GURU NANAK COLLEGE
(AUTONOMOUS)
Chennai – 600 042.

BACHELOR OF COMPUTER SCIENCE

[DEPARTMENT OF COMPUTER SCIENCE]

2024 -2025

Name : _____

Reg. No : _____

Year : **II** **Semester : III**

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Subject : **PROGRAMMING IN JAVA LAB**

GURU NANAK COLLEGE

(AUTONOMOUS)
Chennai – 600 042

DEPARTMENT OF COMPUTER SCIENCE

BONAFIDE CERTIFICATE

NAME : _____

REG NO : _____

CLASS : _____

This is to certify that this is the bonafide record of the practical work done in _____
at Guru Nanak College Computer Lab, during the Year 2024-2025.

Staff-In-Charge **Head of the Department**

Submitted for the _____
B.Sc., Computer Science Practical Examination held on _____
at Guru Nanak College, Chennai – 42.

Internal Examiner **External Examiner**

INDEX

1. SIMPLE AND COMPOUND INTEREST

```
import java.io.*;
import java.util.*;
class interest
{
public static void main(String args[])
{
System.out.println("Simple & Compound Interest");
Double p,n,r,si,ci;
Scanner sc=new Scanner(System.in);
System.out.println("Enter the Principle amount:");
p=sc.nextDouble();
System.out.println("Enter the No.of years:");
n=sc.nextDouble();
System.out.println("Enter the Rate of interest");
r=sc.nextDouble();
si=(p*n*r)/100;
ci=(p*(Math.pow((1+(r/100)),n)))-p;
System.out.println("Simple Interest="+si);
System.out.println("Compound Interest="+ci);
}
}
```

Output:

```
D:\ubai>javac interest.java

D:\ubai>java interest
Simple & Compound Interest
Enter the Principle amount:
50000
Enter the No.of years:
2
Enter the Rate of interest
9
Simple Interest=9000.0
Compound Interest=9405.000000000007
```

2. LARGEST OF THREE NUMBERS

```
import java.io.*;
import java.util.*;
class largest
{
public static void main(String args[])
{
System.out.println("Largest of three numbers");
int a,b,c;
Scanner sc=new Scanner(System.in);
System.out.println("Enter number 1");
a=sc.nextInt();
System.out.println("Enter number 2");
b=sc.nextInt();
System.out.println("Enter number 3");
c=sc.nextInt();
if((a>b)&&(a>c))
{
System.out.println(a+" is greater than "+b+" and "+c);
}
else if((b>a)&&(b>c))
{
System.out.println(b+" is greater than "+a+" and "+c);
}
else
System.out.println(c+" is greater than "+a+" and "+b);
}
}
```

Output:

```
D:\ubai>javac largest.java

D:\ubai>java largest
Largest of three numbers
Enter number 1
16
Enter number 2
25
Enter number 3
12
25 is greater than 16 and 12
```

3. ILLUSTRATION OF CLASS AND OBJECT

```
class rectangle
{
int length,width;
void getdata(int x,int y)
{
length=x;
width=y;
}
int rectarea()
{
int area=length*width;
return(area);
}
}
class rectarea
{
public static void main(String args[])
{
int area1,area2;
rectangle rect1=new rectangle();
rectangle rect2=new rectangle();
rect1.length=15;
rect1.width=10;
area1=rect1.length*rect1.width;
rect2.getdata(20,12);
area2=rect2.rectarea();
System.out.println("area1="+area1);
System.out.println("area2="+area2);
}
}
```

Output:

```
D:\ubai>javac rectarea.java

D:\ubai>java rectarea
area1=150
area2=240
```

4. GENERATE RANDOM NUMBERS

```
import java.util.Random;
public class generaterandom
{
public static void main(String args[])
{
Random rand = new Random();
int rand_int1 = rand.nextInt(1000);
int rand_int2 = rand.nextInt(1000);
System.out.println("Random Integers: "+rand_int1);
System.out.println("Random Integers: "+rand_int2);
double rand_dub1 = rand.nextDouble();
double rand_dub2 = rand.nextDouble();
System.out.println("Random Doubles: "+rand_dub1);
System.out.println("Random Doubles: "+rand_dub2);
}
}
```

