Java Programing

1.Classes and Object:

```
class Rectangle
{
  int length;
  int width;
  Rectangle(int a, int b)
  {
     length=a;
     width=b;
  }
  int rectangleArea()
  {
     int area;
     area=length*width;
     return area;
  }
  int rectanglePerimeter()
  {
     int perimeter;
     perimeter=2*(length+width);
     return perimeter;
  }
}
class RectangleDemo
{
   public static void main(String[] args)
  {
     Rectangle r1=new Rectangle(10,5);
     System.out.println("Area of Rectangle = "+r1.rectangleArea());
```

```
    System.out.println("Perimeter of Rectangle = "+r1.rectanglePerimeter());
    Rectangle r2=new Rectangle(7,4);
    System.out.println("Area of Rectangle = "+r2.rectangleArea());
    System.out.println("Perimeter of Rectangle = "+r2.rectanglePerimeter());
  }
}
```

Output :

Area of Rectangle = 50

Perimeter of Rectangle = 30

Area of Rectangle = 28

Perimeter of Rectangle = 22

```
Area of Rectangle = 50
Perimeter of Rectangle = 30
Area of Rectangle = 28
Perimeter of Rectangle = 22
```

2.Interface:

```
interface Shape2d
{
  double getArea();
}
class Circle implements Shape2d
{
  int radius;
  Circle(int radius)
  {
    this.radius=radius;
  }
  public double getArea()
  {
    return Math.PI*radius*radius;
```

```
  }
}
class CircleDemo
{
   public static void main(String[] args)
  {
    Circle c=new Circle(10);
    System.out.println(c.getArea());
  }
}
```

Output:

314.159265358979

```
C:\Users\infan\Documents\Java>java CircleDemo
314.1592653589793
```

3.Packages:

```
//source file name: B.java
package p;
class B
{
  void b1()
  {
    System.out.println("b1);
  }
}
//source file name: C.java
package p;
class C
{
```

```
  void c1()
  {
    System.out.println("c1);
  }
}
//source file name: PackageDemo.java
package p;
public class PackageDemo
{
  public static void main(String[] args)
 {
   B b=new B();
   b.b1();
   C c=new C();
   c.c1();
 }
}
```

Output:

b1

c1

```
C:\Users\infan\Documents\Java>java p.PackageDemo
b1
c1
```

4.Inheritance:

```
class A
{
 int i;
 int j;
}
```

```
class B extends A
{
}
class C extends B
{
 int k;
}
class ABCDemo
{
 public static void main(string[] args)
 {
  C c1=new C();
  c1.i=11;
  c1.j=22;
  c1.k=33;
  System.out.println("Value of i in class C="+c1.i);
  System.out.println("Value of j in class C="+c1.j);
  System.out.println("Value of k in class C="+c1.k);
 }
}
```

Output:

Value of i in class C=11

Value of j in class C=22

Value of k in class C=33

```
C:\Users\infan\Documents\Java>java ABCDemo
Value of i in class C=11
Value of j in class C=22
Value of k in class C=33
```

5.Exception Handling:

class DividerDemo

```
{
 public static void main(string[] args)
 {
  try
  {
   int a=Integer.parseInt(args[0]);
   int b=Integer.parseInt(args[1]);
   System.out.println("Ouotient"+a/b);
  }
  catch(ArithemeticException e)
  {
   System.out.println("Error in denominator");
  }
  catch(ArrayIndexOutOfBoundsException e)
  {
   System.out.println("Error in index value");
  }
  catch(NumberFormatException e)
  {
   System.out.println("Data type error");
  }
  finally
  {
   System.out.println("finally block");
  }
 }
}
```

Output:

Error in index value

finally block

1 0

Error in denominator

finally block

1 1

Quotient=1

finally block

a b

Data type error

finally block

```
C:\Users\infan\Documents\Java>java DividerDemo
Error in index value
finally block

C:\Users\infan\Documents\Java>java DividerDemo 1 0
Error in denominator
finally block

C:\Users\infan\Documents\Java>java DividerDemo 1 1
Ouotient1
finally block

C:\Users\infan\Documents\Java>java DividerDemo a b
Data type error
finally block
```

