# LABORATORY MANUAL OOPS

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## PROGRAMS LIST:

## WEEK-1

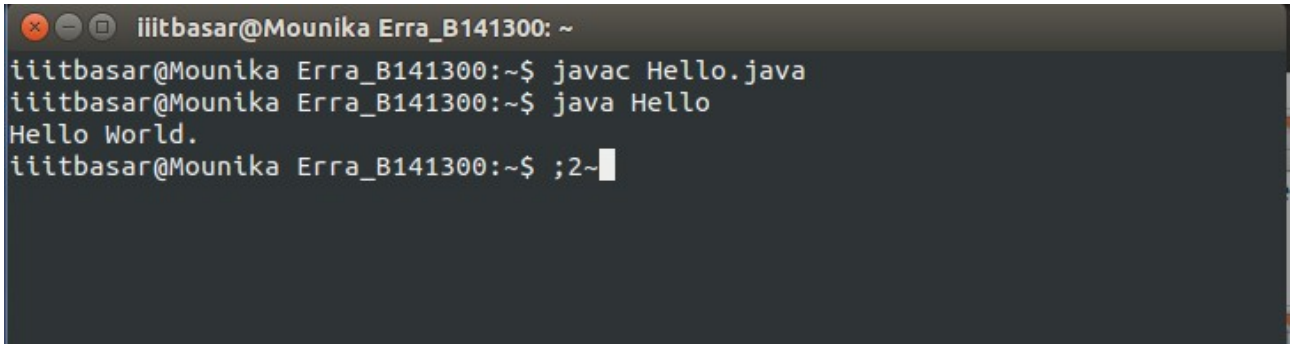
### 1. Write a Java program print “Hello World”

**Program:**

```
public class Hello{
   public static void main(String[] args) {
      System.out.println("Hello World.");
   }
}
```

**OutPut:**

Hello World.




### 2. Write a Java program that prints all real and imaginary solutions to the quadratic equation
### ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula

**Program:**

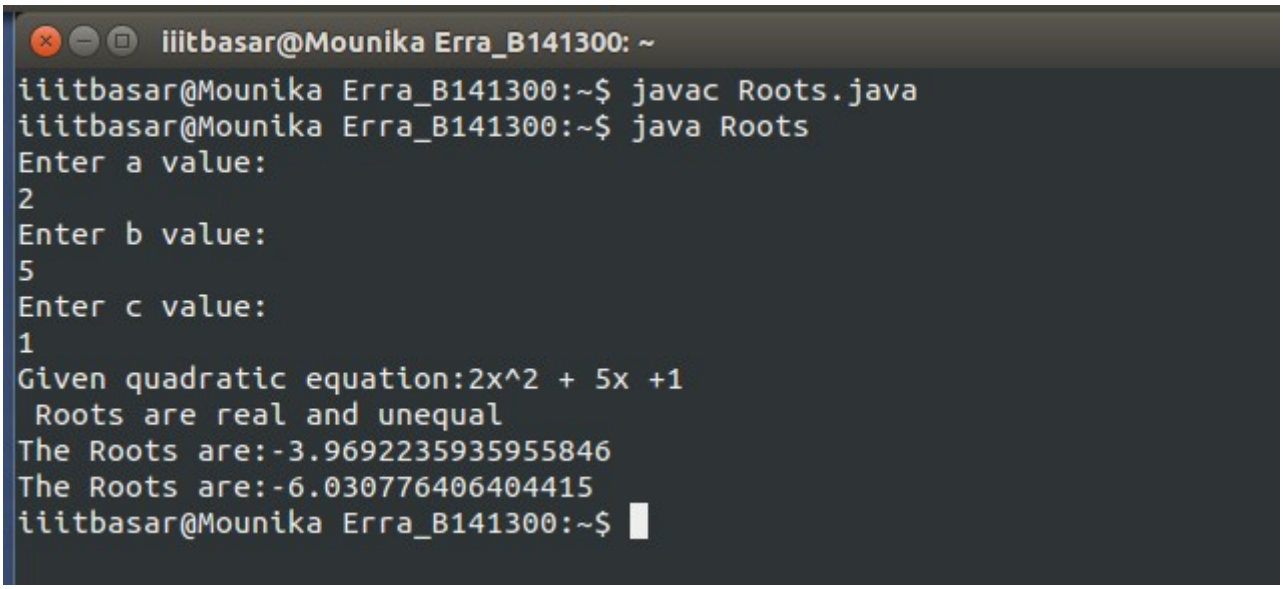
```
import java.util.Scanner;
import java.util.*;
class Roots {
        public static void main(String arg[])
        {
        Scanner sc=new Scanner(System.in);
```

```
        System.out.println("Enter a value:");int a=sc.nextInt();
        System.out.println("Enter b value:");
        int b=sc.nextInt();
        System.out.println("Enter c value:");
        int c=sc.nextInt();
        System.out.println("Given quadratic equation:"+a+"x^2 + "+b+"x +"+c);
        int d=b*b-4*a*c;
        if(d>0)
        {

        System.out.println(" Roots are real and unequal");
        double r1,r2;
        r1=(-b+(Math.sqrt(d))/(2*a));
        r2=(-b-(Math.sqrt(d))/(2*a));
        System.out.println("The Roots are:"+r1 );
        System.out.println("The Roots are:"+r2 );
        }
        else if(d==0)
        {
        System.out.println(" Roots are real and equal");
        double r1,r2;
        r1=(-b+(Math.sqrt(d))/(2*a));
        r2=(-b-(Math.sqrt(d))/(2*a));
        System.out.println(" Roots are:"+r1 );
        System.out.println("The Roots are:"+r2 );
        }
        else
        {
        double r1,r2;
        System.out.println("The Roots are imaginary:");
        r1=(-b+(Math.sqrt(d))/(2*a));
        r2=(-b-(Math.sqrt(d))/(2*a));
        System.out.println(" Roots are:"+r1 );
        System.out.println("The Roots are:"+r2 );
        }
}
}
```

**OutPut:**

```
Enter a value:
2
Enter b value:
5
Enter c value:
1
```

Given quadratic equation:2x^2 + 5x + 1
 Roots are real and unequal
The Roots are:-3.9692234992980957
The Roots are:-6.030776500701904




## 3. Write a Java program to implement calculator operations

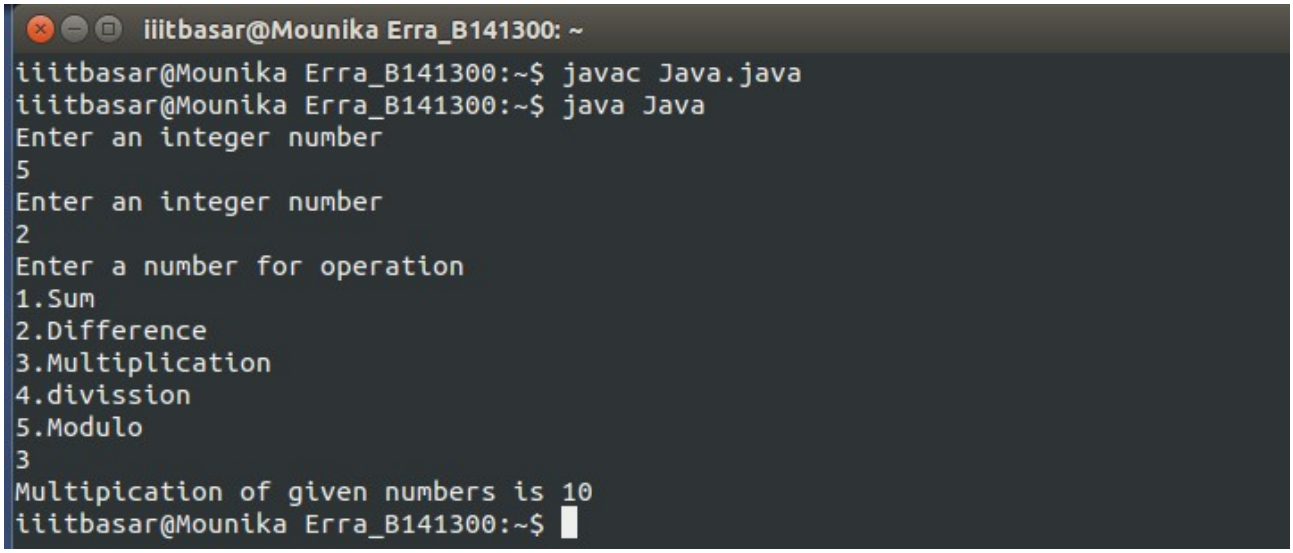
**Program:**

```
import java.util.Scanner;
class Java
{
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter an integer number");
	int a=sc.nextInt();
	System.out.println("Enter an integer number");
	int b=sc.nextInt();
	System.out.println("Enter a number for operation \n1.Sum \n2.Difference
	\n3.Multiplication\n4.divission \n5.Modulo");
	int n=sc.nextInt();
	switch(n)
	{
		case 1:
			{
			System.out.println("sum of given numbers is "+(a+b));
			}
		break;
		case 2:
```

```
                {
                System.out.println("Difference of given numbers is "+(a-b));
                }
            break;
            case 3:
                {
                System.out.println("Multipication of given numbers is "+(a*b));
                }
            break;
            case 4:
                {
                System.out.println("Divission of given numbers is "+(a/b));
                }
            break;
            case 5:
                {
                System.out.println("modulo of given numbers is "+(a%b));
                }
            break;
            default:
                System.out.println("Enter valid number");



        }
        }
}
```

**OutPut:**

```
Enter an integer number
5
Enter an integer number
4
Enter a number for operation
1.Sum
2.Difference
3.Multiplication
4.divission
5.Modulo
1
sum of given numbers is  9
```




## 4. Write a java program to find prime factors of given number

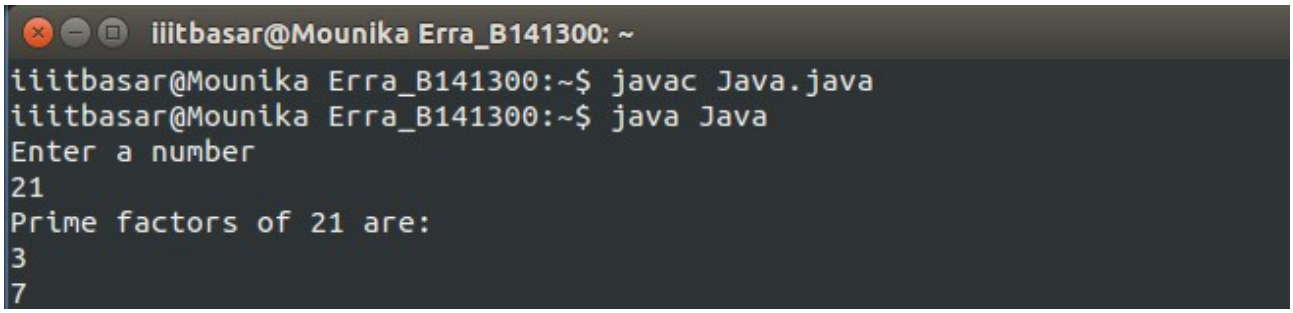
**Program:**

```
import java.util.Scanner;
class Primefact
{
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter a number");
	int a=sc.nextInt();
	int count=0;
	System.out.println("Prime factors of "+a+" are:");
	if(a>=2&&a%2==0)
	{
	System.out.println("2");
	}
		for(int i=1;i<=a;i++)
		{
			if(a%i==0)
			{
				for(int j=2;j<i;j++)
				{
				if(i%j==0)
				{
					count=0;
					break;
				}
				else
				{
```

```
                                count=1;

                        }
                        }
                        if(count==1)
                        {
                                System.out.println(i);
                        }
                }
        }
}
```

**OutPut:**

Enter a number
30
Prime factors of 30 are:
2
3
5




## 5. Write a java program to find whether given number is Palindrome or not

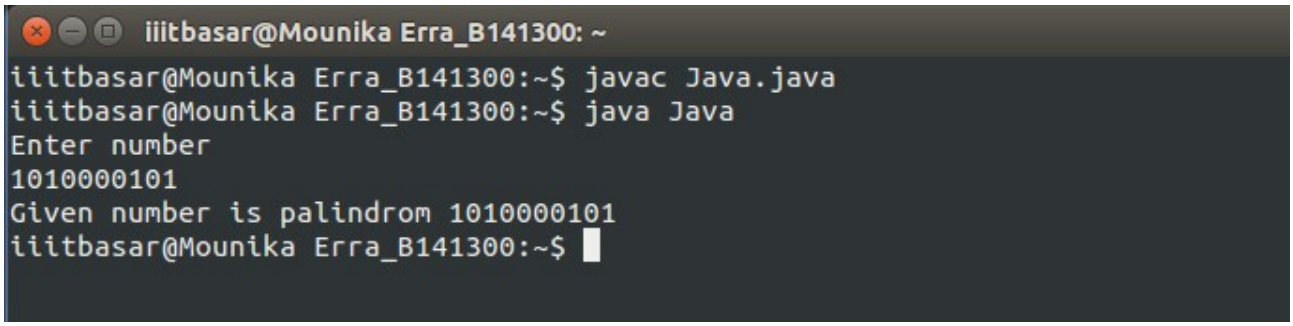
**Program:**

```
import java.util.Scanner;
class Java
{
        public static void main(String arg[])
        {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter number");
        int a=sc.nextInt();
        int t=a;
        int sum=0;
        while(a>0)
                {
```

```
                sum=sum*10;
                int rem=a%10;
                sum=sum+rem;
                a=a/10;
                }
                if(t==sum)
                        {
                        System.out.println("Given number is palindrom "+sum);
                        }
                else

                        {
                        System.out.println("Given number is not palindrom "+t);
                        }
        }
}
```

**OutPut:**

Enter number
123321
Given number is palindrom 123321



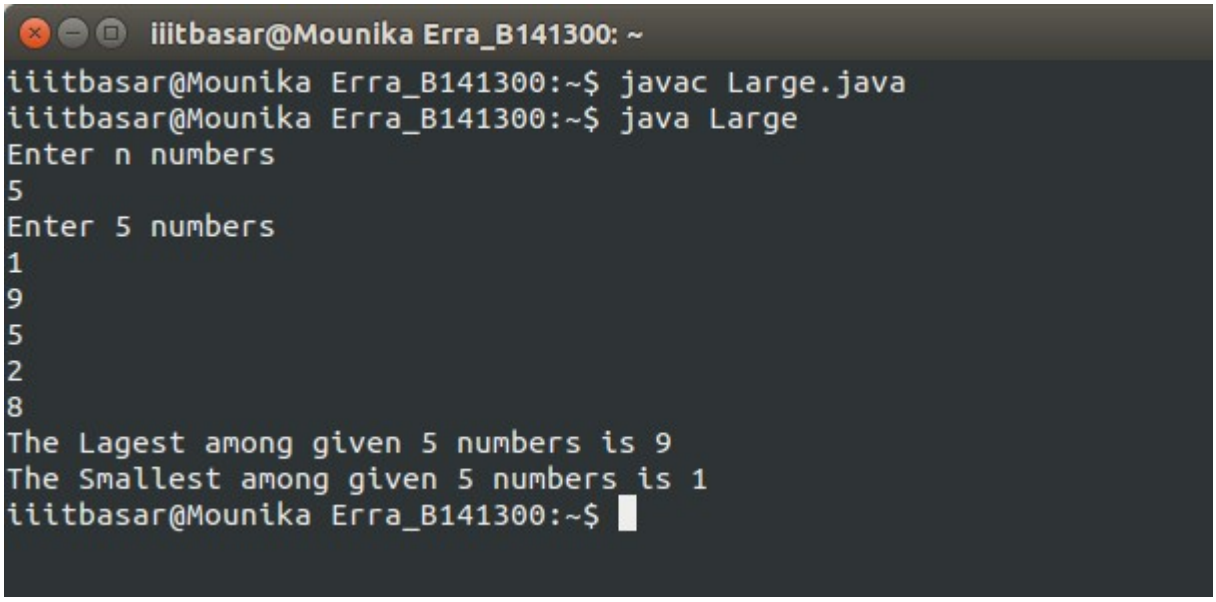

[or]

```
import java.util.Scanner;
class Large
{
        public static void main(String arg[])
        {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter n numbers");
        int n=sc.nextInt();
        int small=2147483647,large=-2147483648,num;
        System.out.println("Enter "+n+" numbers");
        for(int i=0;i<n;i++)
```

```
        {
        num=sc.nextInt();
        if(num>large)
        {
                large=num;
        }
        if(small>num)
        {
                small=num;
        }
        }
                System.out.println("The Lagest among given "+n+" numbers is "+large);
                System.out.println("The Smallest among given "+n+ " numbers is
"+small);
        }
}
```

**OutPut:**

```
Enter n numbers
5
Enter 5 numbers
1
9
5
2
8
The Lagest among given 5 numbers is 9
The Smallest among given 5 numbers is 1
```




**6. Write an application that declares 5 integers, determines and prints the**

**largest and smallest in the group.**

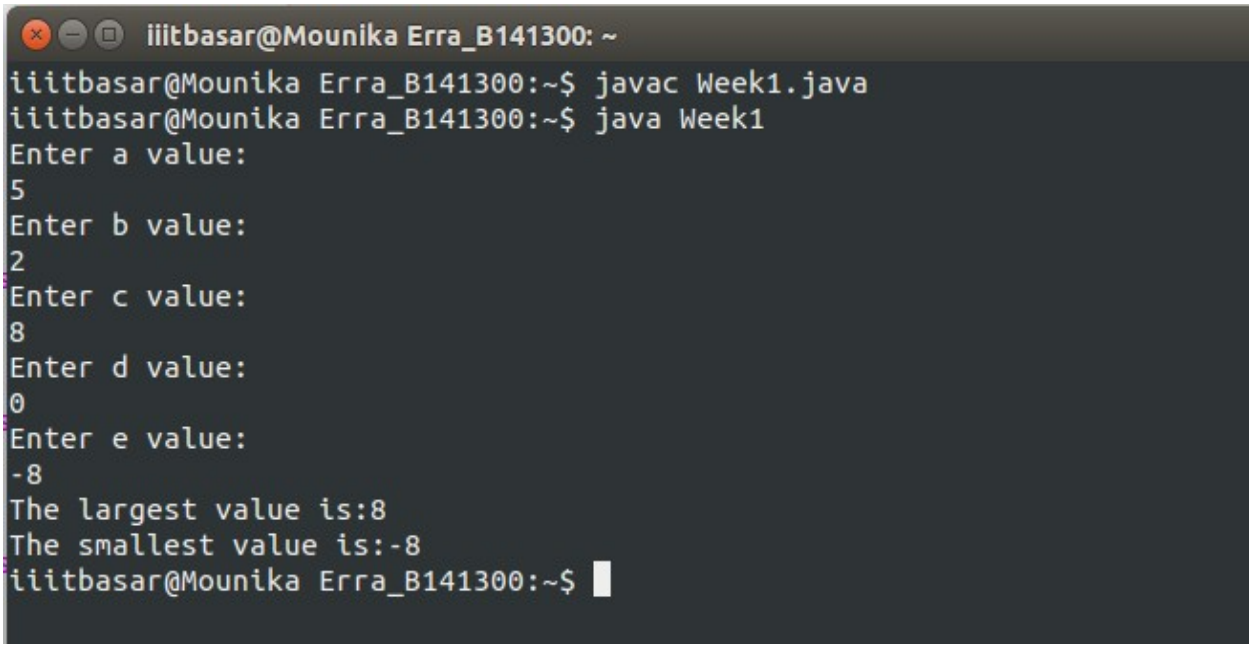
**Program:**

```
import java.util.Scanner;
import java.util.*;
class Week1
{
	public static void main(String arg[])
	{
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter a value:");
		int a=sc.nextInt();
		System.out.println("Enter b value:");
		int b=sc.nextInt();
		System.out.println("Enter c value:");
		int c=sc.nextInt();
		System.out.println("Enter d value:");
		int d=sc.nextInt();
		System.out.println("Enter e value:");
		int e=sc.nextInt();
		if(a>b && a>c && a>d && a>e)
		{
			System.out.println("The largest value is:"+a);
		}
		else if(b>c && b>d && b>e)
		{
			System.out.println("The largest value is:"+b);
		}
		else if(c>d && c>e)
		{
			System.out.println("The largest value is:"+c);
		}
		else if(b>e)
		{
			System.out.println("The largest value is:"+d);
		}
		else
		{
			System.out.println("The largest value is:"+e);
		}
		if(a<b && a<c && a<d && a<e)
		{
			System.out.println("The smallest value is:"+a);
		}
		else if(b<c && b<d && b<e)
```

```
            {
                System.out.println("The smallest value is:"+b);
            }
            else if(c<d && c<e)
            {
                System.out.println("The smallest value is:"+c);
            }
            else if(b<e)
            {
                System.out.println("The smallest value is:"+d);
            }
            else
            {
                System.out.println("The smallest value is:"+e);
            }
        }
}
```

**OutPut:**

Enter a value:
6
Enter b value:
9
Enter c value:
-5
Enter d value:
0
Enter e value:
3
The largest value is:9
The smallest value is:-5



