

LECTURE 4

HTML - hypertext mark-up language

HTML is a standard hypertext language for the WWW and has several different versions. Most WWW browsers support HTML 2 and most of new versions of the browsers support HTML3. WWW pages are created and edited with a text editor, a word processor or, as is becoming more common, within the WWW browser.

HTML tags contain special formatting commands and are contained within a less than (<) and a greater than(>) symbol(which are also known as angled brackets). Most tags have an opening and closing version; for example, to highlight bold text the bold opening tag is (B) and the closing tag is (/B). Table 1 outlines a few examples.

Table 1

Open tag	Closing tag	Description
<HTML>	</HTML>	Start and end of HTML
<HEAD>	</HEAD>	Defines the HTML header
<BODY>	</BODY>	Defines the main body of the HTML
<TITLE>	</TITLE>	Defines the HTML header
<I>	</I>	Italic text
		Bold text
<U>	</U>	Underlined text
<BLINK>	</BLINK>	Make text blink
		Emphasise text
		Increase font size by one increment
		Reduce font size by one increment
<CENTER>	</CENTER>	Centre text
<H1>	</H1>	Section header, level 1
<H2>	</H2>	Section header, level 2
<H3>	</H3>	Section header, level 3
<P>	</P>	Create a new paragraph
 	</BR>	Create a line break
<!--	--!>	Comments

<TT>	</TT>	Teletype (monospaced font)
,	,	Ordered and unordered lists
		List
<SUPER>	</SUPER>	Superscript
_		Subscript

HTML script below (left table) gives an example script and right table shows output from the WWW browser. The first line is always <HTML> and the last line is </HTML>. After this line the HTML header is defined between <HEAD> and </HEAD>. The title of the window in this case is *My first HTML page* . The main HTML text is then defined between <BODY> and </BODY>.

<pre> <HTML> <HEAD> <TITLE> My HTML page </TITLE> </HEAD> <BODY> <H1> This is section 1</H1> This is the text for section 1 <H1> This is section 2</H1> This is the <i>text</i> for section 2 <H1> This is section 3</H3> This is the <u>text</u> for section 3 <p> This is the end of the text </BODY> </HTML> </pre>	
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The WWW browser fits text into the window size and does not interpret line breaks in the HTML source. To force a new line the
 (line break) or a new paragraph (<P>) is used. The example also shows bold, italic and underlined text.

Links

The topology of the WWW is set-up using links where pages link to other related pages. A reference takes the form:

`Reference Name`. See example.

Where *url* defines the URL (uniform resource locator) for the file, *Reference Name* is the name of the reference and `` defines the end of the reference name.

```
<HTML>
<HEAD>
<TITLE> My page </TITLE>
</HEAD>
<BODY BGCOLOR="#CCFFFF">
<H1> This is Tomsk polytechnic university site </H1>
If you want to access information about university<A HREF="http://tpu.ru/">click here</A>
</BODY>
</HTML>
```

Figure 2

HTML script above (Figure 2) shows an example of the uses of referenced and Figure 2 shows a sample browser page. The background colour is set using `<BODY BGCOLOR="#CCFFFF">` which sets the background colour to white. In this case the default text colour is black and the link is coloured blue.

Lists

HTML allows ordered and unordered lists, which can be declared anywhere in the body of the HTML file.

Ordered lists

To start of an ordered list is defined with `` and the end of the list by ``. Each part of the list is defined after the `` tag. Unordered lists are defined between the `` and `` tags. HTML script below (left table) gives examples of an ordered and an unordered list. Figure 3 shows the output from the browser.

