EXPERIMENT NO. 1

1)

PROBLEM STATEMENT :

Write a program for arithmetic operation using Arithmetic Promotion .

```
import java.util.Scanner;
public class Arithmetic {
	public static void main(String[] args) {
		Scanner sc=new Scanner(System.in);
		int a , b ;
		String ch;
		do {
			System.out.println("********************** YOUR CHOICES **********************");
			System.out.println("1 .ADDITION");
			System.out.println("2 .SUBTRACTION");
			System.out.println("3 .MULTIPLICATION");
		   System.out.println("4 .DIVISION");
		   System.out.println("Enter your choice :");
		   int choice =sc.nextInt();
			System.out.println("Enter First number :");
			a=sc.nextInt();
			System.out.println("Enter Second number :");
			b=sc.nextInt();
			switch(choice)
			{
			case 1:System.out.println("Addition of two numbers : "+(a+b));
			break;
			case 2:System.out.println("Subtraction of two numbers : "+(a-b));
			break;
			case 3:System.out.println("Multiplication of two numbers : "+(a*b));
			break;
```

```
                    case 4:System.out.println("Division of two numbers : "+(a/b));
                    break;
                    default :System.out.println("Enter valid choice");
                    }
                    System.out.println("Do you want to continue :");
                ch =sc.nextLine();
    }while(ch=="yes");
}
}
```

**********OUTPUT**********

********** YOUR CHOICES **********

1 .ADDITION

2 .SUBTRACTION

3 .MULTIPLICATION

4 .DIVISION

Enter your choice :

1

Enter First number :

14

Enter Second number :

31

Addition of two numbers : 45

Do you want to continue : yes

2)

PROBLEM STATEMENT:

Write a program for area and perimeter of Triangle ,rectangle and circle through method calling .

```
import java.util.Scanner;
	public class Shapes {
		double pi=3.14;
		public double areatri(int base,int height) {
			return 0.5*base*height;
		}
		public double areарec(int length,int breadth) {
			return length*breadth;
		}
		public double areacircle(int radius) {
			return pi*radius*radius;
		}
		public double peritri(int a,int b,int c) {
			return a+b+c;
		}
		public double perirec(int l,int h) {
			return 2*(l+h);
		}
		public double circumOfCircle(int r) {
			return 2*pi*r;
		}
	 public static void main(String[]args) {
		Scanner in=new Scanner(System.in);
		shapes s=new shapes();
		System.out.println("Area of Triangle :"+s.areatri(5,7));
		System.out.println("Perimeter of Triangle :"+s.peritri(5,8,10));
```

```
                System.out.println("Area of Rectangle :"+s.areарec(15,20));
                System.out.println("Perimeter of Rectangle :"+s.perirec(15,20));
                System.out.println("Area of Circle :"+s.areacircle(20));
                System.out.println("Circumference of Circle :"+s.circumOfCircle(20));
        }
}
```

********** **OUTPUT** **********

```
Area of Triangle :17.5
Perimeter of Triangle :23.0
Area of Rectangle :300.0
Perimeter of Rectangle :70.0
Area of Circle :1256.0
Circumference of Circle :125.60000000000001
```

EXPERIMENT NO. 2

1)

PROBLEM STATEMENT :

To perform a program for Math Calculations like max() ,min() ,round(),avg() and abs() using Java class

with methods .

```
import java.util.Scanner;
public class Mathcalculation {
	public static void main(String[] args) {
		int a,b,e		;
		double d,c;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the value of a");
		a=sc.nextInt();
		System.out.println("Enter the value of b");
		b=sc.nextInt();
		System.out.println("Enter the value of c");
		c=sc.nextDouble();
		System.out.println("Enter the value of d");
		d=sc.nextDouble();
		System.out.println("Enter the value of e");
		e=sc.nextInt();
		System.out.println("Maximum no is :"+Math.max(a, b));
		System.out.println("Minimum no is :"+Math.min(a, b));
		System.out.println("Round no is :"+Math.round(c));
		System.out.println("Squre root of no is :"+Math.sqrt(e));
		System.out.println("Absolute no is :"+Math.abs(d));
	}

}
```

********** **OUTPUT**********

Enter the value of a

2

Enter the value of b

5

Enter the value of c

0.7

Enter the value of d

25

Enter the value of e

8

Maximum no is : 5

Minimum no is : 2

Round no is : 1

Squre root of no is : 5.0

Absolute no is : 8

2)

PROBLEM STATEMENT :

