Course: IT114-006-S2025
Assignment: IT114 Milestone 1
Student: Muhammad K. (muk)
Status: Submitted | Worksheet Progress: 100%
Potential Grade: 10.00/10.00 (100.00%)
Received Grade: 0.00/10.00 (0.00%)
Grading Link: https://learn.ethereallab.app/assignment/v3/IT114-006-S2025/it114-milestone-1/grading/muk

Instructions

1. Refer to Milestone1 of any of these docs:
    2. Rock Paper Scissors
    3. Basic Battleship
    4. Hangman / Word guess
    5. Trivia
    6. Go Fish
    7. Pictionary / Drawing
2. Ensure you read all instructions and objectives before starting.
3. Ensure you've gone through each lesson related to this Milestone
4. Switch to the Milestone1 branch
    1. `git checkout Milestone1` (ensure proper starting branch)
    2. `git pull origin Milestone1` (ensure history is up to date)
5. Copy `Part5` and rename the copy as `Project`
6. Organize the files into their respective packages `Client`, `Common`, `Server`, `Exceptions`
    1. Hint: If it's open, you can refer to the Milestone 2 Prep lesson
7. Fill out the below worksheet
    1. Ensure there's a comment with your UCID, date, and brief summary of the snippet in each screenshot
8. Once finished, click "Submit and Export"
9. Locally add the generated PDF to a folder of your choosing inside your repository folder and move it to Github
    1. `git add .`
    2. `git commit -m "adding PDF"`
    3. `git push origin Milestone1`
    4. On Github merge the pull request from `Milestone1` to `main`
10. Upload the same PDF to Canvas
11. Sync Local
    1. `git checkout main`
    2. `git pull origin main`

100%

Section #1: (1 pt.) Feature: Server Can Be Started Via Command Line And Listen To

Started Via Command Line And Listen To Connections

Task #1 (1 pt.) - Evidence

Combo Task:

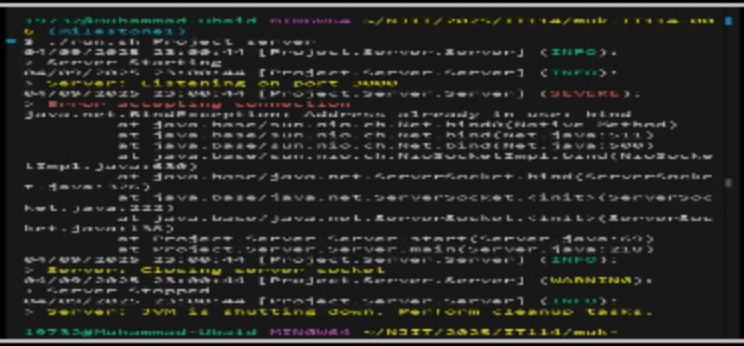
Weight: *100%*
Objective: *Evidence*

Image Prompt

Weight: *50%*

Details:

- Show the terminal output of the server started and listening
- Show the relevant snippet of the code that waits for incoming connections



I did not know server was started and ended up started it again.

Snippet of the code

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the server-side waits for and accepts/handles connections

Your Response:

The default port 3000 is what the server listens on and uses ServerSocket. It uses accept() method which waits for a client to connect. ServerThread is used to read messages from the client where each thread is used.

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Section #2: (1 pt.) Feature: Server Should Be Able To Allow More Than One Client To Be Connected At Once

100%

Task #1 (1 pt.) - Evidence

Combo Task:

Weight: *100%*
Objective: *Evidence*

Image Prompt

Weight: *50%*

Details:

- Show the terminal output of the server receiving multiple connections
- Show at least 3 Clients connected (best to use the split terminal feature)
- Show the relevant snippets of code that handle logic for multiple connections

The terminal showing 3 clients connected

Snippet of code shows where ConcurrentHashMap keeps track of connected clients

Terminal output of the server receiving multiple connections

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the server-side handles multiple connected clients

Your Response:

The server creates ServerThreads for each client's connection. ConcurrentHashMap keeps track of all clients' messages, helps send messages between clients, and removes clients if needed.

clients' messages, helps send messages between clients, and removes clients if needed.

