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# OBJECT ORIENTED PROGRAMMING WITH JAVA

## Java Applet Programming – III

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Indian Institute of Technology Kharagpur





# Typical HTML file

```
<HTML>
```

```
    <body>
```

```
</HTML>
```





# Typical HTML file

```
<HTML>
<HEAD>
  <TITLE> A simple HTML file</TITLE>
</HEAD>
<BODY>
  <H1>
    A browser such as Internet Explorer <BR>
    can open an HTML file and <BR> then display it on the screen.
  </H1>
  ...
</BODY>
</HTML>
```

A browser such as Internet Explorer can open an HTML file and then display it on the screen.

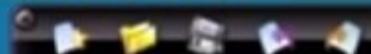


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# Typical HTML file

```
<HTML>
<HEAD>
    <TITLE> A simple HTML file</TITLE>
</HEAD>
<BODY>
    <H1>
        A browser such as Internet Explorer <BR>
        can open an HTML file and <BR> then display it on the screen.
    </H1>
    <B><I>These are some text in Italics and Bold font.</I></B>
    <H2>
        <a href='https://npTEL.ac.in/'>
            This is an Hyperlink to NPTEL Website.</a>
    </H2>
    This is an Image:
    <!--
        This is a Comment.
        Anything in this portion will be ignored by browser.
    -->
</BODY>
</HTML>
```

**A browser such as Internet Explorer can open an HTML file and then display it on the screen.**

*These are some text in Italics and Bold font.*

**This is an hyperlink to NPTEL Website.**



This is an Image

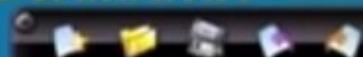


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# HTML File that hosts an APPLETN

```
<HTML>
  <HEAD>
    <TITLE> A simple HTML file</TITLE>
  </HEAD>
  <BODY>

    <H1>
      A browser such as Internet Explorer <BR> can open an HTML file and <BR> then display it on the screen.
    </H1>
    <B><I>These are some text in Italics and Bold font.</I></B>
    <H2><a href='https://nptel.ac.in/'>This is an hyperlink to NPTEL Website.</a></H2>
    This is an Image:
    <!--
      This is a Comment. Anything in this portion will be ignored by browser.
    -->
  </BODY>
</HTML>
```



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# HTML File that hosts an APPLET

```
<HTML>
<HEAD>
    <TITLE> A simple HTML file</TITLE>
</HEAD>
<BODY>

<APPLET CODE="Helloworld.class" WIDTH="460" HEIGHT="160" >

<H1>
    A browser such as Internet Explorer <BR> can open an HTML file and <BR> then display it on the screen.
</H1>
<B><I>These are some text in Italics and Bold font.</I></B>
<H2><a href='https://nptel.ac.in/'>This is an hyperlink to NPTEL Website.</a></H2>
This is an Image:
<!--
    This is a Comment. Anything in this portion will be ignored by browser.
-->
</BODY>
</HTML>
```

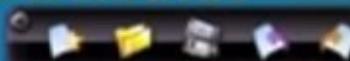


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# HTML File that hosts an APPLET

```
<HTML>
  <HEAD>
    <TITLE> A simple HTML file</TITLE>
  </HEAD>
  <BODY>
    <APPLET CODE="Calculator">
      <H1>
        A browser safe applet
      </H1>
      <B><I>These are some text in Italics and Bold font.</I></B>
      <H2><a href='https://nptel.ac.in/'>This is an hyperlink to NPTEL Website.</a></H2>
      This is an Image:
    <!--
        This is a Comment. Anything in this portion will be ignored by browser.
    -->
  </BODY>
</HTML>
```

**Note:**

1. HTML is **case insensitive** language.
2. Browser interprets each tag and ignores portion, which is **unable to interpret** or if there is **any error**.

/ it on the screen.

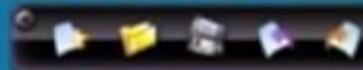


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# HTML File that hosts an APPLET

```
<HTML>
<HEAD>
  <TITLE> A simple applet </TITLE>
</HEAD>
<BODY>
  <APPLET CODE="MyApplet">
    <H1>
      A browser supports the <applet> tag.
    </H1>
    <B><I>These are some text in Italics and Bold font.</I></B>
```

**Note:**

1. HTML is **case insensitive** language.
2. Browser interprets each tag and ignores portion, which is **unable to interpret** or if there is **any error**.

/ it on the screen.

Element	Chrome	Edge	Firefox	IE	Opera
<applet>	Not supported	Not supported	Yes	Yes	Not supported

**Note:** There is still some support for the <applet> tag in some browsers, but it requires additional plug-ins/installations to work.

**Note:** The <applet> tag is supported in Internet Explorer 11 and earlier versions, using a plug-in.

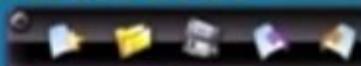


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## Java related HTML APPLET tag

- The <APPLET> tag is used to start an applet from an HTML document by a browser or an applet viewer.
- An applet viewer will execute each <APPLET> tag that it finds in a separate window, while web browsers like Netscape Navigator, Internet Explorer, and HotJava will allow many applets on a single page.
- So far, we have been using only a simplified form of the <APPLET> tag. Now it is time to take a closer look at its different properties that can be set in an HTML file like:
  - CODEBASE,
  - OBJECT,
  - ALT, etc.