To perform a program to illustrate different constructors and methods using String Classes

```
public class StringClass {
	public static void main(String[] args) {
		String s=”Java Programming";
		System.out.println("Upper case of name is : "+s.toUpperCase());
		System.out.println("Lower case of name is : "+s.toLowerCase());
		System.out.println("Length of the name is : "+s.length());
		System.out.println("Trim of the name is : "+s.trim());
		System.out.println("String of the name is : "+s.toString());
		System.out.println("Substring of the name is : "+s.substring(0,4));
	}
}
```

********** OUTPUT **********

```
Upper case of name is : JAVA PROGRAMMING
Lower case of name is : java programming
Length of the name is : 16
Trim of the name is : Java Programming
String of the name is : Java Programming
Substring of the name is : Java
```

EXPERIMENT NO. 3

1)

PROBLEM STATEMENT :

Write a program to method overloading allows developers to create multiple methods in a class with the same name but different parameter lists .

```
public class Addition {
	int add(int a,int b)
	{
		int sum;
		sum=a+b;
		return sum;
	}
	int add(int a,int b,int c)
	{
		int sum;
		sum=a+b+c;
		return sum;
	}
	double add(double a,double b,double c)
	{
		double sum;
		sum=a+b+c;
		return sum;
	}
	public static void main(String[] args) {
		addition obj=new addition();
		System.out.println("Sum method overloading:"+obj.add(17,86));
		System.out.println("Sum method overloading:"+obj.add(64,76,78));
		System.out.println("Sum method overloading:"+obj.add(64.5,76.01,78.5));
	}
```

}

----------output----------

Sum method overloading:103

Sum method overloading:218

Sum method overloading:219.01

2)

PROBLEM STATEMENT :

Write a program to declare class Student with data members Roll no.,name, marks different type of constructors.

```
class Student{
int roll_no;
String name;
int english,maths,CAO;
Student(String name,int roll_no,int english,int maths,int CAO){
        this.name=name;
        this.roll_no=roll_no;
        this.english=english;
        this.maths=maths;
        this.CAO=CAO;
}
void display() {
        System.out.println("Name: "+name);
        System.out.println("Roll no: "+roll_no );
        System.out.println("Marks of English: "+english);
        System.out.println("Marks of Maths: "+maths);
        System.out.println("Marks of CAO: "+CAO);
}
}
public class Constructor {
        public static void main(String[] args) {
                Student b=new Student("Krushna",18,89,78,90);
                b.display();
        }
}
```

********** **OUTPUT** **********

Name: Krushna

Roll no: 18

Marks of English: 89

Marks of Maths: 78

Marks of CAO: 90

EXPERIMENT NO. 4

1)

PROBLEM STATEMENT :

Write a program accepts three numbers from user and find largest number.

```
import java.util.Scanner;
public class largeNum{
        public static void main(String[] args) {
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter First Number(A):");
                int a=sc.nextInt();
                System.out.println("Enter Second Number(B):");
                int b=sc.nextInt();
                System.out.println("Enter Third Number(C):");
                int c=sc.nextInt();
                if(a>b && a>c) {
                 System.out.println("A is greater");
                }
                else if(b>a && b>c) {
                 System.out.println("B is greater");
                }
                else {
                 System.out.println("C is greater");
                }
        }
}
```

----------**OUTPUT**----------

Enter First Number(A):

20

Enter Second Number(B):

30

Enter Third Number(C):

10

B is greater

2)

PROBLEM STATEMENT :

Write a program accept number from user and calculate factorial of given number.

```
import java .util.Scanner;
public class Factorialno {
    public static void main(String[] args) {
                    int num,fact=1,i;
                    Scanner sc=new Scanner(System.in);
                    System.out.println("Enter the no :");
                    num=sc.nextInt();
                    for(i=1;i<=num;i++)
                    {
                fact=fact*i;
            }
                    System.out.println("Facorial of the no is :"+fact);
       }

}
```

********** OUTPUT**********

```
Enter the no :
5
Facorial of the no is :120
```

3)

PROBLEM STATEMENT :

Write a program accept number from user and check number is palindrome or not.

```
import java.util.Scanner;
public class Palindrome {
	public static void main(String[] args) {
		int r,sum=0,temp,num;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the no : ");
		num=sc.nextInt();
		temp=num;
		while(num>0)
		{
			r=num%10;
			sum=(sum*10)+r;
			num=num/10;
		}
		if(temp==sum)
		{
			System.out.println("Palindrome no");
		}
		else
		{
			System.out.println("it is not palindrome no");
		}
	}
}
```

