**Battleship Game Report**

**1. Introduction:**

The goal of this coursework is to implement a text-based version of the classic game Battleship. In this game, two players take turns to guess the coordinates of each other's ships on a grid. The application provides an interactive environment for players to place their ships and engage in strategic battles.

**Running the Program:**

To run the program, ensure you have Python installed on your system. Then, download the provided code file (**battleship.py**) along with the **grid\_size.txt** and **winner.txt** files. Place them in the same directory. Finally, execute the command **python battleship.py** in your terminal or command prompt.

**Using the Program:**

* Upon running the program, it prompts players to input coordinates to target their opponent's ships.
* Players take turns guessing coordinates until one player sinks all of the opponent's ships.
* The game announces the winner and records it in the **winner.txt** file.

**2. Body/Analysis:**

**Ship Classes:**

* The program defines ship classes representing different types of ships, each with its own size.
* The **Ship** class includes methods to track hits and check if the ship is sunk.
* Subclasses like **Carrier**, **Battleship**, etc., inherit from **Ship** and specify their sizes.

**BattleshipGame Class:**

* This class manages the game state and logic.
* It reads the grid size from a file, initializes player grids and ships, and keeps track of hits.
* Methods like **place\_ship** randomly place ships on the grid.
* **take\_turn** allows players to input coordinates to attack opponent ships.
* The **play\_game** method orchestrates the gameplay by alternating turns until a player wins.

**3. Results and Summary:**

* **Results:** The program successfully implements the Battleship game in a text-based format, allowing players to engage in strategic battles.
* **Challenges Faced:** Implementing the ship placement algorithm and managing game state transitions posed challenges, but were overcome with careful design.
* **Summary:** This coursework achieved the goal of creating an interactive Battleship game. Players can enjoy the classic gameplay experience in a simple text interface.
* **Future Prospects:** The program could be enhanced with features like graphical visualization, multiplayer support over networks, and more advanced AI opponents for single-player mode. Additionally, improvements in user interface and input validation can enhance user experience.