Computer Aided Decision Systems Industrial practices using Big Analytics

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Lecture 43

HTML as a User Interface Language 1

Good afternoon, everyone. Welcome to yet another lecture of Web-based Decision Support Systems courses for practitioners and business managers. And, this course is part of the MOOCs program and we have already gone more than halfway through the course as of now. And, we have covered sufficient competence of this one, both between me and Professor Amandeep Singh.

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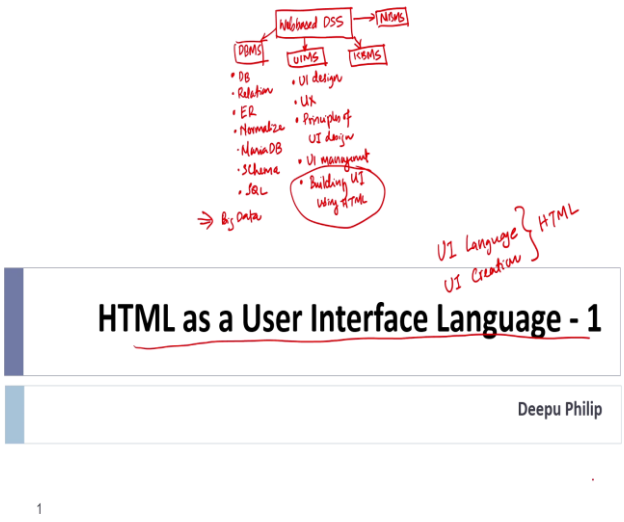

So, let us take a quick recap of where we have and then, we will continue with today's lecture. So, as decided in the beginning of the course, we have Web-based DSS as our main topic in which there are four major parts for us, one is the DBMS (the Database Management System), we have already discussed with this part, we have seen major aspects of it is includes the what is a database, what is a relation, we saw what is an ER diagram, we saw what is normalization and then, we saw what is Maria DB then, we have saw what is schema and we saw what is also SQL, etcetera.

So, these were the major things that we covered under the DBMS (Database Management System). Then, the second part of it what we wanted to cover as part of it is, the UIMS (the

User Interface Management System) and we have seen what is a UI design what involves the User Interface design then, UX (the User Experience) then, we also saw what is the principles of UI design we saw that and then, UI management, etcetera.

So, those aspects we are covering and now we are getting into Building UI using HTML and today our focus will be more towards how to build the User Interface using HTML. And then, the other two components of it are obviously, what you know is KBMS (Knowledge-base Management System), we already discussed a little bit of it. And then, the last part is the MBMS (Model-based Management System).

Some of the aspects that we have covered in the class, Big Data and other kinds of things. There is a component of Big Data in between and then, some of the case studies which I have given you a small introduction. Professor Amandeep is covering many of those other aspects.

So, today's lecture is titled HTML as a User Interface language. So, this is we are talking about UI language also we are going to talk about UI creation. Both of these are done with the help of HTML, as part of this. So, let us see without further delay, what it entails.

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So, today's agenda for the class is to introduce HTML, because many of you may not have done this.

- So, we will, remember this class, we will stay away from frameworks. We do not care about jumla, or word, it is like any of the platforms like Xender whatever it is, it does not matter, but we will only study what the proper HTML is.

- Then, what are the basic features of HTML? And, this is the focus is on UI for DSS Web-based, UI for DSS. What is the output? What is the input aspect of it formatting, forms, links, etcetera, are part of the discussion.

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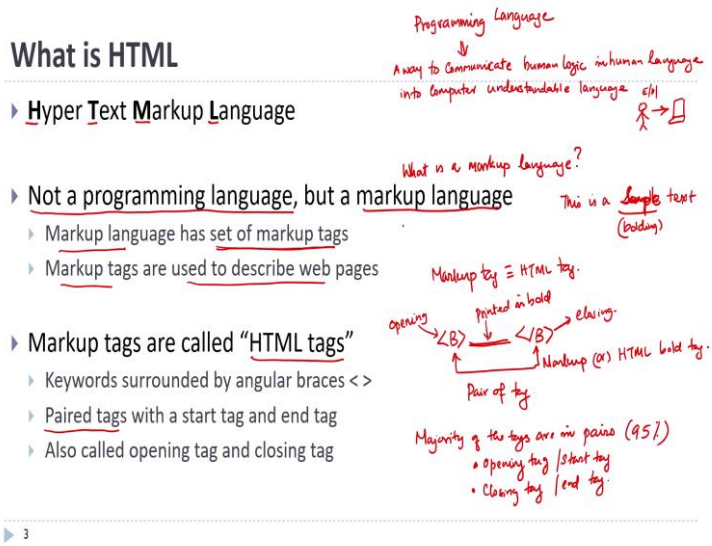

So, what is HTML? So, HTML is an abbreviation, it stands for Hypertext Markup Language. So, the question is, there are multiple things, there is programming language. You might have heard about this. So, the idea behind this is a way to communicate human logic into computer understandable language, they were to communicate human logic in human language into computer understandable language. So, you have a human being sitting here and here is a computer which understands Binary and this person might be speaking English, Hindi, something like this. So, using that mechanism, how can you communicate the logic, it is the logic behind the human into the computer, is what the programming language facilitates.

- So, HTML, the most important thing you need to understand is that it is not a Programming language that is very critical, but what is it? It is a Markup language. So, the question is what is a markup language?

