Web technologies

Lecture

Lecturer: fiona P. Coutinho

Refer blackbook by kogent solutions

COMP7.4.4 WEB TECHNOLOGY

Sessional marks:25

Theory marks:100

TOPICS

- **OSI MODEL**
- **TCP/IP MODEL**
- **HISTORY OF THE WEB**
- **WEB ARCHITECTURE**

HISTORY OF THE WEB

DEFINE INTERNET?

NETWORK OF NETWORKS

ARPA-ADVANCED RESEARCH PROJECTS AGENCY

1969 IN U.S.(RESEARCH PC UNIVERSITY)

1989 WWW –TIM BERNERS-LEE SWITZERLAND

WEB ARCHITECTURE

WWW-EXCHANGE
MULTIMEDIA(VIDEO,AUDIO,TEXT,GRAPHICS)

1.WEB SERVERS-SPECIAL COMPUTER DISTANCE PURPOSE DELIEVERING CONTENT

2.WEB CLIENT-PC OR MOBILE ACCESSS SERVER VIA BROWSER

3-TIER WEB ARCHITECTURE

CLIENT SERVER ARCHITECTURE

3 TIER ARCHITECTURE:

1. PRESENTATION OR CLIENT TIER: DISPLAYS INFO .INTERACTS WITH OTHER TIERS
2. APPLICATION:MIDDLE TIER CONTROLS THE APP FUNCTIONALITY BY DETAILED PROCESSING
3. DATA TIER:DATABASE SERVERS FOR STORAGE/RETRIEVAL

3-TIER WEB ARCHITECTURE

Client tier(web browser)

||

middle tier(application tier)

||

database tier(database server)

Examples of 3 –tier architecture

- MakeMyTrip.com
- Indian Railways – IRCTC
- Amazon.com, etc.

WEB ARCHITECTURE

1-TIER ARCHITECTURE?

Presentation layer, Business logic layer, and data layer are all located on a single machine.

2-TIER ARCHITECTURE? There is no Business logic layer in between client and server.

WEB BROWSER

SOFTWARE ACCESS AND NAVIGATE WWW

2 TYPES :

1.GRAPHICAL(MOZILLA,EXPLORER,CHROME EXCHANGE AUDIO,VIDEO,TEXT,IMAGES) AND

2.TEXT(LYNX)

URL/DNS

URL-HAS INTERNET ADDRESS OF STORED FILE ON PC ON THE NET

DOMAIN NAME SYSTEM(DNS) WORLD WIDE SYSTEM OF SERVERS THAT MAP URL WITH IP ADDRESS(NUMERIC ADDRESS DIFFICULT REMEMBER)

ONCE TRANSLATION IS MADE BY DNS BROWSER CONTACTS WEB SERVER AND REQUEST FOR A RESOURCE

URL/DNS

URL STRUCTURE: eg.
http://www.pccegoa.edu.in/index.html

PROTOCOL:HTTP

HOST COMPUTER NAME:WWW

SECOND LEVEL DOMAIN NAME: PCCEGOA

TOP-LEVEL DOMAIN(TLD) NAME: EDU

FILE NAME: INDEX.HTML

COMMONLY USED TLDS(.com,.edu,.net,.org)

URL/DNS

.com: commercial

.edu-colleges,etc

.net: networking org like ISP/back-bone providers

.org-miscellaneous org like non-profit groups(ngo's,etc)

Country domain list:in,ch,jp,uk,ca....

ICANN(INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS)

biz,.museum/info/pro/name,coop,aero

NEXT CLASS

- HTTP
- EXPLORING WEB TECHNOLOGIES

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- EXPLORING WEB TECHNOLOGIES

HTTP

Hypertext transfer protocol –server and client exchange data

- browser wants doc on web .
- it send req to server through dns .
- server listens to browser and executes req.
- server not just returns resource to the browser but also tells it about doc type(pdf,html) so that browser can display it
- req/response issued in a language called http

HTTP

1. **GET** method is used to retrieve information from the given server using a given URI. Ex.date,servername,last-modified,content-length,content-type,connection status(open,closed),etc

2.**HEAD** fetch header information only Ex. Useragent (browser) ,language ,encoding,etc

3.**POST** send data to the server, for example, customer information, file upload, etc. using HTML forms.

