Programming in Java
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Lecture - 36
Applet Programming – III

So, we are discussing about Applet. And in the last module, we have discussed the standard methods which can be included in an applet. Now, we will discussed about the HTML concept, as you know an applet cannot be executed independently. So, in order to view an applet, we have to host this applet code into an HTML page. And then this HTML page will be browsed by means of a web browser like say Internet Explorer or Netscape navigator or the hot Java browser. And in Java JDK, there is a built-in viewer also called the applet viewer.

Now, whatever it is there, first the idea is that applet should be hosted by an HTML page embedded into an HTML page. So, in this module, we will see how this hosting is possible using HTML contact. Actually, one specific tag that is there in HTML; HTML stands HyperText Markup Language is called the applet tag. So, we have to discuss about applet tag here.

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Now, so applet tag is basically let us first see exactly how a typically an HTML page looks like. Now, here you see HTML is a basic tag-based as we said, now this is

basically HTML, and this is the end. So, these are the tag, it is called the HTML tag that means, this indicates that this is the HTML page 1.

So, if this is the tag and then browser use it no issue, the browser will see the blank page here, because it in this tag nothing is there. Now, the next that we can do is that head. So, head is basically we can write, what is the title that will be there. So, head is basically with one HTML browser will show it, here the browser view is not there. So, a simple HTML file if you use it, the browser will show that.

And then within this body, we have a text is a header 1, header 1 is a very big font large font. So, this will display here in the header font. Now, you see there the different tag we are using, so this is another tag B. So, B tag indicates that, it will display some font in a bold as well as I tag to indicate that italics. So, this basic text will be displayed both in bold and italics form.

The next tag is H 2, H 2 is the text is basically small tag. And here not H 1 is the very bigger font, H 2 is a little bit smaller medium size font, so this will display here. And you see there is another a ref is basically link, so this is another tag a, and then closing tag. So, every tag is here starting and then closing syntax. And then these basically see the link that means, from there this is the hyperlink if we do it, so this and in this basically hyperlink. Hyperlink means if we click it, it will go to this link actually that means, it moves to browser moves the focus from this link this page to some other distant page.

Then there are many other images also can be included in the text. And in order to include an image, so image img is the tag for that. So, these basically display this kind of image on your screen. And the comment if you want to include in HTML, it basically comment will be included within this angular, then exclamation then dot, and then it is closing is this one.

So, these are the few tags that I have shown here, so that how the HTML page can be designed using the tag only. And the browser is basically run and HTML page. So, browser running an HTML page, this is basically in an interpretative manner. So, it will basically the first tag, then second tag, next tag and so on. As it is interpretative not compilation nothing is there. So, if there is any mistake in these tags, say suppose H 1 is there, no closing this one, so this means that this will completely ignore. So, the browser will not do anything ignore, it does not mean that the next portion will not be executed.

So, the next portion will be interpreted and executed. So, it is an interpreter, and it will see every tag, and interpret every tag, and then display or paint on the screen. So, basically, the browser will paint on a window actually. So, this is basically the HTML page concept, and one more important thing that HTML tags whatever you can it is a case insensitive whether capital letter, small letter, it does not matter for the browser, the browser will do it correctly. So, is a case so is whether lower case on an upper case that is not the issue there; so, this way the HTML page can be executed there.

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Now, we have discussed about the different tags. There is one special tag that is called the applet tag. So, this special tag is basically to include the code that you want to include in an HTML page. So, the tag looks like an applet, and this code indicates that what is the class file in the Java class compile version of the Java applet program.

And then this is basically width and height that mean, it shows that what how much size of the applet would be in the windows that the browser will take to display your applet. So, these are the very nominal applet tag concept that is there. And then you can use it, and you can so if you can do it, your browser can run your applet from the machine current machine.

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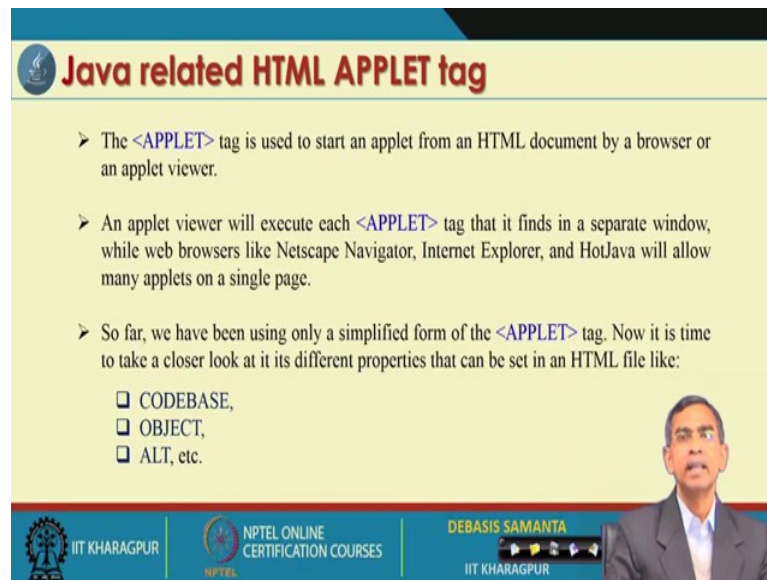
Now, so this is the idea about, but there are few hinge is there is that now applet is little bit disregarded in the sense that many browsers, they do not support until unless you use a special plugin for that. However, the chrome totally ignore any applet tag in the HTML page. Internet explorer till version 4.0, it was supporting and after that, it stops supporting.

