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Distributed Systems Assignment 1 - Simple Client and Server

Overview

Simple WebSocket Client-Server for Number Collection and Processing

Communication Method Used

The client and server communicate using **WebSockets**, which provides **communication** over a single **TCP** connection.

The client collects numbers from the user, serializes them as **JSON**, and sends them to the server.

The server receives the numbers, performs a computation (e.g., sums them), and sends the result back to the client.

Concurrency Handling

The server is built using **Python's** `asyncio` library in combination with `websockets`. It allows multiple clients to connect and communicate **concurrently** without blocking each other.

How to Run the Server and Client

Setup environment

```
python3 -m venv venv
source venv/bin/activate   # Linux/macOS
venv\Scripts\activate      # Windows
pip install -r requirements.txt
```

Start the server in one terminal

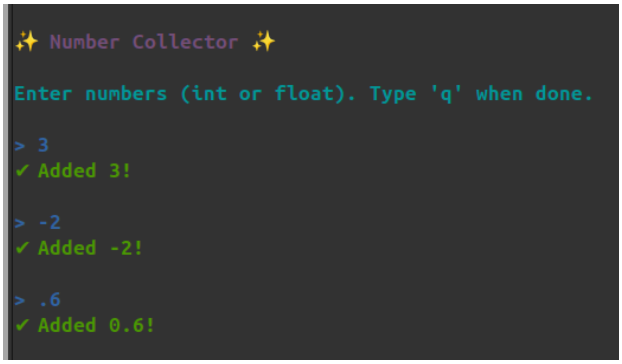
```
python server.py
```

Start the client in another terminal

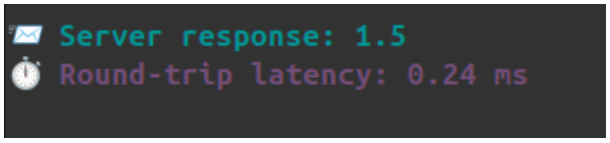
```
python client.py
```

Example Input/Output

Client Input



Client Output



Server Request and Response

```
(venv) elahe@wanheda:~/Files/Master/Semester1/Distributed Systems/A1_SimpleClientAndServer$ py
thon3 server.py
[2025-11-06 12:40:09] REQUEST id=c387b11c ip=127.0.0.1 method=GET body=[3, -2, 0.6, 0.1, -0.2]
[2025-11-06 12:40:09] RESPONSE id=c387b11c body=1.5 latency=0.09ms
```