## WEEK-2

### 1. Write a Java program to sort given list of numbers.

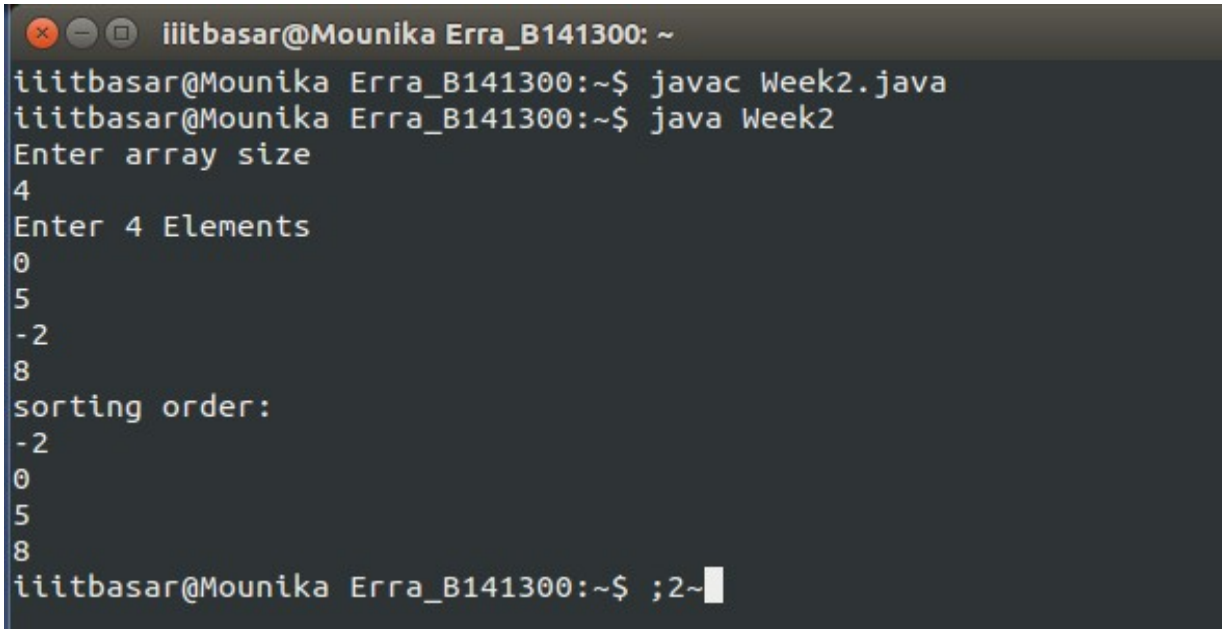
**Program:**

```
import java.util.Scanner;
class Week2
{
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter array size");
	int n=sc.nextInt();
	int a[]=new int[n];
	System.out.println("Enter "+n+" Elements");
	for(int i=0;i<n;i++)
	{
	a[i]=sc.nextInt();
	}
	for(int i=0;i<n;i++)
		{
			for(int j=i+1;j<n;j++)
			{
				if(a[i]>a[j])
				{
				int temp=a[i];
				a[i]=a[j];
				a[j]=temp;
				}
			}
		}
	System.out.println("sorting order:");
	for(int i=0;i<n-1;i++)
	{
	System.out.println(a[i]+" ");
	}
	System.out.println(a[n-1]);
	}
}
```

**OutPut:**

```
Enter array size
4
Enter 4 Elements
```

0
5
-2
8
sorting order:
-2
0
5




## 2. Write a Java program to implement linear search.

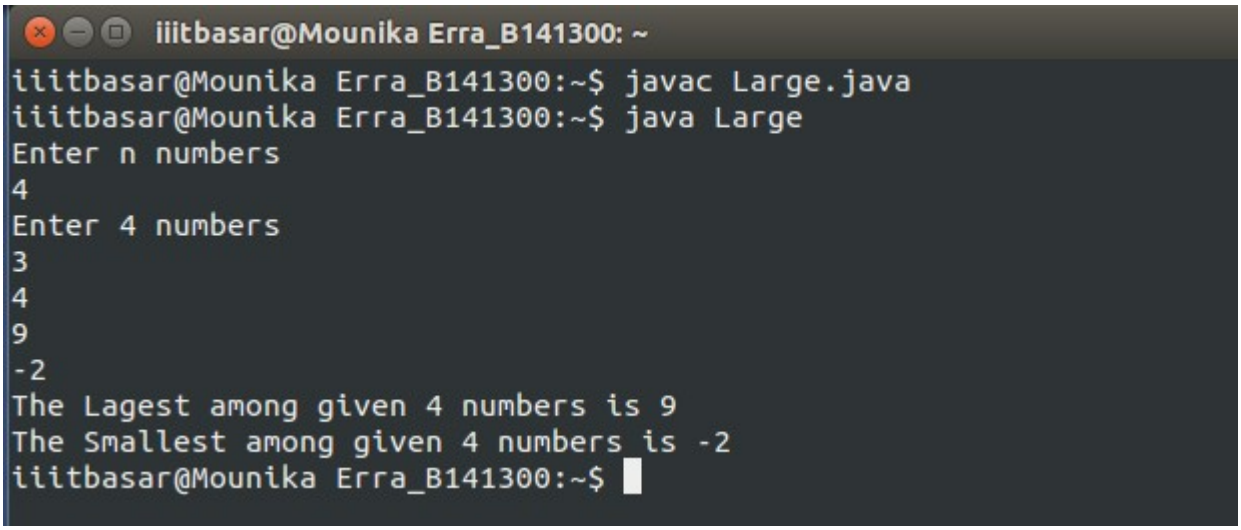
**Program:**

```
import java.util.Scanner;
class Week2
{
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter array size");
	int n=sc.nextInt();
	int a[]=new int[n];
	int i;
	System.out.println("Enter "+n+" Elements");
	for(i=0;i<n;i++)
	{
	a[i]=sc.nextInt();
	}
	System.out.println("Enter Element to Search");
```

```
        int search=sc.nextInt();
        for(i=0;i<n-1;i++)
        {
                if(a[i]==search)
                        {
                        System.out.println("Element "+search+" is Found in given array
At Index "+i);
                        break;
                        }
        }
}
}
```

**OutPut:**

```
Enter array size
4
Enter 4 Elements
2
3
4
7
Enter Element to Search
3
Element 3 is Found in given array At Index 1
```




**3. Write a Java program to implement binary search.**

**Program:**

```
import java.util.Scanner;
class Week2
{
```

```
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter array size");
	int n=sc.nextInt();
	int a[]=new int[n];
	int i;
	System.out.println("Enter "+n+" Elements");
	for(i=0;i<n;i++)
	{
	a[i]=sc.nextInt();
	}
	System.out.println("Enter Element to Search");
	int search=sc.nextInt();
	int first=0,last=n-1,middle;
	middle=(first+last)/2;
	while(first<=last)
	{
		if(a[middle]<search)
		first=middle+1;
		else if(a[middle]==search)
		{
			System.out.println("Element "+search+" is found at "+
(middle+1)+" ");
			break;
		}
		else
		last=middle-1;
		middle=(first+last)/2;
		}
		if(first>last)
		System.out.println(search+" is not present");
	}
}
```

**OutPut:**

```
Enter array size
4
Enter 4 Elements
1
4
2
5
Enter Element to Search
3
```

3 is not present

```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week2.java
iiitbasar@Mounika Erra_B141300:~$ java Week2
Enter array size
3
Enter 3 Elements
2
3
4
Enter Element to Search
3
Element 3 is found at 2
iiitbasar@Mounika Erra_B141300:~$
```

## 4. Write a java program to add two given matrices.

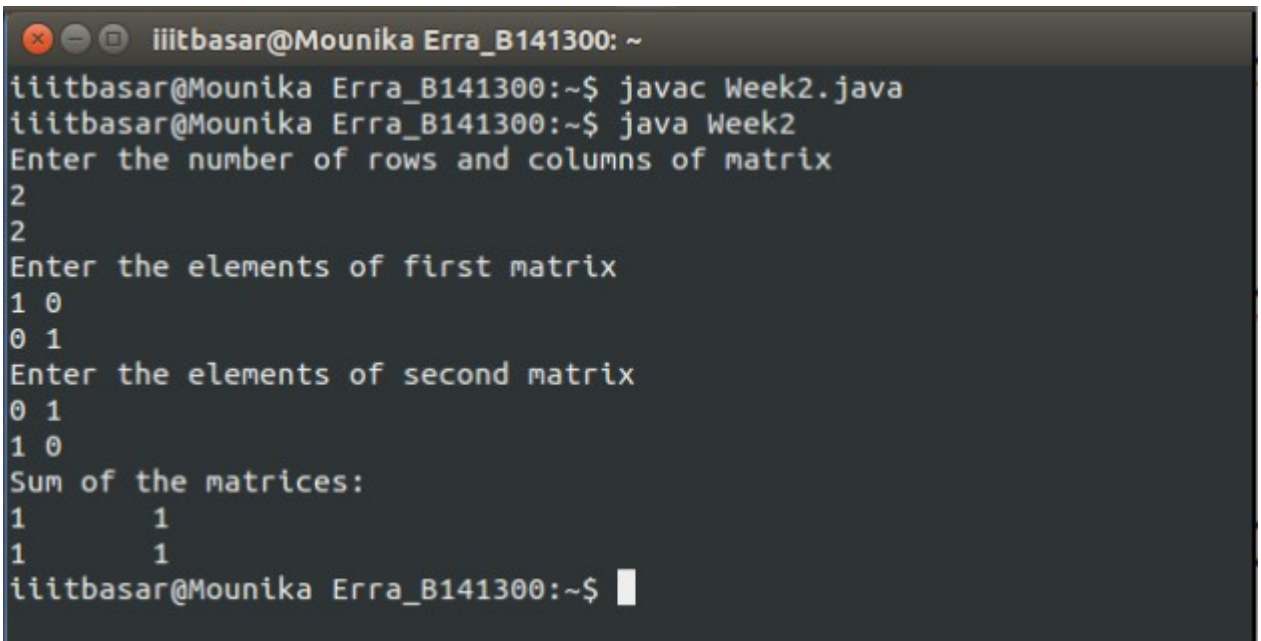
**Program:**

```
import java.util.Scanner;

class Week2
{
  public static void main(String args[])
  {
    int m, n, c, d;
    Scanner in = new Scanner(System.in);

    System.out.println("Enter the number of rows and columns of matrix");
    m = in.nextInt();
    n  = in.nextInt();

    int first[][] = new int[m][n];
    int second[][] = new int[m][n];
    int sum[][] = new int[m][n];

    System.out.println("Enter the elements of first matrix");

    for (c = 0; c < m; c++)
      for (d = 0; d < n; d++)
        first[c][d] = in.nextInt();

    System.out.println("Enter the elements of second matrix");

    for (c = 0 ; c < m ; c++)
      for (d = 0 ; d < n ; d++)
```

```
            second[c][d] = in.nextInt();

        for (c = 0; c < m; c++)
          for (d = 0; d < n; d++)
             sum[c][d] = first[c][d] + second[c][d];

        System.out.println("Sum of the matrices:");

        for (c = 0; c < m; c++)
        {
          for (d = 0; d < n; d++)
            System.out.print(sum[c][d]+"\t");

          System.out.println();
        }
      }
    }
```

**OutPut:**

```
Enter the number of rows and columns of matrix
2
2
Enter the elements of first matrix
1 2
3 4
Enter the elements of second matrix
4 3
2 1
Sum of the matrices:
5       5
5       5
```



## 5. Write a java program to multiply two given matrices.

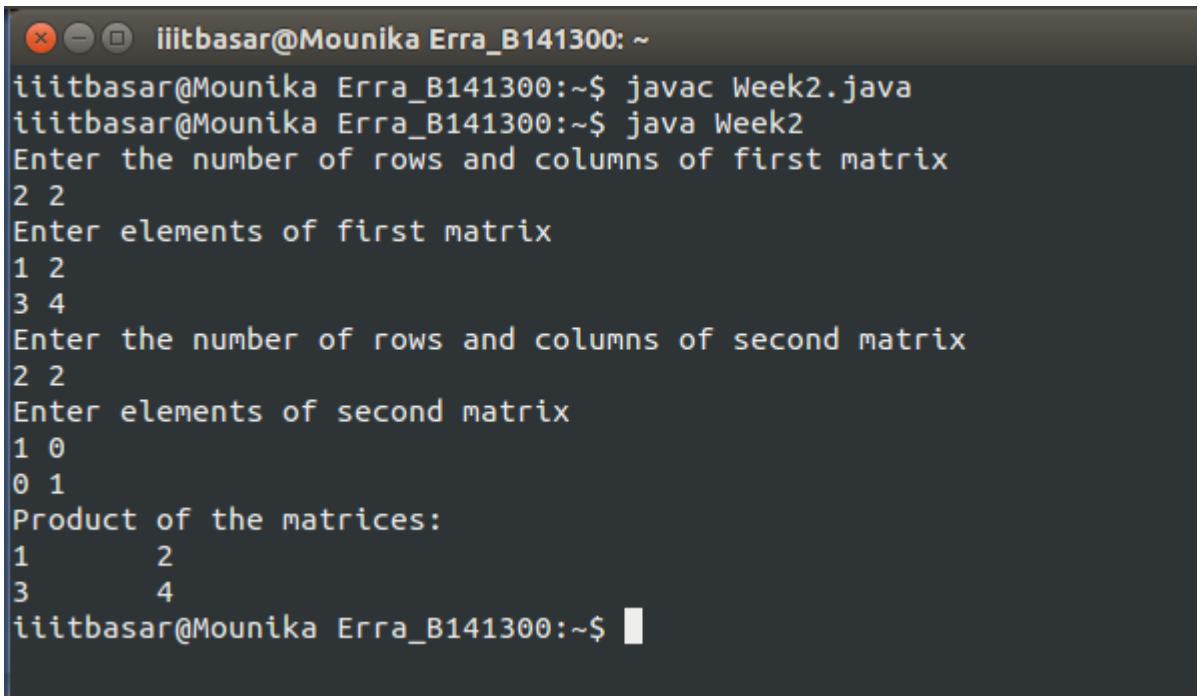
**Program:**

```
import java.util.Scanner;
   class Week2
   {
     public static void main(String args[])
     {
       int m, n, p, q, sum = 0, c, d, k;

       Scanner in = new Scanner(System.in);
       System.out.println("Enter the number of rows and columns of first matrix");
       m = in.nextInt();
       n = in.nextInt();

       int first[][] = new int[m][n];

       System.out.println("Enter elements of first matrix");

       for (c = 0; c < m; c++)
         for (d = 0; d < n; d++)
           first[c][d] = in.nextInt();

       System.out.println("Enter the number of rows and columns of second matrix");
       p = in.nextInt();
       q = in.nextInt();

       if (n != p)
         System.out.println("The matrices can't be multiplied with each other.");
       else
       {
         int second[][] = new int[p][q];
         int multiply[][] = new int[m][q];

         System.out.println("Enter elements of second matrix");

         for (c = 0; c < p; c++)
           for (d = 0; d < q; d++)
             second[c][d] = in.nextInt();

         for (c = 0; c < m; c++)
         {
           for (d = 0; d < q; d++)
           {
             for (k = 0; k < p; k++)
```

```
            {
              sum = sum + first[c][k]*second[k][d];
            }

            multiply[c][d] = sum;
            sum = 0;
          }
        }

        System.out.println("Product of the matrices:");

        for (c = 0; c < m; c++)
        {
          for (d = 0; d < q; d++)
            System.out.print(multiply[c][d]+"\t");

          System.out.print("\n");
        }
      }
    }
  }
```

OutPut:

```
Enter the number of rows and columns of first matrix
3
3
Enter elements of first matrix
1 2 3
4 5 6
7 8 9
Enter the number of rows and columns of second matrix
3
3
Enter elements of second matrix
9 8 7
6 5 4
3 2 1
Product of the matrices:
30      24      18
84      69      54
138     114     90
```




## 6. Write a java program for sorting a given list of names.

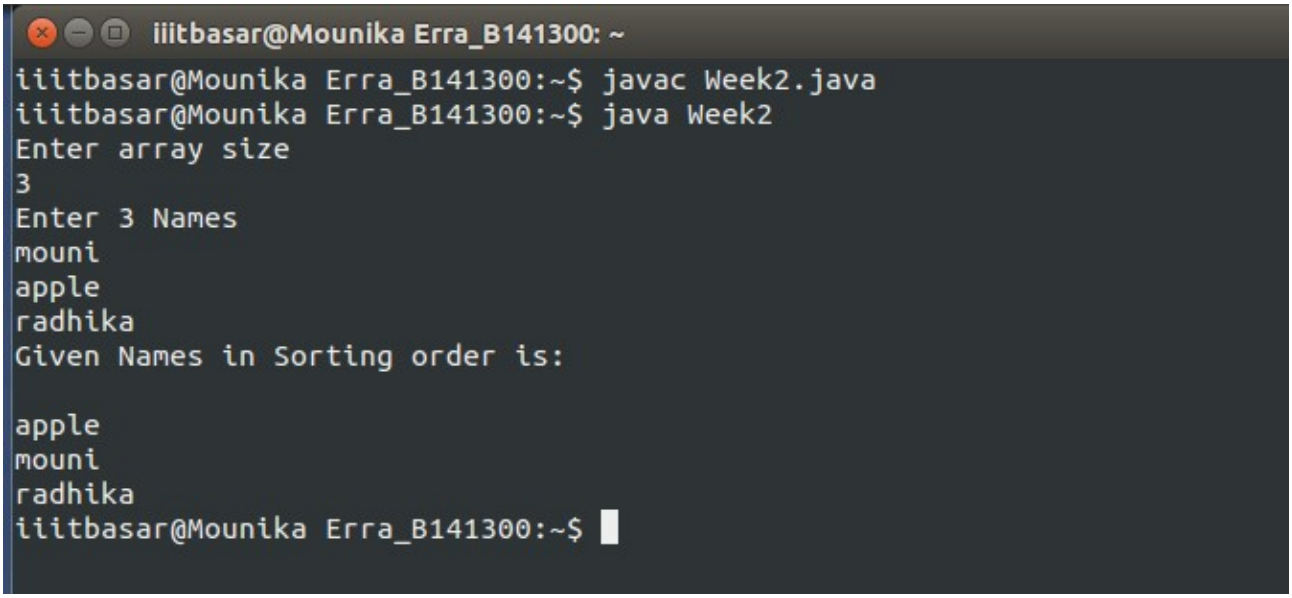
**Program:**

```
import java.util.Scanner;
class Week2
{
	public static void main(String arg[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter array size");
	int s=sc.nextInt();
	int n=s+1;
	String a[]=new String[n];
	int i;
	System.out.println("Enter "+s+" Names");
	for(i=0;i<n;i++)
	{
	a[i]=sc.nextLine();
	}
	System.out.println("Given Names in Sorting order is:");
	for(i=0;i<n;i++)
		{
			String temp;
			for(int j=i+1;j<n;j++)
			{
				if(a[i].compareTo(a[j])>0)
```

```
                        {
                        temp=a[i];
                        a[i]=a[j];
                        a[j]=temp;
                        }
                    }
                }
        for(i=0;i<n;i++)
        {
        System.out.println(a[i]);
        }
}
}
```

OutPut:
Enter array size
4
Enter 4 Names
asdfg
qwert
po
vbn
Given Names in Sorting order is:

asdfg
po
qwert
vbn



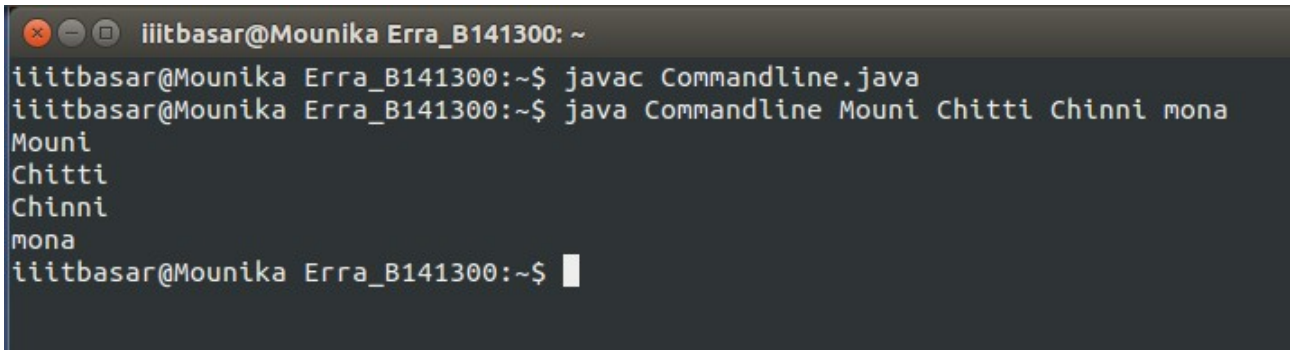
**7. Write a Java program to give an example for command line arguments.**

**Program:**

```
class Commandline
{
    public static void main(String args[])
        {
       for(int i=0;i<args.length;i++)
       System.out.println(args[i]);
   }
}
```

Output:

```
iiitbasar@Mounika Erra_B141300:~$ javac Commandline.java
iiitbasar@Mounika Erra_B141300:~$ java Commandline Amma Nanna
Amma
Nanna
```




## WEEK-3

1. Write a program to display details of the required employee based on his Id. The details of employee
includes, Emp_name, Emp_age, Emp_gender, Emp_designation, Emp_salary, Emp_Address etc.,

