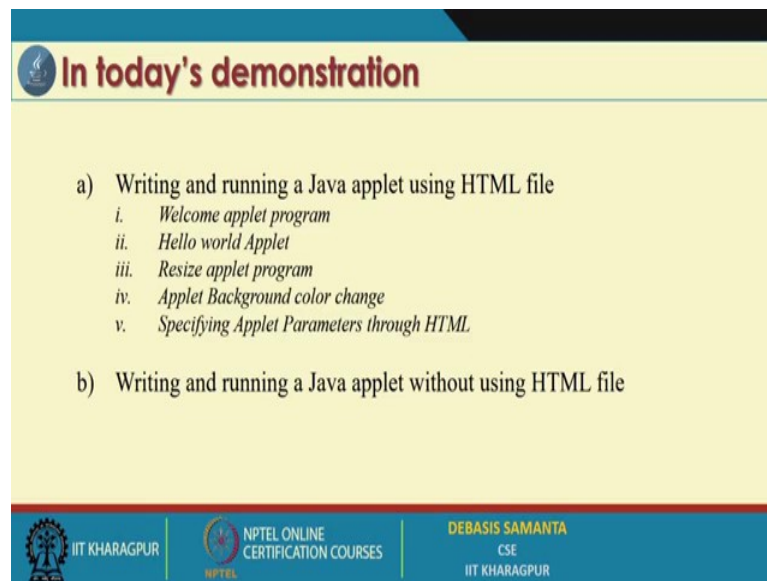**Programming In Java**
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Indian Institute of Technology, Kharagpur

Lecture - 06
Demonstration – II

So, in the last lecture, we have learned about programming in applet programming; Java applet programming. It is something different, in fact, java programming is very fun this is because of the applet in fact, an applet is really enjoyable. So today, we will have a quick demo about how we can write the java applets and then the same applet can be executed and then the different twist in the applet also try to understand in today's demo. So, let us first write our first simple java applet program.

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So, so in today's demo, we will discuss how we can write a java applet and embed it using HTML file. And there are few applet programs that we will discuss that the simple applet program called the hello world applet and then there are a different way the applet can be configured is basically resizing setting background color and then taking input to the applet via HTML and all these things. So, today we will discuss all these things in our demo. So, let us start our demo,.

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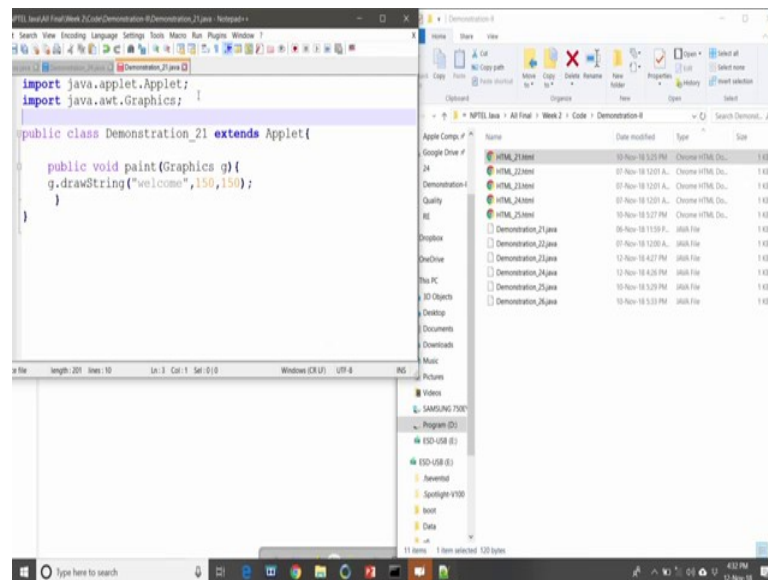
So, we are now in a position to write our first java applet, this is not applet later on this is not the right one, right. First hour you just run 2.1 2 point yeah. So, this is the simple java applet that we write, we have written it for you yeah. So, as we have already mentioned in our discussion in the last lectures that the first portion that should have the input section for any java applet you have to import two packages the java.applet.Applet and then another package is java.awt packages and under these two packages two classes namely Applet and Graphics.

So, these two class files are to be inputted because they are essential for running your applet program. Now here we see the name of the applets that we have given here is demonstration_21 and we have already mentioned in the last lectures that it should extend the class Applet. So, extends and regarding extends we will learn about it later on. So, this is the way the name of the class file that, the name of the java applet program that you can give it in this case demonstration_2 1 is that java file should be.

Now, these are simple java applet it includes only one method the paint method and the paint method is to display a miss, the name the text here, in this case, it welcome and 150 and 150 is the location where the text will start displaying in your applet. So, this applet once it is written you should save it with the extension.java and the name should be given as demonstration_21.java.

So, we have saved this file as this one demonstration_200.java and then we should compile it, that compilation is the same as the java application compilation is javac. So, javac then name of the java file demonstration_21.java (Refer Time: 04:04) you type it.

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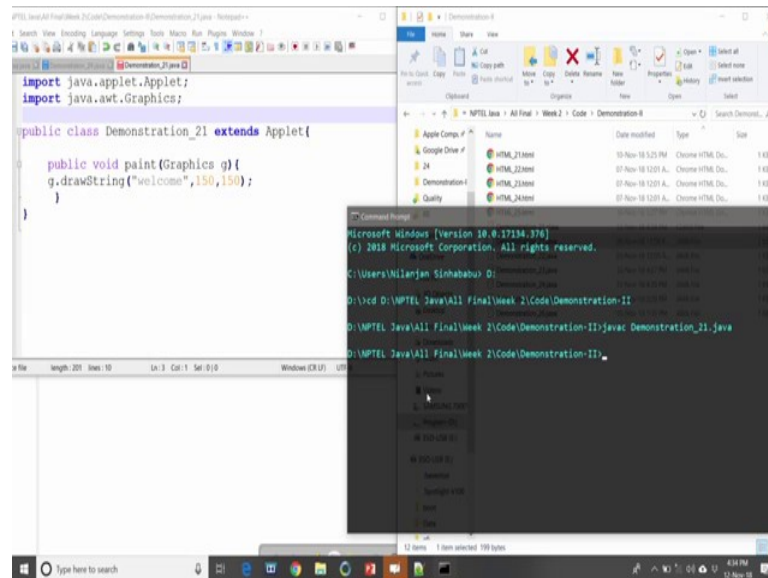
So, right so javac then the name of the file it is here at demonstration_21.java, yes. So, this is the file yeah. So, this now this compilation produces a class file, the name of the class file you can see the demonstration_21.class.

