



COLLEGE OF ENGINEERING & TECHNOLOGY

LABORATORY MANUAL

OBJECT ORIENTED PROGRAMMING-I

SUBJECT CODE: 3140705

**COMPUTER SCIENCE ENGINEERING
DEPARTMENT**

B.E. 4TH SEMESTER

NAME: _____

ENROLLMENT NO: _____

BATCH NO: _____

YEAR: _____

Amiraj College of Engineering and Technology

Nr.Tata Nano Plant, Khoraj, Sanand, Ahmedabad.



COLLEGE OF ENGINEERING & TECHNOLOGY

Amiraj College of Engineering and Technology

Nr.Tata Nano Plant, Khoraj, Sanand, Ahmedabad.

CERTIFICATE

This is to certify that Mr. / Ms. _____

Of class _____ Enrolment No _____ has

*Satisfactorily completed the course in
_____ as by the Gujarat Technological
University for ____ Year (B.E.) semester ____ of Computer Science Engineering
in the Academic year _____.*

Date of Submission:-

Faculty Name and Signature
PROF.NENSI KANSAGARA

Head of Department
(COMPUTER)



COLLEGE OF ENGINEERING & TECHNOLOGY

**COMPUTER SCIENCE
ENGINEERING DEPARTMENT**

B.E. 4th SEMESTER

SUBJECT: OBJECT ORIENTED PROGRAMMING-I

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List Of Experiment

Sr. No.	Title	Date of Performance	Date of submission	Sign	Remark
1.	Write a Program that displays Welcome to Java, Learning Java Now and Programming is fun.				
2	Write a program that reads a number in meters, converts it to feet, and displays the result.				
3	Write a program that prompts the user to enter a letter and check whether a letter is a vowel or constant.				
4	Write a test program that prompts the user to enter ten numbers, invoke a method to reverse the numbers, display the numbers.				
5	Assume a vehicle plate number consists of three uppercase letters followed by four digits. Write a program to generate a plate number				

6	Write a generic method that returns the minimum elements in a two dimensional array.				
7	Write a program that moves a circle up, down, left or right using arrow keys.				
8	Write a GUI program that use button to move the message to the left and right and use the radio button to change the color for the message displayed				
9	Define MYPriorityQueue class that extends Priority Queue to implement the Cloneable interface and implement the clone() method to clone a priority queue.				
10	Write a program that reads words from a text file and displays all the non-duplicate words in descending order. The text file is passed as a command-line argument.				

PRACTICAL -1

OBJECTIVE: Write a Program that displays Welcome to Java, Learning Java Now and Programming is fun.

PROGRAM:

```
public class fun
{
public static void main(String[] args)
{
    System.out.print("Welcome to Java, ");
    System.out.print("Learning Java Now and Programming is
fun");
}
}
```

OUTPUT:-

```
Welcome to Java, Learning Java Now and Programming is fun
```

PRACTICAL -2

OBJECTIVE: Write a program that reads a number in meters, converts it to feet, and displays the result.

PROGRAM:

```
import
    java.util.Scanner;
class
    MeterToFeetConv
{
    public static void main(String []args)
    {
        Scanner s = new
        Scanner(System.in); double n;
        System.out.println("Enter The Value as
        Meter: "); n = s.nextInt();
        System.out.println("Ans
        is:");
        System.out.println(n/0.30
        48); s.close();
    }
}
```

OUTPUT:-

```
Enter the Value as Meter: 10
Ans is: 32.808398950131235
```

PRACTICAL -3

OBJECTIVE: Write a program that prompts the user to enter a letter and check whether a letter is a vowel or constant.