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Section #3: (2 pts.) Feature: Server Will Implement The Concept Of Rooms (With The Default Being "l obby")

Task #1 (2 pts.) - Evidence

Combo Task:

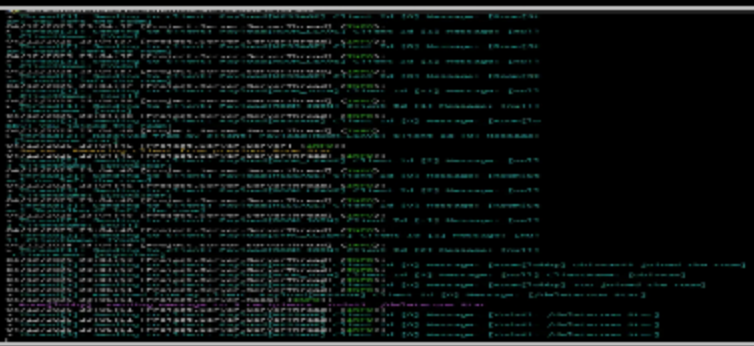
Weight: *100%*
Objective: *Evidence*

Image Prompt

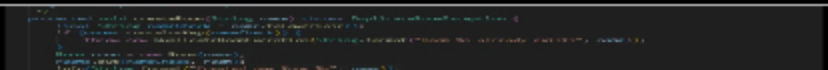
Weight: *50%*

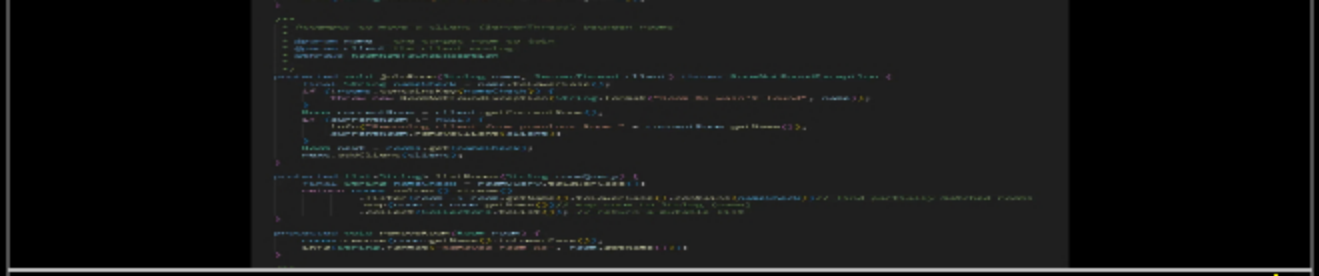
Details:

- Show the terminal output of rooms being created, joined, and removed (server-side)
- Show the relevant snippets of code that handle room management (create, join, leave, remove) (server-side)



Terminal output of rooms = created,joined and removed





Snippet of code

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the server-side handles room creation, joining/leaving, and removal

Your Response:

The server creates new room witht the method /creatroom, joined rooms with method /joinroom and leave room with the method /removeroom . For create room the server checks if the room exists if not then it is created. For join room, the server removes the client from their orginal room and adds them to the new room. When a room is no longer needed the server removes the empty room.