So, this file is required to run the applet, now in order to run this applet we need 1 HTML file to be created.

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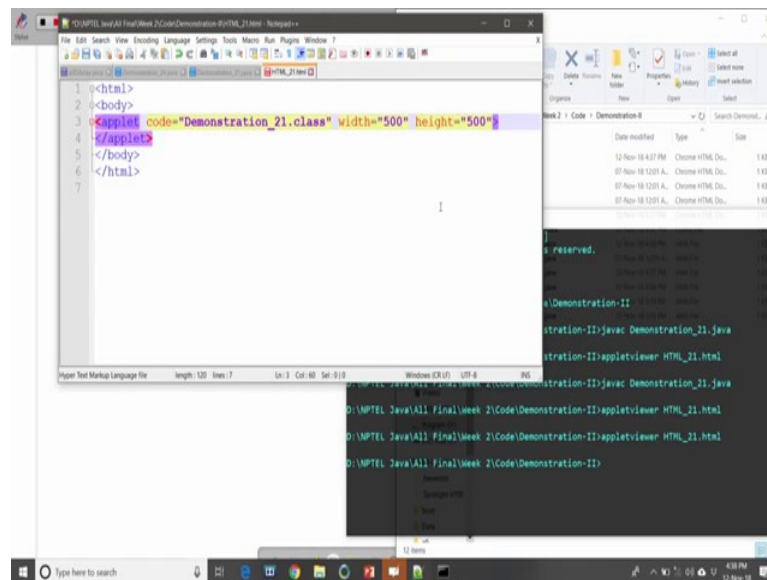
Now, with a simple HTML file look like this here the standard syntax that is there, you have to blindly follow it at the moment later on you will be able to understand the different tags the meaning of these things. Today also you will be able to explain some meaning of the tag.

Now, the important tag it is there in HTML file called the apple;t applet code demonstration_21.class the file that you have just now created and then here width equals to within single code 300 and height equals to 300 and you can see there is no comma nothing is there.

So, this basically specifies the size of your applet should be on your display screen. So, it is basically 300-pixel X 300 pixels. So, once this HTML file is written you can save this file using any name. In this case, we have given the name of this HTML file as HTML_21.html. So, let us save this HTML file as HTML_21.html. So, this file is written here ok, we can see the HTML file that is created here in our directory project directory HTML 21.

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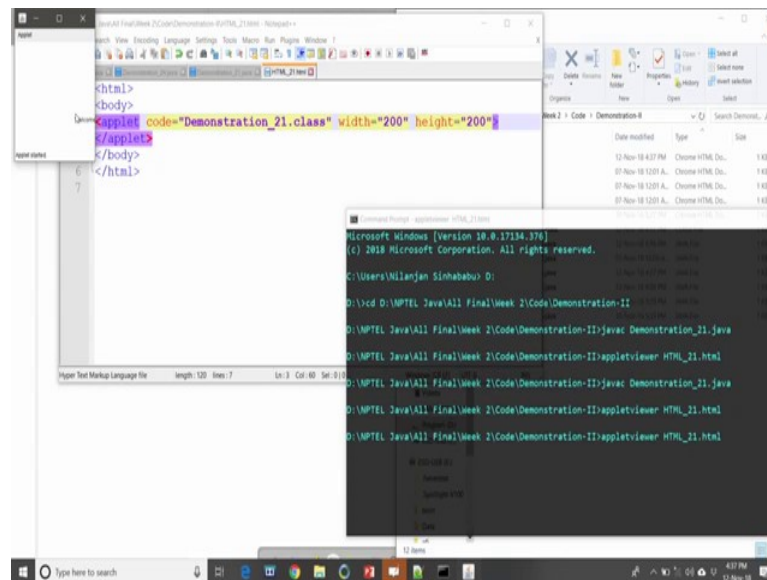
Now, we can run this HTML 21 using applet viewer. So, I applet viewer and then give the name of the file as HTML_21.html. So, this is the way that you can browse this one and once it is browsed this applet is created. So, this is the look of the applet that you have created, here you can see the title bar and then default applet is there and that welcome it is there.

Now, if we again go to the applet program that we have written here, go to the program here ok.

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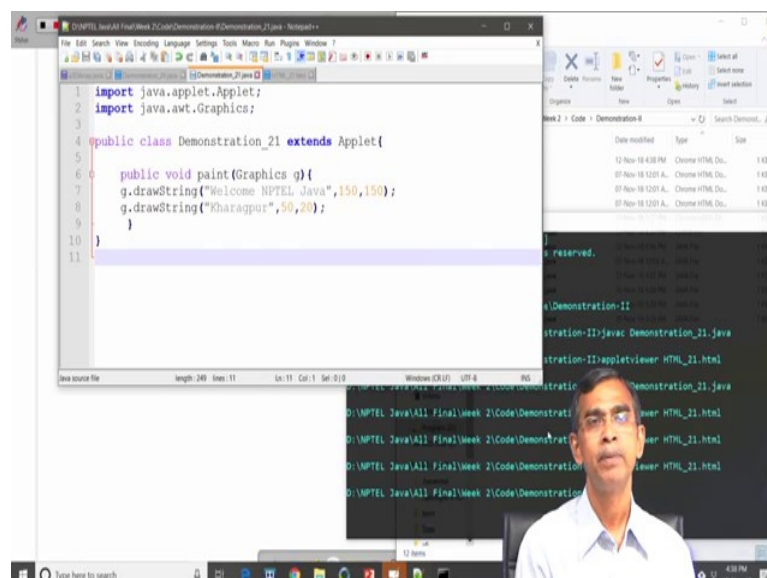
So, welcome and then we can write welcome NPTEL Java, NPTEL Java capital welcome yeah right fine. Now let us see how we can run it again repeat the same procedure compile because you have changed in the main program. So, this should be compiled again and then the class file should be created and the class file is created and the same HTML file we do not require to change anything because HTML file you will remain same then run it. So, it will display it, yeah you can see this will display this one right. Now let us see if we change the applet code little bit let us go to the HTML file that we have created for this applet. Yes and then instead of 300 we just give 200 x 200 and then save it.

