ChristMax Tree GAME!

Objective:

Decorate your Christmas tree (Max-Heap) by answering Christmas-themed questions. Your answers will be represented as ornaments (numbers). The largest ornaments will be placed at the top of the tree.

Step 1: Introduction

1. When the game starts, a welcome message and a fun Christmas logo will be displayed. You will also see a small Christmas tree printed for decoration.

    o Example:

    *** Welcome to ***

    Let's Decorate Your ChristMax Tree!

    --- Christmas Fun with Heaps! ---

2. The instructions will explain the goal of the game:

    • You'll answer Christmas-themed questions.

    • Each answer will add an ornament (a number) to the tree.

    • The largest ornaments will be placed at the top of the tree.

Step 2: Answer Christmas-Themed Questions

1. **Answer Questions**:
    You will be asked 5 questions related to Christmas. For each question, enter a number between 1 and 10. Each number represents your excitement level for a specific aspect of Christmas.

    o Questions:

        1. *On a scale of 1 to 10, how excited are you to celebrate Christmas this year?*

        2. *On a scale of 1 to 10, how much do you love decorating the Christmas tree?*

        3. *On a scale of 1 to 10, how much do you enjoy Christmas music?*

        4. *On a scale of 1 to 10, how excited are you for Christmas gifts?*

        5. *On a scale of 1 to 10, how much do you love Christmas food?*

2. **Check for Duplicates**:
    After each answer, the game will check if the ornament (number) you chose has already been added. If it's a duplicate, you'll be prompted to choose a different number.
    o Example Input:
    On a scale of 1 to 10, how excited are you to celebrate Christmas this year? 7
    If a duplicate is detected:
    This ornament has already been added! Please choose a different number.

3. **Heap Visualized**:
   After each answer, the tree will be visualized as a Max-Heap, showing how the ornaments (numbers) are arranged in the tree. The largest ornaments will be placed at the top.
   - o Example Output:

   ChristMax Tree Design:
   ```
        9
       7 6
      5 3 4
   ```

4. **Repeat for All 5 Questions**:
   You will continue answering the questions, and the tree will be updated after each input.

Step 3: Interact with the Tree

1. **Remove the Root Ornament**:
   After answering the questions, you will be asked if you want to remove the top ornament (root) of the tree.
   - o Prompt:
     Would you like to remove the top ornament (root)? (1 for Yes, 0 for No):
2. **If Yes (1)**:
   - o The root ornament (largest value) will be removed, and the tree will reheapify (the largest remaining ornament will be placed at the root).
   - o The new tree structure will be visualized.
   - o Example:

     After removing the top ornament (root), your tree looks like this:
     ```
        7
       6 5
      4 3
     ```
3. **If No (0)**:
   - o The tree will remain unchanged, and you will proceed to the final step.

Step 4: Final Tree Visualization

1. **Display Final Tree**:
   The final state of the tree will be shown, whether or not the root was removed.

   - o Example Output:

   Final ChristMax Tree:
   ```
        9

       7  6

      5  3  4
   ```

2. This is the end of the game, and your ChristMax Tree is complete!

Important Notes:

- **Heap Property**: The game uses a Max-Heap to organize your answers. The largest ornament will always be at the top of the tree, and smaller ones will be placed below according to the heap's rules.

- **Input Constraints**: Each ornament (number) must be between 1 and 10, and no two ornaments can be the same.