

## Explanation of Data Storage System (UML model diagram)

The UML class diagram outlines the structure of a Data Storage system, focusing on flexibility and modularity. At its core, the SimpleWebSocketServer class represents the main entry point for WebSocket connections. It maintains an address property to specify the server's location. The onOpen method handles new connections, passing the necessary parameters such as the WebSocket object and ClientHandshake to the appropriate strategy.

To enhance extensibility, the WebSocketStrategy interface is introduced. This allows different strategies to be implemented for handling WebSocket events. The WebsocketStrategy class, implementing this interface, demonstrates a file-based strategy. It initializes properties like BaseDirectory and file\_path for managing file output. The onOpen and onClose methods handle the respective events, such as setting up file resources or releasing them.

To further illustrate the flexibility of the design, the FileOutputStrategy class is shown as a subclass of WebsocketStrategy. This highlights the fact that different strategies can be created by extending the base strategy class. For example, the TopOfTheTreeStrategy class, also implementing WebSocketStrategy, demonstrates an alternative strategy that may focus on different functionality, such as priority handling or real-time analysis.

In summary, this design choice enables the WebSocket server to adapt to various requirements by allowing different strategies to be implemented and swapped in easily. The modular structure promotes code reuse and maintainability, while the extensible nature of the system ensures it can grow with changing needs.