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Section #4: (1 pt.) Feature: Client Can Be Started Via The Command Line

Task #1 (1 pt.) - Evidence

Combo Task:

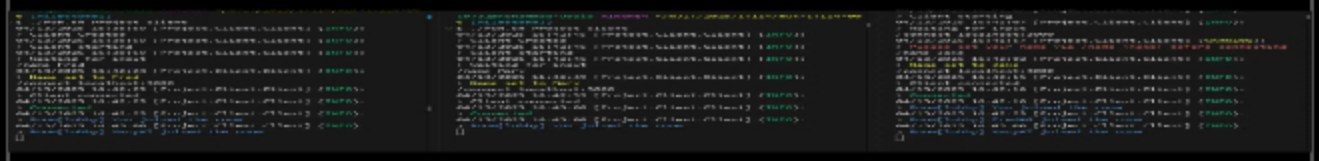
Weight: *100%*
Objective: *Evidence*

Image Prompt

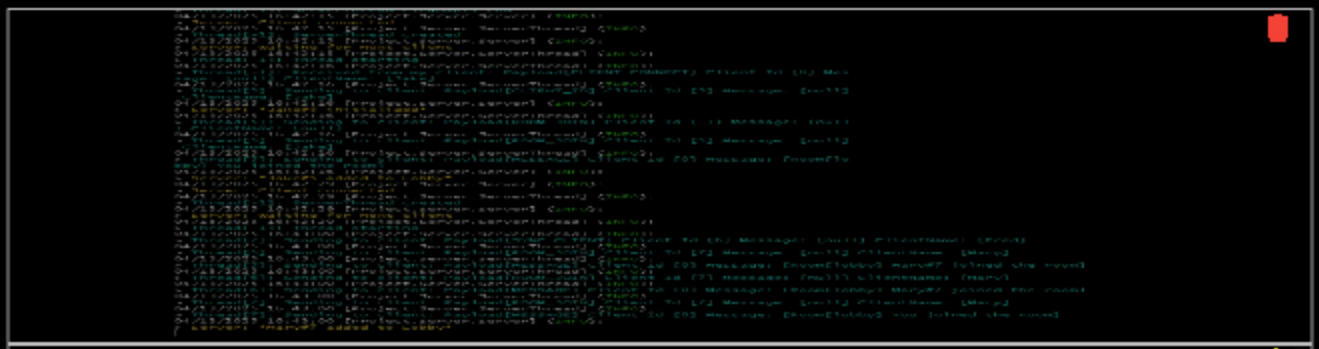
Weight: *50%*

Details:

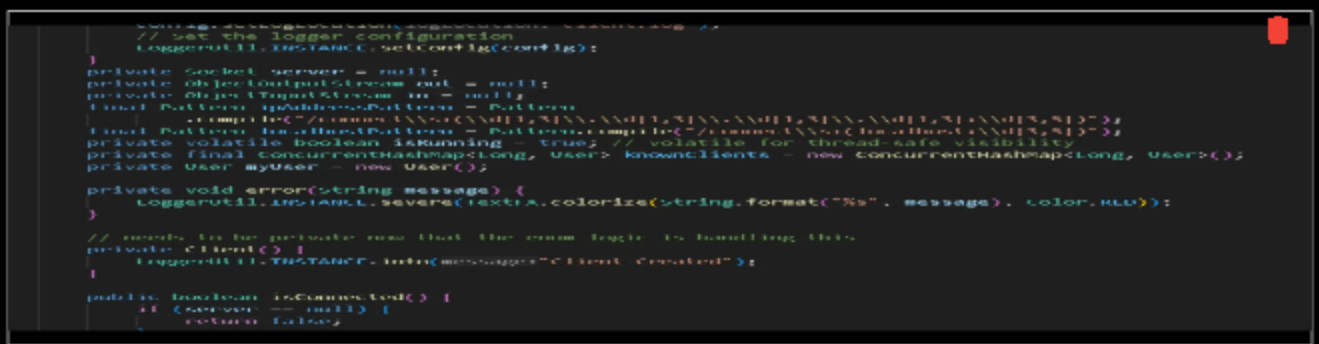
- Show the terminal output of the /name and /connect commands for each of 3 clients (best to use the split terminal feature)
- Output should show evidence of a successful connection
- Show the relevant snippets of code that handle the processes for /name, /connect, and the confirmation of being fully setup/connected



Terminal output of /name and /connect



Output showing evidence



Snippet of code for /connect and /name

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the /name and /connect commands work and the code flow that leads to a successful connection for the client

Your Response:

For /connect the client does / connect localhost:3000 which is matched against the regex inside the code. If it matches, then the method connectToServer is used to connect. As for /name the client name would be passed into the sendName(String name) method. This would be used to send the name over to the server.

