

Advanced Programming Assignment – 01

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Submitted To: Dr. Sidra Sultana

Open Source Software: Joomla

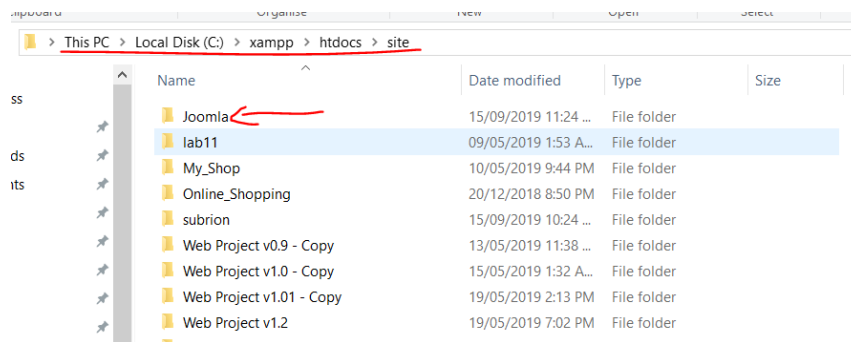
Joomla

Joomla is open-source PHP-based content management system (CMS). It uses object-oriented programming techniques and uses MySQL to store data. It supports many extensions and templates which can be found on its official website. It is free to use and is very flexible. It can be used to design wide variety of websites.

Configuration

1) Downloading and installing software

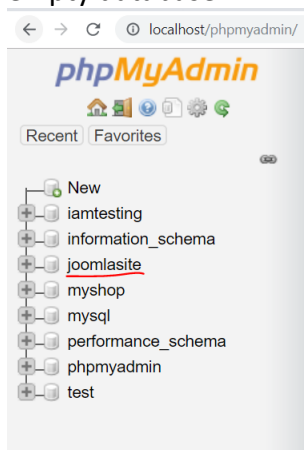
- 1) Download the source code from official website of Joomla
- 2) Extract the source code and place all the files in single folder.
- 3) Place that folder in 'htdocs/site/' folder.



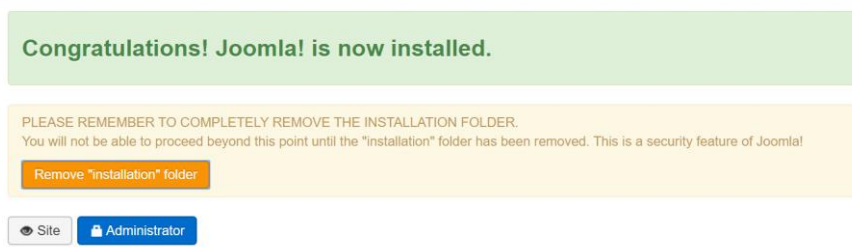
- 4) Open localhost in browser and browse to the 'Joomla' folder.
- 5) After that, it will begin installation. Just follow the instructions to install it.

2) Creating Database

Joomla requires connection to the database for its working. It will ask for database name and password during installation. Go to 'localhost/phpmyadmin' and create an empty database.

