation layers, allowing updates or modifications to be implemented without impacting other components of the system.

On the backend, **RESTful microservices** manage individual stock data streams independently. This modular approach simplifies the integration of new features or data sources while maintaining high system reliability. An **Event-Driven architecture** ensures that users receive real-time stock market updates through WebSocket or push notifications. The processed stock data is stored in a robust relational database, offering quick and reliable retrieval for analysis.

The application also emphasizes user accessibility through its responsive web interface. The interface is designed to be intuitive and interactive, enabling users to visualize and analyze stock data effectively. Techniques such as caching and API gateway patterns are employed to provide a smooth, low-latency experience for both detailed analysis and high-level market monitoring.

With its scalable architecture, cross-platform compatibility, and focus on usability, this application is well-suited for delivering accurate stock market insights while maintaining high performance and adaptability for future enhancements.