

## 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 Design	Yadhu & Jawad	8 Hours	Designing the basic skeleton of the game, dividing up the game parts into sprintable assignments that each member can do. The core class of the game and basic mechanics.
3. Game Logic	Entire Team (division of work)	10-15 Hours	Implement the core classes defined previously with game logic such as the ship placement, sizing, hit detection, win/loss conditionals, move counts, etc

4. UI Design	Sanketh & Dev	5-8 Hours	Create and integration of the grid display. Input system for moving and setting the ships up on the board.
5. Backend Integration	Jawad	5 Hours	Connecting the user interface with the game logic such that the classes defined are linked to add the final parts of the game.
6. Testing	Yadhu & Dev	2-4 Hours	Test gameplay, flag any bugs and send it to debuggers.
7. Debugging	Sanketh & Yadhu	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 & Kemar	6 Hours	Create a repository, 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: ~56 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, these were the basis of assigning roles and were fully utilized.
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, (turn-based logic, grid interaction), keeping the task size relatively small and quick to iterate over.
4. Task Complexity: We estimated tasks involving user interface and logic 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, UI.