**Program:**

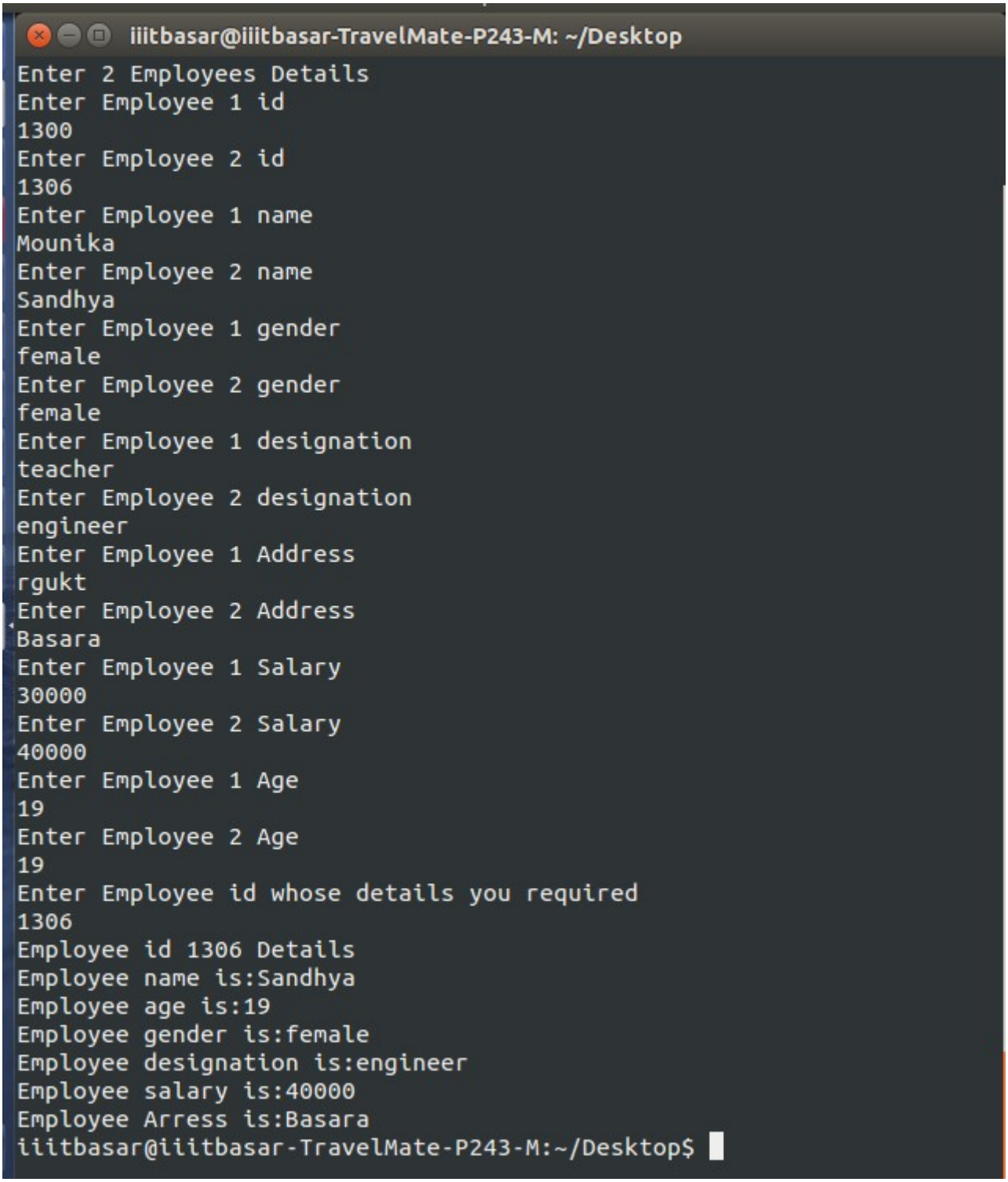
```
import java.util.Scanner;
class Employee_details1
{
  public static void main(String args[])
  {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter number of Employees:");
        int n=s.nextInt();
```

```
        System.out.println("Enter "+n+ " Employees Details");
        int id[]=new int[n];
        String name[]=new String[n];
        String gender[]=new String[n];
        String des[]=new String[n];
        String address[]= new String[n];
        int age[]=new int[n];
        int salary[]=new int[n];
        System.out.println("Enter Employee Details \nID
Number\nName\nGender\nDesignation\nAddress\nSalary\nAge\nRespectively");
        for(int i=0;i<n;i++)
        {
        System.out.println("Enter Employee "+(i+1)+" Details ");
        id[i]=s.nextInt();
        name[i]=s.next();
        gender[i]=s.next();
        des[i]=s.next();
        address[i]=s.next();
        salary[i]=s.nextInt();
        age[i]=s.nextInt();
        }
        System.out.println("Enter Employee id whose details you required");
        int ID=s.nextInt();
        System.out.println("Employee id "+ID+" Details");
        for(int i=0;i<n;i++)
        {
        if(ID==id[i])
        {
        System.out.println("Employee name is:"+name[i]);
        System.out.println("Employee age is:"+age[i]);
        System.out.println("Employee gender is:"+gender[i]);
        System.out.println("Employee designation is:"+des[i]);
        System.out.println("Employee salary is:"+salary[i]);
        System.out.println("Employee Address is:"+address[i]);
        }
        }
}
}
```

**OutPut:**

```
Enter number of Employees:
2
Enter 2 Employees Details
Enter Employee Details
ID Number
```

Name
Gender
Designation
Address
Salary
Age
Respectively
Enter Employee 1 Details
1400
mouni
female
manager
basar
500000
23
Enter Employee 2 Details
1300
hyma
female
hr
basar
3000000
23
Enter Employee id whose details you required
1300
Employee id 1300 Details
Employee name is:hyma
Employee age is:23
Employee gender is:female
Employee designation is:hr
Employee salary is:3000000
Employee Address is:basar




**2. A mail-order house sells five products whose retail prices are as follows : Product 1 : Rs. 99.90 ,**
**Product 2 : Rs. 20.20 , Product 3 : Rs. 6.87 , Product 4 : Rs. 45.50 and Product 5 : Rs. 40.49 . Each**
**product has Prdouct_Id, Product_Name,**
**Product_Quantity, Product_Price. Write an application that**

**reads a series of pairs of numbers as follows :**
**a) product Id**
**b) quantity sold your program use a switch statement to determine the retail price for each product.**
**should calculate and display the total retail value of all products sold.**
**it**

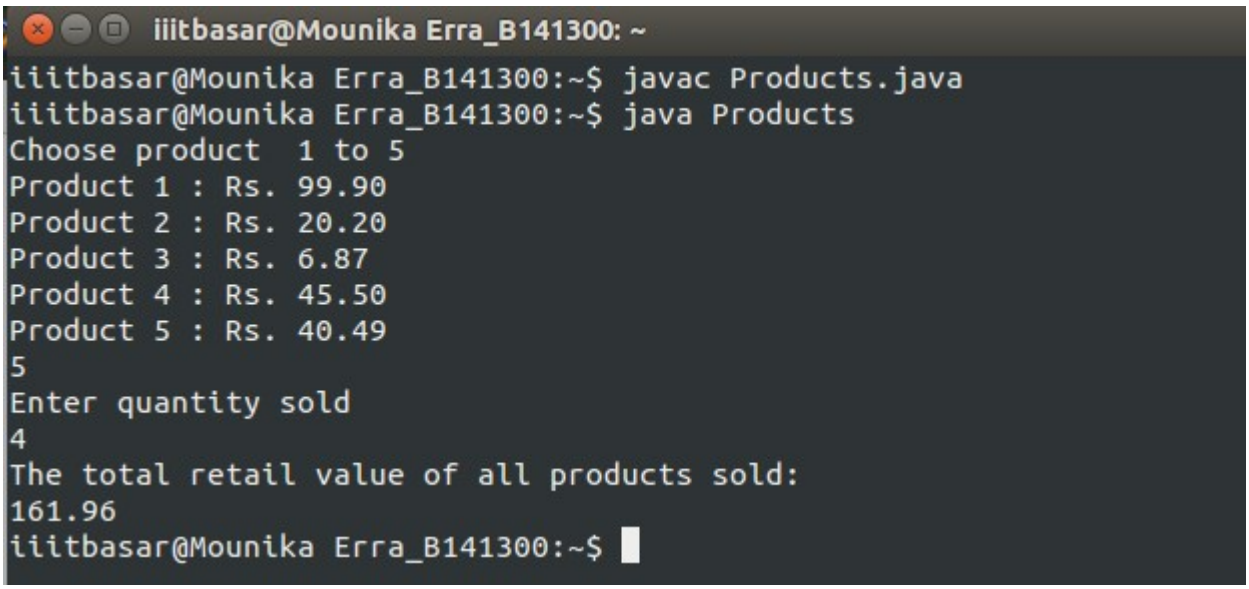
**Program:**

```
import java.util.Scanner;
public class Products
{
        public static void main(String[] args)
        {
        Scanner input = new Scanner (System.in);
            double product1;
            double product2;
            double product3;
            double product4;
            double product5;
            int quantity;
            double totalSales = 0;
             System.out.println("Choose product  1 to 5 ");
    System.out.println("Product 1 : Rs. 99.90\nProduct 2 : Rs. 20.20\nProduct 3 : Rs. 6.87\nProduct 4 : Rs. 45.50\nProduct 5 : Rs. 40.49");
             int productNo=input.nextInt();
            System.out.println("Enter quantity sold ");
            quantity = input.nextInt();
            switch (productNo)
                  {
                       case 1: product1 = 99.90;
                  totalSales+=(99.90*quantity);

                  break;
                       case 2: product2 = 20.20;
                  totalSales+=(20.20*quantity);
                   break;
                      case 3: product3 = 6.87;
                   totalSales+=(6.87*quantity);
                  break;
                    case 4: product4 = 45.50;
                 totalSales+=(45.50*quantity);
                         break;
                       case 5: product5 = 40.49;
                       totalSales+=(40.49*quantity);
                         break;
```

```
            }


            System.out.println("The total retail value of all products
sold:\n"+totalSales);
        }
}
```

**OutPut:**

```
Choose product  1 to 5
Product 1 : Rs. 99.90
Product 2 : Rs. 20.20
Product 3 : Rs. 6.87
Product 4 : Rs. 45.50
Product 5 : Rs. 40.49
4
Enter quantity sold
5
The total retail value of all products sold:
227.5
```




**3. Write java program that inputs 5 numbers, each between 10 and 100 inclusive. As**

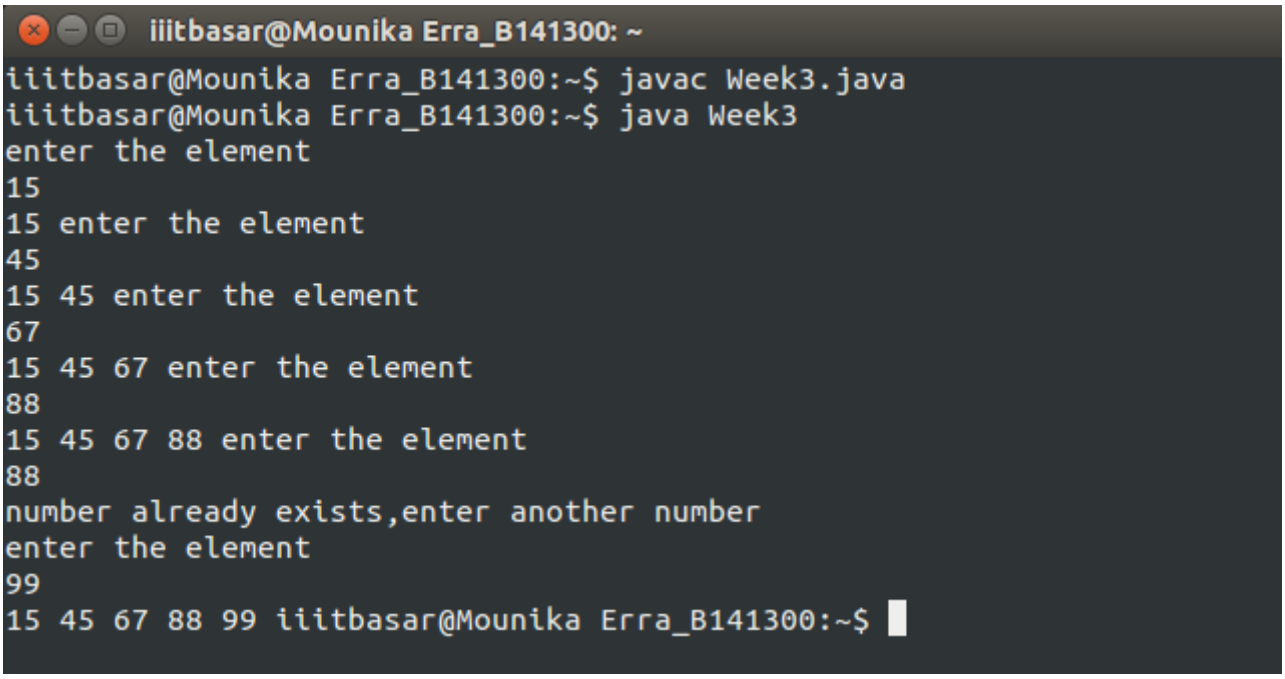
**each number is read display it only if it's not a duplicate of any number already read display the complete set of unique values input after the user enters each new value**

**Program:**

```
import java.util.*;
public class Week3
{
        public static void main(String args[])
        {
        Scanner s=new Scanner(System.in);
        int arr[]=new int[5];
        for(int i=0;i<5;i++)
        {
        int count=0;
        System.out.println("enter the element");
        int e=s.nextInt();
        for(int j=0;j<arr.length;j++)
        {
        if(e==arr[j])
        {
        count=1;
        System.out.println("number already exists,enter another number");
        i=i-1;
        break;
        }
        else if(e<10||e>100)
        {
        count=1;
        System.out.println("number is not in range (10&100)enter a valid number");
        i=i-1;
        break;
        }
        }
        if(count!=1)
        {
        arr[i]=e;
        for (int k=0;k<=i;k++)
        {
        System.out.print(arr[k]+" ");
        }
        }
    }
  }
}
```

**OutPut:**

enter the element
14
14 enter the element45
14 45 enter the element
56
14 45 56 enter the element
76
14 45 56 76 enter the element
89
14 45 56 76 89




**4. Write a java program : rolling a pair of dices 10 times [ each attempt should be delayed by 10000 ms ] and count number Successful attempts. successful attempt : If the pair of Dice results in same values.**

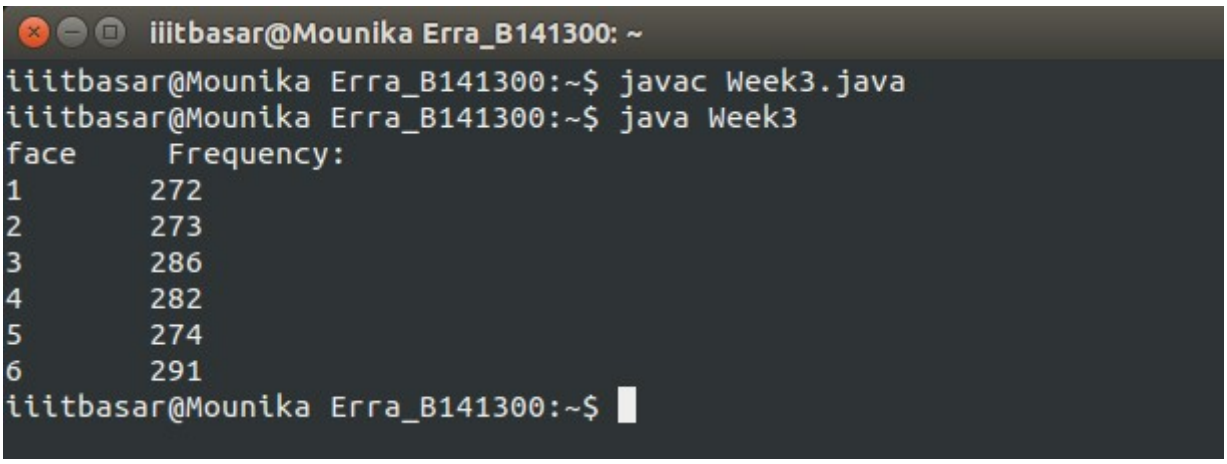
**Program:**

```
import java.util.Random;
public class Week3
{
	public static void main(String args[])
	{
	Random random=new Random();
	int freq1=0,freq2=0,freq3=0,freq4=0,freq5=0,freq6=0;
	for(int roll=1;roll<10000;roll++)
	{
	int dice1=1+random.nextInt(6);
```

```
        int dice2=1+random.nextInt(6);
        if(dice1==dice2)
        {
switch(dice1)
{
case 1:
++freq1;
break;
case 2:
++freq2;
break;
case 3:
++freq3;
break;
case 4:
++freq4;
break;
case 5:
++freq5;
break;
case 6:
++freq6;
break;
}
}
}
System.out.println("face\t
Frequency:");System.out.println("1\t"+freq1+"\n2\t"+freq2+"\n3\t"+freq3+"\n4\t"+fr
eq4+"\n5\t"+freq5+"\n6\t"+freq6);
}
}
```

Output:

```
face   Frequency:
1       296s
2       282
3       291
4       304
5       299
6       304
```




**5. Implement the following case study using OOP concepts in Java. E-Book stall :**
**Every book has Properties which includes : Book _Name, Book_Author,Book_Count ; Every Customer is having properties as : Customer_Id, Customer_Name, Customer_Address and he can buy Books from E- Book stall. Write a Program which will display the text book name and the remaining count of text books when a customer buys a text book.**

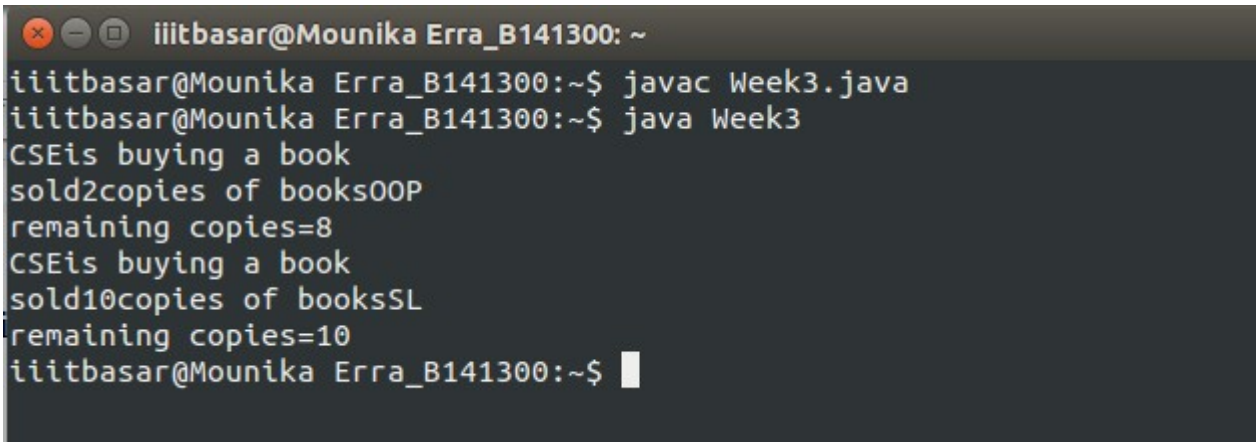
**Program:**

```
import java.util.*;
class Week3
{
public static void main(String args[])
{
        Book b1=new Book("OOP","Mounika",10);
        customer c1=new customer("CSE","rgukt_basar",10);
        c1.buy(b1,2);
        Book b2=new Book("SL","Radhika",20);
        customer c2=new customer("CSE","rgukt_basar",20);
        c2.buy(b2,10);
}
}
class Book
{
        String name,author;
        int count;
        public Book(String name,String author,int count)
        {
        this.name=name;
        this.author=author;
        this.count=count;
}
```

```
public void sell(int n)
{
        if(n<=count)
{
        count=count-n;
        System.out.println("sold"+n+"copies of
books"+name);System.out.println("remaining copies="+count);
}
else
{
        System.out.println("stock not available");
}
}
}
class customer
{
        String name,address;
        int cid;
        public customer(String name,String address,int cid)
        {
        this.name=name;
        this.address=address;
        this.cid=cid;
        }
        public void buy(Book b,int n)
        {
        System.out.println(name+"is buying a book");
        b.sell(n);
        }
}
```

**OutPut:**

```
CSEis buying a book
sold2copies of booksOOP
remaining copies=8
CSEis buying a book
sold10copies of booksSL
remaining copies=10
```




## WEEK-4

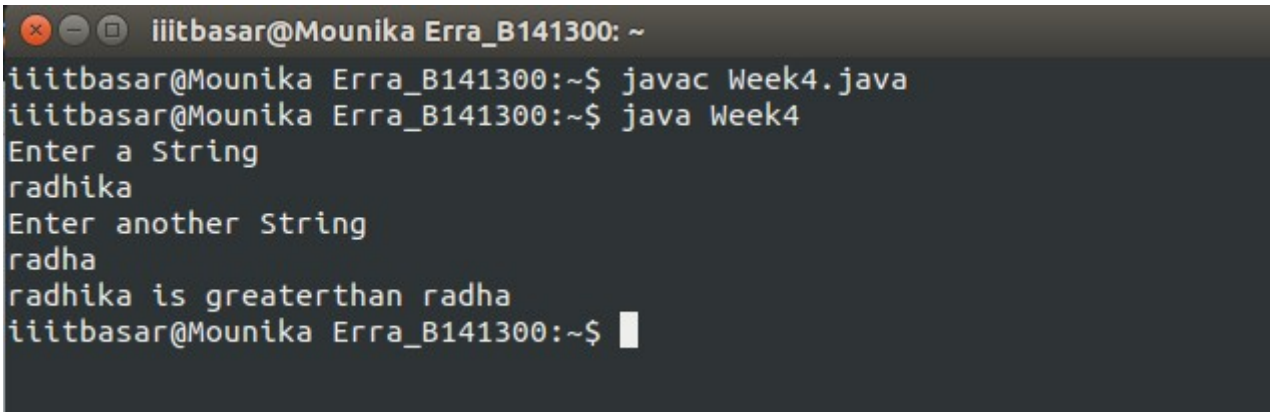
1. Write an application that uses String method compareTo to compare two strings defined by the user.