***************************OUTPUT********************************

Enter the no : 454

Palindrome no

4)

PROBLEM STATEMENT :

Write a program accepts number from user and check number is Armstrong or not.

```
import java.util.Scanner;
public class Armstrongno {
	public static void main(String[] args) {
		int num,org_no,r,res=0;
	   Scanner sc=new Scanner(System.in);
				System.out.println("Enter the no");
				num=sc.nextInt();
				org_no=num;
				while(org_no!=0)
				{
					r=org_no%10;
					res+=Math.pow(r,3);
					org_no/=10;
				}
				if(res==num)
				{
					System.out.println("No is armstrong");
				}
				else
				{
					System.out.println("No is not armstrong");
				}
	 }
}
```

********** **OUTPUT**********

Enter the no

153

No is armstrong

5)

PROBLEM STATEMENT :

Write a program accepts number from user and check number is prime or not.

```
import java.util.Scanner;


public class PrimeOrNot {
	public static void main(String[] args) {
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter Number :");
		int n =sc.nextInt();
	   int count = 0;
	   if (n <= 1) {
	    System.out.println("The number is not prime");
	    return;
	   }
	   for (int i = 1; i <= n ; i++) {
	    if (n % i == 0) {
	      count++;
	    }
	   }
	   if (count > 2) {
	      System.out.println("The number is not prime");
	   }
	   else {
	    System.out.println("The number is prime");
	}
}
}
```

********** **OUTPUT**********

Enter Number :

5

The number is prime

EXPERIMENT NO. 5

1)

PROBLEM STATEMENT :

Write a program accepts n numbers from user , store in array and find largest

```
import java.util.Scanner;
public class MaxOfArray {
	public static void main(String[] args) {
		Scanner sc=new Scanner(System.in);
		int[] arr=new int[5];
		for(int i=0;i<arr.length;i++)
		{
			System.out.println("Enter Array Element of index "+i);
			arr[i]=sc.nextInt();
		}
		int max=arr[0];
		for(int i=0;i<arr.length;i++)
		{
			if(max<arr[i])
			{
				max=arr[i];
			}
		}
	System.out.println("Maximum Number of Array : "+max);
	}

}
```

********** **OUTPUT**********

Enter Array Element of index 0

36

Enter Array Element of index 1

87

Enter Array Element of index 2

98

Enter Array Element of index 3

24

Enter Array Element of index 4

84

Maximum Number of Array : 98

2)

PROBLEM STATEMENT :

Write a program accepts n nummbers from user ,store in array and perform linear search.

```
import java.util.*;
public class LinearSearch {
	public static void main(String[] args) {
		Scanner in=new Scanner(System.in);
		int i,search ,a[]=new int[5];
		System.out.println("Enter elements in array :");
		for(i=0;i<a.length;i++) {
			a[i]=in.nextInt();
		}
		System.out.println("Enter Element you want to search :");
		search=in.nextInt();
		for(i=0;i<a.length;i++) {
			if(a[i]==search){
				System.out.println("Entered element "+search+" is present in Array at Index "+i);
			}
		}
	}
}
```

********** **OUTPUT**********

Enter elements in array :

1

2

3

4

5

Enter Element you want to search :

4

Entered element 4 is present in Array at Index 3

3)

PROBLEM STATEMENT :

Write a program to accept n numbers ,store in array and perform intersection of two sets.

```
import java.util.Scanner;
public class IntersectionOfTwoArrays {
	public static void main(String[] args) {
		Scanner in=new Scanner(System.in);
		int array1[] =new int[3];
	int array2[] =new int[3];
	System.out.println("Array 1 : ");
	for(int i = 0; i<array1.length; i++ ) {
		array1[i]= in.nextInt();
	}
	System.out.println("Array 2 : ");
	for(int j = 0; j<array2.length; j++ ) {
		array2[j]=in.nextInt();
	}
	System.out.println("Intersection of two Arrays: ");
	for(int i = 0; i<array1.length; i++ ) {
	  for(int j = 0; j<array2.length; j++) {
	    if(array1[i]==array2[j]) {
	      System.out.println(array2[j]);
	    }
	  }
	}

}
}
```

********** **OUTPUT**********

Array 1 :

54

24

85

Array 2 :

24

87

35

Intersection of two Arrays:

24

4)

PROBLEM STATEMENT :

