External Project Presentation of Computer Networking (CSE 3034)
On
Tic-Tac-Toe Game Using Client-Server Architecture

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Introduction

Overview:

- Modernize the classic Tic Tac Toe game by integrating it into a Client-Server architecture.
- Emphasizes the significance of networking in revolutionizing gaming experiences.

Project Objective:

- Introducing a Client-Server model for remote gameplay by leveraging Java's socket programming for interactive gaming interactions.

Relevance of Networking:

- Networking's pivotal role in enabling multiplayer gaming experiences.
- The game's functionality hinges on consistent and stable network connections.

Problem Statement

Objective:

- Implementing a Client-Server Tic Tac Toe game with console interaction in Java.
- Enabling multiple players to participate remotely through console inputs and compiler outputs.

Console-Based Interaction:

- Players engage through console inputs, entering moves and observing game states via the compiler.

Constraints:

- Input Validation: Ensuring valid moves within grid boundaries and unoccupied cells to maintain gameplay integrity.
- Network Connectivity: Reliance on stable connections, addressing disruptions through robust error-handling. Concurrency: Managing multiple client interactions with multithreading and synchronization for fair gameplay

Methodology

Architecture Overview:

- Visualization of the Client-Server model for the Tic Tac Toe game.
- Components: Server Application, Client Application.

Server Application:

- Orchestrates game sessions and manages player interactions.
- Listens for incoming connections and handles game logic.

Client Application:

- Connects to the server and awaits game initiation signals.
- Interacts via console inputs and sends moves to the server.

Data Flow:

- Bidirectional flow of data between server and clients.
- Communication channels established via Java's socket programming.

Methodology

Importance of Input Validation:

- Ensuring player inputs align with game rules and grid boundaries.
- Verifying moves within grid bounds and unoccupied cells before updating the game state.
- Players can confidently strategize and execute moves without concerns about inconsistencies.

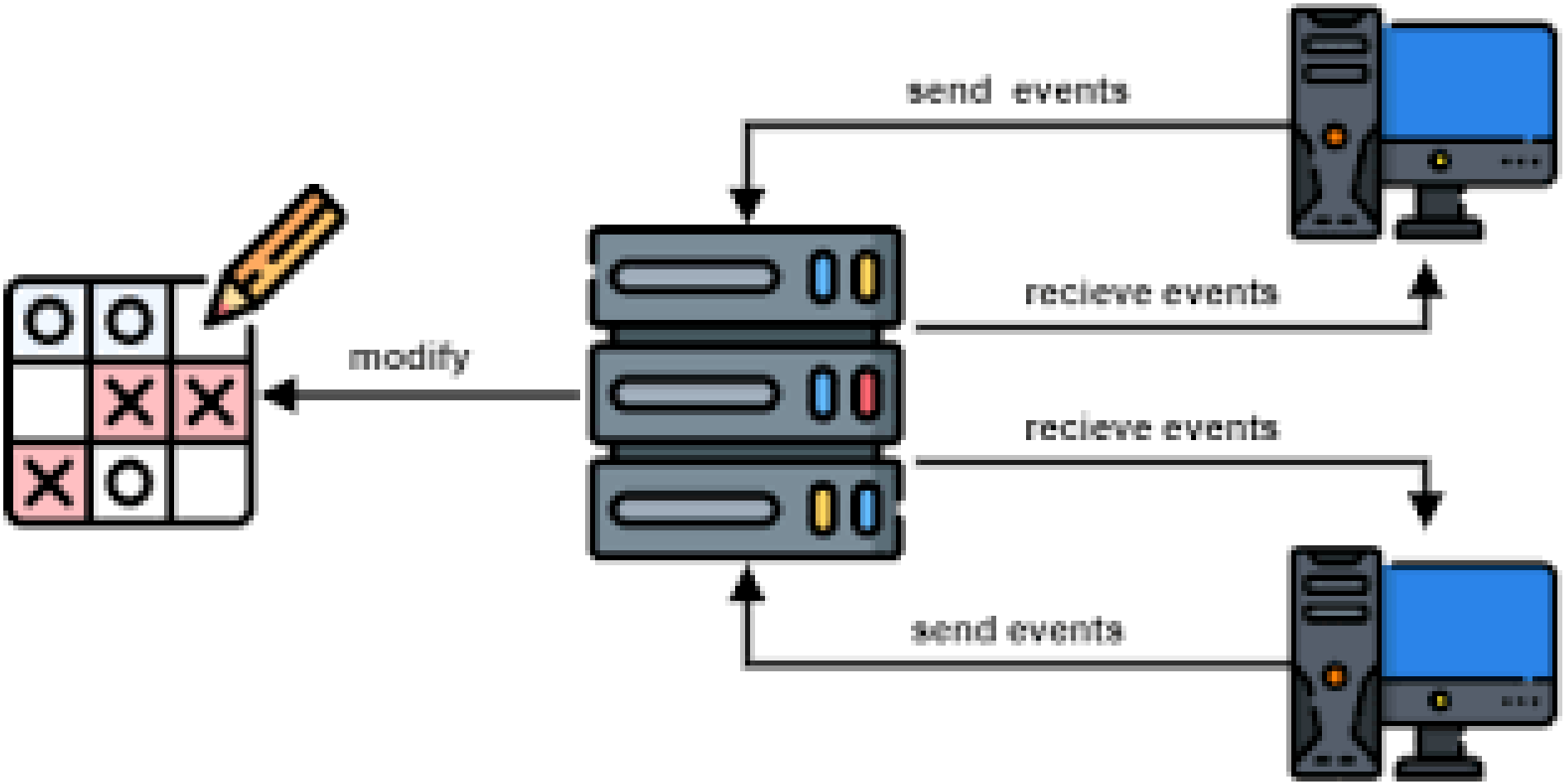
Role of Multithreading:

- Implementation of multithreading mechanisms to handle concurrent client requests.
- Managing multiple threads for seamless interaction and responsiveness.

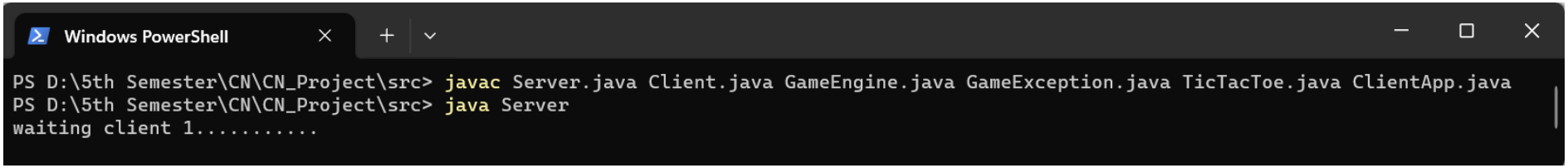
Real-Time Reflections:

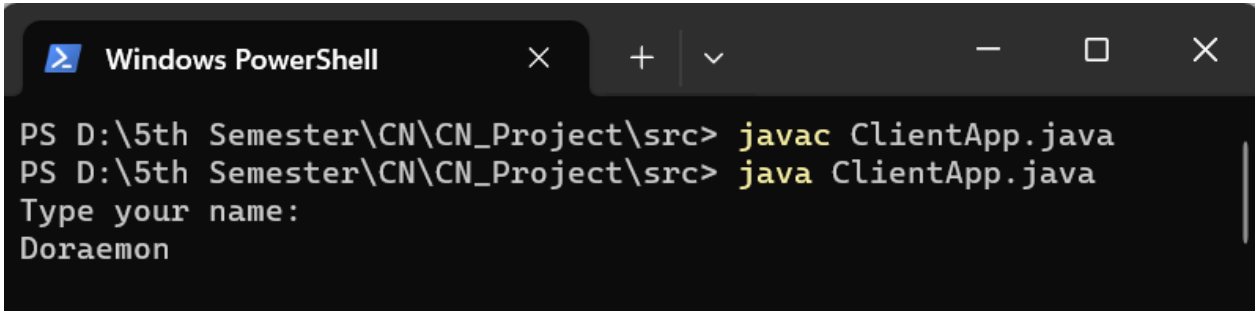
- Visual representation of how player inputs reflect the game's progression in the compiler.

