Submission Worksheet

Submission Data

Course: IT114-005-F2025
Assignment: IT114 - Milestone 3 - Trivia
Student: Nilkanth D. (nhd5)
Status: Submitted | **Worksheet Progress:** 100%
Potential Grade: 10.00/10.00 (100.00%)
Received Grade: 0.00/10.00 (0.00%)
Started: 12/11/2025 11:56:08 PM
Updated: 12/11/2025 11:56:08 PM
Grading Link: https://learn.ethereallab.app/assignment/v3/IT114-005-F2025/it114-milestone-3-trivia/grading/nhd5
View Link: https://learn.ethereallab.app/assignment/v3/IT114-005-F2025/it114-milestone-3-trivia/view/nhd5

Instructions

1. Refer to Milestone3 of Trivia
    1. Complete the features
2. Ensure all code snippets include your ucid, date, and a brief description of what the code does
3. Switch to the `Milestone3` branch
    1. `git checkout Milestone3`
    2. `git pull origin Milestone3`
4. Fill out the below worksheet as you test/demo with 3+ clients in the same session
5. Once finished, click "Submit and Export"
6. 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 Milestone3`
    4. On Github merge the pull request from `Milestone3` to `main`
7. Upload the same PDF to Canvas
8. Sync Local
    1. `git checkout main`
    2. `git pull origin main`

Section #1: (1 pt.) Core Ui

Progress: 100%

--- Section Collapsed ---

Section #2: (2 pts.) Project Ui

Progress: 100%

--- Section Collapsed ---

Section #3: (4 pts.) Project Extra Features

Progress: 100%

Task #1 (2 pts.) - Category Selection

Progress: 100%

Details:

- Categories can be toggled by session creator

Part 1:

Progress: 100%

Details:

- Show the Ready Check screen with the option for the host (3+ clients must be visible) - Show the related code that makes this interactable only for the host
- Show the code related to having the server-side utilize only the chosen categories

```java
/** Draws & removes a random question from the pool, respecting enabledCategories if possible */
private Question drawRandomQuestion() {
    if (questionPool.isEmpty()) return null;

    ArrayList<Integer> eligible = new ArrayList<>();
    for (int i = 0; i < questionPool.size(); i++) {
        Question q = questionPool.get(i);
        // Only include questions from enabled categories
        if (enabledCategories.isEmpty() || enabledCategories.contains(q.category)) {
            eligible.add(i);
        }
    }

    if (eligible.isEmpty()) {
        // Fallback if no eligible questions
        int idx = rng.nextInt(questionPool.size());
        return questionPool.remove(idx);
    } else {
        // Select from eligible questions only
        int poolIndex = eligible.get(rng.nextInt(eligible.size()));
        return questionPool.remove(poolIndex);
    }
}
```

Show the related code that makes this interactable only for the host

```
void handleCategories(ServerThread sender, String csv) {
sessionActive) {  // Check 1: Must be before game starts
sender.sendMessage(Constants.DEFAULT_CLIENT_ID,
        "Categories can be changed only before the game starts.");
return;

sender.getClientId() != hostClientId) {  // Check 2: Must be host
sender.sendMessage(Constants.DEFAULT_CLIENT_ID,
        "Only the session host can change categories.");
return;


tedCategories.clear();
sv == null || csv.trim().isEmpty()) {
sender.sendMessage(Constants.DEFAULT_CLIENT_ID,
        "No categories provided. Keeping previous selections: " + enabledCategories);
return;

ng[] parts = csv.split(",");
(String p : parts) {
String cat = p.trim().toLowerCase();
if (!cat.isEmpty()) {
    enabledCategories.add(cat);  // Add to enabled set
}
```

Show the related code that makes this interactable only for the host

```java
private long hostClientId = Constants.DEFAULT_CLIENT_ID;

// Categories enabled by host during ready check
private final Set<String> enabledCategories = new HashSet<>();
```