- So, the simple way to answer the question is markup language is as a set of markup tags.
- So, what these markup tags do is, they describe or they format the way the content is displayed. So, for example, you are writing a text so, let us say this is a sample text, something like this, and you want to make this sample bolder. So, it looks bold.

So then, bolding this, you can put an appropriate tag to tell the browser that this text will be printed in bold and the browser when it reads this markup tags will ensure that this word sample is printed in bold. So, that kind of tags are the kind of commands that you can issue to describe content mostly used up in a web page and the markup tags are called HTML tags. So, when somebody says I am using your markup tag, it is equal to HTML tags. So, that is one thing. And, how do you distinguish these tags?

These tags are usually distinguished by angular brackets. So, if I say something like this, <B> and somewhere here </B> then, whatever the text in between here, it will be printed in bold and these two are called as the markup or HTML bold tag. So, usually tags come in pairs, they are in pairs. So, in this case, it is a pair of tags.

So, <B> is the opening tag or starting tag and </B> is the closing tag. So, it tells the HTML interpreter that whatever you find between these two tags, make sure that, that is printed in bold and most of the time the tags come in pairs, majority of the tags are in pairs. Pairs means there is usually an

- opening tag, or also known as a start tag
- there is a closing tag or also known as an end tag

So, most of them, majority, I would say 90, 95 percent of them go the tags come up in pairs.

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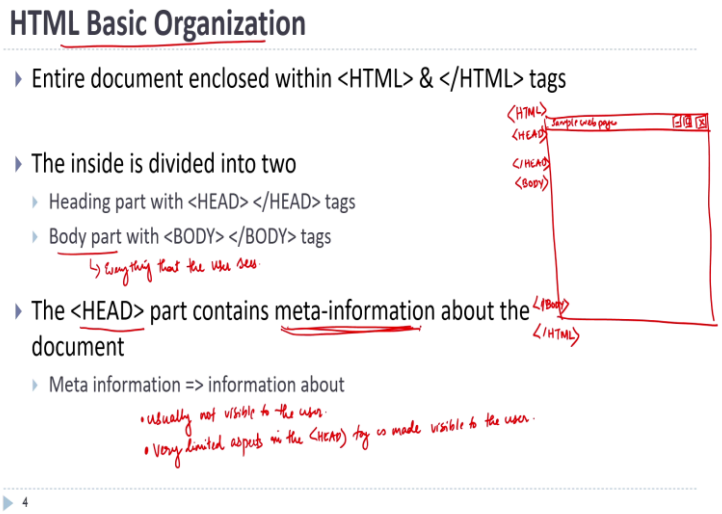

Now, how is the HTML webpage or the document organized? That is what we are going to look into today. So, assuming that I am going to schematically draw this, it seems that this is a

web page and there are three boxes at the end: the minimization, maximization and close, kind of things. And, this HTML document you can think about is. It is divided into two parts.

- So, the minute you say something like this, like <HTML>, a tag here and </HTML>, these two tags everything the entire HTML thing has to be enclosed within these start and end tags which tells everything within this is a Hypertext Markup Language.
- Then, within this there are two parts. The one tag is called the <HEAD> tag, </HEAD> and the other one is called the <BODY> and </BODY> tag.
- The idea is that, most of the time, the content that goes into the head tags, the meta information about the document, so it is the information about what is the webpage. So, this is
- usually not visible to the user, you do not get to see this most of the time, some aspects.

So, like a name here, this is a sample web page, that info that we put there, is visible to that.

- So, very limited aspects in the <HEAD> tag are made visible to the user. So, for example, this is a page title, and the page title is visible to you.

And, the body part means everything else, everything that the user sees, whatever the user gets to see in the web page that goes in what we call as the body parts. So, the head part is really designed for storing the meta information or information about the document, that is the idea.

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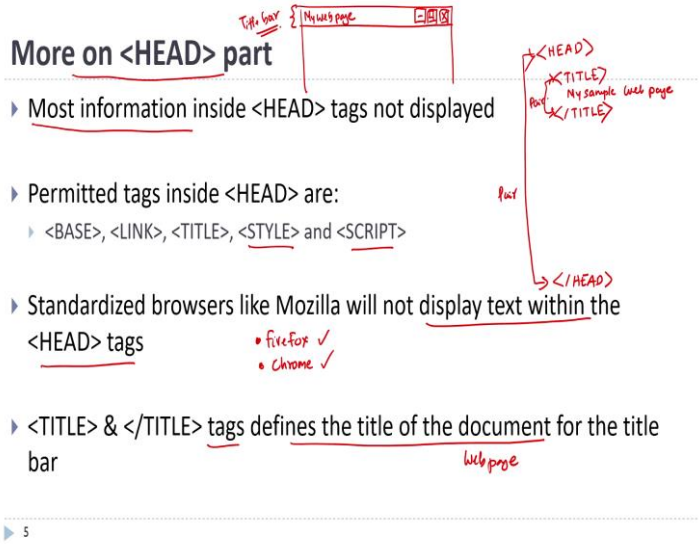

So, let us look into what all things contained in the head part, more on the head part.

- So, as I said earlier, most of the information inside the head tags are not displayed. Most of the information is, not every information, most of the information in the head tags are not displayed. So, if you think now let us just look only at the <HEAD> and </HEAD>. So, that means whatever within this, most of it is meta information. And, there is a tag within this, which is called a title tag. The thing that you put here, my sample web page, whatever that you put here between the title that is shown at the top of the webpage, where you have these three buttons, close, maximize, minimize, and it will be shown here, so, that is what the <TITLE> and </TITLE> tag, so, you get to see whatever the <TITLE>tag is. And, the title tag is a pair of tags. So, this is a tag pair. And, here is another pair, this regard, there some other stuff like style, and <SCRIPT> and etcetera, you do not get to see the <STYLE> tag and <SCRIPT> tags not visible in this. So, standardized browsers, and there is debate on this.

