Program1:

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.

Source Code:

```
public class product
{
        int pcode;
        String pname;
        double price;
        double lowest;
        void data(int c, String n, double p){
           pcode=c;
           pname=n;
           price=p;
        }
        void display(){
           System.out.println(pcode+"\t\t"+pname+"\t\t"+price);

        }
        static void findLowest(double price1,double price2, double price3){
        if(price1<=price2 && price1<=price3){
           System.out.println("\nProduct 1 is of the lowest price!");

        }
        else if(price2<=price1 && price2<=price3){
           System.out.println("\nProduct 2 is of the lowest price!");

        }
        else{
           System.out.println("\nProduct 3 is of the lowest price!");

        }

       }
      public static void main(String[] args){
           product obj1 = new product();
           product obj2 = new product();
           product obj3 = new product();
           obj1.data(101,"Product_1",100.0);
           obj2.data(102,"Product_2",128.40);
           obj3.data(103,"Product_3",790.00);
           System.out.println("INDULEKHA PS");
           System.out.println("ROLL NO:31\n 13-2-24");
           System.out.println("Define a class 'product' with data members pcode, pname and price.
Create 3 objects ofthe classand find the product having the lowest price.");
```

```
            System.out.println("ProductInformation:\nProduct_Code\tProduct_Name\tProduct_
            Price");
        obj1.display();
        obj2.display();
        obj3.display();
        findLowest(obj1.price,obj2.price,obj3.price);

    }
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac product.java
mca@Z238-UL:~/ijava$ java product
INDULEKHA PS
ROLL NO:31
 13-2-24
1.Define a class 'product' with data members pcode, pname and price. Create 3 objects ofthe classand find the product having the lowest price.
Product Information:
 Product_Code    Product_Name    Product_Price
101             Product_1               100.0
102             Product_2               128.4
103             Product_3               790.0

Product 1 is of the lowest price!
mca@Z238-UL:~/ijava$
```

Program2:

Aim: Read 2 matrices from the console and perform matrix addition.

Source Code:

```
import java.util.Scanner;
public class add_matrix {
	public static void main(String args[])
	{
	int row, col,i,j;
	Scanner in = new Scanner(System.in);
	System.out.println("INDULEKHA PS");
 System.out.println("ROLL NO:31\n 13-2-24");
 System.out.println("2. Read 2 matrices from the console and perform matrix addition.");
	System.out.println("Enter the number of rows");
	row = in.nextInt();
	System.out.println("Enter the number columns");
	col = in.nextInt();
	int mat1[][] = new int[row][col];
	int mat2[][] = new int[row][col];
	int res[][] = new int[row][col];
	System.out.println("Enter the elements of matrix 1");
	for ( i= 0 ; i < row ; i++ )
	{
	for ( j= 0 ; j < col ;j++ )
	mat1[i][j] = in.nextInt();
	System.out.println();
	}
	System.out.println("Enter the elements of matrix 2");
	for ( i= 0 ; i < row ; i++ )
	{
	for ( j= 0 ; j < col ;j++ )
	mat2[i][j] = in.nextInt();
	System.out.println();
	}
	for ( i= 0 ; i < row ; i++ )
	for ( j= 0 ; j < col ;j++ )
	res[i][j] = mat1[i][j] + mat2[i][j] ;
	System.out.println("Sum of matrices:-");
	for ( i= 0 ; i < row ; i++ )
	{
	for ( j= 0 ; j < col ;j++ )
	System.out.print(res[i][j]+"\t");
	System.out.println();
	}

	}
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac add_matrix.java
mca@Z238-UL:~/ijava$ java add_matrix
INDULEKHA PS
ROLL NO:31
 13-2-24
2. Read 2 matrices from the console and perform matrix addition.
Enter the number of rows
2
Enter the number columns
2
Enter the elements of matrix 1
4
3


2
1

Enter the elements of matrix 2
1
1


4
4

Sum of matrices:-
5       4
6       5
```

Program3:

Aim: Add complex numbers.

