Web Design

كلية التربية للعلوم الصرفة/ ابن الهيثم
المرحلة الرابعة
قسم علوم الحاسبات

The Internet

The Internet or "the network of networks" is a public network that connects computers and computer networks around the world through a common protocol (IP).

All connected computers and networks mutually exchange information and use various services. Hence, the Internet is not solely the WWW, or pages and content available from a browser. In fact, the WWW is just one of the services that the Internet offers to its users although it is the most commonly used service.

Other available services:

- File transfer - the file transfer from one computer to another.

- E-mail (electronic mail) – it is the oldest Internet service, and it enables the exchange of digital messages between two or more people.

- Instant messaging (IM) – it enables the exchange of electronic messages between two or more people in real time. Such as chat rooms (MSN, Skype, etc.) that also support nowadays video/ audio/ photo communication exchange.

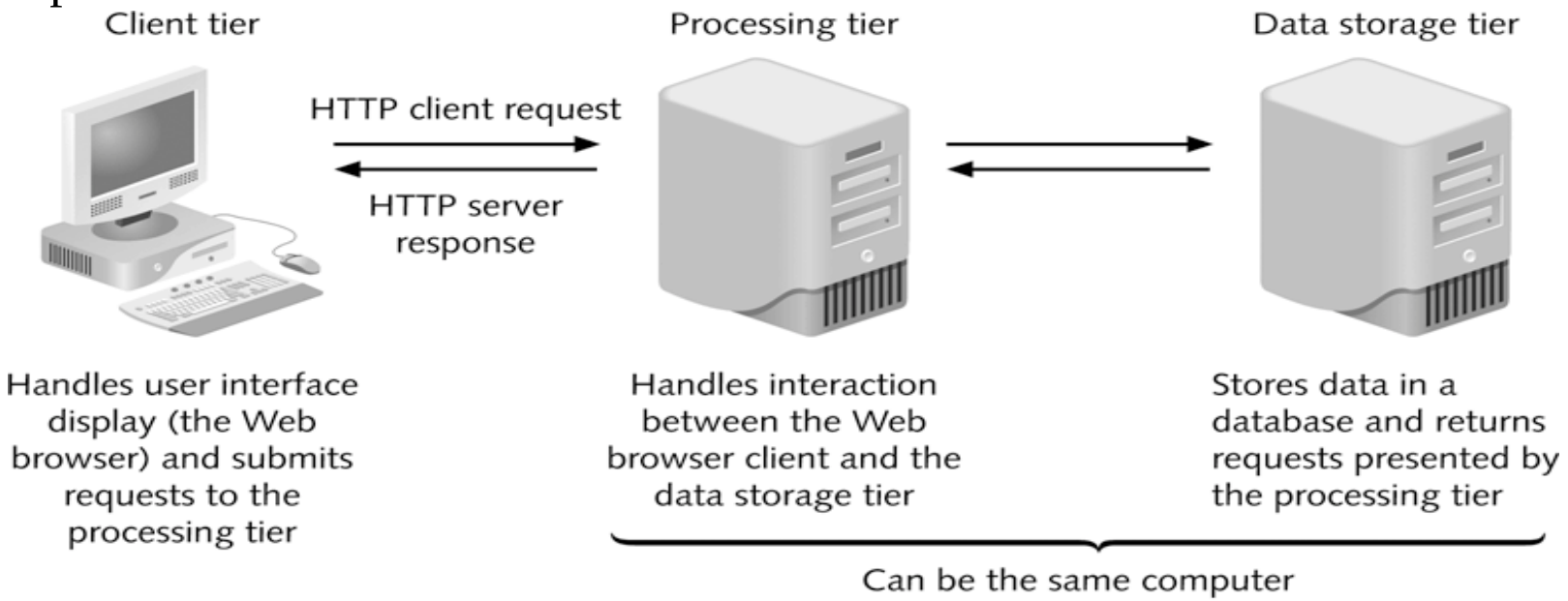
- The Internet is not just a single network but a global system of interconnected networks that communicate through standard Internet Protocol (IP).
- It enables millions of private, public, academic, business, and government networks to share information, resources, and services efficiently.
- Besides browsing websites, the Internet supports a variety of functions such as cloud storage, remote access, online learning, and Internet of Things (IoT) communication.
- It has become essential for communication, education, entertainment, research, and e-commerce around the world.

- Other Available Services (Additional Examples):
- **Video Conferencing** – allows users to hold live meetings with audio and video (e.g., Zoom, Google Meet, Teams).
- **Online Gaming** – enables multiplayer games over the Internet, connecting players globally.
- **Cloud Computing** – provides remote servers to store, manage, and process data instead of using local computers.
- **Social Networking** – platforms like Facebook, X (Twitter), and Instagram allow people to connect, share media, and communicate instantly.
- **E-commerce Services** – online platforms such as Amazon and eBay enable buying and selling goods or services through the Internet.
- **Search Engines** – such as Google or Bing, help users find information quickly across billions of web.

Client/Server Architecture

The Internet is probably the best-known example of a client/ server relationship. The difference between a client and a server is big. Here we have two computers/ programs where the client sends requests to a server, and the server processes requests and returns the results to the client. A server is typically a remote computer not visible to the user.

- A system consisting of a client and a server is known as a **two-tier system**
- A **three-tier**, or multi-tier, client/server system consists of three distinct pieces:



- **Client:** A computer or device that requests information or services (for example, your browser when you open a website).
- **Server:** A powerful computer that stores data and provides services or resources to clients upon request (for example, the web server that hosts a website).
- When a client sends a request (such as opening a webpage, downloading a file, or sending an email), the server processes this request and sends the response back to the client.
- This process happens through Internet protocols like HTTP, FTP, or SMTP

- **Web server:** is the computer/ server whose entire content is visible on a website in a web browser. Web servers are constantly connected to the Internet. We access them through URL. Therefore, if we enter, for example, www.google.com in a web browser, we are accessing the Google server.

- **Web browser:** enables browsing through websites. Its mechanisms display the content, retrieved from the server, in a correct and understandable way. As such it is an intermediary between the user and the server. (e.g. Google Chrome, Firefox, Internet Explorer, etc.).

- A **webpage** is a single HTML document.

- A **web site** is a collection of web pages. Web sites may be dynamic and interactive or static. Designing a good website requires more than just putting together a few pages.

- A **Web application** is a program that runs in whole or in part on one or more web servers which is run by users through a web site.

Search engine: allow us to search in the Internet for information, images and other types of files stored in various locations available throughout the network.

Search engines work according to certain algorithms that show the user relevant requested search results. At first, information from the various websites is collected and stored and then analyzed to organize and save them in the database for future use. When a user enters an inquiry into the search engine, the database is organized by an index and the user is presented with results that match best the entered search terms. Therefore, it is important to understand that by using the search engine one does not search the entire Internet but the search engine's database. Therefore, we might get different results each time we use different web engines. This information is important from a website owner's view, who wants to make sure that the website is represented in various search engines once he created it. Otherwise, it will only be possible to access the website when a user enters the exact address in the web browser address bar. Currently, the most known search engine is "Google."