So, for us, most of the things that we discuss in this course are either using Firefox, or we are talking about Chrome, Google Chrome. We are not worried much about it. So, this is what for us, we are looking into a standardized process. We are not worried about Internet Explorer or para, etcetera, those kinds of browsers.

So, standardized browsers, like Mozilla will not display the text within their head tags. So, that is kind of a golden rule that most of the browser's follow very well, that whatever the text that you put in there, with an exception of title, nothing gets displayed. And, the title, slash title tags, or the HTML tag defines the title of the document, (title of the or the web page), title of the webpage. And, for what to display in the title bar. So, this portion is what he calls the title bar of a web page. So, that is the place where you actually get to see the title of the document.

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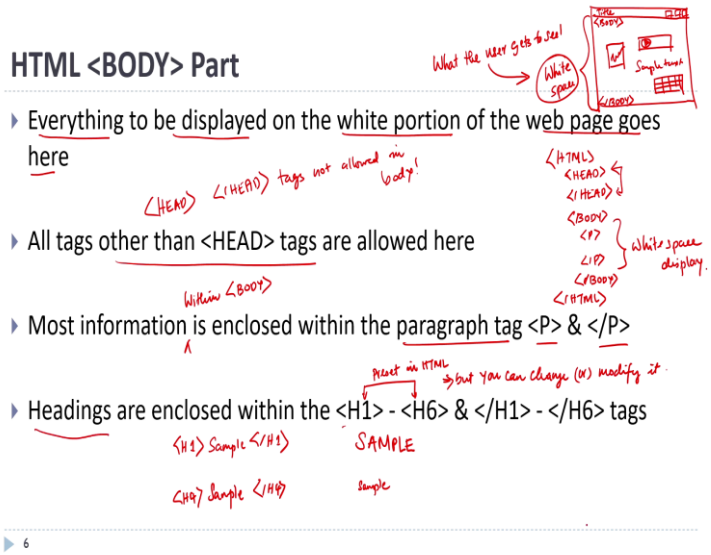

Now, let us talk about the body part of the HTML, HTML <BODY> part.

- So, everything to be displayed on the white portion of the web page goes here. This is a simple rule. So, if you have a web page, something like this, this is the title bar. This remaining portion is what we call the white space and white space is what the user gets to see, so, that is the white space. So, whatever the user gets to see, and whatever you need to display here, goes into the body. So, this is the <BODY>, </BODY> tag. So, whatever you put here, the user gets to see, you can put a graph like this. You can put a song or a movie, you can put some text here. You can show numbers, tables of data, etcetera like this. So, all those things that you want the user to see goes in here.
- Almost all of the tags other than the <HEAD> tags are allowed here. So, <HEAD>, </HEAD> tags are not allowed in the body, remember that. So, standardized browsers do not allow the head tags to go into the body tags. So, they both should be separate.

So, the easiest way to remember is,

<HTML>

<HEAD>

</HEAD>

White space display

</BODY>

</HTML>

And, whatever in this one, it goes either the meta information or the title which gets displayed in the title bar and to the one of the most commonly used tags within the body tag.

- So, most information within the <BODY> is enclosed within the paragraph tag and the paragraph tag is with <P> and </P>.

So, you may have something like <P>, </P>. So, whatever you type in between these two tags, it will show up as a paragraph and the web page when you see this.

- Other common tags are you have tags with H headers. So, if I say <H1> sample something like this, </H1>, it will be displayed probably like this- SAMPLE, very large, but if you do the same thing as <H4> sample and </H4>, you may see something like this- sample, smaller text, maybe it is slightly different.

So, from <H1> to <H6> they are preset in HTML. So, the font, the bold, the italic, the capitalization, all those aspects associated with these tags are already pre-set in this. But you can change or modify, so, that is the heading tags. So, the paragraph, we saw, what is a paragraph tag and we also saw what is a heading tag and how heading tag is a preset tag.

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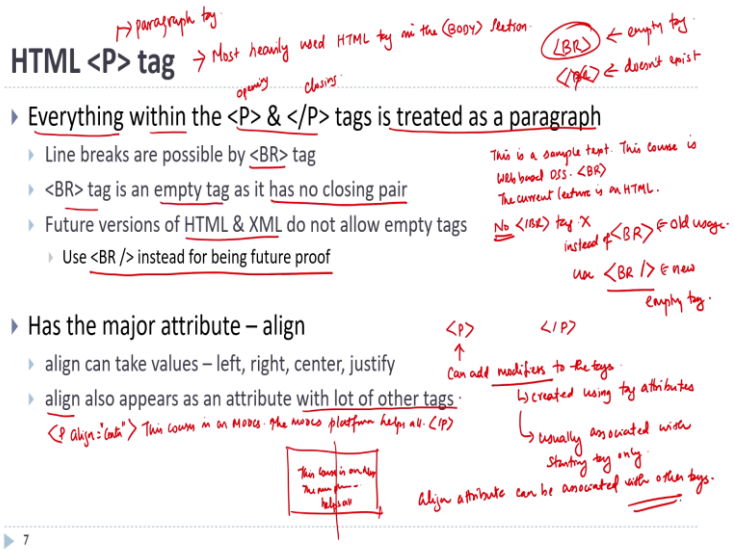

Now, since we said <P>, the paragraph tag, so, this is the paragraph tag. And, since we said that the paragraph tag is the most heavily used HTML tag in the <BODY> section. So, the rule of thumb is very simple.

