

# Content Management System (CMS): Application of Joomla to website development in Libraries and Information Centers

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## Abstract

A website is a mirror of an organization. It is a real way of expressing what an organization believes by reflecting the organization's mission and vision to its users. Days are gone when we used to build up static website which was a bit difficult to update, modify or make any change. All these difficulties show the way to capitalize dynamic website. A Content Management System (CMS) as a dynamic one helps any novice to create, modify, update and publish the content of webpage without having much of technical knowledge. Now a days library and Information Science professionals can take the advantages of using various open source CMS, Joomla as for example, for developing their website. Joomla is being widely used CMS all over the world to manage the content of the website. It has also been using in the case of website development of a number of libraries and information centers to inform the available services, create user accounts, manage back end database, provide virtual library service, highlight new arrivals, and bring any modification on regular basis. The present paper discusses the significance/application of CMS/Joomla in present-day's digital library environment.

## Keywords

Content Management System (CMS), Open Source Software (OSS), Joomla, XAMPP,

## 1. Introduction

At the age of Information & Communication Technology (ICT), website has become one of the most powerful tools to accelerate the awareness of users about the activities and services of libraries and information centers. Developing a library website and making it up-to-date at regular interval is one of the most creative and challenging work, all of which

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require sound knowledge and professionalism of library personnel on web designing along with performing their day to day library activities.

Content Management System (CMS), that make easier the total process, open a new horizon for non-IT persons of library and information center to create as well as make regular update seamless website content. In the word of (Paret 2009), CMS is "usually designed in such a way that anyone can update its functionality using customized modules. This way the same system can be used by many individuals/organizations and still the visitor doesn't feel that they run on the same system". Joomla as a Content Management System is being widely used to build as well as develop dynamic website by a group of persons working simultaneously together from the same platform without having much of IT knowledge. It is very intuitive, and can be developed and updated promptly. Actually the main advantages of using Joomla as an open source software are to develop a website without requiring knowledge of programming language, and to utilize all possible extensions (templates, modules, components and plugin) freely available, and to get assistances to solve any CMS related problem form a huge supporting community spreading throughout the world.

## **2. Content Management System (CMS)**

Today we are living in the information age. Information on the web is growing tremendously, and searching on the Internet today can be compared to dragging a net across the surface of the ocean. The internet's explosion created a new set of problems for site administrators. Producing and managing content was becoming increasingly difficult. A system was needed to manage, create, and distribute various forms of content. The content management system was created. Most CMS's are built on the LAMP (Linux Apache MySQL PHP) stack and are FOSS (Free Open Source Software). Every CMS now uses downloadable add-ons known as modules or extensions (Giri & Nirgude 2009, p. 184).

Content Management System (CMS) is, most frequently used as Web Content Management System, a process to manage the content of website without requiring enough technical knowledge of programming language or web technologies. Content may be of anything, viz. audio, video, image, text, graphs animation etc. to represent valued information to the users of website. CMS may be available as open source or it may be exist as commercial domains. Any library professional can think of building up a website representing library resources and services to its distant user using various open source CMS viz. Joomla, Wordpress, Drupal, Plone , etc.

## 2.1 Parts/Components/Units of CMS:

There are basically three parts/components/units of Content Management System (**Witkowski, 2008; Svarre, 2010**), which are discussed below in brief:

**(i) Content Management Application (CMA):** allows the content manager or author, who may not know HTML, to manage the creation, modification, and removal of content from a website without needing the expertise of a web master.

**(ii) Content Delivery Application (CDA):** uses and compiles that information to update the website.

**(iii) Meta-data Management Application (MMA):** stores properties about the content, details that are generally not shown to the end user

## 2.2 Features and Evaluation Process of CMS

A basic CMS provides a lot of special features viz. content management, menu management, block/panel management, template management (**Paret 2009**). But the salient features which are commonly applicable to almost all CMS, include following (**Svarre 2010**):

- I. Web-based publishing:** This feature allows individuals to use a template or a set of templates approved by the organization, as well as wizards and other tools to create or modify web content.
- II. Format Management:** This feature allows documents including legacy electronic documents and scanned paper documents to be formatted into HTML or PDF for the website.
- III. Revision Control:** The revision control features allows content to be updated to a newer version or restored to a previous version. Revision control also tracks any changes made to files by individuals.
- IV. Indexing, Search and Retrieval:** This is an additional feature of CMS, which allows to indexing all data contained in website. Individuals can then search for data using keywords, which the CMS retrieves.

Hagen (**Cited in Sharma, Sirtaj, Ahluwalia & Singh 2009, p. 254**) states the typical features of web content management consist of following:

- I. Front end & Back end:** The front is the view of the website-what the visitors and the logged-on users see in a web browser. The back end is the administration layer of the

website for the administrator to do configuration, maintenance, cleaning, creation of statistics, and new content creation.

- II. Configuration Settings:** These settings which apply to the entire website control the title text in the browser window, passwords for search engines, switches that permit or forbid logging on to the site, switches that switch the entire page offline or online, and many other functions.
- III. Access Rights:** The whole teams who may involve the development of different types of contents include super administrator, authors, editors and other users of the team.
- IV. Content:** Content can be text, a picture, a table, a link, a piece of music or a combination of everything depending on the basic structure of the website.
- V. Templates:** Templates (a complete layout of the web page) provides an editable visual format in which content is embedded aesthetically.
- VI. Extensions (Components):** The content management system should have the feature of expandability for future growth and changing requirements in the form of components for a single functionality.

Sunny (2008, p. 362) provides few checklists for selecting and implementing CMS. These are as follows-

- Production overview.
- Creation and publishing.
- Content presentation.
- Content retrieval.
- Technical.
- Interdependencies.
- Support and training.

### **2.3 Content Management System (CMS) in Library Environment**

With the emergence of ICT, the activities as well as attitudes of library professionals have been changed a lot. Now the library professional has to pay more attention to provide desired information to the targeted users instantaneously with the help of modern technologies, and at the same time to keep them up-to-date with current trends in this sector as well. In this case website of library and information center plays a more proactive role to ensure reliable, cost effective and immediate virtual library service to its remote users. Therefore, CMS, in the case of dynamic website creation, helps the library professionals to manage the content of the website more effectively without sufficient IT knowledge. Gwyn

(2009, p. 3) revealed that the following benefits can be achieved if we generate library website with the help of CMS:

- I. The process separates content from formatting, allowing content to be recycled and reformatted with minimal effort for additional applications, and also making site redesigns easier.
- II. Content Management System can facilitate the provision of multi-user environment of functioning. Any number of users can be working on site content simultaneously.
- III. CMS frees content creators from having to understand HTML coding and from having to update (and upload) multiple pages in the site manually every time new content is added. This facilitates more frequent content updates, at least in theory, as well as work flow management.
- IV. Integration of RSS feeds, web 2.0 applications and other dynamic content are built into most CMS packages or are available through plug-in-modules.

Libraries have been enthusiastic adopters of the CMS content model, employing open source and commercial products in an effort to freshen up their websites and integrate web 2.0 features (Gwynn 2009, p.1). But the question is why the library professionals choose CMS to build up their website and why should not select other. Here we're trying to find out some suitable answers:

- Information is always changeable. It is also truer in case of service oriented institutions like library and information center. The updating and modification of the content of website at regular basis is not easy task for static website.
- The quality of content of static website is always questionable.
- Content is a king, Library is his palace and Librarian is a governor to regulate and govern the content management (Rawtani & Chidambaram 2009, p. 176). Therefore it is a greater responsibility on the part of librarians as a web content manager in the internet world to be more meticulous in providing the information on the library websites keeping in view of the user community. (Kumar, Raj, Naik and Reddy 2009, p. 194).
- Usually, in Bangladesh perspective the library personnel often have little knowledge or in some case no knowledge on HTML, CSS or any other web programming language which are the most important prerequisites to develop a website for their own organization. While 'CMS consists of a content management application which enables the management and modification of content without advanced web master

knowledge, and a content delivery application, that uses new information to update the website' (Naik & Shivalingaish 2007, p. 226,).

- Library and information center often deals with users and to satisfy their demands to information. Therefore, ensuring continuous communication to library and simplifying user interactions with information resource, library website have to be dynamic. According to webopedia (2010) web content management may also catalog or index content, select or assemble content at runtime, or deliver content to specific visitors in a personalized way or in different languages.

## 2.4 Advantages of Using CMS in Libraries and Information Centers

Content Management Systems (2010) raise up the following advantages of using CMS to build-up library website include:

- Separation of content, logic, and data.
- Ability for multiple content providers (many staff members can edit the website, rather than just one expert).
- Easier or automatic integration with web 2.0 tools (built in RSS for instance).
- Many cool add-ons that provide added functionality to the website, an events calendar for instance

## 3. Joomla as Open Source Content Management System

Although there are numerous other options, Glen Stansberry cited Wordpress, Drupal and Joomla as the most usable content management system in 2009 where Wordpress was cited for its simplicity and ease of use, and Drupal for its flexibility and extensibility and Joomla for its large developer community and ease of installation (Gwynn 2009, p. 6). For the purpose of this paper our discussion will be limited only to Joomla as it is one of most popular CMS of the world.