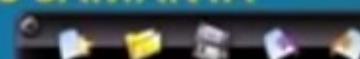


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# The HTML APPLET Tag : Syntax

The syntax for the standard APPLET tag is shown here. *Bracketed items are optional.*

```
<APPLET  
    [CODEBASE = URL to an applet]  
    CODE = applet class filename  
    [ARCHIVES = Name of a JAR file]  
    [OBJECT Serialized applet filename]  
    [ALT = alternate text]  
    [NAME = applet instance name]  
    WIDTH = pixels HEIGHT = pixels  
    [ALIGN = alignment type]  
    [VSPACE = pixels] [HSPACE = pixels]  
>  
    [< PARAM NAME = AttributeName VALUE =AttributeValue>]  
    [< PARAM NAME = AttributeName2 VALUE =AttributeValue>]  
    . . .  
    [Some text to be displayed in the absence of Applet]  
</APPLET>
```

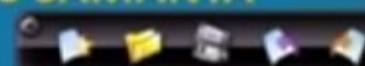


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    [CODEBASE = URL to an applet]  
    CODE = applet class filename  
    [ARCHIVES = Name of a JAR file]  
    [OBJECT Serialized applet filename]  
    [ALT = alternate text]  
    [NAME = applet instance name]  
    WIDTH = pixels HEIGHT = pixels  
    [ALIGN = alignment type]  
    [VSPACE = pixels] [HSPACE = pixels]  
  
    [< PARAM NAME = AttributeName VALUE =AttributeValue>]  
    [< PARAM NAME = AttributeName2 VALUE =AttributeValue>]  
    . . .  
    [Some text to be displayed in the absence of Applet]  
</APPLET>
```



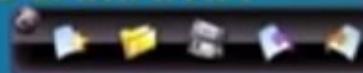
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```
<APPLET  
    [CODEBASE = URL to an applet]  
    CODE = applet class filename  
    [ARCHIVES = Name of a JAR file]  
    [OBJECT Serialized applet filename]  
    [ALT = alternate text]  
    [NAME = applet instance name]  
    [WIDTH = pixels HEIGHT = pixels]  
    [ALIGN = alignment type]  
    [VSPACE = pixels] [HSPACE = pixels]  
>  
    [< PARAM NAME = AttributeName VALUE =AttributeValue>]  
    [< PARAM NAME = AttributeName2 VALUE =AttributeValue>]  
    . . .  
    [Some text to be displayed in the absence of Applet]  
</APPLET>
```

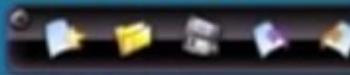


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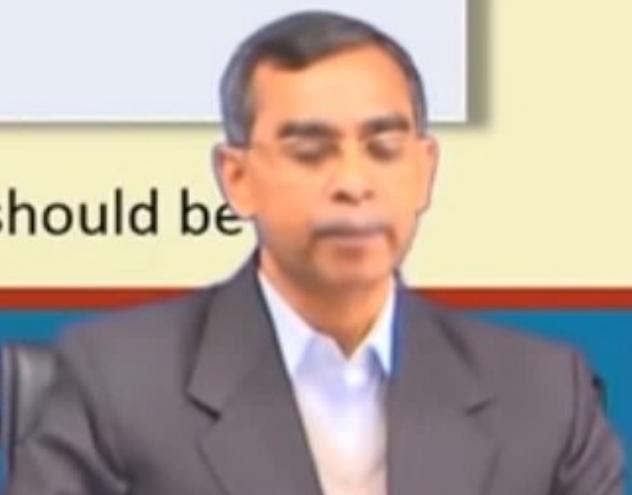




# APPLET tag properties : Required

Attribute	Value	Description
code	Java class	Specifies the file name of a Java applet
codebase	URL	The base-URL (absolute or relative) of the applet to be displayed.
object	Applet name	Specifies a reference to a serialized representation of an applet
width	pixel	Specifies the width of an applet
height	pixel	Specifies the height of an applet

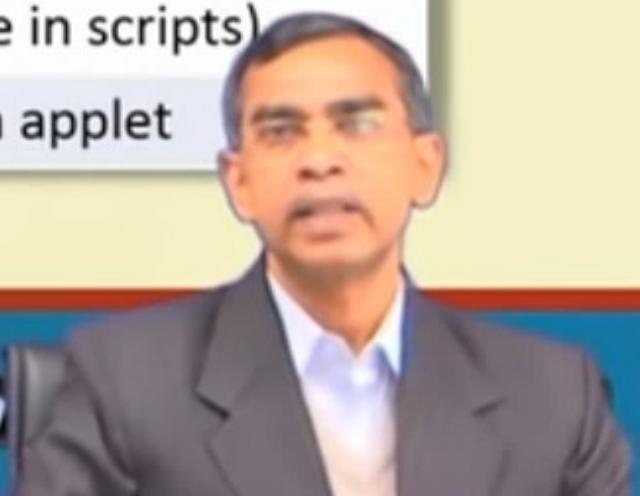
Note: In APPLET tag, either CODE or CODEBASE or OBJECT, any one should be





# APPLET tag properties : *Optional*

Attribute	Value	Description
align	left right top bottom middle baseline	Specifies the alignment of an applet according to surrounding elements
alt	text	Specifies an alternate text for an applet
archive	URL	Specifies the location of an archive file
hspace	pixels	Defines the horizontal spacing around an applet
name	name	Defines the name for an applet (to use in scripts)
vspace	pixels	Defines the vertical spacing around an applet





# APPLET tag properties : *Optional*

Attribute	Value	Description
align	left right top bottom middle baseline	Specifies the alignment of an applet according to surrounding elements
alt	<p><b>Note:</b> The &lt;applet&gt; tag is not supported in HTML5.</p>	
archive		
hspace	pixels	Defines the horizontal spacing around an applet
name	name	Defines the name for an applet (to use in scripts)
vspace	pixels	Defines the vertical spacing around an applet



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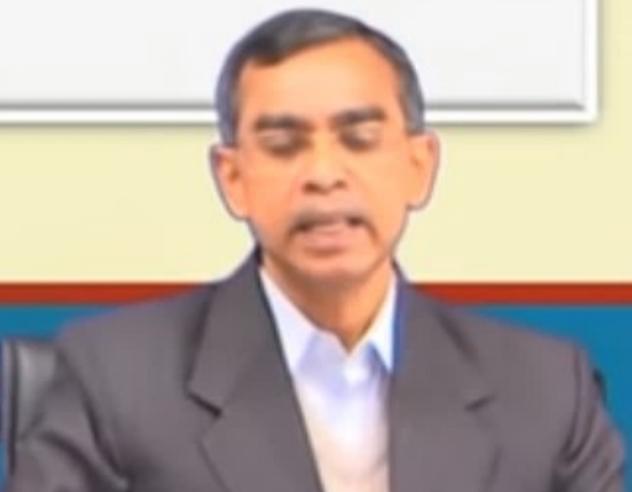