Examples of search engines:

- Google – the most popular and accurate search engine.
- Bing – Microsoft's search engine, integrated with Windows.
- Yahoo!– one of the oldest web directories and search engines.
- DuckDuckGo – focuses on privacy and doesn't track users.

Key functions include:

- Finding websites, images, videos, and news.
- Suggesting related topics or queries.
- Ranking results based on relevance, popularity, and freshness.

Uniform Resource Locator (URL)

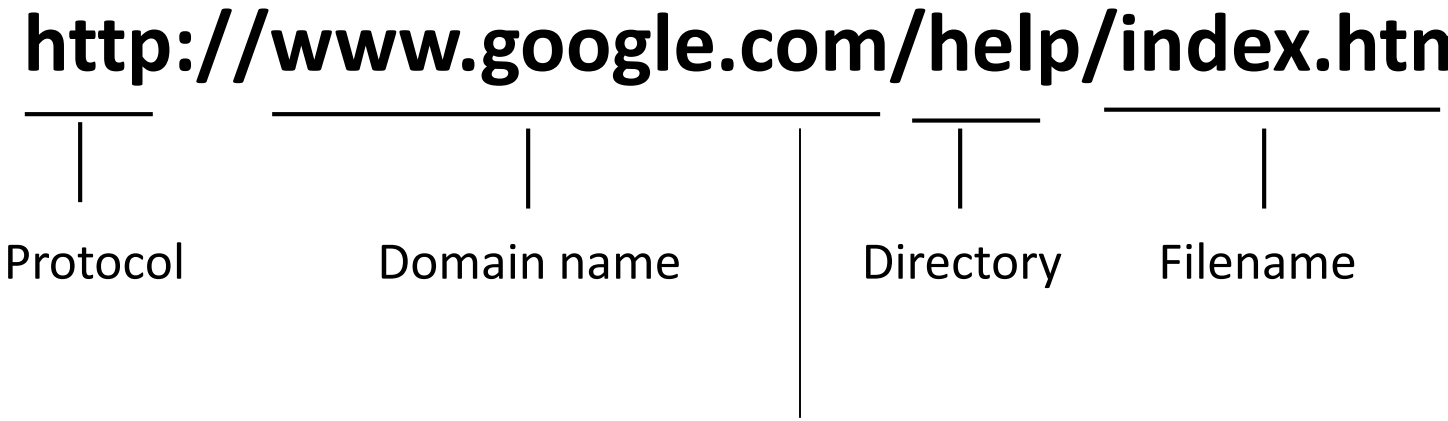
URL (Uniform Resource Locator) is a web page's address identifies where the web page is stored on the Internet. A URL has three parts:

1- protocol name (e.g., HTTP)

2- **domain name/ hostname** is a unique address used for identifying a web server on the Internet.

3- file name is optional, implies the access to a file/directory into the principal webpage. It is separated by slash.

Therefore, when we enter http://www.google.com in the address bar in our web browser, the browser is instructed to connect to a server with the domain www.google.com by using the HTTP protocol.



Sample URL

Where:

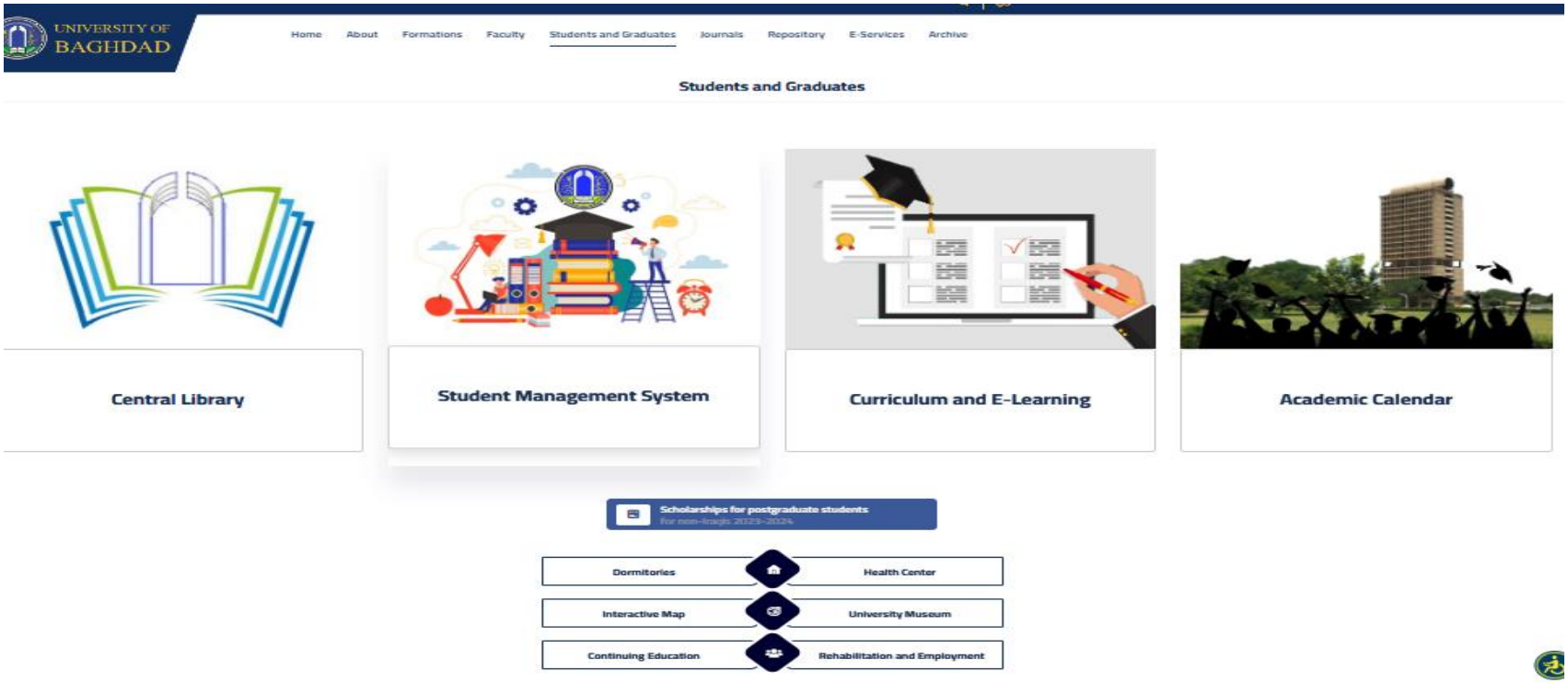
The **domain identifier** identifies the type of institution or organization (.biz, .com, .edu, .org)

Some Common Types of Domain Identifier

- com: commercial enterprise.
- edu: educational institution.
- gov: government entity.
- net: network access provider.
- org: usually nonprofit organizations.
- mil: military entity.
- biz: small business.