- Everything whatever you type, everything, text, graph, it does not matter, within the< P> and </P>, So, <P>is the opening tag and </P> is the closing tag. It just takes us one paragraph.
- So, if you want to break a line, the line breaks are possible by the <BR> tag. In between you want a forceful line break then, the BR tag is important.
- And, BR tag is what you called as an empty tag as it has no closing pair. So, I am writing something like this.

This is a sample text. This course is web-based DSS.

And, let us say you want to leave one space and write it as,

The current lecture is on HTML.

Let us say you do not want this to go here. So then, you can put a <BR> tag here, which will force a line break. So, the <BR> tag will force this line break but there is no </BR> tag, remember, no <BR> tag, there is no, this tag is not there. So, it is a single tag. It is an orphan tag. So, <BR> tag is an empty tag, another name for it is an empty tag. So, whenever I say, I am working I am writing it as an empty tag, that means it has no closing pair. So, the actual usage is <BR> that is it. The </BR> does not exist.

- So, if that is the case, what we say is this tag becomes an empty tag because there is no closing pair, the future versions of HTML and XML do not allow these empty tags. So, one of the formatting changes that they have brought into this picture is, if there are no empty tags, so then, instead of writing <BR> like this, write like this-
. So, this is the notation of the empty tag. They are following this from HTML 5 onwards. So, <BR /> is the future proof one, <BR> is the old usage, it still works, this is the new usage, HTML 5 onwards.

Now, whenever you say a tag, you have a tag called <P> and the <P/>, I can add modifiers to the tags. So, I can modify these tags by adding modifiers. And, what are these modifiers? Created using tag attributes. So, we create this using the tag attribute. So, what is the tag attribute?

The tag attribute is a set of commands that you can build into the and it is usually associated with starting tag only. So, if I write something like this, so as an example, let us just take an example,

<P align= “center”> This course is an MOOCs. The MOOCs platform helps all. <P>

Now, in a white text, let us say if you look into this, it will align like this,

This course is an MOOCs. The MOOCs platform helps all.

So, depending upon what align you specify. So, align is a modifier to the P tag. And, align can also do it. So, by the way, a modifier or an attribute does not need to be stuck with one tag. So, the align attribute can be associated with other tags as well. It does not have to be the paragraph tag alone. It can be associated with a lot of other tags you can use this one to do other tags as well.

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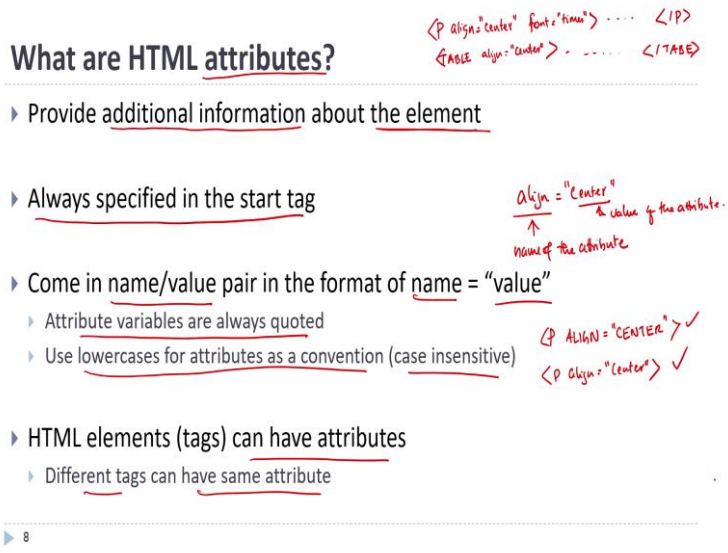

Now, what are HTML attributes? I just mentioned that these attributes are something that you can add to the tags. So, what is the simplest definition for them?

- It provides additional information about the element. Most important thing. It provides additional information about the particular element. So, how is it done? So, when I say <P align=”center” font=”times”

So then, these are two different attributes. One is the alignment attribute another is the font attributes. And, these attributes can also I can, instead of this one, I can also use the <TABLE> as another HTML tag, where I can use,

<TABLE> align=’center’>

So that the table will end completely in the center. So, that is what an attribute is. It provides additional information about the tag element. The most important rule is always specified in the start tag.

So, whatever you do in the <P> extra here then, the <P>, whatever you do in the <TABLE> then, you have, </TABLE>.

- So, the attributes always go in the start tag.
- They typically come in name value pairs. In the format name=”value”. So, when I say align=”center”. Align is the name of the attribute, and center, this is the value of the attribute. That is the name value pair as we mentioned.
- And, attribute variables are always quoted, so, you can say, think about single quote, double quote.
- I usually use double quotes because to maintain uniformity, use lowercase for attributes as a convention, this case insensitive. If you write something like this <P align=”center” and you do <P align=”center”>, both are correct, both forms can be used.
- And, you can have not just one attribute, they can have multiple attributes, a lot of attributes is possible.
- And, different tags can have the same attribute. It can be the paragraph type align attribute, the table tag as align attribute, the image tag as align attribute, the drop-down list can have that as an attribute. So, the attribute can be associated with the different elements or HTML tags.

