LAB ASSIGNMENT # 05

PATTERN GENERATION

CSE110 | Programming Language I

	LAB TASKS	HOME TASKS
CODING	08	07
TRACING	00	00

NOTE: You need to submit only the Home Tasks. Submit all the Flowchart or Tracing tasks hand drawn or handwritten, respectively to your Lab Instructors before the next lab. Submit all the Homework Coding Tasks in the Google Form shared on buX.

LAB TASKS
[NO NEED TO SUBMIT]

Rules:

- You are not allowed to use any array or String
- One only line where the word "String" may appear is in public static void main(**String** [] args) {
- The word "char" must not be anywhere in your solution

Overall hint: Imagine all outputs as a matrix of space and digit. Then count spaces and digits to find out the trend of increment or decrement of number of digits/spaces. Utilize several IF statements to control when 'digit' will be printed, when 'space' will be printed and when 'enter' will be printed. Nested loops may be utilized to print multiple lines.

Question: 1

Number Line

Sample Input	Sample Output
6	**123456**
7	**1234567**

Question: 2

Rectangle

Sample Input	Sample Output
4 6	123456 123456 123456 123456
8 4	1234 1234 1234 1234 1234 1234 1234 1234

Question: 3

Triangle - Left Justified

Sample Input	Sample Output
4	1 12 123 1234
6	1 12 123 1234 12345 123456

Question: 4

Triangle - Right Justified

Sample Input	Sample Output
4	4 34 234 1234
6	6 56 456 3456 23456 123456

Question: 5

Triangle - Isosceles

Sample Input	Sample Output
3	1 123 12345
4	1 123 12345 1234567

Question: 6

Hollow Rectangle

Hint 1: Print the character space (' ') in the middle.

Hint 2: You can re-use your solution to PROBLEM 2) Rectangle and use IF condition to selectively print the first and last digit of each line and all digits of the first and last line.

Sample Input	Sample Output
4 5	12345 1 5 1 5 12345
5 4	1234 1 4 1 4 1 4 1234

Question: 7

Hollow Triangle - Left Justified

Sample Input	Sample Output
5	1 12 1 3 1 4 12345
6	1 12 1 3 1 4 1 5 123456

Question: 8

Palindrome

Sample Input	Sample Output
5	123454321
7	1234567654321

HOME TASKS

Question: 1

Rhombus

Sample Input	Sample Output
3	1 123 12345 123 1
4	1 123 12345 1234567 12345 123 1

Question: 2

Hollow Triangle - Right Justified

Sample Input	Sample Output
5	5 45 3 5 2 5 12345
6	6 56 4 6 3 6 2 6 123456

Question: 3

Hollow Triangle – Isosceles

Sample Input	Sample Output
3	1 1 3 12345
4	1 1 3 1 5 1234567

Question: 4

Hollow Rhombus

Sample Input	Sample Output
3	1 1 3 1 5 1 3 1
4	1 1 3 1 5 1 7 1 5 1 3 1

Question: 5

Palindromic Triangle

Sample Input	Sample Output
5	1 121 12321 1234321 123454321
4	1 121 12321 1234321

Question: 6

Downward Palindromic Triangle

Sample Input	Sample Output
5	123454321 1234321 12321 121 1
4	1234321 12321 121 1

Question: 7

Hourglass

Sample Input	Sample Output
5	12345 123 1 123 12345
7	1234567 12345 123 1 123 12345 1234567

UNGRADED TASKS

Question: 1

You're a master baker at Golden Crust Bakery. Every morning, you make n loaves. But the dough must rise in stages. For each loaf, you check every 5 minutes:

- If it's not risen enough, print . (still rising).
- If it just rose, print * (ready!).
- Each loaf rises at a different minute (based on its number).

Write a program to print the rising status of the first n loaves over 20 minutes.

Sample Input:
Enter number of Loaves: 3
Sample Output:
. . . . * . . . . * . . . . * . . . . .

Question: 2

You're a domino artist. You line up n dominoes in a row.

- When the first falls, it knocks the next every 1 second.
- Print the falling wave over n seconds.

Sample Input	Sample Output
Enter Time: 5	/ | | | | / / | | | / / / | | / / / / | / / / / /
Enter Time: 8	/ | | | | | | | / / | | | | | | / / / | | | | | / / / / | | | | / / / / / | | | / / / / / / | | / / / / / / / | / / / / / / / /

Question: 3

You're controlling the stage lights for a K-pop concert. There are 8 lights. Every second, the pattern shifts left. Print the first 8 seconds of the show. Light on = *****, off = **.**

Sample Output
****..... ***....* **....** *....*** ....**** ...****. ..****.. .****...