According to [ijoomla.com](http://ijoomla.com) (n.d.) Joomla is a free, open source content management system written with PHP for publishing content on the World Wide Web and intranets using a MySQL database. The name is a phonetic spelling of the Swahili word "Jumla" meaning "all together" or "as a whole". It was chosen to reflect the commitment of the development team and community to the project. The first release of Joomla! (Joomla! 1.0.0) was announced on September 16, 2005. This was a re-branded release of Mambo 4.5.2.3 combined with other bug and moderate level security fixes. Joomla came into being as the result of a fork of mambo between Micro Corporation of Australia, the trademark holder of the Mambo name,

and the bulk of the core developers. However, Joomla! includes features such as page caching to improve performance, web indexing, RSS feeds, printable versions of pages, news flashes, blogs, forums, polls, calendars, website searching and language internationalization. In the project's road map, the core developers say Joomla! 2.0 will be completely re-written code base built with PHP 5.

### 3.1 Joomla as Most Popular CMS of the World

To measure the popularity between two or more CMS, Google trends utilize 'Search-volume' graph illustrated below in which Joomla is clearly a step ahead than other CMS:

**Figure 1: Popularity Measuring Graph**



Source: [Google Trends, 2010](#)

It is worth mentioning that Joomla is the most popular CMS than others that the above graph suggests. But the general question is why Joomla is mounting a lot faster than other CMS. [Buytaert \(2006\)](#) assessment put forward that Joomla has more appealing balance between functionality, flexibility, performance, quality of code, ease of use, documentation, user interface design, support and product marketing.

Designers will choose Joomla because of the amazing capabilities that its engine has in making websites look fantastic. Newcomers to Joomla (and website management) will love the fact that it is very easy to use and even customize as more and more developers create tools that are easier to understand. Developers, likewise, will choose the system because of its large capacity for development and customization ([Stiffler-Dean 2009](#))

### 3.2 Specialties of Joomla:

- Ease of use so that everyone without requiring much of technical knowledge can build up website.
- Minimal amount of instructions so that it is very easy to manage as well as update sites.
- Highly extensible where Joomla extension directory provides thousands of extensions, most of them are free under GPL (General Public License).
- Very easy to install and simple to maintain.
- No need to be an IT expert.
- A good number of users through out the world use Joomla. It has strong user community to get any kind of support in terms of website creation (<http://communityJoomla.org/>).
- Joomla is flexible and scalable.

### 3.3 Architectural view of Joomla

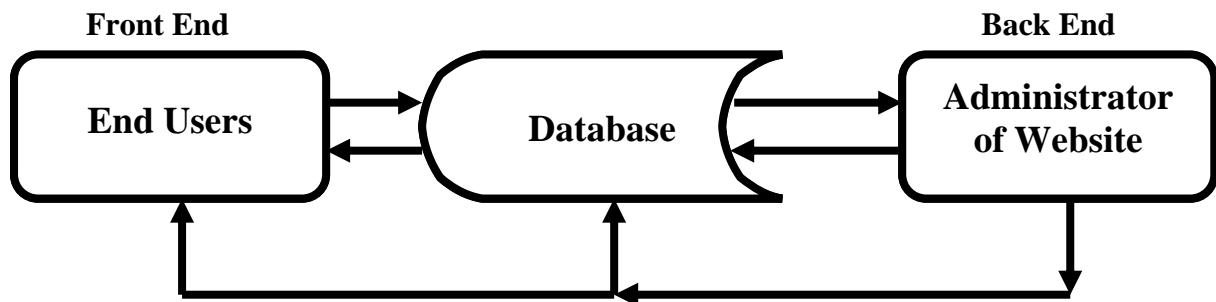


Figure 2: Architectural View of Joomla

### 3.4 System Requirements to Launch Joomla:

There are two ways to make the computer suitable to use/install Joomla. First way is to install PHP, MySQL and Apache components individually. The second option is to use a preconfigured package such as XAMPP or WAMP, the two of which have been creating a complete development environment with the ingredients like Apache, MySQL, PHP, Perl and various extensions... XAMPP is a free, cross-platform web server, which is very easy to install and less time consuming rather than install each components separately. (Sharma, Sirtaj, Ahluwalia & Singh 2009, p. 255).

### 3.5 Evaluation of Joomla



Giri and. Nirgude (2009, pp. 186-191) evaluate Joomla in terms of Installation, Platform Support, Bowser Support, Modules & Extensions, Documentation, Support, User Management, Content Creation, and Searching:

**(i) Installation \*\*:**

Joomla's installation is large and complex. Installer quality is very high, and has a professional fit and finish, while being easy to navigate. All options are presented on the screen, but the amount of options may be over whelming. The script prompts the user to input the site URL, administrator email, MySQL account details, and a few other basic setting.

**(ii) Platform Support:**

Joomla is designed for a Linux platform. Apache is the preferred web server. The manuals state that it is tested on apache. Apache can be deployed on either windows or Linux and it is written in PHP.

**(iii) Bowser Support:**

Browser support plays a fundamental role in any web based CMS. The most used browsers are Firefox and Internet explorer.

**(iv) Modules & Extensions:**

Joomla offers three installation types. The administrator can upload the downloaded package, enter the URL, or install from a local directory on the web server. Depending on the package, the install may need extra steps. Once installed, the module is configured through the extensions section of the administration panel. The administration panel also provides friendly interface to remove modules.

**(v) Documentation:**

The documentation is in two separate places on the main website. One is a wiki and the other is a standard web page. The main website (<http://api.joomla.org>) keeps auto generated documentation in packages...Joomla does provide a hand book for the beginners. The document covers system administration, basics of changing templates, how to install new extensions, and search engine optimization. The document is on the wiki, but is complete unlike other sections. A large and complete FAQ is also present in the wiki.

**(vi) Support**

Joomla follows the community support model. Registration is free to anyone. Many knowledgeable members who donate time answering questions and posting

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\*\* For easy understanding the total installation process is available in Annexure-I as screen shoots.

tutorials...[OpenSourceSupportDesk.com](http://OpenSourceSupportDesk.com) offers service contracts or single ticket purchases. Many different forms of support are available. Community support handles most issues.

### **(vii) User Management**

Joomla has a friendly user interface allowing administrators to manage users, and also allows the visitors to create their own accounts without an administrator's approval. If the need is for a simple user management tool, Joomla performs well. There are predefined groups (public front end and public back-end) that are available upon user creation. The public front-end group is created for users of the site, and the public back-end is created for managers or administrators.

### **(viii) Content Creation**

Joomla has a specified content management section where the content can be created and edited. Initially, the administrator can only create 'articles' (i.e. content). But within these articles, text, pictures, video and music can be added in for more expansive multimedia integration.

### **(ix) Searching**

In order to search in Joomla, at first the function must be enabled in the module manager section. When enabling, there are many areas given to configure the search function, such as the details of it what menus it will be located in, and the parameters of how the search module will look on the site.

Murrian, Quinn & Starvish (2009, p23) review Joomla (version 1.5.8), in the light of a lot structured considerations, important of which are delineated below:

#### **(i) Skills to Install**

Installation does not require technical knowledge beyond how to FTP and how to install a database on a Web host.

#### **(ii) Default Setup on Installation**

Upon installation, you have the option to work with a set of sample data (such as news stories), or you may start from a blank slate. There are three themes to choose from.

#### **(iii) Structuring a Simple Site**

Creating a simple 20-page site divided into four sections is not immediately intuitive for a newcomer to the system. In order to add a page, a user must first decide whether it's a "Category", a "Section" or an "Article". The distinction between them is not obvious, and many users will need to consult the documentation to determine what to do. Once a page is

created, it needs to be added into the navigational scheme with the "Menu Manager" in order to show up on the navigational bar.

**(iv) Ease of Finding What You Want to Edit**

Administrators can easily find the particular page or article they want to edit within the visitor view of the Web site, and then click a button to edit it, or they can browse or search through a list of all pages in the administrative interface.

**(v) Ease of Text Editing**

Editing the text of an existing page is straightforward. Text can be formatted using a standard, Word-style 'What-You-See-Is-What-You-Get' formatting (WYSIWYG) toolbar.

**(vi) Admin Languages**

The administrative interface is available in 100 languages.

**(vii) Automatic Logouts**

The administrative interface logs the user out by default after a shorter period of inactivity than other systems, meaning that a content admin who is multitasking is likely to have to re-log in more frequently.

**(viii) Finding Pre-Packaged Themes**

Hundreds of pre-packaged graphical themes are available. There is no official template repository, but many third-party sites offer templates.

**(ix) Number of Templates Allowed**

Each site can use as many different graphical page templates as desired.

**(x) Number of Pages**

There is no practical limit to the number of pages the platform can support.

**(xi) Page Printing and Referral Options**

Features to implement a "print-friendly" version, email a friend or allow site visitors to easily promote site content (like through a "Digg this" link) are available through add-ons.

**(xii) Search Engine**

The system includes a search engine but it only searches pages on the site, not documents.

**(xiii) Publishing a RSS Feed of Content**

Full support for outgoing RSS feed is provided.

**(xiv) Installing an Add-on**

Add-on modules can also be installed by URL or uploaded via the Web interface.

**(xv) Support for Large Amounts of Traffic**

There are no practical limitations (beyond those imposed by hardware) on how much traffic the CMS will support. This is true up to at least up to tens of thousands of visitors a day; the scope of this report did not include investigating beyond that.

#### **(xvi) Security Vulnerabilities**

Security Focus ([www.securityfocus.com](http://www.securityfocus.com)) reported 67 security vulnerabilities in 2008.

#### **(xvii) Site Backup**

To backup the Web site, a site administrator downloads all the site assets (HTML pages, documents, images, etc.) from a single directory on the Web server, and then backs up the database either in PHPMyAdmin (provided by most Web hosts) or using simple commands on the command-line.

#### **(xviii) Community Support**

There are a number of different helpful forums and discussion lists where anyone can ask questions about the system and receive answers. These communities have a reputation of being very helpful and gentle to newcomers.