So, here we need not compile it again because there is no change; however, HTML file does not record any compilation. So, simply browse this HTML file using applet viewer and then you see because of the size has changed the text that will be printed according to these things not properly displayable so you have to be careful about it. Now if I change the width say 500 x 500, you will be able to understand the meaning of width parameter and height parameter in the applet code they are in HTML file yeah.

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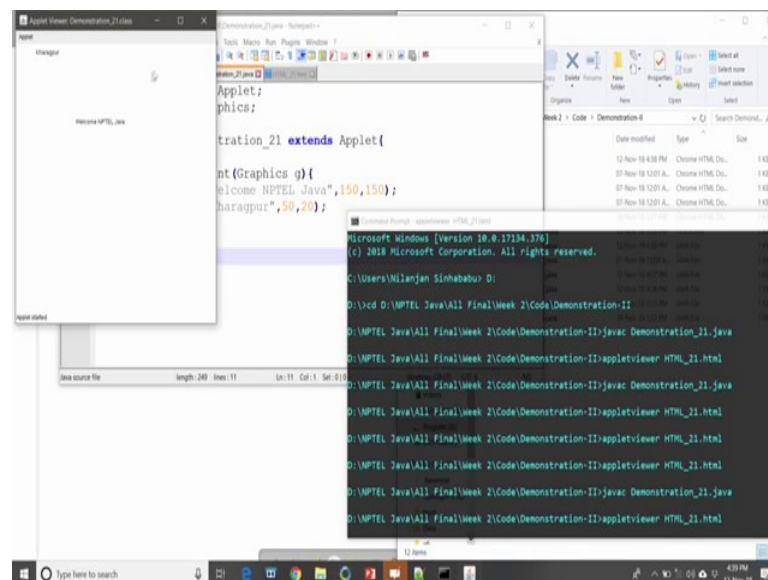
So, you can see the size of the applet has increased and then the display and everything.

Now, go to the applet program again and then here that g.drawstring we have used only one text. So, let us print another text. So, we just repeat it. drawString and then g.drawString then install welcome. So, let us pin that Kharagpur and then location I just

see 50 and 20. Now let us see we have changed the location; that means, the welcome will be printed in some location and then 50, 20 really and we have changed the program file applet program. So, we have to compile it.

So, let us compile and then now after the compilation we just no need to change in the HTML file. So, it is not required and then we can browse the HTML file using applet viewer ok, now you can see two things, the Kharagpur is printed at 50 20 location whereas, welcome NPTEL java is printed at 150 150 location. So, this is the way the applet program your first applet program where you can display some messages or text in your applet view applet window. So, these are first applet program.

Now, let us go to some other applet program; we have another program where you can see the applet, the applet that we have shown you here.

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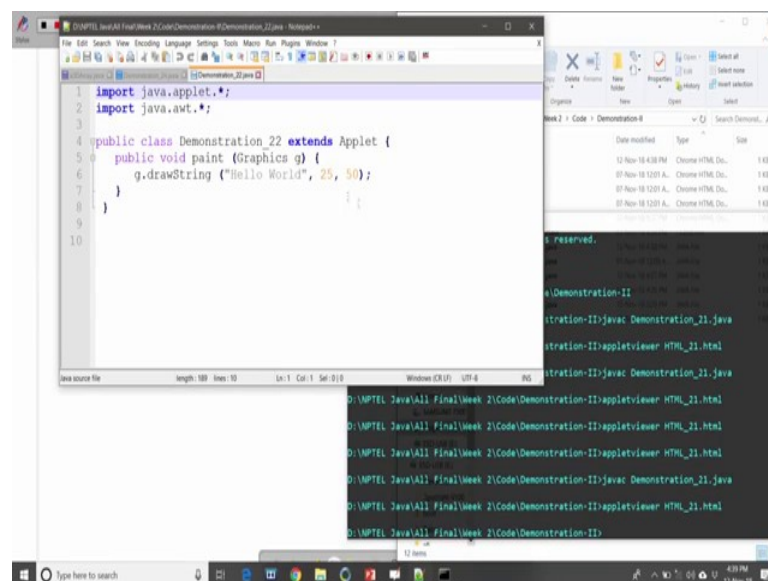
So, there is a title bar there is no text displayable. Now, this title can be changed, but to do this thing you do not have to do anything in your applet program only the thing that you should go to change in the HTML file.

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So, go to the HTML 2.2 program, yes now we have little bit change about HTML code it is not as simple as the first HTML file that we have created for your first program.

