

Exercise 11

Task 1 – Creating Constructors to Initialize Objects

In this task, you create a class and use constructors to initialize objects. Follow these steps to create your class.

1. Create a new Java project called Exercise11.
2. Add a new Java class and name it Rectangle.
3. Create two private member variables of type int and name them as width and height.
4. Add the following constructors in Rectangle class.
 - a. A constructor with no arguments that prints the message "Default rectangle created: width = 25, height = 10" and sets the width to 25 and the height to 10.
 - b. A constructor that takes two integer arguments w and h and sets the width to w and the height to h only if both the w and h are greater than 0 and less than 30. An appropriate error message is printed if w or h is out of range. In addition, a message is printed that a rectangle was created with width = w and height = h.
5. Create a getArea method that calculates and returns the area of the rectangle. The area is calculated as height * width.
6. Create a draw method and perform the following in the method.
 - a. Create a nested for loop to draw a rectangle using asterisks (*).
 - b. The number of asterisks used to represent a rectangle should match with the height and width of the rectangle.
7. Create a new Java class called RectangleTest.
8. In the RectangleTest class, create two instances of Rectangle called r1 and r2.
 - a. r1 is created with constructor with no arguments.
 - b. r1 is drawn immediately after it is created.
 - c. r2 is created by using the constructor with arguments.
 - d. r2 is drawn, and the area is printed.
9. Run the test program. The output should be similar to the following.

```
Default rectangle created: width=25, height=10
This is the first rectangle:
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
Rectangle created: width=20, height=7
This is the second rectangle:
*****
*****
*****
*****
*****
*****
*****
```

The area is 140.