Fundamental notions of programming (NFP)

Class 11

Static and dynamic websites design

Basically, websites there are two main types of websites : static and dynamic.

What is called a ***static website*** is usually written in plain HTML. The source-code containing a structure, contents and styling reflects what is shown on screen.

A ***dynamic website***, on its part, adds to the HTML language server-side scripts programmed using languages such as PHP (and many more). The page actually calls contents from external files and/or databases, depending on actions taken by the user, to build a HTML document that is finally shown on screen.

Static websites

Static websites are coded using HTML and CSS only. They are simple websites used to give basic informations about a company, for instance. Such website do not require any programming skills as they only consist of a structure, contents and styling.

In static websites, codes are casted and pages usually more or less look like printed pages. One way to find out if a page is static is to take a look at its URL. A document ending with *.html* it is likely static, unless there is some JavaScript acting into it.

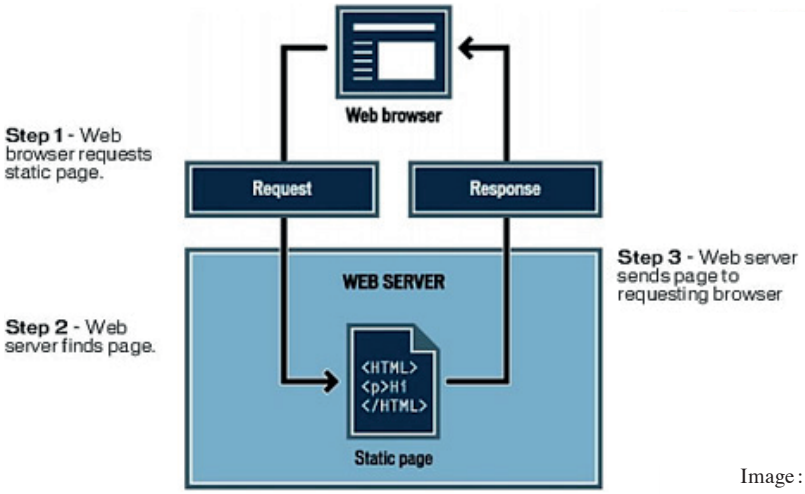


Image : techwelkin.com,

Advantages

The main advantage of a static website is its simplicity. Built correctly, it is very flexible, easy to create, edit, update, and adapt to every situation. It doesn't require any special server-side technology and, because it is built more rapidly, it also costs a lot less, which is probably why they are so popular.

Disadvantages

The main disadvantage, from a client's perspective, is that it usually is necessary to ask the web designer to perform any simple content update. Another disadvantage is that although a static website may be appropriate for modest needs, it becomes very complicated to maintain in circumstances where, for instance, there are a high volume of products to sell. This would mean a page would have to be manually built for each product, navigation updated, etc.

Dynamic websites

A dynamic website is made of web pages built in such a way (server-side scripting) that they retrieve contents dynamically from external sources to produce the documents to be shown to users. Instead of having to update the website pages, it is the database that is updated —or the content management system (CMS). The web pages are then produced and shown accordingly to the content sources and the user's specifications.