Output:

```
D:\ubai>javac generaterandom.java

D:\ubai>java generaterandom
Random Integers: 644
Random Integers: 893
Random Doubles: 0.32511939373350174
Random Doubles: 0.7914386628134115
```

5. CALENDAR CLASS

```
import java.util.*;
public class calendar2
{
 public static void main(String[] args)
 {
 Calendar cal = Calendar.getInstance();
 System.out.println("Current Calendar's Year: " + cal.get(Calendar.YEAR));
 System.out.println("Current Calendar's Month: " + cal.get(Calendar.MONTH));
 System.out.println("Current Calendar's Day: " + cal.get(Calendar.DATE));
 System.out.println("Current HOUR: " + cal.get(Calendar.HOUR));
 System.out.println("Current MINUTE: " + cal.get(Calendar.MINUTE));
 System.out.println("Current SECOND: " + cal.get(Calendar.SECOND));
 }
}
```

Output:

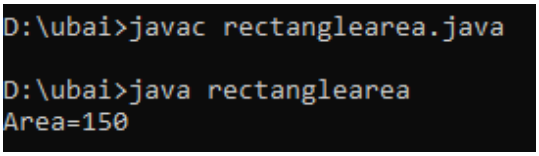
```
D:\ubai>javac calendar2.java

D:\ubai>java calendar2
Current Calendar's Year: 2022
Current Calendar's Month: 9
Current Calendar's Day: 4
Current HOUR: 9
Current MINUTE: 33
Current SECOND: 4
```

6. ILLUSTRATION OF CONSTRUCTOR

```
import java.io.*;
class rectangle
{
int length,width;
rectangle(int x,int y)
{
length=x;
width=y;
}
int rectarea()
{
return(length*width);
}
}
class rectanglearea
{
public static void main(String args[])throws IOException
{
rectangle rect=new rectangle(15,10);
int area=rect.rectarea();
System.out.println("Area="+area);
}
}
```

Output:



7. METHOD OVERLOADING

```
class overloaddemo{
void test()
{
System.out.println("No Parameters");
}
void test(int a)
{
System.out.println("a:"+a);
}
void test(int a,int b)
{
System.out.println("a and b:"+a+" "+b);
}
double test(double a)
{
System.out.println("double a:"+a);
return a*a;
}
}
class overload
{
public static void main(String args[])
{
overloaddemo ob=new overloaddemo();
double result;
ob.test();
ob.test(10);
ob.test(10,20);
result=ob.test(123.25);
System.out.println("Result of ob.test(123.25):"+result);
}
}
```

Output:

```
D:\ubai>javac overload.java

D:\ubai>java overload
No Parameters
a:10
a and b:10 20
double a:123.25
Result of ob.test(123.25):15190.5625
```

8. ILLUSTRATION OF INHERITANCE

```
class room{
int length;
int breadth;
room(int x,int y)
{
length=x;
breadth=y;
}
int area()
{
return(length*breadth);
}
}
class sroom extends room
{
int height;
sroom(int x,int y,int z)
{
super(x,y);
height=z;
}
int volume()
{
return(length*breadth*height);
}
}
class inher
{
public static void main(String args[])
{
sroom room1=new sroom(14,12,10);
int area1=room1.area();
int volume1=room1.volume();
System.out.println("Area1="+area1);
System.out.println("Volume="+volume1);
}}
```

Output:

```
D:\ubai>javac inher.java

D:\ubai>java inher
Area1=168
Volume=1680
```

9. METHOD OVERRIDING

```
class over
{
int i,j;
over(int a,int b)
{
i=a;
j=b;
}
void show()
{
System.out.println("i and j:"+i+" "+j);
}
}
class over1 extends over
{
int k;
over1(int a,int b,int c)
{
super(a,b);
k=c;
}
void show()
{
System.out.println("i="+i+" j="+j+" k="+k);
}
}
class override
{
public static void main(String args[])
{
over1 ob=new over1(1,2,3);
ob.show();
}
}
```