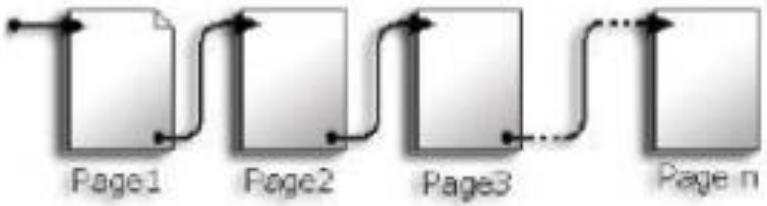
Hyperlinks

Hyperlinks are separately marked words, images and other elements on a web page that represent a direct link to additional information. Most often we open other web pages when we click on hyperlinks. Furthermore, we also might be able to open other parts of a web page, download content, and run applications. The image below shows a hyperlink, which is usually marked blue in texts and sometimes underlined to stand out, and it's called Hypertext.

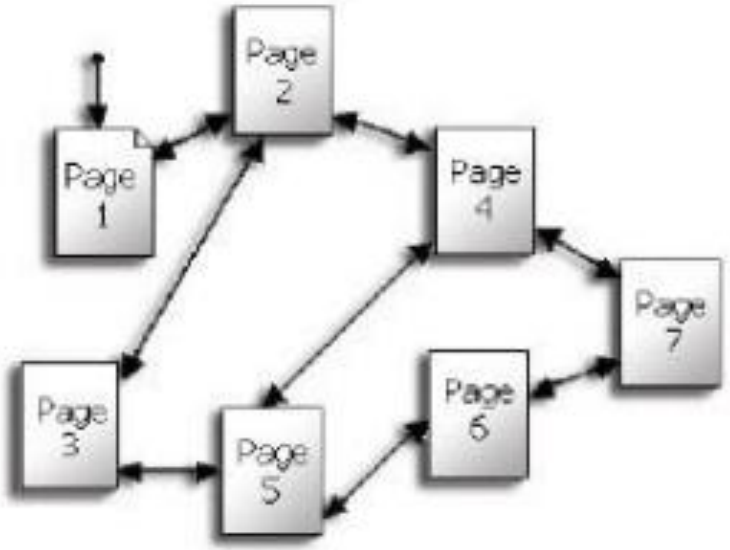


Hypertext:

- Hypertext links allow the reader to jump instantly from one electronic document to another.
- Two type : linear text and nonlinear text



Linear Text



Nonlinear Text --Hypertext--

Web Communication Protocols

- Computers on the Internet communicate with one another using the TCP/IP, which contains the main protocols for Internet communication. It defines the rules that computers need to follow to communicate with other computers via a network.

- An IP address consists of a series of four groups of numbers separated by periods Each Internet domain name is associated with a unique IP address.

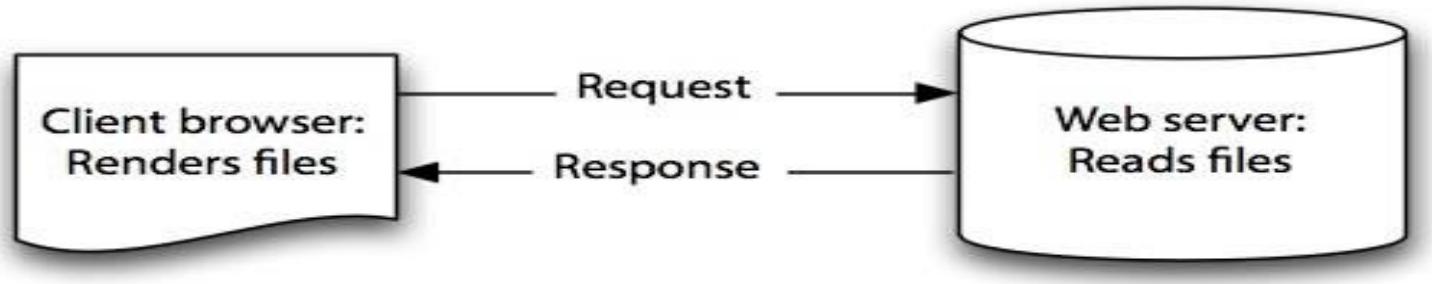
- Hypertext Transfer Protocol (HTTP) manages the hypertext links that are used to navigate the Web.

- Hypertext Transfer Protocol Secure (HTTPS) provides secure Internet connections for transactions that require security and privacy

- FTP(File Transfer Protocol): is used to load (upload) or retrieve (download) files between the client and server communication, or between two computers on the Internet. In other words, this protocol is responsible for file transfer on the Internet.

Websites Types

- Website can be classified into two categories the **static websites** and the **dynamic websites**.
- In static websites. all the content data is contained in the files that correspond to the pages of the site. These files store data in a special format, HTML. Returning to the example of static website displaying the pages of a book, each page of the book would be stored as HTML in a separate file with the .html extension. In order to change the contents of a book page, you would have to edit the corresponding HTML file (using a text editor or HTML editor such as Dreamweaver). To run a static website you need a *web server*, which is a software application that: receives requests for displaying a web page then reads the corresponding file and sends the contents of the file back to the computer that made the request.