### **3.6 Library Website Creation and Joomla**

Library websites are expected to be able to respond to two major types of needs: to offer high functionality to the patrons, and to allow librarians and library staff to participate in the un-intermediated creation and publication of content. Web Content Management Systems are software systems that provide tools for both (Tofan 2010, p.1).

According to Wiersma (2009, p.169) libraries use content management systems in order to create, manage, edit and publish content on the web more effectively... Furthermore, Wiersma pointed out that when considering content management systems, libraries should investigate their options. Many libraries have adopted Joomla because of its ease of use and superior administrative interface.

### **3.7 Official Website of Joomla for Library**

Joomla developed a specific website (<http://www.joomla.inlibrary.com>) for libraries and information centers for the purpose of providing technical support, special links to Joomla resource, latest information on newly released version, and reviews of users' comments, problem assessment, and special guidance.

### **3.8 Library web sites that use Joomla: Few specimens**

Here is a few library websites developed using Joomla:



Figure 3 [Librarians of Love, Africa](#)



Figure 4: [Tyngsborough Public Library, USA](#)



Figure 5: [Airlangga University Library, Indonesia](#)



Figure 6: [South Carolina State Library](#)



Figure 7: [Health Sciences Library, Stony Brook University](#)



Figure 8: [Whatcom County Library System](#)

### 3.9 Professional Library Management Component (PLMC) for Joomla 1.5.x and Joomla 1.0.x

Joomla brought a special version for web site development on professional library management in 2009. This license version, known as Professional Library Management Component (PLMC), is specially designed to manage books and articles on web environment. According to official website of Joomla (2009) this version (PLMC) contains following special features.

- Define unlimited category and subcategory for library website.
- Assign different custom images to each category.
- Define unlimited publishers through which it is possible to get list of books published under specific publisher.
- Define unlimited writer along with list of books with each writer.
- Support tagging for the books.
- Support to display content in multilingual languages.
- Define simple or advanced search option to get details of desired materials in library.
- Import existing books with a CSU to the Joomla website.
- Accelerate component with great speed using core Joomla CSS values and JavaScript files.
- Configure book details field.

## 4. Conclusion

After the arrival of web 2.0 technologies many tools are there in the seen, which are more flexible and easier than the traditional tools. The new technologies include content management systems (CMS), Blogs, wikis, and RSS etc... A CMS is a computer application that enables users to manage content in an orderly fashion...The benefit of using a CMS, especially for website creation, is that it does not require an extensive knowledge of coding. (Giri & Nirgude 2009, p. 185).

One of the most powerful CMS used to develop websites is called Joomla. Joomla is known as an open source CMS means the source code is accessible and able to easily modify. Joomla has many features known as modules or mambots that can be used when developing the website. Features such as video and photo galleries, shopping carts, polls, new articles, message forums, stats packages and so on (Young 2008).

Libraries and information centers which are always dealing with information and have direct connection with their user community who are living both near and far. Without a complete and proficient website a modern library can't be imagined. For the design and development of a perfect website many web designing tools are available in the market. But in case of library and information centre its bit different. Here library website plays a central role to notify its user community on due time and keep them up-to-date, OPAC facilities, provide necessary links and access capacity to its respective resources and miscellaneous library user guides.

In this perspective, Joomla can make all these functions easier. It has some extra ordinary features and advantages which have been discussed above elaborately, those may ensure to develop a constructive library website to satisfy its clients according to their demand of information. Now the library professionals who has minimum IT knowledge can easily develop, keep it up-to-date and run their website independently.

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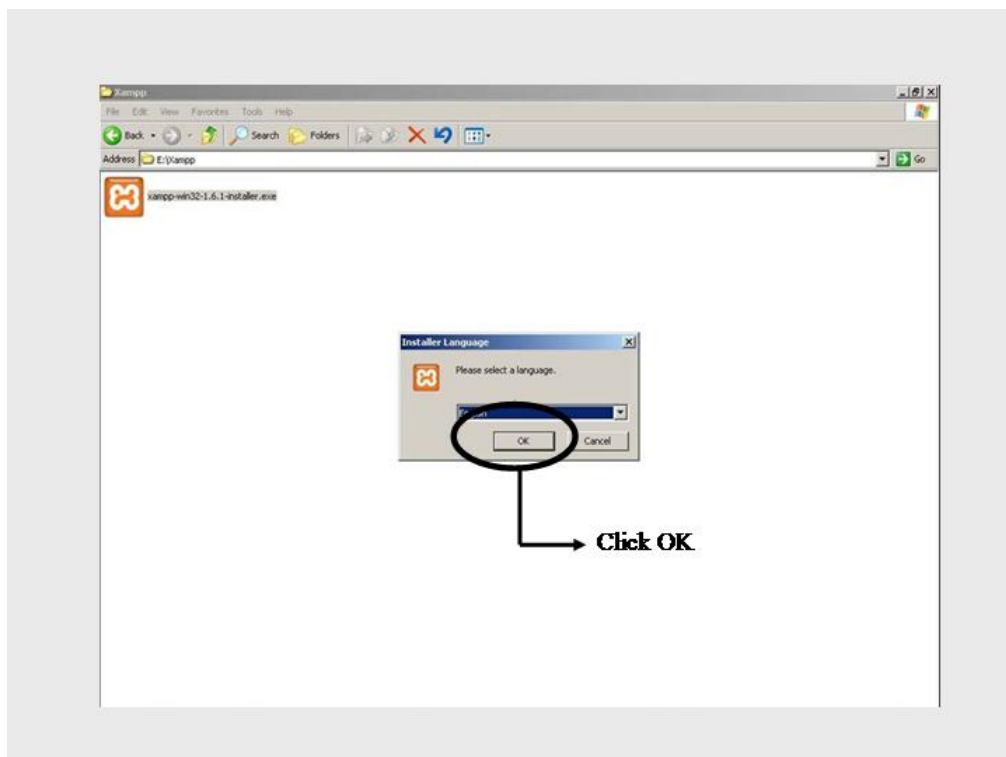
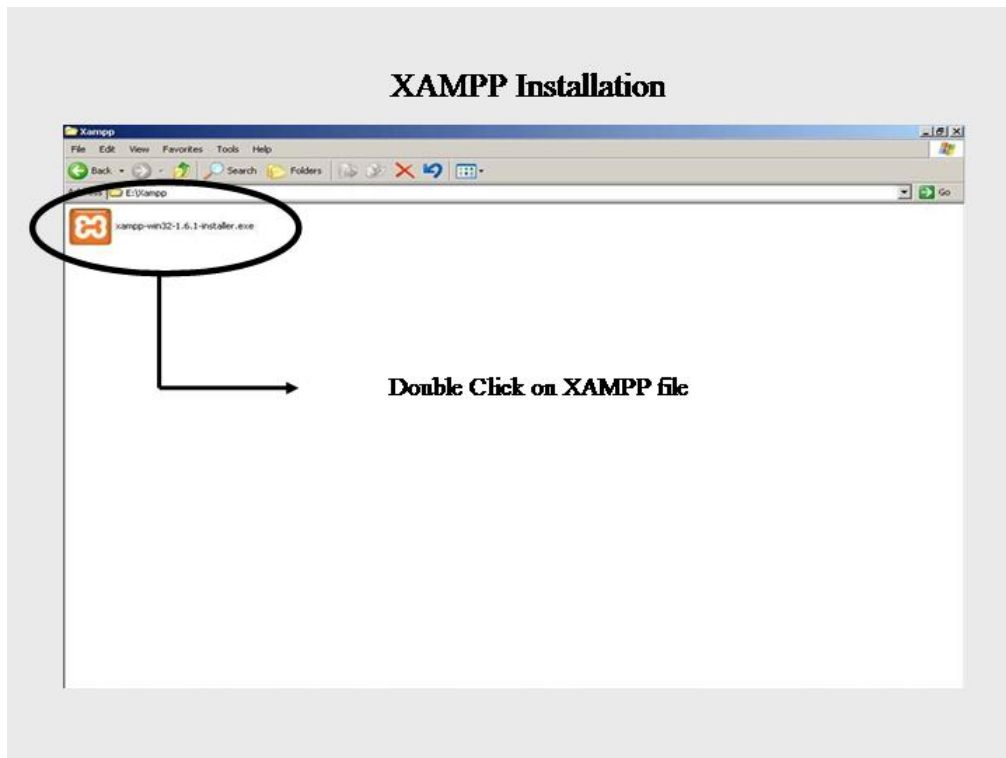
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## ANNEXURE-1