**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a String");
	String s=sc.nextLine();
	System.out.println("Enter another String");
	String s1=sc.nextLine();
		if(s.compareTo(s1)>0)
		{
		System.out.println(s+" is greaterthan "+s1);
		}
		else if(s.compareTo(s1)<0)
		{
		System.out.println(s+" is lessthan "+s1);
		}
		else
		{
		System.out.println("Given two Strings are equal");
		}
	}
}
```

**OutPut:**

Enter a String
mouni
Enter another String
mounika
mouni is lessthan mounika




**2. Write an application that uses String method equals and equalsIgnoreCase to tests objects for equality.**

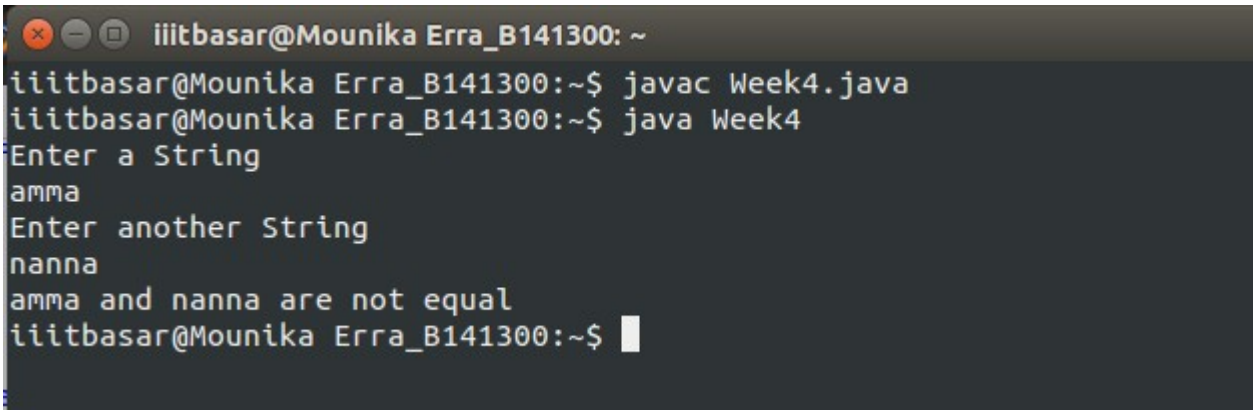
**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a String");
	String s=sc.nextLine();
	System.out.println("Enter another String");
	String s1=sc.nextLine();
	if(s.equals(s1))
	{
	System.out.println(s+" and "+s1+" are equal");
	}
	else if(s.equalsIgnoreCase(s1))
	{
	System.out.println(s+" and "+s1+" are equal by Ignoring the case of characters");
	}
	else
	{
	System.out.println(s+" and "+s1+" are not equal");
```

```
        }
        }
}
```

**OutPut:**

Enter a String
Rgukt
Enter another String
RGUKT
Rgukt and RGUKT are equal by Ignoring the case of characters
Enter a String
rgukt
Enter another String
iiit
rgukt and iiit are not equal




**3. Write an application that uses String method indexOf to determine the total of any given alphabet in a defined text.**

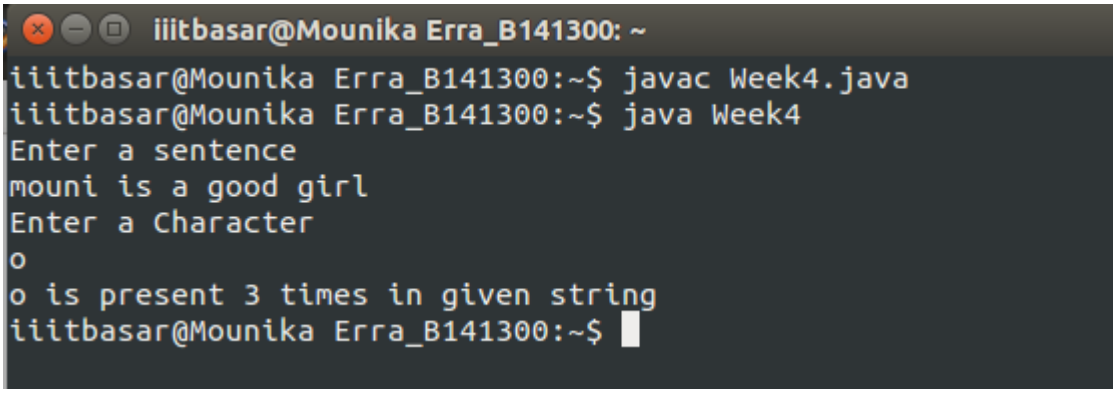
**Progrom:**

```
import java.util.Scanner;
class Week4
{
        public static void main(String args[])
        {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a sentence");
        String sen = sc.nextLine();
        System.out.println("Enter a Character");
        char ch = sc.next().charAt(0);
        int count=0;
        for(int i=0;i<sen.length();i++)
        {
        if(sen.charAt(sen.indexOf(ch))==sen.charAt(i))
```

```
        {
                count++;
        }
        }
        System.out.println(ch+" is present "+count+ " times in given string");
        }
}
```

**OutPut:**

Enter a sentence
Basar
Enter a Character
a
a is present 2 times in given string



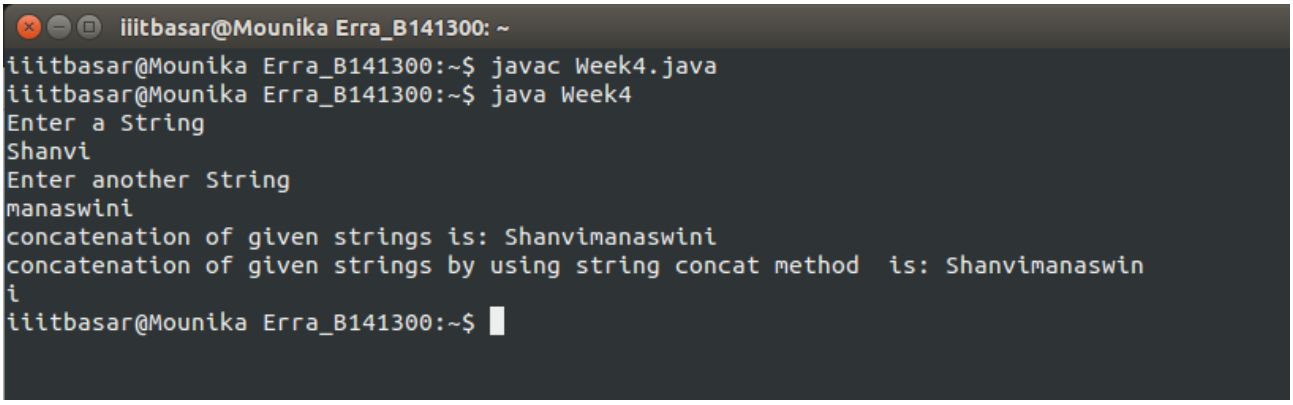

**4. Write an application that uses String method concat to concatenate two defined strings**

**Program:**

```
import java.util.Scanner;
class Week4
{
        public static void main(String args[])
        {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        System.out.println("Enter another String");
        String s1=sc.nextLine();
        System.out.println("concatenation of given strings is: "+s+s1);
        String s2=s.concat(s1);
        System.out.println("concatenation of given strings by using string concat
        method  is: "+s2);
        }
}
```

**Output:**

Enter a String
RGUKT
Enter another String
Basar
concatenation of given strings is: RGUKTBasar
concatenation of given strings by using string concat method  is: RGUKTBasar




**5. Write a Java program to print all vowels in given string and count number of vowels and consonants present in given string**

**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("enter your sentence");
	String sen = sc.nextLine();
	int vowels=0,con=0;
	char ch;
	sen=sen.toLowerCase();
	for(int i=0;i<sen.length();++i)
	{
	ch=sen.charAt(i);
	if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'||ch=='A'||ch=='E'||ch=='O'||ch=='I'||
	ch=='U')
	{
	++vowels;
	System.out.println(ch+" is vowel");
	}
	else (ch>'a'&&ch<='z')
```

```
        {
        ++con;
        System.out.println(ch+" is consonant");
        }
        }
        System.out.println("Number of vowels present in given sentence is "+vowels);
        System.out.println("Number of Consonants present in given sentence is
"+con);
        }
}
```

**OutPut:**

```
Enter your sentence
Mounika is a Smart Girl
m is consonant
o is vowel
u is vowel
n is consonant
i is vowel
k is consonant
a is vowel
i is vowel
s is consonant
a is vowel
s is consonant
m is consonant
a is vowel
r is consonant
t is consonant
g is consonant
i is vowel
r is consonant
l is consonant
Number of vowels present in given sentence is 8
Number of Consonants present in given sentence is 11
```

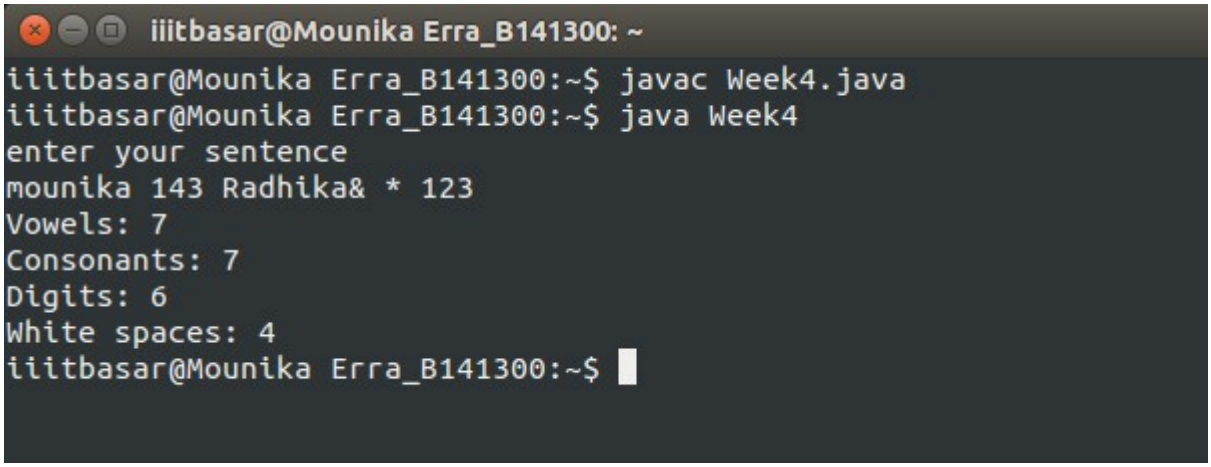
```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java
iiitbasar@Mounika Erra_B141300:~$ java Week4
Enter your sentence
Not getting It Take a deep breath and say ur smart enough to do this
n is consonant
o is vowel
t is consonant
g is consonant
e is vowel
t is consonant
t is consonant
i is vowel
n is consonant
g is consonant
i is vowel
t is consonant
t is consonant
a is vowel
k is consonant
e is vowel
a is vowel
d is consonant
e is vowel
e is vowel
p is consonant
b is consonant
r is consonant
e is vowel
a is vowel
t is consonant
s is consonant
m is consonant
a is vowel
r is consonant
t is consonant
e is vowel
n is consonant
o is vowel
u is vowel
g is consonant
h is consonant
t is consonant
o is vowel
d is consonant
o is vowel
t is consonant
h is consonant
i is vowel
s is consonant
Number of vowels present in given sentence is 21
Number of Consonants present in given sentence is 33
iiitbasar@Mounika Erra_B141300:~$
```

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	String sen;
	Scanner in = new Scanner(System.in);
	System.out.println("enter your sentence");
	sen = in.nextLine();
	int vow=0, con=0, digits=0, spaces=0;
	char ch;
	sen=sen.toLowerCase();
	for(int i = 0; i < sen.length(); ++i)
	{
	ch = sen.charAt(i);
	if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u'||ch=='A'|| ch=='E'||
	ch=='I'|| ch=='O'||ch=='U')
	{
	++vow;
	}
	else if((ch >= 'a' && ch <= 'z'))
	{
	++con;
	}
	else if(ch >= '0' && ch <= '9')
	{
	++digits;
	}else if(ch == ' ')
	{
	++spaces;
	}
	}
	System.out.println("Vowels: " +vow);
	System.out.println("Consonants: " +con);
	System.out.println("Digits: " +digits);
	System.out.println("White spaces: " +spaces);
	}
}
```

**OutPut:**

```
enter your sentence
im a good girl 123
Vowels: 5
Consonants: 6
```

Digits: 3
White spaces: 4




## 6. Write an application that finds the length of a given string.

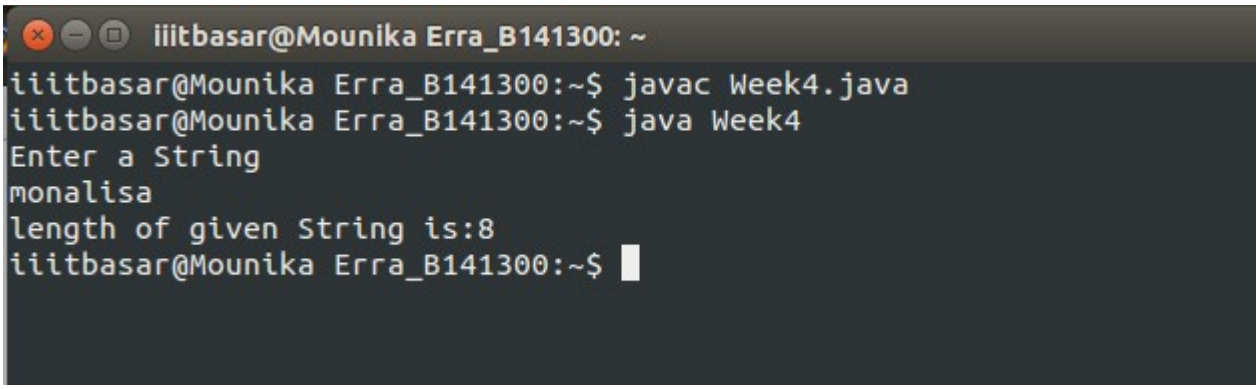
**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a String");
	String s=sc.nextLine();
	int a=s.length();
	System.out.println("length of given String is:"+a);
	}
}
```

**OutPut:**

Enter a String
rgukt
length of given String is:5

OutPut:



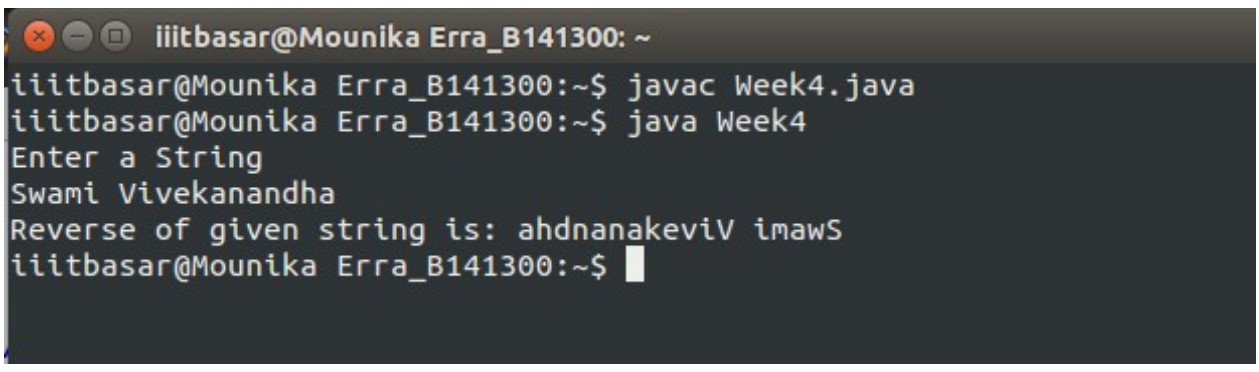

## 7. Write an application that uses String method charAt to reverse the string.

**Program:**

```
import java.util.Scanner;
class Week4
{
        public static void main(String args[])
        {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        int n=s.length();
        System.out.print("Reverse of given string is: ");
        for(int i=n-1;i>=0;i-- )
        {
        char rev=s.charAt(i);
        System.out.print(rev);
        }
         System.out.println(“”);
        }
}
```

**OutPut:**

Enter a String
rgukt
Reverse of given string is: tkugr



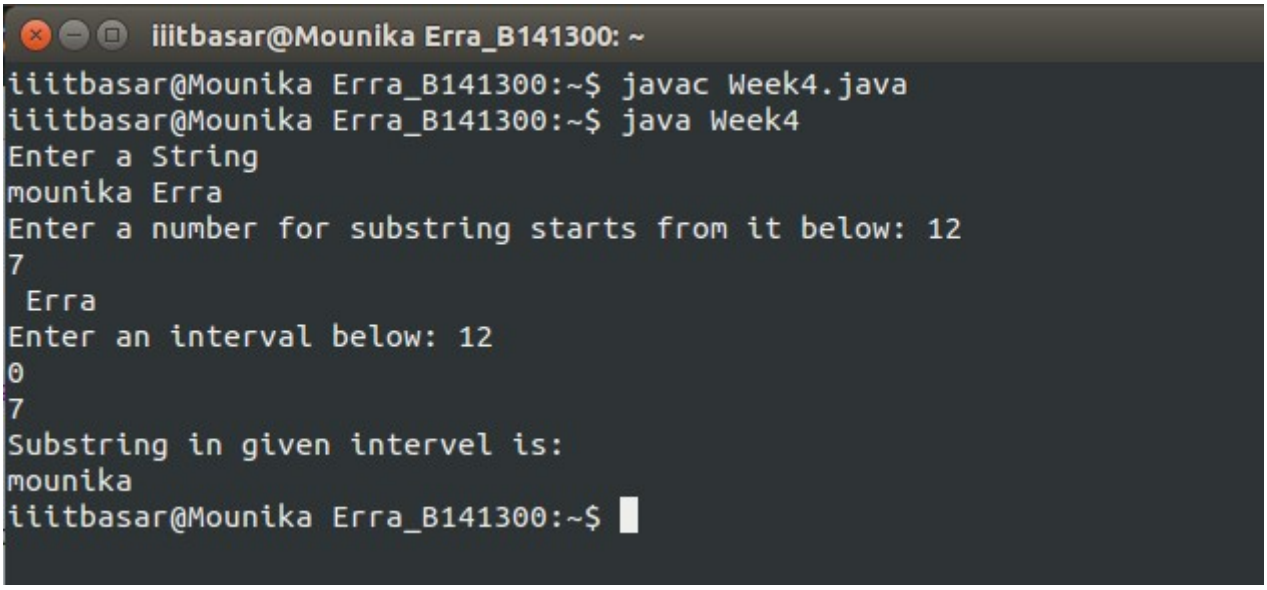
**8. Write an application that finds the substring from any given string using substring and method startsWith & endsWith methods.**

**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a String");
	String s=sc.nextLine();
	System.out.println("Enter a number for substring starts from it: "+(s.length()));
	int n=sc.nextInt();
	String s1=s.substring(n);
	System.out.println(s1);
	System.out.println("Enter an interval below: "+(s.length()));
	int a=sc.nextInt();
	int b=sc.nextInt();
	String s2=s.substring(a,b);
	System.out.println("Substring in given intervel is:");
	System.out.println(s2);
	}
}
```

**Output:**

```
Enter a String
RGUKTBasar
Enter a number for substring starts from it: 10
5
Basar
Enter an interval below: 10
5
8
Substring in given intervel is:
Bas
```



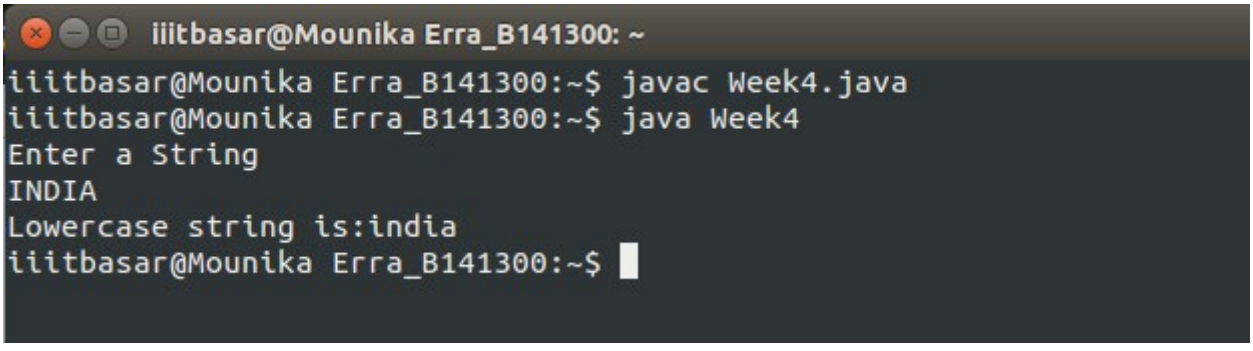

**9. Write an application that changes any given string with uppercase letters, displays to lowercase letters and displays it.**

**Program:**

```
import java.util.Scanner;
class Week4
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a String");
	String s=sc.nextLine();
	String s1=s.toLowerCase();
	System.out.print("Lowercase string is:"+s1);
	System.out.println(" ");

	}
}
```

**OutPut:**

Enter a String
RGUKT
Lowercase string is:rgukt



# WEEK-5

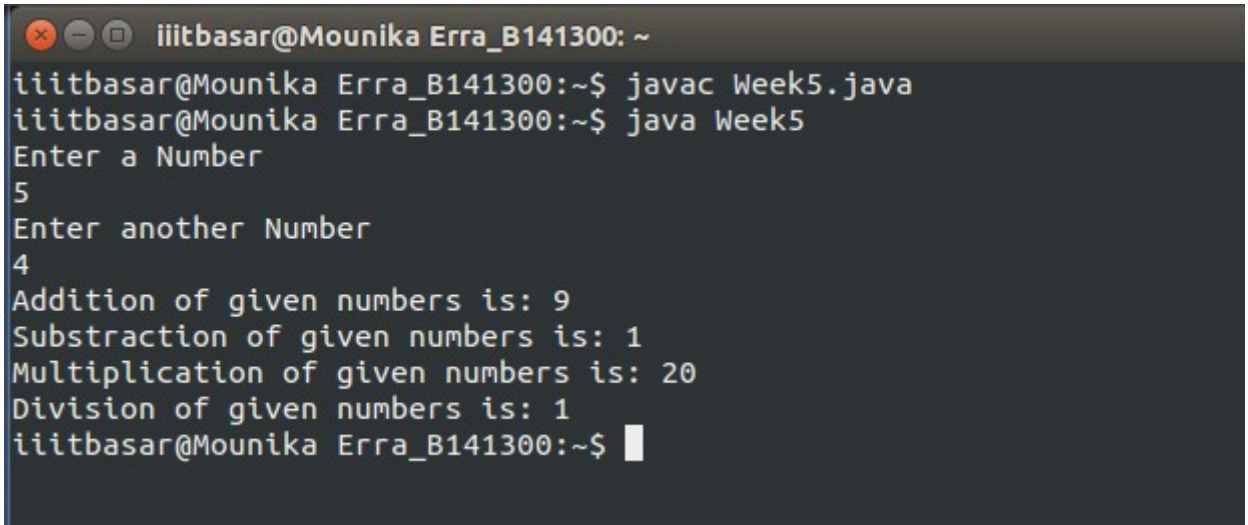
## 1. Write a Java Program to implement Wrapper classes and their methods.

