# 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.

```
//Megha Praveen
//Sjc22mca-039
//23-03-23
//Object Oriented Programming Lab
//20MCA132

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();
            System.out.println("Megha Praveen");
               System.out.println("SJC22MCA-039");
               System.out.println("23-03-23");
               System.out.println("Object Oriented Programming Lab");
               System.out.println("20MCA132");
            obj1.data(101,"Product_1",100.0);
            obj2.data(102,"Product_2",128.40);
            obj3.data(103,"Product_3",790.00);
            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);
        }
}
```

```
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ javac product.java
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ java product
Megha Praveen
SJC22MCA-039
23-03-23
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!
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$
```

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

```
//Megha Praveen
//SJC22MCA-039
//23-03-23
//Object Oriented Programming Lab
//20MCA132
```

```
import java.util.Scanner;
public class add_matrix
{
	public static void main(String args[])
	{
		int row, col,i,j;
		System.out.println("Megha Praveen");
		System.out.println("SJC22MCA-039");
		System.out.println("23-03-23");
		System.out.println("Object Oriented Programming Lab");
		System.out.println("20MCA132");
		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();
		}
```

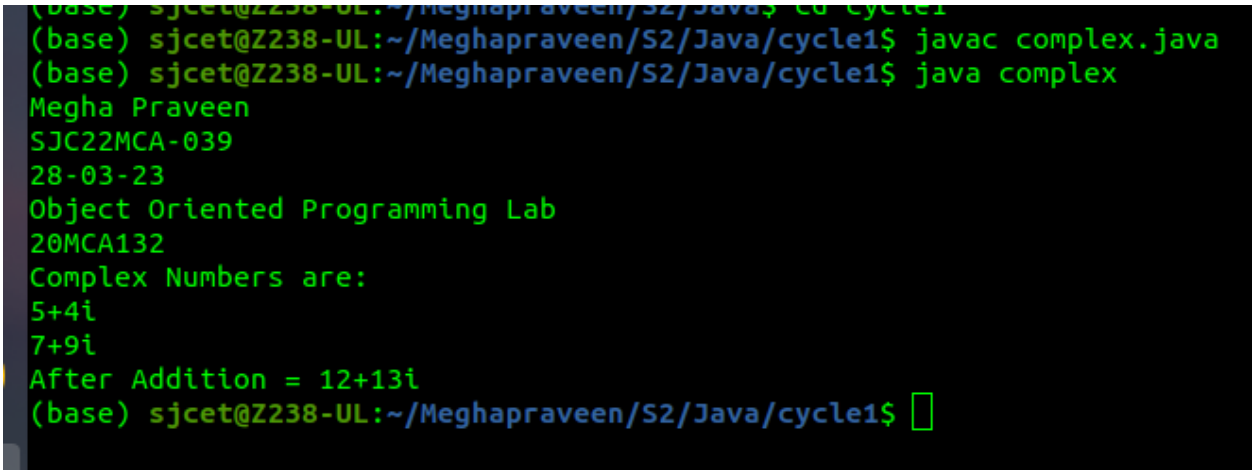
```
        }
}
```

```
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ javac add_matrix.java
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ java add_matrix
Megha Praveen
SJC22MCA-039
23-03-23
Enter the number of rows
2
Enter the number columns
2
Enter the elements of matrix 1
2
3

4
5

Enter the elements of matrix 2
6
7

8
9

Sum of matrices:-
8       10
12      14
```

3. Add complex numbers

```
//Megha Praveen
//SJC22MCA-039
//28-03-23
//Object Oriented Programming Lab
//20MCA132

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)
	{
		complex first=new complex(5,4);
		complex second=new complex(7,9);
		System.out.println("Megha Praveen");
		System.out.println("SJC22MCA-039");
		System.out.println("28-03-23");
		System.out.println("Object Oriented Programming Lab");
		System.out.println("20MCA132");
		System.out.println("Complex Numbers are:");
		first.display();
		second.display();
		add(first.r,first.i,second.r,second.i);
	}
}
```




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

```
//Megha Praveen
//SJC22MCA-039
//28-03-23
//Object Oriented Programming Lab
//20MCA132

import java.util.Scanner;
public class symmetric
{
	public static void main(String[] args)
```

```
	{
		System.out.println("Megha Praveen");
		System.out.println("SJC22MCA-039");
		System.out.println("28-03-23");
		System.out.println("Object Oriented Programming Lab");
		System.out.println("20MCA132");
		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");
		}
	}
}
```

```
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ javac symmetric.java
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ java symmetric
Megha Praveen
SJC22MCA-039
28-03-23
Object Oriented Programming Lab
20MCA132
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)
1
Enter the Element at M(1,0)
1
Enter the Element at M(1,1)
1
Matrix is Symmetric
(base) sjcet@Z238-UL:~/Meghapraveen/S2/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.

```
//Megha Praveen
//SJC22MCA-039
//28-03-23
//Object Oriented Programming Lab
//20MCA132

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("Megha Praveen");
       System.out.println("SJC22MCA-039");
       System.out.println("28-03-23");
       System.out.println("Object Oriented Programming Lab");
       System.out.println("20MCA132");
     cpu.ram obj1= new cpu.ram(8,"Intel");
     cpu obj2 = new cpu();
     cpu.processor obj3 = obj2.new processor(8,"Samsung");
     obj1.display();
     obj3.display();

  }
}
```

```
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ javac cpu.java
(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$ java cpu
Megha Praveen
SJC22MCA-039
23-03-23

RAM info
Memory = 8 GB
Manufacturer = Intel


Processor info
No. of Cores = 8
Manufacturer = Samsung

(base) sjcet@Z238-UL:~/Meghapraveen/S2/Java/cycle1$
```