Output:

```
D:\ubai>javac override.java

D:\ubai>java override
i=1 j=2 k=3
```

10. PACKAGES

classA.java

```
package package1;
public class classA
{
public void displayA()
{
System.out.println("Class  A");
}
}
```

packagetest.java

```
import package1.*;
class packagetest
{
public static void main(String args[])
{
classA objA=new classA();
objA.displayA();
}
}
```

Output:

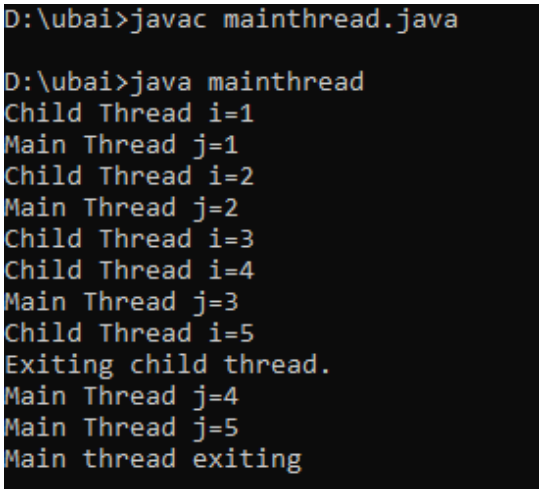
```
D:\ubai>javac packagetest.java

D:\ubai>java packagetest
Class A
```

11. ILLUSTRATION OF THREAD

```
class newthread extends Thread
{
public void run()
{
try
{
for(int i=1;i<=5;i++)
{
System.out.println("Child Thread i=" +i);
Thread.sleep(500);
}
}
catch(InterruptedException e)
{
System.out.println("Child interrupted.");
}
System.out.println("Exiting child thread.");
}
}
class mainthread
{
public static void main(String args[])
{
newthread ob=new newthread();
ob.start();
try
{
for(int j=1;j<=5;j++)
{
System.out.println("Main Thread j=" +j);
Thread.sleep(1000);
}
}
catch(InterruptedException e)
{
System.out.println("Main thread interrupted.");
}
System.out.println("Main thread exiting");
}
}
```

Output:


D:\ubai>javac mainthread.java
D:\ubai>java mainthread
Child Thread i=1
Main Thread j=1
Child Thread i=2
Main Thread j=2
Child Thread i=3
Child Thread i=4
Main Thread j=3
Child Thread i=5
Exiting child thread.
Main Thread j=4
Main Thread j=5
Main thread exiting

12. ILLUSTRATION OF EXCEPTION HANDLING

```
class exceptiontest
{
public static void main(String args[])
{
int d,a;
try{
d=0;
a=42/d;
System.out.println("This will not be printed");
}
catch(ArithmeticException e)
{
System.out.println("Division by Zero");
}
System.out.println("After catch statement");
}
}
```

Output:

```
D:\ubai>javac exceptiontest.java

D:\ubai>java exceptiontest
Division by Zero
After catch statement
```

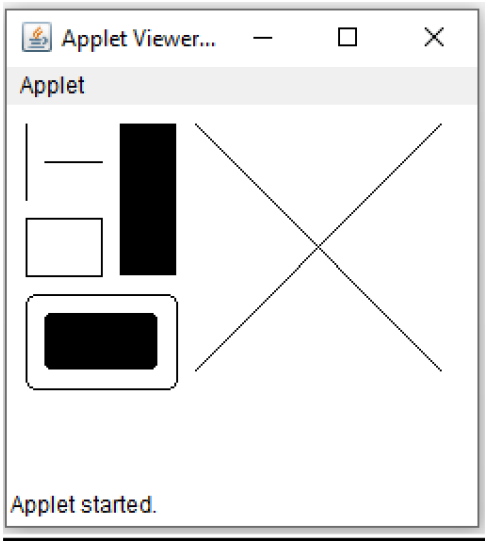
13. VARIOUS SHAPES USING APPLET

```
import java.awt.*;
import java.applet.*;
/*
<applet code="linerectangle.java" width=250 height=200>
</applet>
*/
public class linerectangle extends Applet{
public void paint(Graphics g){
g.drawLine(10,10,10,50);
g.drawLine(20,30,50,30);
g.drawRect(10,60,40,30);
g.fillRect(60,10,30,80);
g.drawRoundRect(10,100,80,50,10,10);
g.fillRoundRect(20,110,60,30,5,5);
g.drawLine(100,10,230,140);
g.drawLine(100,140,230,10);
}}
```