6.Multi Threading:

```
class Thread1 extends Thread
{
  public void run()
 {
   try
   {
      for(int i=1;i<=10;i++)
     {
       Thread.sleep(1000);
```

```
      System.out.println("Welcome to Java");
    }
  }
  catch(InterruptedException e)
  {
  }
 }
}
class ThreadDemo1
{
  public static void main(String[] args)
  {
    Thread t1=new Thread1();
    t1.start();
  }
}
```

Output:

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

Welcome to Java

---

7. Swing & Event Handling:

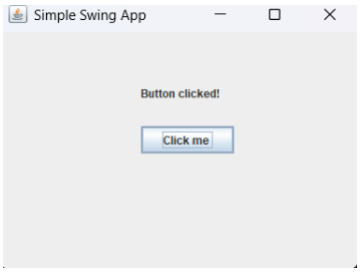
```
import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class SimpleSwingApp {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Simple Swing App");
        frame.setSize(400, 300);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setLayout(null);
        JLabel label = new JLabel("Click the button!");
        label.setBounds(150, 50, 150, 30); // x, y, width, height
        frame.add(label);

        JButton button = new JButton("Click me");
        button.setBounds(150, 100, 100, 30);
        frame.add(button);
        button.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                label.setText("Button clicked!");
            }
```

```
        });
        frame.setVisible(true);
    }
}
```

Output:

Simple Swing App

Button clicked!



8.Streams and Files:

```
import java.io.*;
class CharacterStreamDemo
{
    public static void main(String [] args).io.
    {
        try
        {
            FileReader fr= new FileReder(“Sample.dat”);
            int i;
            while((i=fr.read()!=-1)
            {
              System.out.println((char)i);
            }
           fr.close();
        }
        catch(Exception e)
        {
```

```
            System.out.println("Exception :"+e);
        }
    }
}
```

Output:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

```
ABCDEFGHIJKLMNOPQRSTUVWXYZ
```

---

9. Networking:

Server Program

```
import java.io.*;
import java.net.*;
public class Server {
   public static void main(String[] args) {
      try {
            ServerSocket ss=new ServerSocket(4321);
            Socket s =ss.accept();
            OutputStream os=s.getOutputStream();
            DataOutputStream dos=new DataOutputStream(os);
            dos.writeInt(2742809);
            s.close();
           } catch (Exception e) {
                System.out.println("Exception :"+e);
            }
   }
}
```

Client Program

```
import java.io.*;
import java.net.*;
public class Client {
```

```
    public static void main(String[] args) {
        try {
            Socket s =new Socket("127.0.0.1",4321);
            InputStream is=s.getInputStream();
            DataInputStream dis=new DataInputStream(is);
            int i=dis.readInt();
            System.out.println(i);
            s.close();
        } catch (Exception e) {
              System.out.println("Exception :"+e);
        }
    }
}
```

Output:

2742809

---

10. Servlet:

```
import java.io.*;
import java.util.*;
import javax.servlet.*;
public class HelloServlet extends GenericServlet
{
   public void service(ServletRequest request,ServletResponse response)throws
ServletException , IOException
  {
     response.setContentType("text/html");
     PrintWriter out=response.getWriter();
     Calendar cal =calendar.getInstance();
     int hour = cal.get(Calendar.HOUR_OF_DAY);
```

```
        out.println("<HTML>");
        out.println("<BODY>");
        out.println("<H1>Hello, Servlets !</H1>");
        out.println("<BR>");
        out.println("<HR>");
        out.println("<H2>Server Time is "+hour+"</H2>");
        out.println("</BODY>");
        out.println("</HTML>");
        out.close();
    }
}
```

Output:

Hello, Servlets!

Server Time is 14

Hello Servlet !

Server Time is 9