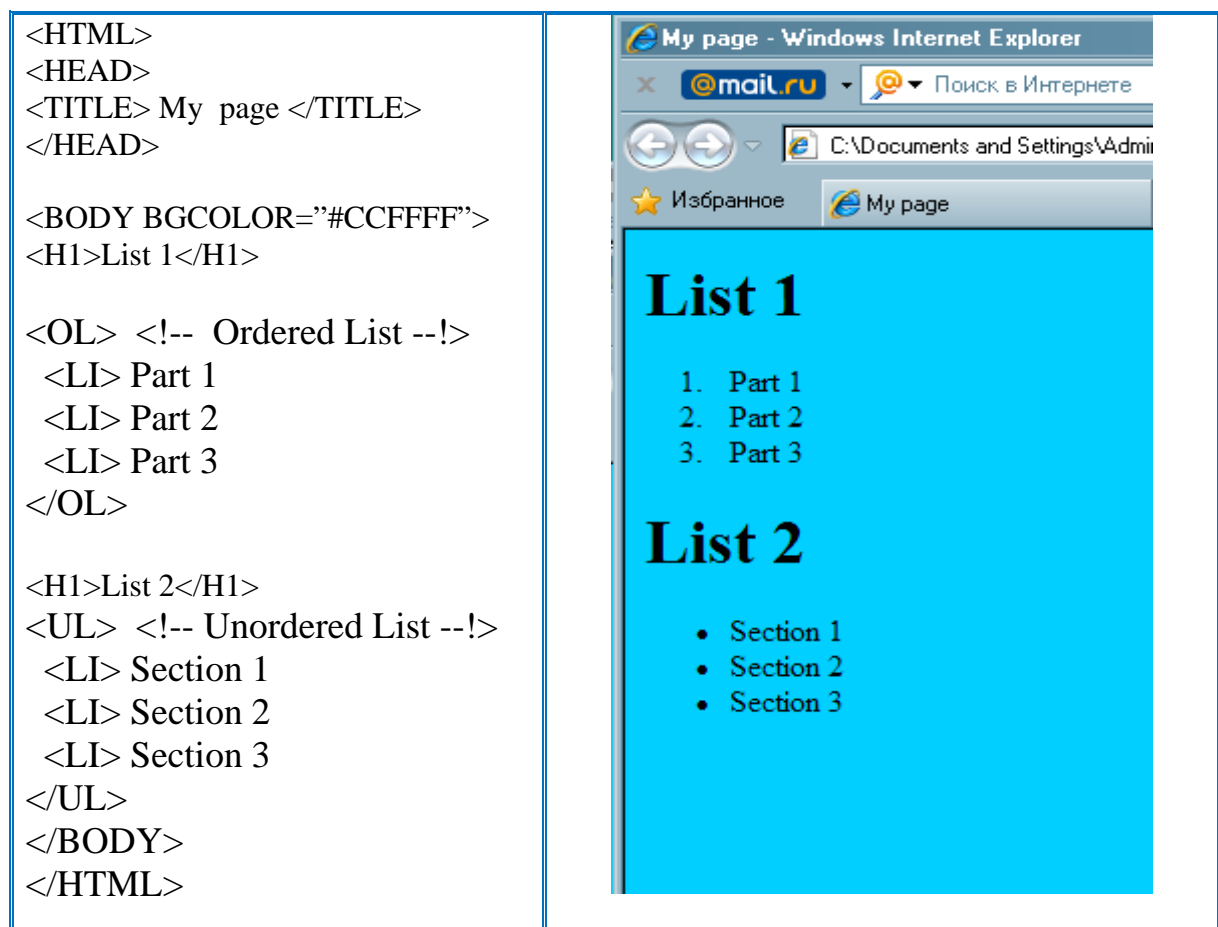
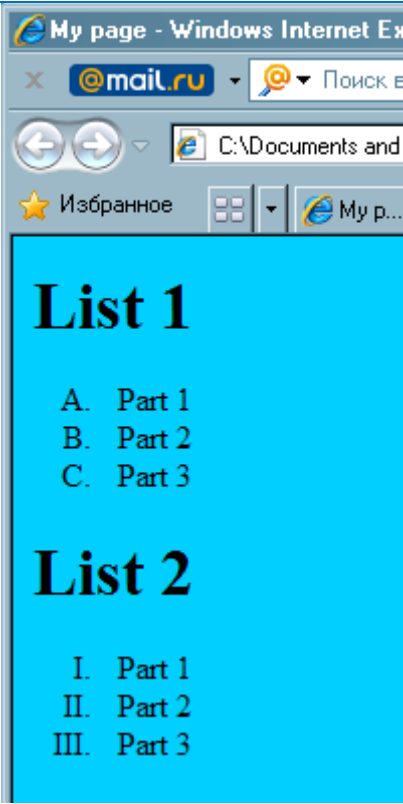


Figure 3

Some browsers allow the type of numbered list to be defined with `<OL TYPE =x>`, where X can either be:

- A for capital letters(such as A, B,C, and so on).
- a for small letters(such as a, b, c, and so on).
- I for capital roman letters(such as I, II, III, and so on).
- i for small letters(such as i, ii, iii, an so on).
- I for numbers(which is the default).