4.**PUT** request the server to store the included entity-body at a location specified by the given URL.

5.**DELETE** request the server to delete a file at a location specified by the given URL

HTTP Req/Response

HTTP Request:

GET/request-URI HTTP/Version

HTTP Response:

HTTP/1.0 200 OK ---200 means req successful

Server:Netscape communication/1.1 -server details

Date:Tuesday 13th august 2020 10:44:54 GMT –current date

Last-modified: Wednesday , 07-August-2020 10:44:54 GMT

Content-length:6344 -bytes

Content-type:text/html –html file,image/gif for GIF,text/plain for text file

<!DOCTYPE HTML>

<HTML>…….Document content comes here

EXPLORING WEB TECHNOLOGIES

WT is mechanism to **save,filter,secure and display** info to user over the WWW.

Select it based on purpose and mode of deployment

1. HTML
2. XML
3. ASP.NET
4. Java
5. PHP
6. AJAX

EXPLORING WEB TECHNOLOGIES

1.HTML(hyper text markup language) is language to create web pages

-understood by browser

-not case sensitive

-html editors work with html as well as css,xml and javascript .Eg. Adobe dreamweaver,visual web developer,frontpage,etc.

EXPLORING WEB TECHNOLOGIES

2.XML : eXtensible markup language

Store data In structured format

Used in B2B ecommerce model(trading partners)

Advantages:

- Readable
- Any app can use it
- Extendable

EXPLORING WEB TECHNOLOGIES

3.ASP.NET
Active server pages is MS technology to build websites
Needs .Net framework to excecute it

Features of ASP.NET 3.5(released with VS2008)

- Ajax support
- listview control
- datapager control
- WCF services
- nested master pages support at design time
- MS office app support
- javascript debugging

EXPLORING WEB TECHNOLOGIES

4.Java :1995 by james Gosling similar to C++

Imp components of java are JSP and Servlets

MVC solved maintenance problems

-use JDBC (java database connectivity) connect database to web app

EXPLORING WEB TECHNOLOGIES

5.AJAX(Asynchronous javascript and xml)

Interactive web apps

Jesse james garrett founded AJAX

XMLHttpRequest is object that interacts with server

Entire page not referenshed

EXPLORING WEB TECHNOLOGIES

6.PHP

- Server side scripting language
- Free

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- **EXPLORING WEB TECHNOLOGIES**
- Cookies
- Web services
- IIS

Cookies

-piece of text web servers stores on users hard disk

-name/value pairs

-Google Chrome stores all cookies in a single file called *Cookies*. The file is located at the following path: "**C:\Users\Your User Name\AppData\Local\Google\Chrome\User Data\Default**."

Introduction to Web Services

- Application service providers offer this
- These services interact with other services using middleware
- XML is foundation of WSDL(web service description language)
- Web site used by humans but webservice used by another program via web(using service port)

IIS

- About IIS
- Services Supported by IIS 7

About IIS

Internet information Services help n/w admin to create, manage and control access to website

Services:

- ASP.NET service
- WWW services: used by http to allow users publish content on web
- FTP publishing services: upload/download files and distribute on internet
- SMTP service(simple mail transfer protocol) : Transport email through internet .POP3 receives mails
- NNTP service(Network news transfer protocol) –transfer USENET news from one server to another

Note: Usenet is a collection of user-submitted notes or messages on various subjects that are posted to servers on a worldwide network

IIS

- Installation of IIS 7
- Administer Web Server Remotely
- Creating Web Sites

Installation of IIS 7

IIS7 is set of internet based services for servers created by MS for windows.