Write a program to declare class Employee having data members empId ,Name and Salary .Accepts records for five Employees and Display that records whose salary is greater than 50000.

```
import java.util.Scanner;
public class Employee {
	public static void main(String[] args) {
		Scanner in=new Scanner(System.in);
		int[] id=new int[5];
		String[] name=new String[5];
		double[] salary=new double[5];
		for(int i=0;i<5;i++)
		{
			System.out.println("Enter id of Employee "+(i+1));
			id[i]=in.nextInt();
			in.nextLine();
			System.out.println("Enter name of Employee "+(i+1));
			name[i]=in.nextLine();
			System.out.println("Enter salary of Employee "+(i+1));
			salary[i]=in.nextDouble();
		}
		System.out.println("Employees data whose salary is graeter than 50000");
		for(int i=0;i<5;i++)
		{
			if(salary[i]>5000)
			{
			System.out.println("ID of Employee: "+id[i]);
			System.out.println("Name of Employee: "+name[i]);
			System.out.println("Salary of Employee: "+salary[i]);
```

```
                    }
                }

        }
}
```

********** OUTPUT**********

```
Enter id of Employee 1
1010
Enter name of Employee 1
Jony Dixit
Enter salary of Employee 1
50000
Enter id of Employee 2
1020
Enter name of Employee 2
Seema Choudhary
Enter salary of Employee 2
75000
Enter id of Employee 3
1030
Enter name of Employee 3
Neha Jadhav
Enter salary of Employee 3
55000
Enter id of Employee 4
1040
Enter name of Employee 4
```

Sanjeev Satpute

Enter salary of Employee 4

40000

Enter id of Employee 5

1050

Enter name of Employee 5

Jivan Reddy

Enter salary of Employee 5

50000

Employees data whose salary is greater than 50000

ID of Employee: 1010

Name of Employee: Jony Dixit

Salary of Employee: 50000.0

ID of Employee: 1020

Name of Employee: Seema Choudhary

Salary of Employee: 75000.0

ID of Employee: 1030

Name of Employee: Neha Jadhav

Salary of Employee: 55000.0

ID of Employee: 1040

Name of Employee: Sanjeev Satpute

Salary of Employee: 40000.0

ID of Employee: 1050

Name of Employee: Jivan Reddy

Salary of Employee: 50000.0

EXPERIMENT NO. 6

1)

PROBLEM STATEMENT :

Write a program of single inheritance with base class is animal and derived is dog class .

```
class Animal{
	void base() {
		System.out.println("Animal class is base class !!!");
	}
}
class Dog extends Animal{
	void derived() {
		System.out.println("Dog class inherits properties of Animal class !!!");
	}
}
public class SingleInheritance {
	public static void main(String[] args) {
		Dog obj=new Dog();
		obj.base();
		obj.derived();
	}
}
```

********** OUTPUT**********

```
Animal class is base class !!!
Dog class inherits properties of Animal class !!!
```

2)

PROBLEM STATEMENT :

Write a program of Multilevel Inheritance with base class is Animal class and Derived class name and BabyDog using method overriding .

```
class Animal{
	void info() {
		System.out.println("Animal class is base class !!!");
	}
}
class Dog extends Animal{
	void info() {
		super.info();
		System.out.println("Dog class inherits properties of Animal class  and it is base class for BabyDog class!!!");
	}
}
class BabyDog extends Dog{
	void info() {
		super.info();
		System.out.println("BabyDog class inherits properties of Dog class !!!");
	}
}
public class MultilevelInheritance {
	public static void main(String[] args) {
		BabyDog obj=new BabyDog();
		obj.info();
	}
}
```

**********OUTPUT**********

Animal class is base class !!!

Dog class inherits properties of Animal class and it is base class for BabyDog class!!!

BabyDog class inherits properties of Dog class !!!

3)

PROBLEM STATEMENT:

Write a program of hierarchical inheritance with base class is animal class and derived classes are Dog class and cat class .

```
class Animal{
	void m1() {
		System.out.println("Animal class is base class for Dog and Cat class.");
	}
}
class Dog extends Animal{
	void m2() {
		System.out.println("Dog class is derived class of Animal Class .");
	}
}
class Cat extends Animal{
	void m3() {
		System.out.println("Cat class is derived class of Animal Class .");
	}
}
public class Hierarchical_Inheritance {
	public static void main(String[] args) {
		Dog d=new Dog();
		Cat c=new  Cat();
		d.m2();
		d.m1();
		c.m3();
		c.m1();
		}
}
```

********** **OUTPUT** **********

Dog class is derived class of Animal Class .

Animal class is base class for Dog and Cat class.

Cat class is derived class of Animal Class .

Animal class is base class for Dog and Cat class.