EXPERIMENT NUMBER: 1

AIM

Define a class ‘product’ with data members pcode, pname and price. Create 3 objects of the class and find the product having the lowest price.

ALGORITHM

PROGRAM CODE

```
import java.util.*;
 class Product
 {
  String pcode,pname;
  int price;
  void getData()
  {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Product Code");
    pcode=sc.nextLine();
    System.out.println("Enter the Product Name");
    pname=sc.nextLine();
    System.out.println("Enter the Product Price");
    price=sc.nextInt();
   }
   void Display()
   {
     System.out.println(" Product Code "+ pcode);
     System.out.println(" Product Name "+ pname);
     System.out.println(" Product Price "+ price);
   }
  }
 public class ProductMain  {
   public static void main (String args[])
   {
     System.out.println(" Product Details");
     System.out.println("_________________");
```

```
    Product p1=new Product();
    Product p2=new Product();
    Product p3=new Product();
    p1.getData();
    p2.getData();
    p3.getData();
    System.out.println(" Product Details 1");
    System.out.println("_____");
    p1.Display();
    System.out.println();
    System.out.println(" Product Details 2");
     System.out.println("_____");
    p2.Display();
    System.out.println();
    System.out.println(" Product Details 3");
     System.out.println("_____");
    p3.Display();
    System.out.println();
    if(p1.price < p2.price && p1.price < p3.price) {
        System.out.println(" Lower Price :Product 1: "+p1.price);
     }
    else if(p2.price<p3.price) {
       System.out.println(" Lower Price :Product 2: "+p2.price);
     }
     else  {
     System.out.println(" Lower Price :Product 3: "+p3.price);
     }
  }
```

OUTPUT

```
PS C:\Users\USER\Desktop\OOPL> javac ProductMain.java
PS C:\Users\USER\Desktop\OOPL> java ProductMain
 Product Details
---------------
Enter the Product Code
P01
Enter the Product Name
Bag
Enter the Product Price
654
Enter the Product Code
P02
Enter the Product Name
Shoes
Enter the Product Price
879
Enter the Product Code
P03
Enter the Product Name
Spoon
Enter the Product Price
123
 Product Details 1
--------------------
 Product Code P01
 Product Name Bag
 Product Price 654

 Product Details 2
--------------------
 Product Code P02
 Product Name Shoes
 Product Price 879

 Product Details 3
--------------------
 Product Code P03
 Product Name Spoon
 Product Price 123

 Lower Price :Product 3: 123
```

EXPERIMENT NUMBER: 2

AIM

Read 2 matrices from the console and perform matrix addition.

ALGORITHM

PROGRAM CODE

```
import java .util.*;
public class Matrix
 {
   public static void main(String args[])
   {
    Scanner sc=new Scanner(System.in);
    int a[][]=new int[5][5];
    int b[][]=new int[5][5];
    int r1,c1,r2,c2,i,j;
    System.out.println("Enter ROW and COLUMN of 1st Matrix");
    r1=sc.nextInt();
    c1=sc.nextInt();
    System.out.println("Enter ROW and COLUMN of 2nd Matrix");
    r2=sc.nextInt();
    c2=sc.nextInt();
    if(r1==r2 & c1==c2)
    {
        System.out.println("Enter 1st Matrix");
        for(i=0;i<r1;i++)
        {
          for(j=0;j<c1;j++)
          {
            a[i][j]=sc.nextInt();
          }
        }
        System.out.println("Enter 2nd Matrix");
        for(i=0;i<r2;i++)
```

```
        {
         for(j=0;j<c2;j++)
         {
           b[i][j]=sc.nextInt();
         }
        }
         for(i=0;i<r1;i++)   {
         for(j=0;j<c1;j++)
         {
           a[i][j]=a[i][j]+b[i][j];
         }
        }

         System.out.println("After Matrix Addition");
        for(i=0;i<r2;i++)   {
         for(j=0;j<c2;j++)
         {
           System.out.print(a[i][j]+"\t");
         }
         System.out.println(" ");
        }
    }
    else
     {
      System.out.println(" Enter Matrix of Same size!!!!");
     }
}
  }
```