# The HTML APPLET Tag : CODE

**CODE** is a required attribute that gives the name of the file containing your applet's compiled .class file. This file is relative to the code base URL of the applet, which is the directory that the HTML file was in or the directory indicated by **CODEBASE** if set.

```
<html>
  <body>
    <applet
      code="MyClass.class" WIDTH = 460 HEIGHT = 160 >
    </applet>
  </body>
</html>
```





# The HTML APPLET Tag : CODE

**CODE** is a required attribute that gives the name of the file containing your applet's compiled .class file. This file is relative to the code base URL of the applet, which is the directory that the HTML file was in or the directory indicated by **CODEBASE** if set.

```
<html>
  <body>
    <applet
      code="MyClass.class" WIDTH = 460 HEIGHT = 160 >
    </applet>
  </body>
</html>
```



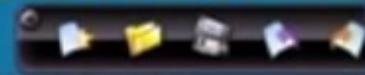


# The HTML APPLET Tag : CODE

**CODE** is a required attribute that gives the name of the file containing your applet's compiled .class file. This file is relative to the code base URL of the applet, which is the directory that the HTML file was in or the directory indicated by **CODEBASE** if set.

```
<html>
  <body>
    <applet
      code="MyClass.class" width = 460 height = 160 >
    </applet>
  </body>
</html>
```

```
<applet width="300" height="50" code="StatusWindow.class">
</applet>
```





# The HTML APPLET Tag : CODEBASE

**CODEBASE** is an optional attribute that specifies the base URL of the applet code, which is the directory that will be searched for the applet's executable class file (specified by the **CODE** tag). The HTML document's URL directory is used as the **CODEBASE** if this attribute is not specified. The **CODEBASE** does not have to be on the host from which the HTML document was read.

```
<html>
  <body>
    <applet
      codebase="https://nptel.iitkgp.ac.in/classes"
      CODE="HelloWorld.class" WIDTH=460 HEIGHT=160 >
    </applet>
  </body>
</html>
```





# The HTML APPLET Tag : CODEBASE

**CODEBASE** is an optional attribute that specifies the base URL of the applet code, which is the directory that will be searched for the applet's executable class file (specified by the **CODE** tag). The HTML document's URL directory is used as the **CODEBASE** if this attribute is not specified. The **CODEBASE** does not have to be on the host from which the HTML document was read.

```
<html>
  <body>
    <applet
      codebase="https://nptel.iitkgp.ac.in/classes"
      CODE="HelloWorld.class" WIDTH=460 HEIGHT=160>
    </applet>
  </body>
</html>
```



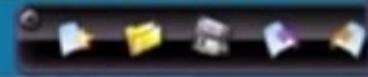
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# The HTML APPLET Tag : ARCHIVES

HTTP uses a separate connection for each request. When downloading many small files, the time required to set up and tear down the connections can be a significant fraction of the total amount of time needed to load a page. It would be better if one can load all the HTML documents, images, applets, and sounds a page needed in one connection. To do this, the idea is to pack all those different files into a single archive file, perhaps a zip archive, and just download that.

```
<html>
  <body>
    <applet
      CODE="HelloWorld" WIDTH=460 HEIGHT=160
      ARCHIVES ="AllFiles.jar" WIDTH=460 HEIGHT=160 >
    </applet>
  </body>
</html>
```

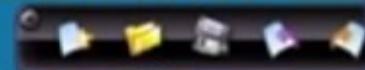


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# The HTML APPLET Tag : ARCHIVES

HTTP uses a separate connection for each request. When downloading many small files, the time required to set up and tear down the connections can be a significant fraction of the total amount of time needed to load a page. It would be better if one can load all the HTML documents, images, applets, and sounds a page needed in one connection. To do this, the idea is to pack all those different files into a single archive file, perhaps a zip archive, and just download that.

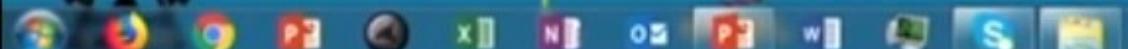
```
<html>
  <body>
    <applet
      CODE="HelloWorld" WIDTH=460 HEIGHT=160
      ARCHIVES = "AllFiles.jar" WIDTH=460 HEIGHT=160 >
    </applet>
  </body>
</html>
```



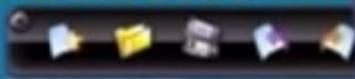
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# The HTML APPLET Tag : OBJECT

HTML 4.0 deprecates the **<APPLET>** tag. Instead you are supposed to use the **<OBJECT>** tag. For the purposes of embedding applets, the **<OBJECT>** tag is used almost exactly like the **<APPLET>** tag except that the **class** attribute becomes the **classid** attribute..

```
<html>
  <body>
    <OBJECT classid="MyApplet.class"
      CODEBASE="http://www.iit.com/classes" width=200 height=200
      ALIGN=RIGHT HSPACE=5 VSPACE=10>
    </OBJECT>
  </body>
</html>
```

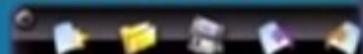


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# The HTML APPLET Tag : OBJECT

HTML 4.0 deprecates the **<APPLET>** tag. Instead you are supposed to use the **<OBJECT>** tag. For the purposes of embedding applets, the **<OBJECT>** tag is used almost exactly like the **<APPLET>** tag except that the **class** attribute becomes the **classid** attribute..

```
<html>
  <body>
    <OBJECT classid="MyApplet.class"
      CODEBASE="http://www.iit.com/classes" width=200 height=200>
      <APPLET code="MyApplet.class" width=200 height=200>
        </APPLET>
      <ALIGN=RIGHT HSPACE=5 VSPACE=10>
    </OBJECT>
  </body>
</html>
```

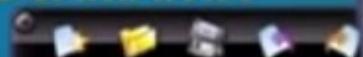


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# The HTML APPLET Tag : WIDTH and HEIGHT

