

Content Management Software (UCS23504J)- Lab Manual

This manual outlines the practical exercises for the Content Management Software course, focusing on Joomla. Each laboratory session is designed to provide hands-on experience with various aspects of Joomla, from initial setup to advanced configuration.

Laboratory 1: System Requirements for Joomla

Aim

To understand and identify the minimum system requirements necessary for a successful Joomla installation and operation.

Procedure

1. **Research Joomla Requirements:** Use the official Joomla documentation to find the latest recommended system requirements (PHP version, database type and version, web server, minimum memory, etc.).
2. **Check Current System:** Verify if the local machine or server environment meets these requirements.
3. **Identify Missing Components (if any):** Note down any software or configuration settings that are not met.
4. **Plan for Installation:** Based on the findings, outline the steps required to set up an environment suitable for Joomla.

Source Code

No specific source code is involved in this lab. The task focuses on system analysis and configuration.

Input

- Joomla official documentation.
- System information of the target server/local machine (e.g., `phpinfo()` output, database version checks, web server version checks).

Expected Output

A detailed report listing:

- Joomla's official system requirements.
- A comparison of the current system's specifications against these requirements.
- A list of any discrepancies or missing components.

- Recommendations for configuring the environment for Joomla.

Laboratory 2: Using Toolbar Options, Creating Store Database

Aim

To familiarize with Joomla's administrative toolbar options and to create a database for a Joomla-based store.

Procedure

1. **Access Joomla Administrator Panel:** Log in to the Joomla backend.
2. **Explore Toolbar:** Navigate through various sections of the administrator panel and identify the common toolbar options (e.g., Save, Save & Close, New, Delete, Help).
3. **Database Creation:**
 - o Access your web hosting control panel (e.g., cPanel, phpMyAdmin) or command-line interface.
 - o Create a new MySQL/MariaDB database.
 - o Create a new database user and grant all necessary privileges to this user for the newly created database.
 - o Note down the database name, username, and password.

Source Code

Database creation is typically done via a graphical interface or SQL commands.

```
-- Example SQL for database creation (if done via command line)
CREATE DATABASE `joomla_store_db`;
CREATE USER 'joomla_user'@'localhost' IDENTIFIED BY 'your_password';
GRANT ALL PRIVILEGES ON `joomla_store_db`.* TO 'joomla_user'@'localhost';
FLUSH PRIVILEGES;
```

Input

- Joomla administrator login credentials.
- Web hosting control panel/phpMyAdmin access.
- Desired database name, username, and password.

Expected Output

- Familiarity with Joomla's administrative toolbar.
- A successfully created database and database user with appropriate permissions for a Joomla installation.
- Confirmation message from the hosting panel/database system indicating successful creation.

Laboratory 3: Create a Template

Aim

To understand the basics of Joomla templating and to create a simple custom template.

Procedure

1. **Understand Template Structure:** Research the basic directory structure of a Joomla template (e.g., `templateDetails.xml`, `index.php`, CSS, JS folders).
2. **Create Template Directory:** In the `templates` folder of your Joomla installation, create a new folder for your custom template (e.g., `my_custom_template`).
3. **Create `templateDetails.xml`:** Create this file inside your template folder, defining basic template information (name, author, description, files, positions).
4. **Create `index.php`:** Create this file, which is the main entry point for the template. Include basic HTML structure and Joomla-specific `jdoc:include` statements for components, modules, and messages.
5. **Add Basic CSS:** Create a `css` folder and a `style.css` file to add some basic styling.
6. **Install and Activate:** Go to Joomla Administrator -> Extensions -> Manage -> Install, and then Extensions -> Templates -> Styles to activate your new template.

Source Code

`templateDetails.xml` (Example):

```
<?xml version="1.0" encoding="utf-8"?>
<extension version="4.0" type="template" client="site">
  <name>My Custom Template</name>
  <creationDate>2025-05-22</creationDate>
  <author>Your Name</author>
  <authorEmail>your.email@example.com</authorEmail>
  <authorUrl>http://www.example.com</authorUrl>
  <copyright>Copyright (C) 2025 Your Name. All rights reserved.</copyright>
  <license>GNU General Public License version 2 or later</license>
  <version>1.0.0</version>
  <description>A simple custom template for Joomla.</description>
  <files>
    <filename>index.php</filename>
    <filename>templateDetails.xml</filename>
    <folder>css</folder>
  </files>
  <positions>
    <position>banner</position>
    <position>top</position>
    <position>position-1</position>
    <position>position-2</position>
    <position>debug</position>
    <position>footer</position>
  </positions>
</extension>
```

`index.php` (Example - simplified):

