CYCLE 1

1. 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.

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,"Pen",10.0);
obj2.data(102,"Pencil",05.0);
obj3.data(103,"Book",50.0);
System.out.println("\nRIYA ROY - 22MCA045 - 24/03/23\n");
System.out.println("Product Information:\n
Product_Code\tProduct_Name\tProduct_Price");
obj1.display();
obj2.display();
obj3.display();
findLowest(obj1.price,obj2.price,obj3.price);
}
}
```

OUTPUT

```
sjcet@HP-Z238:~/riya/java$ javac product.java
^[[Asjcet@HP-Z238:~/riya/java$ java product

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Product Information:
 Product_Code   Product_Name    Product_Price
101             Pen             10.0
102             Pencil          5.0
103             Book            50.0

Product 2 is of the lowest price!
sjcet@HP-Z238:~/riya/java$
```

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

CODE

```
import java.util.Scanner;
public class addmatrix
{
public static void main(String args[])
{
int row,col,i,j;
System.out.println("\nRIYA ROY - 22MCA045 - 24/03/23\n");
Scanner in = new Scanner(System.in);
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

```
^Csjcet@HP-Z238:~/riya/java/cycle1$ java addmatrix

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Enter the number of rows
2
Enter the number columns
2
Enter the elements of matrix 1
1
2

3
4

Enter the elements of matrix 2
5
6

7
8

Sum of matrices:-
6       8
10      12
sjcet@HP-Z238:~/riya/java/cycle1$
```

3. Add complex numbers

CODE

```
public class cmplxnum
{
	int r; int i;
	cmplxnum(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)
	{
		System.out.println("\nRIYA ROY - 22MCA045 - 24/03/23\n");
		cmplxnum first=new cmplxnum(5,4);
		cmplxnum second=new cmplxnum(7,9);
		System.out.println("Complex Numbers are:");
		first.display();
		second.display();
		add(first.r,first.i,second.r,second.i);
	}
}
```

OUTPUT

```
sjcet@HP-Z238:~/riya/java/cycle1$ javac cmplxnum.java
sjcet@HP-Z238:~/riya/java/cycle1$ java cmplxnum

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Complex Numbers are:
5+4i
7+9i
After Addition =12+13i
sjcet@HP-Z238:~/riya/java/cycle1$
```

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

CODE

```
import java.util.Scanner;
public class symmetric
{
public static void main(String[] args)
{
System.out.println("\nRIYA ROY - 22MCA045 - 24/03/23\n");
   Scanner sc = new Scanner(System.in);
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

```
sjcet@HP-Z238:~/riya/java/cycle1$ javac symmetric.java
sjcet@HP-Z238:~/riya/java/cycle1$ java symmetric

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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)
1
Enter the Element at M(0,1)
2
Enter the Element at M(1,0)
3
Enter the Element at M(1,1)
4
Matrix is Antisymmetric
sjcet@HP-Z238:~/riya/java/cycle1$
```

5. 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.

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("\nRAM info");
        System.out.println("Memory = "+mem+" GB");
        System.out.println("Manufacturer = "+manuf+"\n");
    }
    }
    public static void main(String[] args)
    {
    System.out.println("\nRIYA ROY - 22MCA045 - 24/03/23\n");
         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

```
sjcet@HP-Z238:~/riya/java/cycle1$ javac cpu.java
sjcet@HP-Z238:~/riya/java/cycle1$ java cpu

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RAM info
Memory = 8 GB
Manufacturer = Intel


Processor info
No. of Cores = 8
Manufacturer = Samsung

sjcet@HP-Z238:~/riya/java/cycle1$
```

```
 Teacher Id:
201

********Informations of all the Teacher's************

1).
Name: jincy
Gender: female
Address: chittettu(h)
Age: 43
Employee id: 101
Company Name: npr
Qualification: pg
Salary: 250000
Subject: maths
Department: mca
Teacher id: 200

2).
Name: reji
Gender: female
Address: jxsojnhlkc
Age: 47
Employee id: 123
Company Name: sdf
Qualification: degree
Salary: 27000
Subject: dbms
Department: mca
Teacher id: 201
sjcet@HP-Z238:~/riya/java/cycle3$
```