**WIDTH** and **HEIGHT** are required attributes that give the size (in pixels) of the applet display area.

```
<html>
  <body>
    <applet
      codebase="http://myurl.com/classes"
      code="MyClass.class" width=600 height=300 >
    </applet>
  </body>
</html>
```

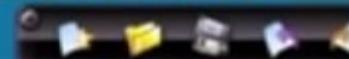


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# The HTML APPLET Tag : ALT

The **ALT** tag is an optional attribute used to specify a short text message that should be displayed if the browser understands the **APPLET** tag but can't currently run Java applets. This is distinct from the alternate HTML you provide for browsers that don't support applets.

```
<html>
  <body>
    <applet
      codebase="http://myurl.com/classes"
      code="MyClass.class" WIDTH = 300 HEIGHT = 200
      alt="Browser cannot run the applet!">
    </applet>
  </body>
</html>
```

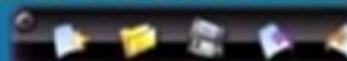


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# The HTML APPLET Tag : NAME

**NAME** is an optional attribute used to specify a name for the applet instance. Applets must be named in order for other applets on the same page to find them by name and communicate with them. To obtain an applet by name, use **getApplet()**, which is defined by the **AppletContext** interface.

```
<html>
  <body>
    <applet
      codebase="http://myurl.com/classes"
      code="MyClass.class" WIDTH = 300 HEIGHT = 200
      alt="New Applet"
      name="MyApplet1">
    </applet>
  </body>
</html>
```

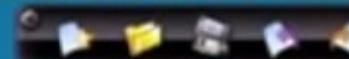


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```
<html>
  <body>
    <applet
      codebase="http://myurl.com/classes"
      code="MyClass.class" WIDTH = 300 HEIGHT = 200
      alt="New Applet"
      name="MyApplet1">
    </applet>
  </body>
</html>
```



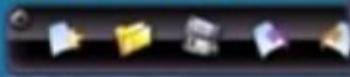
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# The HTML APPLET Tag : ALIGN

**ALIGN** is an optional attribute that specifies the alignment of the applet. This attribute is treated the same as the HTML **IMG** tag with these possible values:

LEFT, RIGHT, TOP, BOTTOM, MIDDLE, BASELINE, TEXTTOP, ABSMIDDLE, and ABSBOTTOM.





# The HTML APPLET Tag : VSPACE and HSPACE

These attributes are optional.

**VSPACE** specifies the space, in pixels, above and below the applet.

**HSPACE** specifies the space, in pixels, on each side of the applet.

They're treated the same as the **IMG** tag's **VSPACE** and **HSPACE** attributes.





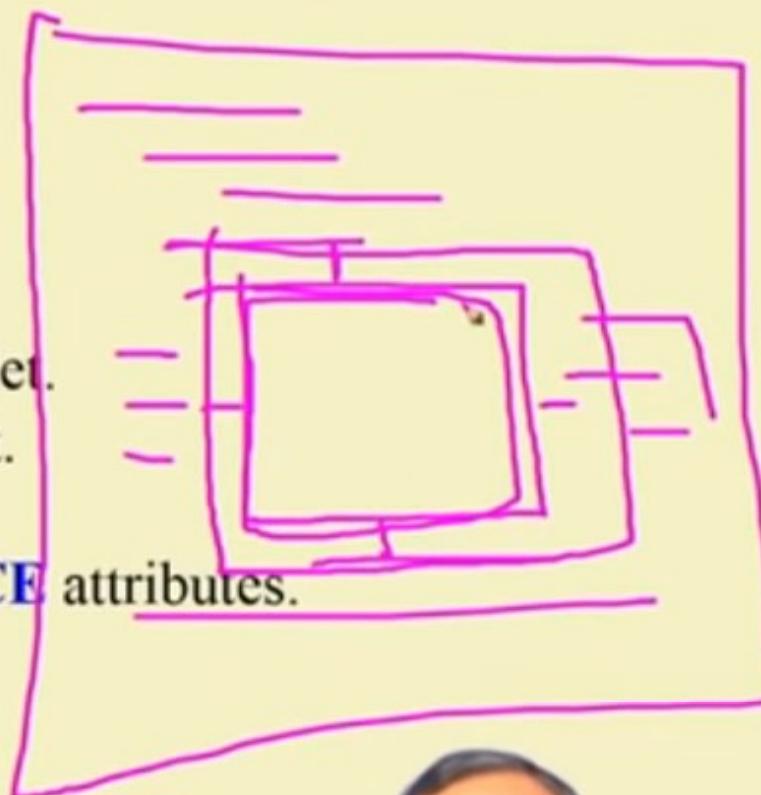
# The HTML APPLET Tag : VSPACE and HSPACE

These attributes are optional.

**VSPACE** specifies the space, in pixels, above and below the applet.

**HSPACE** specifies the space, in pixels, on each side of the applet.

They're treated the same as the **IMG** tag's **VSPACE** and **HSPACE** attributes.

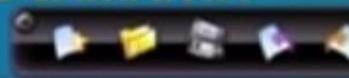


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# The HTML APPLET Tag : PARAM NAME and VALUE

The **PARAM** tag allows you to specify applet-specific arguments in an HTML page. Applets access their attributes with the **getParameter()** method.

```
<html>
<body>
<applet
    codebase="http://myurl.com/classes"
    code="MyClass.class" width=600 height=300>
    <param name=fontName value=Courier>
    <param name=fontSize value=14>
    <param name=imageSource value="images/tour">
    <param name=audioSource value="audios/movie">
</applet>
</body>
</html>
```

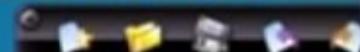


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# The HTML APPLET Tag : PARAM NAME and VALUE

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```
<html>
<body>
<applet
  codebase="http://myurl.com/classes"
  code="MyClass.class" width=600 height=300>
  <param name=fontName value="courier">
  <param name=fontSize value=14>
  <param name=imageSource value="images/tour">
  <param name=audioSource value="audios/movie">
</applet>
</body>
</html>
```

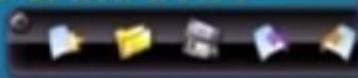


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# The HTML APPLET Tag : PARAM NAME and VALUE

The **PARAM** tag allows you to specify applet-specific arguments in an HTML page. Applets access their attributes with the **getParameter()** method.