Then Mozilla can supports if you use one special plugin for that. And this is the Netscape navigator, it always favors the applet code applet tag in an HTML page which means, Netscape navigator browse successfully. And the opera is another browser also which does not support it. So, many browser they do not support many browser support conditionally under the usage of the plugin, whatever it is there. So, these are the basic restriction, and restrictions there is a certain reason for this kind of restriction, mainly it is from the security point of view. So, many browsers have stopped supporting applet code in HTML.

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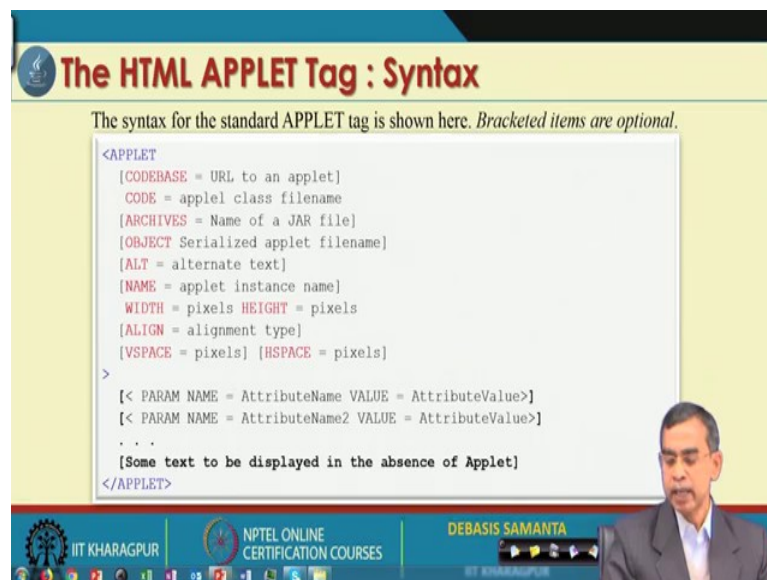
Now, see applet code; whenever it was initiated initially, applet code has many other parameters for the complete specification of an applet.
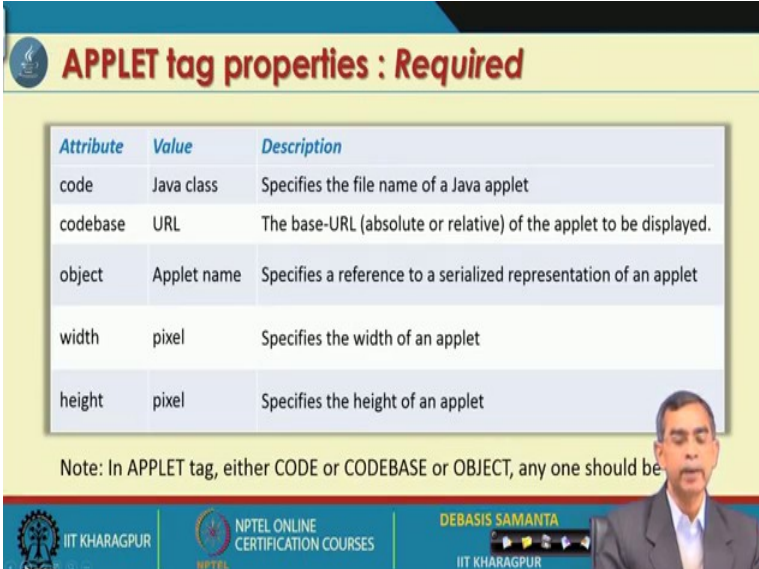
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The parameters that are there in an applet code are like which are some specification optional, and some are necessary. Those are optional, which are written in the square bracket look like. So, for example, this is the applet tag initial, and this is the starting of the applet. And there if you see within this there is a few portions which you can include, and then this is in the applet portion; so, this is very important. So, this and then curly

brackets is basically the different parameter that the applet tag will allow to specify for the special viewing of your applet. So, this is there, and what is the special thing that can be here you see.

