Joomla Architecture: A brief Introduction

Introduction
Joomla is a free and open source content management system or more precisely a PHP based web application development platform.

What is CMS?
CMS is a software platform that aids in management of content of a website. CMS makes it possible for non-technical users to publish content to a website. It also serves as a store for a wide range of assets and utilities including text, images, databases and so on.

The history of Joomla dated back from 2000 when it was originally started as Mambo but later came out separately as a fork of Mambo when some of the developers from Mambo created Joomla in late 2005. Since then, Joomla has been downloaded over a million times and there are several extensions of Joomla which are currently available and it is estimated as the second most used CMS in the world after WordPress.

Architecture
Joomla is written in PHP, it uses Object Oriented programming techniques and MVC design patterns, it uses MySQL to store data (MS SQL version 2.5 onwards, and PostgreSQL version 3.0 onwards). Various features which make Joomla a hit include page caching, blogs, polls, language internationalization support and RSS feeds.
**Architecture of Joomla**

**Core Joomla**

Joomla makes use of MVC design pattern. When Joomla processes a request, it analyses the URL to determine which component will be responsible for processing the request, and hand over the control to that component. Then as per MVC, that component pass control to the controller. The controller analyses the request and determines which model and view will be used to return the results back to the user. The model encapsulates the data used by component. The data can come from a database, it can be a Joomla database or any external database or can come via web service API running on external server. The model is responsible for updating database and isolating the view and controller from the functioning about how data is amended or modeled. The view is responsible for generating the output which is then sent over to the browser by the component. Once the view has produced the output, the control is taken over by Joomla framework which then loads and executes the template. The template combines the output from various components and active modules and deliver it as a single page on browser.

Apart from this, Joomla splits the traditional MVC view into view and layout. The view pulls the data from the model and then sends the data to layout which can then formats the data and present it to the user. The split mechanism allows the template to be overridden in the template. These overridden layouts are bundled with the template and give complete control to designer over all the output and any installed third party extensions.

**What makes up Joomla?**

1. **Core** – The core of Joomla consists of php files which provides platform functionality required to make general work. There are also some configuration files and library files for e.g. Some of the files may call Javascript library etc. And lastly, there is a database which contains vital information about configuration files in Joomla and also the content which you put into Joomla.

2. **Extensions** – There are five types of extensions for Joomla viz.
   a) **Components** – Components are the largest and most complex extensions of them all, they sometime referred to as mini applications. Mostly, they have 2 parts; a site part and an administrator part. Each time a Joomla page is loaded, one component is called to render the main page body.
   b) **Modules** – These are light weight and flexible extensions used for page rendering. These are commonly called as “boxes” as these are arranged around a component.
   c) **Plugins** – More advanced extensions and are actually event handlers. In any execution scenario, whether it is core, a module or a component, an event is triggered. When this happens, the plugins registered with the application are executed. For example, a plugin can be used to filter out a bad word.
   d) **Templates** – Templates are basically how your Joomla website looks. It is in essence the design of your Joomla powered website. It can be used to change the look and feel of your website. Components and modules are generally shown under the templates. Templates provide maximum flexibility in regards to how you style your website.
e) Languages – It is most basic extension. It can be packaged either as a core package or an extension package. These files contains key/value pairs, these pairs provide the translation of static text strings within the Joomla Source code. Language packs also include an XML meta file which describes the language.

How Joomla Works?

When a request comes to Joomla website; following events happens in series:-

1) It loads framework file, first of all 'defines.php' and 'framework.php', 'defines.php' defines some global constants for Joomla framework files and folders. 'framework.php' does the installation check and then initiates the process of importing the files required to run Joomla framework.
2) Joomla Site application is created which means $mainframe object is created and session is initialized.
3) Application is initialized i.e. Website's language is loaded followed by loading of system plugins and then event is triggered to let other plugin know that it is ready for routing.
4) Routing of Request which means request is examined to determine which component should receive the request and whether user has privilege to do the action.
5) Application Dispatching, in this phase requested component gets the chance to handle the request. If the component does not exists, then the request is send to default component. $document object is created and output from component is buffered.
6) Application Rendering, which is the process of putting the documents buffers in the template placeholders. If the website is set to offline mode, it shows the offline template, otherwise, rendered output is buffered in the JResponse variable.
7) Response is sent in the form of buffered data in JResponse variable to user.

This is the entire process of how Joomla works once it receives a request.

Advantages and disadvantages

There are a number of advantages associated with Joomla. Some of them are mentioned below:-

1) No HTML is needed.
2) Website creation is extremely fast
3) It is 100% free (with some exceptions to third party extensions).
4) Huge collection of templates
5) A large number of extensions to add any type of functionality.
6) All your content is managed for you.
7) Joomla is coded by professionals which makes it secure against any hack or virus attack and even if some security issue arises, updates are readily available to fix it.
8) You can easily add new pages/content to your website at any time
9) Comes with user management and Joomla is fun to learn and has got a small learning curve.

But there are several disadvantages as well:
1) Joomla makes the website heavy to load and run.
2) The learning curve is larger compared to other CMS such as Wordpress.
3) Biggest drawback is that some of its plug-ins works only with particular scripts.
4) Development is too clumsy if you want to change the layout.
5) May need a developer to make some of the changes.
6) Some plugins cost money.

Conclusion

In Summary, Joomla may be well suited for dynamic websites designed for growth and features. Also, for medium sized business sites, multimedia sites, membership sites, small e-commerce sites etc. Joomla is evolving and will keep on doing the same. It is not as easy as Wordpres and at the same time it is not too complex like Drupal. It fits perfectly between Wordpres and Drupal. There is a huge amount of documentation on Joomla which makes it robust compared to Wordpres. Joomla can boast of excellent characteristics by all factors which are crucial for small business owners who would like to take their business online keeping in mind the factors of cost, quality, time, flexibility and control. It may be concluded that Joomla is a powerful CMS and with the help of Joomla design templates and ready-made solutions, one can save time and money. Having all said, Joomla would be a great option to build and deploy websites.

References

- http://www.joomla.org/
- http://docs.joomla.org/J1.5:Understanding_sections,_categories_and_articles
- http://www.slideshare.net/ghessler/joomla-presentation-presentation?from__search=6