Example 1:
Define a method to find the maximum of two numbers:

```
int maximum (int x, int y)
{
if (x>=y)
  max = x;
else
  max = y;
}
```

Or

```
int maximum (int x, int y)
{
max = (x>=y)? x : y;
}
```

Define a method to find the maximum of three numbers:

```
int maximum(int x, int y, int z)
{
  if (x>=y)
    max = x;
  else
    max = y;
  if (max<z)
    max = z;
  return max;
}
```

Call in the main method: by one of the following two ways:

```
xMax = maximum(x1,x2,x3);
System.out.println("larger number = "+maximum(x1,x2,x3));
yMax = maximum(y1,y2,y3);
```

Q1))) Rewrite the following program using method called maximum

```
public class Larger
{
public static void main(String[] args)
{
 double num1, num2;
 num1 = 250.57;
 num2 = 112.0;
 double larger;
 if (num1 >= num2)
   larger = num1;
 else
   larger = num2;
 System.out.println("Larger: "+larger);
```

```
}
}

public class Larger
{
public static double maximum(double x,double y)
{
 if (x >= y)
   return x;
 else
   return y;
}
public static void main(String[] args)
{
 double num1, num2;
 num1 = 250.57;
 num2 = 112.0;
 System.out.println("Larger: "+maximum(num1,num2));
}
}
```

Example 2:
Write a method to calculate the average of two integer numbers:

```
double calcAverage(double x,double y)
{
  double avg = (x+y)/2;
  return avg;
}

return (x+y)/2;
```

Q2)) Write a Java program that inputs an integer number and uses two methods:
1- method with name positive: return true if number is positive and false otherwise
2- method with name oddeven: return true if number is odd and false otherwise

```
import java.io.*;
public class Methods2
{
 public static boolean positive(int x)
 {
  if (x>0)   return true;
  else       return false;
 }

 public static boolean oddeven(int x)
 {
  if (x % 2 != 0)    return true;
  else               return false;
 }


 public static void main(String args[]) throws IOException
 {
  int num;
  InputStreamReader inStream = new InputStreamReader( System.in ) ;
  BufferedReader stdin = new BufferedReader( inStream );

  System.out.println("Enter an integer");
  num = Integer.parseInt(stdin.readLine());

  if(positive(num))  System.out.println("positive number");
  else               System.out.println("not a positive number");

  if(oddeven(num))   System.out.println("Odd");
  else               System.out.println("even");
 }
}
```

Q-3)) Overloading of functions:
Write a Java program that uses 4 functions with the name sum to find the sum of two variables with the types: (int,int), (int,double), (double,int), (double,double)

```
public class Method3
{

 public int sum(int x, int y)
 {
   return x+y;
 }
 public double sum(int x, double y)
 {
   return x+y;
 }
 public double sum(double x, int y)
 {
   return x+y;
 }
 public double sum(double x, double y)
 {
   return x+y;
 }

public static void main(String args[])
 {
  int num1, num2;
  num1 = 3;
  num2 = 5;
  double val1, val2;
  val1 = 12.5;
  val2 = 10.0;
  System.out.println(sum(num1,num2));    System.out.println(sum(num1,val1));
  System.out.println(sum(val2,num2));    System.out.println(sum(val1,val2));
 }
}
```

Q-4)) Overloading of functions:
Write a Java program that uses 4 functions with the name maximum to find the maximum of two integers or three integers or four integers

```
public class Method4
{
    public static int maximum(int x, int y)
    {
     int max;
     max=(x>=y)?x:y;
     return max;
    }
    public static int maximum(int x, int y, int z)
    {
     int max;
     max = maximum(x,y);
     if (max<z)  max=z;
     return max;
    }
    public static int maximum(int x, int y, int z, int w)
    {
     int max;
     max = maximum(x,y,z);
     if (max<w)  max=w;
     return max;
    }
    public static void main(String[] args)
        {
          int num1,num2,num3,num4;
          num1 = 5;
          num2 = 9;
          num3 = 12;
          num4 = 20;
          System.out.println("larger of two numbers:  "+maximum(num1,num2));
          System.out.println("larger of three numbers:  "+maximum(num1,num2,num3));
          System.out.println("larger of four numbers:+maximum(num1,num2,num3,num4));
        }
  }
```

Q5) Write a Java program using two methods, area_square , area_circle to compute the area of a square and a circle

Without using methods:

```
import java.io.*;
public class Area
{

 public static void main (String[] args) throws IOException
 {
   double length,radius;
   double pi=3.1416;
   double sq_area;
   double cir_area;

   InputStreamReader inStream = new InputStreamReader( System.in ) ;
   BufferedReader stdin = new BufferedReader( inStream );

   System.out.println("side length of a square = ");
   length= Double.parseDouble(stdin.readLine());

   sq_area = length*length;
   System.out.println("square area = " + sq_area);

   System.out.println("radius of a circle = ");
   radius= Double.parseDouble(stdin.readLine());

   cir_area = pi*radius*radius;
   System.out.println("circle area = " + cir_area);
  }
}
```

****

```
public class Area
{

 public static void main (String[] args)
 {
   double length = 12.5;
   double radius = 25;
   double pi=3.1416;
   double sq_area;
   double cir_area;
   sq_area = length*length;
   System.out.println("square area = " + sq_area);
```

```
   cir_area = pi*radius*radius;
   System.out.println("circle area = " + cir_area);
  }
}
```

****

Write a complete Java program to calculate the area of a square and the area of a circle using two methods.

Using methods:

```
public class Area
{
 public static double sq_area (double l)
 {
     return l*l;
 }
 public static double cir_area (double r)
 {
   double pi = 3.1416;
   return pi*r*r;
 }
public static void main (String[] args) throws IOException
 {
   double length;
   double radius;

   InputStreamReader inStream = new InputStreamReader( System.in ) ;
   BufferedReader stdin = new BufferedReader( inStream );

   System.out.println("side length of a square = ");
   length= Double.parseDouble(stdin.readLine());
   System.out.println("square area = " + sq_area(length));

   System.out.println("radius of a circle = ");
   radius= Double.parseDouble(stdin.readLine());
   System.out.println("circle area = " + cir_area(radius));
 }
}
```

Q6) What is the output of the following program?

```
public class Class1
{

 public static int proc1(int i)
 {
  i=i*2;
  System.out.println(i);
  return 2*i;
 }

 public static void main(String args[])
 {
  int i=1;
  int j = proc1(i);
  System.out.println(i+" , "+j);
 }

}
```

2
1 , 4

****