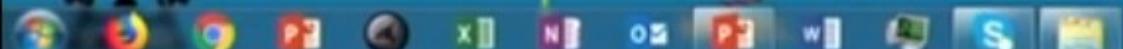
```
<html>
<body>
<applet
  codebase="http://myurl.com/classes"
  code "MyGlass.class" width 600 height 300>
  <param name=fontName value=Courier>
  <param name=fontSize value=14>
  <param name=imageSource value="images/tour">
  <param name=audioSource value="audios/movie">
</applet>
</body>
</html>
```



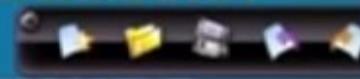
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# Passing parameters to applets

- As just discussed, the **APPLET** tag in HTML allows you to pass parameters to your applet.
- To retrieve a parameter, use the **getParameter()** method. It returns the value of the specified parameter in the form of a **String object**.
- Thus, for numeric and Boolean values, you will need to convert their string representations into their internal formats.

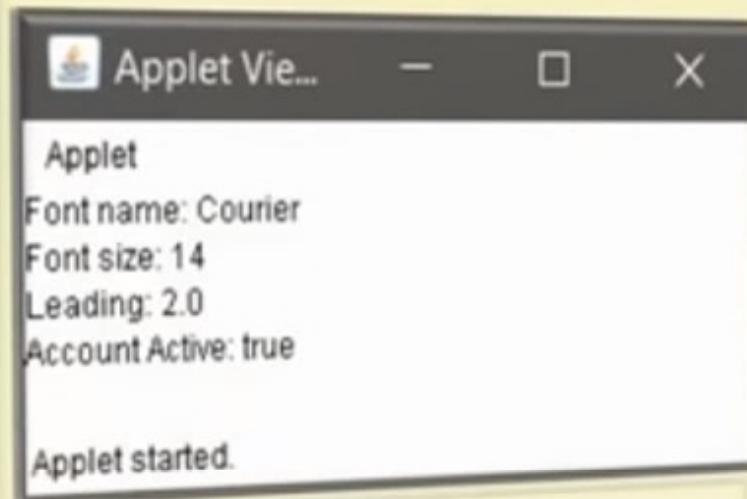




# Parameter passing : An example

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

public class ParamDemo extends Applet{
    String fontName;
    int fontSize;
    float leading;
    boolean active;
    // Initialize the string to be displayed.
    public void start() {
        String param;
        fontName = getParameter("fontName");
        if(fontName == null)
            fontName = "Not Found";
        param = getParameter("fontSize");
        try {
            if(param != null) // if not found
                fontSize = Integer.parseInt(param);
            else
                fontSize = 0;
        } catch(NumberFormatException e) {
            fontSize = -1;
        }
    }
}
```

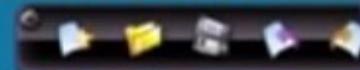


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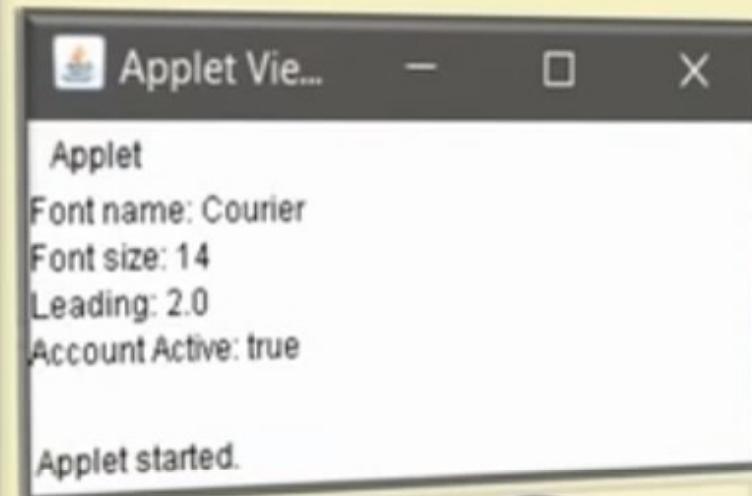




# Parameter passing : An example

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

public class ParamDemo extends Applet{
    String fontName;
    int fontSize;
    float leading;
    boolean active;
    // Initialize the string to be displayed.
    public void start() {
        String param;
        fontName = getParameter("fontName");
        if(fontName == null)
            fontName = "Not Found";
        param = getParameter("fontSize");
        try {
            if(param != null) // if not found
                fontSize = Integer.parseInt(param);
            else
                fontSize = 0;
        } catch(NumberFormatException e) {
            fontSize = -1;
        }
    }
}
```



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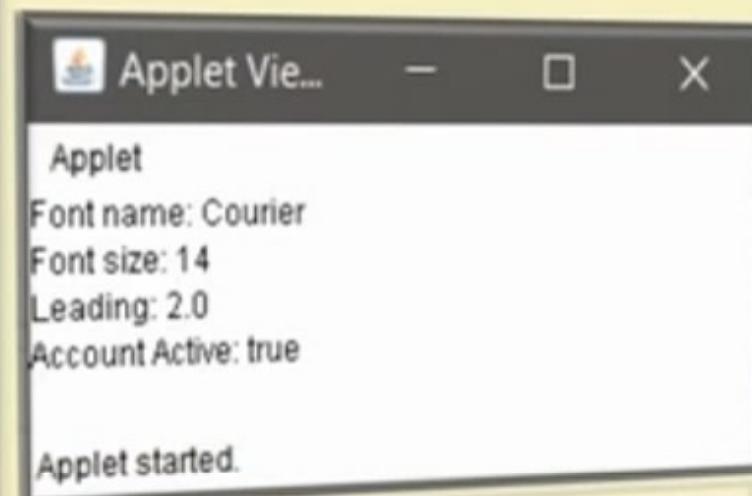