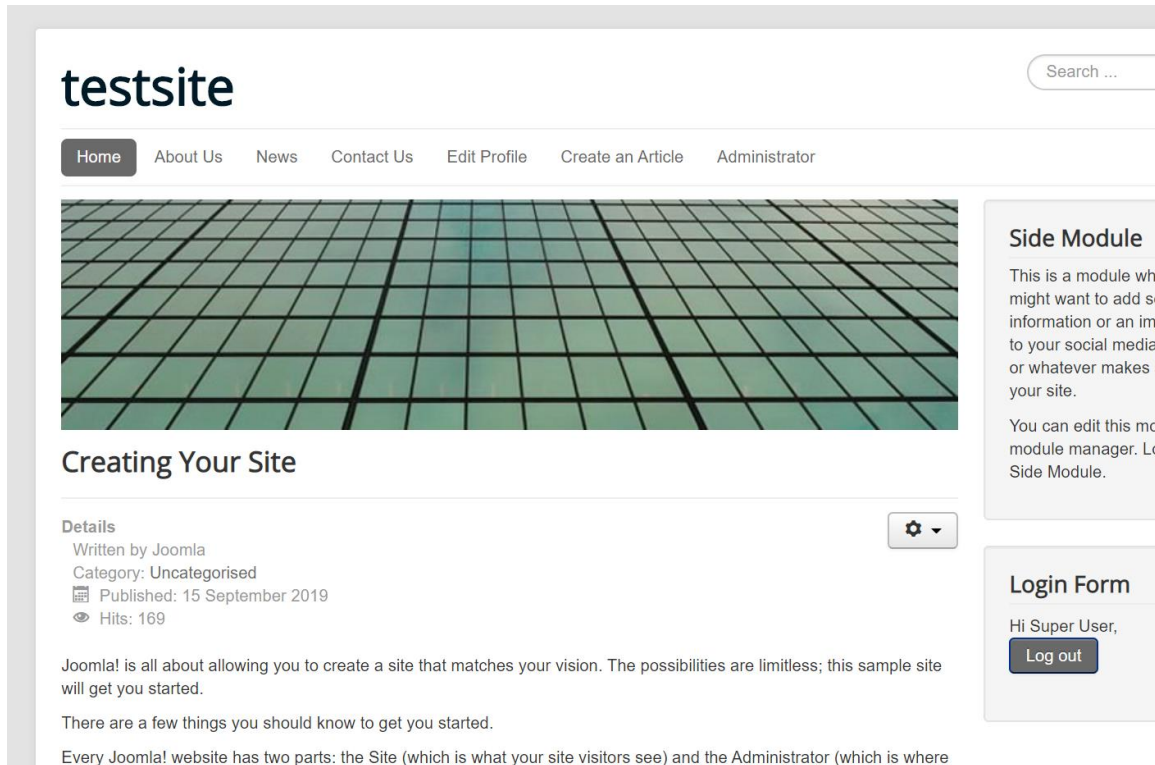


Provide its name and connection credentials to installation menu of Joomla and then again follow installation procedure instruction. After it is installed, it is important to delete install folder from Joomla folder otherwise process will not proceed any further.



3) Setting Up Website

At the end of installation menu, Joomla will give you some sample websites options to choose from. Choose the type of website you want and give it a name. Then Joomla will create a sample website. Here is what it might look like:



Exploring it with User Perspective

To access the website, you have to login. Once you have logged in, you come to home screen as shown in picture above. There is a navigation menu on the top. You can move to different sections of the website using this menu. There is also a search bar at the top section, and right panel is reserved for some information/notifications you might want to display across all pages. Most of the pages in navigation are just what you expect them to be and are more or less same for most of the websites. In create an article tab, you can use an editor and some other tools for the purpose of article writing.

Content

Publishing

Language

Metadata

Title *

Alias

Auto-generate from title

Edit

Insert

View

Format

Table

Tools

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Module

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Menu

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Contact

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Article

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Image

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Page Break

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Read More

When logged in as administrator, you can access 'Administrator' tab. You can perform all the administrative tasks there like managing articles, adding extensions, managing users, templates, modules and menus etc. It looks like this:

System

Users

Menus

Content

Components

Extensions

Help

testsite

Control Panel

Joomla! would like your permission to collect some basic statistics.

To better understand our install base and end user environments it is helpful if you send some site information back to a Joomla! controlled central server. No identifying data is captured at any point. You can change these settings later from Plugins > System - Joomla! Statistics. [Select here to see the information that will be sent.](#)

Enable Joomla Statistics?

Always

Once

Never

CONTENT

New Article

Articles

Categories

Media

STRUCTURE

Menu(s)

Modules

You have post-installation messages

There are important post-installation messages that require your attention.

This information area won't appear when you have hidden all the messages.

Read Messages

LATEST ACTIONS

User [daud](#) logged in to admin

2019-09-16 14:49

You can see log of different activities. To manage structure or content of website, you head to corresponding link. It uses database table to store preferences. You change different things like adding category to categories of article, or adding a new module, you just have to click on the button which basically create a new entry to the corresponding table. For example, if you want to add a new menu, just click on 'Menu(s)' button in above screenshot and then to new menu and you will come across this screen:

System Users Menus Content Components Extensions Help

Menus. Add

Save Save & Close Save & New Cancel

Joomla! would like your permission to collect some information

To better understand our install base and end user environments it is helpful if you send some information at this point. You can change these settings later from Plugins > System - Joomla! Statistics. **Select**

Enable Joomla Statistics?