### Joomla Installation Guidelines

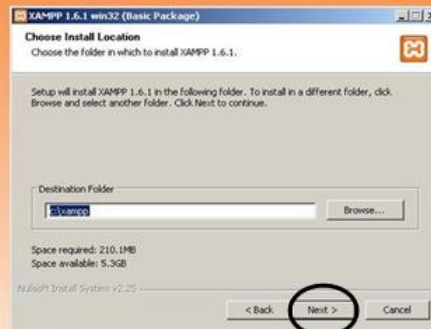


### XAMPP 1.6.1 win32 (Basic Package)



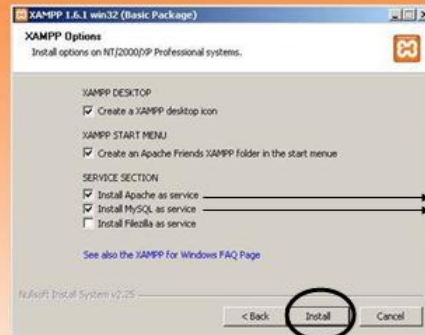
**Click Next**

### XAMPP 1.6.1 win32 (Basic Package)



**Click Next**

### XAMPP 1.6.1 win32 (Basic Package)

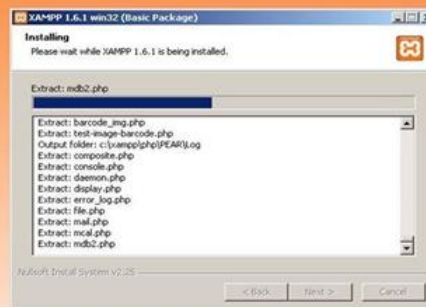


Click on these two check boxes

Then Click Install

Wait here few minutes for installation to be completed

### XAMPP 1.6.1 win32 (Basic Package)

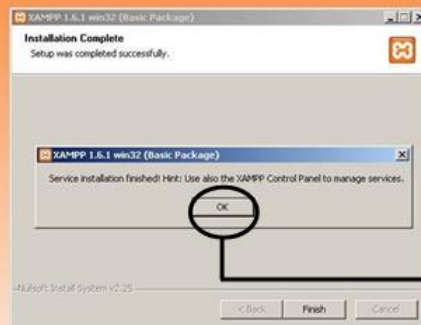


*XAMPP 1.6.1 win32 (Basic Package)*

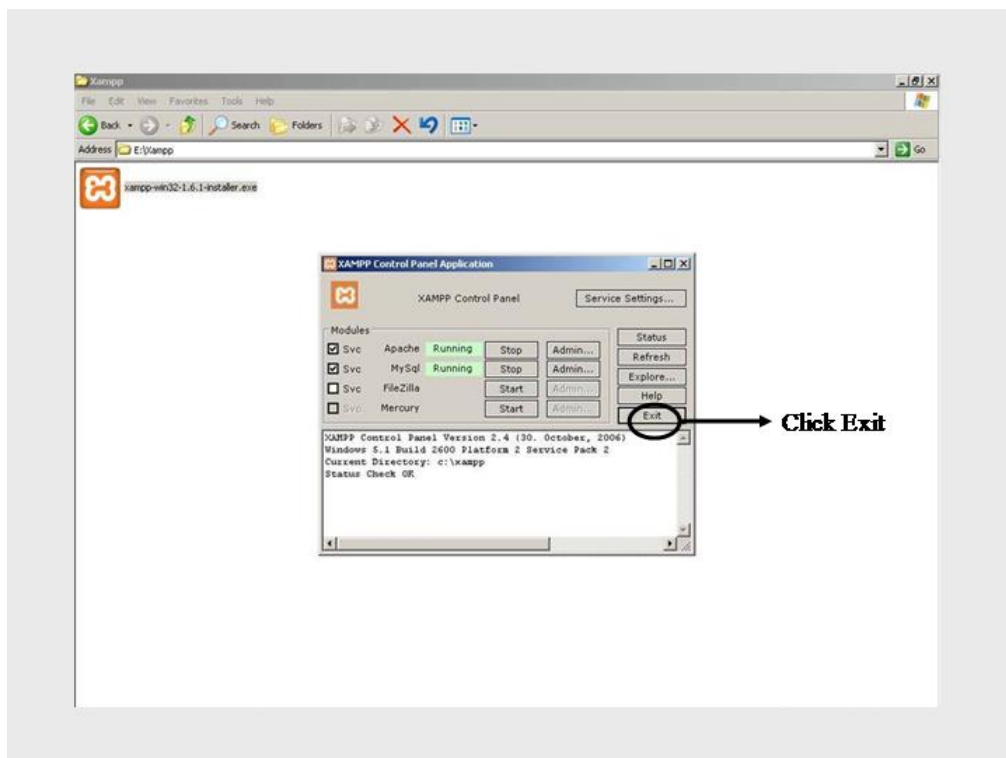
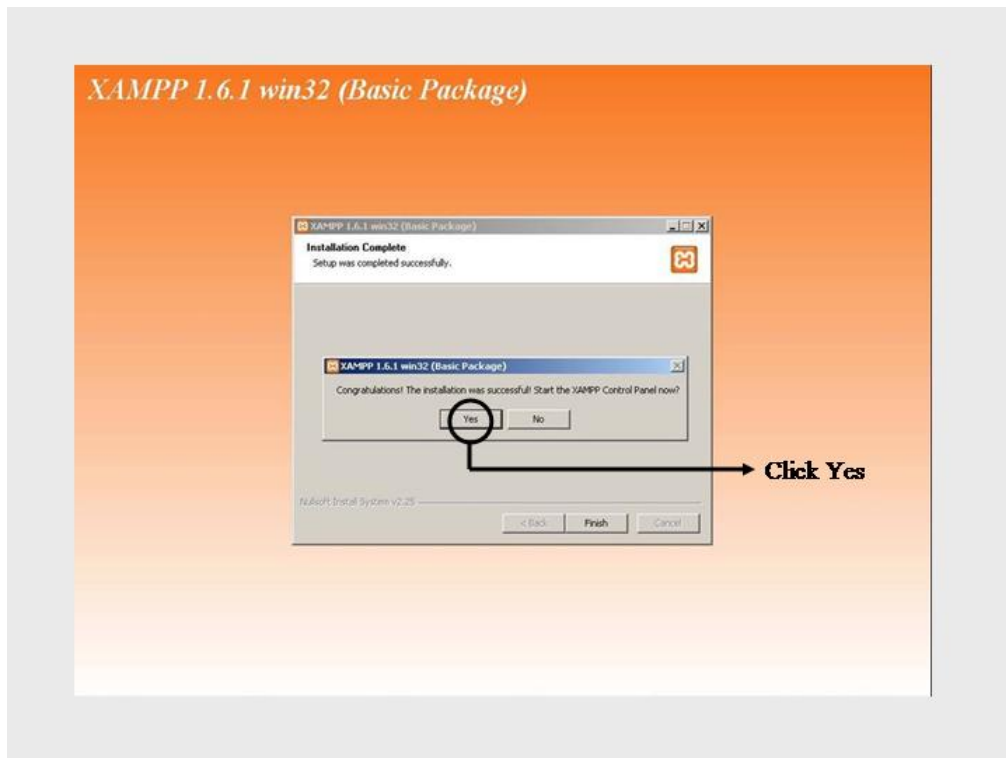


**Click Finish**

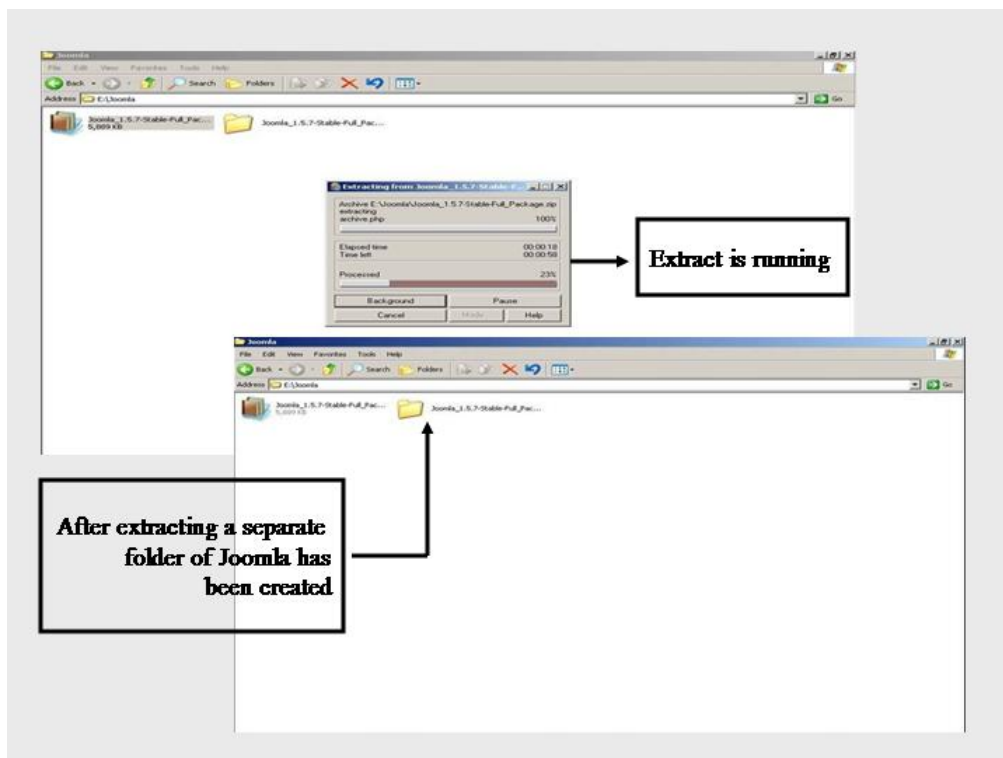
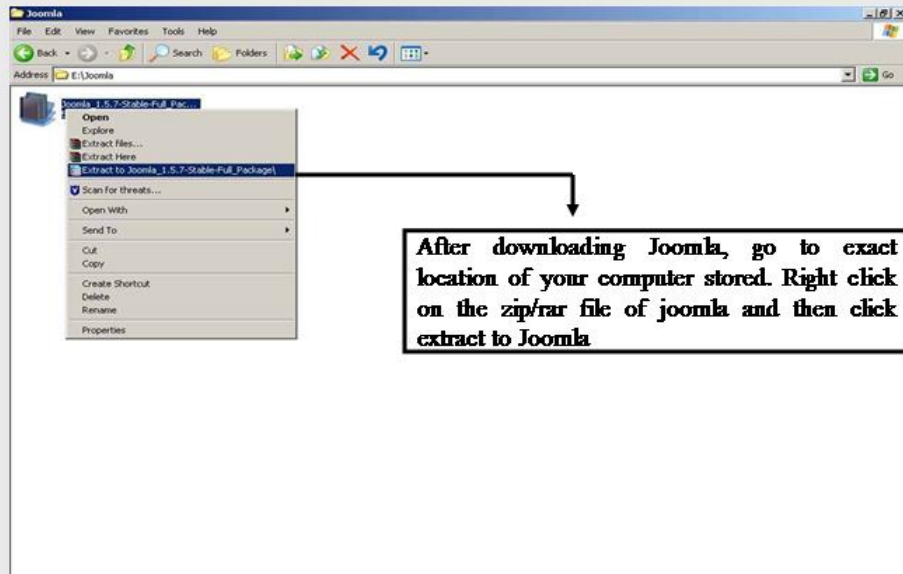
*XAMPP 1.6.1 win32 (Basic Package)*