# Parameter passing : An example

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

public class ParamDemo extends Applet{
    String fontName;
    int fontSize;
    float leading;
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        String param;
        fontName = getParameter("fontName");
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        param = getParameter("fontSize");
        try {
            if(param != null) // if not found
                fontSize = Integer.parseInt(param);
            else
                fontSize = 0;
        } catch(NumberFormatException e) {
            fontSize = -1;
        }
    }
}
```

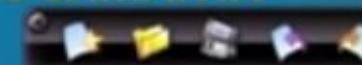


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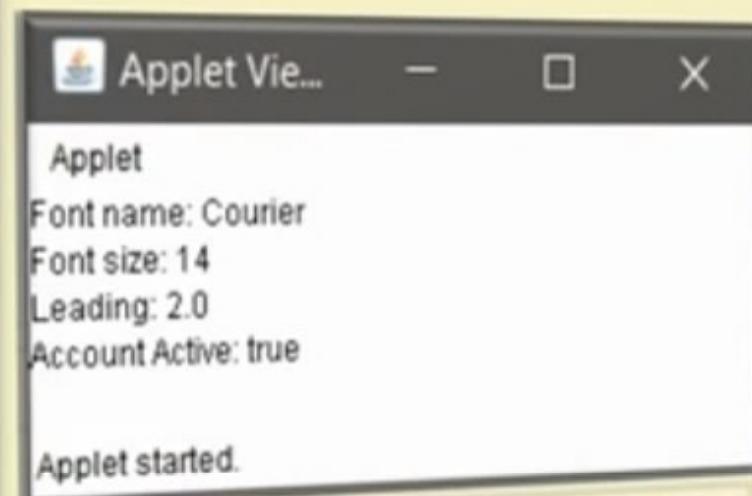




# Parameter passing : An example

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

public class ParamDemo extends Applet{
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    // Initialize the string to be displayed.
    public void start() {
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        if(fontName == null)
            fontName = "Not Found";
        param = getParameter("fontSize");
        try {
            if(param != null) // if not found
                fontSize = Integer.parseInt(param);
            else
                fontSize = 0;
        } catch(NumberFormatException e) {
            fontSize = -1;
        }
    }
}
```

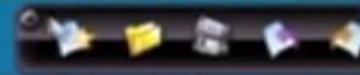


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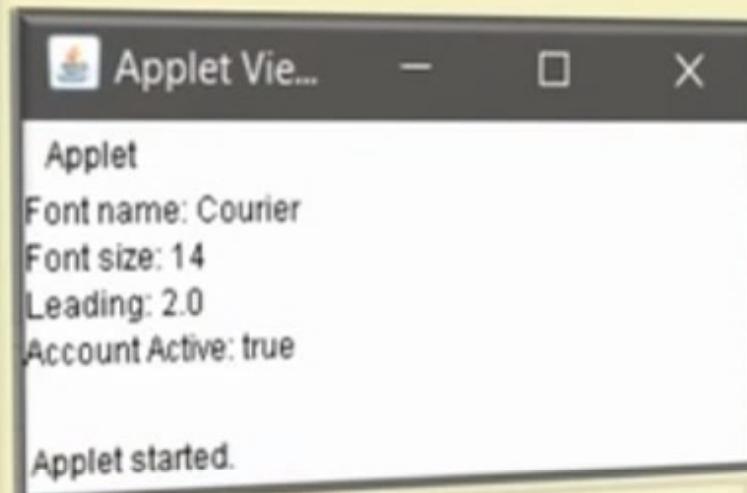


# Parameter passing : An example

```
}

param = getParameter("leading");
try {
    if(param != null) // if not found
        leading = Float.valueOf(param).floatValue();
    else
        leading = 0;
} catch(NumberFormatException e) {
    leading = -1;
}
param = getParameter("accountEnabled");
if(param != null)
    active = Boolean.valueOf(param).booleanValue();

// Display parameters.
public void paint(Graphics g) {
    g.drawString("Font name: " + fontName, 0, 10);
    g.drawString("Font size: " + fontSize, 0, 26);
    g.drawString("Leading: " + leading, 0, 42);
    g.drawString("Account Active: " + active, 0, 58);
}
```

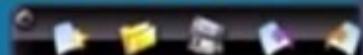


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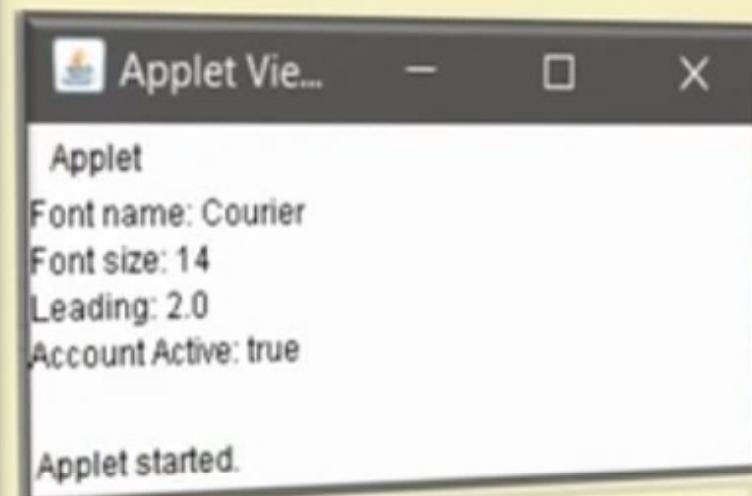


# Parameter passing : An example

```
}

param = getParameter("leading");
try {
    if(param != null) // if not found
        leading = Float.valueOf(param).floatValue();
    else
        leading = 0;
} catch(NumberFormatException e) {
    leading = -1;
}
param = getParameter("accountEnabled");
if(param != null)
    active = Boolean.valueOf(param).booleanValue();

// Display parameters.
public void paint(Graphics g) {
    g.drawString("Font name: " + fontName, 0, 10);
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    g.drawString("Leading: " + leading, 0, 42);
    g.drawString("Account Active: " + active, 0, 58);
}
```