Now, here if you see in the there is a tag called the title and we have written it takes there the hello world applet, if this is the text is written in HTML file then this text will appear as a title in your applet status bar in the top of the applet viewer and the rest of the things are same and lets run this program and then I come we shall come back to this HTML file again. So, this is the basically same program, but with the different applet HTML file it will basically use demonstration_22.class. Another java program, java applet that we have created. So, just go to the demonstration_22.class program first, yeah it is basically new java applet we have created right run it show it.
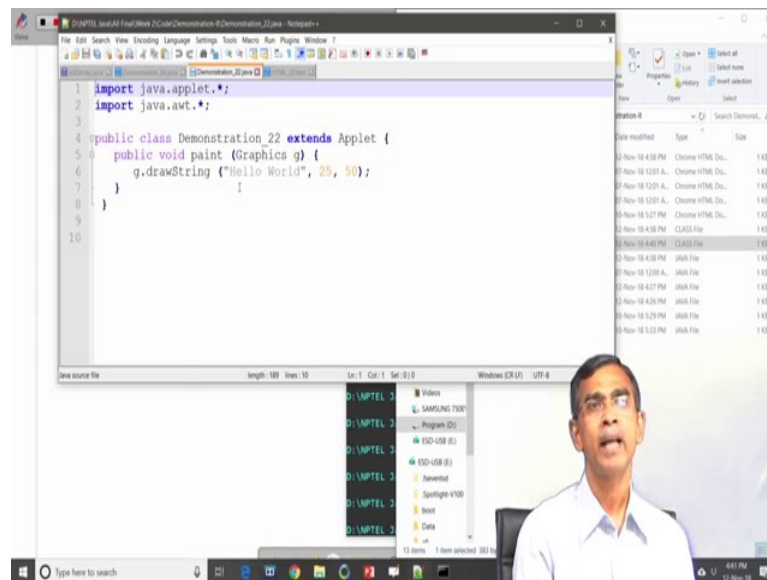
Go to that note foot notepad yes notepad just a star. So, this is the new program demonstration_22 is basically the same, but only it will print hello world. Anyway basically the same applet, now we embed this applet into our current HTML file, as a current HTML file like this now let us run this HTML using applet viewer yeah.
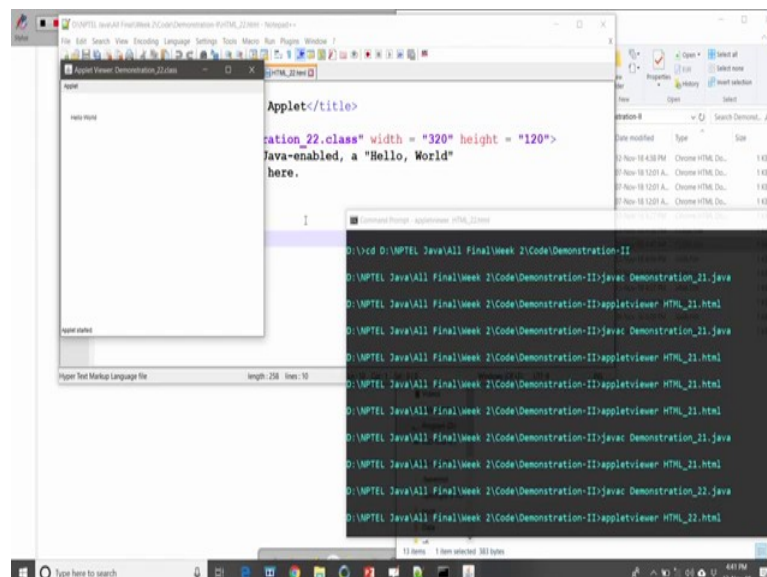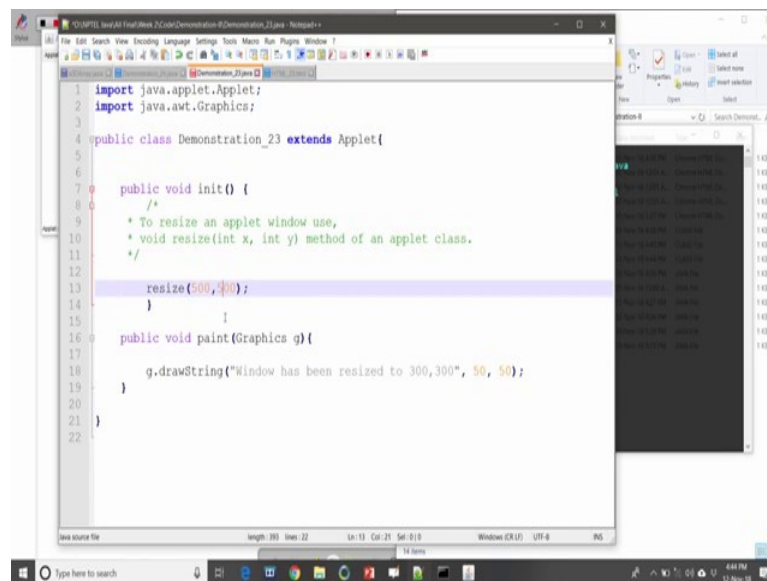
Now, you see right. So, here you can see in the first applet which we have executed, they are applet viewer demonstration_22.html class. So, it was not showing there, but it is

here showing where is this showing that title the hello world applet? It is not showing nothing. So, let me just do some changes here we can see it.

Browser, lets go to the chrome then we will not be able to go. So, that title will not be able to display using applet viewer, it will be done by why do not check it fine. So, now so, these are a very simple applet that we have tested with.
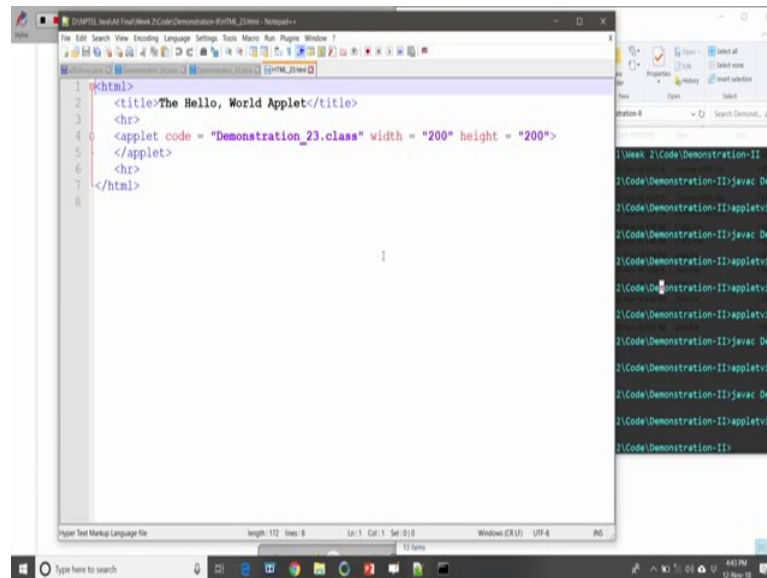
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Now, we will come to this regarding the different methods. So, the applet can include many methods and in the last lecture, we have discussed 5 methods on which the init() method. Now today we will just have a quick demo about the usage of the init() method.