**Program:**

```
import java.util.Scanner;
class Week5
{
	public static void main(String args[])
	{
	Scanner s=new Scanner(System.in);
	System.out.println("Enter a Number");
	int a=s.nextInt();
	Integer c= new Integer(a);
	System.out.println("Enter another Number");
	int b=s.nextInt();
	Integer d= new Integer(b);
	System.out.println("Addition of given numbers is: "+(c+d));
	System.out.println("Substraction of given numbers is: "+(c-d));
	System.out.println("Multiplication of given numbers is: "+(c*d));
	System.out.println("Division of given numbers is: "+(c/d));
	}
}
```

**OutPut:**

```
Enter a Number
20
Enter another Number
5
Addition of given numbers is: 25
Substraction of given numbers is: 15
Multiplication of given numbers is: 100
Division of given numbers is: 4
```



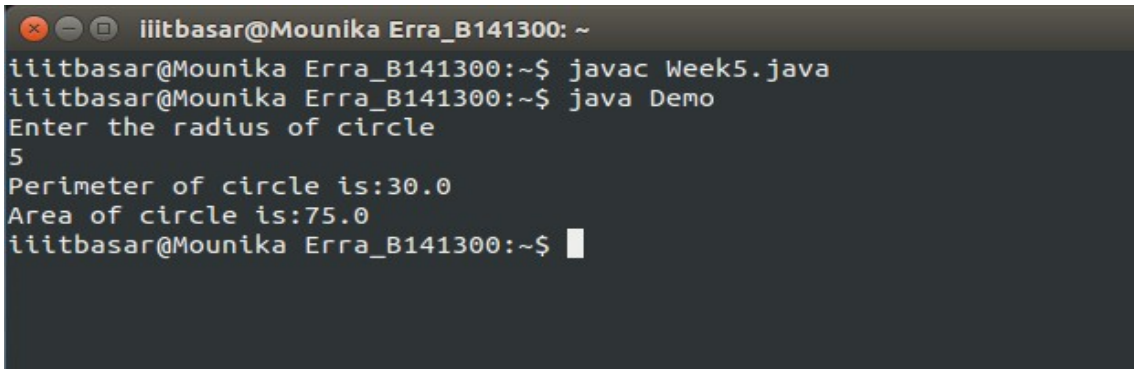
**2. Write an application that prompts the user for the radius of a circle and uses a method called circleArea to calculate the area of the circle and uses a method circlePerimeter to calculate the perimeter of the circle.**

**Program:**

```
import java.util.Scanner;
class Week5
{
	double r;
	double Area()
	{
		return (22/7)*r*r;
	}
	double Perimeter()
	{
		return 2*(22/7)*r;
	}
}

//class declares multiple objects of circle
class Demo
{
	public static void main(String args[])
	{
	Scanner s=new Scanner(System.in);
	Week5 c=new Week5();//object1
	System.out.println("Enter the radius of circle");
	double R=s.nextDouble();
	c.r=R;
	System.out.println("Perimeter of circle is:"+c.Perimeter());
	System.out.println("Area of circle is:"+c.Area());
	}
}
```

**OutPut:**

```
Enter the radius of circle
7
Perimeter of circle is:42.0
Area of circle is:147.0
```



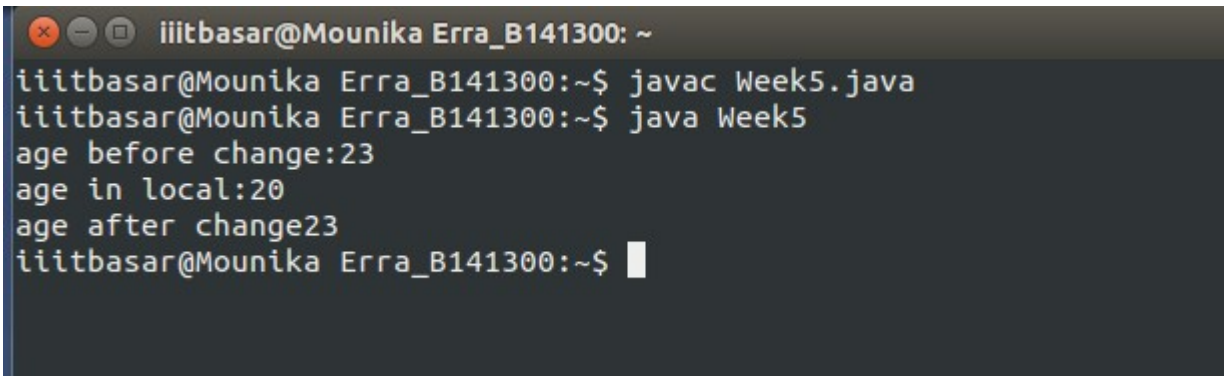
## 3. Write a JAVA program for the following
## a. Call by value

**Program:**

```
class Week5
{
int age=23;
void change_age(int age)
{
age=age+10;// cahnges will be done in the local variable only
System.out.println("age in local:"+age);
}
public static void main(String aa [])
{
Week5 c1=new Week5();
System.out.println("age before change:"+c1.age);
c1.change_age(10);
System.out.println("age after change"+c1.age);
}
}
```

**OutPut:**

```
age before change:23
age in local:20
age after change23
```




## b. Call by object

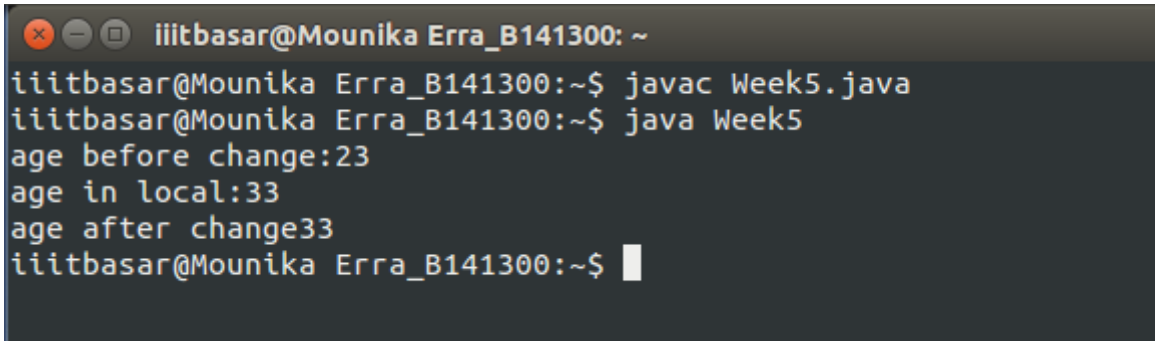
**Program:**

```
class Week5
{
int age=23;
        void change_age(Week5 c1)
        {
        age=age+10;// cahnges will be done in the local variable only
```

```
        System.out.println("age in local:"+age);
        }
        public static void main(String aa [])
        {
        Week5 c1=new Week5();
        System.out.println("age before change:"+c1.age);
        c1.change_age(c1);// passinf object through called method
        System.out.println("age after change"+c1.age);
        }
}
```

**OutPut:**

age before change:23
age in local:33
age after change33




**4. Create a class Account with an instance variable balance (double). It shouldcontain a constructor that initializes the balance, ensure that the initial balance is greater than 0.0. Acct details : Acct_Name, Acct_acctno, Acct_Bal, Acct_Address.**
**Create two methods namely credit and debit, getBalance.**
**The Credit adds the amount (passed as parameter) to balance and does not return any data. Debit method withdraws money from an Account. GetBalance displays the amount. Ensure that the debit amount does not exceed the Account's balance. In that case the balance should be left unchanged and the method should print a message indicating "Debit amount exceeded account balance".**

**Program:**

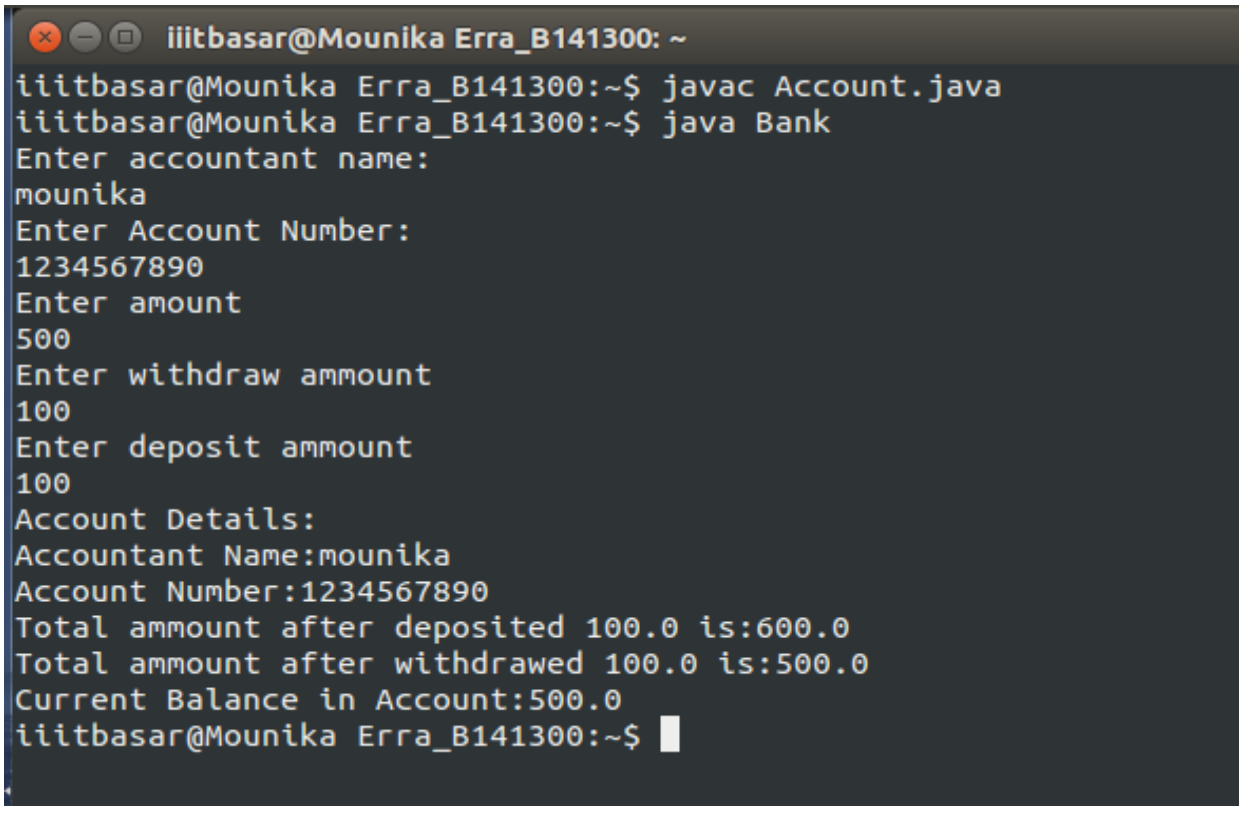
```
import java.util.Scanner;
class Account
{
        //instance variables
        String Accountant_name;
        int Account_number;
```

```
        double ammount,withdraw,deposit;
        Account(String s,double a,int i,double w,double d)
        {
                Accountant_name=s;
                ammount=a;
                Account_number=i;
                withdraw=w;
                deposit=d;
        }
        void debit(double w)
       {
        if(ammount>w)
        {
                ammount=(ammount-w);
                System.out.println("Total ammount after withdrawed "+withdraw+"
is:"+ammount);
                double M=(ammount-withdraw)+deposit;
                System.out.println("Current Balance in Account:"+M);
        }
        else
        {
                System.out.println("Insufficent accunt balance");
                System.out.println("Enter amount below:"+ammount);
        }
}
        void credit(double d)
        {
        ammount=(ammount+d);
        System.out.println("Accountant Name:"+Accountant_name);
        System.out.println("Account Number:"+Account_number);
        System.out.println("Total ammount after deposited "+deposit+"
is:"+ammount);
}
}
class Bank
{
        public static void main(String args[])
        {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter accountant name:");
        String name=s.nextLine();
        System.out.println("Enter Account Number:");
        int i=s.nextInt();
        System.out.println("Enter amount");
        double a=s.nextDouble();
```

```
        System.out.println("Enter withdraw ammount");
        double w=s.nextDouble();

        System.out.println("Enter deposit ammount");
        double d=s.nextDouble();
        System.out.println("Account Details:");
        Account Ac=new Account(name,a,i,w,d);
        Ac.credit(d);
        Ac.debit(w);
        }
}
```

**OutPut:**

Enter accountant name:
Radhika
Enter Account Number:
1234567890
Enter amount
1000
Enter withdraw ammount
100
Enter deposit ammount
500
Account Details:
Accountant Name:Radhika
Account Number:1234567890
Total ammount after deposited 500.0 is:1500.0
Total ammount after withdrawed 100.0 is:1400.0
Current Balance in Account:1400.0



## 5. Write Java program for the following

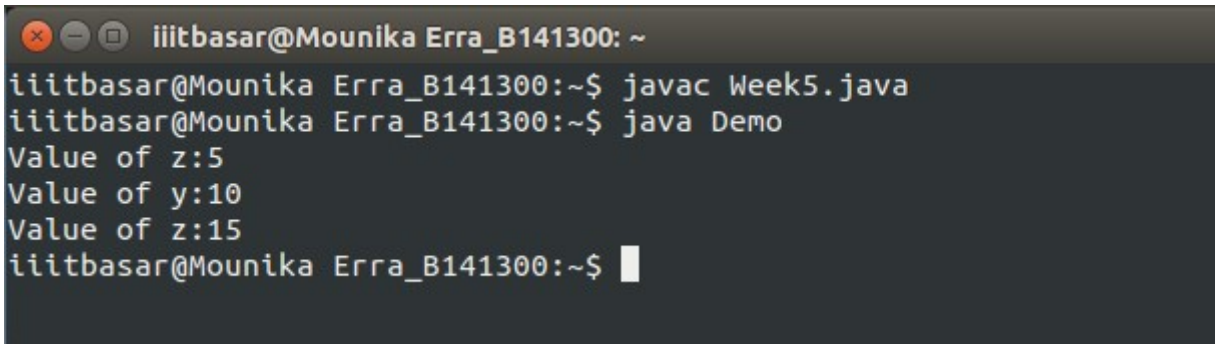
## a. Example for this operator and the use of this keyword.

**Program:**

```
class Week5
{
	Week5(int x,int y,int z)
	{
		this(x,y);
		System.out.println("Value of z:"+z);
	}
	Week5(int x,int y)
	{
		this(x);
		System.out.println("Value of y:"+y);
	}
	Week5(int x)
	{

		System.out.println("Value of z:"+x);
	}
}
class Demo
{
	public static void main(String aa[])
	{
	Week5 e=new Week5(5,10,15);
	}
}
```

**OutPut:**

Value of z:5
Value of y:10
Value of z:15



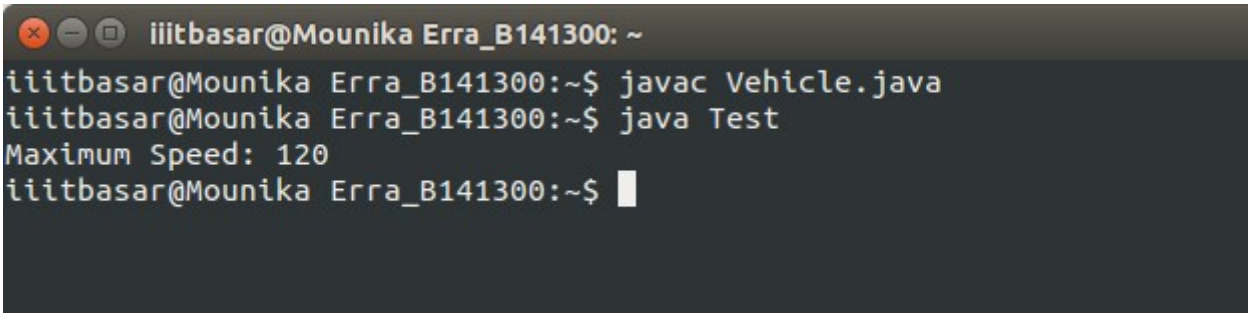
## b. Example for super keyword.

**Program:**

```
//Base class vehicle
class Vehicle
{
   int maxSpeed = 120;
}

//sub class Car extending vehicle
class Car extends Vehicle
{
   int maxSpeed = 180;

   void display()
   {
      //print maxSpeed of base class (vehicle)
      System.out.println("Maximum Speed: " + super.maxSpeed);
   }
}

//Driver program to test
class Test
{
   public static void main(String[] args)
   {
      Car small = new Car();
      small.display();
   }
}
```

**OutPut:**

Maximum Speed: 120



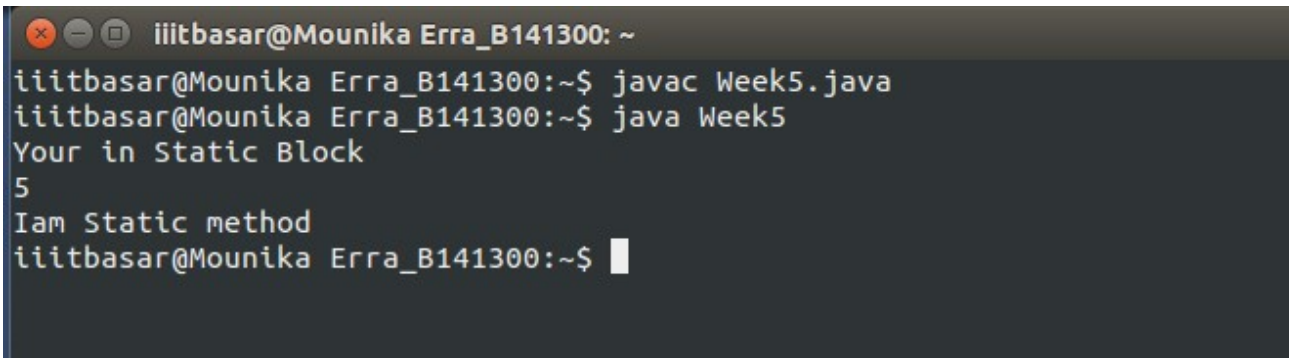

## c. Example for static variables and methods.

**Program:**

```
class Week5
{
	static //Static Block
	{
		System.out.println("Your in Static Block");
	}
	static void display() //static  method
	{
		System.out.println("Iam Static method");
	}
	static int a=5;//Static Variable
	public static void main(String args[])
	{
	System.out.println(Week5.a);
	Week5.display();
	}
}
```

**OutPut:**

Your in Static Block
5
Iam Static method




## WEEK-6

### 1. Write a Java program to find Area and Circle of different shapes using polymorphism concept

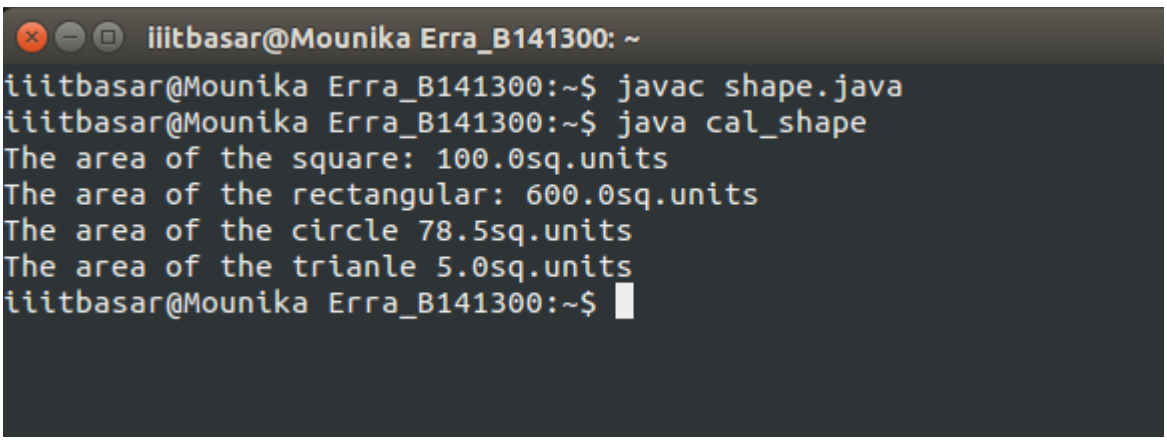
**Program:**

```
class shape
{
	void area(float x)
	{
```

```
        System.out.println("The area of the square: "+x*x+"sq.units");
        }
        void area(float x,float y)
        {
        System.out.println("The area of the rectangular: "+x*y+"sq.units");
        }
        void Area(double x)
        {
        double z=3.14*x*x;
        System.out.println("The area of the circle "+z+"sq.units");
        }
        void Area(int x,int y)
        {
        float r=(x*y)/2;
        System.out.println("The area of the trianle "+r+"sq.units");
        }
}
class cal_shape
{
public static void main(String a[])
        {
        shape s=new shape();
        s.area(10);
        s.area(20,30);
        s.Area(5);
        s.Area(2,5);
}
}
```