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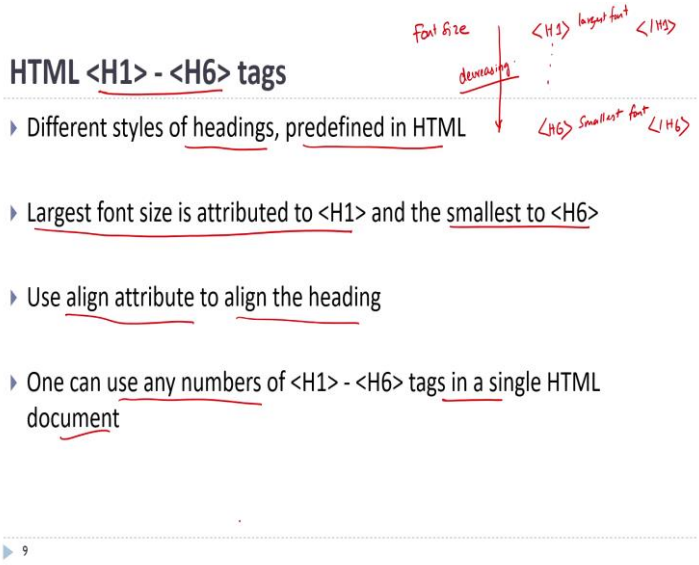

- And then, I talked to you guys about the <H1> - <H6>, the heading tags as part of this <H1> - <H6>. And, these are different styles of heading and they are predefined in HTML, it is already said, done. This is what it is going to be. It is already set up as part of this. So, that is the style of heading.
- And, the largest font size is attributed to <H1> and the smallest is to <H6>. So, you have <H1> to </H1>, and you have like this <H6>, </H6>. So, if we talk about font size, it is decreasing. So, the largest font will be with <H1>. And, the smallest font will be with the <H6>. That is the idea. And then, you can put the align attribute to align the heading, left right center, you can use the align attribute and there are no restrictions, you can use any number of <H>1 to <H6> tags in a single HTML document. There is no limit you cannot. Nobody says that you can use the <H1> tag only five times, so something like that. You can use <H1> tags, how many times you want the document. Yes, if you write everything in <H1> and it will look pretty ugly. That is one part of it. That is the usability question. But there is, from the Markup Language side, there is no upper limit of the number of the predefined heading tags. High number of times you can use any one of these tags, neither for <H1> nor for <H2>, <H3>, <H4>, <H5>, <H6>, any one of them, you can use any number of types.

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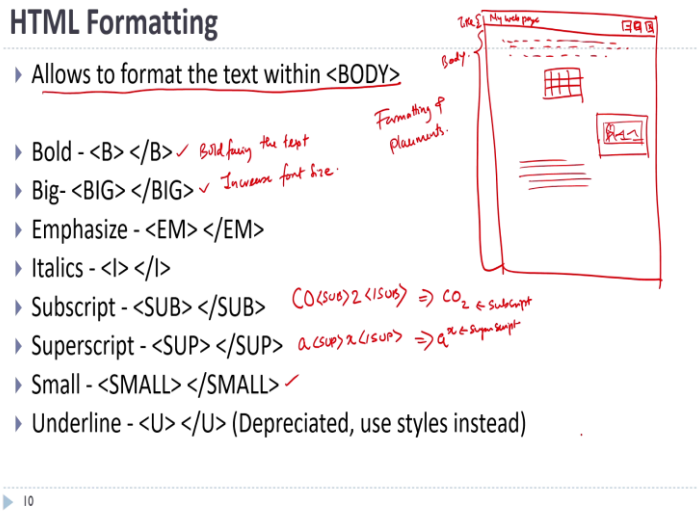

Now, comes the formatting tags. And what these tags are?

- They are allowed to format the text within the <BODY>. So, if you remember this, as we said earlier of a web page, this is our web page, and this is the title bar. And, the HTML the formatting tags allows you to see, however, you have a paragraph of text going like this. Then, you have a table here something like this. And then, you have a video aligned like this, some video going on. Then, you have more text here like this. So, all these formatting and placement, it is not just format, these are allowed within the body because this is the body what the user gets to see. So, you can do those kinds of things.
- And, some of the major ones are the bold tags (<B> </B>). So, this is bolding the text, bold facing the text. So, big as usual, make it in the bigger size, the next font size.
- So, <BIG> </BIG> helps to increase font size.
- Emphasis means basically like a strike. So, it is a different way of bold, some ways of emphasizing is bolding and underlining and stuff like that. So, <EM> </EM> emphasizes the text, this is again emphasizing text.
- The Italics <I> </I> tag is used.
- Subscript and Superscript is a sub and sup. So, if you want to write something like carbon dioxide, you will use CO ₂ then, it will show up as CO_2 like this. So, if I say, a ^x, it will show us, a^x. So, the superscript will increase.

- Then, <SMALL> </SMALL> will reduce the font size. It will bring the font size one down.
- And, the Underline <U> </U> is depreciated. So, when you have the text, you can underline them, it still works. It is an old tag at this point. But, yes, it is depreciated, you can use the styles sheet instead of this.

