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Foundations of Programming
Programming Assignment 3: Algorithm

1. Setup
    a. Import random library
    b. Initialize grid size to 9
    c. Initialize number of ships to 5 in ship_num variable
    d. Initialize two dimensional array in variable twoDarry
        i. Place a dot in each location on the grid
2. Call welcome function:
    a. Display welcome message with rules and legend
3. Call setupShips function
    a. Require an array as a parameter
    b. For each ship, get a random number in range for both the row and column coordinate
    c. Save coordinates to ship_r and ship_cl, respectively
    d. Check if there is already a ship in that location
        i. Yes: get new random coordinates and recheck
        ii. No: save ‘S’ to selected coordinates in the array
    e. Increment the number of ships on the board by 1 each time
4. Call displayArray function
    a. Require the array as a parameter
    b. Print the leger of column numbers
    c. Set row_num to 1 to count the number of rows displayed
    d. Print each row with a pipe after the row number
    e. Increment the row counter variables
5. Call guess function
    a. Accept the array as a parameter
    b. Call isGameOver to check if the game is over
        i. Feed in the array as a parameter
        ii. Check if there are any unsunk ships
    c. If the game is over, alert the user
    d. If the game is not over, ask the user to guess the coordinates
    e. Validate the coordinates
        i. Ask for new coordinates if the entered ones are invalid
    f. Check if the guess was a HIT or MISS, and alter the user if they already guessed that position
    g. Restart the guess until the game is deemed over