PROGRAM:

```
import
java.util.Scanner;

import
java.util.ArrayList;
import java. util. List;

class VovCon {
public static void main(String[]
args) { Scanner s = new
Scanner(System.in); String str;
int count = 0;
System.out.println("Enetr a single
Alphabet : "); str = s.nextLine();
String cs;
cs = str.toUpperCase();
Character ch = new Character(cs.charAt(0));
List<Character> vowels = new
ArrayList<Character>(); vowels.add('A');
vowels.add('E');
vowels.add('I');
vowels.add('O');
vowels.add('U');
for(int j=0 ; j < str.length() ;
j++) {
if(vowels.contains(ch)) {
count = count + 1;
```

```
    }  
}  
    if(count == 1){  
        System.out.println("Vow  
el");  
    }  
    else {  
        System.out.println("Consona  
nt");  
    }  
        s.close();  
    }  
}
```

OUTPUT:-

```
Enter a single Alphabet: a  
Vowel
```


PRACTICAL -4

OBJECTIVE: Write a test program that prompts the user to enter ten numbers, invoke a method to reverse the numbers, display the numbers.

PROGRAM:

```
import java.util.*;
class ReverseNurnDemo
{
    public static void main(String args[])
    {
        Scanner input = new
        Scanner(System.in); Int[] a = new
        int[10]; Systemout.println("Enter
        ten numbers :"); for(int i = 0;i
        <a.length; i+ +)
        a[i] =
        input.nextInt();
        reverse(a);
        System.out.println("The numbers in reverse order
        are..."); for(int i = 0; i<a.length; i+ +)
        Systemn.out.println(" " +a[i1];
    }
    public static void reverse(int[] list)
    {
        int temp;
        for(int i = 0, j = list.length - 1; i<list.length/2; i+ +, j-- )
        {
```

```
        temp =
        list[i];
        list[i] =
        list[j]

        list[j] = temp;
    }
}
}
```

OUTPUT:-

Enter ten numbers:

1

2

3

4

5

6

7

8

9

10

The numbers in reverse order are...

10987654321

PRACTICAL -5

OBJECTIVE: Assume a vehicle plate number consists of three uppercase letters followed by four digits. Write a program to generate a plate number.

PROGRAM:

```
import java.util.*;
class NumberPlateDemo
{
    public static void main(String args[])
    {
        System.out.println("The Plate number is: ");
        String alphabet = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
        for(int i=0; i<3; i++)
            {
                char ch =
                alphabet.charAt((int)(Math.random() * 10));
                System.out.println(ch);
            }
        for(int j=0; j<4; j++)
            {
                int num = (int)(Math.random()
                * 10); System.out.println(num);
            }
    }
}
```

OUTPUT:-

The Plate number is: CED5032

The Plate number is: CDI1441

PRACTICAL -6

OBJECTIVE: Write a generic method that returns the minimum elements in a two dimensional array

PROGRAM:

```
import java.util.*;

class
GenericMinDemo
{

    public static void main(String[]args)
    {

        Integer[][] a = new
        Integer[3][3]; int value = 0;
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the elements in 3.3
        matrix"); for (int i = 0; i < a.length; i++)
        {

            for (int j = 0; j < a.length; j+ +)
            {

                value =
                input.nextInt();
                a[i][j] = value;
            }
        }

        System.out.println("Minimum value is = "+min(a));
    }

    //Generic method to find minimum value from 2D
    array public static <E extends Comparable <E > >
```

```

E min(E[][]list)
{
    E min = list[0][0];
    for (E[] elements : list)
    {
        for (E element : elements)
        if (element.compareTo(min) < 0)
        {
            min = element;
        }
    }
}
return min;
}
}

```

OUTPUT:-

Enter the elements in 3.3 matrix

123

456

789

Minimum value is = 1

PRACTICAL -7

OBJECTIVE: Write a program that moves a circle up, down, left or right using arrow keys.

