# Institute of Engineering & Technology

## Devi Ahilya Vishwavidyalaya, Indore

## Department of Computer Science & Engineering


# Object Oriented Programming (CER3C2)

# Assignment-1

# (Simple Java Programs)

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**CS "B" 2nd Year**

# Assignment-1

1. Write a program to draw a pyramid of star.

```java
class PyramidStar{
    public static void main(String[] args) {
        int n=5;
        for(int i=0; i<n; i++){
            for(int j=n-i; j>1; j--)
            {
                System.out.print(" ");
            }
            for(int j=0; j<=i; j++ ){
                System.out.print("* ");
            }
            System.out.println();
        }
    }


}
```

## Output

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac
PyramidStar.java } ; if ($?) { java PyramidStar }
    *
   * *
  * * *
 * * * *
* * * * *
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

2. Write a program to display the list of even numbers between 1 to 100.

```java
public class Even_No {
    public static void main(String[] args) {
        for(int i=1; i<=100; i++)
        {
            if(i%2==0)
            {
                System.out.print(i+" ");
            }
        }
    }
}
```

## Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac Even_No.java } ; if ($?) { java Even_No }
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

3. Write a program to display prime numbers between 1 to 200.

```java
public class Prime_No {
    public static void main(String[] args) {
        System.out.println("Prime Number Between 1 to 200 is: ");
        for(int i=1; i<=200; i++)
        {
            int count=0;
            for(int j=i; j>=1; j--)
            {
                if(i%j==0)
                {
                    count++;
                }
            }
            if(count==2){
                System.out.print(i+" ");
            }
        }
    }

}
```

## Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac Prime_No.java } ; if ($?) { java Prime_No }
Prime Number Between 1 to 200 is:
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

4. Write a program to find sum of all integers greater than 100 and less than 200 that are divisible by 7.

```java
public class Divisibleby7 {
    public static void main(String[] args) {
        int sum=0;
        for(int i=100; i<=200; i++)
        {
            if(i%7==0){
                sum=sum+i;
            }
        }

        System.out.print("Sum of all integers is :"+sum);
    }
}
```

## Output

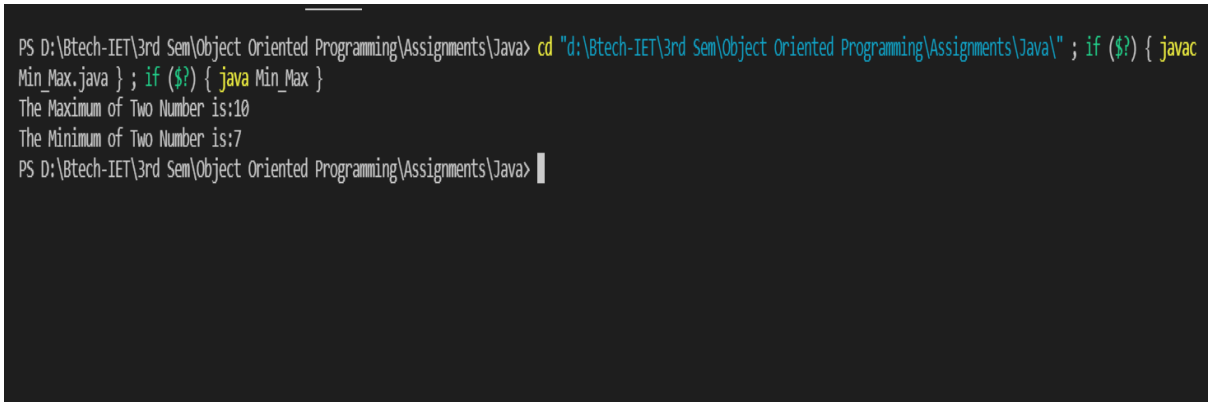
```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac
Divisibleby7.java } ; if ($?) { java Divisibleby7 }
Sum of all integers is :2107
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

5. Find minimum and maximum of two numbers using conditional operator.

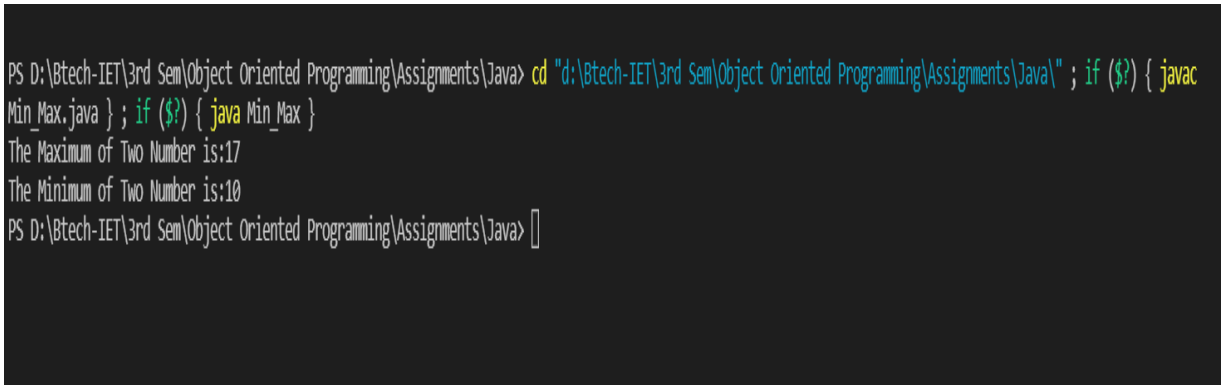
```
public class Min_Max
{
    public static void main(String[] args)
    {
        int a=10;
        int b=17;

        if(a>b)
        {
            System.out.println("The Maximum of Two Number
is:"+a);
            System.out.println("The Minimum of Two Number
is:"+b);
        }
        else
        {
            System.out.println("The Maximum of Two Number
is:"+b);
            System.out.println("The Minimum of Two Number
is:"+a);
        }
    }
}
```

# Output-1




# Output-2



6. Create a class Circle and methods circumcircle( ) to compute circumference of a circle and arcLength() to compute the length of the arc for a given angle. Within the main method of class Circle create an object which compute circumference when the radius is 10 and arc length when the angle is 45.