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100%

Section #5: (2 pts.) Feature: Client Can Create/j oin Rooms

100%

Task #1 (2 pts.) - Evidence

Combo Task:

Weight: *100%*
Objective: *Evidence*

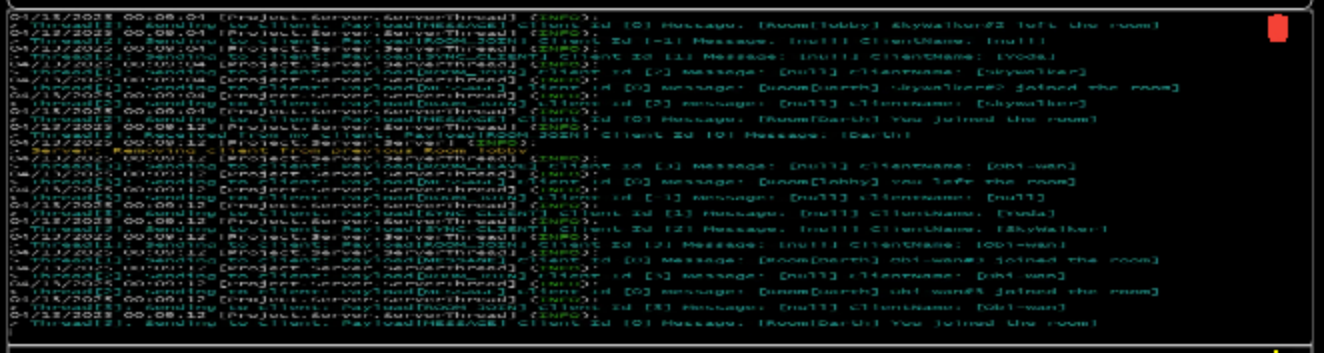
Image Prompt

Weight: *50%*

Details:

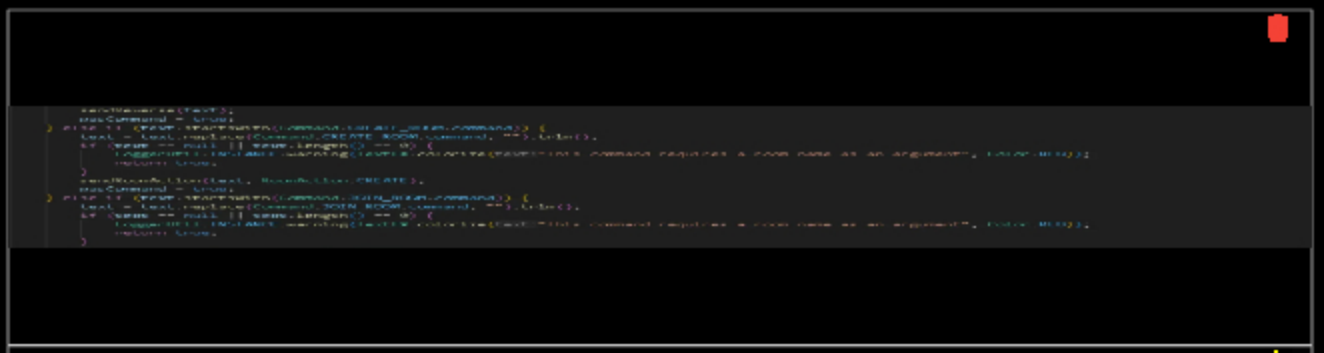
- Show the terminal output of the / createroom and /joinroom
- Output should show evidence of a successful creation/join in both scenarios
- Show the relevant snippets of code that handle the client-side processes for room creation and

joining



Terminal output

Evidence of successful creation/join in both scenario



Snippet of code

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the /createroom and /join room commands work and the related code flow for each

Your Response:

The / createroom the command would be detected and if it is a room is created. Same thing for /joinroom, if it detected the client joins the room.