Now, here again, see another applet program, go to the camp account background and outer common from the yeah. So, yeah right , let us look at this program, the first two lines are the import section and then there is the name of the applet here demonstration_23 and then here is the init() method, the init() method has only one statement called the resize 300 300. So, if you ambit this applet class in an HTML file with certain width and height parameters and then init() if it is if you want to resize this value into some other values, then you can do it using the resize method, resize method is defined in applet class.

So, by default it will come you do not have to bother about the declaration or defining the resize method it is already there in the applet class, it will call it and they need to basically initialize the applet with the desired size in this case 300 x 300.

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Now, let us come to the HTML slide here and you see that 200 and then 200 is the default height for the applet from the HTML we have fixed it. Now if we run it so we will see a clear code, clear code clear right.
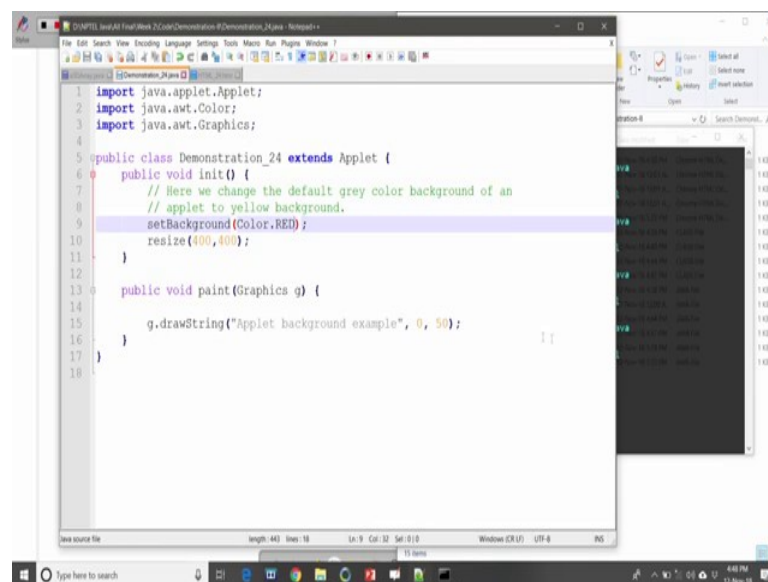
(Refer Slide Time: 14:15)
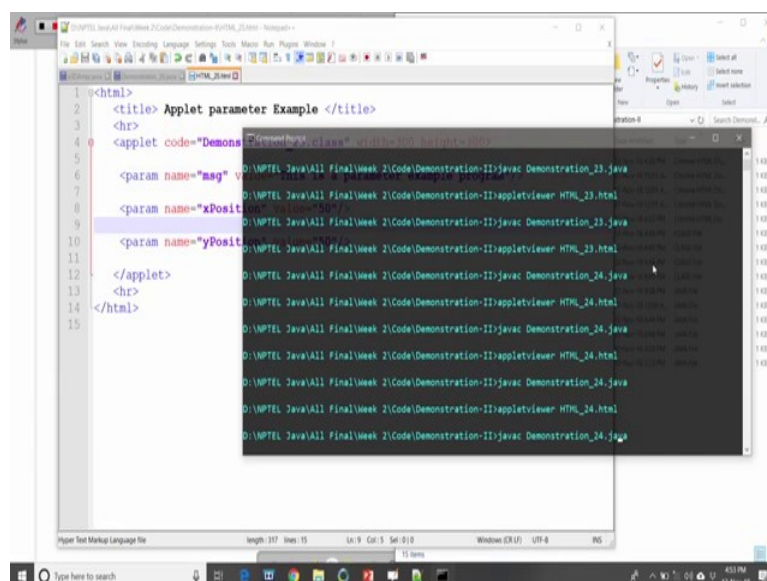
Now, here javac so, this is basically compiling this program and then class file is created, this basically embedded in the HTML file and then being the HTML file yeah. So, here you can see it basically displays of the HTML file here with the resize.

Now, let us go to the resize method again and then let us change 300 x 300 to 500 x 500. So, definitely, it will reconfigure your applet size to 500 x 500 bigger applet, now again run the same HTML file. Now we have not done any changes in the HTML file only we have done the changes in the applet program and we can see the applet is coming in that way. So, it is basically an HTML file where you can define one parameter which can be reconfigured from the applet program itself and for these things you have to use the init() method and there the resize method.

So, we have discussed the usage of init() method and thereby the research application, let us have another application another use of the init() method this is also init() method is initially is basically mean for initializing your applet. Now here we are going to discuss one another applet which basically initializes the background color as by default the background color is white.

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So, you are, now this is the one program let us have a quick look.

So, in this program we have used another method another class which is defined in awt packages, the name of the class is color this is basically regarding setting colors of the

different components in an applet or applet itself. And so, this is the program name, the name of the program is demonstration_24 extends applet as usual and you just check a look the method init. Here in earlier init() method, we use a resize, but in this case, we use the method setBackground, this method is defined in the color class which is in awt package and here the method is used to set background.

So, it will basically set the background color as yellow. So, for this thing the parameter is color.yellow. So, this is the default standard that capital letter you have to write the color name and then the white paint the same thing it will just pin the takes the applet background color and this is embedded in an HTML file.