**OutPut:**

The area of the square: 100.0sq.units
The area of the rectangular: 600.0sq.units
The area of the circle 78.5sq.units
The area of the trianle 5.0sq.units



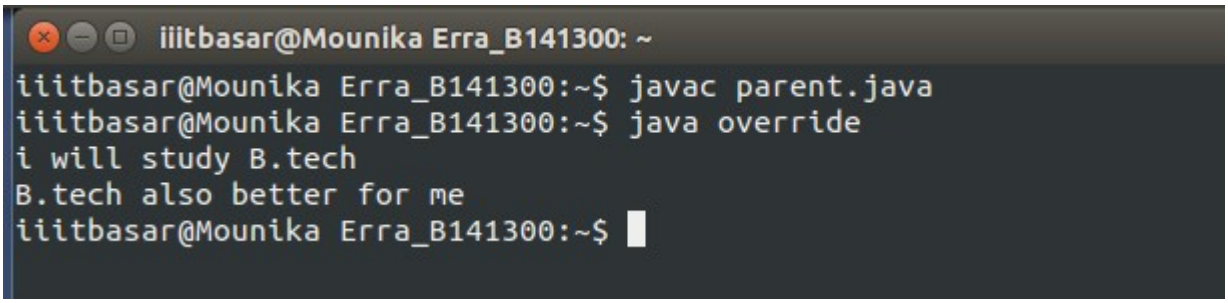
## 2. Write a Java program which can give example of Method overloading and overriding
## overloading

**Program:**

```
class parent
 {
   void m1()
   {
     System.out.println("you must study MBA");
    }
    void m2()
    {
     System.out.println("MBA is better to you");
    }
  }

  class override extends parent
  {
   void m1()
   {
    System.out.println("i will study B.tech");
    }
   void m2()
   {
   System.out.println("B.tech also better for me");
    }
    public static void main(String args[])
     {
       override c1= new override();
       c1.m1();
       c1.m2();
      }

   }
```

**OutPut:**

i will study B.tech
B.tech also better for me



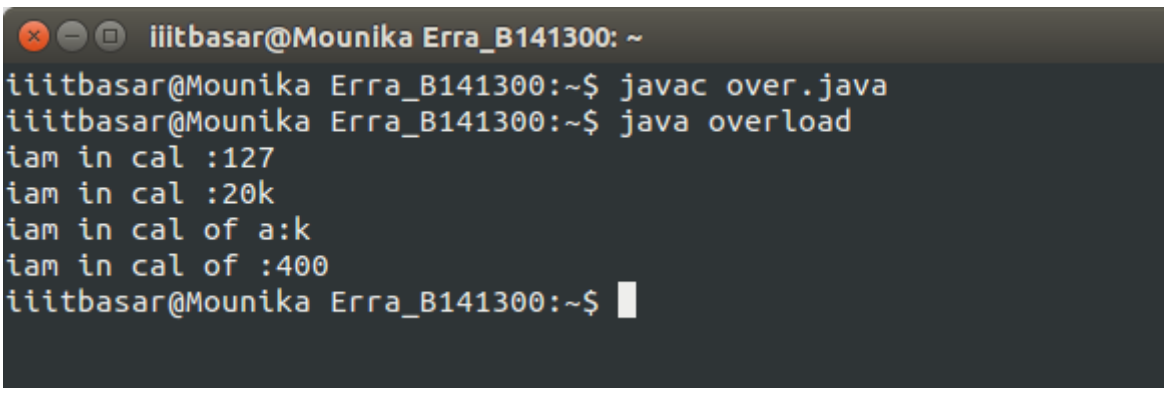
## Overloading

### Program:

```
import java.util.Scanner;
class over
 {
  void cal(int a, char c)
   {
    System.out.println("iam in cal :"+(a+c));
    System.out.println("iam in cal :"+a+c);
    }
  void cal(char c)
   {
     System.out.println("iam in cal of a:"+c);
    }
   void cal(int a)
    {
      System.out.println("iam in cal of :"+a*a);

     }
   }
  class overload

   {
     public static void main(String args[])
     {
      over c1 = new over ();
      c1.cal(20,'k');
      c1.cal('k');
      c1.cal(20);

       }
   }
```

### OutPut:

```
iam in cal :127
iam in cal :20k
iam in cal of a:k
iam in cal of :400
```



**3. Write an application to create a super class Employee with information first name & last name and methods getFirstName(), getLastName() derive the sub-classes ContractEmployee and RegularEmployee with the information about department, designation & method displayFullName() , getDepartment(), getDesig() to print the salary and to set department name & designation of the corresponding sub-class objects respectively.**

**Program:**

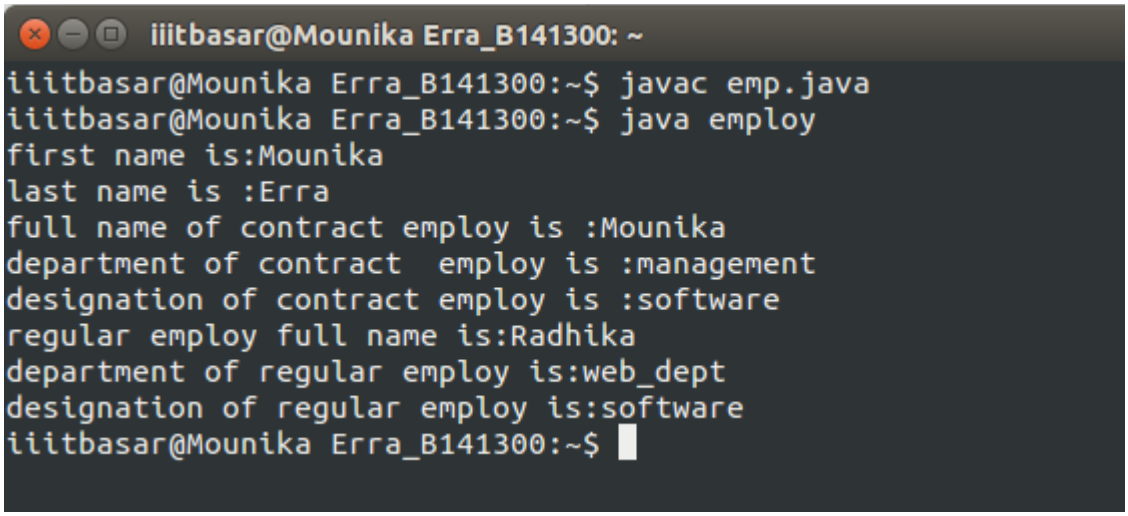
```
class emp
 {
  String first_name ;
  String last_name;

  void  getfirstname(String g)
   {
    first_name =g;
    System.out.println("first name is:" +g);
   }
  void getlastname(String h)
  {
    last_name =h;
    System.out.println("last name is :"+h);
  }
 }

 class contractemp extends emp
  {
   String department ;
   String designation;
   String fullname;


    void displayfullname(String a)
      {
       fullname = a;
      System.out.println("full name of contract employ is :"+a);
      }

    void department(String b)
      {

       department = b;
```

```
      System.out.println("department of contract  employ is :"+b);

      }

   void designation(String c)
    {
      designation = c;
      System.out.println("designation of contract employ is :"+c);
     }
    }


class regularemp extends emp
  {
   String department ;
   String designation;
   String fullname;
   void displayfullname(String d)
    {
      fullname = d;
     System.out.println("regular employ full name is:"+d);
     }

   void department(String e)
    {

     department = e;
     System.out.println("department of regular employ is:"+e);
     }

   void designation(String f)
    {
      designation =f;
     System.out.println("designation of regular employ is:"+f);
     }
    }

    class employ
     {
       public static void main(String args[])
       {
         emp e1= new emp();

         e1.getfirstname("Mounika");
         e1.getlastname("Erra");
```

```
        contractemp c1= new contractemp();
        c1.displayfullname("Mounika");
        c1.department("management");
        c1.designation("software");

        regularemp r1= new regularemp();
        r1.displayfullname("Radhika");
        r1.department("web_dept");
        r1.designation("software");
       }
}
```

**OutPut:**

first name is:Mounika
last name is :Erra
full name of contract employ is :Mounika
department of contract  employ is :management
designation of contract employ is :software
regular employ full name is:Radhika
department of regular employ is:web_dept
designation of regular employ is:software




**4. Derive sub-classes of ContractEmployee namely HourlyEmployee & WeeklyEmployee with information number of hours & wages per hour, number of weeks & wages per week respectively & method calculateWages() to calculate their monthly salary. Also override getDesig () method depending on the type of contract employee.**

**Program:**

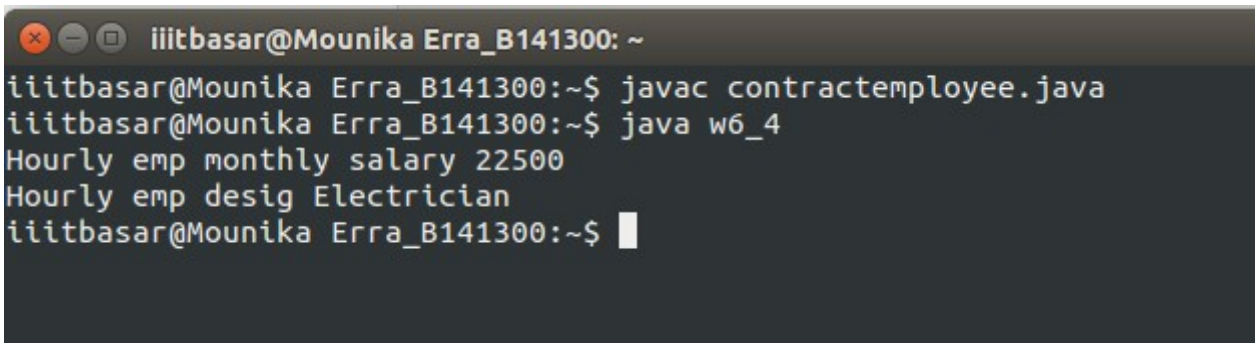
class contractemployee

```
{
        String desig;
        double salary;
        public void setDesignation(String desig)
        {
        this.desig=desig;
        }
        public String getdesignation()
        {
        return desig;
}}
class hourlyemp extends contractemployee
{
        int hours,wageph;
        hourlyemp(String design,int hours,int wageph)
        {
        super.setDesignation(design);
        this.hours=hours;
        this.wageph=wageph;
        }
        int calwages()
        {
        return hours*wageph*30;
        }
        public String getDesignation()
        {
        return super.desig;
        }
}
class Weeklyemp extends contractemployee
{
        int weeks,wagespwk;
        Weeklyemp(String design,int weeks,int wagepwk)
        {
        super.setDesignation(design);
        this.weeks=weeks;
        this.wagespwk=wagespwk;
        }
        int calwages()
        {
        return weeks*wagespwk*30;
        }
        public String getDesignation()
        {
        return super.desig;
```

```
        }
}
class w6_4
{
        public static void main(String a[])
        {
        hourlyemp he=new hourlyemp("Electrician",10,75);
        System.out.println("Hourly emp monthly salary "+he.calwages());
        System.out.println("Hourly emp desig "+he.getdesignation());
        }
}
```

**OutPut:**

Hourly emp monthly salary 22500
Hourly emp desig Electrician




**5. Write an application to create a super class Vehicle with information vehicle number,insurance number,color and methods getConsumption() displayConsumption(). Derive the sub-classes TwoWheeler and FourWheeler with method maintenance() and average() to print the maintenance And average of vehicle.**

**Program:**

```
class vehicle
{
        int vno;
        int ino;
        String color;
        double fuel;
        void setinfo(int vno,int ino,String color)
        {
        this.vno=vno;
        this.ino=ino;
        this.color=color;
        }
        void getconsumption(double fuel)
```

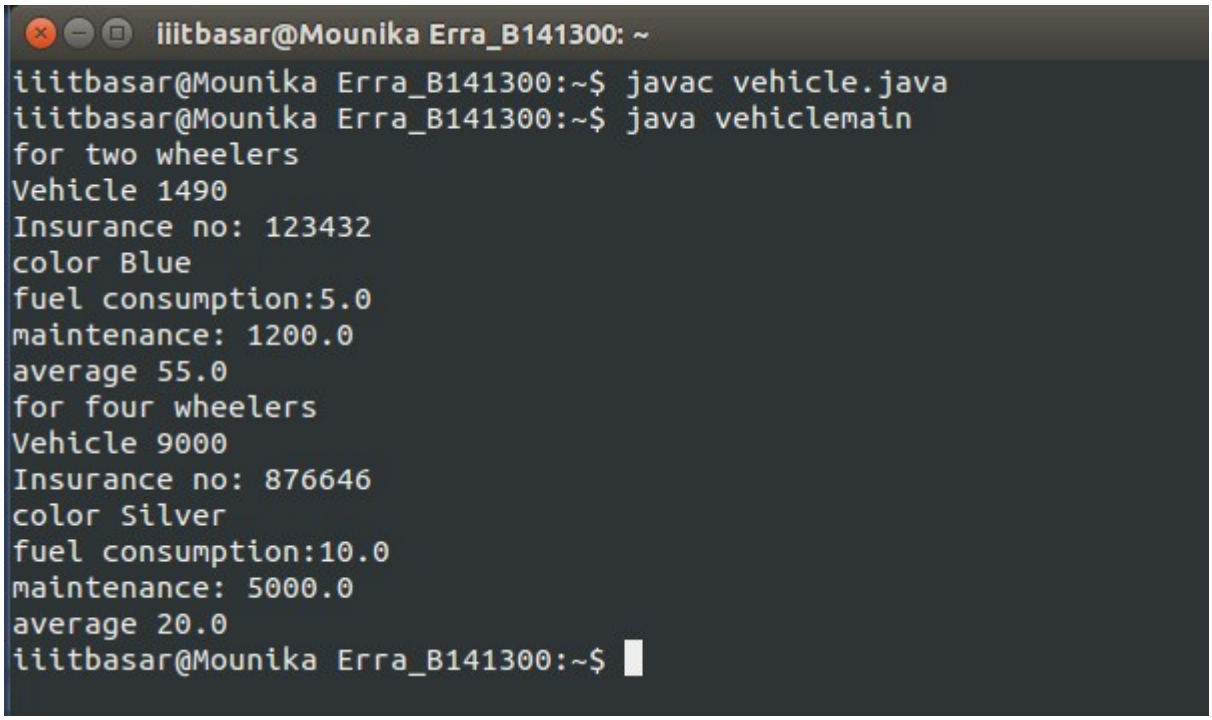
```
	{
	this.fuel=fuel;
	}
	void displayconsumption()
	{
	System.out.println("fuel consumption:"+fuel);
	}
	void displayinfo(){
	System.out.println("Vehicle "+vno);
	System.out.println("Insurance no: "+ino);
	System.out.println("color "+color);
	}
}
class twowheeler extends vehicle
{
	double avg;
	double mt;
	void setspecs(double avg,double mt)
	{
	this.avg=avg;
	this.mt=mt;
	}
	double getmaintenance()
	{
	return mt;
	}
	double getaverage()
	{
	return avg;
	}
}
class fourwheeler extends vehicle
{
	double avg;
	double mt;
	void setspecs(double avg,double mt)
	{
	this.avg=avg;
	this.mt=mt;
	}
	double getmaintenance()
	{
	return mt;
	}
	double getaverage()
```

```
        {
        return avg;
        }
}
class vehiclemain
{
public static void main(String args[])
        {
        twowheeler tw=new twowheeler();
        tw.setinfo(1490,123432,"Blue");
        tw.getconsumption(5);
        tw.setspecs(55,1200);
        double m=tw.getmaintenance();
        double av=tw.getaverage();
        System.out.println("for two wheelers");
        tw.displayinfo();
        tw.displayconsumption();
        System.out.println("maintenance: "+m);
        System.out.println("average "+av);
        fourwheeler fw=new fourwheeler();
        fw.setinfo(9000,876646,"Silver");
        fw.getconsumption(10);
        fw.setspecs(20,5000);
        m=fw.getmaintenance();
        av=fw.getaverage();
        System.out.println("for four wheelers");
        fw.displayinfo();
        fw.displayconsumption();
        System.out.println("maintenance: "+m);
        System.out.println("average "+av);
        }
}
```

**OutPut:**

```
for two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0
maintenance: 1200.0
average 55.0
for four wheelers
Vehicle 9000
Insurance no: 876646
color Silver
```

fuel consumption:10.0
maintenance: 5000.0
average 20.0




**6. Extend the above TwoWheeler class with methods getType() and getName() which gives the information about the type and the name of the company.Create sub-classes Geared and NonGeared with method average() to print the average of a geared and non-geared two wheeler.**

**Program:**

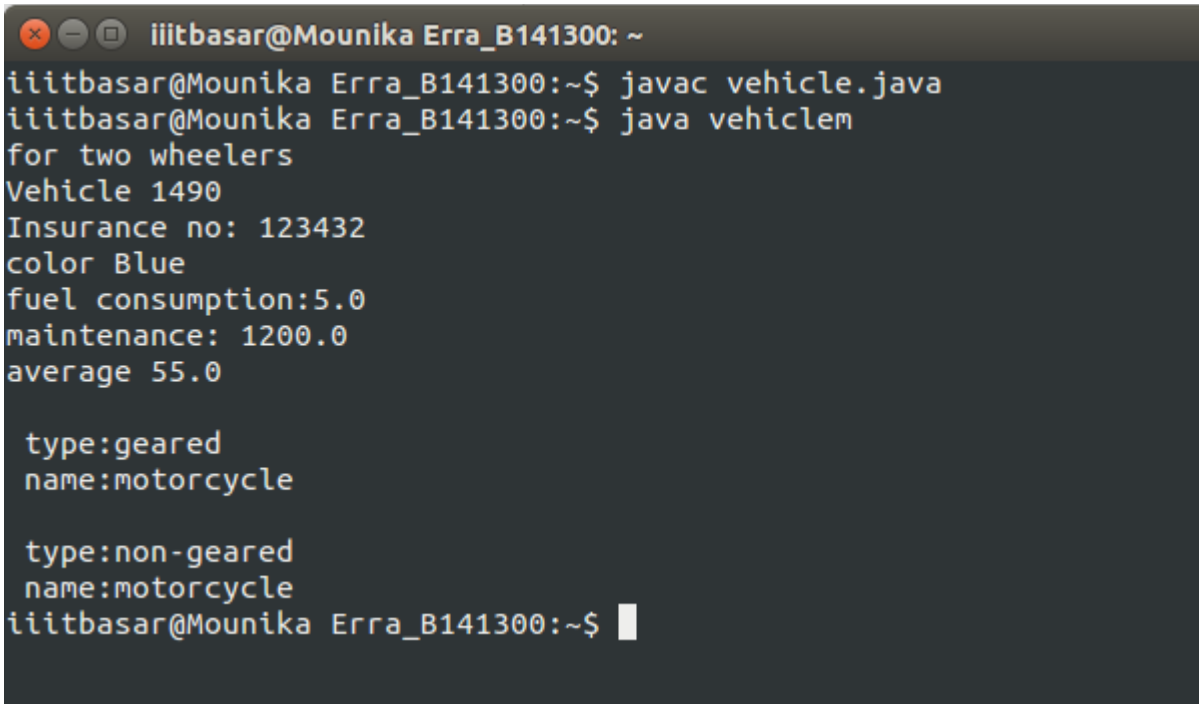
```
class vehicle
{
        int vno;
        int ino;
        String color;
        double fuel;
        void setinfo(int vno,int ino,String color)
        {
        this.vno=vno;
        this.ino=ino;
        this.color=color;
        }
        void getconsumption(double fuel)
        {
        this.fuel=fuel;
        }
        void displayconsumption()
```

```
        {
        System.out.println("fuel consumption:"+fuel);
        }
        void displayinfo(){
        System.out.println("Vehicle "+vno);
        System.out.println("Insurance no: "+ino);
        System.out.println("color "+color);
        }
}
class twowheeler extends vehicle
{
        double avg;
        double mt;
        void setspecs(double avg,double mt)
        {
        this.avg=avg;
        this.mt=mt;
        }
        double getmaintenance()
        {
        return mt;
        }
        double getaverage()
        {
        return avg;
        }
}
class geared extends twowheeler
{
String type;
String name;
geared(String type,String name)
{
this.type=type;
this.name=name;
}
String gettype()
{
return type;
}
String getname()
{
return name;
}
}
```

```
class nongeared extends twowheeler
{
String type;
String name;
nongeared(String type,String name)
{
this.type=type;
this.name=name;
}
String gettype()
{
return type;
}
String getname()
{
return name;
}
}
class vehiclem
{
public static void main(String args[])
        {
        twowheeler tw=new twowheeler();
        tw.setinfo(1490,123432,"Blue");
        tw.getconsumption(5);
        tw.setspecs(55,1200);
        double m=tw.getmaintenance();
        double av=tw.getaverage();
        System.out.println("for two wheelers");
        tw.displayinfo();
        tw.displayconsumption();
        System.out.println("maintenance: "+m);
        System.out.println("average "+av);
        geared g=new geared("geared","motorcycle");
        String type=g.gettype();
        String name=g.getname();
        System.out.println("\n type:"+type+"\n name:"+name);
        nongeared ng=new nongeared("non-geared","motorcycle");
         type=ng.gettype();
         name=ng.getname();
        System.out.println("\n type:"+type+"\n name:"+name);
        }
}
```

