

Battleship Game

by Marina Novikova (2023230731)

Structures

Coordinate

Represents the coordinates (row and column) on the game board.

```
// Structure to represent coordinates on the game board
typedef struct {
    int row;
    int y;
} Coordinate;
```

Ship

Represents a ship on the game board, including its coordinates and hit status.

```
// Structure to represent a ship
typedef struct {
    Coordinate cells;
    int isHit;
} Ship;
```

Game

Represents the overall game state, including player and enemy boards, ships, player's username, and the current game ID.

```
// Structure to represent the game state
typedef struct {
    char playerBoard[BOARD_SIZE][BOARD_SIZE];
    char enemyBoard[BOARD_SIZE][BOARD_SIZE];
    Ship playerShips[5];
    Ship enemyShips[5];
    char username[MAX_USERNAME_LENGTH];
    int current_Id;
} Game;
```

Functions

Game Initialization

```
void initializeGame(Game* game)
```

Initializes the game state, setting both player and enemy boards to empty sea tiles.

```
void start_logo()
```

Displays the start logo for the game.

```
void start_menu()
```

Displays the main menu options for the player.

Display

```
void printBoard(const char board[BOARD_SIZE][BOARD_SIZE])
```

Prints the game board, including column labels and row numbers.

Ship Placement

```
void placePlayerShips(Game* game)
```

Allows the player to place their ships on the game board.

```
void placeEnemyShips(Game* game)
```

Randomly places enemy ships on the game board.

Game Process

```
void game_procces(Game* game, int* playerShipNumber, int* enemyShipNumber)
```

Manages the main game loop, including player and enemy turns.

Save and Load

```
void saveGame(char PlayerBoard[BOARD_SIZE][BOARD_SIZE], char  
            EnemyBoard[BOARD_SIZE][BOARD_SIZE], int current_Id, char  
            username[MAX_USERNAME_LENGTH])
```

Saves the current game state to a file.

```
int loadGame(char PlayerBoard[BOARD_SIZE][BOARD_SIZE], char  
            EnemyBoard[BOARD_SIZE][BOARD_SIZE], int* current_Id, char  
            username[MAX_USERNAME_LENGTH], int GameId)
```

Loads a saved game state from a file.

Main Function

```
int main()
```

The main function includes menus, game initialization, and calling game processes.

Menu:



Game Process:

```
> Press 1 for a New Game
> Press 2 to Load the Game
> Press 3 for Exit

1

Enter your name:
marina

Now it's time to place your ships!
Choose coordinates (for example '1 A'):
1 A

Your board:

A B C D E F G H
1 * . . . . . .
2 . . . . . . .
3 . . . . . . .
4 . . . . . . .
5 . . . . . . .
6 . . . . . . .
7 . . . . . . .
8 . . . . . . .

Choose coordinates (for example '1 A'):
```

```
Choose coordinates (for example '1 A'): 7 H  
Yes, you hit an enemy ship!  
The Bot missed (8 8)  
Game saved with ID 1955592444  
  
**Enemy's board**
```

A B C D E F G H

	A	B	C	D	E	F	G	H
1	0
2	0	.	.
3	.	0
4	.	0	.	0
5	0	0	.
6	.	0
7	X
8	.	0	.	.	0	.	0	.

Your's board

Load the Game:

Exit:

```
Choose a game:  
> Press 1 to List all Saved Games  
> Press 2 to Load the Last Game by ID  
> Press 3 to Search Games by Username  
> Press 4 to Return to Main Menu  
  
4  
  
(Returning to the Main Menu)  
  
*****  
*          Main Menu          *  
*****  
  
> Press 1 for a New Game  
> Press 2 to Load the Game  
> Press 3 for Exit  
  
3  
  
See you!
```