

Applet & Bank

22fallBO

What is applet ? Create an applet that takes a value from the html in which it is embedded and displays it.

Applet is a small Java program that is stored in internet server, transmitted over the internet, get automatically installed and displayed on the browser.

* Code to create an Applet that takes a value from the html in which it is embedded and displays it

* HTML *

<!DOCTYPE html>

<html>

<head>

<title> Applet Example </title>

</head>

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<body>

<h1> Taking user input </h1>

<form>

enter a value <input type="text" id="inputValue">
<input type="button" value="Submit" onclick="sendToApplet()">

</form>

<applet code="MyApplet.class" height="200", width="200"> </applet> <!-- applet code -->

<script>

function sendToApplet()

{ /* storing the userinput value in variable named inputValue */

code → var inputValue = document.getElementById("inputValue");

("inputValue").value;

code → document.MyApplet.displayValue(inputValue);

/* now the variable which stores the input
value is passed as an argument while invoking
displayValue() method of java applet */

}

</script>

</body>

</html>

* Java App

// Java Applet code

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```
import java.applet.*;  
import java.awt.Graphics;
```

```
public class MyApplet extends Applet {  
    private String displayedValue = "nothing";  
    public void init()  
    {  
        //initialization code  
    }
```

```
    public void start()  
    {  
        // Start code  
    }
```

```
    public void stop()  
    {  
        //Stop code  
    }
```

```
    public void paint(Graphics g)  
    {  
        g.drawString("Value from HTML : " + displayed  
                    value, 20, 40);  
    }
```

```
    public void displayValue( String value )  
    {  
        displayedValue = value;  
        repaint(); // If again call the paint method  
    }
```

```
    public void destroy()  
    {  
        //destroying Applet after finish job  
    }
```

connection less programming

(1)

~~def~~ It is a networking approach where data is transmitted from one entities to other without establishing a dedicated connection between 2 entities after beforehand.

~~protocol~~

It typically uses protocols like UDP (User Datagram protocol).

~~reliability~~
Less reliable as there is no acknowledgement of data delivery.

~~speed~~

faster & low overhead as there is no need to set up connection.

~~arrival of p.m.~~

Packets may arrive in random order, & application needs to manage sequencing.

~~duplication~~

Packets can be duplicated in network apps.

can be used in task like sending simple message where occasional data loss is acceptable.

connection less and connection oriented are two different networking paradigm that defines how data is transmitted & received between communicating entities in a network. Both of these approaches uses various networking protocol, technologies including java network libraries.

connection oriented programming

Data
Flow

It is a networking paradigm where data is transmitted between 2 entities after establishing reliable & persistent connection.

Typically uses TCP.

More reliable as acknowledgement is done before both end for data transmission.

slower & high overhead as connection has to be setup.

Packets arrive in exact order hence no need to manage sequence.

No any chance of packet duplication by maintaining sequence.

Used in applications where data integrity.

21SPG9

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Create an applet that lets users to draw in
Canvas and ~~then~~ save the drawing as an image
file.

Save
File

① Firstly Let's code the Java applet:

```
import java.applet.Applet;  
import java.awt.*;  
import java.io.*;  
import javax.imageio.ImageIO;
```

2ISP39

Draw digital clock using applets

↳ `import java.applet.*; // for applet
import java.awt.*; // for designing of frame etc
import java.util.*; // for date time display`

* Lapplet code = "DigitalClockApplet" width = "400", height = "200" ></applet> */

// Above comment means when compiler compile this file then it ignores the comment but when we use applet viewer to run the applet, it doesn't consider it comment and get the applet tag

public class DigitalClockApplet extends Applet implements Runnable

{
/* Here we have implement the Runnable Interface for making threads */

Thread t, t1; // making 2 reference variable of Thread class.

public void start()

{
t = new Thread(this); // making obj of Thread class, as
t.start(); } } // passing obj of current class //
// executes the thread and makes the run function call //

public void run()

{
t1 = Thread.currentThread();

// static method in Thread class so we have called current

Thread() method in Thread and it refers the currently working threads reference to t1, out of

```
while( $t_1 == t$ ) {
```

~~If the current thread = thread at t , \neq
repaint();~~

```
try {
```

```
    t1.sleep(2000); // 2000ms = 2s, for 1sec, execution
```

~~- stops i.e. repaint happens
in the gap of 1sec \neq~~