For example:

<pre><HTML> <HEAD> <TITLE> My page </TITLE> </HEAD> <BODY BGCOLOR="#CCFFFF"> <H1>List 1</H1> <OL TIPE=A> Part 1 Part 2 Part 3 <OL TIPE=I> Part 1 Part 2 Part 3 </BODY> </HTML></pre>	
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Unordered lists

Unordered lists are used to list a series of items in no particular order. They are defined between the `` and `` tags. Some browsers allow the type of bullet point to be defined with the `<LT TYPE = shape>`, where *shape* can either be :

- *Disc* for round solid bullets (which is the default for first level lists).
- *Round* for round hollow bullets(which is the default for second level lists).

- *Square* for square bullets(which is the default for third).

HTML script Figure 4 gives an example of an unnumbered list and Figure 4 (right table) shows the WWW page output for this script. It can be seen from this that the default bullets for level 1 lists are discs, for level 2 they are round and for level 3 they are square.

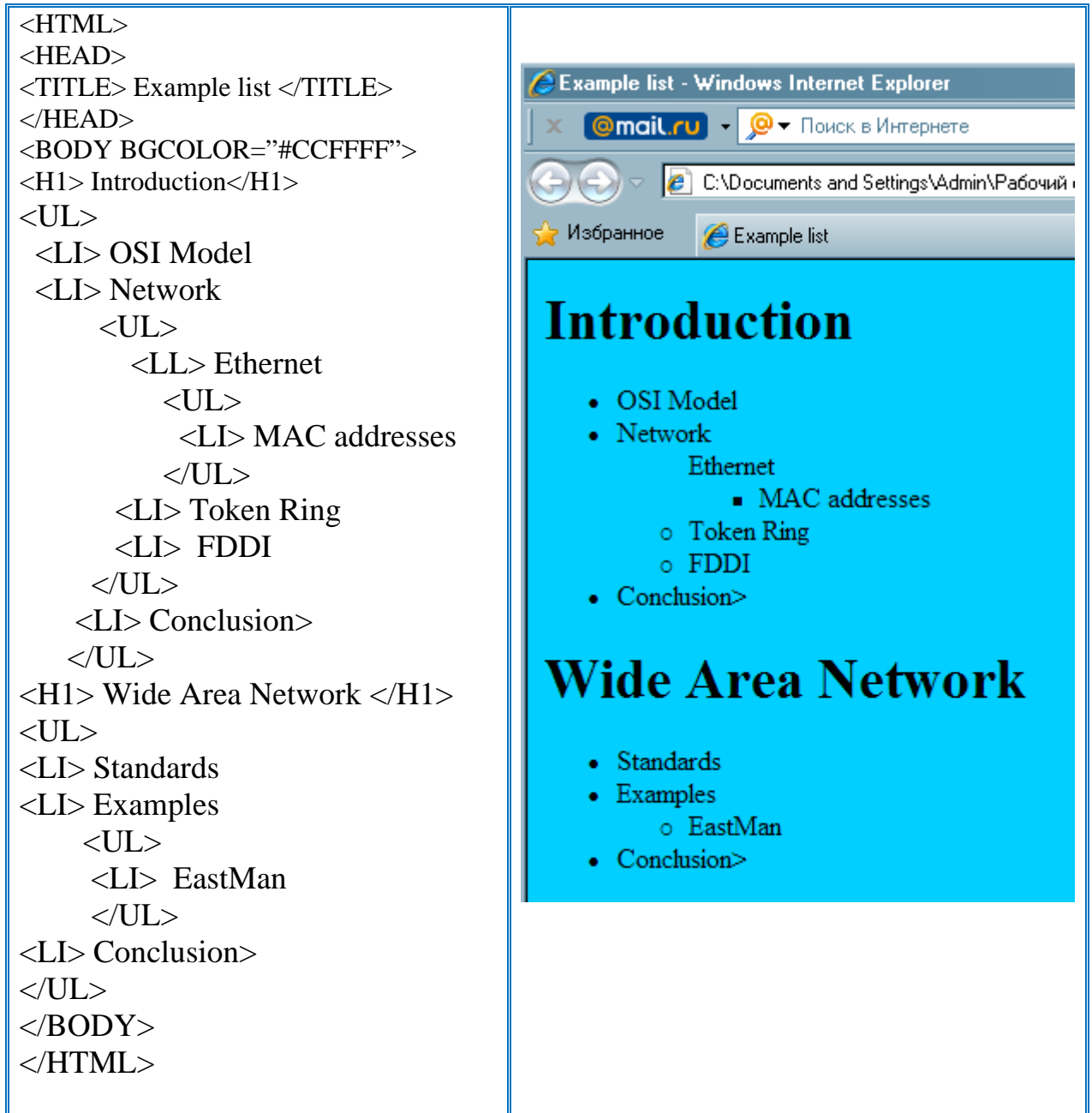


Figure 4

8.3.3 Definition lists

HTML uses the `<DL>` and `</DL>` tags for definition lists, which are normally used when building glossaries. Each entry in the definition is defined by the `<DT>` tag and the text associated with the item is defined after the `<DD>` tag. The end of the

list is defined by `</DL>`. HTML script Figure 5 shows an example with a definition list and Figure 5 (right table) gives a sample output. Note that it uses the `` tag to emphasise the definition subject.

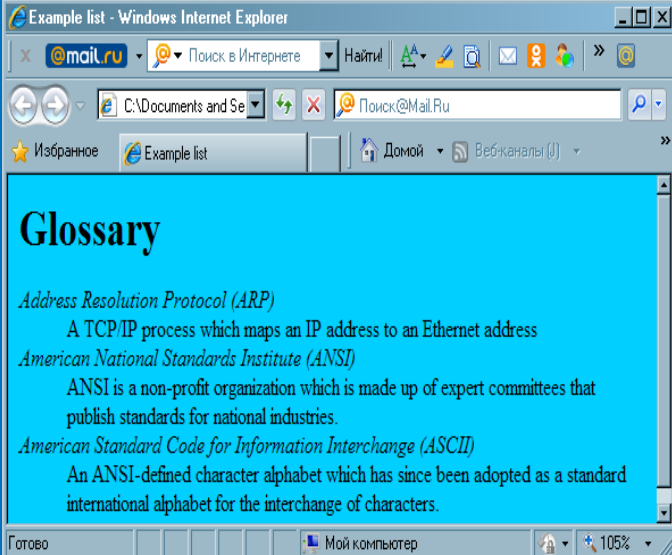
