

**20MCA132 OBJECT ORIENTED**  
**PROGRAMMING LAB**

**ASSIGNMENT-1**

SUBMITTED BY

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SUBMITTED TO ,

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

## **PROGRAM**

```
import java.util.Scanner;

class Sym1
{
    public static void main(String[] args)
    {
        int row,col,i,j;
        int x=0;
        Scanner ob= new Scanner(System.in);
        System.out.print("Enter the number of Rows of matrix:");
        row=ob.nextInt();
        System.out.print("Enter the number of columns of matrix:");
        col=ob.nextInt();
        if(col==row)
        {
            System.out.println("Since the No. of Row is eqaul to No.of
Columuns \nMatrix can become Symmetric");
        }
        else
        {
            System.out.println("No. of Rows and Colum must be same");
            System.exit(0);//to exit the program
        }
        int mat[][]=new int[row][col];
        System.out.println("Enter the Matrix");
        for(i=0;i<row;i++)
        {
```

```

        for(j=0;j<col;j++)
        {
            mat[i][j]=ob.nextInt();
        }
        System.out.println();
    }
    for(i=0;i<row;i++)
    {
        for(j=0;j<row;j++)
        {
            if (mat[i][j]==mat[j][i])
            {
                x=1;
                //System.out.println("Given matrix are Symmetric");
                break;
            }

            else
            {
                x=0;
                //System.out.println("Given matrix are not a symmetric
matrix");
                break;
            }
        }
    }
    if (x==1)
    {
        System.out.println("Given Matrix is Symmetric.");
    }
    else

```

```

        {
            System.out.println("Given Matrix is not Symmetric.");
        }
    }
}
}

```

## OUTPUT

The screenshot displays a Java IDE with two windows. The left window shows the source code for a class named `Sym1`, which checks if a matrix is symmetric. The right window shows the command prompt output for running the program.

**Source Code (Sym1.java):**

```

1 import java.util.Scanner;
2 class Sym1
3 {
4     public static void main(String[] args){
5         int row,col,i,j,x=0;
6         Scanner ob= new Scanner(System.in);
7         System.out.println("Enter the number of Rows");
8         row=ob.nextInt();
9         col=row;
10        int mat1[][]=new int[row][col];
11        int mat2[][]=new int[row][col];
12        System.out.println("Enter the first matrix");
13        for(i=0;i<row;i++){
14            for(j=0;j<col;j++){
15                mat1[i][j]=ob.nextInt();
16            }
17            System.out.println();
18        }
19        System.out.println("Enter the Second matrix");
20        for(i=0;i<row;i++){
21            for(j=0;j<col;j++){
22                mat2[i][j]=ob.nextInt();
23            }
24            System.out.println();
25        }
26        for(i=0;i<row;i++){
27            for(j=0;j<row;j++){
28                if (mat1[i][j]==mat2[j][i]){
29                    x++;
30                }
31                else{
32                    x=0;
33                    break;
34                }
35            }
36        }
37        if(x==1)
38            System.out.print("Given matrix are Symmetric");
39        else
40            System.out.println("Given matrix are not a symmetric matrix");
41    }
42 }
43

```

**Command Prompt Output:**

```

D:\java_lab>javac Sym1.java
D:\java_lab>java Sym1
Enter the number of Rows of matrix:2
Enter the number of columns of matrix:2
Since the No. of Row is equal to No.of Columns
Matrix can become Symmetric
Enter the Matrix
2
4
2
2

Given Matrix is Symmetric.
D:\java_lab>javac Sym1.java
D:\java_lab>java Sym1
Enter the number of Rows of matrix:2
Enter the number of columns of matrix:2
No. of Rows and Column must be same
D:\java_lab>javac Sym1.java
D:\java_lab>java Sym1
Enter the number of Rows of matrix:2
Enter the number of columns of matrix:2
Since the No. of Row is equal to No.of Columns
Matrix can become Symmetric
Enter the Matrix
2
3
2
2

Given Matrix is not Symmetric.
D:\java_lab>javac CPU.java

```

2. 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.