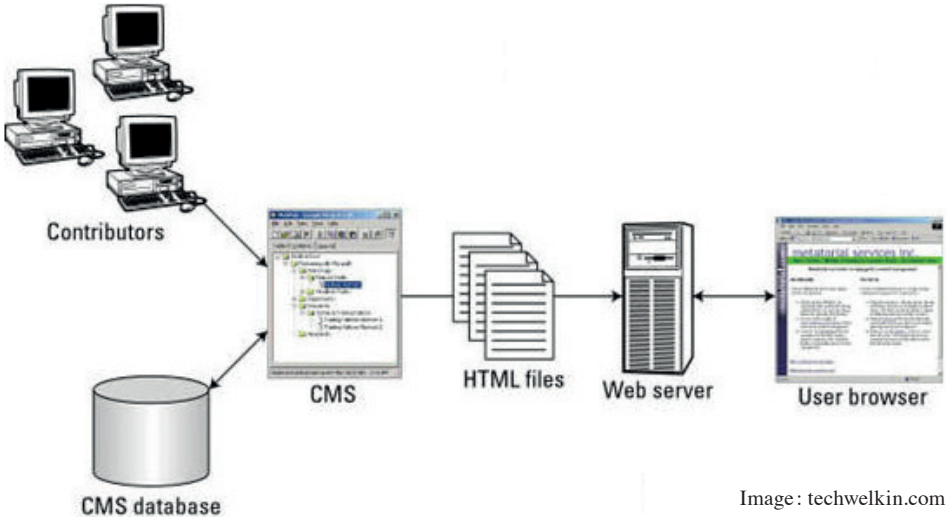


Image : techwelkin.com

Advantages

The web documents being produced based on external sources, dynamic sites main advantage is that contents may be created, changed, updated, suppressed very easily by modifying the database's contents. The pages created and shown to users are then automatically updated.

Another important advantage is that such a website being based on a database, it is possible to create a content management system (CMS), which makes it possible for the client to update the website with little or no skills.

Although such websites are more expensive to develop, they are very cheap to maintain as they are maintained by their owners with virtually no need to call back the developers unless new functionalities would be needed.

Disadvantages

A big part of the pages of a dynamic website being templates designed to produce documents based on external sources, pages produced within a given category, for instance, usually need to respect quite a very strict structure (some limited customization options can although be built in).

As already mentioned, development costs are higher and it takes quite a longer period of time to produce a final bug-free website, but it is worthy on the long run. Nevertheless, any major changes or supplementary functionalities will always be much more expensive than for a static website.

Finally, depending on the size of the database and the importance of traffic, it may be necessary to think about a high quality and performance hosting service which is also much more expensive.

Content management systems (CMS)

A Content Management System (CMS) consists of a system controlled by an Interface making it possible to interact with a website's database. CMS can be built and customized for specific needs, but many public CMS platforms are available (WordPress, Drupal, Wix, etc.) They are all different and offer different options. The choice of a CMS should be based of the needs and the options available in the *admin panel*. For the moment, WordPress is the most popular with a very large plugins library.

Graphical user interface (GUI)

The very basic purpose of a CMS is to make it possible for someone with limited skills to be able to manipulate database content, templates and styles. To do so, an interface is needed. Every time you interact, for instance on social media, you actually interact with databases through an interface in a very similar way a CMS would be used.

Most of the time, a CMS consist in a collection of forms, each having a specific purpose. For instance, in WordPress, when you create a new page to a website, a form is submitted through MySql to a database in order to create a new database row entry in the « Content Page » table.

WYSIWYG

Standing for what you see is what you get, WYSIWYG is the most user friendly approach to CMS. Basically working like a text editor, it allows you to position and style different types of elements on a page and generates the necessary codes for the user. The codes produced is then saved into a database making it available to be displayed on screen whenever requested.

Available features

Features vary a lot depending on the CMS you choose. But some of the features commonly offered would include : indexing, search and retrieval, format management, revision control and publishing.

Indexing, search and retrieval features
Make it possible for the user to easily access and use search functions based on various attributes (dates, keywords, etc.).

Format management
Makes it possible to convert scanned texts or electronic documents into HTML.

Revision features
Makes it possible to update and edit contents after publication and it also tracks changes made to files by anyone.

Publishing functionality
Makes it possible to use templates or sets of templates, wizards and various tool designed to create and modify websites contents.

Well known content management systems

Various options are available when the time comes to picking a CMS. Depending on your specific needs (complexity, language, user's skills, etc.), it can be a difficult task to find a CMS well-suited to your needs. Some of the CMS are more interesting that the rest for different reasons : usability, easy to install use and extend, etc.

Wordpress

This PHP blogging platform is presently the most popular CMS for blogging, and maybe the most popular CMS. Benefiting from great documentation, it is probably the best suited CMS for beginners.

Easy and very fast to install, the updates are made on server-side without any download necessary. WordPress comes with WYSIWYG HTML editor, an image and multimedia uploading functionalities, and the interface is very intuitive and easy to understand and operate. It offers a wide selection of various types of plugins and themes (some free, some for sale).

Drupal

This CMS is much more a « real » CMS than a blogging platform, and it also has a very large, active community, great documentation and efficient support. Basic installation includes plenty of optional modules offering various functionalities such as forums, blogs, OpenID, profiles, etc. It is very easy to use and also offers professional themes easy to customize.