And the codebase is the one parameter, archives are their code already we have discussed, then an object, alt, name, width, height, align, vspace, and hspace are the few things that we have. And apart from this param name also somethings are there. If the param name is there, then separate angular brackets should be used for each parameter name. Param name probably for passing parameter or passing input from HTML page to an applet, we have discussed you can recall.

Now, here we can see out of this different specification that is possible for an applet, few things are mandatory. These are code, width, and heights, these are mandatory that means, you have to give it. If you do not give it, your applet the tag will not be executed by a browser successfully. Whereas the other the code based, archives, object, alt, name, and align, all these things are optional. And then param name also optional, you can have you also may not have it. So, these are the different tags specification; so, for the applet tag is concerned are there.

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Now, in our next few slides, we will see exactly what is the meaning of each specification in the applet tag?

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Now, these are the ok, I have listed the few things that you can take your own time to go through, and then understand about it, but I will give the detail description in next slides.

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And as I told you HTML also has the different versions. And HTML5 onwards, the applet tag is not supported. Rather instead of applet tag, they supported some other concept, it is called the object, I will discuss this thing.

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Now, first is basically the code. Code as it is the as you have learned it, within this applet. The code indicates that what is the class file that you want to include width and height specification. So, this is the minimum portion that it should have in your applet tag to run an applet.

So, this is basically code is there. And then code is basically here one important point that you should note. Whenever you run an HTML file hosting a class file, it basically requires two things. The HTML file itself, it should be saved somewhere, and then the .class file should be saved somewhere. So, if you do not specify anything explicitly, then your browser assume that the .class file and HTML file belong to the same directory.

If you want to explicitly mention that it is not in the same directory, but somewhere else, then we should use the codebase. So, codebase usually accompanied by code, if you want to tell that the HTML file is here, and then code is somewhere else. Regarding codebase, we will discuss the details. ah

So, and another thing is that, so for the width and height whenever it is the applet code, it is not necessary to maintain in this order. It also can be in any order like here width, height. And also another thing is that this is the width in pixel, those things also not necessary to put in a double quote, but is customary to for improving the viewer view (Refer Time: 11:51). So, we usually put in the double quote, but this needs to be put in

the double quote always. So, here is an example like, so this is also correct, and this is also correct. So, these are the code and this code and with height and width are the mandatory things. Mandatory means, you have to use it without using you cannot do that.

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Now, let us come to the concept of the codebase. So, codebase is basically showing the relative address of your or base address of your applet. Now, what exactly the idea it is that if you want to I mean import your class file from a distance machine from your local other than your local. So, browser from which machine it is browsing, it is called the local to that browser. And if you want to have access from some distance machine remote machine, then the through a browser that can be connected.

Here is an example say https indicates that it is the location of the remote repository, where this class file is there. So, this means that your browser will connect to this size, and then check this that class file import it into to your local machine, and then this applet code will be executed. So, applet code is not necessary to be executed from your own machine from the distance.

Usually, in case of internet programming, we are we have to do that. You can import your HTML page from the remote machine, and importing means all the class file applets, all the image, all the audio, video files, whatever it is required. Needs to be fetched into your browser machine, and then it will be executed there in your browser

machine, so the codebase is for that purpose. We can explicitly mention that which is the location where your class file is there.

Even if you use the same thing in your own local machine also, but it is that the HTML file is in belongs to one directory, whereas the class file belongs to the separate directory. So, the base is basically here, which is the base directory and with respect to this base, which is the class file that you want to use. So, in the codebase also that we can use it, but in that case, we have to use the file command here. So, file and then the location of the directory, and then the name of the class file that you want to use it. So, this is the use of the tag the codebase.

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And the archive is there for this purpose is that say suppose, as I told you applet can be viewed from your local machine containing its elements from the distance machine. If you want to do that, then every time you want some things to be included in your applet, it needs to be connected to your remote machine and then import it, and then store it, and then display.

So, instead of whatever the files that are required for that HTML page, you can put into an archive in a jar file it is called here, for example, all files that are required for an HTML page can be put into one jar file. Then the browser that it will do is that the browser will import only once with an only a single connection to the remote server, and then fetch it into a local machine.

And then from this jar file whatever the file that is required image or video, audio or any other class file will be extracted from there and will be referred to this one. So, this archive commands will basically give an idea about that which is the jar file that needs to be fetched only once in a lifetime of the viewing. So, this is an idea about the archive tag specification in the applet code.