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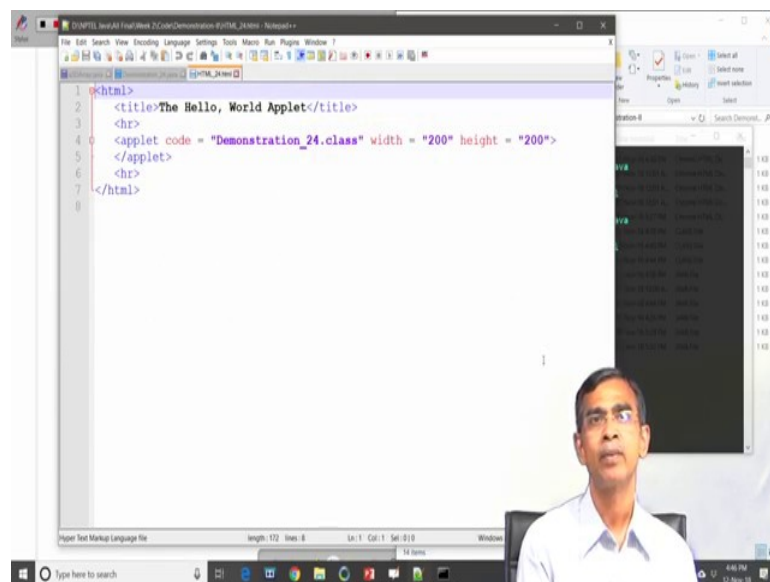
The name of the HTML file, in this case, is HTML 2.4. Now let us view this HTML file we have created the class file for it ok. Now so applet viewer runs this HTML file yes, run yeah you can see the background color is created like this yeah not here, fine.

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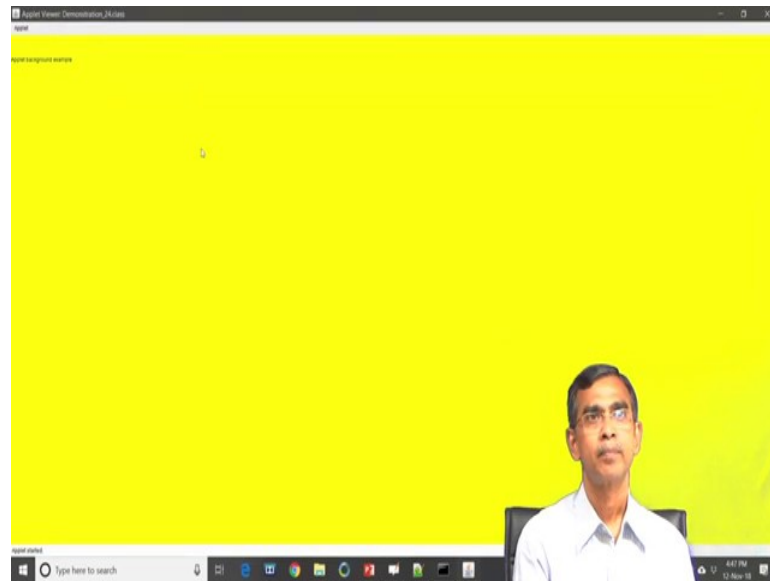
So, the applet is created now, let us go to the applet program again now we can do many more things in the init(). So, init() is nowhere for set background, I can again do the resize, let's resize here resize then 400 x 400 so; that means, initially the applet was very small I want to make it a little bit larger. So, 400 400 be the size then we have to compile it again because you have changed the applet code. So, the compilation is done and then embedded in HTML file no need to change in the HTML file itself. So, now, you can see the applet is now viewed with a little bit larger in size the color is yellow.

Now, again in the saved background, if we change the color say rate we just write rate all these colors are defined in color class. Here applet background will appear, we have to change the class file. So, compile then run this one.

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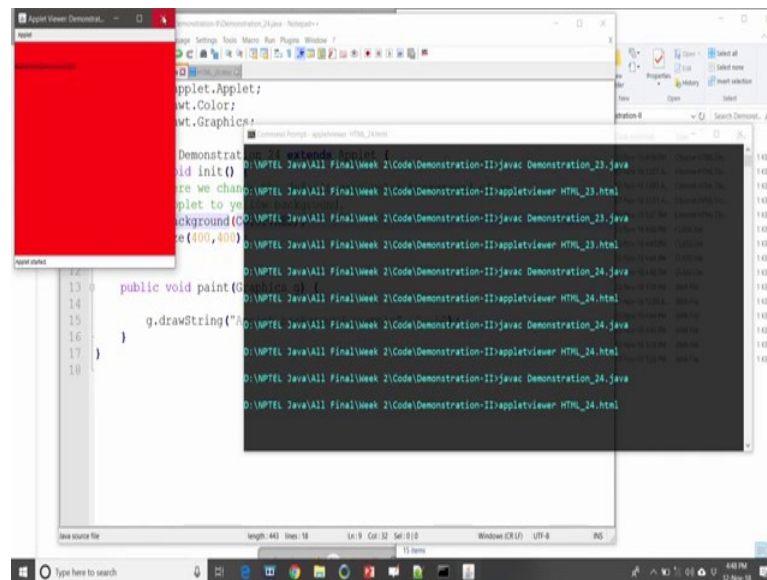
So, the background color will change the rate. So, now, we can understand about the init() method. So, init() method is basically you should use to initialize your applet view.

Now, there are there is another important application of init() method which is very interesting also so. In fact, I told you that you cannot give or applet cannot take direct input from the keyboard. Even applet cannot take any input from any other sources.