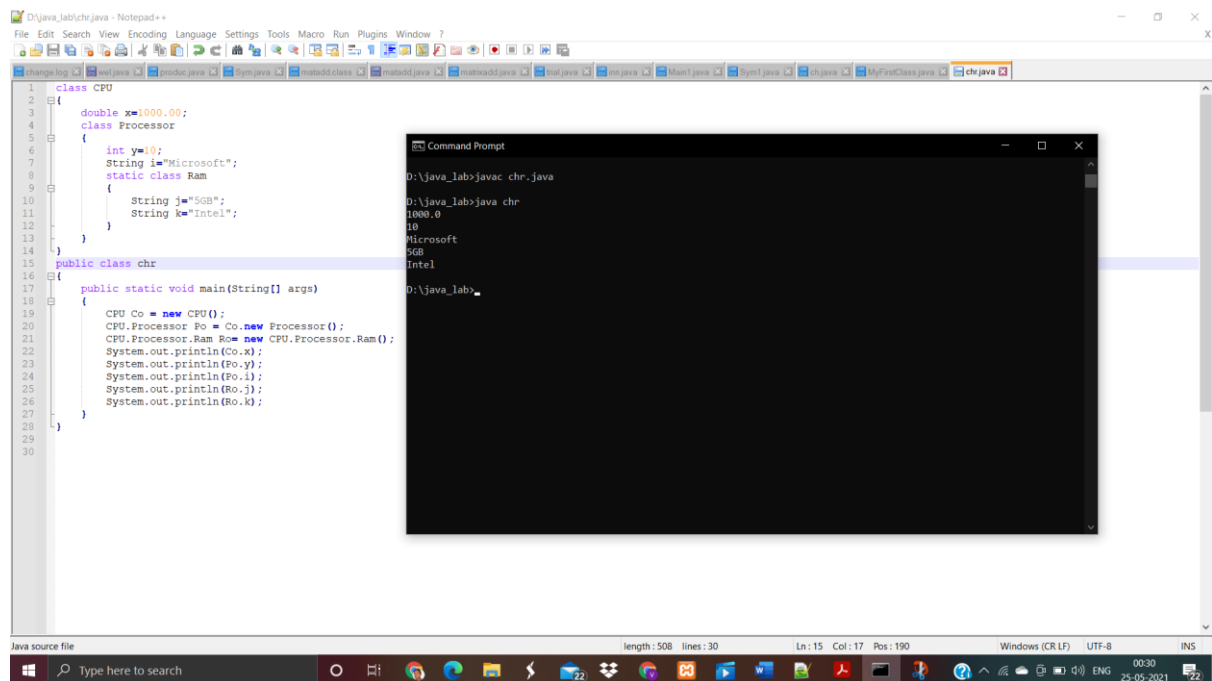
## **PROGRAM**

```
class CPU
{
    double x=1000.00;
    class Processor
    {
        int y=10;
        String i="Microsoft";
        static class Ram
        {
            String j="5GB";
            String k="Intel";
        }
    }
}

public class ch
{
    public static void main(String[] args)
    {
        CPU Co = new CPU();
        CPU.Processor Po = Co.new Processor();
        CPU.Processor.Ram Ro= new CPU.Processor.Ram();
        System.out.println(Co.x);
        System.out.println(Po.y);
        System.out.println(Po.i);
        System.out.println(Ro.j);
    }
}
```

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

## OUTPUT



The screenshot displays a Java IDE with a source file on the left and a Command Prompt window on the right. The source file contains the following code:

```
1 class CPU
2 {
3     double x=1000.00;
4     class Processor
5     {
6         int y=10;
7         String i="Microsoft";
8         static class Ram
9         {
10             String j="5GB";
11             String k="Intel";
12         }
13     }
14 }
15 public class chr
16 {
17     public static void main(String[] args)
18     {
19         CPU Co = new CPU();
20         CPU.Processor Po = Co.new Processor();
21         CPU.Processor.Ram Ro = new CPU.Processor.Ram();
22         System.out.println(Co.x);
23         System.out.println(Po.y);
24         System.out.println(Po.i);
25         System.out.println(Ro.j);
26         System.out.println(Ro.k);
27     }
28 }
29
30
```

The Command Prompt window shows the execution of the program:

```
D:\java_lab>javac chr.java
D:\java_lab>java chr
1000.0
10
Microsoft
5GB
Intel
D:\java_lab>
```

The IDE status bar at the bottom indicates the file is a Java source file, has a length of 508, and contains 30 lines. The Command Prompt window shows the current directory is D:\java\_lab.