<pre> <HTML> <HEAD> <TITLE> Example list </TITLE> </HEAD> <BODY BGCOLOR="#CCFFFF"> <H1> Glossary </H1> <DL> <DT> Address Resolution Protocol (ARP) <DD>A TCP/IP process which maps an IP address to an Ethernet address <DT> American National Standards Institute (ANSI) <DD> ANSI is a non-profit organization which is made up of expert committees that publish standards for national industries. <DT> American Standard Code for Information Interchange (ASCII) <DD>An ANSI-defined character alphabet which has since been adopted as a standard international alphabet for the interchange of characters. </DL> </BODY> </HTML> </pre>	
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Figure 5

8.4 Colours

Colours in HTML are defined in the RGB (red/ green / blue) strength. The format is #rrggbb, where rr is the hexadecimal equivalent for the red component, gg the hexadecimal equivalent for the green component and bb the hexadecimal equivalent for the blue component. **Figure 6** lists some of the codes for certain colours.

Colour	Code
White	#FFFFFF
Light red	#DC640D
Yellow	#FCE503
Dark Green	#088343
Dark Blue	#0D3981
Pink	#F3D7E3
Dark grey	#777777
Light grey	#D4D4D4

Figure 6









Colour	Code	
Dark red	#C91F16	
Orange	#F1A60A	
Light Green	#BED20F	
Light Blue	#009DBE	
Purple	#3A0B59	
Nearly Black	#434343	
Grey	#A7A7A7	
Black	#000000	

Figure 6 (continuation)

Individual hexadecimal numbers use base 16 and range from 0 to F (in decimal this ranges from 0 to 15). A two-digit hexadecimal number ranges from 00 to FF (in decimal this ranges from 0 to 255). **Table 2** outlines hexadecimal equivalents.

HTML uses percentage strengths for the colours. For example, FF represents full strength (100%) and 00 represents no strength (0%). Thus, white is made from FF(red), FF(green) and FF(blue) and black is made from 00(red), 00(green) and 00(blue). Grey is made from equal weighting of each of the colours, such as 43, 43, 43, for dark grey (#434343) and D4, D4 and D4 for light grey (#D4D4D4). Thus, pure red will be #FF0000, pure green will be #00FF00 and pure blue will be #0000FF.