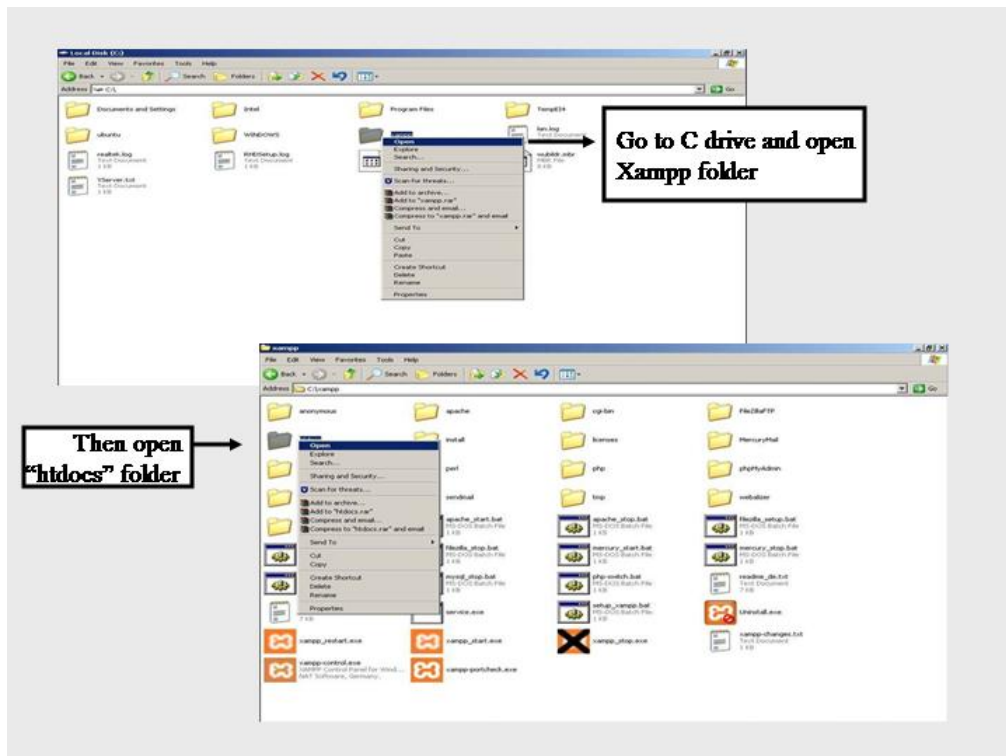
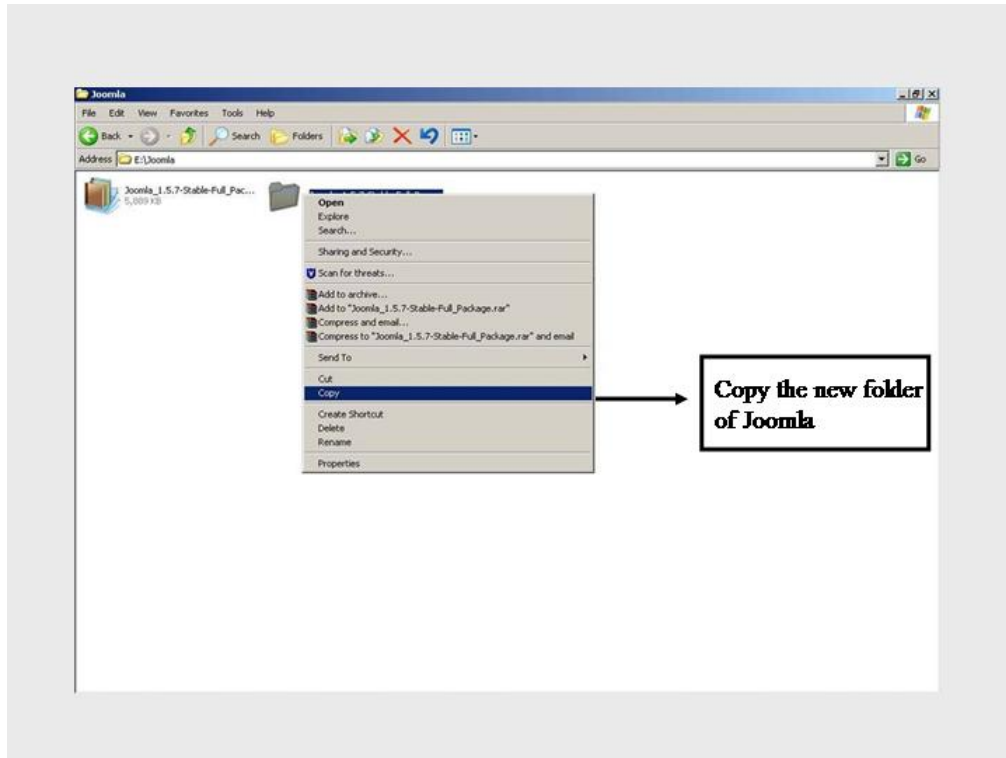
**Click OK**