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
```

```

    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>My Custom Joomla Site</title>
    <jdoc:include type="head" />
    <link rel="stylesheet" href="<?php echo $this->baseurl;
?>/templates/<?php echo $this->template; ?>/css/style.css" type="text/css" />
</head>
<body>
    <div id="wrapper">
        <header>
            <jdoc:include type="modules" name="banner" style="xhtml" />
            <h1>Welcome to My Site</h1>
        </header>
        <nav>
            <jdoc:include type="modules" name="top" style="xhtml" />
        </nav>
        <main>
            <jdoc:include type="message" />
            <jdoc:include type="component" />
        </main>
        <footer>
            <jdoc:include type="modules" name="footer" style="xhtml" />
            <p>&copy; <?php echo date('Y'); ?> Your Name</p>
        </footer>
    </div>
</body>
</html>

```

css/style.css (Example):

```

body {
    font-family: Arial, sans-serif;
    margin: 0;
    padding: 0;
    background-color: #f4f4f4;
    color: #333;
}

#wrapper {
    width: 960px;
    margin: 20px auto;
    background-color: #fff;
    padding: 20px;
    box-shadow: 0 0 10px rgba(0,0,0,0.1);
}

header {
    background-color: #333;
    color: #fff;
    padding: 10px 20px;
    text-align: center;
}