Steps install IIS7 on windows server 2008

-click start->server manager->roles option (roles summary display all roles)->click add roles(wizard appears)->click next->select server roles -> **select checkbox web server IIS-**>click next->Read IIS intructions and click next->select role services **"sayASP.NET under app development"**->Add roles wizard appears ->click add required role services->ASP.NET feature is now added to web server role services->click next->confirm selection page appears->click install button

How to check if webserver is installed?

-open browser

Type http://localhost/ in address bar

Default web server(IIs) "welcome page is displayed"-This confirms that server is installed

Administer Web Server Remotely

- Users and Admins can manage web server in windows vista and windows 2008

A.Installation of IIS7 management services :these allow turning on, of remote services

Steps:

1.Click start button-> click server manager option->click role option ->role page appears go down to IIS role services->click add role services hyperlink->wizard appears -> expand management tools from roles services-> **select management service checkbox** ->click next->confirm selection->click install

Administer Web Server Remotely

B.Configuration of web server management services

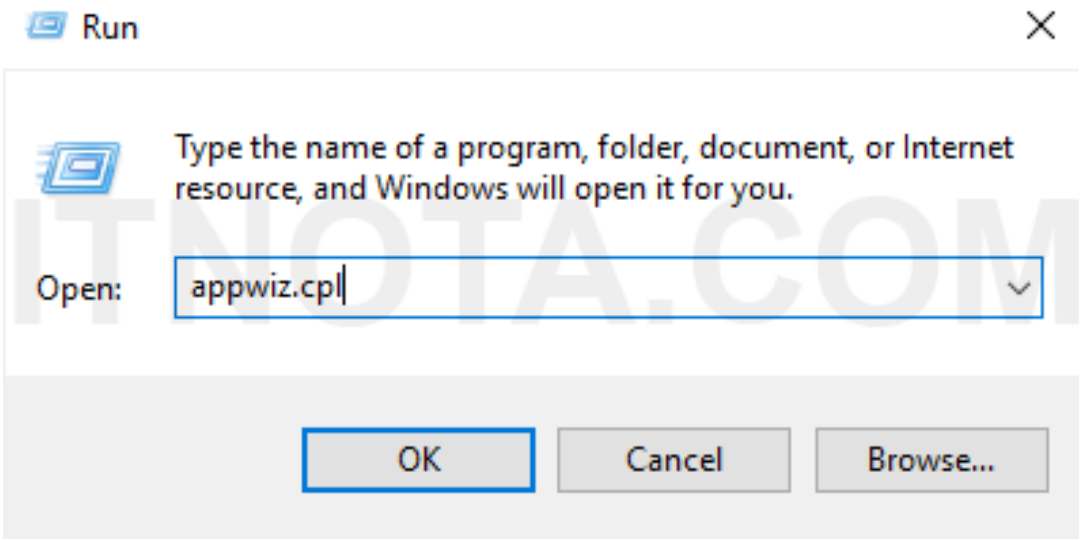
Start-> all programs-> click admin tools from program list-> select IIS manager->select connect to local host(home page opens)-> double click management services ->select checkbox for **enable remote connections** -> say yes to pop up that ask to save changes