Joomla

Very advanced in terms of functionality, this CMS is pretty easy to install and it is a complete CMS system similar to Drupal which is best suited for more complex projects. It also has an intuitive interface, great documentation and excellent support.

Shopify

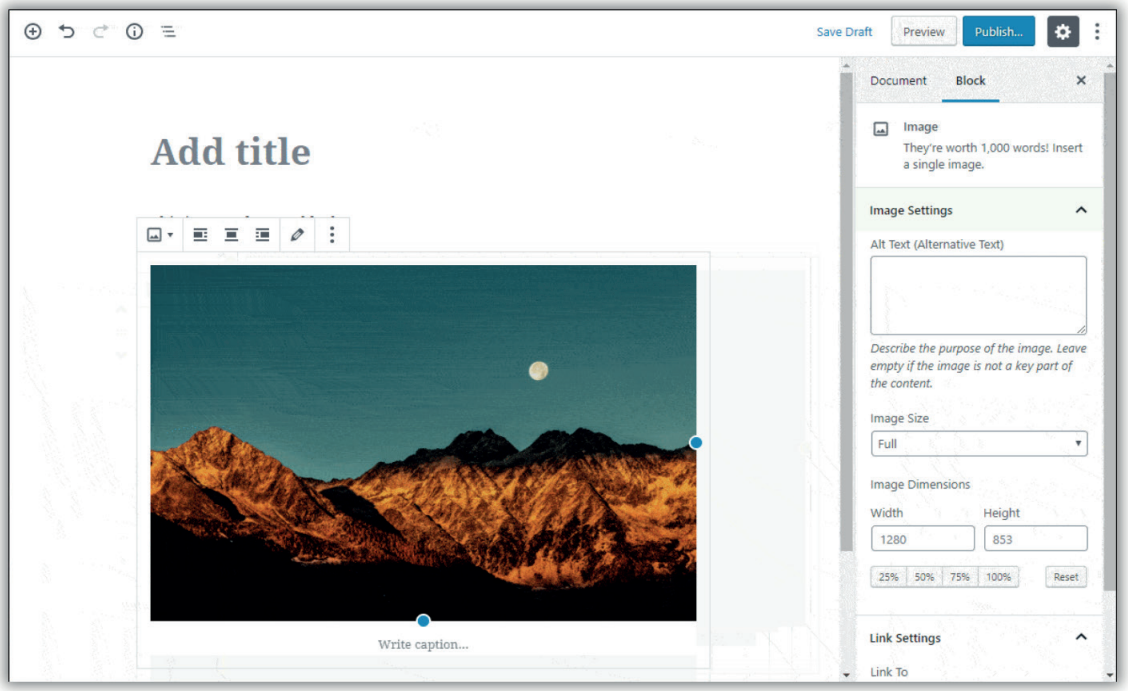
Before anything else, Shopify has been designed as a tool to run e-commerce stores. Although it does a great job as an e-commerce solution, it can't replace major content management systems such as WorPpress. However, Shopify offers customizable themes allowing you to manage content quite efficiently. The basic installation also comes with some limitations.

Although, for situations where content is the main concern and e-commerce is secondary, you may want to consider Shopify JavaScript which can be integrated yo your favourite CMS.

Gutenberg WordPress text editor

WordPress Gutenberg has replaced the WordPress Classic Editor in 2018 and is now part of the WordPress core. It has made the design and publishing process more visual for users with limited skills and it includes everything needed to create great custom pages.

The concept is based on building blocks to position intuitively in the page, which greatly simplify the creation process.



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Final project : Dashboard

Using Photoshop or Illustrator, and HTML, CSS and JavaScript, create a dashboard that could be the one of a customer's profile based on the following requirements :

- Create the entire interface, the content part should be generated using JavaScript variables.
- The content section is divided into two panes. Left pane for user profile, and right pane for orders/transactions.
- The profile part (left pane) must contain at least the followings :
    - Full name
    - Date of birth
    - Age
    - Full address
    - Premium member (yes/no)
- The transactions part (right pane) should contain a few transactions, the total and a premium (5% of transactions).

Must be used

- Use prompt to gather user's details
- 1 variable of each type (string, number, boolean)
- Concatenation must be used (e.g. : for the full name)
- Calculation (mathematical operation) must be used
- You must also use : a condition and a function