Labsheet 3: Modular Programming (Methods)

Question 1

(i). Write a public static method which accepts an integer N and returns the sum of first N numbers.
(ii). Write a public static method which accepts an integer N and outputs true if number is even.
(iii). Write a public static method which accepts an integer N and outputs true if number is odd.

In each case write a main() method to test your method.

Question 2

Write a program that accepts two positive integer values *x* and *n*, and uses a public static method to calculate the value of *x* raised to the power *n*. The result should be returned to the main method and displayed.

Question 3

Write a method isEven that takes as argument a number and returns true if the number is even, and false otherwise.

Question 4

Write a program containing a public static method that takes 2 integer parameters/arguments x and y and returns the value of $x^2 + y^2$. The main method should then allow the input of two integer values a and b and display the value of a^2+b^2.

Question 5

Write a program that accepts a positive integer. Define and use a public static method to calculate the factorial of that number. The value should be returned to the main method and displayed on the screen.

Question 6

Write a program that consists of a **main()**method and a public static method **void printRectangle**(char symbol, short height, short width);where
symbol is a character such as '*';
height specifies the number of symbol characters that compose the height; and,
width specifies the width.
The **printRectangle()** method prints a rectangle with the height and width specified using the specified symbol. For example,
symbol = '*'
height = '3'
letter = '4'
The method will print

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****
****
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Make the program continuously prompts for the input of the above data until a -1 is input for the height or width.

Question 7

Write a Java method that takes as argument a number in the range 1-12, and displays the corresponding month. The function must validate that the number falls in the correct range. Use the function to display the corresponding month of a user-provided number.

Question 8

Write a Java program/class "MyCalculator" that contains the following methods:

(i) **add** that takes as arguments 2 numbers x and y and returns the sum of x and y.
(ii) **subtract** that takes as arguments 2 numbers x and y and returns the value of x - y.
(iii) **multiply** that takes as arguments 2 numbers x and y and returns the product of x and y.
(iv) **divide** that takes as arguments 2 numbers x and y and returns the value of x/y.
(v) menu that displays the following options:
    1. Add
    2. Subtract
    3. Multiply
    4. Divide
    5. Exit
(vi) main() that will continuously display the menu and perform the appropriate calculation after allowing for the input of 2 numbers. The program will exit when user opts for option 5.