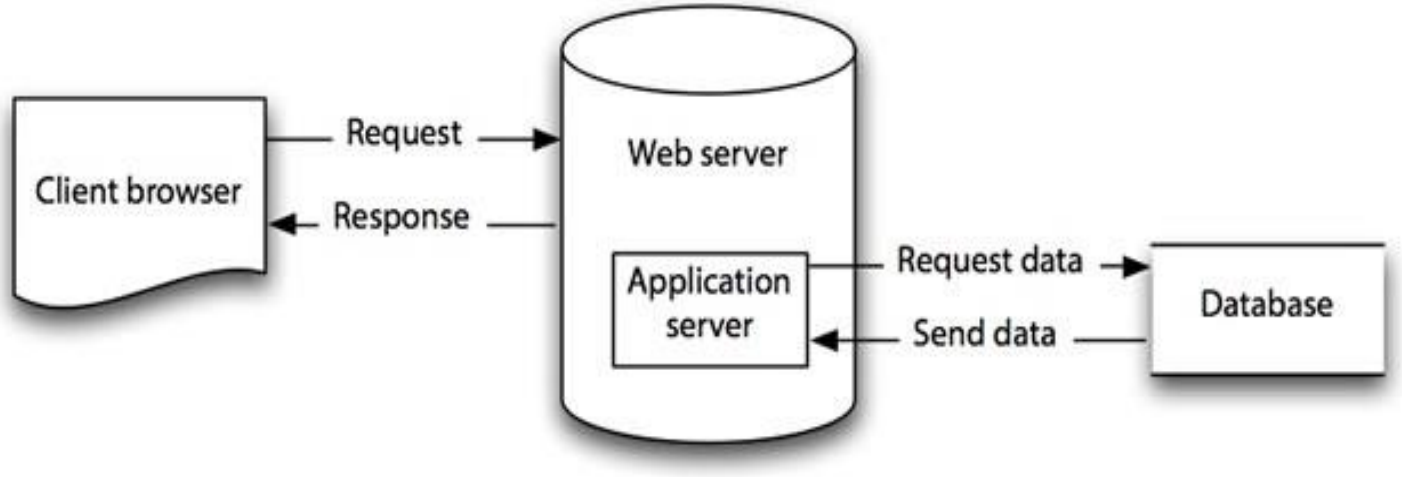
Dynamic websites

In contrast, dynamic sites must be able to display information that changes over time or varies depending on the user who accesses it. For this reason dynamic sites use a software program that acts as a data repository, usually a database system. Information can be added to or retrieved from this repository dynamically. Furthermore, dynamic sites must be able to integrate the static parts of a site—for example, the book contents in the book website—with the dynamic ones, for example, comments. This mix of static and dynamic information is realized, in addition to using a web server, by: Writing the pages in a *scripting or tag-based language*, that mixes the static part (HTML) with instructions for processing dynamic data then running software on the server that interprets the instructions in dynamic pages and executes them to retrieve information (data) from the database, add information to the database, or modify it. This software is commonly known as an *application server*. The scripting or tag-based language that you'll use must be compatible with the application server that you choose.

Popular combinations include: **Active Server Pages (ASP)**, which uses VBScript and JavaScript or **PHP,** which uses the PHP scripting language in addition to a web server. The following software is required in order to run a dynamic site (see Figure 3):

Database server: Software that manages the database. Some commonly used database servers for the web are *MySQL*, *Oracle*, and *SQL Server*.

Application server: Examples of application servers are Internet Information Services (IIS) (which acts as a web server and an application server) and the *APACHE* application server.



Web page programming options

A- Server-side processing

Generally dynamic or data-driven web pages use HTML forms to collect user inputs, submitting them to a web server. A program running on the server processes the form inputs, dynamically composing a web page reply. This program, which is called, **servicing program**, can be either a compiled executable program or a script interpreted into machine language each time it is run.

1. Compiled server programs: when a user submits HTML- form data for processing by a compiled server program, the web server invokes the servicing program. The servicing program is not part of the web server but it is an independent executable program running on the web server; it processes the user input, determines the action which must be taken, interacts with any external sources (ex. database) and finally produces an HTML document and terminates. The web server then sends the HTML document back to the user's browser where it is displayed. Popular languages for creating compiled server programs are Visual Basic, and C++, but almost any language that can create executable programs can be used.

The most popular one is **Active Server Pages (ASP.NET)** which is a web application framework marketed by Microsoft that programmers can use to build dynamic websites or web applications.

2. Server-side scripts: web based applications can also use server-side scripts to create dynamic web pages that are able to retrieve and display information from a backend database and modify data records. The processing architecture is the same as the processing architecture used for compiled server programs, except the web server processing is performed through and interpreted script rather than a compiled program. **Hypertext Preprocessor, it was abbreviated previously as Personal Home Page (PHP)** is a widely-used general-purpose scripting language that is especially suited for web development and can be embedded into HTML. It is a programming language widely used to build web applications or websites.

3. Server-side hybrid processing: compiled server-side programs offer two main advantages: First, they are compiled and stored in a machine-readable format; so they usually run faster than scripts. Second, compiled programs are usually created in integrated development environments that provide debugging utilities. The advantage of using scripts is that their modification requires only a text editor rather than installation of an associated development environment. Hybrid server-side programming strives to combine the advantages of compiled server-side programs and server-side scripts; a server-side script is created but not compiled. The first time a user accesses a web page calling the script, the script is compiled into machine-readable format and stored as an executable file. With this approach, the developer works with ordinary text files and does not need to install an integrated programming development environment to modify the script. Performance is improved because the program does not need to be translated into machine language each time it runs.

Choosing server-side processing

ASP.NET and PHP are the mainstream languages of the website development, which have their advantages and disadvantages respectively ,the comparison between them is shown in Table

Table (1) comparison between ASP.NET and PHP .

Parameter	ASP.NET	PHP
Security	Safety is good, but there exist certain degree of security vulnerabilities	PHP is a recognized safety performance
Platform incompatibility	Single platform	Multiplatform
Operating efficiency	High	Higher
Cost	High	Free
Size	**Better suited for large and medium sized organization**	**Better suited for start-up and small-sized organization**

B- Client-side processing

Client-side web page processing is achievable through compiled programs downloaded, installed, and executed on the client workstation or by creating scripts with the HTML web page commands interpreted by the client browser.

1. Downloading and running compiled programs on client workstations: when a user clicks a hyperlink on a web page associated with a compiled client-side program, the user's browser must have the ability to run the executable program file; this program interacts with the user, sending and retrieving data from a server as needed Many times, the user is asked to install certain ActiveX components to view some animations or play games. This new component plugs in into the existing system, thus extending the functionality of the system. Java Applet is an example of compiled programs on client workstations.

An applet is a program written in the Java programming language that can be included in an HTML page, much in the same way an image is included in a page. When we use a Java technology-enabled browser to view a page that contains an applet, the applet's code is transferred to our system and executed by the browser.

ActiveX download disadvantages:

1- Stop your computer from functioning correctly.

2- Collect personal information without your knowledge.

3- Give you content like pop-up ads, that you don’t want.

4- Also, good ActiveX controls might contains flaws that allow bad websites to use them for malicious purposes.

2- Client-side scripts: in a client-side script, source code written in such languages as JavaScript and VBScript are embedded in an HTML document, along with the static HTML text; it is placed within delimiter tags to indicate to the user's browser that the text is code that must be interpreted. If the user's browser is able to recognize and interpret the code, it is processed. If the browser is unable to recognize and interpret the code, it is displayed as text on the web page.
Although basic client-side scripts cannot be used by a web page to interact with a remote database, they are often used to **validate** user inputs entered on HTML forms submitted for processing by a server-side program; for example, a script running on a client workstation might check the inputs users submit to a web page to make sure they entered all required data and appropriate data values. This approach avoids transmitting inputs to the web server that are incomplete or include errors. JavaScript (JS) is the most commonly used client-side scripting language and is supported by most browsers.

Types of websites

- News
- Informational
- Business/Marketing
- Educational
- Entertainment
- Advocacy
- Blog
- Wiki
- Online Social Networks
- Content Aggregator
- Personal

The Main Advantages of Having a Website

1- It is possible to reach a broad audience in an easy way.

2- It is possible to change information virtually anywhere in real time. If, for example, a website offers some products, it is possible to update prices with just a few clicks.

3- Web sites allow a much better relationship with customers. The user can receive information more easily, answer questions, share experiences, etc.

4- Maintaining a website is cheap.

5- Obtain information of their consumers and create a specific target of their promotion.