Each colour is represented by eight bits, thus the colour is defined by 24 bits. This gives a total of 16,777,216 colours (2^{24} different colours). Note that some video displays will not have enough memory to display 16.777 million colours in a certain mode so that colours may differ depending on the WWW browser and the graphic adapter.

The colours of the background, text and the link can be defined with the <BODY> tag. An example with a background colour of white, a text colour of orange and a link colour of dark red is:

```
<BODY BGCOLOR="#FFFFFF" TEXT="#F1A60A" LINK="#C91F16">
```

And for a background colour of red, a text colour of green and a link colour of blue:


```
<BODY BGCOLOR ="#FF0000" TEXT ="#00FF00" LINK="#0000FF">
```

When a link has been visited its colour changes. This colour itself can be changed with VLINK. For example, to set-up a visited link colour of yellow:

```
<BODY VLINK="#FCE503" TEXT ="#00FF00" LINK="#0000FF">
```

Note that the default link colours are:

```
Link:                #0000FF      (Blue)
Visited link:       #FF00FF      (Purple)
```

Table 2

Hex.	Dec.	Hex.	Dec.	Hex.	Dec.	Hex.	Dec.
0	0	1	1	2	2	3	3
4	4	5	5	6	6	7	7
8	8	9	9	A	10	B	11
C	12	D	13	E	14	F	15

8.5 Background images

Images (such as GIF and JPEG) can be used as a background to a WWW page. For this purpose the option BACKGROUND = "src.gif" is added to the <BODY> tag. An HTML script with a background of CLOUDS.GIF is given in HTML script

Figure 7. A sample output from a browser is shown in **Figure 7** (right table)

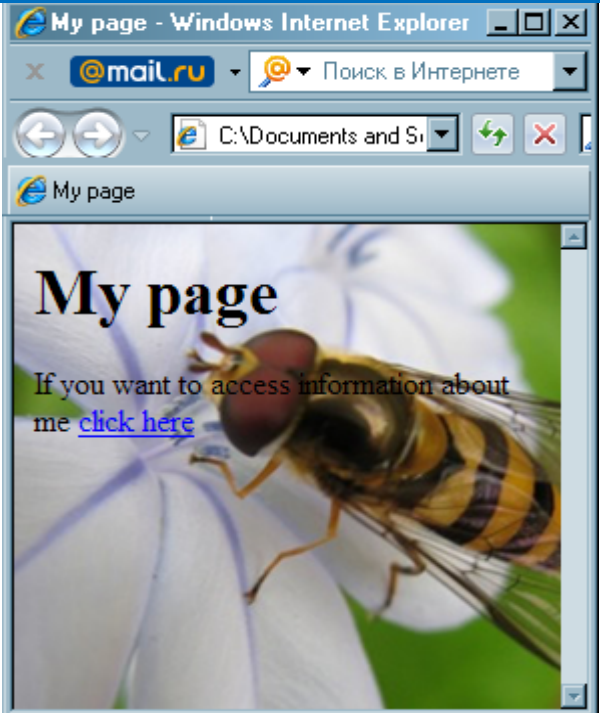
<pre><HTML> <HEAD> <TITLE> My page</TITLE> </HEAD> <BODY BACKGROUND="bee.jpg"> <H1> My page </H1> If you want to access information about me click here </BODY > </HTML></pre>	 <p>The screenshot shows a Windows Internet Explorer browser window titled "My page". The address bar shows "C:\Documents and Settings\...". The page content includes the text "My page" in a large font, followed by "If you want to access information about me" and a blue underlined link "click here". The background of the page is a close-up image of a bee on a white flower.</p>
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Figure 7

8.6 Displaying images

WWW pages can support graphics images within a page. The most common sources of images are either JPEG or GIF files, as these types of images normally have a high degree of compression. GIF images, as was previously mentioned, support only 256 colours from a pallet of 16.7 million colours, whereas JPEG supports more than 256 colours.