Always Once Never

Title *

Menu Details

Permissions

Menu Type *

Description

Client ☒ Site ☐ Administrator

Fill the table to add new menu type.

Also, everything in this sample website is editable. You can edit anything like you may even edit the content at homepage. If you want to edit any section of website, just click on the edit button corresponding to that section.

Creating Your Site

Details

Written by Joomla
Category: Uncategorized
Published: 15 September 2019
Hits: 173

Print

Edit

Joomla! is all about allowing you to create a site that matches your vision. The possibilities are limitless; this sample site will get you started.

There are a few things you should know to get you started.

Every Joomla! website has two parts: the Site (which is what your site visitors see) and the Administrator (which is where

After clicking on edit button, it opens the content in content editor where you can make any changes you want.

Exploring Database

Remember creating Database during installation process? It uses that database. When

website was created, it automatically populated that databases. Now I will explore that database. Here is how that database looks like:

Table	Action	Rows	Type	Collation	Size
<input type="checkbox"/> my_action_logs	★ Browse Structure Search Insert Empty Drop	4	InnoDB	utf8mb4_unicode_ci	80 KiB
<input type="checkbox"/> my_action_logs_extensions	★ Browse Structure Search Insert Empty Drop	18	InnoDB	utf8mb4_unicode_ci	16 KiB
<input type="checkbox"/> my_action_logs_users	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	32 KiB
<input type="checkbox"/> my_action_log_config	★ Browse Structure Search Insert Empty Drop	19	InnoDB	utf8mb4_unicode_ci	16 KiB
<input type="checkbox"/> my_assets	★ Browse Structure Search Insert Empty Drop	48	InnoDB	utf8mb4_unicode_ci	64 KiB
<input type="checkbox"/> my_associations	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	32 KiB
<input type="checkbox"/> my_banners	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	96 KiB
<input type="checkbox"/> my_banner_clients	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	48 KiB
<input type="checkbox"/> my_banner_tracks	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	64 KiB
<input type="checkbox"/> my_categories	★ Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_unicode_ci	128 KiB
<input type="checkbox"/> my_contact_details	★ Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_unicode_ci	144 KiB
<input type="checkbox"/> my_content	★ Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_unicode_ci	160 KiB
<input type="checkbox"/> my_contentitem_tag_map	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	64 KiB
<input type="checkbox"/> my_content_frontpage	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	16 KiB
<input type="checkbox"/> my_content_rating	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	16 KiB

There are 78 tables in this database. One advantage of having so many tables and storing most of information in those tables is that you get a lot of flexibility and security. For example, activity log has its own table. All activities are recorded in it, and naturally we can create backup of database and can be transferred.

Here is screenshot of my_action_logs table:

id	message_language_key	message	log_date
1	PLG_ACTIONLOG_JOOMLA_USER_LOGGED_IN	{ "action": "login", "userid": "195", "username": "daud" ...	2019-09-15 18:24:4
2	PLG_ACTIONLOG_JOOMLA_USER_LOGGED_IN	{ "action": "login", "userid": "195", "username": "daud" ...	2019-09-15 18:25:0
3	PLG_ACTIONLOG_JOOMLA_USER_LOGGED_IN	{ "action": "login", "userid": "195", "username": "daud" ...	2019-09-16 07:42:5
4	PLG_ACTIONLOG_JOOMLA_USER_LOGGED_IN	{ "action": "login", "userid": "195", "username": "daud" ...	2019-09-16 07:43:1
5	PLG_ACTIONLOG_JOOMLA_USER_LOGGED_IN	{ "action": "login", "userid": "195", "username": "daud" ...	2019-09-16 14:49:2

As you can see it keeps record of all the login I have attempted.

