# Assignment:

The task requires the development of a Java program that utilizes nested for loops to generate a specific output pattern. The output consists of numbers arranged in a pyramid-like structure, followed by an "@" symbol at the end of each line. The numbers in each row represent powers of two, and the pattern is symmetric.

A screen shot of a computer program

Description automatically generated

# Code explanation:

The provided Java program is structured to generate the desired output pattern through the use of nested loops. Here is a detailed breakdown of the code:

1. **Class Declaration**: The program is encapsulated within a class named NestedLoopPattern, which is a standard practice in Java.
2. **Main Method**: The main method serves as the entry point for the program execution.
3. **Row Count**: The variable rows is initialized to 7, indicating the number of rows to be printed in the pattern.
4. **Outer Loop**: The outer for loop iterates over each row, indexed by i. This loop controls the number of rows printed.
5. **Leading Spaces**: The first inner loop (for (int j = 0; j < rows - i - 1; j++)) is responsible for printing the leading spaces. The number of spaces decreases as the row index increases, creating a centered pyramid effect.
6. **Increasing Powers of 2**: The second inner loop (for (int j = 0; j <= i; j++)) prints the increasing powers of 2. The expression (int) Math.pow(2, j) computes the power of 2 for each index j, starting from 0 up to i.
7. **Decreasing Powers of 2**: The third inner loop (for (int j = i - 1; j >= 0; j--)) prints the decreasing powers of 2, mirroring the previous loop. This creates the symmetric effect of the pattern.
8. **Printing the "@" Symbol**: After printing the numbers for each row, the program appends an "@" symbol to the end of the line.
9. **New Line**: Finally, System.out.println() is called to move the cursor to the next line for the subsequent row.

# Output:

A screen shot of a computer program

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