```
catch (InterruptedException e) {
```

```
} }
```

```
}
```

```
public void paint(Graphics g)
```

```
{
```

```
    Calendar cal = new GregorianCalendar();
```

```
    String hour = String.valueOf(cal.get(Calendar.HOUR));
```

```
    String minute = String.valueOf(cal.get(Calendar.minute));
```

```
    String second = String.valueOf(cal.get(Calendar.second));
```

```
    g.drawString(hour + ":" + minute + ":" + second, 20, 30);
```

20px from
left

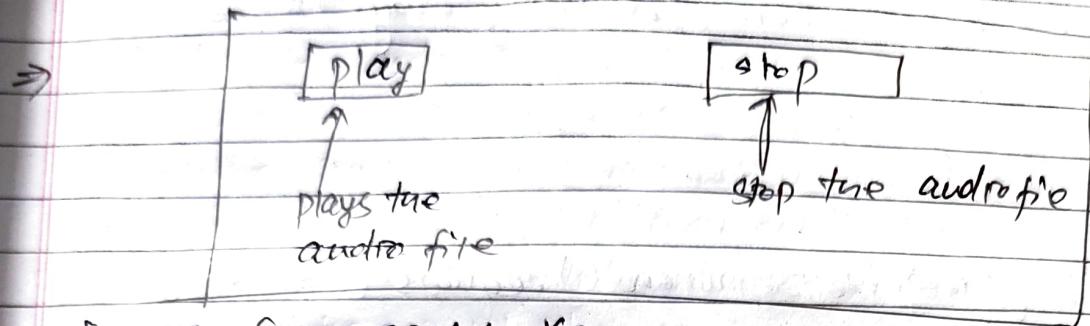
30px
from top

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(G3)

WAP to create an applet that plays a sample audio file.

Also create a GUI that allows users to play, stop or replay the audio. Add a functionality to automatically stop the audio if the applet is inactive.



⇒ import java.applet.*;

import java.awt.*;

import java.awt.event.*;

Since on click we have to perform, so implementing ActionListener
public class C extends Applet implements ActionListener

{

Button play, stop, Replay;

Audiostream ac; // to play one audio file, we have to make obj
of audiostream class

public void init()

{ Replay = new ~~button~~ button("Replay");

Play = new Button("Play");

Stop = new button("Stop");

add(Play);

add(Stop); → add(Replay);

Replay.addActionListener(this);

Play.addActionListener(this); // adding ActionListener on

Stop.addActionListener(this); buttons * /

ac = getAudioClip(getCodeBase(), "Recordings.wav");

}

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If for playing the audio & pausing the audio
on click of button, we use action performed method of ActionListener
interface
public void actionPerformed(ActionEvent ae)
{
 if (ae.getActionCommand().equals ("Play"))
 ac.play();
}

else if (ae.getActionCommand().equals ("Stop"))
{
 ac.stop();
}

else
{
 ac.replay();
}

}

}

Zafalize

Short Notes (5 marks)

lifecycle of an applet

↳ Applet can be defined as the small application which is stored on an Internet server, transported over the Internet, automatically installed on client's machine and run as a web page. Applet have limited access to system resources such that it is capable of displaying GUI and perform certain computation without any risk of data breach and malware injection.

Applet
Life cycle of
initialization

@ init

↳ This

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Applet runs of 4 different Lifecycle methods.

Life cycle of an applet can be defined as the sequence of methods that an applet goes through from its initialization to termination. Such 4 methods are:

(a) init() method:

→ This method is used to initialize the applet. We can say it is the first method which is invoked when the applet is created. It sets up the initial conditions like initializing the variables, making the object of class, loading the resources to be used or displayed, adding components in the applet. is done in init method. This init() method is only called once in applet's lifetime.

(b) start() method:

→ It starts the applet. It is responsible for starting or resuming the execution done by applet. This is the method where, different kind of animation, playing or pausing of audio, video happens. start() method can be called multiple times during applet life cycle depending upon need.

(c) stop() method:

→ This method is responsible for stopping applet for example when a user navigate away from the page which is using applet, it stops. It can also be called multiple times in an applet life cycle.

destroy() method: This method destroys the applet and is invoked when the termination happens either because the browser window is closed or the page containing applet is unloaded. It is responsible for releasing the resources that were used by applet initially. Closing files, releasing network connection etc. is done by destroy() method and is called only once in lifecycle.

Eg: import java.applet.*;

import java.awt.*;

public class AppletLifecycle extends Applet

{ public void init()

{

}

public void start()

{

}

public void stop()

{

}

public void destroy()

{

}

}

}

}

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15SP (2b) Repaint method of Applet



↳ Repaint method is a fundamental part of java applet that is used to request the applet to redraw its visual content on the screen. ↳ repaint method calls the paint method that draws the provided value on the screen.

For example if I take a user input from html and I displays it using applet, then there will be using the repaint method. If user enters nothing then it will display empty screen. Else if user gives some input, it will receive it in applet and invoke the repaint method which ultimately invokes the paint method.

Eg :-

