Q1

**import** java.util.Scanner;

**public** **class** Fact {

**public** **static** **void** main(String[] args) {

System.***out***.println("Enter a number from 1 to 50");

Scanner s=**new** Scanner(System.***in***);

System.***out***.println("The factorial is: "+ *fact*(s.nextInt()));

}

**public** **static** **int** fact(**int** n)

{

**if**(n==1)

**return** 1;

**if**(n==2)

**return** 2;

**return** n\**fact*(n-1);

}

}

Q2

**import** java.util.Scanner;

**public** **class** ArEg {

**public** **static** **void** main(String[] args) {

**int** ar[] = **new** **int**[10];

Scanner s = **new** Scanner(System.***in***);

**for** (**int** i = 0; i < ar.length; i++) {

System.***out***.println("Enter " + i + "th element of array");

ar[i] = s.nextInt();

}

**int** sum=0;

**int** max=ar[0];

**int** min=ar[0];

**for** (**int** i : ar) {

sum+=i;

**if**(i>max)

max=i;

**if**(i<min)

min=i;

}

System.***out***.println("The average value of the array elements is: "+ sum/10);

System.***out***.println("The min value in the array is: "+ min);

System.***out***.println("The max value in the array is: "+ max);

}

}

Q3

**import** java.util.Scanner;

**public** **class** Mat {

**public** **static** **void** main(String[] args) {

**int** ar[][] = **new** **int**[10][10];

Scanner s = **new** Scanner(System.***in***);

ar[0][1] = 1;

System.***out***.println("\nOriginal array");

*display*(ar);

*init*(ar);

System.***out***.println("\nInitialised Array");

*display*(ar);

System.***out***.println("");

**for** (**int** i = 0; i < ar.length; i++) {

**for** (**int** j = 0; j < ar[0].length; j++) {

System.***out***.println("\nEnter element in " + i + "th row and " + j

+ "th col of array");

ar[i][j] = s.nextInt();

}

}

System.***out***.println("\nOriginal array");

*display*(ar);

**int**[][] tar=*transpose*(ar);

System.***out***.println("\nTransposed array");

*display*(tar);

}

**public** **static** **int**[][] transpose(**int** [][] ar){

**int** r=ar.length;

**int** c=ar[0].length;

**int** [][] temp=**new** **int**[r][c];

**for** (**int** i = 0; i < ar.length; i++) {

**for** (**int** j = 0; j < ar[0].length; j++) {

temp[j][i] =ar[i][j];

}

}

**return** temp;

}

**public** **static** **void** init(**int**[][] ar) {

**for** (**int** i = 0; i < ar.length; i++) {

**for** (**int** j = 0; j < ar[0].length; j++) {

ar[i][j] = 0;

}

}

}

**public** **static** **void** display(**int**[][] ar) {

**for** (**int** i[] : ar) {

System.***out***.println();

**for** (**int** j : i) {

System.***out***.print(j + "\t");

}

}

}

}

Q4.

**import** java.util.Scanner;

**import** java.util.\*;

**public** **class** Max3 {

**public** **static** **void** main(String[] args) {

System.***out***.println("Enter three numbers");

Scanner s=**new** Scanner(System.***in***);

**int** a[]=**new** **int**[3];

a[0]=s.nextInt();

a[1]=s.nextInt();

a[2]=s.nextInt();

Arrays.*sort*(a);

System.***out***.println("2nd largest is :"+ a[1]);

}

}

Alternate way

**import** java.util.Scanner;

**import** java.util.\*;

**public** **class** Max3 {

**public** **static** **void** main(String[] args) {

System.***out***.println("Enter three numbers");

Scanner s = **new** Scanner(System.***in***);

**int** a[] = **new** **int**[3];

a[0] = s.nextInt();

a[1] = s.nextInt();

a[2] = s.nextInt();

**int** max = Integer.***MIN\_VALUE***;

**int** max2 = Integer.***MIN\_VALUE***;

**for** (**int** i : a) {

**if** (i > max) {

max2 = max;

max = i;

} **else** **if** (i > max2) {

max2 = i;

}

}

System.***out***.println("2nd largest is :" + max2);

}

}

Q5.

**import** java.util.Scanner;

**public** **class** Measurements {

**public** **static** **void** main(String[] args) {

System.***out***.println("Enter a number");

Scanner s = **new** Scanner(System.***in***);

**double** num = s.nextDouble();

*circle*(num);

*square*(num);

*sphere*(num);

}

**public** **static** **void** sphere(**double** num) {

System.***out***

.println("\n\nIf a sphere is drawn with radius as the given number");

**double** diag = Math.*sqrt*(2) \* num;

**double** volume = (4.0 / 3.0) \* 3.14 \* num \* num \* num;

**double** sa = 4.0 \* 3.14 \* num \* num;

System.***out***.println("Volume is : " + volume);

System.***out***.println("Surface Area is :" + sa);

}

**public** **static** **void** square(**double** num) {

System.***out***

.println("\n\nIf a square is drawn with side as the given number");

**double** diag = Math.*sqrt*(2) \* num;

System.***out***.println("The diagnoal is :" + diag);

}

**public** **static** **void** circle(**double** num) {

System.***out***

.println("\n\nIf a circle is drawn with the radius as the given number");

**double** area = (3.14) \* num \* num;

**double** circumference = 2 \* 3.14 \* num;

System.***out***.println("Area is :" + area);

System.***out***.println("Circumference is: " + circumference);

}

}