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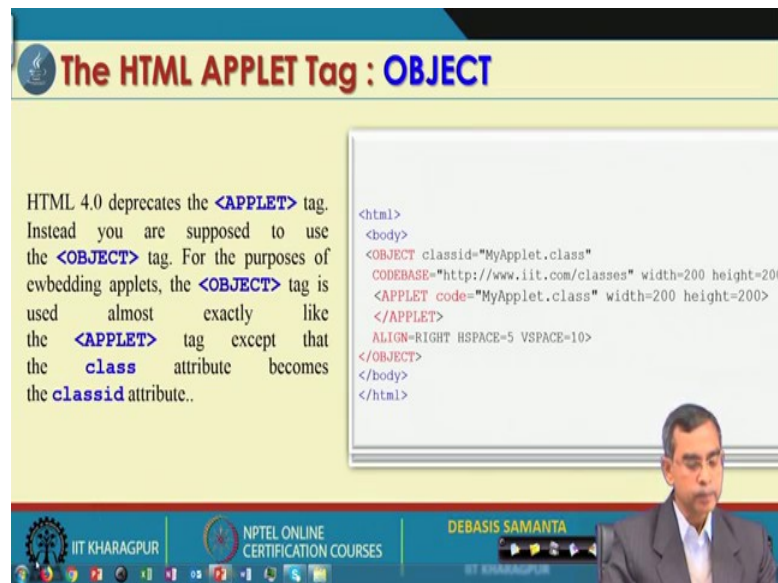
And then object. Object as I told you HTML5, and upwards version of the HTML, they have stopped supporting applet code. So, in that case is basically allow to use the object code. So, object code is the same as the applet tag actually; so an applet is not there. So, here basically the same instead of applet, you use the object that is all; so, this basically the idea about. And other code-based, then width, height everything is applicable to that only. So, an object is an alternative to an applet tag that is the newer version in the HTML page.

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And here again if you want to suppose, you do not know whether your browser will support, whether HTML4 or HTML2 or HTML5 or upwards so, sometimes to make it more robust for images or compatible with any versions; so some HTML designer used both objects as applet code here. For example, an object is there here, and then an applet code is also there. So, if it fetches for the, for example, HTML4, you want your browser supporting HTML4, then object will not be applicable to that HTML browser. So, in that case, you can use this one; so all these will be ignored, but an applet will be considered in that case.

On the other hand, another version which supports HTML5, then the only object; so, this will be ignored by that browser, only this portion will be considered, and the applet that file will be successfully browsed. So, this is the idea about that both object and applet can be merged together, to make it more compatible with your browser system.

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And width and height as I told you specification of the height and width by changing this parameter, we can resize your applet view, and that can be done from your applet from the HTML page itself, so that is why the ok. Before viewing the HTML, so HTML will be footed in front of within a set of text in a multimedia document like it can include audio, image, and then video also, in addition to the hyperlink text, hypertext we can say.

And then the applet is basically a window within this text also, it appears as a living on things for the browser. So, in that case, we can specify the width and height, how much space of the total view area of your display that it will take to display your applet. So, this is the width and height is an essential one parameters ok.

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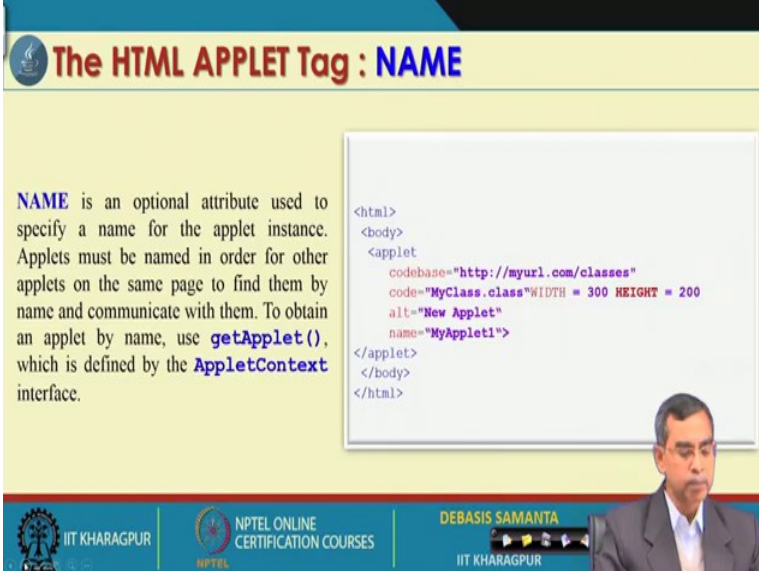
And then the alt. Say suppose your applet, there are some mistakes in your class file or there is a problem that it is not able to load it successfully, then the browser can give some message to the user. So, here the message that can be given by means of all statement. In case, suppose this is a problem right, your browser faces the problem of fetching this class or executing this class file, then it will be there; otherwise, this will not be executed.

So, this is basically for giving users good interaction or impressions about viewing a page. So, alt statement is used there. So, alt is basically an alternate text within this double quote that can be used. And you see one thing here all these things will be within this applet tag, whatever this codebase, code, alt, width, height, name whatever it is there. Those are the within this applet state and finally, this is called the final applet tag.