```
public class Circle {
    public static void circumCircle(double radius)
    {
        double circumference=2*3.14*radius;
        System.out.println("The circumference of circle with
radius " + radius + " is " + circumference);
    }
    public static void arcLength(double radius, double
angle)
    {
        double arc= (radius*angle*3.14)/180;
        System.out.println("The length of arc of circle with
radius " +radius+ " and angle " + angle+ " is " + arc);
    }
    public static void main(String[] args)
    {
        circumCircle(10);
        arcLength(10,45);
    }
}
```

# Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac
Circle.java } ; if ($?) { java Circle }
The circumference of circle with radius 10.0 is 62.800000000000004
The length of arc of circle with radius 10.0 and angle 45.0 is 7.85
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

7. Write a program in which class is declared to deal with the characteristics of regular polygons and declare methods for determining area and parameter. The length of the side and the number of the sides should be declared public.

```
public class Polygon {
    static void area(double n, double length)
    {
        double angle= Math.toRadians(180/n);
        angle=Math.tan(angle);
        double Area=(length*length*n)/(4*angle);
        System.out.println("The area of polygon with "+ n +
" sides is "+ Area);
    }
    static void Perimeter(double n, double length)
    {
        double perimeter=n*length;
        System.out.println("The perimeter of polygon with "+
n + " sides is "+ perimeter);
    }
    public static void main(String[] args)
    {
        area(6, 10);
        Perimeter(6, 10);
    }
}
```

# Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac
Polygon.java } ; if ($?) { java Polygon }
The area of polygon with 5.0 sides is 688.1909602355868
The perimeter of polygon with 5.0 sides is 100.0
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

8. Write a program to generate 5 random numbers between 1 to 100 and it should not follow with decimal point.

```java
import java.util.Random;

public class GenerateRandom_No {
    public static void main(String[] args) {
        Random obj=new Random();
        System.out.println("Random number between 1 to 100");
        int upperbound=101;
        for(int i=1;i<=5;i++){
            System.out.println(i + " Random Integer Between 1 to 100 is: " + obj.nextInt(upperbound));
        }
    }

}
```

## Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac GenerateRandom_No.java } ; if ($?) { java GenerateRandom_No }
Random number between 1 to 100
1 Random Integer Between 1 to 100 is: 59
2 Random Integer Between 1 to 100 is: 94
3 Random Integer Between 1 to 100 is: 78
4 Random Integer Between 1 to 100 is: 33
5 Random Integer Between 1 to 100 is: 97
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

9. Write a program in which a sample of 8 random numbers are generated and an average value is determined by a user.

```
import java.util.Random;
public class RandomAverage
{
    public static void main(String[] args)
    {
        int sum=0;
        Random ran =new Random();
        System.out.println("Random Numbers are: ");
        for(int i=1;i<=8;i++)
        {
          int x = ran.nextInt();
          System.out.println(x);
          sum = sum+x;
        }
        int average = sum/8;
        System.out.println("Average of 8 Random Numbers is:
"+ average);
    }

}
```

## Output

```
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java> cd "d:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java\" ; if ($?) { javac
RandomAverage.java } ; if ($?) { java RandomAverage }
Random Numbers are:
-1639925909
-121327768
38693337
957317099
-911916151
-1157198976
1062561362
-1390976176
Average of 8 Random Numbers is: 141524264
PS D:\Btech-IET\3rd Sem\Object Oriented Programming\Assignments\Java>
```

10.Write and run a java program that generates a random integer in the range of 60 to 99and then prints the letter grade that would be correspond to that score on a test. Divide the marks interval 60-99 into 9 intervals and grade them A+, A, A-, B+, B, B, C+, C, C-.

```
import java.util.Random;
public class Grade {
    public static void main(String[] args) {
        Random random = new Random();
        int innerbound=59, upperbound = 100;
        int rand = random.nextInt(innerbound, upperbound);
        System.out.println("Random integer between 60 to 99
is: "+ rand);
        if(rand>=60 && rand<=63){
            System.out.println("The grade is C-");
        }
        if(rand>=64 && rand<=67){
            System.out.println("The grade is C");
        }
        if(rand>=68 && rand<=71){
            System.out.println("The grade is C+");
        }
        if(rand>=72 && rand<=75){
            System.out.println("The grade is B-");
        }
        if(rand>=76 && rand<=79){
            System.out.println("The grade is B");
        }
        if(rand>=80 && rand<=84){
            System.out.println("The grade is B+");
        }
        if(rand>=85 && rand<=89){
            System.out.println("The grade is A-");
```

```
        }
        if(rand>=90 && rand<=94){
            System.out.println("The grade is A");
        }
        if(rand>=95 && rand<=99){
            System.out.println("The grade is A+");
        }
    }
}
```

# Output

```
Random integer between 60 to 99 is: 65
The grade is C
```