8.6.1. Inserting an image

Images can be displayed within a page with the `` which inserts the graphic *src.gif* . HTML script (**Figure 8**) contains three images : *bee.jpg*, *Lion.jpg* and *Fox.jpg* . These are aligned either to the left or the right using the ALIGN option within the `` tag. The first image (*bee.jpg*) is aligned to the right, while the second image (*Lion.jpg*) is aligned to the left. **Figure 8** shows output from the script. Note that images are left aligned by default.

```
<HTML>
<HEAD>
<TITLE> My page</TITLE>
</HEAD>
<BODY BGCOLOR="#ffffff">
<IMG SRC="bee.jpg" width=120 ALIGN=RIGHT>
<H1>Picture gallery</H1>
<P><P>
Here are a few pictures. To the right is a picture of bee.
Below to the left is a picture of lion and tiger and to the right
is a picture of fox
<P>
<IMG SRC="Lion.jpg" ALIGN=LEFT width=300>
<IMG SRC="Fox.jpg" AILIGN=RIGHT width=300>
</BODY>
</HTML>
```

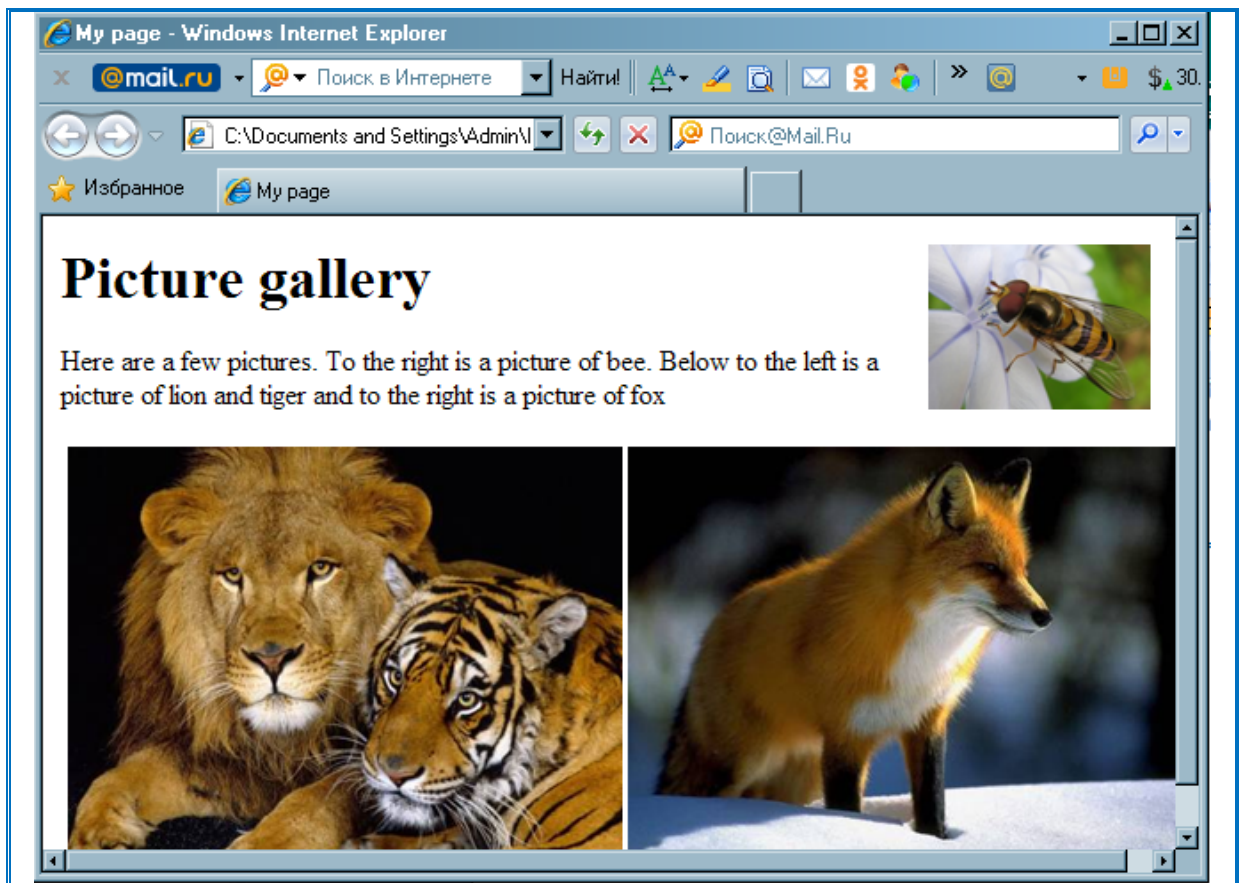


Figure 8

8.6.2 Alternative text

Often users choose not to view images in a page and select an option on the viewer which stops the viewer from displaying any graphic images (to give faster downloading of pages). If this is the case then the HTML page can contain substitute text which is shown instead of the image. For example:

```
<IMG SRC="bee.jpg" ALT=" bee" ALIGN=RIGHT >
<IMG SRC="Lion.jpg" ALT=" Lion" ALIGN=LEFT >
<IMG SRC="Fox.jpg" ALT=" Fox" AILIGN=RIGHT>
```