Once you have decided to establish a web site there are three steps to getting it online.

1**- Design, build and upload your website -** The process of website creation.

Static vs dynamic website

2 - Get a domain name - This is your personal/private address on the Web.

3 - Find a web hosting service- Here is where your website will reside.

Free vs Private Web Hosting

Web Site Design

Five step process for effective website design

1. **Analyse (**Why do I want to create this web site**?)**
   - Info / content
   - Target Audience
2. **Organise**
   - Navigation
   - Content
   - Page layout
   - Page design
3. **Develop**
   - Web page layout
   - Site layout
   - Web page construction
   - Graphics techniques
4. **Implement**
   - User Interaction
   - Final Checklist
   - FTP
   - Fine Tune
5. **Maintain**
   - Marketing
   - Optimisation
   - Traffic analysis

Website Design Tips

1. **Know your audience**
2. **Frequently updated information**
3. **Guest book that your guests to your site can sign and add their own comments**
4. **Web site search, very useful for larger sites**
5. **Keep web pages short**
6. **Limit the amount of text**
7. **Avoid large images**
8. **Use web safe colors**
9. **Clearly identify all links**

10. Check spelling

11. Use a site map (is a list of all the pages that a web page contains) or directory page

12. Update and check all links

13. Include contact information

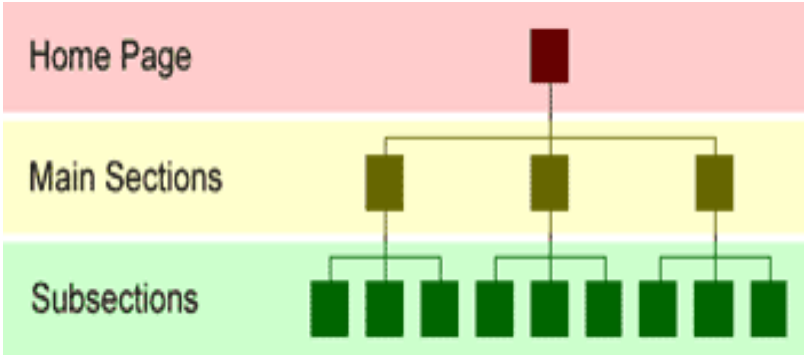
14. Free offers

15. News

16. Unique information

17. Include about us

Organisation - Structure



As the diagram shows a web site is composed of three main areas:

- The Home Page
- The Main Sections
- The Subsections

Organisation - Structure (1)

Home Page Do’s

- Visitors first impressions
- Should tell the visitors what your site is about
- Should provide index or table of contents
- Keep the home page short and to the point

Homepage don’ts

- Should not contain a lot of text
- Don’t present your users with a huge list of links to every single page

The Homepage

So what do you want on this most important first screen?

- The title of your web site
- Let visitors know what the content is as briefly as possible.
- To provide links to the main sections of your site (making sure to include text links).
- Set the tone/theme of your site with this first page -what will visitors expect to see carried out on every page within the site. This is also true of the navigation system you use.
- Use contrast to guide the eye around your pages. Any design must have a focal point.
- Group items and information that belong together using ***white space*** so that the eye "knows" they are together.
- The alignment of elements on the page is also very important.
- Make good use of the hot spots on the page for your title and links.

Organisation - Structure (2)

Main Sections

Determining and naming the main sections of your site is very important. Sections should contain material grouped according to visitor needs - in other words, these are sizeable chunks of related information. For example, if you are creating a site for a tourist visiting Baghdad, you would want to make it easy for the visitor to find the right information.

The main sections might include:

Travel	Restaurants	Tourist places	Accommodation

The main section is your site index on your homepage, it is the foundation to your navigation of the website.

Once you have divided your content into main sections, decide their order of importance

Organisation - Structure (3)

Subsections

Not all main sections necessarily need to have subsections, but most will require a further breakdown of information. It really depends on the amount of content on your site. When designing a new web site, keep in mind that the content will increase as you update and add information to the site.

Once you have established the home page, main sections and subsections of the web site, organise them into order of importance and note it. This is the basic layout of your web site.

Organisation - Navigation

There are three different navigation methods:

- **Linear navigation -** Moving in a straight line.
- **Database navigation** - Many branches from your main page.
- **Hierarchical navigation -** A completely connected website.

Web Site Development

The development of a web site should be a complete and deliberate process. You will need to organise the many files and graphics that support your site. This way whenever a change or update is necessary you can control the process much better. One of the best ways to do this is by the construction and maintenance of a site outline. This is where you will keep track of the physical data that comprises the web site

Site Outline

A site outline is a written outline of the content of your web site.

Having a site outline helps provide a mental picture of the site, the sections, subsections and content pages.