File: `Server/GameRoom.java`
Lines: 220–223 (Host Assignment)

```java
if (hostClientId == Constants.DEFAULT_CLIENT_ID) {
    hostClientId = id;  // First ready player becomes host
    broadcast(null, sender.getDisplayName() + " is the session host.");
}
```

Show the related code that makes this interactable only for the host

Show the related code that makes this interactable only for the host

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Part 2:

Progress: 100%

Details:

- Briefly explain the code for the host's option to toggle this feature
- Briefly explain the code for handling the selected categories (from the UI to the server-side)

Your Response:

When a user selects Away in the UI, the radio button's action listener triggers a status-change method that sends a /away command to the server. The server processes this in handleAway(), updates the user's status, and includes the new away=true flag in the next UserListPayload. Clients receive this payload, rebuild their user list, and the UI shows the player as Away. On the server side, Away users are ignored in round logic: when determining who can answer, award points, or advance the game, the server checks if (awayThisRound.get(id)) continue; which skips the user entirely. This prevents Away players from locking in answers or affecting scoring until they return.

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Task #2 (2 pts.) - Add New Questions

Progress: 100%

Details:

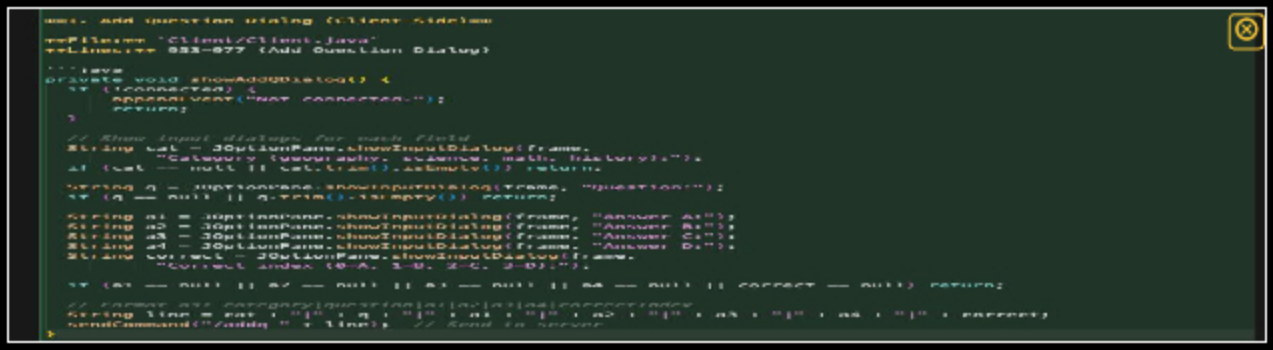
- Users can create new questions
  - Question text
  - Category
  - 2-4 answers
  - Correct answer
  - Gets saved server-side in a file
  - Can be done outside of an active session (i.e., ready check)

Part 1:

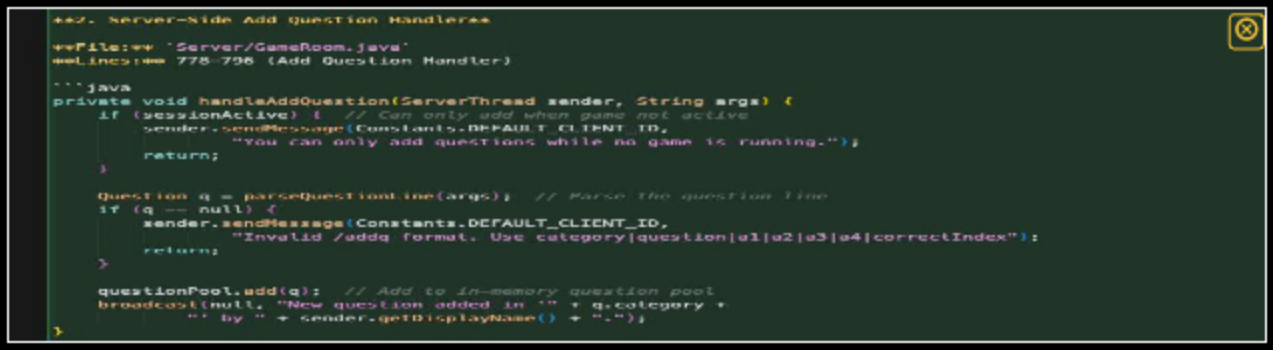
Progress: 100%

Details:

- Show a few variations of the screen as new questions are added
- Show the updated/generated file when a question is created
- Show an example of the new question in play



code of new added questions



code of new added questions

code of new added questions

code of new added questions

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Part 2:

Progress: 100%

Details:

- Briefly explain the code for this feature from the UI to updating the server-side file

Your Response:

When the user chooses to add a question, the UI opens showAddQDialog(), which gathers the category, question text, four answers, and the correct index through a series of input dialogs. The client then formats these values into a single pipe-delimited string and sends it to the server using /. The server receives this command in handleMessage(), calls handleAddQuestion(), and first verifies that no game session is active. It then parses the pipe-delimited string into a Question object and adds it to the server's in-memory questionPool. The server broadcasts a confirmation message to all players and, if file persistence is enabled, appends the new question to questions.txt for future sessions.

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Section #4: (2 pts.) Project General Requirements

Progress: 100%

Task #1 (1 pt.) - Away Status

Progress: 100%

Details:

- Clients can mark themselves away and be skipped in turn flow but still part of the game
- The status should be visible to all participants
- A message should be relayed to the Game Events Panel (i.e., Bob is away or Bob is no longer away)
- The user list should have a visual representation (i.e., grayed out or similar)

Part 1:

Progress: 100%

Details:

- Show the UI button to toggle away
- Show the related code flow from UI to server-side back to UI for showing the status
- Show the related code flow for sending the message to Game Events Panel
- Show various examples across 3+ clients of away status (including Game Events Panel messages)
- Show the code that ignores an away user from turn/round logic

```
**File:** `Server/GameRoom.java`
**Lines:** 524–528 (Answer Handler — Prevents Away Users)

```java
if (away.getOrDefault(id, false)) {
    sender.sendMessage(Constants.DEFAULT_CLIENT_ID,
            "You are marked AWAY. Use /back to participate again.");
    return;  // Prevent away users from answering
}
```

File: `Server/GameRoom.java`
Lines: 572–580 (Lock Check — Skips Away)

```java
private boolean allActivePlayersLocked() {
    for (ServerThread st : getClients()) {
        long id = st.getClientId();
        if (spectator.getOrDefault(id, false)) continue;
        if (away.getOrDefault(id, false)) continue;  // Skip away users
        if (!lockedThisRound.getOrDefault(id, false)) return false;
    }
    return true;
}
```
```

project general requirements

```
**File:** `Server/GameRoom.java`
**Lines:** 234–251 (Ready Check — Skips Away)

```java
private boolean allActivePlayersReady() {
    int activeCount = 0;
    int readyCount = 0;

    for (ServerThread st : getClients()) {
        long id = st.getClientId();
        if (spectator.getOrDefault(id, false)) continue;
        if (away.getOrDefault(id, false)) continue;  // Skip away users

        activeCount++;
        if (ready.getOrDefault(id, false)) {
            readyCount++;
        }
    }

    // Need at least 2 active players and all must be ready
    return activeCount >= 2 && activeCount == readyCount;
}
```
```

project general requirements

```
**3. Server-Side Away Handler**

**File:** `Server/GameRoom.java`
**Lines:** ~ 353–363 (Away Handler)