**OutPut:**

for two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0




## WEEK-7

**1. Create an abstract class Shape which calculate the area and volume of 2-d and 3-d shapes with methods getArea() and getVolume(). Reuse this class to calculate the area and volume of square,circle ,cube and sphere.**

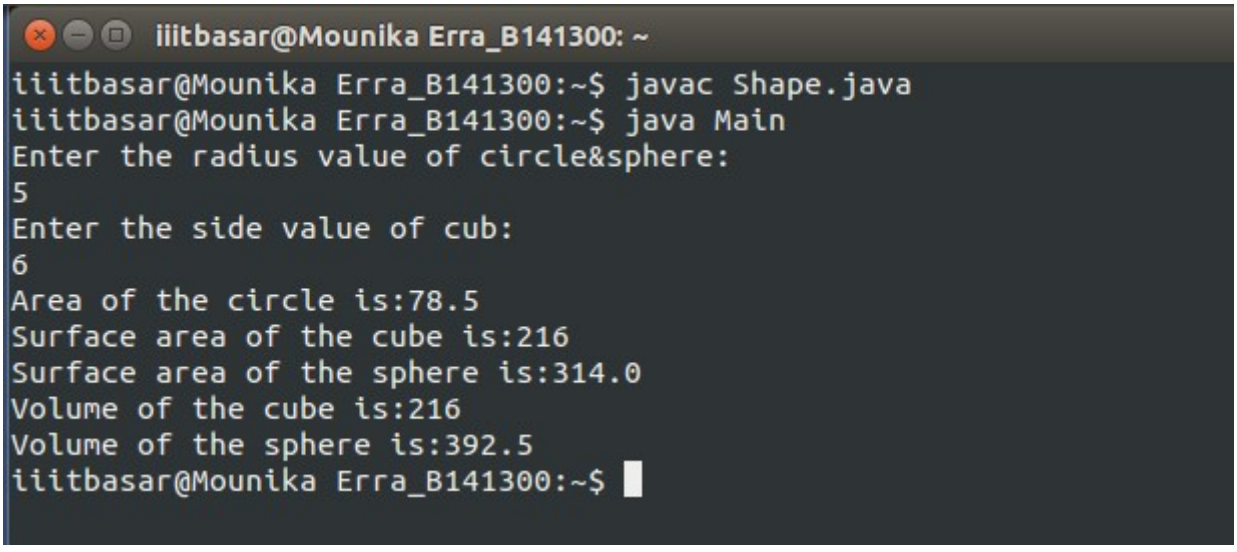
**Program:**

```
import java.util.Scanner;
abstract class Shape
{
        abstract void getArea(int r,int a);
        abstract void getVolume(int r,int a);
}
class Calculations extends Shape
{
        public void getArea(int r,int a)
        {

                System.out.println("Area of the circle is:" +(3.14*r*r));
                System.out.println("Surface area of the cube is:"+(6*a*a));
                System.out.println("Surface area of the sphere is:"+(4*3.14*r*r));
```

```
        }
        public void getVolume(int r,int a)
        {

                System.out.println("Volume of the cube is:" +(a*a*a));
                System.out.println("Volume of the sphere is:"+((4/3)*3.14*r*r*r));
        }
}
class Main
{
        public static void main(String args[])
        {
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the radius value of circle&sphere:");
                int R=sc.nextInt();
                System.out.println("Enter the side value of cub:");
                int A=sc.nextInt();
                Shape sh=new Calculations();
                sh.getArea(R,A);
                sh.getVolume(R,A);
        }
}
```

**OutPut:**

```
Enter the radius value of circle&sphere:
5
Enter the side value of cub:
6
Area of the circle is:78.5
Surface area of the cube is:216
Surface area of the sphere is:314.0
Volume of the cube is:216
Volume of the sphere is:392.5
```



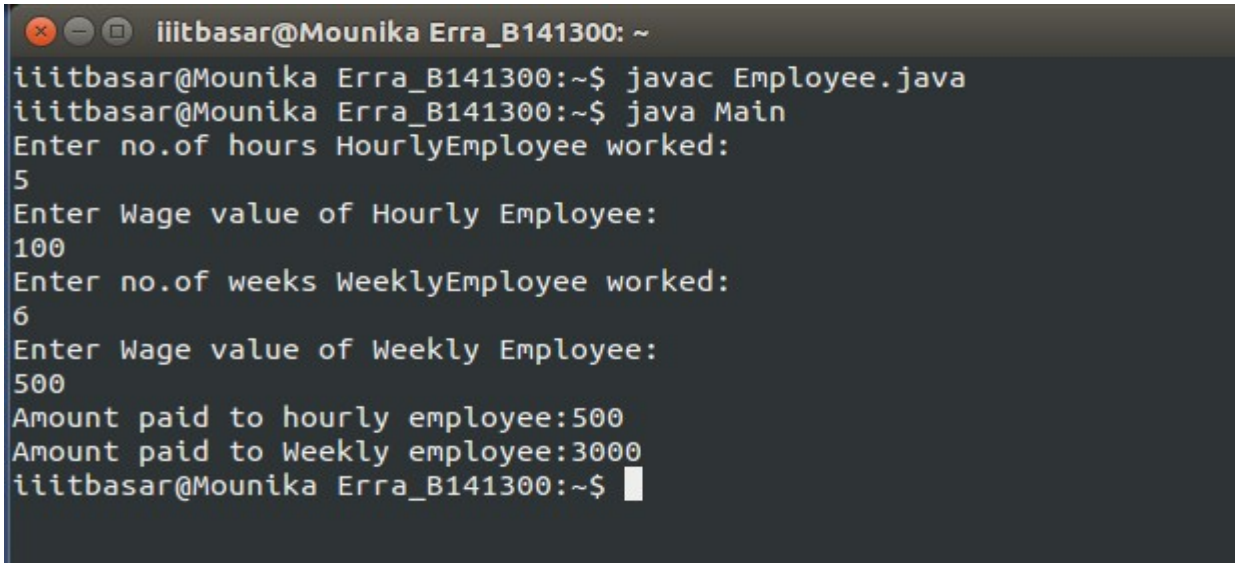
**2. Create an abstract class Employee with methods getAmount() which displays the amount paid to employee. Reuse this class to calculate the amount to be paid to WeeklyEmployeed and HourlyEmployee according to no. of hours and total hours for HourlyEmployee and no. of weeks and total weeks for WeeklyEmployee.**

**Program:**

```
import java.util.Scanner;
abstract class Employee
{
	abstract void getAmount(int m,int n);
}
class HE extends Employee
{
	public void getAmount(int m,int wage)
	{
		System.out.println("Amount paid to hourly employee:"+(m*wage));
	}
}
class WE extends Employee
{
	public void getAmount(int p,int Wage)
	{
		System.out.println("Amount paid to Weekly employee:"+(p*Wage));
	}
}
class Main
{
	public static void main(String args[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter no.of hours HourlyEmployee worked: ");
	int a=sc.nextInt();
	System.out.println("Enter Wage value of Hourly Employee:");
	int b=sc.nextInt();
	System.out.println("Enter no.of weeks WeeklyEmployee worked:");
	int c=sc.nextInt();
	System.out.println("Enter Wage value of Weekly Employee:");
	int d=sc.nextInt();
	Employee sc1= new HE();
	Employee sc2= new WE();
	sc1.getAmount(a,b);
	sc2.getAmount(c,d);
	}
}
```

**OutPut:**

Enter no.of hours HourlyEmployee worked:
8
Enter Wage value of Hourly Employee:
200
Enter no.of weeks WeeklyEmployee worked:
7
Enter Wage value of Weekly Employee:
7500
Amount paid to hourly employee:1600
Amount paid to Weekly employee:52500




**3.Create an Interface payable with method getAmount ().Calculate the amount to be and Employee by implementing Interface.paid to Invoice**

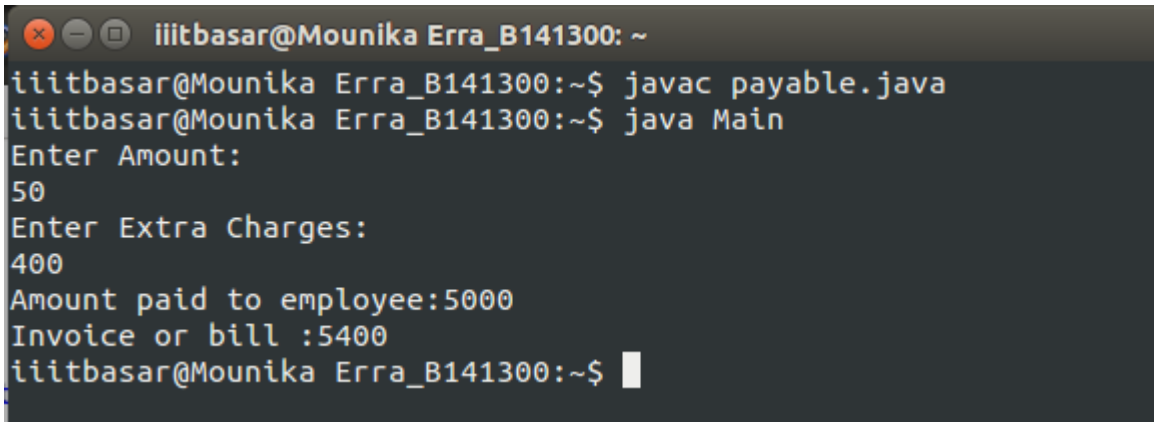
**Program:**

```
import java.util.Scanner;
interface payable
{
	void getAmount(int m,int n);
}
class cal implements payable
{
	public void getAmount(int m,int n)
	{
		System.out.println("Amount paid to employee:"+(m*100));
		System.out.println("Invoice or bill :"+((m*100)+n));//invoice includes
employee payment and
extra charges
	}
```

```
}
class Main
{
	public static void main(String args[])
	{
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter Amount: ");
		int a=sc.nextInt();
		System.out.println("Enter Extra Charges: ");
		int b=sc.nextInt();
		payable pb=new cal();
		pb.getAmount(a,b);
	}
}
```

**OutPut:**

```
Enter Amount:
100
Enter Extra Charges:
600
Amount paid to employee:10000
Invoice or bill :10600
```




**4. Create an Interface Vehicle with method getColor(),getNumber(), getConsumption() calculate the fuel consumed , name and color for TwoWheeler and Four Wheeler By implementing interface Vehicle.**

**Program:**

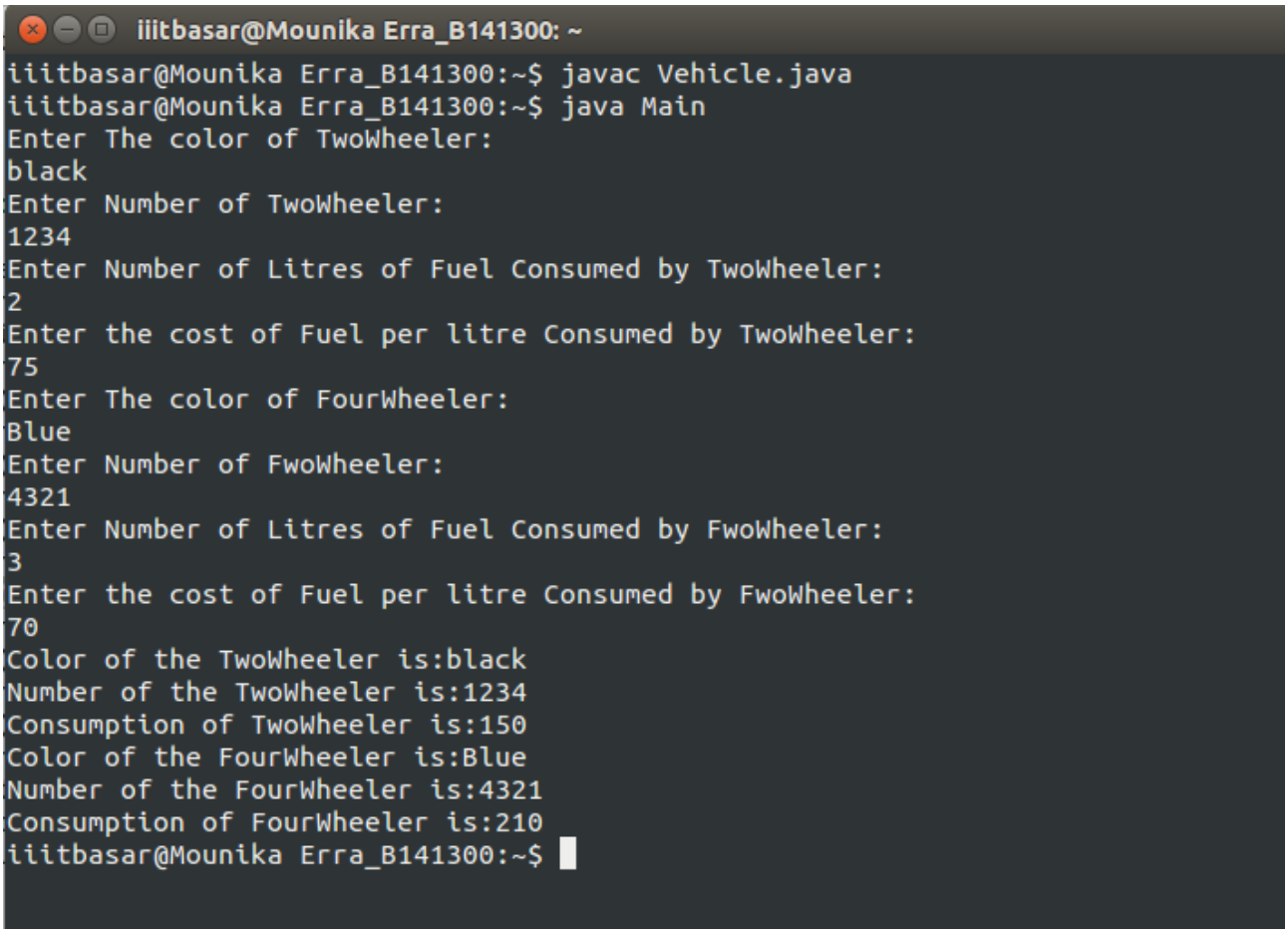
```
import java.util.Scanner;
interface Vehicle
{
	void getColor(String c);
	void getNumber(int n);
	void getConsumption(int l,int fuelcost);
}
class TwoWheeler implements Vehicle
```

```
{
	public void getColor(String c)
	{
		System.out.println("Color of the TwoWheeler is:"+c);
	}
	public void getNumber(int n)
	{
		System.out.println("Number of the TwoWheeler is:"+n);
	}
	public void getConsumption(int l,int fuelcost)
	{
		System.out.println("Consumption of TwoWheeler is:"+(l*fuelcost));
	}
}
class FourWheeler implements Vehicle
{
	public void getColor(String c)
	{
		System.out.println("Color of the FourWheeler is:"+c);
	}
	public void getNumber(int n)
	{
		System.out.println("Number of the FourWheeler is:"+n);
	}
	public void getConsumption(int l,int fuelcost)
	{
		System.out.println("Consumption of FourWheeler is:"+(l*fuelcost));
	}
}
class Main
{
	public static void main(String args[])
	{
	Scanner sc=new Scanner(System.in);
	System.out.println("Enter The color of TwoWheeler:");
	String C=sc.nextLine();
	System.out.println("Enter Number of TwoWheeler:");
	int N=sc.nextInt();
	System.out.println("Enter Number of Litres of Fuel Consumed by
TwoWheeler:");
	int L=sc.nextInt();
	System.out.println("Enter the cost of Fuel per litre Consumed by
TwoWheeler:");
	int FC=sc.nextInt();
	System.out.println("Enter The color of FourWheeler:");
```

```
        String C1=sc.next();
        System.out.println("Enter Number of FwoWheeler:");
        int N1=sc.nextInt();
        System.out.println("Enter Number of Litres of Fuel Consumed by
FwoWheeler:");
        int L1=sc.nextInt();
        System.out.println("Enter the cost of Fuel per litre Consumed by
FwoWheeler:");
        int FC1=sc.nextInt();
        Vehicle TW=new TwoWheeler();
        Vehicle FW=new FourWheeler();
        TW.getColor(C);
        TW.getNumber(N);
        TW.getConsumption(L,FC);
        FW.getColor(C1);
        FW.getNumber(N1);
        FW.getConsumption(L1,FC1);
        }
}
```

**OutPut:**

```
Enter The color of TwoWheeler:
Red
Enter Number of TwoWheeler:
7890
Enter Number of Litres of Fuel Consumed by TwoWheeler:
4
Enter the cost of Fuel per litre Consumed by TwoWheeler:
65
Enter The color of FourWheeler:
White
Enter Number of FwoWheeler:
5678
Enter Number of Litres of Fuel Consumed by FwoWheeler:
3
Enter the cost of Fuel per litre Consumed by FwoWheeler:
74
Color of the TwoWheeler is:Red
Number of the TwoWheeler is:7890
Consumption of TwoWheeler is:260
Color of the FourWheeler is:White
Number of the FourWheeler is:5678
Consumption of FourWheeler is:222
```




**5. Create an Interface Fare with method getAmount() to get the amount paid for fare Calculate the fare paid by bus and train implementing interface Fare. of travelling.**

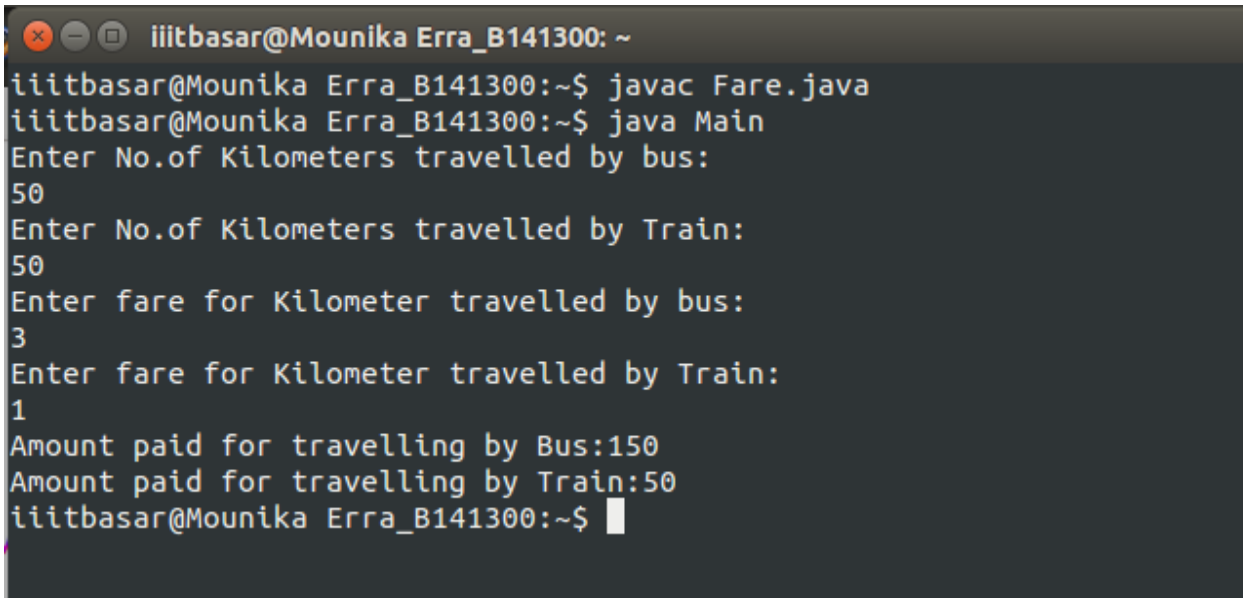
**Program:**

```
import java.util.Scanner;
interface Fare
{
	void getAmount(int K,int C);
}
class Bus implements Fare
{
	public void getAmount(int K,int C)
	{
		System.out.println("Amount paid for travelling by Bus:"+(K*C));
	}
}
class Train implements Fare
{
	public void getAmount(int K,int C)
	{
```

```
                System.out.println("Amount paid for travelling by Train:"+(K*C));
        }
}
class Main
{
        public static void main(String args[])
        {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter No.of Kilometers travelled by bus:");
        int k=sc.nextInt();
        System.out.println("Enter No.of Kilometers travelled by Train:");
        int k1=sc.nextInt();
        System.out.println("Enter fare for Kilometer travelled by bus:");
        int f=sc.nextInt();
        System.out.println("Enter fare for Kilometer travelled by Train:");
        int f1=sc.nextInt();
        Fare b=new Bus();
        Fare t=new Train();
        b.getAmount(k,f);
        t.getAmount(k1,f1);
        }
}
```

**OutPut:**

```
Enter No.of Kilometers travelled by bus:
15
Enter No.of Kilometers travelled by Train:
15
Enter fare for Kilometer travelled by bus:
3
Enter fare for Kilometer travelled by Train:
1
Amount paid for travelling by Bus:45
Amount paid for travelling by Train:15
```



**6. Create an Interface StudentFee with method getAmount() ,getFirstName() ,getLastName(), getAddress(), getContact(). Calculate the amount paid by the Hostler and NonHostler student by implementing interface Student Fee**

**Program:**

```
interface Studentfee
{
	void getAmount(int clgfee);
	void getFirstname(String fname);
	void getLastname(String lname);
	void getAddress(String address);
	void getContact(double contact);
}
class Hostler implements Studentfee
{
	public void getAmount(int clgfee)
	{
		int hostelfee=5000;
		System.out.println("fee payed by hostler:"+(clgfee+hostelfee));

	}
	public void getFirstname(String fname)
	{
		System.out.println("first name of the student:"+fname);

	}
	public void getLastname(String lname)
	{
		System.out.println("last name of the student:"+lname);

	}
	public void getAddress(String address)
	{
		System.out.println("Address of the student:"+address);

	}
	public void getContact(double contact)
	{

		System.out.println("contact number of the student:"+contact);

	}
}
class NonHostler implements Studentfee
{
```