Creating Web Sites

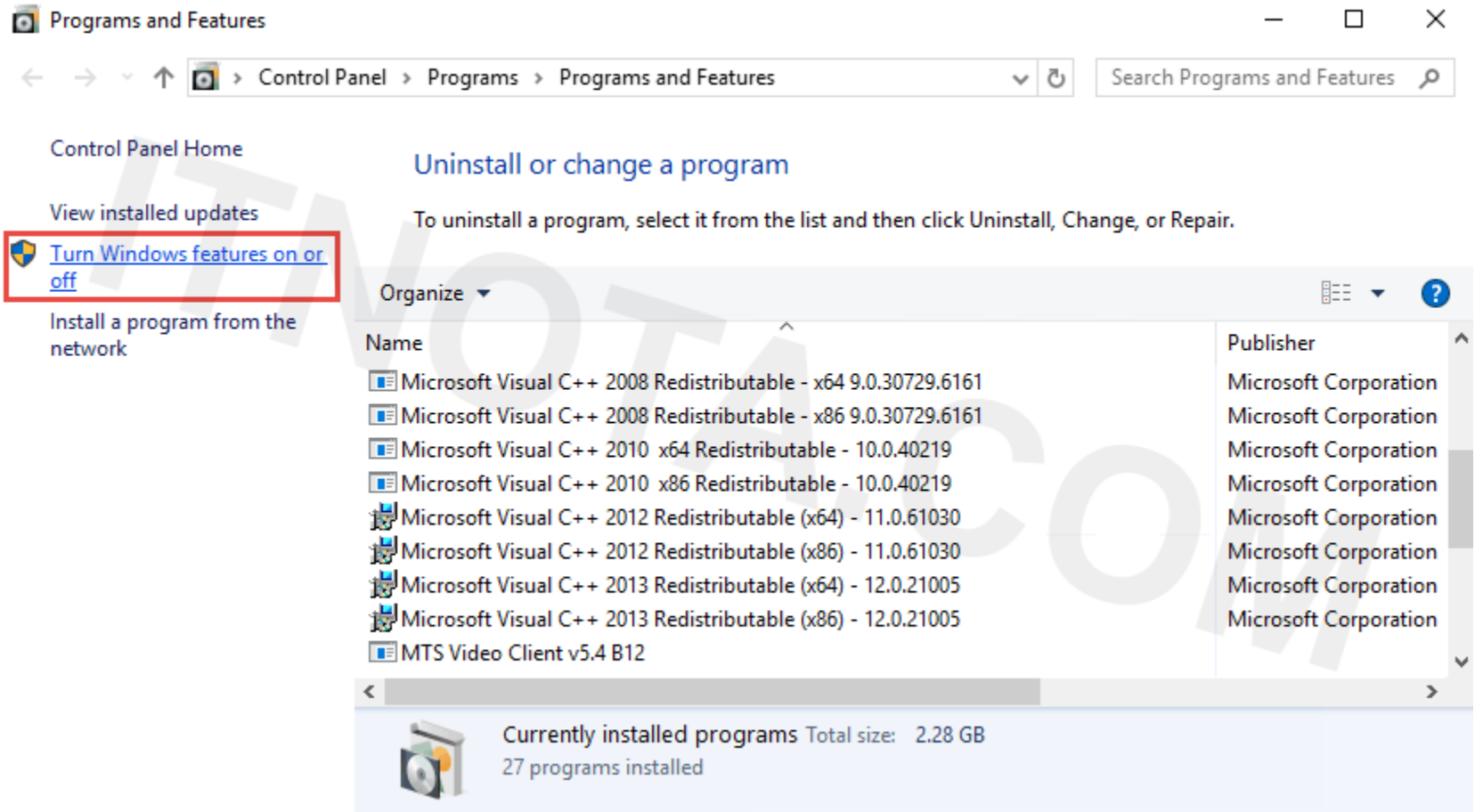
Click start->all programs->admin tools->select IIS ->expand home page-> click sites option from home page->by default the default site link opens->right click in this pane and click add website option -> enter site name eg. www.swirl.com->type location for web site below the physical path eg. %systemdrive%\inetpub\wwwroot ->enter host name eg. www.abil.com->click ok->web site you created is added to the sites page