Output:

```
D:\ubai>javac linerectangle.java
Note: linerectangle.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

D:\ubai>appletviewer linerectangle.java
Warning: Applet API and AppletViewer are deprecated.
```



14. POINT CLASS MANIPULATION

```
import java.awt.*;
import java.awt.event.*;
import java.applet.*;
/*<applet code="impoint.java" width=200 height=200>
</applet>*/
public class impoint extends Applet
{
Point  p;
int w=0;
int h=0;
int x1=100;
int y1=100;
Image theImage;
public void init()
{
p=new Point(10,10);
theImage=getImage(getDocumentBase(),"flowers.jpg");
addMouseListener(new MouseAdapter()
{
public void mousePressed(MouseEvent me)
{
p.move(me.getX(),me.getY());
x1=p.x;
y1=p.y;
w+=15;
h+=15;
repaint();
}});}
public void paint(Graphics g)
{
g.drawImage(theImage,x1,y1,w,h,this);
showStatus(getCodeBase().toString());
}
}
```

Output:

```
D:\ubai>javac impoint.java
Note: impoint.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

D:\ubai>appletviewer impoint.java
Warning: Applet API and AppletViewer are deprecated.
```

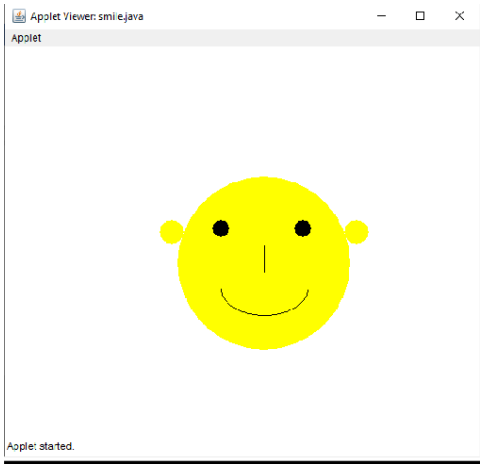
15. HUMAN FACE

```
import java.awt.*;
import java.applet.*;
/*
<applet code="smile.java" width=550 height=450>
</applet>
*/
public class smile extends Applet
{
public void paint(Graphics g)
{
g.setColor(Color.yellow);
g.fillOval(200,150,200,200);
g.setColor(Color.black);
g.fillOval(240,200,20,20);
g.fillOval(335,200,20,20);
g.drawLine(300,230,300,260);
g.drawArc(250,250,100,60,180,180);
g.setColor(Color.yellow);
g.fillOval(393,200,28,28);
g.fillOval(179,200,28,28);
}
}
```

Output:

```
D:\ubai>javac smile.java
Note: smile.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

D:\ubai>appletviewer smile.java
Warning: Applet API and AppletViewer are deprecated.
```



16. AWT CONTROLS – CHECKBOX, CHECKBOXGROUP, LABEL, TEXTFIELD, CHOICE

CHECKBOX

```
import java.awt.*;
public class checkboxexample
{
checkboxexample()
{
Frame f= new Frame("Checkbox Example");
Checkbox checkbox1 = new Checkbox("C++");
checkbox1.setBounds(100,100, 50,50);
Checkbox checkbox2 = new Checkbox("Java", true);
checkbox2.setBounds(100,150, 50,50);
f.add(checkbox1);
f.add(checkbox2);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
public static void main(String args[])
{
new checkboxexample();
}
}
```

Output:

```
D:\ubai>javac checkboxexample.java

D:\ubai>java checkboxexample
```