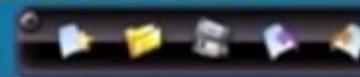


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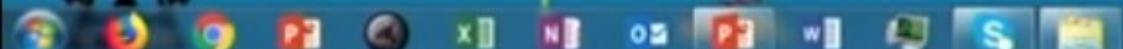


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# Parameter passing : An example

```
<html>
  <body>
    <applet code="ParamDemo" width=300 height=80>
      <param name=fontName value=Courier>
      <param name=fontSize value=14>
      <param name=leading value=2>
      <param name=accountEnabled value=true>
    </applet>
  </body>
</html>
```

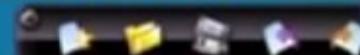


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# Finding an applet's size

- When running inside a web browser the size of an applet is set by the height and width attributes and cannot be changed by the applet. Many applets need to know their own size.
- Retrieving the applet size is straightforward with the `getSize()` method. `java.applet.Applet` inherits this method from `java.awt.Component`. `getSize()` returns a `java.awt.Dimension` object. A Dimension object has two public int fields, `height` and `width`.





# Finding an applet's size : An example

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

public class SizeApplet extends Applet {

    public void paint(Graphics g) {
        Dimension appletSize = this.getSize();
        int appletHeight = appletSize.height;
        int appletWidth = appletSize.width;

        g.drawString("This applet is " + appletHeight + " X " + appletWidth );
    }
}
```

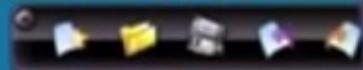


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## Status Window in Applet



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# Applet using the Status Window

- In addition to displaying information in its window, an applet can also output a message to the status window of the browser or applet viewer on which it is running.
- To do so, call **showStatus ()** with the string that you want displayed.
- The status window is a good place to give the user feedback about what is occurring in the applet, suggest options, or possibly report some types of errors.
- The status window also makes an excellent debugging aid, because it gives you an easy way to output information about your applet.



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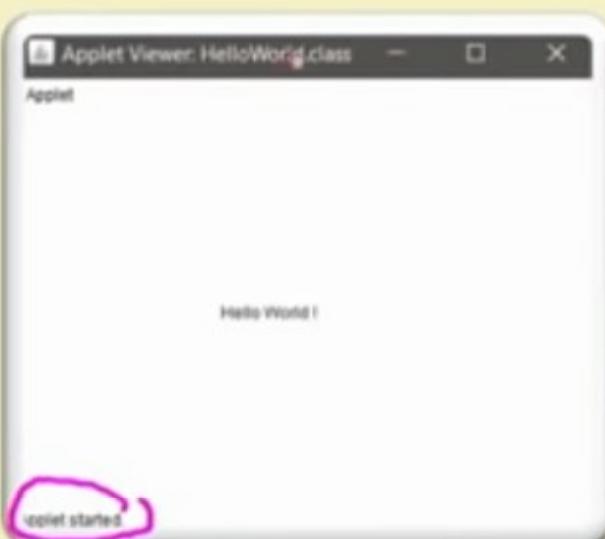


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# Applet using the Status Window

- In addition to displaying information in its window, an applet can also output a message to the status window of the browser or applet viewer on which it is running.
- To do so, call **showStatus ()** with the string that you want displayed.
- The status window is a good place to give the user feedback about what is occurring in the applet, suggest options, or possibly report some types of errors.
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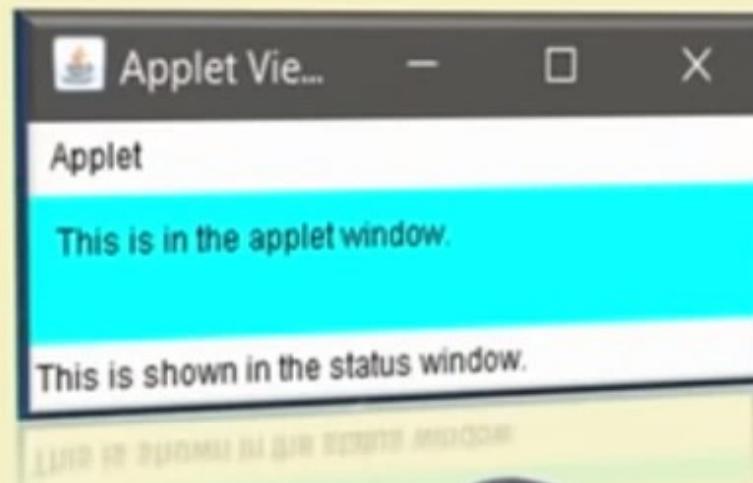




# Status Window : An example

```
import java.awt.*;
import java.applet.*;
public class StatusWindow extends Applet{
    public void init() {
        setBackground(Color.cyan);
    }
    public void paint(Graphics g) {
        g.drawString("This is in the applet window.", 10, 20);
        showStatus("This is shown in the status window.");
    }
}
```

```
<html>
<body>
    <applet width="300" height="50" code="StatusWindow.class">
    </applet>
</body>
</html>
```

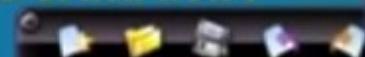


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## Some Interesting Facts





# Running an HTML file

**Q :** Is HTML file always required to execute an applet?

**A :** No, HTML applet tag can be directly embedded into a **Java** file and executed directly from appletviewer.



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# Running an HTML file: An example