```
<!DOCTYPE html>
<html>
  <head>
    <title>Demo of Repaintmethod</title>
  </head>
  <body>
    <form> Enter your name: <input type="text" id="username">
      <input type="button" value="Submit"
        onclick="usernamefunc()">
    </form>
    <script> </script>
  </body>
<applet code="DemoApplet.class" height="400" width="200">
<script>
  <function usernamefunc()
  {
    var username = document.getElementById("username")
    .value;
  }
</script>

```

document • demoApplet.displayValue(username);

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// Applet code in Java

import java.applet.*;

import java.awt.*;

public class DemoApplet extends Applet

{ String username = "empty";

public void init()

{

public void start()

{

}

public void stop()

{

public void paint(Graphics g)

{ g.drawString("Name is : " + user

public void displayValue(Name)

{

username = Name;

repaint();

{

15SP39 discuss about the Sand Box security model with

regard to Java Applet.

⇒ Java Applet has to follow strict security norms and rules that are enforced by the web browsers. It is named as sand box security. Java Applet sand box security model is a fundamental concept of Java's security architecture designed to mitigate the potential risk associated with running untrusted code on the user system by means of Web browsers.

The overview of Java Applet sandbox security model:

(a) Code verification:

↳ Firstly the applet coded in pure Java language is converted into byte code after compilation. Byte code is platform independent format executed by JVM. Before executing applet, the JVM verifies byte code to ensure that it has followed all the criteria and rules. It checks whether there is any kind of malicious activities or not?

(b) Applet class loader

↳ Java applet are loaded using a separate class loader named "applet class loader". This classloader ensures that applet code is isolated from the rest of the system and can't interfere or access sensitive system resources.

(c) Restricted environment

↳ Java applet are provided with limited access of the system resources such that it is capable of displaying GUI and perform computations. They are prevented from performing actions that could compromise the security of users by system.

@Security Manager

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Java Applet Sandbox relies on the Security Manager, a run time environment component that enforces security policies for applets. It determines whether an action can be performed or not by an applet.

Q) Applet lifecycle

~~Q5. Q3b~~ explain how to display a picture in an Applet.



Importing packages

import java.applet.*;

import java.awt.*;

public class Applet1 extends Applet {

* Since we have to load image, we gonna create obj of class Image *

Image img1;

public void init()

{

 img1 = getImage(getDocumentBase(), "coffee.jpg");

* Here getImage is the method used to load image, where we have passed the image name and getDocumentBase() method */

}

public void paint(Graphics g)

{

 g.drawImage(img1, 100, 100, this);

}

returns the URL of the applet's document where embedded

14sp3

?

(2)

update
page

HTML code

```
<!DOCTYPE html>
<html>
  <head> <title>Image Loading in Applet</title> </head>
  <body>
    <applet code = "Applets.class" height = 200, width
            = "50">
      <applet>
    </applet>
  </html>
```

IUSPPB Write an applet program with 3 text fields with the following names : "number1", "number 2" & "result". When the user clicks the "sum" button calculate the sum of 2 inputs & display in "result" field.



```
/* Importing Packages */
import java.applet.*;
import java.util.*;
import java.awt.*;
import java.awt.event.*;
```

```
public class AdditionApplet extends Applet implements
ActionListener
{
  JTextField input1, input2, result;
  JButton button1;
```

dicate full marks.

programming language? Explain.
for loop

public void init()

{

 input1 = new TextField("1"); *worth of textfield*

 input2 = new TextField("2");

 result = new TextField("0");

 result.setEditable(false); // Making the result field
 able to read only.

 button1 = new Button("Add");

 button1.addActionListener(this);

 add(new Label("Number 1 : "));

 add(input1);

 add(new Label("Number 2 : "));

 add(input2);

 add(new Label("Result : "));

 add(result);

 add(button1);

}

public void actionPerformed(ActionEvent e)

{

 if [ae.getActionCommand().equals("Add")]

{

 try {

 double num1 = Double.parseDouble(input1.getText());

 double num2 = Double.parseDouble(input2.getText());

 double sum = num1 + num2;

 result.setText(String.valueOf(sum));

}

 } catch (Exception e)

{

}