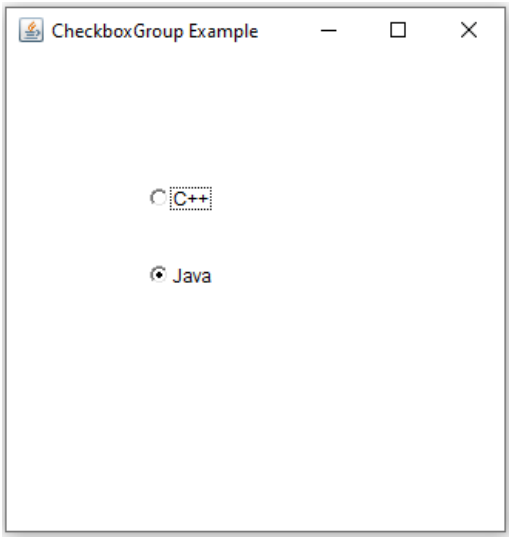
CHECKBOXGROUP

```
import java.awt.*;
public class checkboxgroupexample
{
checkboxgroupexample(){
Frame f= new Frame("CheckboxGroup Example");
CheckboxGroup cbg = new CheckboxGroup();
Checkbox checkBox1 = new Checkbox("C++", cbg, false);
checkBox1.setBounds(100,100, 50,50);
Checkbox checkBox2 = new Checkbox("Java", cbg, true);
checkBox2.setBounds(100,150, 50,50);
f.add(checkBox1);
f.add(checkBox2);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
public static void main(String args[])
{
new checkboxgroupexample();
}
}
```

Output:

```
D:\ubai>javac checkboxgroupexample.java

D:\ubai>java checkboxgroupexample
```



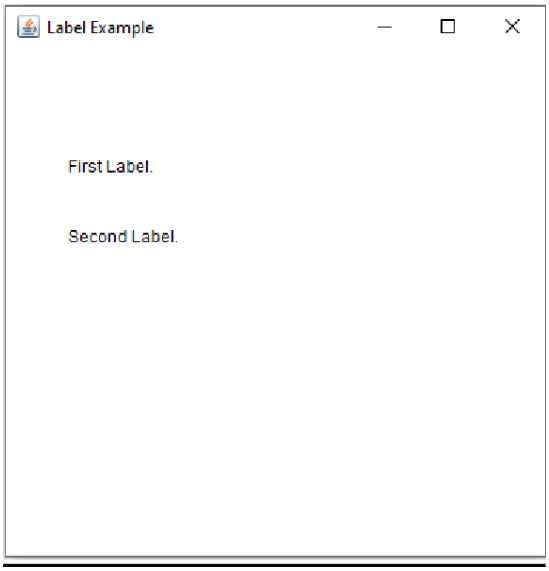
LABEL

```
import java.awt.*;
class labelexample{
public static void main(String args[]){
Frame f= new Frame("Label Example");
Label l1,l2;
l1=new Label("First Label.");
l1.setBounds(50,100, 100,30);
l2=new Label("Second Label.");
l2.setBounds(50,150, 100,30);
f.add(l1);
f.add(l2);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
}
```

Output:

```
D:\ubai>javac labelexample.java

D:\ubai>java labelexample
```



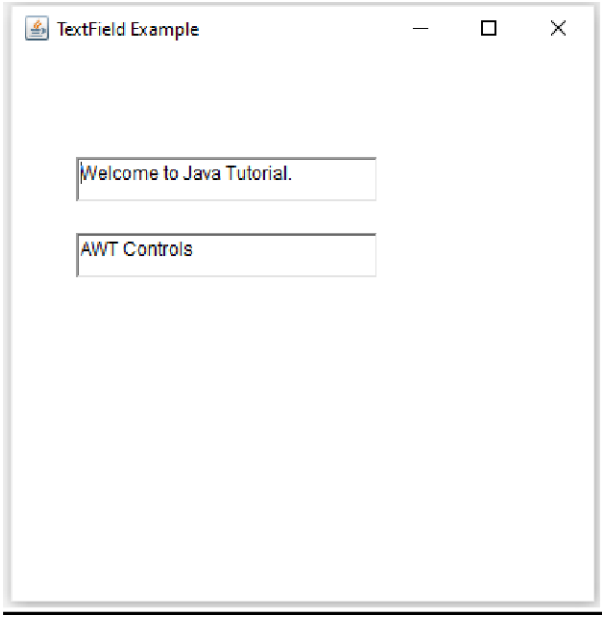
TEXTFIELD

```
import java.awt.*;
class textfieldexample
{
public static void main(String args[])
{
Frame f= new Frame("TextField Example");
TextField t1,t2;
t1=new TextField("Welcome to Java Tutorial.");
t1.setBounds(50,100, 200,30);
t2=new TextField("AWT Controls");
t2.setBounds(50,150, 200,30);
f.add(t1);
f.add(t2);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
}
```

