Original Requirements:

1. Sinking a ship.
2. Winning a game (Opponent's Surrender)

New Requirements:

1. Finding ships with sonar pulses.
2. Sinking ships via hitting the captain's quarters.

Sequence Diagram Use Case:

- Sinking a ship

Use Case Descriptions

Original Requirements:

For our first use case from the original requirements, we chose the sinking a ship use case. For sinking a ship, the player needs to damage their opponent's ship enough to cause it to sink. However, this use case varies based on the type of ship. The minesweeper, destroyer, and battleship respectively have two, three, and four bars of health. As a result, our diagram must account for this by checking the type of ship and its remaining health. When a particular ship's health has been fully depleted, the ship will then sink.

For our second use case from the original requirements, we chose the winning a game (Opponent's Surrender) use case. To cause an opponent's surrender, the player must sink all of the opponent's ships. An opponent's surrender happens when the player has fully depleted all of their opponent's health across their three ships. Once this happens, the player wins the game, and their opponent loses. As a result, our diagram must account for this by checking that all ships have been sunk, which causes the player to win, and the opponent to lose.

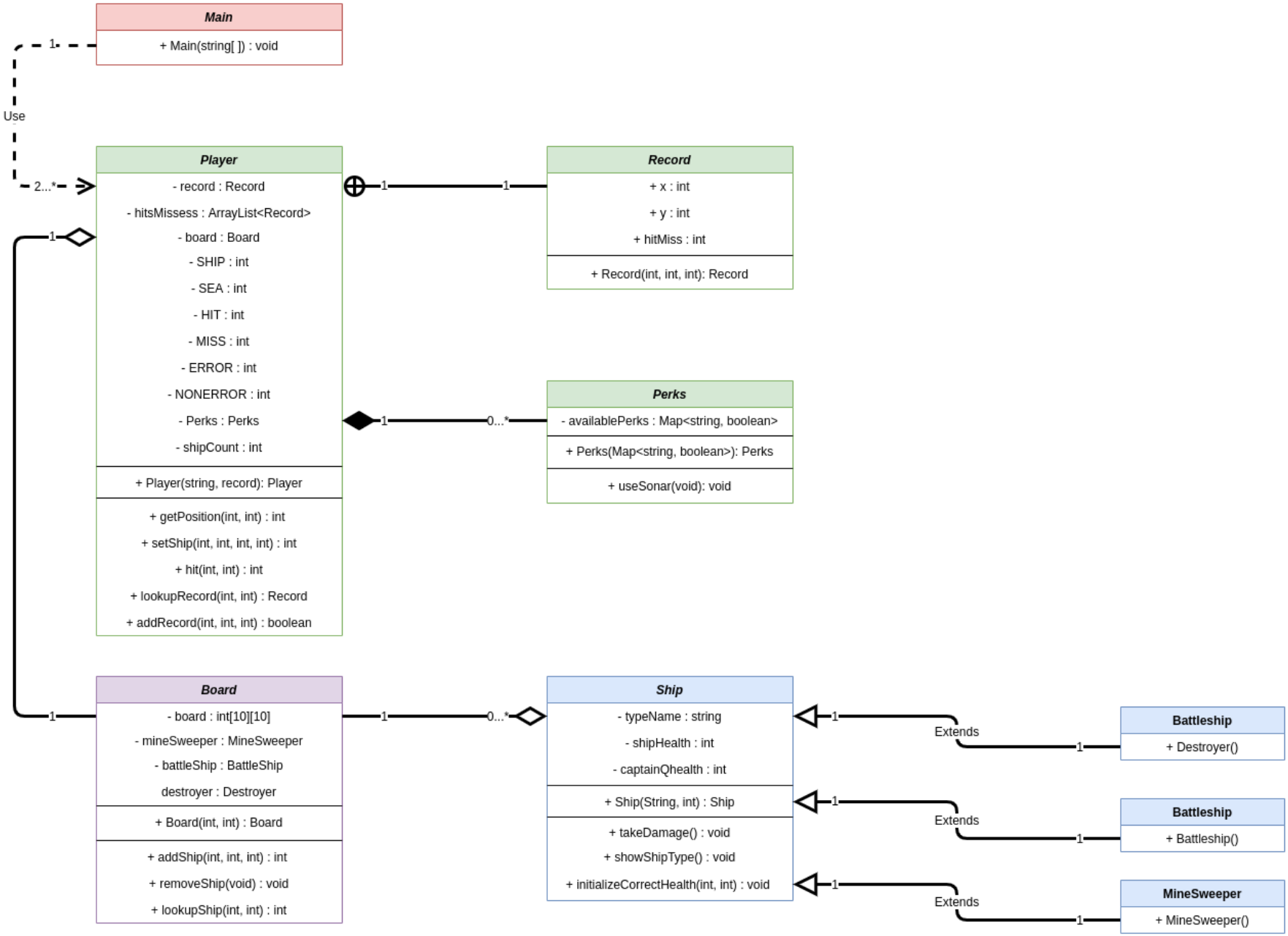
New Requirements:

For our first use case from the new requirements, we chose locating ships with the sonar pulse. In this use case, the sonar pulse only becomes available after a player has successfully sunk their opponent's first ship. As a result, our diagram needs to account for when a player sinks their opponent's first ship, as well as account for the availability of their sonar pulse. Also, if a player chooses to use their sonar pulse, the game must reveal a three cell by three cell area of the grid. Additionally, free cells and occupied cells must be annotated differently so the player can tell where the ships are.

For our second use case from the original requirements, we chose sinking ships via hitting the captain's quarters. In this use case, if the player hits the captain's quarters two times in a row, the ship sinks. The only ship that is an exception here is the minesweeper. The minesweeper ship sinks if the captain's quarters are hit once. As a result, our diagram must account for this by checking the type of ship and checking if the hit location was indeed the captain's quarters. Additionally, if the captain's quarters of the minesweeper are hit once, the ship sinks. In contrast, the battleship and destroyer captain's quarters must be hit twice to cause a sink.

Last, our UML and Sequence Diagrams can be found on the next two pages.

UML Class Diagram



Sequence Diagram Use Case: Sinking a Ship