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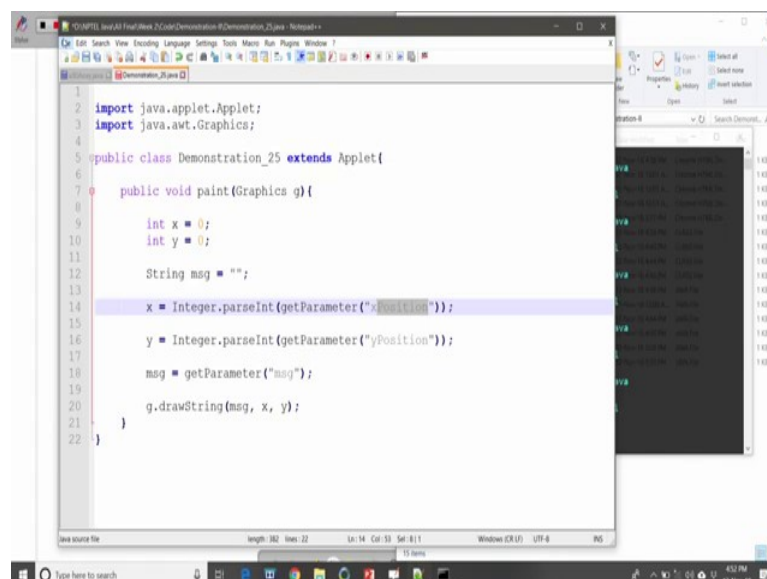
Like say key file or any network or whatever it is there and applet also cannot write anything into anywhere also, applet only can display on the screen.
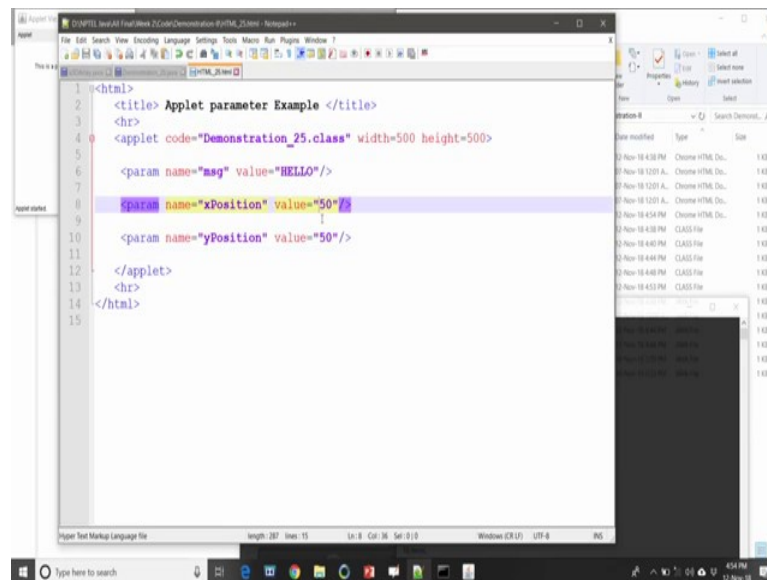
Now, here is another example, if we want to give some input to our applet. So, how the applet can be given input to that so if you want to pass any input to your applet program it is possible by the means of HTML only. Now let us see this is the one program which we have planned to pass input. So, here basically the applet is planned like this, it will take any message from the input as an input and the same message will be displayed in a location x and y which also should be read from the HTML. So, here we have declared x and y. So, this is the program demonstration to_2 4 5 25 is the name of the applet and here we declare two variables x and y which basically will be, whose value will be collected from the HTML.

So, we have declared the two variables as integer and then later one comes, let me finish this one good here yes and as I already told you this applet will take a message from the outside also. So, the message that will be stored here in a temporary variable the name of the variable is msg called the message and it is the type of String; String is a class which is already the declare in the lang package java.lang package. So, it is by default it is imported. So, you do not have any import specially and then here integer parseInt this is basically is parsing or pre-processing of the value to an integer, this is because the java reads everything in the form of a string.

So, it is basically convert a string to an integer value. So, that is why the command is integer.parseInt and it requires the value, that value should get parameter getParameter basically the method which will read from the HTML. And in that HTML there should be some tag get a value called the x position and the value should be supplied there in the HTML file then it will basically parse the HTML and whenever the exposition where very parameters named it will face and it will take its value and the return to x as an integer.

Similarly, another value which is parameter name is y position in the applet file at an HTML file and its read it and then return to y and finally, getParameter msg it will also read a parameter msg that is there in HTML and return as a string. So, need not parse into any other type. So, it is simply written it as a msg and finally, drawstring it is same as earlier it will display the message that will read from the HTML file and it will display the message at the location x and y the value of x and y also read from the HTML file. Now let us see the HTML file for this applet, how it should look like.

So, definitely, it is a little bit different than the previous HTML because here we have to specify the three parameters msg, x position, y position three parameters along with their three values. Now here we can see the first the code, the applet code is as usual it basically include the class file, in this case, demonstration_25.class file and this is the size of the applet in this case 300 as width and then 300 as height.

Now, it read the first parameters called the message, the first parameter that we plan to read it here as a message the value is here this is a parameter example program. And then the second parameter namely the x position also we read it here value as 50 and then third parameter y position that is there is, in this case, is 50. So, these are the values which can be passed to an applet via an HTML file. So, this is the HTML file for your program and then we shall able to run this of HTML file we have already created a class file for this. So, this is the class file, yes class file clear (Refer Time: 23:43) screen clear fine.
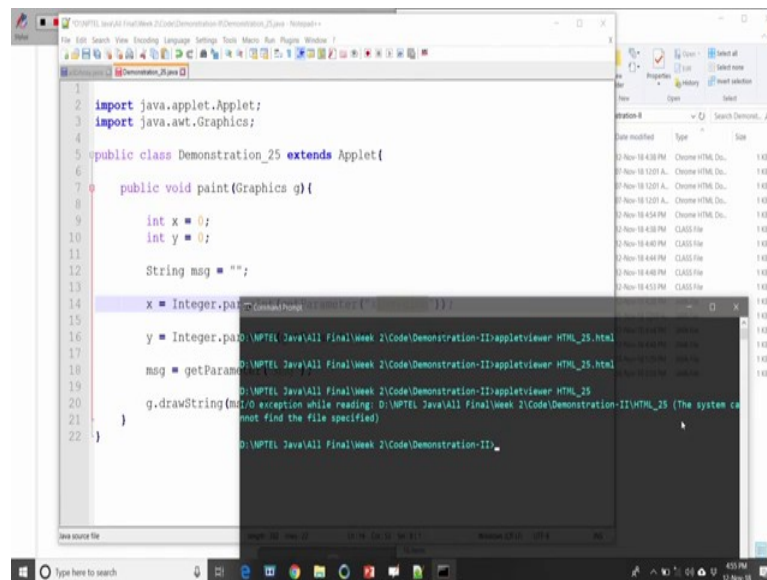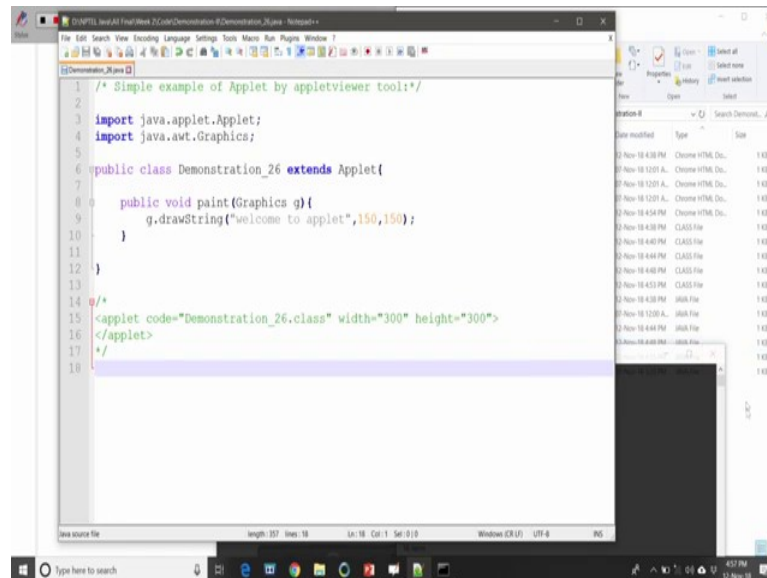
So, now we let us run this an HTML, the name of the HTML file is this one ok.