Web Site Development – Site Outline

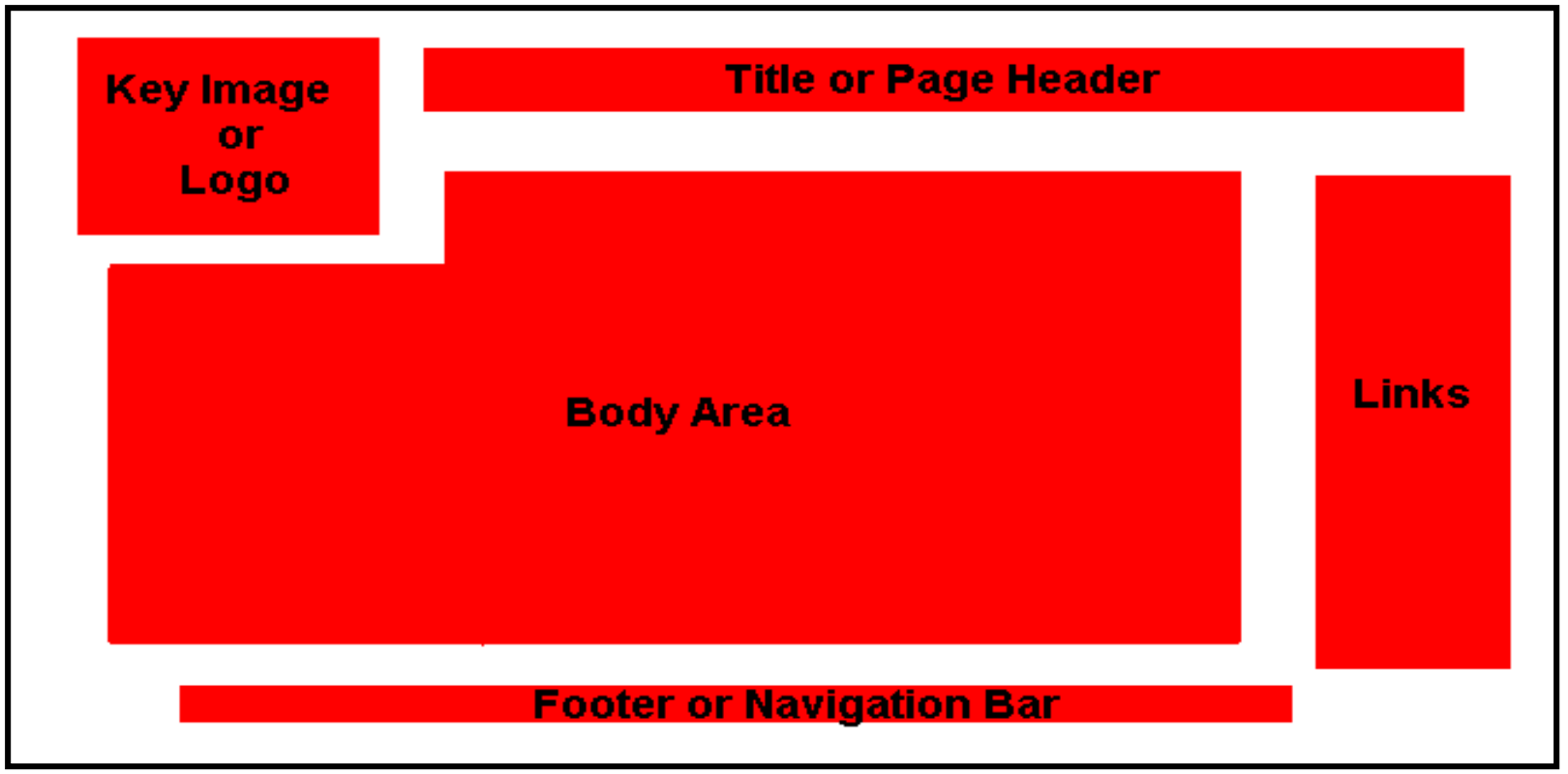
My Homepage: Index.html

Main page #1	Subpage A Detail page Detail page Subpage B Subpage C
Main page #2	Subpage D Subpage E Detail page Subpage F
Main page #3	Subpage G Subpage H Detail page Detail page Subpage J Detail page

Webpage Title:	My website
Filename:	(i.e. index.html)
Links on page:	link 1 - sub page link 2 – sub page link 3 – sub page
Graphics:	image1.gif image2.gif image3.jpg
Comments:	

Web Site Development – Web Page Layout

To produce continuity on your web site as well as enhance the ease of navigation, break what you see on the screen into regions such as header, links, footer, body, and images. Put the same information in the same regions on each page, as the following diagram shows.



Web Site Development – Web Page Construction

There are some basic steps to creating a well-designed web site. These steps begin with the individual pages.

- Make your HTML coding easy to read by using indentations and comment tags.
- Create a separate, descriptive title for each page.
- META tags...make them descriptive, use important key words
- The layout of your page should be planned, the graphics, and content determined. Know the order the pages will appear and how they will be linked

Web Site Development – Web Page Construction

Make special note of the following:

- Header elements such as a Logo or title - these do not have to be the same size on all the pages, but should be the same design .
- Common recognizable clues such as colored bullets and the same color and style of links .
- Footer elements such as copyright and contact persons e-mail address .

Web Site Development – Graphics Considerations

– If you are using a background image, make sure that it remains a "background".

– For every image tag you have on your web pages, make sure to include the height and width attributes.

– Include the "alt" attribute in every image tag. The alt attribute provides alternative information for an image if a user for some reason cannot view it.

Web Site Development

- Short text lines (40-60 characters).
- Short paragraphs (4-8 lines).
- Alt labels on all graphics.
- Index or site map for large web site.
- Color co-ordination - including text link colors.
- Corresponding text links for all graphic links
- Quick download time.

Web Site Development

- All other pages are designed for a width of 640 - 704 pixels; the length can be whatever is appropriate for the content.
- Clear, easy-to-follow navigation.
- Consistency from page to page - visitors will know they are still on the same web site regardless of which page they are viewing.
- Organization - of the information and of the web site.
- White space.
- Contrast of text and background for easy reading.
- Good object/text alignment.

Implement Web Site

This is dealing with the final checks and uploading the web site.

Creating an index / cover page that loads quickly should be your main goal.

Implementation must have:

1- User Interaction: how will users interact with your website.

2- FAQ Page: This an important page on any web site. What questions do your visitors have...what information they would want?

3- FTP: In order to upload or download a website's files.

Fine Tuning the Web Site

•You've organised your files, created the directories and uploaded your web pages. Once your site is online, the first thing you should do is go through each and every page as a visitor would, checking to make sure all the graphics are displaying and the links work.

•Take note of how long it takes your pages to load, if it takes more than **30-45** seconds, its taking too long and you may need to remove or reduce some of the graphic images

•Look at the navigation system. Is it easy to find and to understand? Will it take visitors where they expect to go? Does every page have a Back, Next and Home link?

•You should also Look at the overall design of the site. Will visitors know what type of web site this is? Are the pages consistent so that users will always know they are still on your site and where to find the navigation links?

•Do your forms, survey and e-mail links all function properly?

Maintaining the Web Site

- New information will always be waiting to be uploaded, old information will need to be updated, users will provide suggestions that need to be incorporated, etc.

-Never take your web site down when launching a site redesign.

- Always keep in mind what your audience want out of the site.

-Keep an eye on sites similar to yours to see how they are updating their sites.

-Track responses that result from the web site, via email or form.

-Always respond to email and forms.

Marketing the Web Site

Your Web site should not be a passive thing; Web sites should generate activity, and usually do in the form of e-mail.

Search engine optimization is almost an art. To effectively position your website on the major engines you will have to spend many hours tweaking and monitoring your site.

1. Are your keywords in your title tags?
2. Are your keywords in your content?
3. Do your keywords accurately describe the theme or subject of your page?
4. What words will users type into search engines to find your website?
5. If your website is a business, have you made sure your business address and other information is easily available on each page?

Traffic Analysis

Every time someone visits your website information like their IP address, time and date of access, and error messages are recorded into **log files** that are saved on your server's computer. If your web host doesn't offer these log files, it is well worth it to switch to one that does! The statistics generated by these log files are important tools for monitoring what your visitors do when they enter your website. Using the information gleaned from them you can tailor your pages for maximum effect.

Publishing Your Web Site

- **Web Hosting:**
  - The publication of a Web site for public access.
- after we create a website, it is necessary to store it in a place where it is always available for users. We use Web hosting services/companies for this purpose. They own web servers that have the ability to store content.
- There is a wide range of hosting providers and it is the website owner's decision to choose a service that suits him the best.

Publishing Your Web Site

Domain name registration

- Pick a domain name that is similar to your business name or that describes your Web site.
- You cannot use a domain name that is already in use or a trademarked name.
- The domain should not be too long, it should be constructed well, and customers should be able to remember it easily.

Domain names registration information are stored in a master database that is maintained by the Internet Network Information Center (InterNIC).