And here is screenshot of users table:

id	name	username	email	password
195	Super User	daud	daud.cheema@hotmail.com	\$2y\$10\$2pevxxu6JbCL06NQOcgRW.p2BCziRDRHo0uHtDp3tdW...

Now if I want to add a new user using backend, I will just simple create a new row in this table. Here is the table, after I have added a new user:

id	name	username	email
195	Super User	daud	daud.cheema@hotmail.com
196		news	newemail

Since it uses MySQL tables to store most of the data, and naturally we can edit those tables using MySQL queries, so website created using Joomla are very flexible. Also, because of this front end and backend are independent, this makes website robust and versatile. If you want to add new module, you don't have to change the code of website, just create a corresponding entry in related table.

Exploring Coding Structure

As mentioned at the start of this report, Joomla is open-source and its code can be downloaded from official website. Once you have downloaded the source code, and unzipped it, it looks something like this:

administrator	15/09/2019 11:07 ...	File folder	
bin	15/09/2019 11:07 ...	File folder	
cache	15/09/2019 11:07 ...	File folder	
cli	15/09/2019 11:07 ...	File folder	
components	16/09/2019 8:30 PM	File folder	
images	15/09/2019 11:07 ...	File folder	
includes	15/09/2019 11:07 ...	File folder	
language	15/09/2019 11:07 ...	File folder	
layouts	15/09/2019 11:07 ...	File folder	
libraries	16/09/2019 8:30 PM	File folder	
media	16/09/2019 8:30 PM	File folder	
modules	16/09/2019 8:30 PM	File folder	
plugins	15/09/2019 11:09 ...	File folder	
templates	15/09/2019 11:09 ...	File folder	
tmp	16/09/2019 8:30 PM	File folder	
configuration.php	15/09/2019 11:23 ...	PHP File	2 KB
htaccess.txt	12/08/2019 9:14 PM	Text Document	4 KB
index.php	12/08/2019 9:14 PM	PHP File	2 KB
LICENSE.txt	12/08/2019 9:14 PM	Text Document	18 KB
README.txt	12/08/2019 9:14 PM	Text Document	5 KB
robots.txt	12/08/2019 9:14 PM	Text Document	1 KB
web.config.txt	12/08/2019 9:14 PM	Text Document	2 KB

Its code is very well structured for example code related to the admin user of website is placed in 'administrator' folder, images used in websites are placed in images folder etc.

Code uses many object-oriented techniques as clear from this very small snippet:

```
// Instantiate the application.
$app = JFactory::getApplication('site');

// Execute the application.
$app->execute();
```

Here 'Factory Method' is used for creating an instance. This is one of model of programming in OOP.

There are different templates available for front end. All available templates are placed in 'templates' folder. In each template folder, you can see that there are number of different files/folders like index page and css. If you want to edit some style of your template, you can come to this folder.

Filename	Date modified	Type	Size
css	15/09/2019 11:09 ...	File folder	
html	15/09/2019 11:09 ...	File folder	
images	15/09/2019 11:09 ...	File folder	
img	15/09/2019 11:09 ...	File folder	
js	15/09/2019 11:09 ...	File folder	
language	15/09/2019 11:09 ...	File folder	
less	15/09/2019 11:09 ...	File folder	
component.php	12/08/2019 9:14 PM	PHP File	2 KB
error.php	12/08/2019 9:14 PM	PHP File	10 KB
favicon.ico	12/08/2019 9:14 PM	Icon	2 KB
index.php	12/08/2019 9:14 PM	PHP File	7 KB
offline.php	12/08/2019 9:14 PM	PHP File	5 KB
template_preview.png	12/08/2019 9:14 PM	PNG File	123 KB
template_thumbnail.png	12/08/2019 9:14 PM	PNG File	9 KB
templateDetails.xml	12/08/2019 9:14 PM	XML Document	4 KB