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100%

Section #6: (1 pt.) Feature: Client Can Send Messages

100%

Task #1 (1 pt.) - Evidence

Combo Task:

Weight: *100%*
Objective: *Evidence*

Image Prompt

Weight: *50%*

Details:

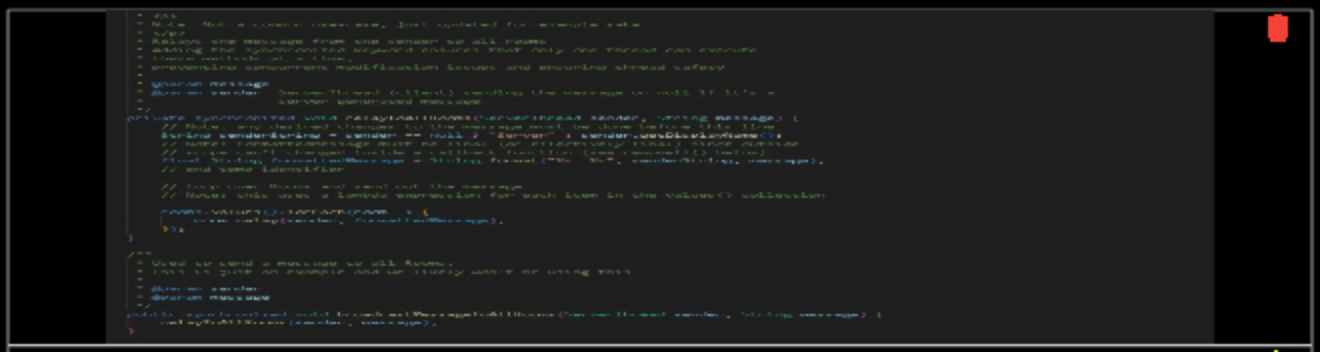
- Show the terminal output of a few messages from each of 3 clients
- Include examples of clients grouped into other rooms
- Show the relevant snippets of code that handle the message process from client to server-side and back

Terminal output of messages

Examples of clients grouped

```java
/**
 * Sends a message to the server
 *
 * @param message
 * @throws IOException
 */
private void sendMessage(String message) throws IOException {
    Payload payload = new Payload();
    payload.setMessage(message);
    payload.setPayloadType(PayloadType.MESSAGE);
    sendToServer(payload);
}
```

snippet of code Client side



server-side snippet code

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Text Prompt

Weight: *50%*

Details:

- Briefly explain how the message code flow works

Your Response:

Section #7: (1 pt.) Feature: Disconnection

Task #1 (1 pt.) - Evidence

Combo Task:

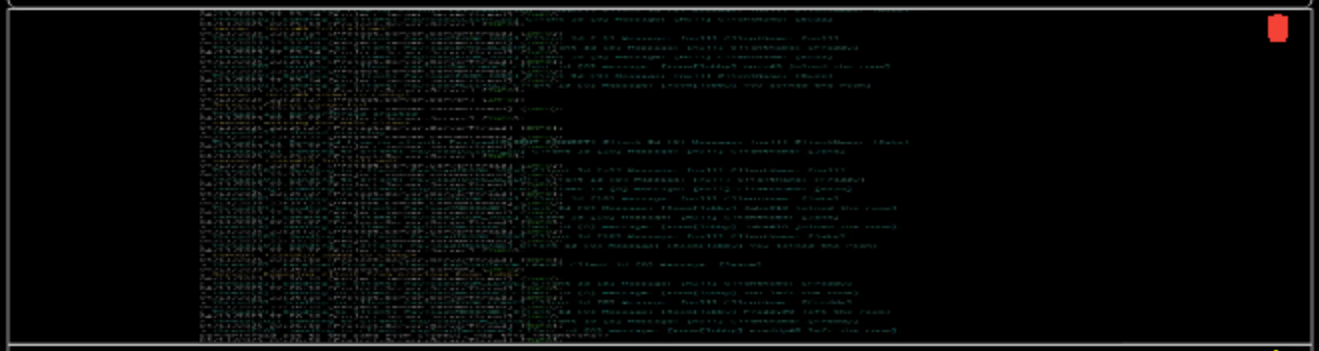
Weight: *100%*
Objective: *Evidence*

Image Prompt

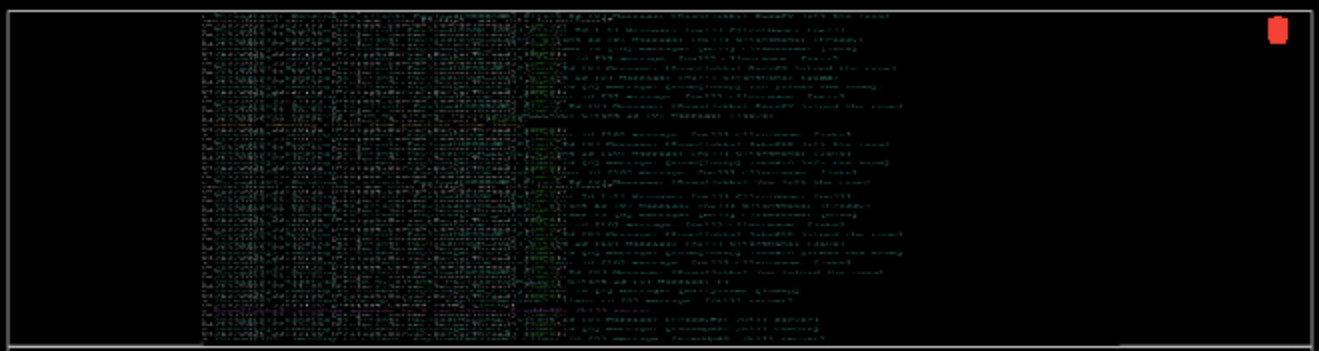
Weight: *50%*

Details:

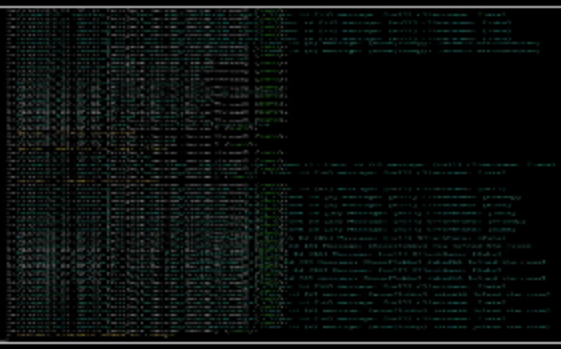
- Show examples of clients disconnecting (server should still be active)
- Show examples of server disconnecting (clients should be active but disconnected)
- Show examples of clients reconnecting when a server is brought back online
- Examples should include relevant messages of the actions occuring
- Show the relevant snippets of code that handle the client-side disconnection process
- Show the relevant snippets of code that handle the server-side termination process



example of clients disconnecting



examples of server disconnecting with clients leaving server and using the command /kill server



clients reconnecting when a server is brought back

```
    }

    /**
     * Sends a disconnect action to the server
     *
     * @throws IOException
     */
    private void sendDisconnect() throws IOException {
        Payload payload = new Payload();
        payload.setPayloadType(PayloadType.DISCONNECT);
        sendToServer(payload);
    }
```

Snippets if code that handle the client side

```
    private Server() {
        Runtime.getRuntime().addShutdownHook(new Thread(() -> {
            Info(message:"JVM is shutting down. Perform cleanup tasks.");
            shutdown();
        }));
    }

    /**
     * Gracefully disconnect clients
     */
    private void shutdown() {
        try {
            // chose removeIf over forEach to avoid potential
            // ConcurrentModificationException
            // since empty rooms tell the server to remove themselves
            rooms.values().removeIf(room -> {
                room.disconnectAll();
                return true;
            });
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
```

snippet of code that handle the server side

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Section #8: (1 pt.) Misc

100%

Task #1 (0.25 pts) - Show the proper workspace structure with the

Task #1 (0.25 pts.) - Show the proper workspace structure with the

Image Prompt

Weight: *25%*
Objective: *Show the proper workspace structure with the new Client, Common, Server, and Exceptions packages*