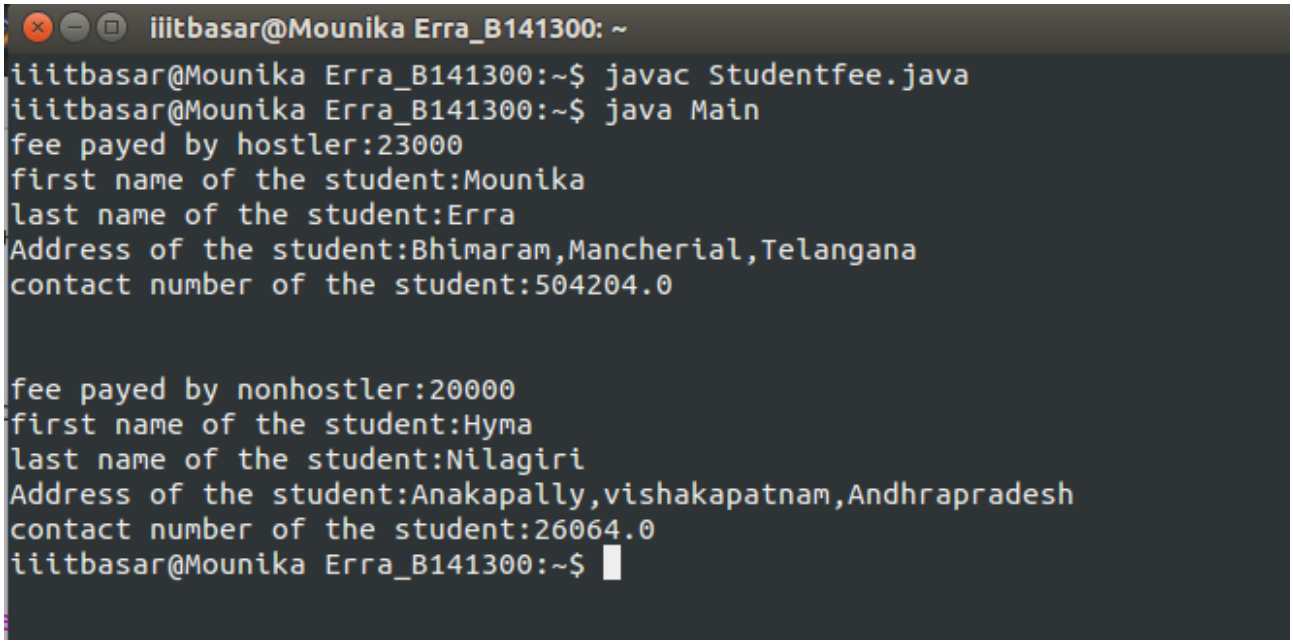
```
	public void getAmount(int clgfee)
	{
		System.out.println("fee payed by nonhostler:"+(clgfee));

	}
	public void getFirstname(String fname)
	{
		System.out.println("first name of the student:"+fname);

	}
	public void getLastname(String lname)
	{
		System.out.println("last name of the student:"+lname);

	}
	public void getAddress(String address)
	{
		System.out.println("Address of the student:"+address);

	}
	public void getContact(double contact)
	{

		System.out.println("contact number of the student:"+contact);

	}
}
class Main
{
	public static void main(String args[])
	{
		Studentfee h= new Hostler();
		h.getAmount(23000);
		h.getFirstname("Mounika");
		h.getLastname("Erra");
		h.getAddress("Bhimaram,Mancherial,Telangana");
		h.getContact(504204);
		System.out.println("\n");
		Studentfee h1= new NonHostler();
		h1.getAmount(20000);
		h1.getFirstname("Hyma");
		h1.getLastname("Nilagiri");
		h1.getAddress("Anakapally,vishakapatnam,Andhrapradesh");
		h1.getContact(26064);
	}
```

}

**OuPut:**

fee payed by hostler:23000
first name of the student:Mounika
last name of the student:Erra
Address of the student:Bhimaram,Mancherial,Telangana
contact number of the student:504204.0

fee payed by nonhostler:20000
first name of the student:Hyma
last name of the student:Nilagiri
Address of the student:Anakapally,vishakapatnam,Andhrapradesh
contact number of the student:26064.0




## WEEK-8

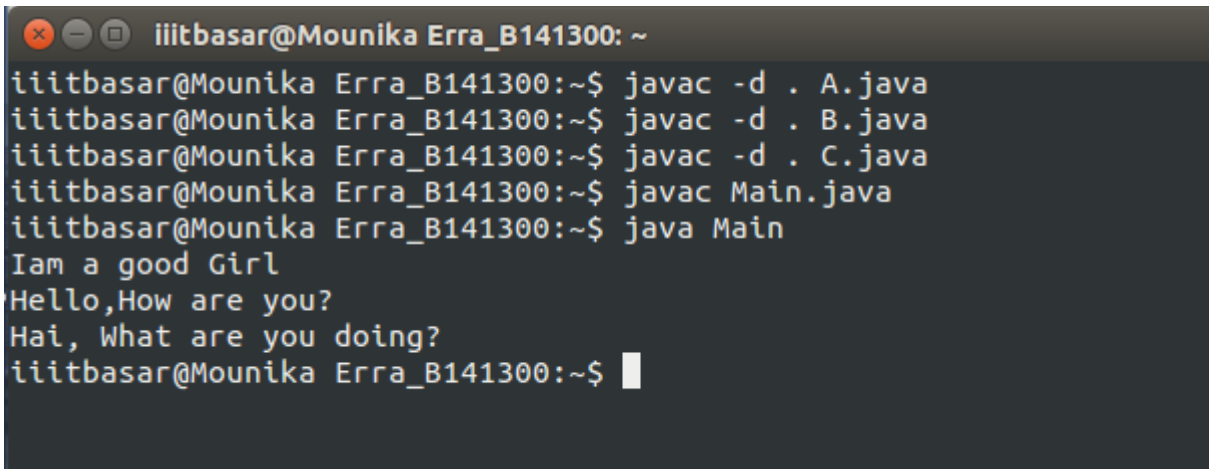
**1. Write a Program to create your own package. Package should have more than two classes. write a Program that uses the classes from the package.**

**Program:**

```
package Mouni;
public class A
{
	public void m1()
	{
		System.out.println("Iam a good Girl");
```

```
	}
}

package Mouni;
public class B
{
	public void m()
	{
		System.out.println("Hello,How are you?");
	}
}

package Mouni;
public class C
{
	public void m2()
	{
		System.out.println("Hai, What are you doing?");
	}
}

import Mouni.A;
import Mouni.B;
import Mouni.C;
class Main
{
	public static void main(String args[])
	{
	A a1=new A();
	B b=new B();
	C c=new C();
	a1.m1();
	b.m();
	c.m2();
	}
}
```

**OutPut:**




**2. Create a package named org.shapes. Create some classes in the package representing some common geometric shapes like Square, Triangle, Circle and so on. write a Program that uses the classes from the package.**

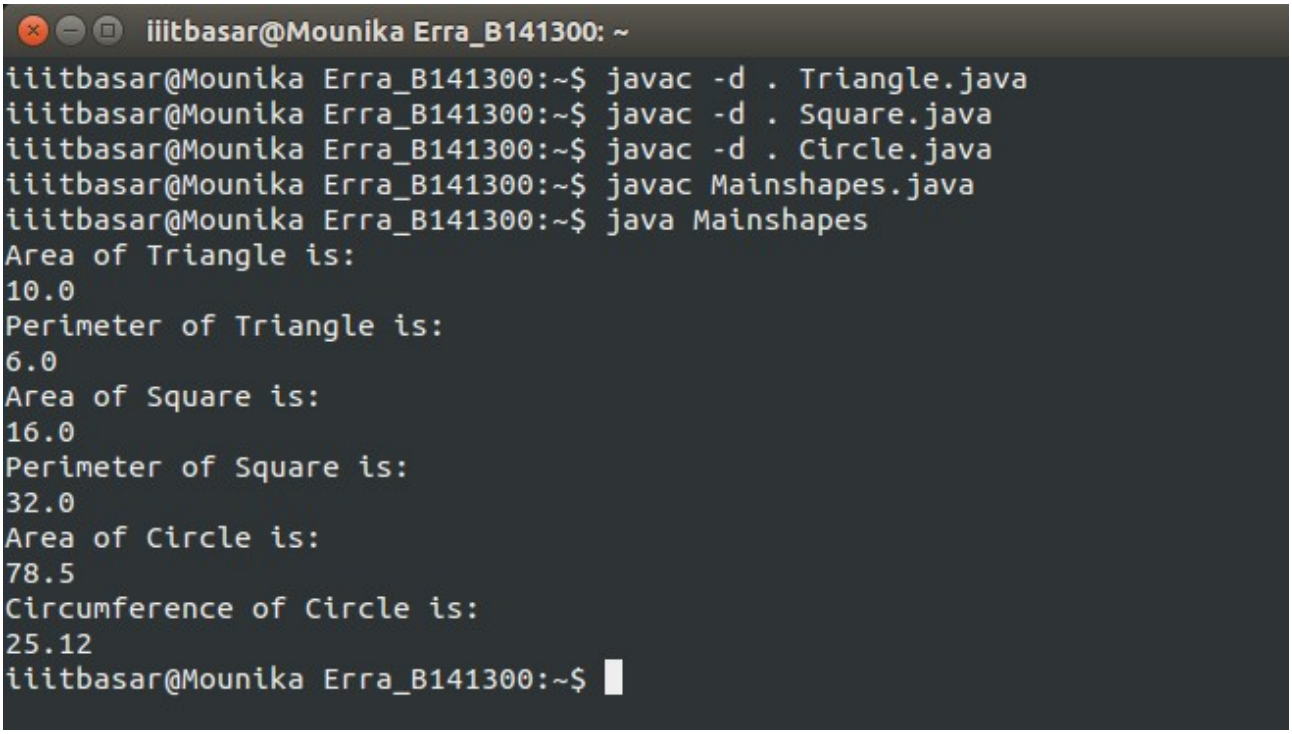
**Program:**

```
package Shapes;
public class Triangle
{
	public void area(double l,double b)
	{
	System.out.println(0.5*l*b);
	}
	public void perimeter(double s,double s1,double s2)
	{
	System.out.println(s+s1+s2);
	}
}
```

```
package Shapes;
public class Square
{
	public void area(double a)
	{
	System.out.println(a*a);
	}
	public void perimeter(double s)
	{
	System.out.println(4*s);
	}
}
```

```
package Shapes;
public class Circle
{
	public void area(double r)
	{
	System.out.println(3.14*r*r);
	}
	public void circumference(double d)
	{
	System.out.println(3.14*d);
	}
}


import Shapes.Triangle;
import Shapes.Square;
import Shapes.Circle;
public class Mainshapes
{
	public static void main(String args[])
	{
	Triangle t=new Triangle();
	Square s=new Square();
	Circle c=new Circle();
	System.out.println("Area of Triangle is:");
	t.area(4,5);
	System.out.println("Perimeter of Triangle is:");
	t.perimeter(1,2,3);
	System.out.println("Area of Square is:");
	s.area(4);
	System.out.println("Perimeter of Square is:");
	s.perimeter(8);
	System.out.println("Area of Circle is:");
	c.area(5);
	System.out.println("Circumference of Circle is:");
	c.circumference(8);
	}
}
```

**OutPut:**



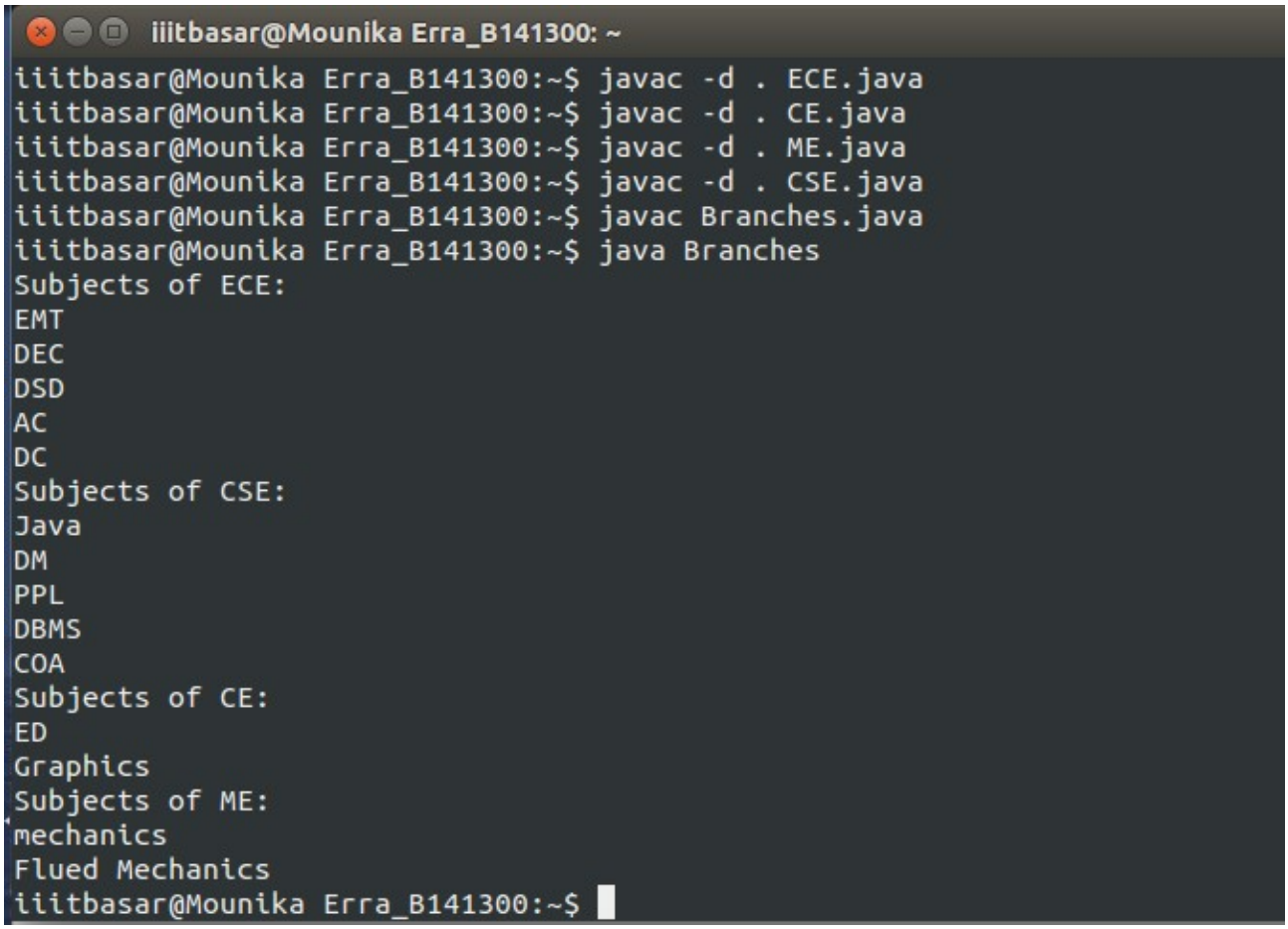

**3. Write a Java program to create package called dept. Create four classes as CSE, ECE, ME and CE add methods in each class which can display subject names of your respect year. access this package classes from main class**

**Program:**

```
package dept;
public class ECE
{
	public void Subjects()
	{
	System.out.println("EMT\nDEC\nDSD\nAC\nDC");
	}
}


package dept;
public class CSE
{
	public void Subjects()
	{
	System.out.println("Java\nDM\nPPL\nDBMS\nCOA");
	}
}


package dept;
```

```
public class CE
{
	public void Subjects()
	{
	System.out.println("ED\nGraphics");
	}
}


package dept;
public class ME
{
	public void Subjects()
	{
	System.out.println("mechanics\nFlued Mechanics");
	}
}


import dept.ECE;
import dept.CSE;
import dept.CE;
import dept.ME;
public class Branches
{
	public static void main(String args[])
	{
	ECE ec=new ECE();
	System.out.println("Subjects of ECE:");
	ec.Subjects();
	CSE cs=new CSE();
	System.out.println("Subjects of CSE:");
	cs.Subjects();
	CE ce=new CE();
	System.out.println("Subjects of CE:");
	ce.Subjects();
	ME me=new ME();
	System.out.println("Subjects of ME:");
	me.Subjects();
	}
}
```

**OutPut:**




**4. Write a Calculator program : Include all calculator operations in as classes in a Package and import in to main class.**

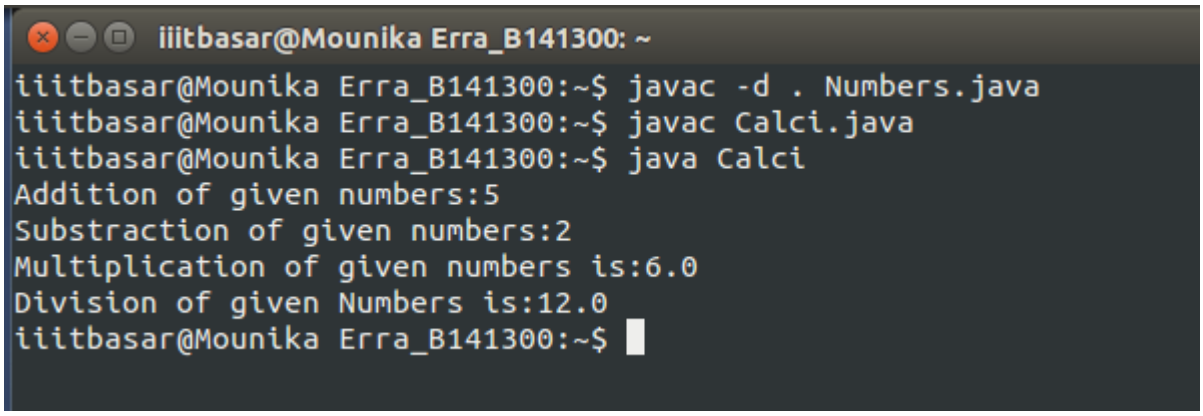
**Program:**

```
package calculator;
public class Numbers
{
	public int add(int a,int b)
	{
		return a+b;
	}
	public int sub(int a,int b)
	{
		return a-b;
	}
	public double mult(int a,int b)
	{
		return a+b;
	}
	public double div(int a,int b)
	{
		return a+b;
```

```
	}
}
```

```
import calculator.Numbers;
public class Calci
{
	public static void main(String args[])
	{
	Numbers n=new Numbers();
	System.out.println("Addition of given numbers:"+n.add(2,3));
	System.out.println("Substraction of given numbers:"+n.sub(5,3));
	System.out.println("Multiplication of given numbers is:"+n.mult(4,2));
	System.out.println("Division of given Numbers is:"+n.div(8,4));
	}
}
```

**OutPut:**




**5. Write a program for the following**
**a. Example to use interfaces in Packages.**

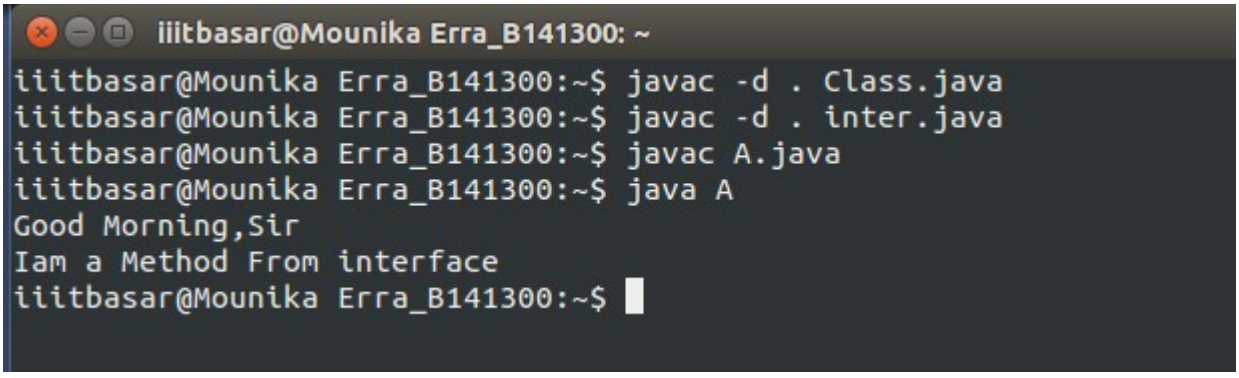
**Program:**

```
package Oops;
public class Class
{
	public void m()
	{
		System.out.println("Good Morning,Sir");
	}
}
```

```
package Oops;
```

```
public interface inter
{
	public void m1();
}


import Oops.Class;
import Oops.inter;
class A implements inter
{
	public void m1()
	{
	System.out.println("Iam a Method From interface");
	}
	public static void main(String args[])
	{
	Class c=new Class();
	c.m();
	A a=new A();
	a.m1();
	}
}
```

**OutPut:**




**b. Example to create sub package in a package.**

**Program:**

```
package Oops.java;
public class M
{
	public void m()
	{
		System.out.println("Hai!");
```

```
	}
}
package Oops.java;
public interface Inter
{
	public void m1();
}


import Oops.java.M;
import Oops.java.Inter;
class A implements Inter
{
	public void m1()
	{
	System.out.println("Iam a Method From interface");
	}
	public static void main(String args[])
	{
	M c=new M();
	c.m();
	A a=new A();
	a.m1();
	}
}
```

**OutPut:**