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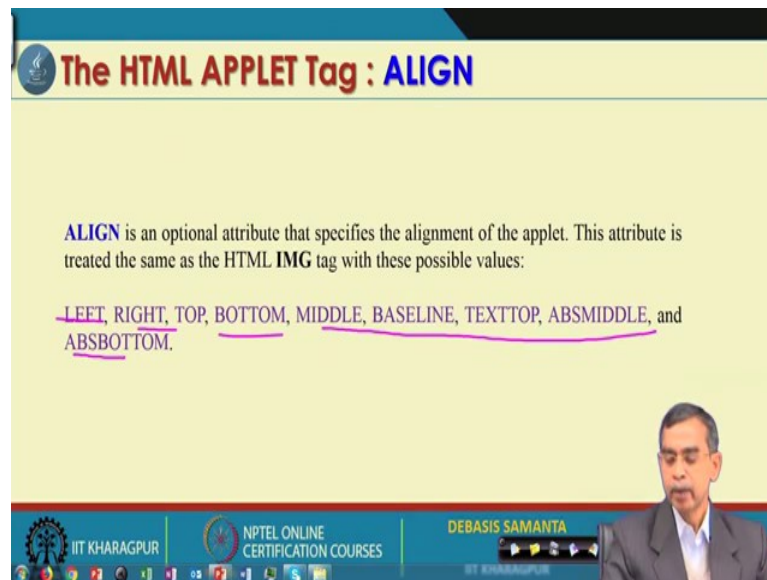
Next is the name. And in your HTML page, you can use many applets into the same HTML page or sometimes applet can be used in a distributed programming system also. From your machine, you are running an applet. From another machine, another user running, another applet and both the applets need to be communicated to each other. And for this communication, so that actually one specification that is required that which applets communicate to which one that mean, each applets should have their own identity; this identity can be mentioned by means of name.

So, name is the one specification that is there by which we can specify that if each applet has its own unique name. And then by this name the applet in your applet programming using the method get the name of the applet can be understood, and using this under say some communication can be established or some communication protocol can be implemented, so that is why the name that specification has been there in the applet. And then so name can be obtained by the getApplet method not get name ok.

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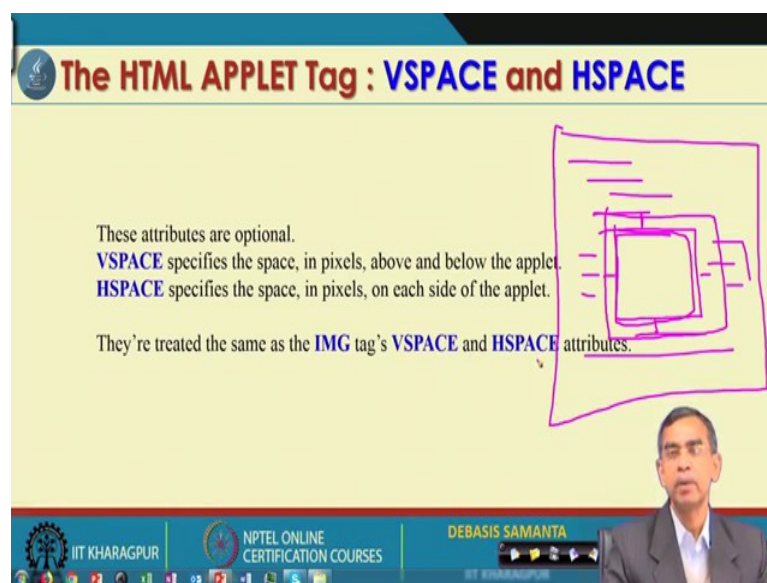
So, these are there are a few more method tags align. Align means you can view your applet in a particular position. For example, these are so many positions left, right, top, bottom, and absolute bottom, whatever. There are many other specification that you can find you can mention, so that applet will be placed accordingly whether left side, right side, top, bottom absolute top, top of some text like this one. So, these are basically placing one applet in an HTML page HTML area view windows that are browsed by the applets.

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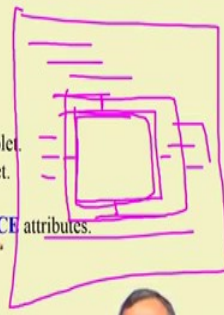
And VSPACE and HSPACE is basically the use of this say suppose, this is the total HTML view of your total HTML page. And there some text like, and here also some text like and where you want to display your applet like suppose. Now, so VSPACE, HSPACE is basically how much gap that you want to give between the text and this applet. And so it is basically VSPACE.

Similarly, if there is some other text, it is there or some other applet is where you want to place it, then this basically HSPACE means what is the gap that you want to allow between the text or this one. So, is basically VSPACE, HSPACE totally is say that other than this is the applet view, this is the width and height is basically how much space that you want to do it. Sometimes it is basically used for a good impression of the applets, and then an artistical presentation of this applets that in there is HTML that can be controlled using this VSPACE, HSPACE commands.