8.6.3 Other options

Other image options can be added, such as:

- `HDPAGE =x VSPAGE =y` defines the amount of space that should be left around images. The `x` value defines the number of pixels in the `x`-direction and the `y` value defines the number of pixels in the `y`- direction.

- WIDTH =x HEIGHT = y defines the scaling in the x- and y=direction, where x and y are the desired pixel width and height, respectively, of the image.
- ALIGH = *direction* defines the alignment of the image. This can be used to align an image with text. Valid options for aligning with text are *texttop*, *top*, *middle*, *absmiddle*, *bottom*, *baseline* or *absbottom*. HTML script **Figure 9** shows an example of image alignment with the image `a.gif` (which is just the letter 'A' as a graphic) and **Figure 9**(right table) shows a sample output. It can be seen that *texttop* aligns the image with highest part of the text of the line,*top* aligns the image with the highest element in the line, *middle* aligns with the middle of the image with the baseline, *absmiddle* aligns the middle of the image with the middle of the largest item, *bottom* aligns the bottom of the image with the bottom of the text and *absbottom* aligns the bottom of the image with the bottom of the largest item.

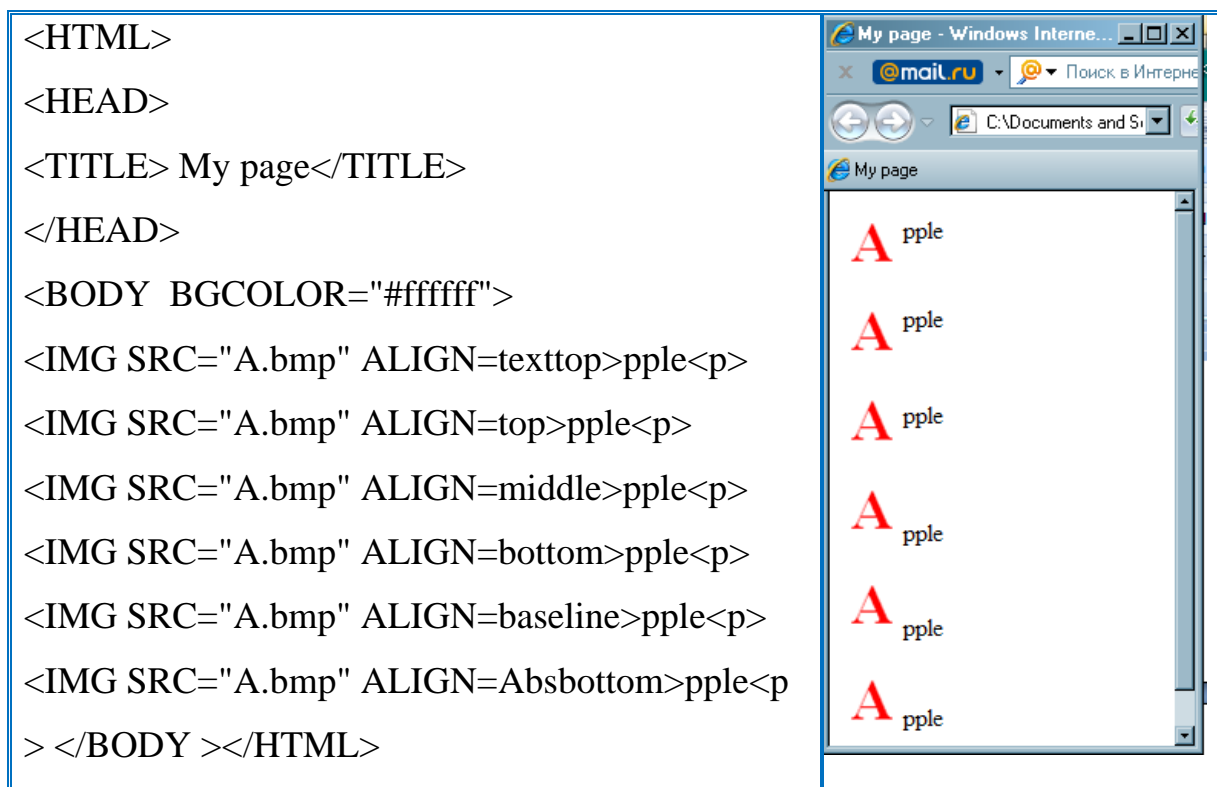


Figure 9

8.7 Horizontal lines

A horizontal line can be added with the <HR> tag. Most browsers allow extra parameters, such as:

SIZE =n – which defines that the height of the rule is n pixels.

WIDTH = w – which defines that the width of the rule in w pixels or as a percentage.

ALIGN = direction – where direction refers to the alignment of the rule. Valid options for direction are *left*, *right* or *center*.

NONSHADE – which defines that the line should be solid with no shading.

HTML script **Figure 10** gives some example horizontal lines and **Figure 10**(right table) shows an example output.

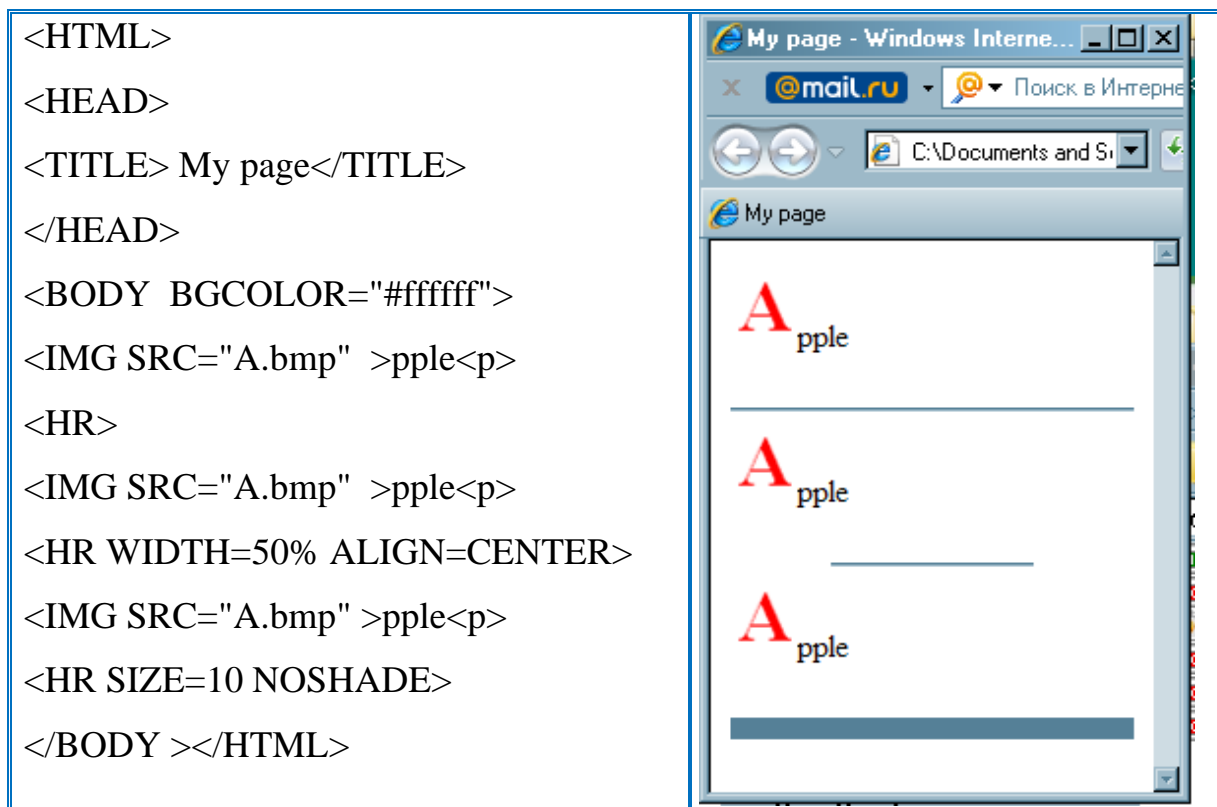


Figure 10