Here is look into css file of protostar template's css:

```

system.css x template.css x
1  article,
2  aside,
3  details,
4  figcaption,
5  figure,
6  footer,
7  header,
8  hgroup,
9  nav,
10 section {
11     display: block;
12 }
13 audio,
14 canvas,
15 video {
16     display: inline-block;
17     *display: inline;
18     *zoom: 1;
19 }
20 audio:not([controls]) {
21     display: none;
22 }
23 html {
24     font-size: 100%;
25     -webkit-text-size-adjust: 100%;
26     -ms-text-size-adjust: 100%;
27 }
28 a:focus {
29     outline: thin dotted #333;
30     outline: 5px auto -webkit-focus-ring-color;
31     outline-offset: -2px;
32 }
33 a:hover,
34 a:active {
35     outline: 0;
36 }
37 sub,
38 sup {
39     position: relative;
40     font-size: 75%;
41     line-height: 0;
42     vertical-align: baseline;
43 }
44 sup {

```

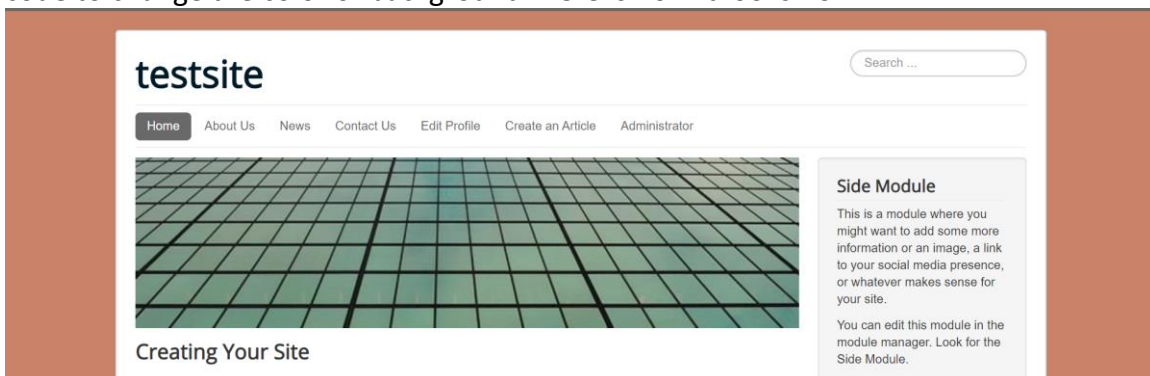
And this is how stylesheet is being used:


```

49 // Add Stylesheets
50 JHtml::_('stylesheet', 'template.css', array('version' => 'auto', 'relative' => true));
51
52 // Use of Google Font
53 if ($this->params->get('googleFont'))
54 {
55     JHtml::_('stylesheet', 'https://fonts.googleapis.com/css?family=' . $this->params->get('googleFontName'));
56     $this->addStyleDeclaration("
57     h1, h2, h3, h4, h5, h6, .site-title {
58         font-family: '" . str_replace(' ', ' ', $this->params->get('googleFontName')) . "', sans-serif;
59     }");
60 }
61
62 // Template color
63 if ($this->params->get('templateColor'))
64 {
65     $this->addStyleDeclaration('
66     body.site {
67         border-top: 3px solid ' . $this->params->get('templateColor') . ';
68         background-color: ' . $this->params->get('templateBackgroundColor') . ';
69     }
70     a {
71         color: ' . $this->params->get('templateColor') . ';
72     }
73     .nav-list > .active > a,
74     .nav-list > .active > a:hover,
75     .dropdown-menu li > a:hover,
76     .dropdown-menu .active > a,
77     .dropdown-menu .active > a:hover,
78     .nav-pills > .active > a,
79     .nav-pills > .active > a:hover,
80     .btn-primary {
81         background: ' . $this->params->get('templateColor') . ';
82     }');
83 }

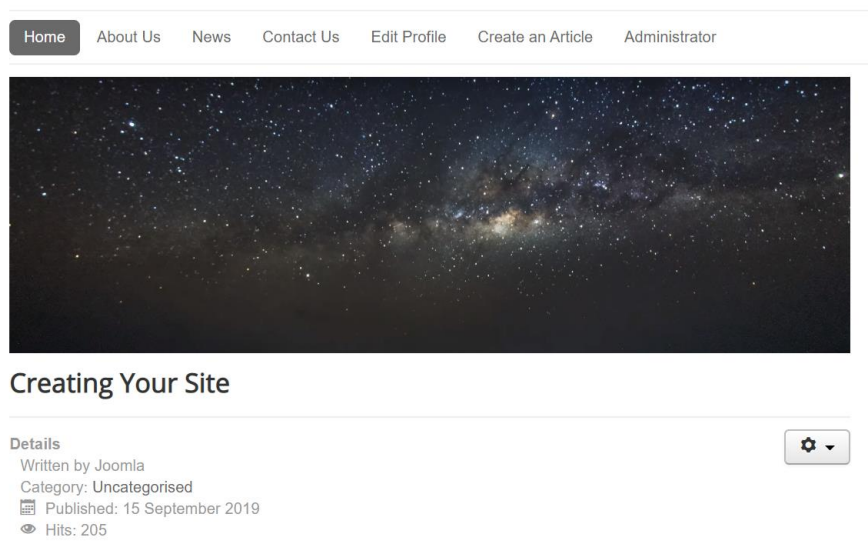
```