Output:

```
D:\ubai>javac textfieldexample.java

D:\ubai>java textfieldexample
```



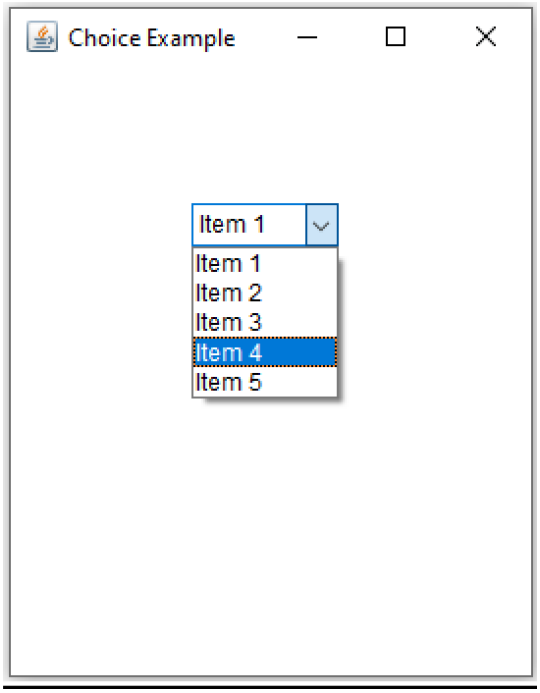
CHOICE

```
import java.awt.*;
public class choiceexample
{
public static void main(String args[])
{
Frame f= new Frame("Choice Example");
Choice c=new Choice();
c.setBounds(100,100, 75,75);
c.add("Item 1");
c.add("Item 2");
c.add("Item 3");
c.add("Item 4");
c.add("Item 5");
f.add(c);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
}
```

Output:

```
D:\ubai>javac choiceexample.java

D:\ubai>java choiceexample
```



17. FONT STYLE AND DIFFERENT COLORS

```
import java.awt.*;
import java.applet.*;
/*
<applet code="fontsize.java" width=500 height=450>
</applet>
*/
public class fontsize extends Applet
{
Font f;
int size=8;
int flag=0;
public void paint(Graphics g)
{
if(flag==0)
{
g.setColor(Color.green);
f=new Font("Courier New",Font.BOLD,size);
g.setFont(f);
}
else
{
g.setColor(Color.red);
f=new Font("Times New Roman",Font.BOLD,size);
g.setFont(f);
}
g.drawString("Welcome",0,300);
flag=1-flag;
size++;
try
{
Thread.sleep(400);
}
catch(Exception e)
{
}
repaint();
}
}
```

Output:

```
D:\ubai>javac fontsize.java
Note: fontsize.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

D:\ubai>appletviewer fontsize.java
Warning: Applet API and AppletViewer are deprecated.
```

18. PANELS AND LAYOUTS

```
import java.awt.*;


class layoutexample extends Frame
{
 layoutexample()
 {
 setLayout(new BorderLayout());
 add(new Button("NORTH"),BorderLayout.NORTH);
 add(new Button("SOUTH"),BorderLayout.SOUTH);
 add(new Button("EAST"),BorderLayout.EAST);
 add(new Button("WEST"),BorderLayout.WEST);
 add(new Button("CENTER"),BorderLayout.CENTER);
 }
}
 class borderexample
 {
 public static void main(String args[])
 {
layoutexample f = new layoutexample();
 f.setTitle("BorderLayout in Java Example");
 f.setSize(400,150);
 f.setVisible(true);
 }
}
```

Output:

```
D:\ubai>javac borderexample.java

D:\ubai>java borderexample
```