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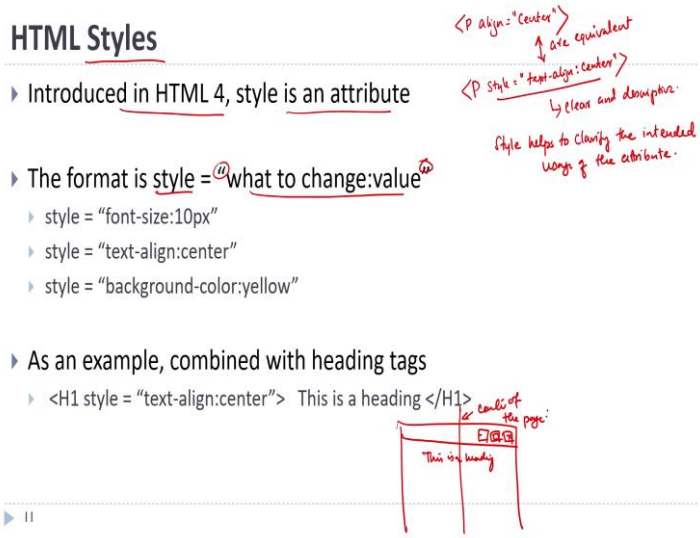

So, what is an HTML style? So, now since we mentioned you, styles. What is style?

- So, the style was introduced in HTML 4. Now, we are talking about HTML 5, HTML advanced 5.5, etcetera. And, style is an attribute. So, I can say that, <P align="center">, I can do something like this. What HTML format does it do? It created something like this, <P> style="text-aligned: center">, so, these are equivalent. The idea is, this is clearer and more descriptive. In this, when you read, it will tell you what you are aligning, whether it is text, whether it is table. So, the text align colon center means (okay, yes) I am going to use a style where I am going to align the text to the center. So, the clear and descriptive way of bringing the attribute. So, the style helps to clarify the intended usage of the attribute. What is the attribute trying to do, that is very clear or evident with the style one?
- So, the formatting style in column and within two double quotation marks, remember, what to change, what are you going to change and the value, what the intended value is going to say. So, if you say style="font-size: 10 pixels, which means the font size is what I am going to change and I have already changed 10 px, "text-align: center" means the text is going to be aligned and it is going to be put into the center, etcetera.

- So, when I say <H1 style = “text-align: center”>, this is a heading so this will show up in a web page somewhere like this, it will show up like this- This is a heading will be aligned at the center of the page, so, that is the style.

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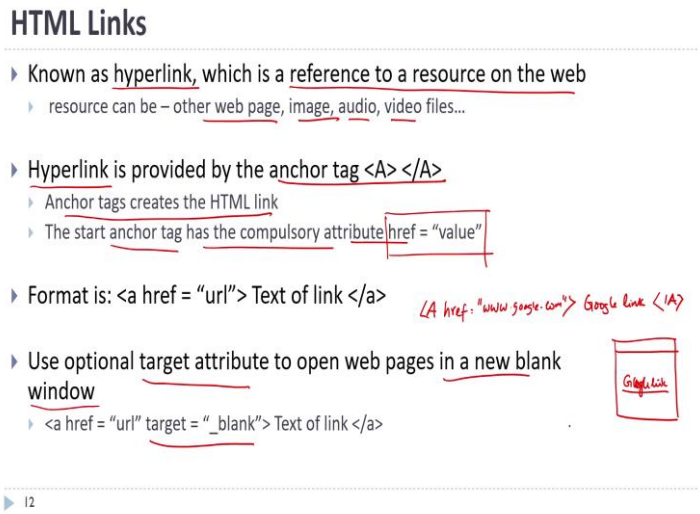

Then, comes this link. And, hypertext also means that you are linking from one page to another page to another page. So, you are hyper linking it. So, what does it do? What is the hyperlink?

- Hyperlink is a reference to a resource on the webpage. It is something that you are there is a link is created and it is tied to the current one. And, what can this resource be? What is the resource? It can be another webpage, it can be an image, it can be an audio, it can be video, it can be a small program, a cord that is embedded. All of these things are part of the resources on the web. So, the hypertext allows you to or the hyperlink allows you to link from one page to another page, or include image pictures, etcetera part of it.
- And, how is this hyperlink provided? It is provided by the anchor tag. The anchor tag <A> </A>, basically what it does, it creates an HTML link, the anchor tags creates the HTML link. And, there is a compulsory attribute in an anchor tag and this only goes to the anchor tag alone, nobody else, and that is called the href (hyper reference or hyperlink).
- So, if I say that something like this- <A href: www.google.com Google link</A>, if I do this. So then, what happens? This web page will be shown here. And, with that blue color and a small underline beneath it most of the time, and when you move the mouse over that, when you bring the mouse over that, the cursor will come Google Link that you can click that at that point.

- And, you can also add another tag to it, which is called as an optional target attribute, which says, if you set a target, that means you want it to be opened in a new window or a new tab. So then, you can use this as we want it to be opened in the new blank window or new tab that can be determined as part of this.

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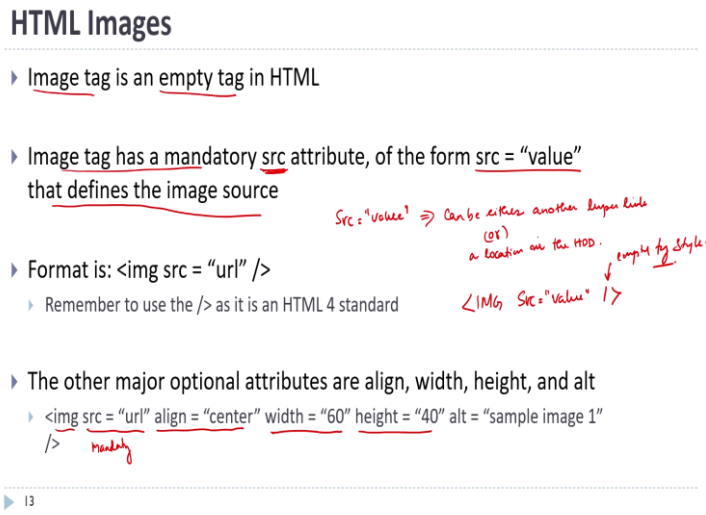

Now, comes the HTML images. So, let us see what happens in this.