Publishing Your Web Site

- **File Transfer Protocol (FTP)**
  - FTP considers the vehicle that allows you to get your Web page files to the Web server.
  - Your ISP (Provides access to the Internet along with other types of services such as e-mail) provides a username and password to log on to the FTP site and upload files to the FTP server.
  - Allows you to use your browser to log on to an FTP server and upload your files.

Types of Hosting

- Free Web Hosting
- Shared Web Hosting
- Reseller Hosting
- Dedicated Hosting Service

- **Free Hosting**
  - Free of cost
  - Security problem
  - Commercially not recommended and encouraged

- **Shared Web Hosting**
  - In Shared Web Hosting the sites of clients are hosted at common server
    - Low Cost
    - Good for small business and average traffic
    - Low Security due to sharing
    - Restricted DB support

- **Reseller Web Hosting**
  - **When clients are allowed to become host themselves and provide the hosting service to their clients.**

- **Dedicated Hosting (DH) Service**

In DH the web site is hosted on the dedicated computer .

- Expensive option
- Suitable for large web sites
- Good for high traffic
- Powerful DB support
- Strong software support

Hosting services

- size of hosting: The size of data that can move and store in server.
- Usage limitations “Bandwidth”: The amount of data transfer from and to server per month.
- Script and extension support: ex: If your Web site uses or will soon use: SQL databases, CGI scripts, FrontPage 2000 extensions, or Dedicated Hosting Service.
- Active Server Pages. File-transfer options
  -FTP account
- Mail options
  -number of email boxes
  - protocol used with email

- Site statistics
- Reliability
- Security
- Backup and disaster recovery
- Cost
- Technical support
- Sub domain
- Database

Six Steps to Publish a web site

1- Pick a reliable web hosting company.

2- Choose your website upload method:

a- File Manger

b- File Transfer Protocol(FTP)

c- Automatic website importer

d- WordPress migration plugins.

3- Upload files to your website.

4- Move the website files to the main root directory.

5- Import your database.

6- Check if the website work.

The factors that impact web page download speed

If the page contains, in addition to the text, a variety of other components such as video, sound, animation, etc. it affects the web page uploading speed. If we select these components in the wrong format, or if the page is overloaded with content it can lead to a slower web page download. The web page download speed is crucial to ensure a positive user experience, and it becomes even more important with the increasing mobile device use.

When selecting the size recommendations are as follows:

- Audio - .mp3 format
- Video - .flv format
- Graphic formats - .jpg picture in general, GIF, and PNG for images with few colors such as background images.
- Data compression also affects the web page download speed. The recommendation is to compress HTML and CSS files before putting them on a web server, in order to reduce their size, and thus increase the webpage download speed.

Understand the term copyright and its implications for text, images, audio, and video available on websites

It is a fact that we can easily download many contents from various websites. However, this does not mean that we can further use all website content. Quite contrary, in most cases content is under certain copyright rules. It is only possible to use content from another website freely if the website explicitly states it (“open content“, “Open Source“, “Creative Commons“, etc.). Otherwise, it should be verified under which circumstances it is allowed to download and use them.

Portal

- **Portal:** is a point of access in which the content is only available for a set of specific users. Portals offers a variety of Internet services.

- Examples of services:
  - News
  - Sports
  - Search engine/directory
  - Web publishing
  - Reference tools
  - Maps
  - Shopping
  - Email
  - E_Service and E_Goverment Service

- Examples of portals:
  - AltaVista, Amazon, MSN, Netscape, Yahoo!, eBay, Google.

What is Cloud Computing?

Cloud computing: Internet-based computing in which large groups of remote servers are networked so as to allow sharing of data-processing tasks, centralized data storage, and online access to computer services or resources.

is the on-demand availability of computer system resources , especially data storage (cloud storage) and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet.

The cloud has five defining characteristics:

1. On-demand self-service. If you are a cloud customer, you can automatically ask for computing resources (such as server time and network storage) as you need them.

2. Broad network access. You can access these services with a variety of technologies, such as mobile phones, laptops, desktops, and mainframe computers.

3. Resource pooling. The cloud provider can put together a large number of multiple and varied resources to provide your requested services

4. Rapid elasticity. Services can quickly and automatically be scaled up or down to meet customer needs. To the customer, the system's capabilities appear to be unlimited.

5. Measured service. Cloud services and resources can be monitored, and controlled.

What is Cloud Computing?

- Allows users to deal with the software without having the hardware.
- Everything is done by remote, nothing is saved locally.

Advantages of Cloud Computing

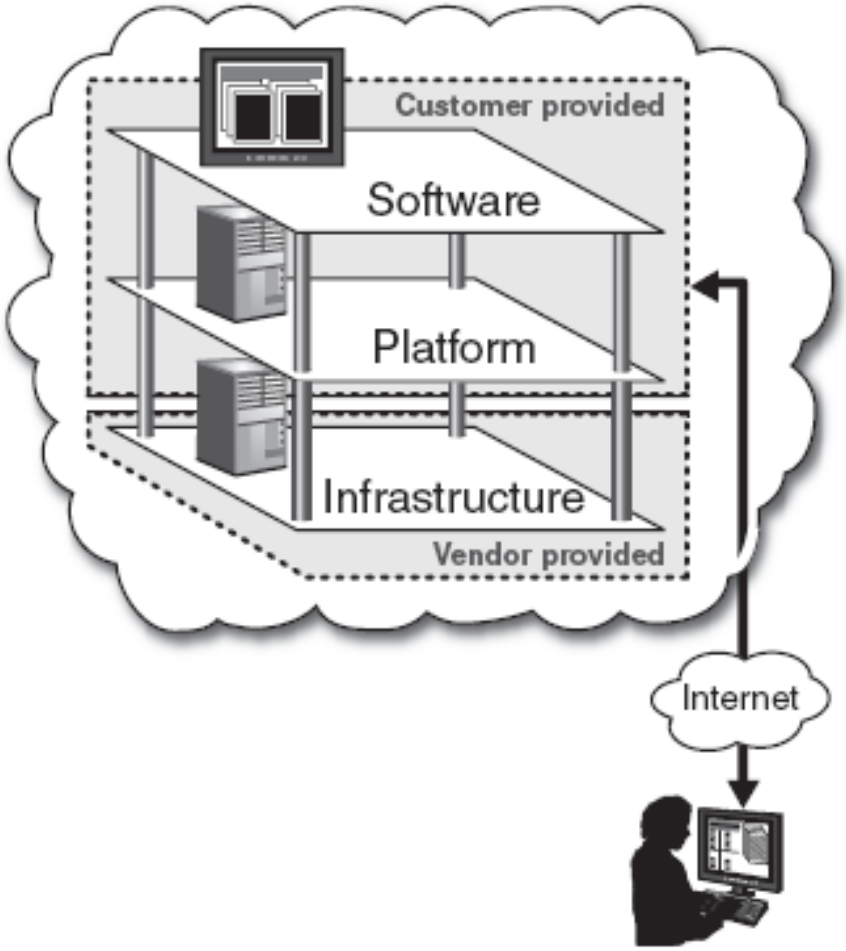
- Pay per use
- Instant Scalability
- Security
- Reliability
- Application Programming Interface (API)

Service Models

A cloud can be configured in many ways, but there are **three basic models** with which clouds provide services.