Now you can edit,delete,rename site or stop/restart/browse/configure website

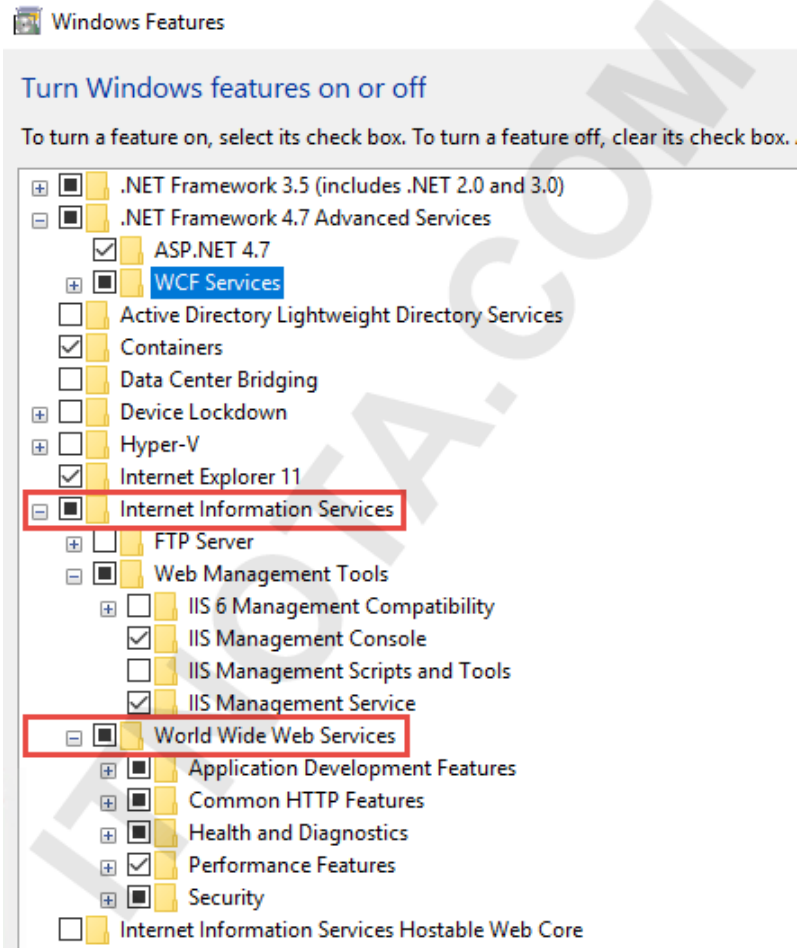
IIS in Windows 10



IIS in Windows 10



IIS in Windows 10

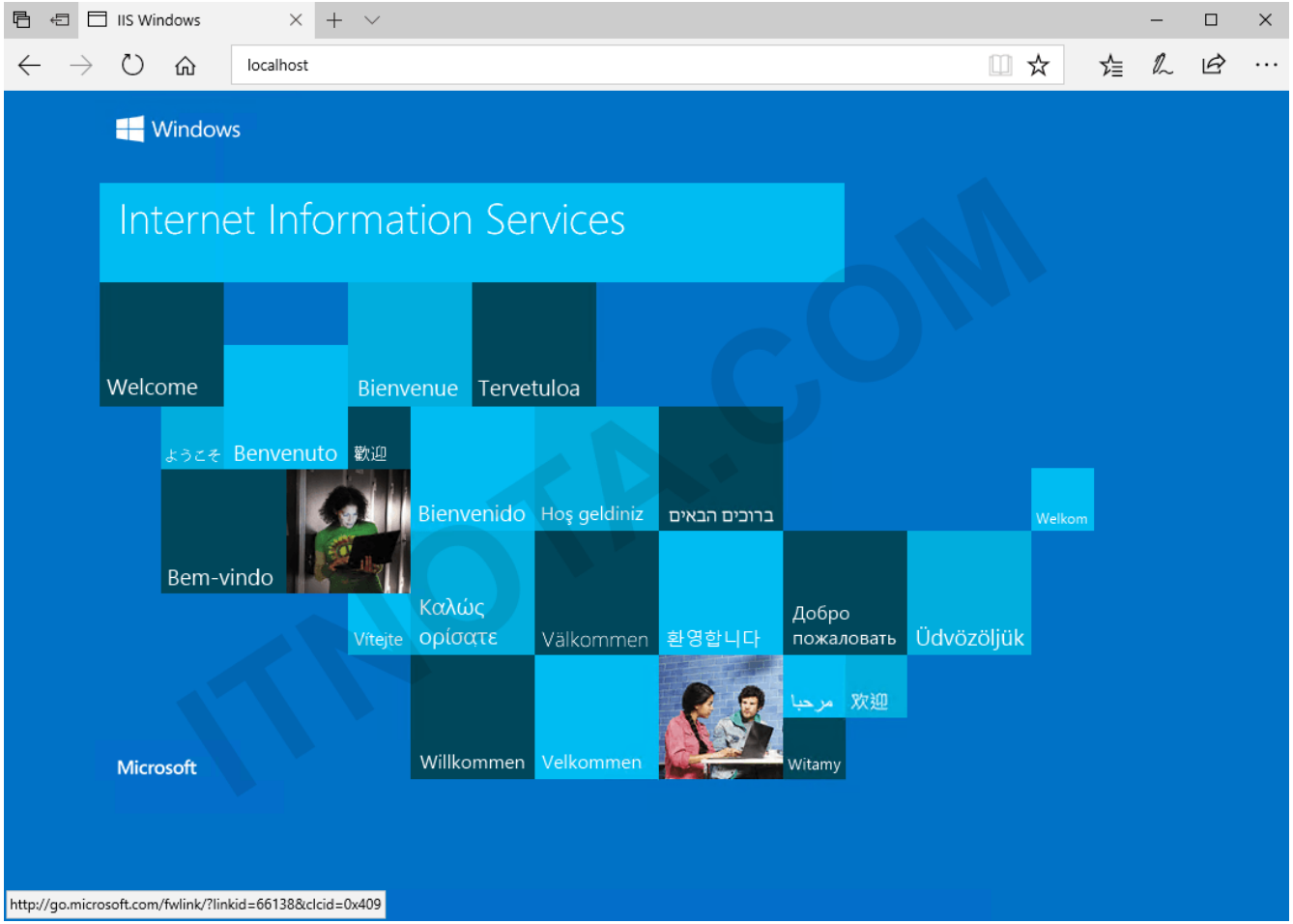


IIS in Windows 10

Now open your browser and type in **localhost** and press **ENTER**. You should see a default web page is rendered in your browser.

default website directory will be in **C:\Inetpub\wwwroot** folder.

IIS in Windows 10



Creating Web Sites

Apache tomcat server –deploy and run java based applications

-free of cost

-download it from http://tomcat.apache.org/download-60.cgi and install it

-while installing enter port no. for app to communicate with server(default its 8080)-

-type usename and pwd

-Finally apache is configured

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- **WEB ARCHITECTURE**
- **HTTP**
- **EXPLORING WEB TECHNOLOGIES**
- **Cookies**
- **Web services**
- **IIS**
- **Basics of HTML**

HTML

- HTML written in form of tags which is <>
- Text in between <> defines html element
- **p** (paragraph) element has a ** tag**, followed by the paragraph text, followed by a closing **tag**
- Element has 2 properties: attributes and content

Eg. <body bgcolor="blue"> Hello </body>

- Html tag ,elements and attributes collectively called **html markup**

HTML

Introducing HTML Document structure:

<!DOCTYPE html …….>

<html>

<head><!- - has info about web page-- >

<title>

Title of web page

</title>

</head>

<body>

Contents of web page(table,frame,image,link,headings,paragraph,form controls like textbox,checkbox,radiobutton,dropdown,comment box,label,button)

</body>

</html>

HTML

<!DOCTYPE> element -first element in html doc

- Specifies DTD used to verify contents of doc with the rules set (eg. Valid elements/attributes)
- The Doctype is not an element or tag, it lets the browser know about the version of or standard of HTML or any other markup language that is being used in the document.
- No closing tag

Html 4.01 has 3 types DTDs:

1. Strict DTD: includes all elements and attributes not been deprecated.Used with CSS
2. Transitional DTD: includes all elements and attributes deprecated and included in strict DTD.used for browsers who don't support CSS
3. Frameset DTD: includes frames in addition to elements and attributes in transitional DTD.used with documents with frames

HTML

Example:

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN“ “ http:// www.w3.org /TR/html4 / strict.dtd">

In HTML 5.0 its:

< !DOCTYPE html > as its not Standard Generalized Markup Language(SGML) based

HTML

<html> element has following attributes:

- Class: used to render content(Styling)
- Dir: direction of text (ltr/rtr)
- Id-unique alphanumeric id for element
- Lang : base language of element(English)
- Version: version of language(deprecated)
- Xmlns: namespace for custom tags in a html document

HTML

<head> element has following attributes:

- Class
- Dir
- Id
- Lang
- Style: apply styling
- Title: title of web page

HTML

- Profile: provide more information for the browser to understand the specified meta-information .The purpose to specify the URI to a file or a white space separated list of URIs of meta data (i.e. information about the webpage).

<head profile =“https://www.W3resource.com/profiles .html”>

<meta **http-equiv**="Content-Type" **content**="text/html; charset=iso-8859-1">

<title>html profile attribute example</title>

<link rel='stylesheet' href='test.css' type='text/css'>

</head>

HTML

```
<head>
  <meta charset="UTF-8">
  <meta name="description" content="Free Web tutorials">
  <meta name="keywords" content="HTML, CSS, JavaScript">
  <meta name="author" content="John Doe">
  </head>
```

HTML

<head> element can have the following elements:

1. <base **href**="https://www.w3schools.com/" **target**="_blank" >- Specify a default URL and a default target for all links on a page
2. <basefront>- used in HTML 4 to specify a default text-color, font-size or font-family for all the text in an HTML document.
3. <bgsound>- play a soundtrack in the background(This tag is for Internet Explorer only.)
4. <isindex>- also an **empty element** and is optional to use
5. <link> used for external styling
6. <meta>- information about header
7. <nextid>- designates a **unique identifier for your document** that is generally used by automated HTML editors(obsolete)
8. <script> javascript
9. <noscript> -defines an alternate content to be displayed to users that have disabled scripts in their browser or have a browser that doesn't support script.
10. <style> internal styling
11. <title> title of web page

HTML:target attribute

Value	Description
_blank	Opens the linked document in a new window or tab
_self	Opens the linked document in the same frame as it was clicked (this is default)
_parent	Opens the linked document in the parent frame
_top	Opens the linked document in the full body of the window

HTML

<title> element can have the following attributes:

- Class
- Id
- Lang
- Style

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HTML

<body> element can have the following attributes:
Background-url of file used as background of browser(deprecated)
Bgcolor-background color of browser
Bgproperties-if set to ‘fixed’ background will not scroll when text scrolls
Language-scripting language used for element
Leftmargin/ rightmargin(pixels)
Marginheight-height of top/bottom margin
Marginwidth-width of left/right margin
Scroll-specifies if vertival scrollbar appears on right of doc
Text-color of text in doc
Title-additional info for element like tooltip
Topmargin-specifies top margin in pixels

- Class
- Id
- Lang
- Style
- Dir
- Alink,vlink, link,

HTML

Creating Headings on a web page:<h1>..<h6>

Aligning the headings:
align=center,left,right,justify

HTML

```
<!DOCTYPE html>
<html>
<head>
    <title>Headings Example</title>
</head>
<body>

<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>

</body>
</html>
```

Output

HTML

- creating links
- creating a paragraph
- working with images

HTML

Working with Links:

Create hyperlink:

clickme

For changing Colors of link use the below attribute of body tag :

Link=“green”-color of unvisited links

Vlink-color of visited link

Alink-color of currently active link

HTML

Working with Links:

Link different sections of webpage:

bottom

<hr>

This is the bottom of the page

HTML

creating a paragraph:

……

HTML

- working with images:

1. Ex1

<img src="c:\crane.jpg" alt="no image" border="7" align="right">

</img>

2. Ex2:

<img src="c:\crane.jpg" alt="no image" border="7" align="right">

</img>

HTML

- working with images: create image maps

Links multiple web pages to single image using image maps