- So, an image tag is an empty tag in HTML. Empty tag means it is a standalone tag, there is no pair for this.
- And, image tag has a mandatory attribute, it always has a mandatory attribute called the src (the source) attribute, which is in the form source equals value. So, what is the source? The source tells you where to look for the image. So, the source can be this one hyperlink or it can be a particular location. The src = "value", you can debate it as can be either another hyperlink or location in the hard drive, hard disc, hard disc drive. And again, it is an empty tag.

So, from the HTML 4 standard onwards, you have to have the <IMG src = "value" />. From the old school, you do not need to do that.

- So, here is an example of that image, so this is the <IMG> tag, and then, src, this is a mandatory. And align, where to how the image should be aligned, here is the width. So, the image should be shown in a particular width, height. And, the alt means it is an alternative reference. So, when you move the mouse over certain images, it will show

a small text in a box which contains something that is called the alternative text or alternate text.

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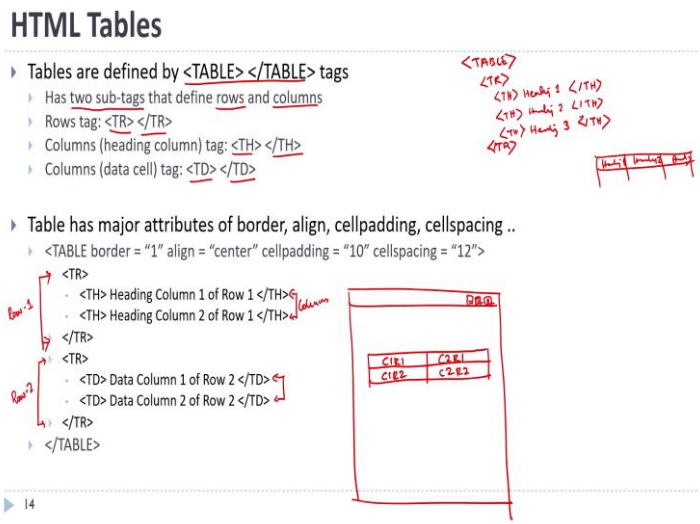

Then, comes the very important one which is called HTML tables.

- So, again, tables are defined by the <TABLE> </TABLE> tags as part of this. But the table tag also has two sub tags. This is the first time you see what is called a sub tag. So, that defines the rows and columns. And, the table rows are <TR> </TR>stands for a table row. And columns, if it is a heading column, you can use <TH> </TH>. And, if it is a data column, you can do <TD> </TD> (table data). So, you can ideally think about just <TR>, <TH> and <TD> as the three things but <TH> and <TD> are one, <TH> is only used for the heading columns.
- So, here is an example of a table. So, in the HTML web page, what do we talk about? This is a web page. HTML is reading the markup, markup, markup and at some point, of time, it says table border equal to 1, align equal to center, cellpadding is 10, cell spacing is something, so, what it does? It looks at and says how many rows are there? So, how do you count the rows? So, this is row 1 of the table, this is row 2. So, everything that is enclosed within the <TR> sub tag, so, it is two rows. So, HTML says, you asked me to draw a table with two rows and the border style of 1 aligned data center, so here is a table aligned at the center, the middle of it exactly. And now, this is the row.

Now, what does it do? It looks at how many columns per row. So, in row one, there are two <TH>. <TH> stands for the table heading. So, this means the columns. How many columns are there? So, there are two columns, so, it is a two column, two stuff. So, you break it like this. So, if I want to create a three-column table, four row three column table, I will be something like this,

<TABLE>

<TR>

<TH> Heading 1 </TH>

<TH> Heading 2 </TH>

<TH> Heading 3 </TH>

<TR>

So, what it says is the first row, so, this table will be drawn something like this Heading 1, Heading 2, Heading 3, like this.

So, whatever you see here, heading column 1 of row 1. So, this will actually C1R1 goes here, column 2 of row 2. So, this is C2R1 then, the other one is C1 R2, and this is C2 R2, like this. So, this is the order in which HTML table tags gets translated to a physical table in the webpage, as of now.

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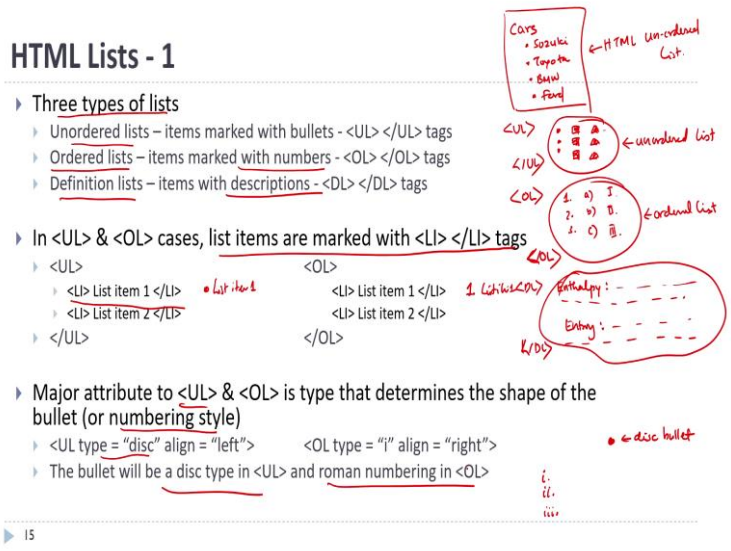

Now then, the other one is the list tags. So, if I say I have a car, and I want to put it as Suzuki, Toyota, BMW, Ford, etcetera. So, this whole structure that you just saw here is an HTML unordered list. Instead of this, if you put a number that is a numeric list, all those kinds of things. So, that kind of data display is called the HTML list.