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And parameter name param is another important parameter, extensively used one parameter that is required to specify the input to an applet as you know an applet cannot take the direct input from the browser machine or cannot take direct input from the distance machine also. So, if you want to pass any input to your applet, then in the HTML page the parameter names to be mentioned there.

Now, the syntax is like this. The tag specification is called the param, the name of the parameter. For example, in this example, as we see the font name is the name of a

parameter, and value is basically the courier, so that means, this is the parameter the font name the value is courier. Then font size is another parameter, whose value is 14 at present. The name is image source, the value is basically the file location.

And then name is another is that audio source, the value is this one. So, here we can see these are the different parameters, whose values are like this which we want to pass from this HTML page to this applet when it is in execution. So, whenever the applets start its execution, it will refer whatever the parameter that is mentioned there in this HTML applet code will obtain the value from here, and it will use it.

So, for this purpose the parameters concept param tag is there defined there. And this tag you see this is an applet, an applet is there, this is the applet part. Yeah, this is basically the applet tag, but within this applet tag, separate parameter tags are to be mentioned there. So, and then whole the things will be basically the applet tag for the HTML page.

Now, so param name, so how an applet can get these values. So, for this purpose, the get parameter methods are there defined in the applet class, and which can be called for this. And then can be can get these values from the HTML itself. So, if you change this values from your machine, and then this will display the different values to your applets. Now, let us see one example to illustrate the use of this one. And this is supposed the HTML page that you have defined, and my class .class is our applet, which basically wants to take input from this value. And then how the applet code will be there.
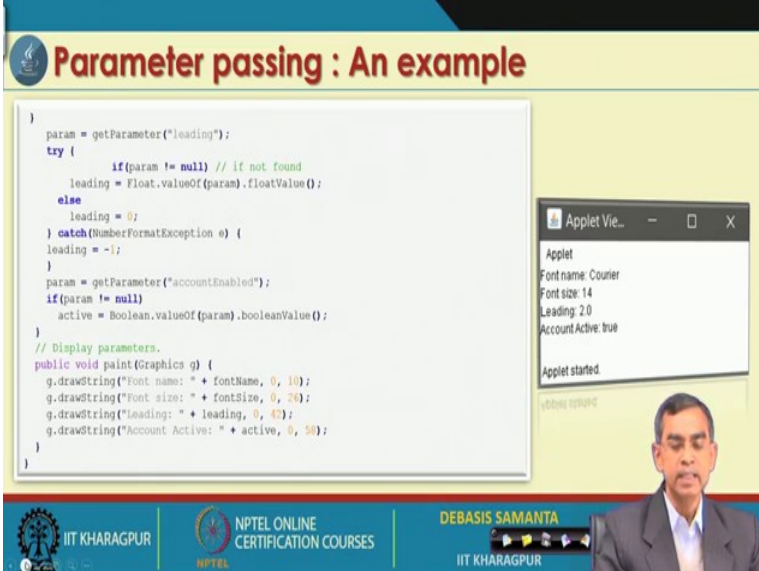
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Now, here is the applet code which looks like this here if you see the paramdemo is the name of the applet, which you are going to demo it, and these are the different parameters called the field of this class like fontname, fontsize, leading, active. All these are the variable as we have declared in a class; so this is the class members.

And here you see the methods start is basically to be either it is in the start method or initializes method, you can read the value. So, here, in this case, we can read the value from the start method or like this one. Now, here as you see all the parameter values that will be read from the HTML page, they will read from a string. So, let the name of the string be param and read. And then from this parameter string, we can convert into a different form.

So, is a get parameter font name, which is there in an HTML page, you will get this and then font name will be there. So, this is the basic parameter that is there font name, font name from a courier. So, the value will be there, so the font name is currently the courier. And it is basically the try-catch is mentioned, if in case suppose, this value is not present in the HTML page like this one.

And then so there is another param is if you want to convert in integer also, because it is read as a string, so we can change into integer. So, integer class, then present, it will convert the string to an integer, so font size, and then this one ok. Now, so this way as the different parameters, there are few more parts of the text that are there, code is there. The different parameters can be read using this get parameter method is there.

Now, other parameters also gets parameter leading and then get parameter account to enable. All these values will be read from the HTML page. And then the once the value is loaded into your applet, and then we can use them in your paint method; so, here is the paint method. And you see whatever the value that we could read, it from the HTML page like font name, font size, reading, and active.

And then they can be printed on the screen like in this case, and then if you run this applet using the HTML file that we have previously shown, it will basically like this one. So, what we want to say here is that whatever the parameters, we want to pass from an HTML page to an applet, they can be embedded into the HTML page itself within the applet tag by the special tag specification called the param. So, this way we can pass the parameter and we can run this like this. So, usually the HTML page designer have this provision to pass the different values or there are many other ways also, it can be there.