OUTPUT

```
PS C:\Users\USER\Desktop\OOPL> javac Matrix.java
PS C:\Users\USER\Desktop\OOPL> java Matrix
Enter ROW and COLUMN of 1st Matrix
2 2
Enter ROW and COLUMN of 2nd Matrix
2 2
Enter 1st Matrix
1 2 3 4
Enter 2nd Matrix
1 1 1 1
After Matrix Addition
2       3
4       5
PS C:\Users\USER\Desktop\OOPL>
```

EXPERIMENT NUMBER: 3

AIM

Add complex numbers

ALGORITHM

PROGRAM CODE

```
import java.util.*;
 class ComplexNum
 {
  int real,img;
  ComplexNum( int r,int i)
  {
    this.real=r;
    this.img=i;
  }
  public static ComplexNum add(ComplexNum n1, ComplexNum n2)
  {
   ComplexNum temp=new ComplexNum (0,0);
   temp.real=n1.real+n2.real;
   temp.img=n1.img+n2.img;
   return temp;
    }
   }
 class ComplexNumMain
 {
  public static void main (String args[])
  {
    System.out.println("--ADDITION OF COMPLEX NUMBERS--");
    System.out.println("_____________________________________");
    int a,b,c,d;
    Scanner sc=new Scanner(System.in);
    System.out.println("Read 1st Complex Number(real->imaginary)");
    a=sc.nextInt();
```

```
    b=sc.nextInt();
    System.out.println("Read 2st Complex Number(real->imaginary)");
    c=sc.nextInt();
    d=sc.nextInt();
    ComplexNum c1=new ComplexNum (a,b);
    ComplexNum c2=new ComplexNum (c,d);
    ComplexNum x=ComplexNum.add(c1,c2);
    System.out.println("result="+x.real+"+i"+x.img);
    }
}
```

OUTPUT

```
PS C:\Users\USER\Desktop\OOPL> javac ComplexNumMain.java
PS C:\Users\USER\Desktop\OOPL> java ComplexNumMain
--ADDITION OF COMPLEX NUMBERS--
------------------------------
Read 1st Complex Number(real->imaginary)
1
2
Read 2st Complex Number(real->imaginary)
2
3
result=3+i5
PS C:\Users\USER\Desktop\OOPL>
```

EXPERIMENT NUMBER: 4

AIM

Create CPU with attribute price. Create inner class Processor (no. of cores, manufacturer) and static nested class RAM (memory, manufacturer). Create an object of CPU and print information of Processor and RAM.

ALGORITHM

PROGRAM CODE

```
import java.util.*;
class Cpu
 {
  float price=2500;

  class Processor
  {
   int cores=7;
   String manufacturer="Intel";
   void display()
   {
     System.out.println("Processor Details\n__________");
     System.out.println("Processor Manufacturer:"+manufacturer);
     System.out.println("Processor Core:"+cores);
     System.out.println();
   }
   }
   protected class RAM
   {
    double memory=512.78;
    String manufacturer="Samsung";
     void display()
   {
     System.out.println("Ram Details\n_________");
     System.out.println("RAM Memory:"+memory);
     System.out.println("RAM Manufacturer:"+manufacturer);
     System.out.println();
```

```
  }
  }
}
public class CpuMain
{
  public static void main (String args[])
  {
   Cpu cpu =new Cpu();
   Cpu.Processor proc= cpu.new Processor();
   Cpu.RAM ram = cpu.new RAM();
   proc.display();
   ram.display();
   }
  }
```

OUTPUT

```
PS C:\Users\USER\Desktop\OOPL> javac CpuMain.java
PS C:\Users\USER\Desktop\OOPL> java CpuMain
Processor Details
----------
Processor Manufacturer:Intel
Processor Core:7

Ram Details
---------
RAM Memory:512.78
RAM Manufacturer:Samsung

PS C:\Users\USER\Desktop\OOPL>
```