

IE 246 Problem Set 1

Write a java program that takes two integers (a base number and an exponent) and calculates the power. For example, $3^4=3 \times 3 \times 3 \times 3=81$.

Write a java program that calculates the factorial of a given number. Factorial is the product of all positive integers less than or equal to n. For example, factorial (4) = $4 \times 3 \times 2 \times 1 = 24$.

Write a Java program to print one triangle as follows:

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

Write a Java program to print two triangles as follows (you can place your above answer in a method and call):

```

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

Write the output of the following java code without using your computer.

```
public class Outputs {
    public static void main(String[] args) {
        for(int i=0; i<5; i++) {
            for(int j=3-i; j<5; j++) {
                if(i<2) {
                    if(j%2==0)
                        System.out.println(i+" "+j+ " Not Null(a)");
                    if (i%2==0)
                        System.out.println(i+" "+j+ " Not Null(b)");
                    else {
                        System.out.println(i+" "+j+" Null");
                    }
                }
                else if(j%3==1) {
                    System.out.println(i+" "+j+ " Not Null(c)");
                }
            }
        }
    }
}
```

The number which is only divisible by itself and one is known as a prime number. For example, 2, 3, 5, 7... are prime numbers.

- Write a java program that shows prime numbers between 1000 to 2000.
- Write a java program that stores the first one hundred prime numbers in an array.
- Write a java program that stores the first 100 prime numbers in decreasing order in an array.