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One good example that we can have it, then we can see the applet is ok, it is just a windows program. And this is the HTML page for this applet, it will look like.

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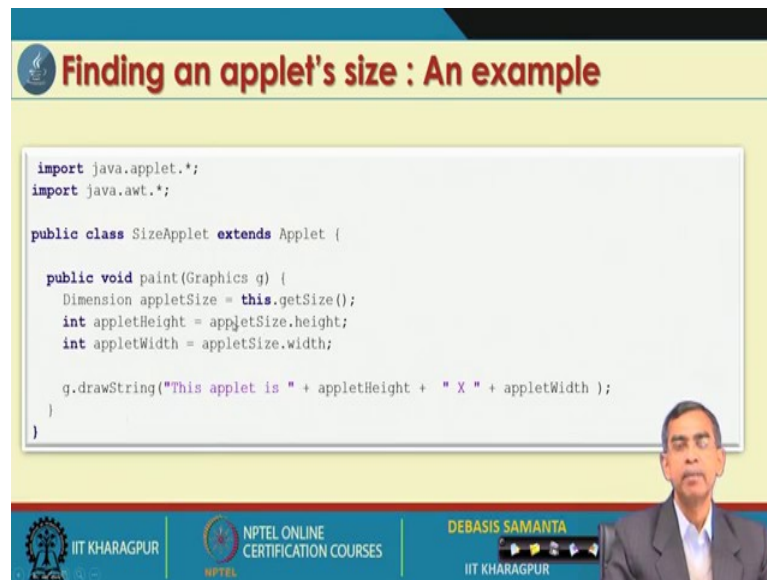
The applet finding an applet size; now sometimes it is required to interact with the applet size which some situations, then we need to know what is the current size of the applet. So, the current size of the applet can be understood using another method called the get size, which is defined in applet methods are there. So, this basically get the applet size like.

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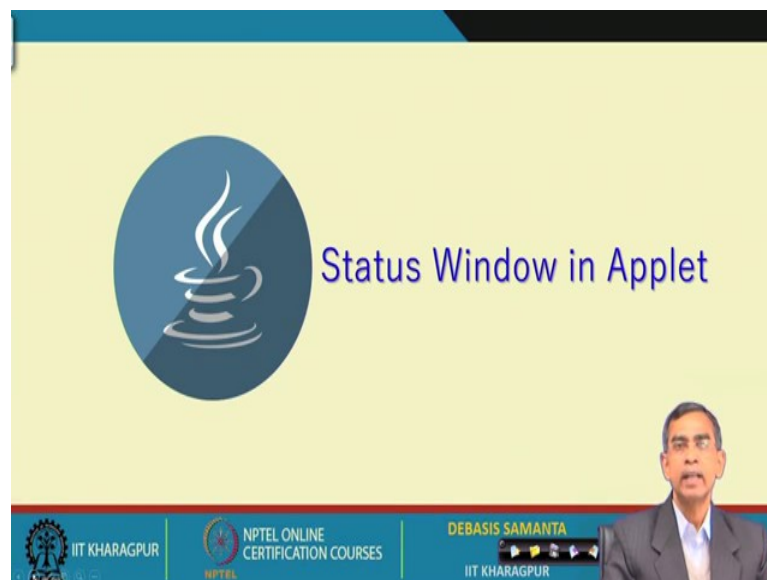
And this example says for a current applet, what is this width and height parameter that can be read here.

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Now, there is also another method is also in an applet is basically called the show status method.

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So, here basically the idea is that this basically showing the status of the applet. If the applets started its execution, it is called the applet started. If it is destroyed, it is applet is stopped or killed or if it is applet is not yet started like not started this kind of. So, this is called the status bar of the applet, and this is the title of the applet. Now, sometimes the show status, we can for some reason that we want to display our own, what is called the message on to this one. So, this can be done using the show status method.

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And here is the one simple example, how this show status method can be utilized. Here you see this method can be used here show status, and this string. And if you run this applet, then it basically shows in this status bar there that this is shown in the status window like.