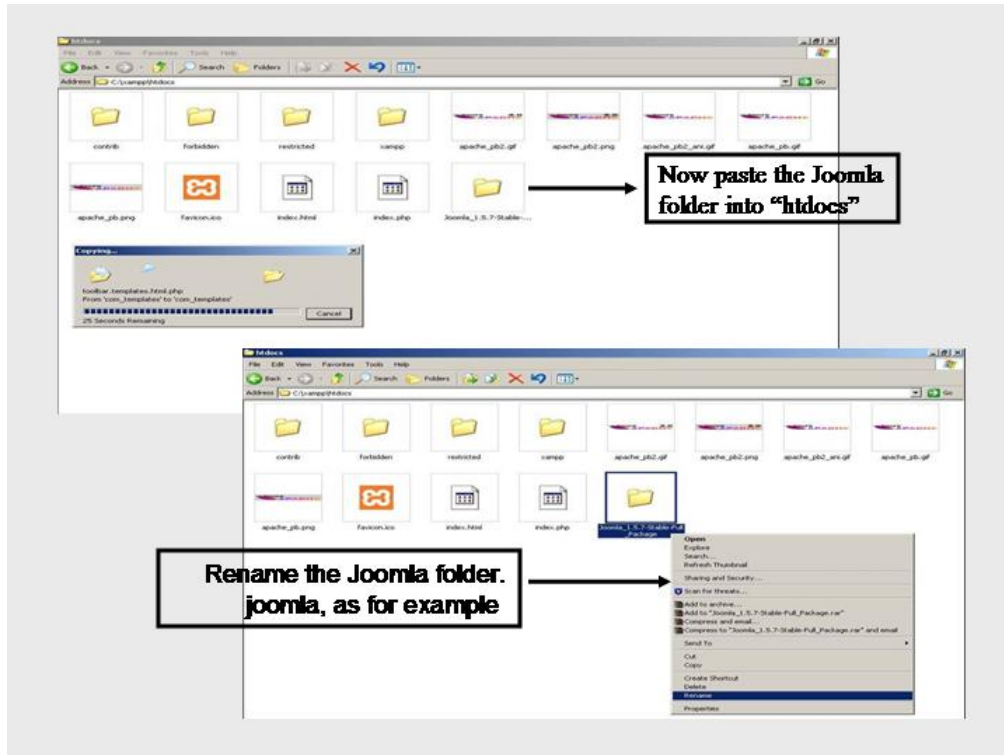


## Joomla Installation



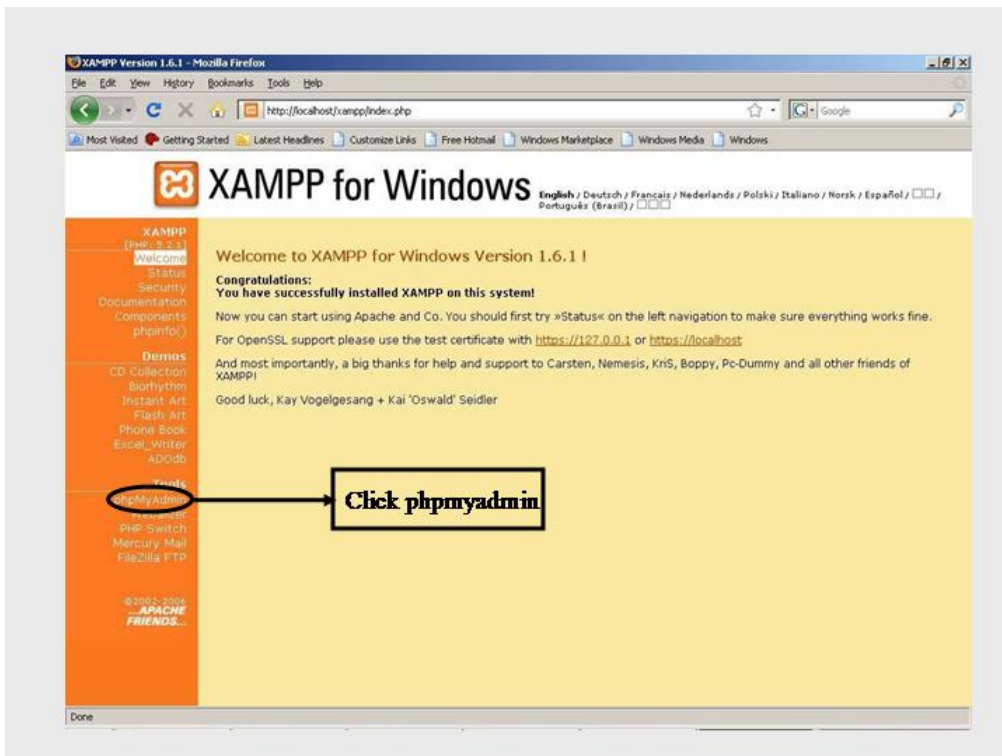


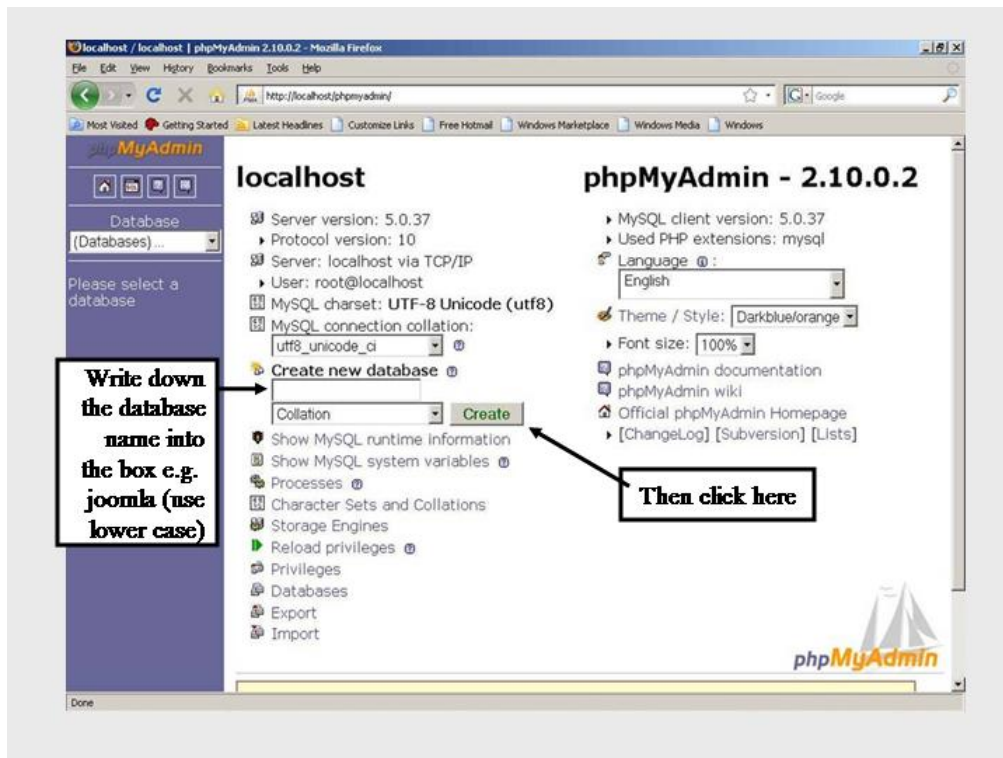




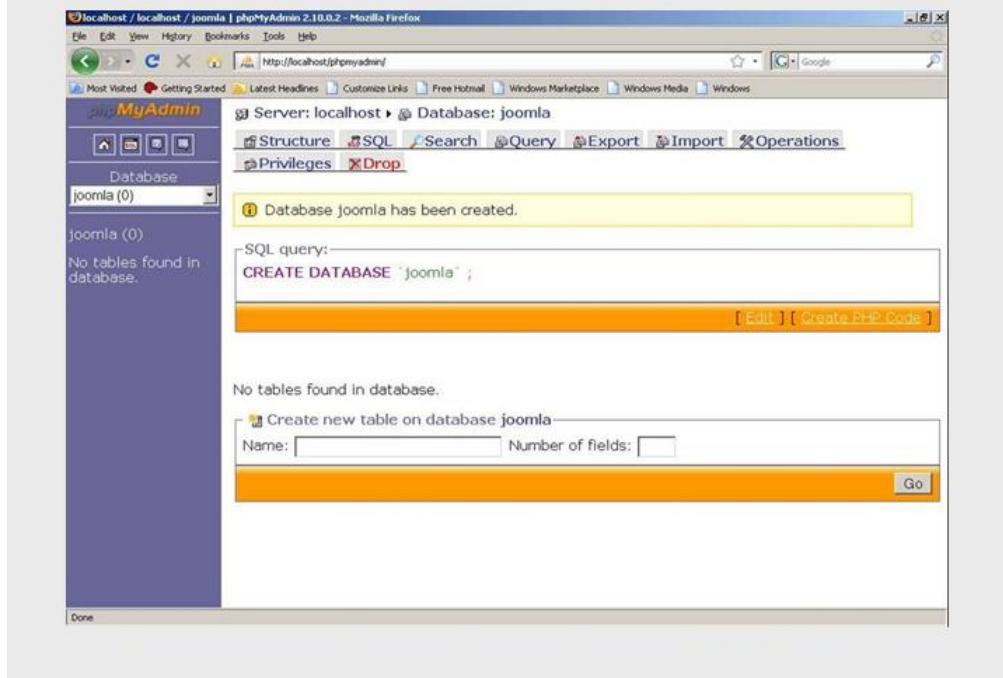
Open any Internet browser e.g. Internet explorer or Mozilla firefox.  
Write <http://localhost> into address bar and then click enter.



