System Documentation: Estimate of Person-Hours for Battleship Game Development

Team Members:

- Yadhu Tharakeswaran
- Sanketh Reddy
- Jawad Ahsan
- Kemar Wilson
- Devarth Patel

Project Overview:

The project involves developing a simple battleship game that will include key components such as game logic, user interface, and testing. The estimate of person-hours is broken down into tasks that each team member will handle.

Tasks Breakdown and Estimation:

Task	Member Responsible	Estimated Hours	Details
1. Requirements Gathering	Entire Team	2-3 Hours	Discuss game rules, features, grading rubric, meet times, roles, development cycle, GTA meeting times and technical stack.
2. Game Review	Entire Team	2 Hours	Designing the new features and AI, dividing up the game parts into sprintable assignments that each member can do. The core class of the game AI and basic mechanics.
3. Game AI Logic	Yadhu and Kemar	10-15 Hours	Implement the AI classes. Implement it into the game
4. AI Testing	Sanketh & Dev	2-3 Hours	Test the AI, play against it, analyze test cases and report any bugs/errors.

5. Custom Feature	Jawad, Sanketh, Dev	5-7 Hours	Creating the scorecard and integrating the display of it into the final game.
6. Testing	Entire Team	2-4 Hours	Test gameplay, flag any bugs and send it to debuggers.
7. Debugging	Yadhu, Kemar	5 Hours	Take a look at new bugs, areas if error and then go back and fix the bugs in the code itself. Testing again by themselves to make sure it works.
8. Documentation	Dev	2 Hours	Sharing the documentation, keeping track of attendance and the work done by members, communication of timings, meetings and collaborations. Creating the documentation according to the rubric.
9. Final Deployment	Entire Team	2 Hours	Finalizing the system, integrating all components and making sure it is in deployable state.

Total Estimate:

- Total Person-Hours: ~43 Hours

Basis of Estimation:

1. Past Experience: Each team member has good experience in coding simple games, which helped us gauge the time needed for specific tasks as well as identifying each person's strengths and weaknesses, we applied this in project 1 and then went ahead and used the same system to divide up the tasks in project 2. We already had the base code from another team so we decided to do something simpler and integrated the AI and make a simple scorecard.

2. Team Availability and Conflict of Opinions: Team members have limited availability due to other classes so meetings and collaborations could be short, postponed or even canceled, which must be accounted for as it can lead to delays. A conflict of opinions and creative differences could cause a productive stalemate and prolong the initial phases of development.
3. Scope of Project: The game has straightforward requirements, which have all been set and defined in the instructions and rubric provided to us at the start of the project which made it easy to divide up the work into suitable roles, (AI integration, logic development for AI, Custom Feature, feature integration), keeping the task size relatively small and quick to iterate over.
4. Task Complexity: We estimated tasks involving AI logic development and its integration to take longer due to their design and coordination challenges since we have to be specific with moves, ship size and coordination, so it could cause bugs and delays.
5. Team Collaboration: Tasks such as testing and final integration involve the whole team, leading to more person-hours and all of which is dependant on availability.

This estimate assumes each person works on their respective tasks in parallel, with overlaps in tasks like testing, debugging and integration.