

CSE111 Lab 1 - Review of CSE110

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 star. Then count spaces and stars to find out the trend of increment or decrement of number of stars/spaces. Utilize several IF statement to control when 'star' will be printed, when 'space' will be printed and when 'enter' will be printed. Nested loop may be utilized to print multiple lines.

PROBLEM 1) Number Line

Sample input:

6

Sample output

123456

PROBLEM 2) Rectangle

Sample input:

4

6

Sample output

123456

123456

123456

123456

Hint: 4 and 6 means 4 lines of numbers having 1..6 in each line.

PROBLEM 3) Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

1

12

123

1234

Hint: One loop for lines, another loop for printing number 1 to i when it is line i.

PROBLEM 4) Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

1

12

123

1234

PROBLEM 5) Triangle - Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

```
  1
 123
12345
```

Sample input 2:

4

Sample output 2:

```
    1
   123
  12345
1234567
```

PROBLEM 6) Rhombus

Just draw the image of the above triangle once. And then, the opposite, once.

Sample input:

3

Sample output

```
    1
   123
  12345
   123
    1
```

PROBLEM 7) Hollow Rectangle

Display a rectangle of given length and width.

Sample input:

4

5

Sample output

```
12345
1   5
1   5
12345
```

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 first and last star of each line and all stars of first and last line.

PROBLEM 8) Hollow Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

5

Sample output

```
1
12
1 3
1 4
12345
```

PROBLEM 9) Hollow Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

5

Sample output

```
5
45
3 5
2 5
12345
```

PROBLEM 10) Hollow Triangle – Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

```
1
1 3
12345
```

Sample input 2:

4

Sample output 2:

```
1
1 3
1 5
1234567
```

PROBLEM 11) Hollow Rhombus

Just draw the image of the above triangle once. And then, the opposite, once.

Sample input:

3

Sample output

```
  1
 1 3
1  5
 1 3
  1
```

PROBLEM 12) Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

```
  4
 34
234
1234
```

PROBLEM 13) Palindrome

Sample input:

5

Sample output

123454321

PROBLEM 14) Palindromic Triangle

Sample input:

5

Sample output

```
  1
 121
12321
1234321
123454321
```

PROBLEM 15) Star Line

Print as many stars as given in input

Sample input:

6

Sample output

PROBLEM 16) Rectangle using solution of PROBLEM 15) Star Line

Sample input:

4

6

Sample output

Hint: 4 and 6 means 4 lines of stars having 6 stars in each line.

PROBLEM 17) Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

```
*
**
***
****
```

Hint: One loop for lines, another loop for printing i number of stars when it is line i.

PROBLEM 18) Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

```
  *
  **
 ***
****
```

Hint: Count and print appropriate number of spaces in front of stars. Notice that there is one less space and one more star in each line.

PROBLEM 19) Triangle - Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

```
  *
 ***
*****
```

Sample input 2:

4

Sample output 2:

```
  *
 ***
****
*****
*****
```

PROBLEM 20) Rhombus using PROBLEM 19) Triangle - Isosceles

Just draw the image of the above triangle once. And then, the opposite, once.

Sample input:

3

Sample output

```
  *
 ***
*****
 ***
  *
```

PROBLEM 21) Hollow Rectangle using solution of PROBLEM 16) Rectangle

Display a rectangle of given length and width.

Sample input:

4

5

Sample output

* *

* *

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

Hint 2: You can re-use your solution to PROBLEM 16 and use if condition to selectively print first and last star of each line and all stars of first and last line.

PROBLEM 22) Hollow Triangle - Left Justified using solution of PROBLEM 17) Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

5

Sample output

*

**

* *

* *

PROBLEM 23) Hollow Triangle - Right Justified using solution of PROBLEM 18) Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

5

Sample output

*

**

* *

* *

PROBLEM 24) Hollow Triangle – Isosceles using solution of PROBLEM 19) Triangle - Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

*

* *

Sample input 2:

4

Sample output 2:

*

```

  *  *
 *    *
*****

```

PROBLEM 25) Hollow Rhombus using solution of PROBLEM 20) Rhombus

Just draw the image of the above triangle once. And then, the opposite, once.

Sample input:

3

Sample output

```

  *
 *  *
*    *
 *  *
  *

```

26. First 15 problems from URI Online Judge (See link below) :

<https://www.urionlinejudge.com.br/judge/en/problems/index/1>