Laboratory Activities: Basic Python Part I

CP020001 Computer Programming
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https://github.com/kaopanboonyuen/CP020001_ComputerProgramming_2024s2

(10 Points) Christmas Tree Assignment 🎄⭐

Objective:

The goal of this assignment is to:

1. Practice using **loops** to repeat actions.
2. Use **conditionals** to create a pattern for the Christmas tree.
3. Work with **user input** to customize the size of the tree.
4. Have fun by designing a cool Christmas tree in Python using emojis.

Why Must You Do This?

- **Hands-on Practice**: This will help you get more comfortable with loops and conditionals.
- **Creative Coding**: You'll make your own personalized Christmas tree that is both fun and interactive!
- **Core Programming Skills**: Mastering loops and conditionals is fundamental in learning how to solve more complex problems.

Task:

Create a program that prints a **Christmas tree pattern** based on user input. The user will input the size of the tree, and the program will print a tree with layers made of the "🎄" emoji and a star "⭐" on top. You will use loops to create the tree's shape.

Details:

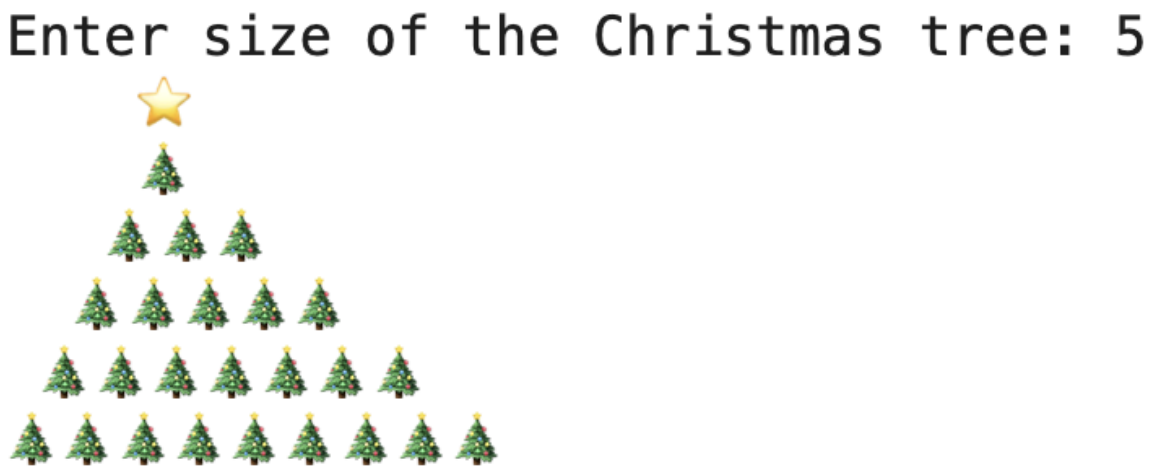
- **Input 1:** Size of the tree (height).
- **Output:** The program will print a tree with the correct number of layers based on the size input. The tree will have a star at the top and branches made from the "🎄" emoji.

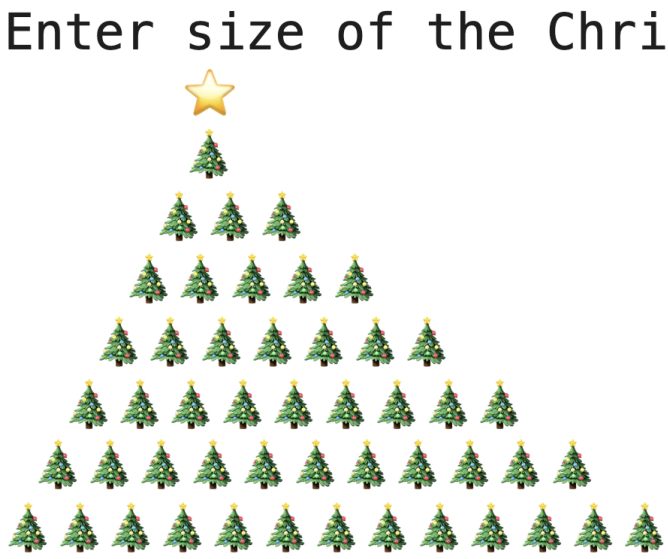
Example Input/Output:

Example 1:

Input:

```arduino
Enter size of the Christmas tree: 5
```





```
Enter size of the Christmas tree: 9
```

Steps to Complete:

1. **Take User Input**:
    - Ask the user to enter the **size** of the tree.
2. **Print the Star**:
    - Print a star ("⭐") at the top of the tree.
3. **Loop for the Tree Layers**:
    - Use a loop to print each layer of the tree. The first layer should have 1 "🎄", the second layer 3 "🎄", and so on, increasing by 2 each time.
    - Each layer should be centered.
4. **Center the Layers**:
    - Make sure that the branches of the tree are centered by adding spaces before the "🎄" emojis.

(+2% RAW SCORE) Optional Bonus Challenge: Add a Dynamic Brown Tree Trunk 🎄🌰

Objective:

Your goal is to add a **brown trunk** (stem) under the Christmas tree. The trunk should be dynamically sized based on the size of the tree. The size of the trunk will change according to the size of the tree, and it should be centered under the tree just like the tree itself.

What Must You Do?

- **Dynamic Tree Trunk**: The height of the trunk (stem) will be proportional to the size of the tree. For example, if the tree height is `n = 5`, the trunk will have a height of 2.
- **Positioning the Trunk**: The trunk should be centered under the tree.