- And, there are three types of lists in HTML,

1) Unordered list. So, these are the items that are marked with bullets. So, when you have the circular bullets, or square bullets, you have triangle bullets. So, all these are pretty much part of the (they are all part of) unordered list. That is what it is.
2) Then, the ordered list, the second one is an ordered list and items that are marked with the numbers. So, the unordered list is created by the <UL>, ,</UL> unordered list tag, if you have the things with order that will be numbered. So, you may have 1, 2, 3, etcetera or A, B, C, or you have I, II, III like roman numerals, these are all called an ordered list. And, the way HTML implements this pretty much is what you call as a <OL>, </OL> within this whatever you write is called as the ordered list, but the main thing is it is numbered.
3) Then, the last one is the definition list. So, you have a text with a definition along with it. So then, it is that tag with the definition, descriptions as part of it and it is created as, so something like this, if I create a definition list, so, it could be something like this enthalpy with the definition associated with it is written here. Then, you can say another one is entropy, that is written right here. So, this whole thing can become what we call <DL>, </DL>, definition list is part of this.

But, in the case of both <OL> and these guys, whatever these list items, these individual ones are marked with what we call as <LI>. List items are always marked with <LI> tags, only meant for <OL> and unordered list an ordered list. So, whatever you want to list them, you put them under this will be appearing as list item 1, this will appear as 1, list item 1 like this. So, that is what it is. So, one of the attributes of the <UL> and <OL>. Ordered list, the unordered list is that you can determine the shape of the bullet or you can determine the numbering.

So, if I say <UL> type equal to disc, so, disc means it will create something like this, the disc bullet. And, when you can say the order list you can define what is the numerical scheme that you want to use. So, if I said type I aligned right. So then, I will actually get to see I. So, this is the roman numerals, II, III kind of a thing. So, you can tell whether you can choose the disc

type in unordered or roman numbering in the ordered list, is something that is feasible as part of this.

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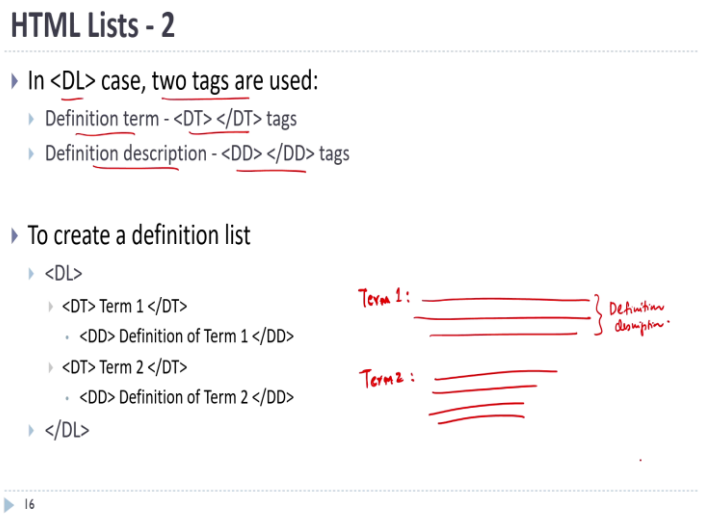

- The second part of the list, which is the <DL> (the definition list) as part of this, there are two tags that are used, <DT> (the definition term) is used, and <DD> (the definition description) tags are used. So, if I say that it will be shown here as term 1, but we will be involved and stuff like that, and then, the description whatever you type the description will go here. So, this is the definition description, so, same way. So, this and then, this is the term 2.

So, it will be something like this. Term 2 maybe, boldfaced or something depending upon how you are done. And, the definition of term 2 goes like this and depending upon what <DT>

<DD> pair determines the definition list. Unlike the ordered lists and unordered list, there is only one thing it is <LI> (the list item), whereas in case you have a definition term and definition description as part of this exercise.

So, with this today, what happens is we reach the first introduction part of the basic aspects of HTML. And, I request you guys to, as I already mentioned at the beginning of the class, W3 schools, I request you to go to the W3 schools wherever the hyperlink was provided.

Link for W3 Schools- https://www.w3schools.com/

And, look for an HTML tutorial, it actually gives you a very good online hands-on tutorial that you can. It is available for you for free, you do not have to pay anything, go out there and use it and make sure that you practice, you learn what are the different HTML markup tags, the orphan tags, the pair tags, the attributes, the modifiers, all these aspects you can do as part of this process.

So, the next one, there are so many more other things, but we are going to cut out all of those. And, we are going to move towards what we call the User Interface design (UI design), which is HTML forms as part of this, as part of the next lecture. And then, after that, we will move towards something else to show you how to use forms to collect data and store the data in the database. So, once we finish HTML, quickly, we will move to the intermediary application layer, where we will be using PHP. Thank you very much for your patient hearing. We will continue the remaining in the next class. Thank you.