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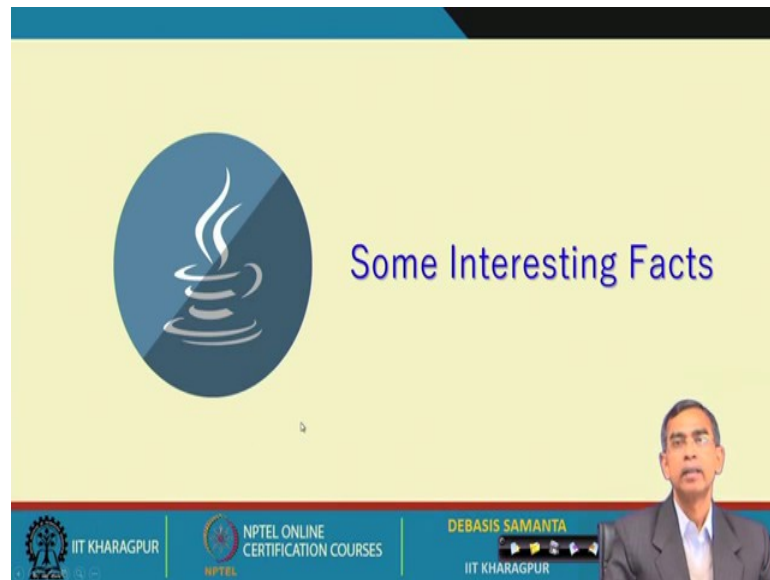
So, this is the different methods are there that can be used to display the status concept here. And there are a few more interesting facts that I want to give, before concluding this module.

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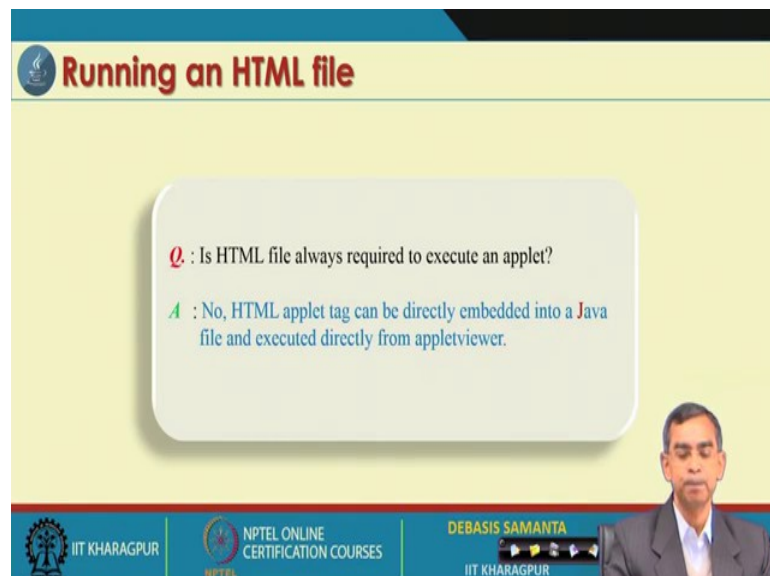
And let us see the first is HTML file is always necessary to execute an applet that means, as I have mentioned that HTML code should be there, an HTML file is there, but there is a trick that the tricks are basically HTML applet tag can be directly embedded into the Java program itself. And then that can be used by the applet viewer actually.

Now, what is the policy it is here that means, whatever the applet tag, it is there? You just write after the HTML file, either after or before whatever wherever it is there as shown no problem. Then same .java file can be used, so no need to maintain two files. One is the .java file or .class, and then .html, but only one .java, and then the corresponding class file should be there complied version.

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Now, here is an example as you can see here, this is the applet program that we have already know; so, this is the .java file. And here is the HTML code, which basically to host it. Now, I can maintain only one file, and then let the name of the file is .java. So, this is the .java may be status window .java is the name of the applet file compile it. Now, whenever you go for compilation, those are the things included within this comment which means, your compiler the Java compiler will ignore this one.

On the other hand, whenever an applet viewer will come into their, applet viewer will ignore, all these paths because an applet viewer cannot understand about this tag and simply ignore it is just interpreted. But, whatever the portions it is there, applet viewer can understand it, and then can be interpreted.

So, if we run this using applet viewer for example, here run it applet viewer status window .java. So, here you have to write .java, this is an original file right. So, then as the applet viewer will browse it, and then displayed. So, only one HTML file that you can plan only one dot file only .java file can be maintained, and then no need to maintain explicitly .html file. So, this is the idea about and many programmers prefer to do that, what is the code HTML tag it is required, they usually use in the .java file within the comment lines only; so this is the one.

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And another is that it is applet the only way to create a graphical user interface or there are many other ways are there. In our next discussion, we will discuss about the AWT the Abstract Windowing Tool kit. The abstract windowing tool kit allows us to include our code here. So, using this one also you can do it, but regarding this abstract window tool kit, we will discuss all these things in detail there.

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So, it means that in your program, you can write one application look like, it is not an applet actually. But, it looks like an applet, it is basically called the frame or panel, and that panel is basically a windows programmer. So, these are another version of the windows program, which can come in the form of an AWT programming.

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And this is the one AWT code that will be discussed in details, I just want to skip it.

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And so this way we can run another windows program, other than applets. So, AWT is an alternative to the applet programming actually. And applet regarding AWT programming, we will discuss in our next module onwards. And then will discuss another programming concept in Java the AWT concept.

Thank you very much.