WIX1002 Fundamentals of Programming
Lab 6: Java Methods

1. Write a Java method that check whether a number is a perfect number or not. A perfect number is a number that is equal to the sum of all its divisor (excluding itself). For example, 6 is a perfect number because 1+2+3=6. Then, write a Java program to use the method to display the first 20 perfect number.

2. Write a Java method multiPrint(int n, char c) that prints n copies of character c. Then, write a Java program to use the method to display a circle or rectangle. For circle, the program will ask for one input, r which is the radius of the circle. For rectangle, the program will ask for two input, w and h which are the width and height of the rectangle.

   Sample Input:
   Circle or rectangle? circle
   Please input circle radius: 5

   Sample Output:
   ```
     ******
   ********
  **********
  **********
  **********
   ********
     ******
   ```

3. Write a java method that accepts two arrays of 10 bits (ones and/or zeros). The methods will take each bit from the same index and perform XOR operation. Finally, the method will return a new array of bits containing the result of XOR operation. Then, write a Java program to take 2 sets of 10 bits and return the XOR result in **decimal**.

   Sample Input:
   Enter first 10 bits: 1111111111
   Enter second 10 bits: 1111100000

   Sample Output:
   XOR result: 31

4. Write a method that accepts two parameter, N and R. The method should check whether the number R is the summation of N subsequent number (any number). Write a Java program that accept input N and R from the user and check using the method. If there is a summation of N subsequent number, print out R = x + (x+1) + (x+2) + … else, print out "No summation of subsequent number"

Sample Input:
Enter N: 3
Enter R: 522

Sample Output:
Yes. 522 = 173 + 174 + 175

5. Write a method that accepts an array of 4 non-duplicate digit (0-9), then do permutation on all digit in the array to produce all possible number. Then, write a Java program to randomly generate N non-duplicate digit in an array then print out all permutation.

Sample Input:
Generated numbers are 0, 7, 3, 9

Sample Output:
739
7039
7309
7390
…
<output too long>
…
9073
973
793
739