Course Outcome 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.

```
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("Name: Athul Ajay");
        System.out.println("Reg No: SJC22MCA-017");
        System.out.println("Date: 28/03/2023");
        System.out.println("Course code: 20MCA132");
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();
        }

        }
}
```

```
sjcet@Z238-UL:~/Athul/Java/C1$ javac product.java
sjcet@Z238-UL:~/Athul/Java/C1$ java product
Name: Athul Ajay
Reg No: SJC22MCA-017
Date: 28/03/2023
Course code: 20MCA132
Product Information:
 Product_Code   Product_Name    Product_Price
101             Legion_5i_Pro_11th_Gen          154990.0
102             Dell_Latitude_9430              196738.71
103             MSI_Pulse_GL66                  119990.0

Product 3 is of the lowest price!
```

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

```
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("Name: Athul Ajay");
        System.out.println("Reg No: SJC22MCA-017");
        System.out.println("Date: 28/03/2023");
        System.out.println("Course code: 20MCA132");
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();
       }
        }
}
```

```
sjcet@Z238-UL:~/Athul/Java/C1$ javac add_matrix.java
sjcet@Z238-UL:~/Athul/Java/C1$ java add_matrix
Name: Athul Ajay
Reg No: SJC22MCA-017
Date: 28/03/2023
Course code: 20MCA132
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@Z238-UL:~/Athul/Java/C1$
```

3. Add complex numbers

```
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(18,36);
complex second=new complex(43,50);
System.out.println("Name: Athul Ajay");
          System.out.println("Reg No: SJC22MCA-017");
          System.out.println("Date: 28/03/2023");
          System.out.println("Course code: 20MCA132");
        System.out.println("Complex Numbers are:");
        first.display();
second.display();
        add(first.r,first.i,second.r,second.i);
    }

}
```

```
sjcet@Z238-UL:~/Athul/Java/C1$ javac complex.java
sjcet@Z238-UL:~/Athul/Java/C1$ java complex
Name: Athul Ajay
Reg No: SJC22MCA-017
Date: 28/03/2023
Course code: 20MCA132
Complex Numbers are:
18+36i
43+50i
After Addition = 61+86i
sjcet@Z238-UL:~/Athul/Java/C1$
```

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

```
import java.util.Scanner; public class
symmetric { public static void
main(String[] args) {     Scanner sc = new
Scanner(System.in);
System.out.println("Name: Athul Ajay");
System.out.println("Reg No: SJC22MCA-017");
System.out.println("Date: 28/03/2023");
System.out.println("Course code: 20MCA132");
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");
}
}
}
```

```
sjcet@Z238-UL:~/Athul/Java/C1$ java symmetric
Name: Athul Ajay
Reg No: SJC22MCA-017
Date: 28/03/2023
Course code: 20MCA132
Enter the Number of rows of the Matrix
3
Enter the Number of Columns of the Matrix
3
Enter the Element at M(0,0)
1
Enter the Element at M(0,1)
1
Enter the Element at M(0,2)
-1
Enter the Element at M(1,0)
1
Enter the Element at M(1,1)
2
Enter the Element at M(1,2)
0
Enter the Element at M(2,0)
-1
Enter the Element at M(2,1)
0
Enter the Element at M(2,2)
5
Matrix is Symmetric
sjcet@Z238-UL:~/Athul/Java/C1$
```

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.

```
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("Name: Athul Ajay");
         System.out.println("Reg No: SJC22MCA-017");
         System.out.println("Date: 28/03/2023");
         System.out.println("Course code: 20MCA132");
       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(64,"HyperX");
        cpu obj2 = new cpu();
        cpu.processor obj3 = obj2.new processor(16,"AMD");
obj1.display();         obj3.display();

   }
}
```

```
sjcet@Z238-UL:~/Athul/Java/C1$ javac cpu.java
sjcet@Z238-UL:~/Athul/Java/C1$ java cpu
Name: Athul Ajay
Reg No: SJC22MCA-017
Date: 28/03/2023
Course code: 20MCA132

RAM info
Memory = 64 GB
Manufacturer = HyperX


Processor info
No. of Cores = 16
Manufacturer = AMD

sjcet@Z238-UL:~/Athul/Java/C1$
```