Source Code:

```
public class complex {
int r;
int i;
    complex(int real,int img){
    r=real;
    i=img;
    }
    void display(){
    System.out.println(r+"+"+i+"i");
    }
    static void add(int r1,int i1,int r2,int i2 ){
        r1=r1+r2;
        i1=i1+i2;
        System.out.println("After Addition = "+r1+"+"+i1+"i");
    }
    public static void main(String[] args) {
        // Scanner sc =new Scanner(System.in);
        // String firstComplex=sc.nextLine();
        // String[] ar=firstComplex.split("[-+i]");
        // String secondComplex=sc.nextLine();
        // String[] ar2=secondComplex.split("[-+i]");
        complex first=new complex(5,4);
        complex second=new complex(7,9);
        System.out.println("INDULEKHA PS");
            System.out.println("ROLL NO:31\n 13-2-24");
            System.out.println("Add complex numbers");
        System.out.println("Complex Numbers are:");
        first.display();
        second.display();
        add(first.r,first.i,second.r,second.i);
    }

}
```

Output:

```
mca@Z238-UL:~/ijava$ javac complex.java
mca@Z238-UL:~/ijava$ java complex
INDULEKHA PS
ROLL NO:31
 13-2-24
3.Add complex numbers
Complex Numbers are:
5+4i
7+9i
After Addition = 12+13i
```

Program4:

Aim: Read a matrix from the console and check whether it is symmetric or not.

Source Code:

```
import java.util.Scanner;
public class symmetric {
public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    System.out.println("INDULEKHA PS");
 System.out.println("ROLL NO:31\n 13-2-24");
 System.out.println("4. Read a matrix from the console and check whether it is symmetric or not.");
System.out.println("Enter the Number of rows of the Matrix");
int row = sc.nextInt();
System.out.println("Enter the Number of Columns of the Matrix");
int col = sc.nextInt();
int matrix[][] = new int[row][col];
int i,j;
boolean state=true;
for(i=0;i<row;i++){
    for(j=0;j<col;j++){
        System.out.println("Enter the Element at M("+i+","+j+")");
       matrix[i][j] = sc.nextInt();
    }
}
for(i=0;i<row;i++){
    for(j=0;j<col;j++){
       if(matrix[i][j]!=matrix[j][i]){
           state=false;
           break;
       }
    }
}

if(state){
System.out.println("Matrix is Symmetric");
}
else{
System.out.println("Matrix is Antisymmetric");
}
}
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac symmetric.java
mca@Z238-UL:~/ijava$ java symmetric
INDULEKHA PS
ROLL NO:31
 13-2-24
4. Read a matrix from the console and check whether it is symmetric or not.
Enter the Number of rows of the Matrix
2
Enter the Number of Columns of the Matrix
2
Enter the Element at M(0,0)
11
Enter the Element at M(0,1)
11
Enter the Element at M(1,0)
11
Enter the Element at M(1,1)
11
Matrix is Symmetric
mca@Z238-UL:~/ijava$ java symmetric
INDULEKHA PS
ROLL NO:31
 13-2-24
4. Read a matrix from the console and check whether it is symmetric or not.
Enter the Number of rows of the Matrix
2
Enter the Number of Columns of the Matrix
2
Enter the Element at M(0,0)
23
Enter the Element at M(0,1)
45
Enter the Element at M(1,0)
65
Enter the Element at M(1,1)
76
Matrix is Antisymmetric
mca@Z238-UL:~/ijava$
```

Program5:

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.

Source Code:

```
public class cpu{
   int price;
    class processor{
      int cores;
      String producer;
      processor(int noC, String manu){
         cores=noC;
         producer=manu;
      }

      void display(){
      System.out.println("\nProcessor info");
      System.out.println("No. of Cores = "+cores);
      System.out.println("Manufacturer = "+producer+"\n");
   }
   }
   static class ram{
      int mem;
      String manuf;
      ram(int memory,String producer ){
         mem=memory;
         manuf=producer;
      }
      void display(){
      System.out.println("INDULEKHA PS");
         System.out.println("ROLL NO:31\n 13-2-24");
         System.out.println("5. Create CPU with attribute price. Create inner class Processor (no. of
cores, manufacturer)andstatic nestedclass RAM (memory, manufacturer). Create an object of CPU
and print information of Processor and RAM.");
      System.out.println("\nRAM info");
      System.out.println("Memory = "+mem+" GB");
      System.out.println("Manufacturer = "+manuf+"\n");
   }}
   public static void main(String[] args) {
       cpu.ram obj1= new cpu.ram(8,"Intel");
       cpu obj2 = new cpu();
       cpu.processor obj3 = obj2.new processor(8,"Samsung");
       obj1.display();
       obj3.display();

   }}
```

Output:

```
mca@ZZ38-UL:~/ijava$ javac cpu.java
mca@ZZ38-UL:~/ijava$ java cpu
INDULEKHA PS
ROLL NO:31
 13-2-24
5. Create CPU with attribute price. Create inner class Processor (no. of cores, manufacturer)andstatic nestedclass RAM (memory, manufacturer). Create an object of CPU and print
 information of Processor and RAM.

RAM info
Memory = 8 GB
Manufacturer = Intel


Processor info
No. of Cores = 8
Manufacturer = Samsung
```