```
import java.awt.*;
import java.applet.*;
public class StatusWindow extends Applet{
    public void init() {
        setBackground(Color.cyan);
    }
    public void paint(Graphics g) {
        g.drawString("This is in the applet window.", 10, 20);
        showStatus("This is shown in the status window.");
    }
/*
<html>
    <body>
        <applet width="300" height="50" code="StatusWindow.class">
        </applet>
    </body>
</html>
*/
```

## Tips:

1. Save this file as StatusWindow.java
2. Compile it.
3. Run it as : **appletviewer StatusWindow**

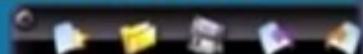


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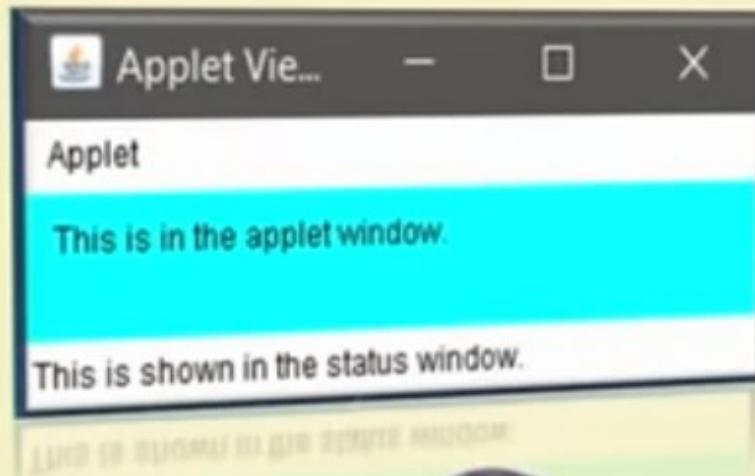


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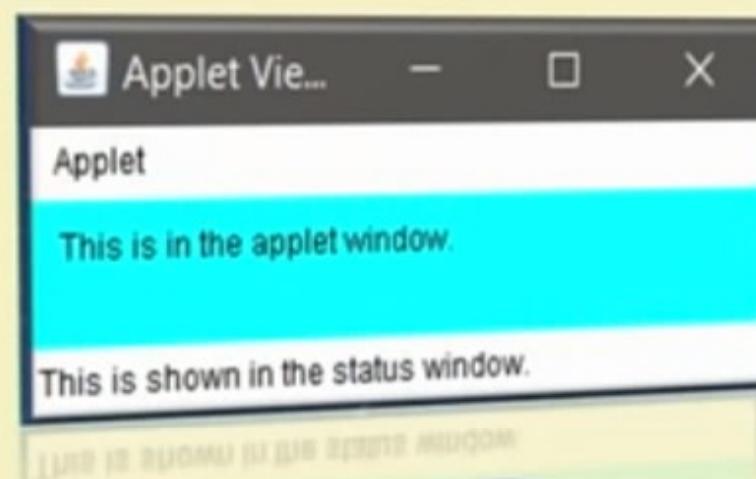
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# Running an HTML file: An example

```
import java.awt.*;
import java.applet.*;
public class StatusWindow extends Applet{
    public void init() {
        setBackground(Color.cyan);
    }
    public void paint(Graphics g) {
        g.drawString("This is in the applet window.", 10, 20);
        showStatus("This is shown in the status window.");
    }
/*
<html>
    <body>
        <applet width="300" height="50" code="StatusWindow.class">
        </applet>
    </body>
</html>
*/
```



## Tips:

1. Save this file as `StatusWindow.java`
2. Compile it.
3. Run it as : `appletviewer StatusWindow`

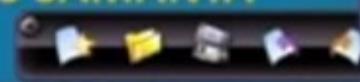


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# Running an applet

**Q.** : Is Applet the only way to create GUI?

**A** : No, Java provides AWT(Abstract Window Toolkit) by which we can make Java GUI applications.

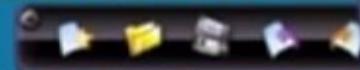


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# GUI without applet : An example

An example is shown in next slide for creating GUI Application using AWT instead of Applet.

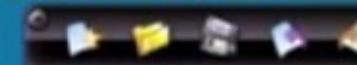


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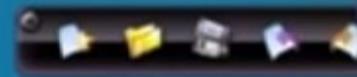
# GUI without Applet

 Create Student File

Roll Number

Student Name

Marks





# GUI design

```
import java.io.*;
import java.awt.*;
class StudentFile extends Frame
{
    // Defining window components
    TextField number, name, marks;
    Button enter, done;
    Label numLabel, nameLabel, markLabel;
    DataOutputStream dos;

    // Initialize the Frame
    public StudentFile()
    {
        super("Create Student File");
    }
    // Setup the window
    public void setup()
    {
        resize(400, 200);
        setLayout(new GridLayout(4,2));
        // Create the components of the Frame
    }
}
```

```
number = new TextField(25);
number = new TextField(25);
numLabel = new Label("Roll Number");
name = new TextField(25);
nameLabel = new Label ("Student Name");
marks = new TextField(25);
markLabel = new Label("Marks");
enter = new Button("ENTER");
done = new Button("DONE");
// Add the components to the Frame
add(numLabel);
add(number);
add(nameLabel);
add(name);
add(markLabel);
add(marks);
add(enter);
add(done);
// Show the Frame
show();
```



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# GUI-based input

```
// Open the file
try {
dos = new DataOutputStream( new
FileOutputStream("student.dat"));
}
catch(IOException e) {
System.err.println(e.toString());
System.exit(1);
}

// Write to the file
public void addRecord() {
int num;
Double d;
num = (new Integer(number.getText())).intValue();
try {
dos.writeInt(num);
dos.writeUTF(name.getText());
d = new Double(marks.getText());
dos.writeDouble(d.doubleValue());
}
```

```
catch(IOException e) {
// Clear the text fields
number.setText(" ");
name.setText(" ");
marks.setText(" ");
}
// Adding the record and clearing the
TextFields
public void cleanup()
{
if(!number.getText().equals(" "))
addRecord();
}
try {
dos.flush();
dos.close();
}
catch(IOException e) { }
```



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# Running the application

```
// Processing the event
public boolean action(Event
event, Object o)
{
    if(event.target instanceof
        Button)
        if(event.arg.equals("ENTER")) {
            addRecord();
            return true;
        }
    return super.action(event, o);
}
public boolean handleEvent(Event
event)
{
```

```
if(event.target instanceof Button)
    if(event.arg.equals("DONE")) {
        cleanup();
        System.exit(0);
        return true;
    }
    return super.handleEvent(event);
}
// Execute the program
public static void main (String args[])
{
    StudentFile student = new StudentFile();
    student.setup();
}
```



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# THANK YOU



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