1. ***Software as a Service (SaaS)*:** the cloud provider gives a customer access to applications running in the cloud. Here,

- The customer has no control over the infrastructure or even most of the application capabilities.
- No hardware or software to manage.
- Service delivered through a browser.



2. Platform as a Service (PaaS): the customer has his or her own applications, but the cloud affords the languages and tools for creating them. Again, the customer has no control over the infrastructure that underlies the tools but may have some say in infrastructure configuration.

3. Infrastructure as a Service (IaaS): the cloud offers processing, storage, networks, and other computing resources that enable customers to run any kind of software. Here, customers can request operating systems, storage, some applications, and some network components.

Where Is My Data?

- Data resides on servers that the customer cannot physically access.
- Vendors may store data anywhere at lowest cost if not restrained by agreement.

Deployment Models

1- Public cloud

- Done by service providers

2- Private cloud

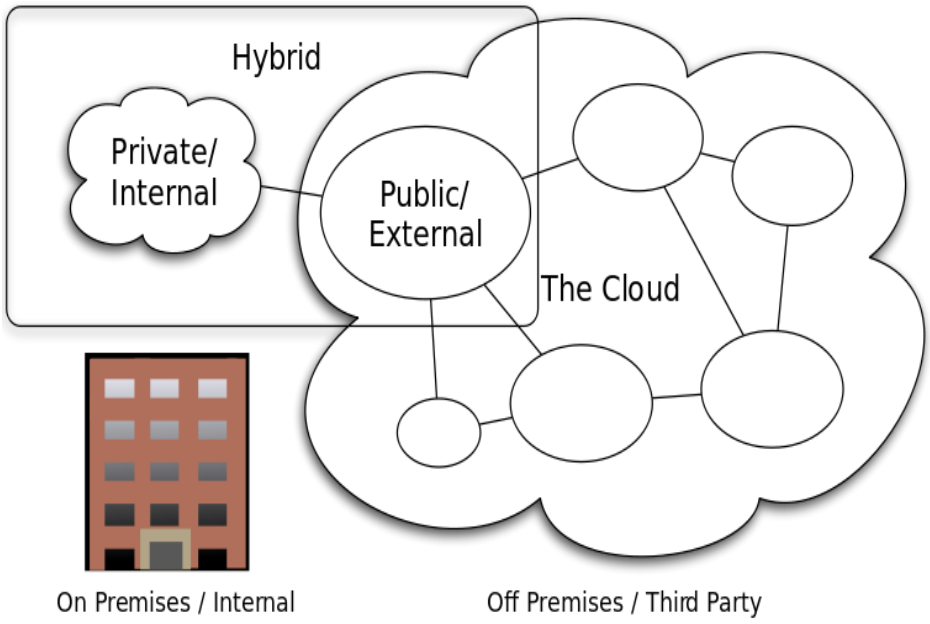
- operated solely for a single organization

3- Community cloud

Exclusive use by a specific group of consumers/companies of common interest

4- Hybrid cloud

- composition of two or more clouds (private, community or public)



Cloud storage

- Google drive
- One drive
- Dropbox
- iCloud

Examples of Google Cloud Application

- Google form
- Google docs
- Google sheets
- Google slides

Risk Areas

- Service Provider Risks
- Technical Risks
- External Risks
- Management Risks
- Security / Connectivity / Privacy Risks

Basics of Hypertext Markup Language (HTML)

- HTML stands for Hypertext Markup Language, HTML is being widely used to format web pages with the help of different tags available in HTML language.

- There are two types of tags in HTML:

<tag> content </tag> tag need open and close and tags do not need opening and closing, as there is nothing to go in between them <tag/>

Note:

1- Some HTML elements have no content (like the <br> element). These elements are called empty elements. Empty elements do not have an end tag!

2- HTML tags are not case sensitive: <P> means the same as <p>.

- Most of the HTML tags can also have attributes, which are extra bits of information.

HTML Document Structure

<!DOCTYPE html> (used by the web browser to understand the version of the HTML used in the document)

<html>

<head>

</head>

<body>

</body>

</html>

Heading Tags

HTML has six levels of headings, which use the elements <h1>, <h2>, <h3>, <h4>, <h5>, and <h6>

```
<!DOCTYPE html>
<html lang="ar"> (include the lang attribute inside the <html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers)
<head>
<title>My Website</title> (title tag used to give a name you choose to your site)
</head>
<body>
<h1>Good Morning</h1>      (h1 gives the biggest size)
<h2>Good Morning</h2>
<h3>Good Morning</h3>
<h4>Good Morning</h4>
<h5>Good Morning</h5>
<h6>Good Morning</h6>      (h6 gives the smallest size)
</body>
</html>
```

Note: Use HTML headings for headings only. Don't use headings to make text **BIG** or **bold**.

- The Paragraph   tag offers a way to structure your text into different paragraphs. It carries an attribute whose name is align, which you can use to indicate the alignment of paragraph on the page. The value of it shows three possible values of align attribute: left, center and right. The default is left and it is written:

  content
- Whenever you use the <br> element, anything following it starts from the next line
- You can use tag to put any content in the center of the page or any table cell.
- The <hr /> tag creates a line from the current position in the document to the right margin and breaks the line
- accordingly.
- Preserve Formatting: Any text between the opening <pre> tag and the closing </pre> tag will preserve the formatting of the source document.
- italic
- <u>underlined</u>
- bold

The HTML <pre> element defines preformatted text.

Ex: <pre>

My Bonnie lies over the ocean.

My Bonnie lies over the sea.

My Bonnie lies over the ocean.

Oh, bring back my Bonnie to me.

</pre>

Run

My Bonnie lies over the ocean.

My Bonnie lies over the sea.

My Bonnie lies over the ocean.

Oh, bring back my Bonnie to me.

- The HTML <mark> </mark> element defines text that should be marked or highlighted.
- You can add comments to your HTML source by using the following syntax:

<!-- Write your comments here -->
Note: Comments are not displayed by the browser, but they can help document your HTML source code.

- The <a> tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:

Ex: University of Baghdad

-The <img> tag is used to embed an image in an HTML page. The src attribute specifies the path to the image to be displayed:

<img src=“path“ width=“ “ height=“ “ alt=“ “ >

- To use an image as a link, just put the <img> tag inside the <a> tag:

```
Ex: <a href=“index1.html">
        <img src="smiley.gif" alt="HTML tutorial">
    </a>
```

- Use mailto: inside the href attribute to create a link that opens the user's email program (to let them send a new email):

Ex:Send email

- The title attribute specifies extra information about an element. The information is most often shown as a tooltip text when the mouse moves over the element.

Baghdad University