```java
private void handleAway(ServerThread sender, boolean isAway) {
    long id = sender.getClientId();
    away.put(id, isAway);  // Update away map

    if (isAway) {
        broadcast(null, sender.getDisplayName() + " is now away.");  // Broadcast message
    } else {
        broadcast(null, sender.getDisplayName() + " is back.");
    }

    sendUserListToAll();  // Update users list with away status
}
```

2. User List Display (Away Indicator)

File: `Client/User.java`
Lines: 25–34 (User Display Format)

```java
public String toDisplayString() {
    StringBuilder sb = new StringBuilder();
    sb.append(name).append(" (").append(id).append(") ");
    sb.append("[ pts: ").append(points);
    if (locked) sb.append(" LOCKED");
    if (away) sb.append(" AWAY");  // Away indicator
    if (spectator) sb.append(" SPECTATOR");
    return sb.toString();
}
```
```

project general requirements

```
**1. Away Checkbox UI**

**File:** `Client/Client.java`
**Lines:** 415–427 (Away Checkbox Creation)

```java
private JCheckBox createAwayCheckBox() {
    JCheckBox box = new JCheckBox("Away");
    box.setOpaque(false);
    box.setForeground(new Color(30, 60, 120));
    box.addActionListener(e -> toggleAway());  // Toggle handler
    TruthFX.setSubtleTrFont(box);
    return box;
}
```

File: `Client/Client.java`
Lines: 928–944 (Toggle Away)

```java
private void toggleAway() {
    isAway = chkAway.isSelected();
    if (isAway) sendCommand("/away");      // Mark as away
    else sendCommand("/back");             // Mark as back
}
```
```

project general requirements

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Part 2:

Progress: 100%

Details:

- Briefly explain the code flow for the away action from UI to server-side and back to UI
- Briefly explain how the server-side ignores the user from turn/round logic

Your Response:

When the user checks the Away box, its action listener calls toggleAway(), which sends either /away or /back to the server based on the checkbox state. The server receives this in handleMessage(), updates the internal away map, broadcasts a status message, and sends an updated UserListPayload containing each player's away flag. The client receives this payload in handleUserList(), rebuilds the user list with the updated away statuses, and the UI displays "[AWAY]" next to the player.

Server-side, away users are fully ignored in gameplay logic: ready checks and lock-in checks skip users marked away, and handleAnswer() blocks them from answering. This allows the game to proceed normally while excluding away players from all turn and scoring logic.

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Task #2 (1 pt.) - Spectators

Progress: 100%

Details:

- Spectators are users who didn't mark themselves ready
  - Optionally you can include a toggle on the Ready Check page
- The can see all chat but are ignored from turn/round actions and can't send messages
- Spectators will have a visual representation in the user list to distinguish them from other players
- A message should be relayed to the Game Events Panel that a spectator joined (i.e., during an in-progress session)

Part 1:

Progress: 100%

Details:

- Show the UI indicator of a spectator (visual and message)
- Show the related code flow from UI to server-side back to UI for showing the status
- Show the related code flow for sending the message to Game Events Panel
- Show various examples across 3+ clients of spectator status (including Game Events

Panel messages)

- Show the code that ignores a spectator from turn/round logic
- Show the code that prevents spectators from sending messages (server-side)
- Show the spectator's view of the session
- Show the code related to the spectator seeing the session data (including things participants won't see)

7. User List Display (Spectator Indicator)

File: `Client/User.java`
Line: 32 (Spectator Indicator)

```java
if (spectator) sb.append(" [SPECTATOR]");  // Shows [SPECTATOR] in user list
```