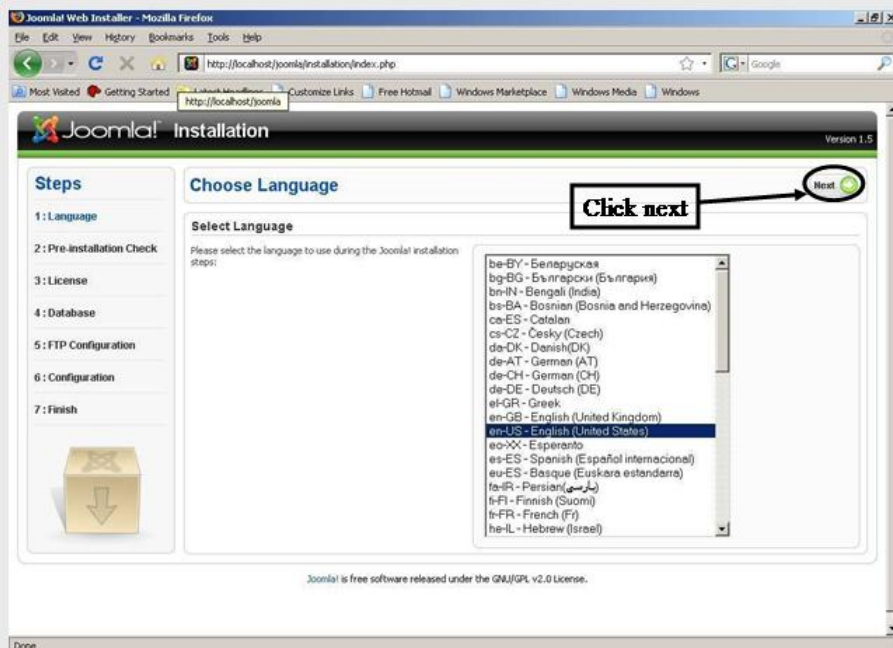


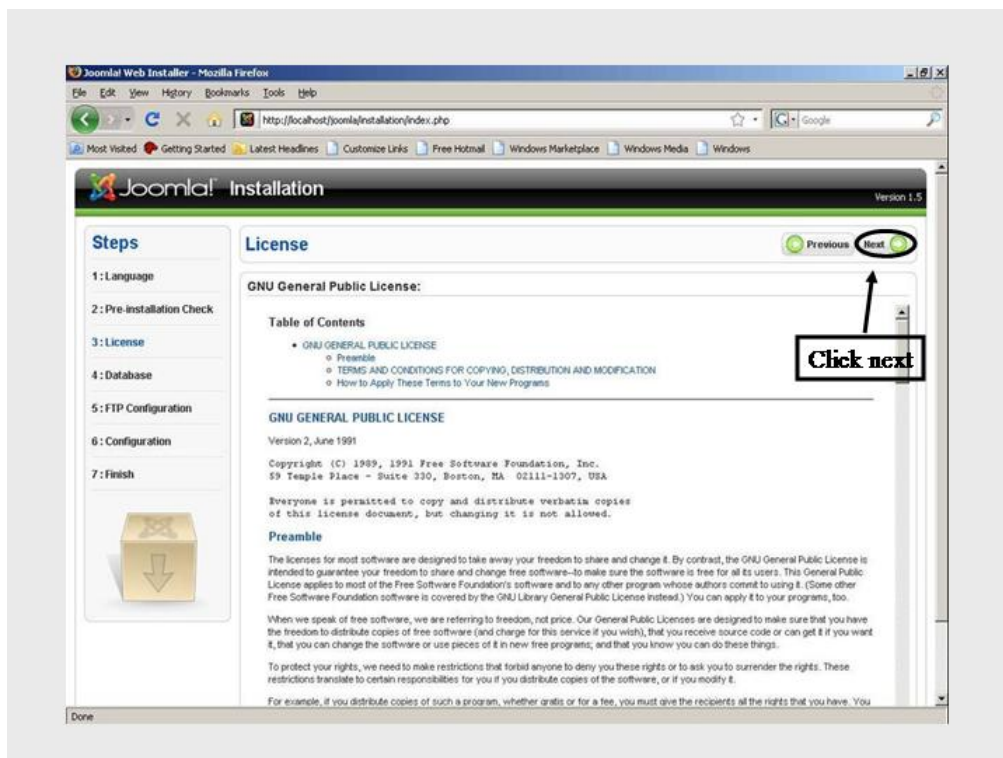
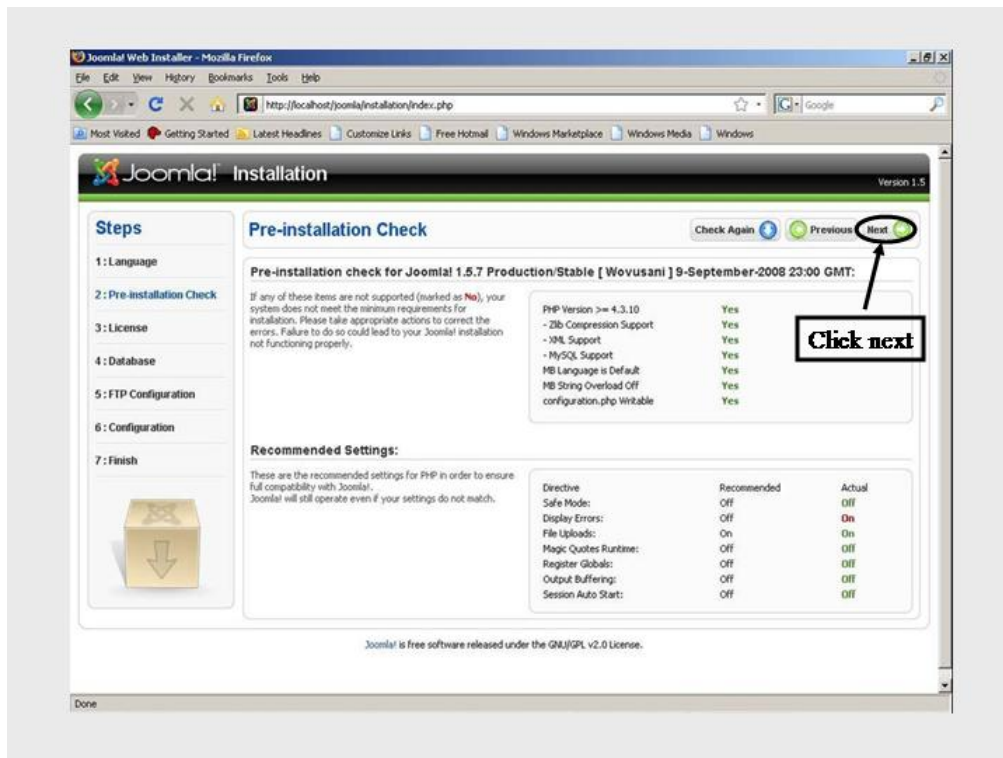


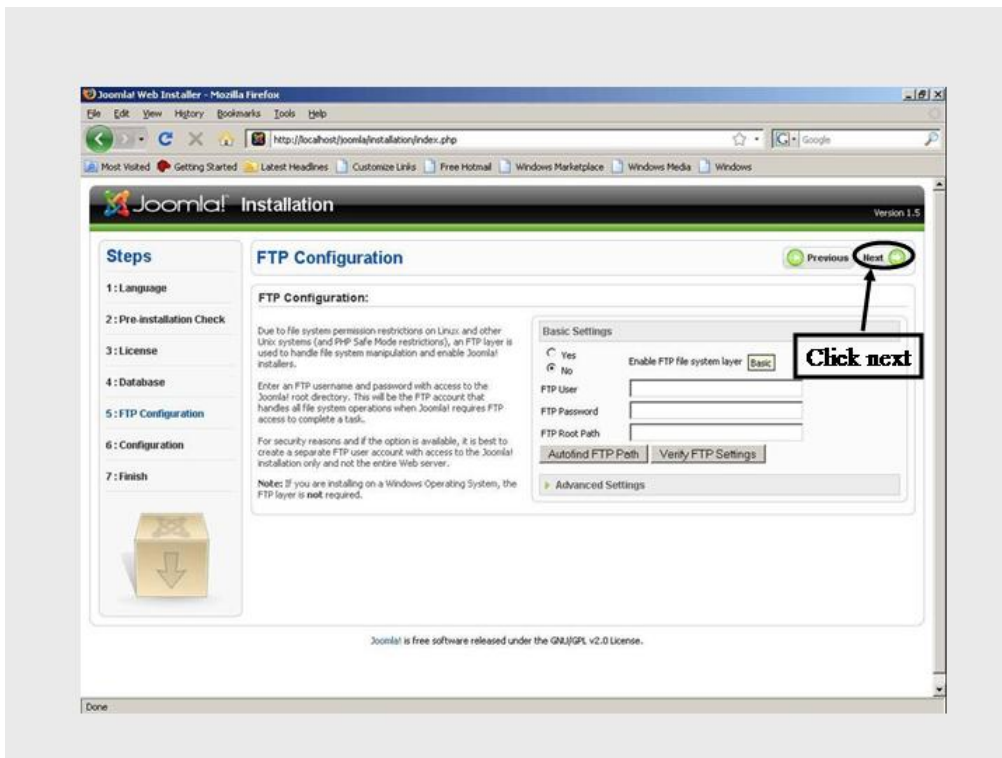
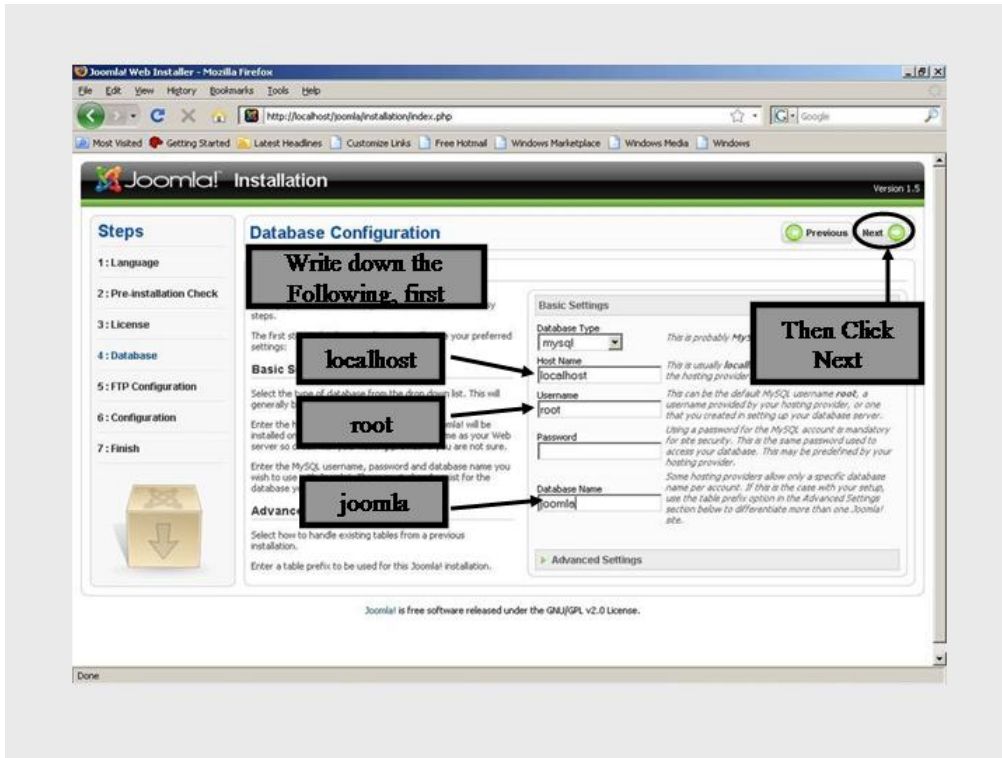
Then, the following page will be appeared. Just close the page and follow the next instruction

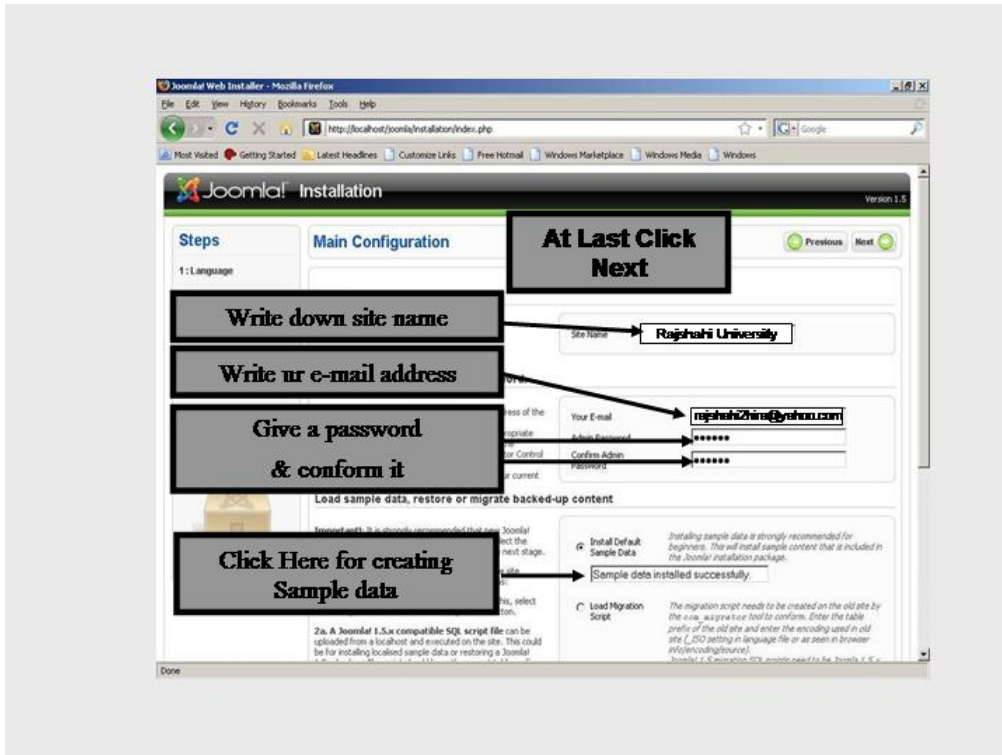


Open any Internet browser and type <http://localhost/joomla> into address bar and then click enter.