PROGRAM:

```
package myjav-abcapplication;

import
javafx.application.Application;

import
javafx,event.Eventliandler;

importjavafx.scene.Group;
import javafx,scene,Scene;

import
javatx.scene.input.MouseEvent;

import javafx.scene.shape.Circle;

import ja.vabc.scenepaint.Color;

import javatg,scerie.text.Text;

import javeix.stage, Stage;

public class MyJav FXApplication extends Application {

@Override

public void start(Stage
primaryStage) { Circle circle
new Circle(50,50,20);

circle.setFill(Color,RED);

circle.setStroke(Color.BLACK);

Text text = new Text(20,20,"Use arrow keys to move
the circle"); Group root = new Group(text,circle);
```

```

Scene scene=new Scene(root,400,200);

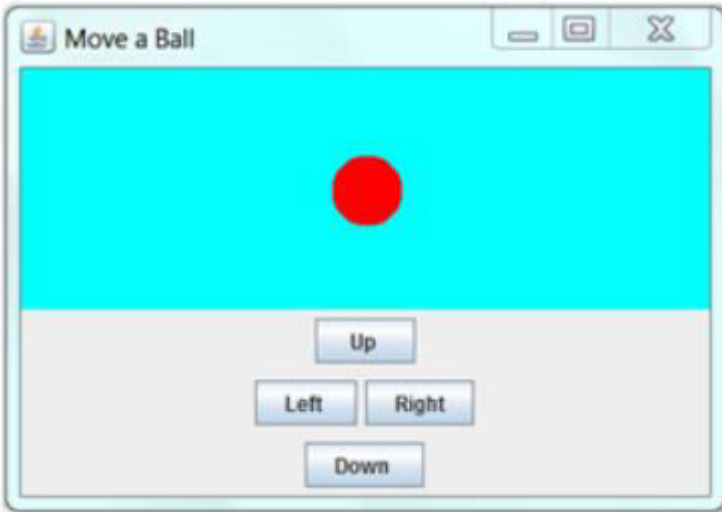
//Handling the keyboard
event scene.
setOnKeyPressed (e- > {
switch(e.getCode())
{
case
DOWN:circle.setCenterY(circle.getCenterY0
+10); break;
case
UP:circle.setCenterY(circle.getCenterY0-
10); break;
case
LEFT:circle.setCenterX(circle.getCenterX0
-10); break;
})
case
RIGHT:circle.setCenterX(circle, geteenterX0
+10); break;

primaryStage.setScene(scene);
primaryStage.setTitle("Move Circle Using
Arrow Keys"); primaryStage.show();
}

public static void main(String[]
args) { launch(args);
}
}

```

OUTPUT:-



PRACTICAL -8

OBJECTIVE: Write a GUI program that use button to move the message to the left and right and use the radio button to change the color for the message displayed.

PROGRAM:

```
package myjavafxapplication;
import
javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import
javafx.scene.control.RadioButton;
import
javafx.scene.control.ToggleGroup;
import
javafx.scene.layout.BorderPane;
import javafx.scene.layout.HBox;
import
javafx.scene.layout.Pane;
import
javafx.scene.paint.Color;
import
javafx.scene.text.Text;
import javafx.stage.Stage;
public class MyJavaFXApplication extends Application {
public Text text = new Text(100,100,"JavaFX is wonderful
Programming language"); @Override
Public void start(Stage
```

```

primaryStage) { HBox hBox
LRbuttons = new HBox(20);
Button left = new Button("Left");
Button right = new
Button("Right");
hBoxLRbuttons.getChildren().addAll(left,right);

HBox hBox_ColorRadioButtons = new HBox(20);

RadioButton red = new
RadioButton("RED"); RadioButton blue
= new RadioButton("BLUE");

RadioButton green = new RadioButton("GREEN");
hBox_ColorRadioButtons.getChildren().addAll(red,bl
ue,green);

//radio button is toggled no that only one is active at
a time ToggleGroup group = new ToggleGroup();
red.setToggleGroup(group);
blue.setToggleGroup(grou
p);
green.setToggleGroup(gro
up);

Pane Pane Message = new
Pane();
PaneMessage.getChildren().add(
text);

BorderPane borderPane = new BorderPane();
borderPane. setCenter(Pane_Message);
borderPane.setTop(hBox_ColorRadioB
uttons);
borderPane.setBottom(hBox_LRbuttons
);

```

```

//Handling the button event
    left.setOnAction(e -> text.setX(text.
    getX()- 10)); right.setOnAction(e-
    >text.setX(text.getX()+10));
    red.setOnAction(e-> {
    if(red.isSelected())
    {
        text.setFill(Color.RED);
    }
    });

    blue.setOnAction(e
    -> {
    if(blue.isSelected()
    )
    {
        text.setFill(Color.BLUE);
    }
    });

    green.setOnAction(e->
    {
    if(green.isSelecte
    d())
    {
        text.setFill(Color.GREEN);
    }
    });

    Scene scene =new
    Scene(borderPane,400,200);
    primaryStage.setScene(scene);