related code flow from UI to server-side back to UI for showing the status

related code flow for sending the message to Game Events Panel

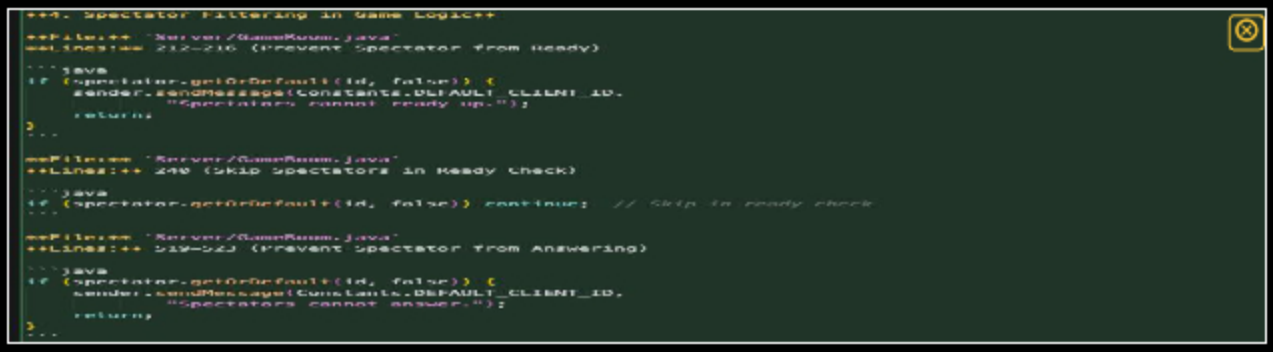
5. Prevent Spectator from Chatting

File: `Client/Client.java`
Lines: 876–880 (Client-Side Chat Prevention)

```java
private void sendChat() {
  if (!connected) return;

  // Spectators cannot chat
  if (isSpectator) {
      appendEvent("Spectators cannot chat.");
      return;  // Prevent sending
  }
  // ... send chat message ...
}
```

the code that ignores a spectator from turn/round logic



the code that prevents spectators from sending messages (server-side)

the code related to the spectator seeing the session data (including things participants won't see)

the spectator's view of the session

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Part 2:

Progress: 100%

Details:

- Briefly explain the code flow for the spectator logic from server-side and to UI
- Briefly explain how the server-side ignores the user from turn/round logic
- Briefly explain the logic that prevents spectators from sending a message
- Briefly explain the logic that shares extra details to the spectator (information normal participants won't see such as the correct answer)

Your Response:

When a user selects Spectator mode, the client sends /spectate and the server sets their spectator flag, clears their ready state, broadcasts the update, and includes the spectator status in the next UserListPayload. Clients receive this payload, rebuild their user list, and show "[SPECTATOR]" in the UI. Server-side, spectators are ignored in all turn logic—ready checks, lock checks, and answer handling all skip users marked as spectators, and handleAnswer() rejects any attempt to answer. The client also prevents spectators from chatting; sendChat() checks isSpectator and blocks outgoing messages. Spectators still receive all game broadcasts, including questions, lock-in events, points, and the correct answer, allowing them full visibility while remaining non-participants.

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Section #5: (1 pt.) Misc

Progress: 100%

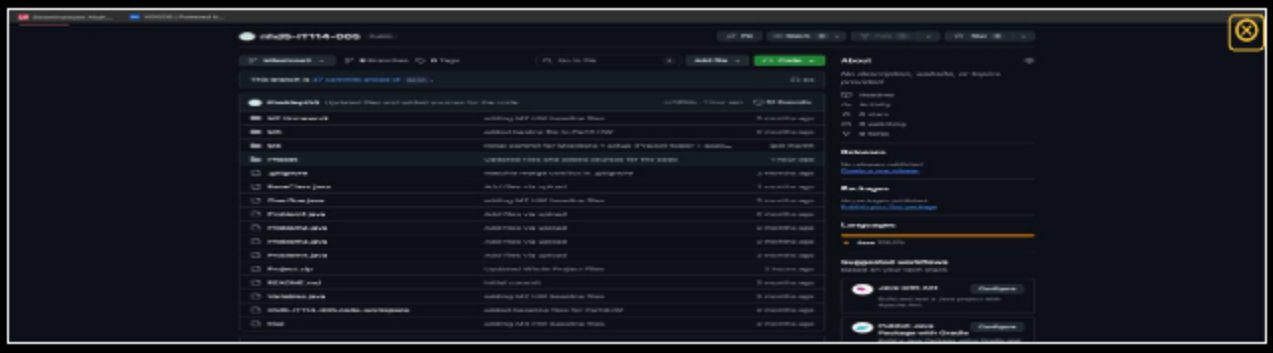
Task #1 (0.33 pts.) - Github Details

Progress: 100%

Part 1:

Progress: 100%

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



commit histroy

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Part 2:

Progress: 100%

Details:
Include the link to the Pull Request for Milestone3 to main (should end in `/pull/#`)

URL #1
https://github.com/Pixeldepth5/nhd5-IT114-005/commits/393dcfb67c3fe23a9d3e9f96700a0e28d72c0630

URL
https://github.com/Pixeldepth5/n

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Task #2 (0.33 pts.) - WakaTime - Activity

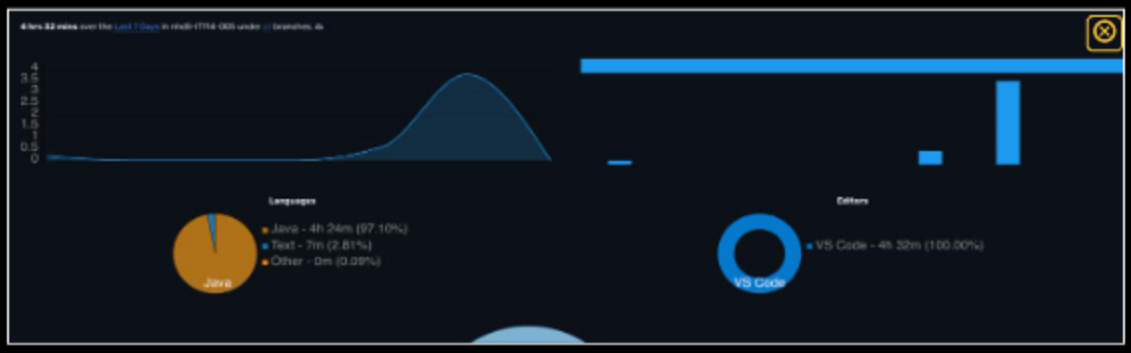
Progress: 100%

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 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

Wakatime



Wakatime

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Task #3 (0.33 pts.) - Reflection

Progress: 100%

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

Progress: 100%

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

Your Response:

In the project, I learned how to develop a multi-threaded client-server application using Java sockets and Swing GUI. I got hands-on experience with real-time communication among multiple clients and a server, handling concurrent connections, and synchronizing game state across participants. This project taught me how to design a messaging system based on payloads, how to manage game logic on the server side, and how to create responsive user interfaces dynamically from the server events. I also learned how to manage the edge cases

like spectator handling, away status, and category filtering. Above all, I learned how to structure a networked application with proper separation of concerns between client UI logic and server-side game management, enabling data consistency across all the connected clients.

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Task #2 (0.33 pts.) - What was the easiest part of the assignment?

Progress: 100%

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

Your Response:

The easiest part was working with the data structures and payload classes. Creating the User class, Payload classes, and UserListPayload was straightforward since they were simple data containers with getters and setters. The toDisplayString() method for formatting user information was easy to implement. Additionally, parsing and formatting question data using pipe-delimited strings was simple and didn't require complex parsing logic. These foundational data structures provided a solid base for the more complex networking and game logic features.

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

Progress: 100%

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

Your Response:

The hardest part was implementing the game logic flow, especially managing the ready check system and ensuring games started only when appropriate conditions were met. Determining when all active players (excluding spectators and away users) were ready required careful filtering logic. The round management, including timer synchronization, answer validation, and points calculation based on answer order, was complex. Handling edge cases like players joining mid-game, becoming spectators, or marking themselves away during an active round required extensive conditional logic throughout the

during an active round required extensive conditional logic throughout the codebase. Ensuring the game state reset properly between rounds while maintaining player points was also challenging.

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