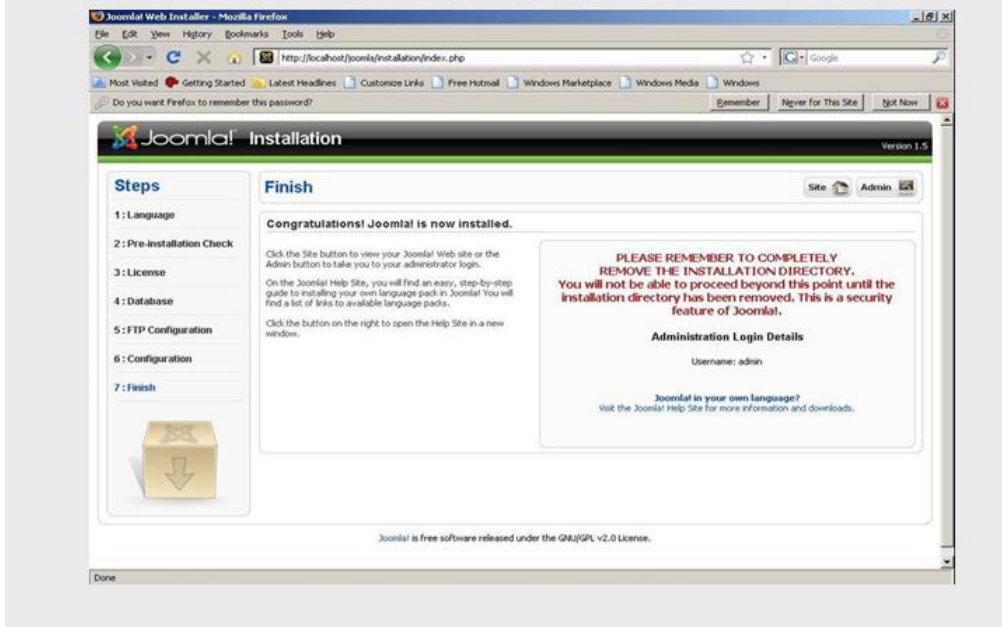






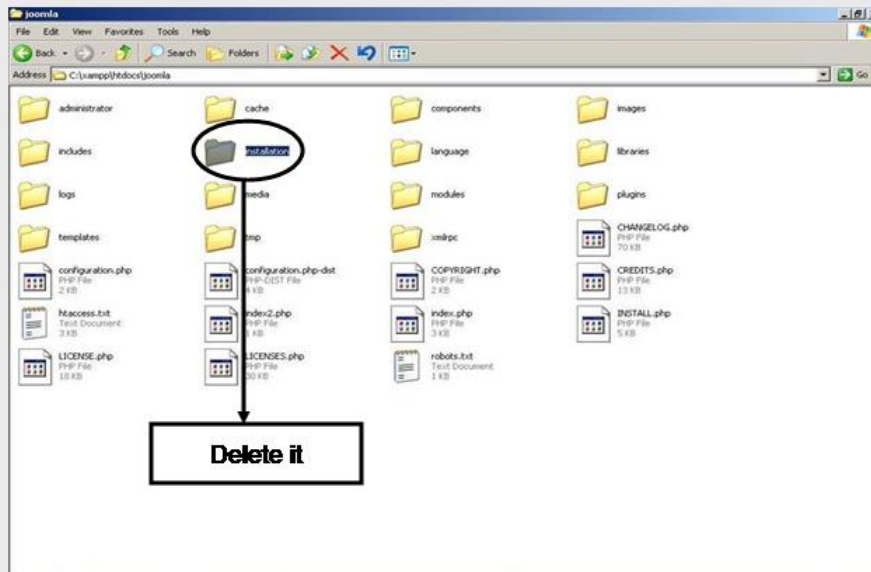


**When this page will be appeared, just minimize it and follow next instruction.**

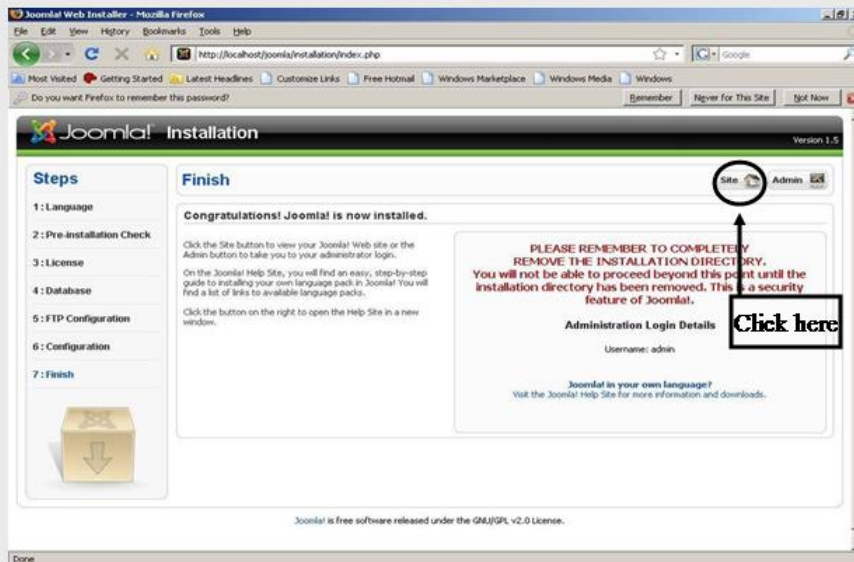


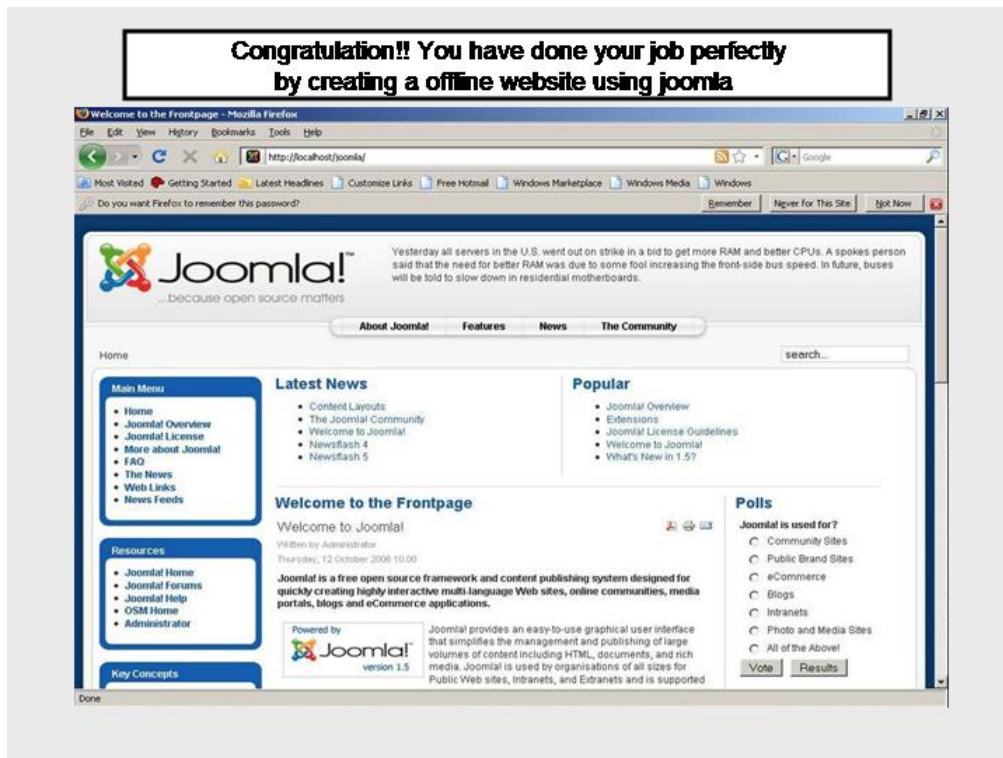


Now go to joomla folder and then delete installation folder  
(C:\xampp\htdocs\joomla)



Maximize this page and click site





To download Joomla and Xampp just follow the links:

<http://www.joomla.org/download.html>

<http://www.apachefriends.org/en/xampp-windows.html>