You can either change the style in css or you can change the code here. I changed the code to change the color of background. Here is how it looks now.



Images used in the website are placed in 'Image' folder. To change the images, simply go to that folder and place your image. Be sure that the name of your images are same as that used in code. For example, I changed the header image to this:

testsite



And here is index.php:

```
index.php
135 <body class="site"><?php echo $option
136 . ' view-' . $view
137 . ($layout ? ' layout-' . $layout : ' no-layout')
138 . ($task ? ' task-' . $task : ' no-task')
139 . ($itemid ? ' itemid-' . $itemid : '')
140 . ($params->get('fluidContainer')) ? ' fluid' : ''
141 . ($this->direction == 'rtl' ? ' rtl' : '');
142 ?>
143 <!-- Body -->
144 <div class="body" id="top">
145 <div class="container"><?php echo ($params->get('fluidContainer')) ? '-fluid' : ''; ?>
146 <!-- Header -->
147 <header class="header" role="banner">
148 <div class="header-inner clearfix">
149 <a class="brand pull-left" href="<?php echo $this->baseurl; ?>/">
150 <?php echo $logo; ?>
151 <?php if ($this->params->get('sitedescription')) : ?>
152 <?php echo '<div class="site-description">' . htmlspecialchars($this->params->get('sitedescription'), ENT_COMPAT, 'UTF-8') . '</div>'; ?>
153 <?php endif; ?>
154 </a>
155 <div class="header-search pull-right">
156 <jdoc:include type="modules" name="position-0" style="none" />
157 </div>
158 </div>
159 </header>
160 <?php if ($this->countModules('position-1')) : ?>
161 <nav class="navigation" role="navigation">
162 <div class="navbar pull-left">
163 <a class="btn btn-navbar collapsed" data-toggle="collapse" data-target=".nav-collapse">
164 <span class="element-invisible"><?php echo JText::_('TPL_PROTOSTAR_TOGGLE_MENU'); ?></span>
165 <span class="icon-bar"></span>
166 <span class="icon-bar"></span>
167 <span class="icon-bar"></span>
168 </a>
169 </div>
170 <div class="nav-collapse">
171 <jdoc:include type="modules" name="position-1" style="none" />
172 </div>
173 </nav>
```

It loads all the content at home page. You can change this code if you want to make some changes to it.

One thing to note here is use of getter functions.

```
<div class="container"><?php echo ($params->get('fluidContainer')) ? '-fluid' : ''; ?>
<!-- Header -->
<header class="header" role="banner">
  <div class="header-inner clearfix">
    <a class="brand pull-left" href="<?php echo $this->baseurl; ?>/">
      <?php echo $logo; ?>
      <?php if ($this->params->get('sitedescription')) : ?>
        <?php echo '<div class="site-description">' . htmlspecialchars($this->params->get('sitedescription'))
        <?php endif; ?>
```

In this way, code is divided into different modules and each module is independent of other. You can change one without affecting other since there is nothing hardcoded.

Installing new Plugins

Joomla has thousands of extensions available which can be downloaded from official website. They can be very helpful and can greatly improve functionality of a website. To add a new plugin:

- 1) Access 'Administrator' tab from navigation bar and authenticate yourself as administrator.
- 2) Once there, click on 'Install Extension(s)' from side bar:

STRUCTURE

Menu(s)

Modules

USERS

Users

No Urgent Requests.