Proper Workspace

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100%

Task #2 (0.25 pts.) - Github Details

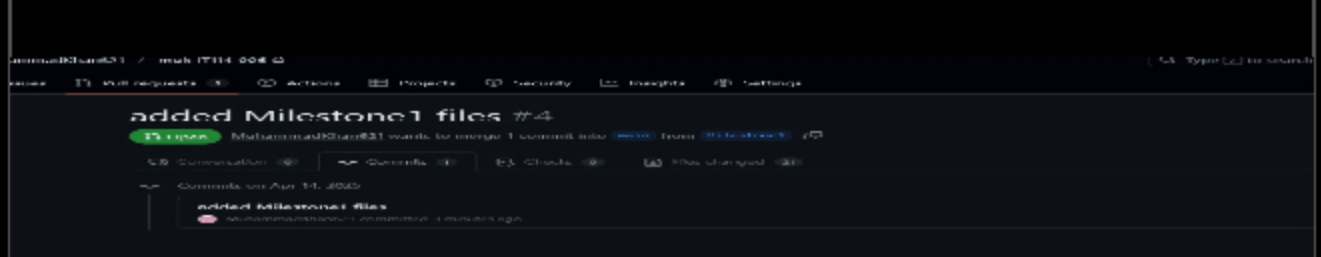
Combo Task:

Weight: *25%*
Objective: *Github Details*

Image Prompt

Weight: *60%*

Details:
From the Commits tab of the Pull Request screenshot the commit history



Commit history

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Url Prompt

Weight: *40%*

Details:
Include the link to the Pull Request (should end in `/pull/#`)

URL #1
https://github.com/MuhammadKhan621/muk-IT114-006/pull/4/commits

URL
https://github.com/MuhammadKha

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100%

Task #3 (0.25 pts.) - WakaTime - Activity

Image Prompt

Weight: *25%*
Objective: *WakaTime - Activity*

Details:

- Visit the WakaTime.com Dashboard
- Click `Projects` and find your repository
- Capture the overall time at the top that includes the repository name
- Capture the individual time at the bottom that includes the file time
- Note: The duration isn't relevant for the grade and the visual graphs aren't necessary

individual time

100% Task #4 (0.25 pts.) - Reflection

Weight: *25%*
Objective: *Reflection*

Sub-Tasks:

100% Task #1 (0.33 pts.) - What did you learn?

Text Prompt

Weight: *33.33%*
Objective: *What did you learn?*

Details:
Briefly answer the question (at least a few decent sentences)

Your Response:

I learned how to start up the server, create clients, give names to those clients, create rooms, leave rooms, also learned how /listrooms would show the lists of rooms, quiting would terminate the clients and also doing /kill would shutdown server. I also learned how some commands happen between client and server classes.

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100% Task #2 (0.33 pts.) - What was the easiest part of the assigni

Text Prompt

Text Prompt

Weight: *33.33%*
Objective: *What was the easiest part of the assignment?*

Details:
Briefly answer the question (at least a few decent sentences)

Your Response:

The easiest part of the assingment learning how to use each commands when performing the Milestone1 assingment. Another easy part was understanding how the server-side handles multiple connected clients.

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100%

Task #3 (0.33 pts.) - What was the hardest part of the assign

Text Prompt

Weight: *33.33%*
Objective: *What was the hardest part of the assignment?*

Details:
Briefly answer the question (at least a few decent sentences)

Your Response:

The hardest part was understanding some parts of the server class.(not all) Another hard part was understanding some part of the client class(not all).

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