Now, here you can see we have read the message this is the pro example, it not clear. So, so these are texts that we have already passed from the HTML, this is a parameter example program and then the location where it printed is 50. Now again if we change the value here accordingly it will take the different value and then the same applet will run, but will different input. for example, not here. So, write the message in capital HELLO and then the position is 20 and 50, 20 and 50, we have changed it, no need to compile the program because there is no change in the applet program only the change in HTML file. So, here you can see we have taken the different message and then we have printed in a different location, which read from the HTML file itself.

Now, let us see if you run the same program without any extension what will happen? See applet viewer HTML_25.without HTML. Now lets see if we are able to run it, now you will not be able to run it this is because it should require the full name of the file to execute it. So, if you do a partial name of the file then your applet cannot recognize it and it will not be able to run it. So, you have to be careful when you call your applet viewer the right file name should be given there. And another thing is that the name of the HTML file not necessary to be same as the name of the class file that you ambit if you do it its good, but if you do not do this is not an issue ok.

So, there is no problem this is 1, now. So, this is the way you can see how the applet programming is possible, we have learned only the init() method and the HTML file that is required to view it and fine. Now let us see one twist is here; that means, is it really allows the applet viewer is required that it should record the HTML file allows here is an example you can check it.

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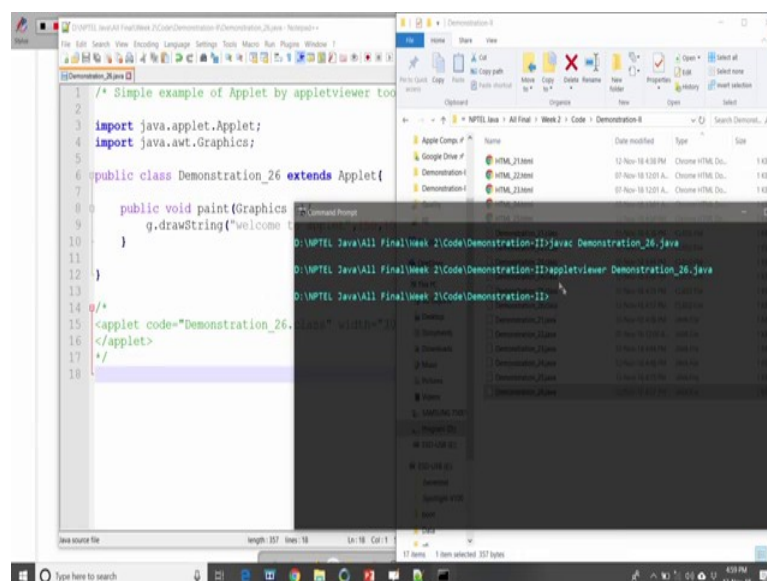
Let us see the program here ok.

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Go to the program yeah look at this program, this is a new one program is basically same as the first program that you have used it, yes and see these are the input section, as usual, it is there input section. And this is the name of the new java applet, the name is demonstration_26 the paint method it is they are no unit anything is there very simple and it will print now will come to the applet.

Now, and here the HTML tag or HTML code that is required to embed this class file is written here at the bottom. So, you see this is that this one, here the HTML code. So, sometimes many programmers prefer to write the applet program and at the bottom or at the end of the same program file they usually embed the HTML code. So, they usually want to avoid writing both the things in the two different file, rather they save all the thing in the same file. Let us save this program as demonstration_26.java.

Now, you should compile it. So, when the compilation will take place all the portion which is written as an applet tag should be ignored because they are under comment. So, they will compile successfully, for example, in this case, we could compile it. So, compilation creates your class file demonstration_26.class file and now we see without embedding it in an HTML file we will be able to run it, to run it we just simply type demonstration_the java file name that you have given earlier you write it.

Now, here you can see yeah so right now there is just little wait. So, here applet viewer, we just call the applet viewer for the program demonstration_26.java we did not create an HTML file for this particular example now let us see whether applet viewer can take this or not, yeah very nice. So, we can see that applet viewer, take this file as an input and then successfully executed and it gives the output.

Now so, some sometimes if you want you can avoid this having the two different files as a.java file as well as the .HTML file and then you can run it. So, it is not magic. The policy it is here is that both the java and applet viewer, in fact, the runtime interpreter. So, java program interprets the byte code which is in the class file form and then applet viewer is also an interpreter who is basically interpreting the HTML code only. So, in this case, the applet viewer interpreter the demonstration_26.java file and in the process of interpretation whatever the statements or lines it is they are on the way it is ignorable, except those are the line which are with HTML tag.

So, applet viewer only executes those are the under HTML tag successfully. So, in this case, the tag applet code demonstration_26.class has been interpreted and then executed. So, this is the way you can use it this is a shortcut method of course, , but my suggestion is that you can have the HTML file separate and then.java file separate, create the class file successfully and use it and enjoy the applet programming more on an applet programming will be discussed there is many things regarding the applet programming, it will be discussed in due time.

Thank you very much.