```

```
primaryStage.setTitle("Arrow Button and Color Radio  
Button Demo"); primaryStage.show();  
  
}  
  
public static void main(String[]  
args) { launch(args);  
  
}  
}
```

OUTPUT:-



PRACTICAL -9

OBJECTIVE: Define `MyPriorityQueue` class that extends `Priority Queue` to implement the `Cloneable` interface and implement the `clone()` method to clone a priority queue.

PROGRAM:

Step 1: We will first define the `MyPriorityQueue` class in a

separate Java file `import java.util.*;`

```
public class MyPriorityQueue<E> extends PriorityQueue<E> implements Cloneable
{
    @Override /** Override the protected clone method defined in the
    Object class */ Public MyPriorityQueue<E> clone() throws
    CloneNotSupportedException
    {
        MyPriorityQueue<E> temp = new
        MyPriorityQueue<>();
        temp.addAll((MyPriorityQueue<E>)super.clone
        ()); return temp;
    }
}
```

Step 2: Now, we will implement the above created `MyPriorityQueue` class. Following is a driver program that invokes the `MyPriorityQueue` class for implementing the `cloneable` interface and implement the `clone()` method.

```
class PriorityQDemo
```

```
{
    public static void main(String[] args)throws
    CloneNotSupportedException MyPriorityQueue<Integer> q1 =
    new MyPriorityQueue<>();
    q1.offer(10);
```

```

q1.offer(20);
q1.offer(30);
MyPriorityQueue<Integer> q2 = q1.clone();
System.out . println("Queue
1: "); while (q1.size() > 0)
{
    System.out.println(q1.remove() + " ");
}

System.out.println();
System.out.println("Queue
2: "); while (q2.size() > 0)
{
    System.out.println(q2.remove() + " ");
}
}
}

```

OUTPUT:-

```

Queue1:  20  30
10
Queue2:  20  30
10

```

PRACTICAL -10

OBJECTIVE: Write a program that reads words from a text file and displays all the non-duplicate words in descending order. The text file is passed as a command-line argument.

PROGRAM:

Step 1: Create a text file named `input.txt` as follows --

<`input.txt`>

Java is useful language

Java is object oriented programming

language I like Java programming

Step 2: Write a Java program that reads the file name using command line argument and displays all the nonduplicate words in descending order.

```
import java.io.*;
```

```
import
```

```
java.util.*; class
```

```
ReadFileWords
```

```
{
```

```
    public static void main(String[] args) throws Exception
```

```
    {
```

```
        File fin=new File(args[0]);
```

```
        BufferedReader br=new BufferedReader(new
```

```
        FileReader(fin)); StringBuffer buffer =new
```

```
        StringBuffer();
```

```
        String str;
```

```
        while((str=br.readLine())!=null) //reading the text file
```

```
        {
```

```
            buffer.append(str); //storing the text in StringBuffer
```

```

        buffer.append(" "); //Separating words by spaces
    }
    ArrayList list =new ArrayList(); //Declaring ArrayList to store
    words of file StringTokenizer st = new
    StringTokenizer(buffer.toString().toLowerCase());
    while(st.hasMoreTokens()) //creating a list of words read
    from file
    {
        String s =
        st.nextToken();
        list.add(s);
    }

    HashSet set = new HashSet(list); //Hashset is created to avoid
    duplicates
    List arrayList = new ArrayList(set); //creating a list of words
    from file without duplicates
    Comparator c = Collections.reverseOrder();
    Collections.sort(arrayList,c); //sorting the words in
    descending order for (Object obj : arrayList)
        System.out.println(obj.toString()); //displaying the contents
    }
}

```

Output:

```

D:\>java ReadFileWords input.txt
Useful
Programming
Oriented Object
Like Language
Java
Is i
D:\>

```