CONFIGURATION

Global

Templates

Language(s)

EXTENSIONS

[Install Extensions](#)

- 3) Search for the plugin you want to install. If you have it downloaded to your PC, select appropriate extension, otherwise use search bar. Click on the extension you want to install.

Install from Web Upload Package File Install from Folder Install from URL

CATEGORIES

- Home
- Access & Security
- Administration
- Ads & Affiliates
- Authoring & Content
- Calendars & Events
- Clients & Communities

Popular extensions listed on the [Joomla Extension Directory](#)

1065 reviews with a score of 100/100

Akeeba Backup

Backup - Restore - Transfer

884 reviews with a score of 100/100

Breezing Forms

Professional Form Builder For Joomla!

721 reviews with a score of 100/100

RSForm!Pro

Professional Form Builder For Joomla!


- 4) Then click on install button and it will be installed.

CATEGORIES

- Home
- Access & Security
- Administration
- Ads & Affiliates
- Authoring & Content
- Calendars & Events
- Clients & Communities
- Communication
- Chat**
 - Chat - hosted
 - Forum
 - Forum add-ons.
 - Autonomous
 - Forum Bridges
 - Instant Messaging

[Extensions / Communication / Chat / ChatBro - website user chat](#)

ChatBro - website user chat POPULAR



3 reviews with a score of 74/100

Version: 3.0.1 (last update on Friday, 11 May 2018)

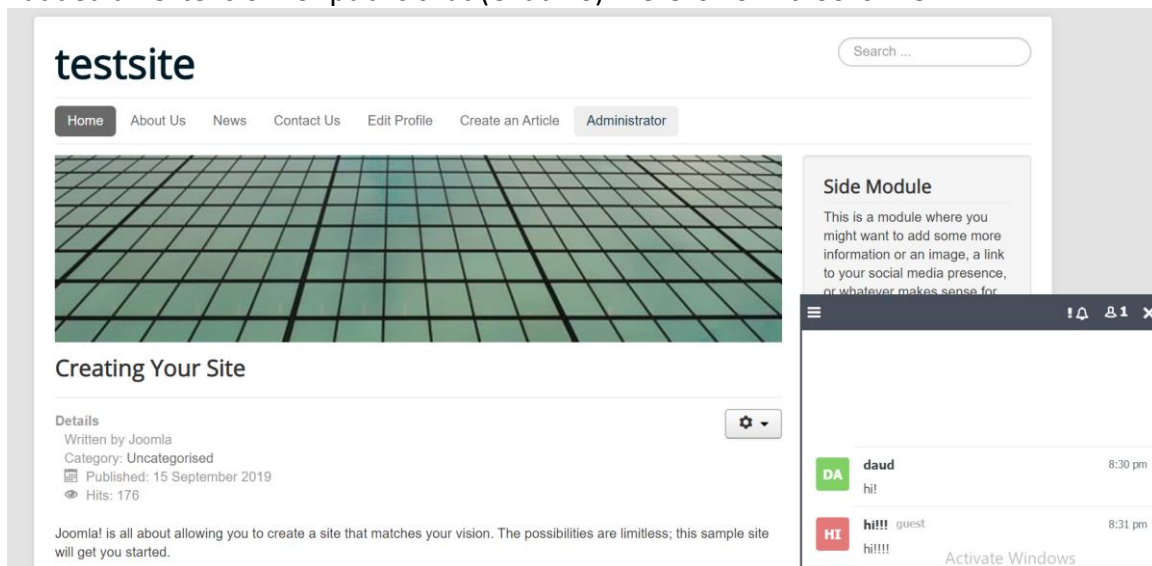
License: GPLv2 or later Free

Added On: Tuesday, 26 July 2016

Component **Module** **Plugin**

ChatBro - website user chat (By ChatBro)

I added an extension for public chat (ChatBro). Here is how it looks like:



You can add as many extensions as you like. In the same way, you can also download new templates. There are thousands of templates too, on Joomla's official site.