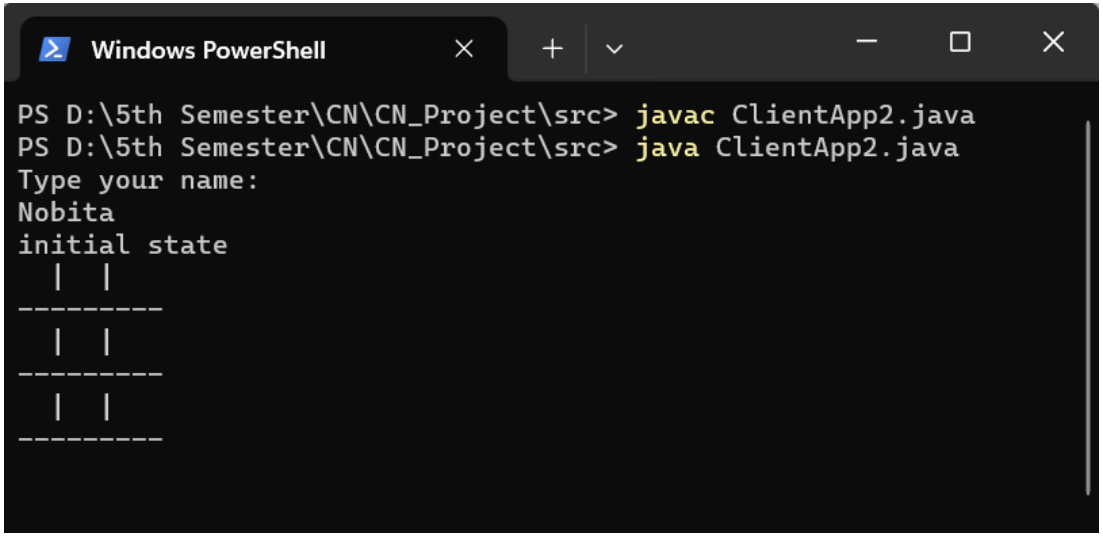
Implementation



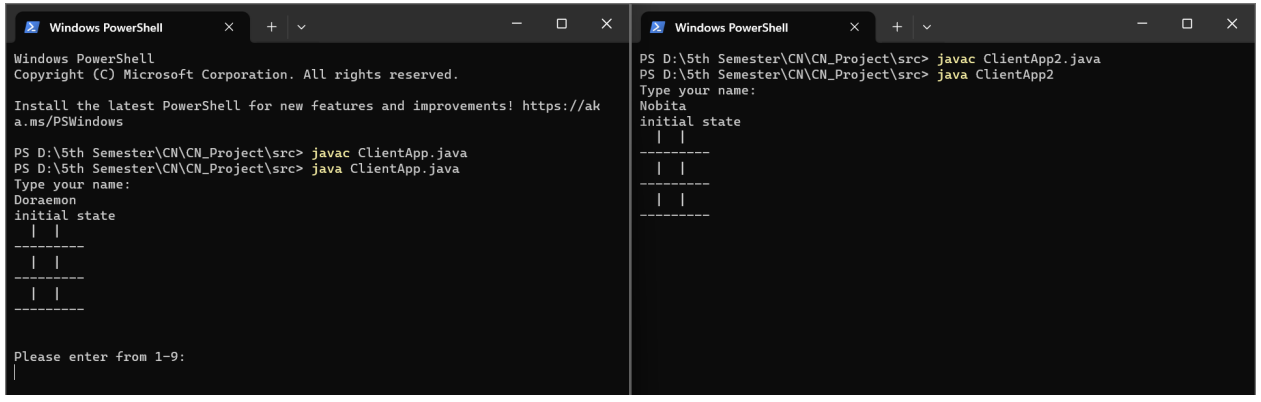
Result & Interpretation

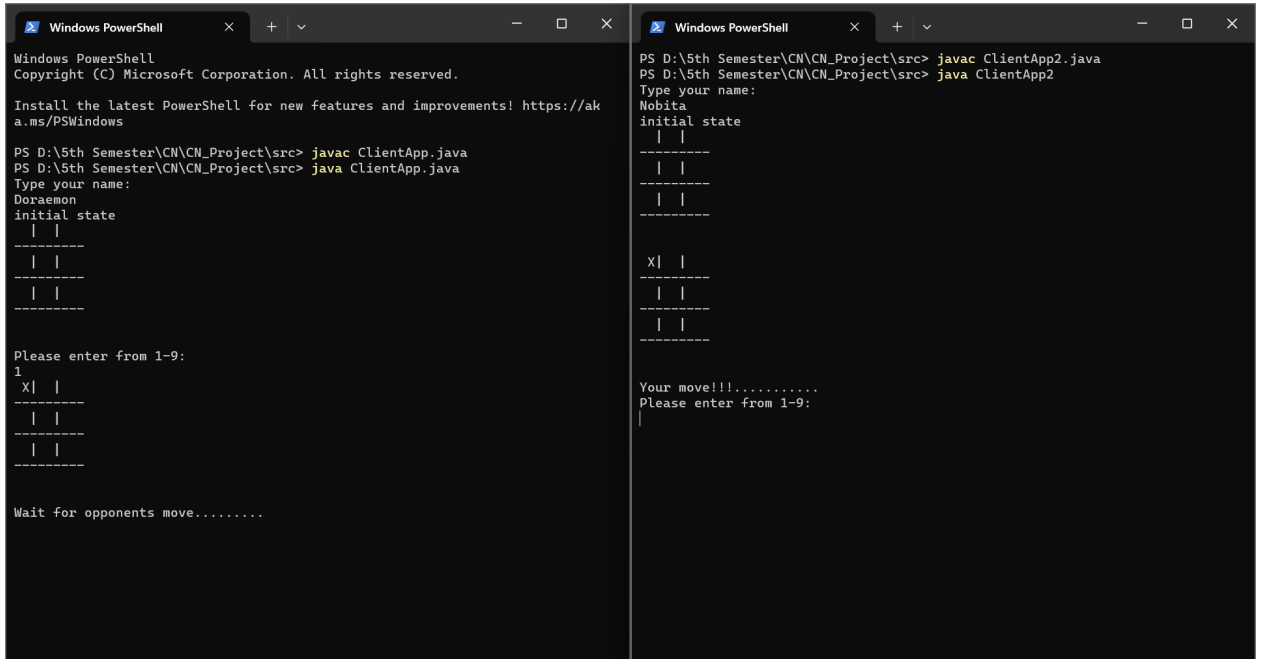






Result & Interpretation





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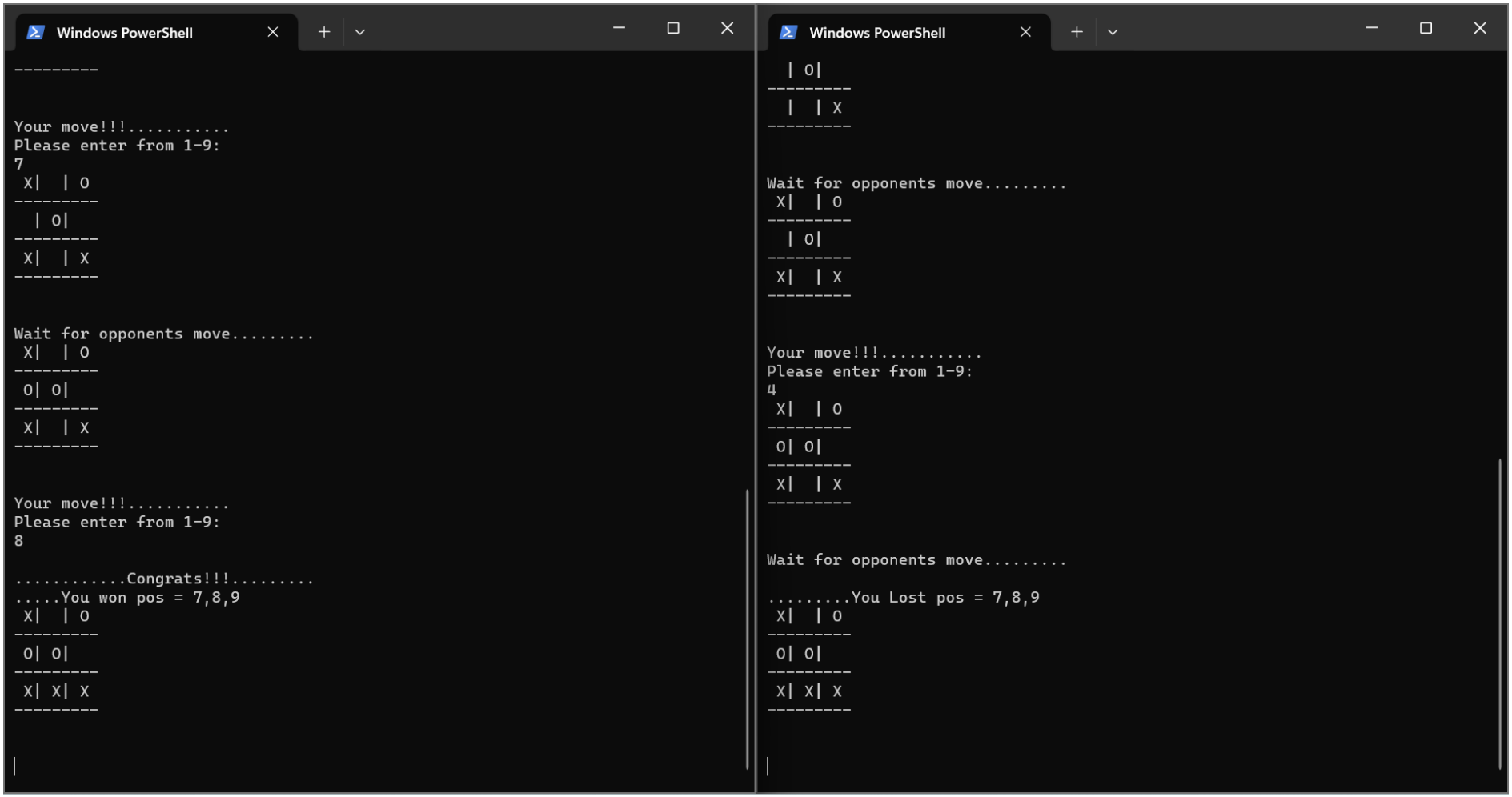

Conclusion

Achieving Project Objectives:

- Successfully implemented the Client-Server Tic Tac Toe game.
- Emphasizing the transformation of a classic game into a networked, console-based experience.

Highlights of Project Accomplishments:

- Addressing challenges of input validation, network connectivity, and concurrency management.
- Showcasing the synthesis of networking concepts in a practical gaming context.

Future Implications and Innovations:

- Possibilities for future enhancements, such as graphical interfaces or expanded features.

Any Questions?

Thank You