nav {
    background-color: #555;
    color: #fff;
    padding: 10px 20px;
}

main {
    padding: 20px;
    min-height: 300px;
}

footer {
    background-color: #333;

```

```
color: #fff;  
padding: 10px 20px;  
text-align: center;  
font-size: 0.8em;  
}
```

Input

- Text editor for creating .xml, .php, and .css files.
- Joomla administrator access.

Expected Output

- A new template listed in Joomla's Template Manager.
- The website frontend displaying the basic structure and styling defined by the custom template when activated.

Laboratory 4: Creating Menus for Website

Aim

To learn how to create and manage menus in Joomla, linking them to various content items.

Procedure

1. **Access Menu Manager:** Log in to Joomla Administrator -> Menus -> Manage.
2. **Create New Menu:** Click "New" to create a new menu (e.g., "Main Navigation").
3. **Add Menu Items:**
 - Go to Menus -> Main Navigation (or your newly created menu).
 - Click "New" to add a new menu item.
 - Select a Menu Item Type (e.g., "Single Article", "Category Blog", "External URL").
 - Configure the item's details (title, link, target).
 - Repeat to add several menu items.
4. **Publish Menu Module:**
 - Go to Extensions -> Modules.
 - Click "New" and select "Menu" as the module type.
 - Select your newly created menu.
 - Choose a position for the module (e.g., `top` or `position-1` from your custom template).
 - Publish the module.

Source Code

Menu creation and management are handled through the Joomla backend interface and database interactions. No direct source code is typically written by the user.

Input

- Joomla administrator access.
- Content items (articles, categories) to link to.
- Desired menu structure and titles.

Expected Output

- A new menu appearing in the Joomla backend.
- Visible navigation links on the website frontend, corresponding to the created menu items, and correctly linking to the specified content or URLs.

Laboratory 5: Content Menu in Joomla

Aim

To understand and utilize the content management features within Joomla's administrator panel, specifically focusing on articles and categories.

Procedure

1. **Access Article Manager:** Log in to Joomla Administrator -> Content -> Articles.
2. **Create Categories:**
 - Go to Content -> Categories.
 - Click "New" to create several categories (e.g., "News", "About Us", "Services").
3. **Create Articles:**
 - Go back to Content -> Articles.
 - Click "New" to create a new article.
 - Provide a title, content, and select a category for the article.
 - Save and close the article. Repeat for multiple articles.
4. **Display Articles:**
 - Create menu items (as learned in Lab 4) that link to these articles or categories (e.g., a "Single Article" menu item, or a "Category Blog" layout).
 - Verify the articles are displayed correctly on the frontend.

Source Code

Content creation is primarily through the Joomla backend editor. No direct source code is involved.

Input

- Joomla administrator access.
- Text content for articles.
- Desired category names.

Expected Output

- Multiple categories and articles created and visible in the Joomla backend.
- Articles displayed correctly on the website frontend, organized by categories if applicable, and accessible via menu links.

Laboratory 6: Component Menu in Joomla

Aim

To explore and manage various components available in Joomla and understand their role in extending website functionality.

Procedure

1. **Identify Core Components:** Log in to Joomla Administrator and navigate to the "Components" menu. Observe the default components (e.g., Contacts, Newsfeeds, Search, Weblinks).
2. **Explore a Component:** Select one core component (e.g., "Contacts").
 - Create a new contact category.
 - Create a new contact.
 - Create a menu item that links to the contact form or a list of contacts.
3. **Install a Third-Party Component (Optional but Recommended):**
 - Download a simple, free third-party component (e.g., a simple gallery or form builder) from the Joomla Extensions Directory (JED).
 - Go to Extensions -> Manage -> Install and upload the component package.
 - After successful installation, explore its settings and functionality under the "Components" menu.
 - Create a menu item to display the component's output on the frontend.

Source Code

Components are pre-built extensions. No direct source code is written by the user, but their configuration involves database interactions.

Input

- Joomla administrator access.
- (Optional) A downloaded .zip package of a third-party Joomla component.

Expected Output

- Successful creation and display of items related to a core Joomla component (e.g., a contact form).
- (Optional) Successful installation and basic configuration of a third-party component, with its functionality visible on the frontend.

Laboratory 7: Working with Modules, Implementation of Templates

Aim

To understand how to manage and position modules in Joomla and how modules interact with template positions.

Procedure

1. **Access Module Manager:** Log in to Joomla Administrator -> Extensions -> Modules.
2. **Explore Existing Modules:** Observe the list of modules, their types, positions, and status.
3. **Create New Module:**
 - o Click "New" and select a common module type (e.g., "Custom", "Latest Articles", "Login Form").
 - o Configure the module's title, content (for Custom module), and crucially, select a **position** from your active template.
 - o Set the module status to "Published" and assign it to relevant menu pages (e.g., "On all pages" or specific pages).
 - o Save and close.
4. **Change Module Position:** Edit an existing module and change its assigned position to see how it affects the layout on the frontend.
5. **Verify Template Positions:** Go to Extensions -> Templates -> Styles, select your active template, and click on "Preview" or "Template Positions" to see a visual representation of available module positions.

Source Code

Module management is done via the Joomla backend. No direct source code is written by the user.

Input

- Joomla administrator access.
- Content for custom modules (if creating a "Custom" module).
- Knowledge of available template positions.

Expected Output

- Modules appearing correctly on the website frontend in the specified template positions.
- Changes in module positions reflected immediately on the frontend.
- Understanding of the relationship between modules and template positions.

Laboratory 8: Working with Plugin Manager

Aim

To understand the role of plugins in Joomla and how to manage them.

Procedure

1. **Access Plugin Manager:** Log in to Joomla Administrator -> Extensions -> Plugins.
2. **Explore Default Plugins:** Observe the list of installed plugins, their types, status, and associated events.
3. **Enable/Disable a Plugin:** Select a non-critical plugin (e.g., "Content - Pagebreak", "Editor - TinyMCE") and toggle its status between enabled and disabled.
4. **Configure a Plugin:** Select an active plugin (e.g., "System - Cache" or "Editor - TinyMCE") and explore its settings. Make a minor change (e.g., for TinyMCE, change the editor's default font size if available).
5. **Observe Effect:** Check the frontend or relevant backend area to see the effect of enabling/disabling or configuring the plugin.

Source Code

Plugins are pre-built extensions. Management is through the Joomla backend. No direct source code is written by the user.

Input

- Joomla administrator access.

Expected Output

- Successful enabling/disabling of a plugin, with its functionality appearing or disappearing accordingly.
- Changes made in plugin configurations reflected in Joomla's behavior (e.g., caching behavior, editor appearance).

Laboratory 9: Modules in Joomla

Aim

To gain a deeper understanding of various module types in Joomla and their specific configurations. This lab builds upon Laboratory 7.

Procedure

1. **Review Module Manager:** Revisit Extensions -> Modules.
2. **Create Different Module Types:**
 - **Latest Articles Module:** Create a "Latest Articles" module, configure it to display articles from a specific category, and set a limit on the number of articles.
 - **Login Form Module:** Create a "Login Form" module and place it in a suitable position (e.g., sidebar).
 - **Breadcrumbs Module:** Create a "Breadcrumbs" module to display navigation paths.
 - **Image Module (Custom HTML with Image):** Create a "Custom" module, insert an image using the editor, and link it.
3. **Module Assignment:** For each new module, experiment with different "Menu Assignment" settings (e.g., "On all pages", "No pages", "Only on the selected pages").
4. **Ordering Modules:** In the Module Manager, experiment with changing the order of modules within the same position.

Source Code

Module configuration is done via the Joomla backend. No direct source code is written by the user.

Input

- Joomla administrator access.
- Existing articles and categories for "Latest Articles" module.
- Images for "Custom" module.

Expected Output

- Various types of modules appearing on the frontend according to their configurations and menu assignments.
- Modules within the same position displaying in the desired order.
- A comprehensive understanding of module types and their flexible placement.

Laboratory 10: Joomla Global Settings, Media Settings

Aim

To understand and configure Joomla's global settings and media settings, which affect the entire website.

Procedure

1. **Access Global Configuration:** Log in to Joomla Administrator -> System -> Global Configuration.
2. **Explore Site Settings:**
 - Review "Site Name", "Offline Mode", "Default Editor", "Default List Limit", "Site Meta Description", and "Site Meta Keywords".
 - Make minor, non-critical changes (e.g., change Site Name) and observe the effect on the frontend.
3. **Explore System Settings:** Review "Debug System", "Cache Settings", and "Session Settings". Understand their implications.
4. **Explore Server Settings:** Review "Server Time Zone", "Error Reporting", and "Force HTTPS".
5. **Access Media Manager:** Go to Content -> Media.
6. **Configure Media Options:**
 - Click "Options" in the Media Manager toolbar.
 - Review settings like "Legal Extensions", "Maximum Size (MB)", "Path to Files", and "Path to Images".
 - Understand how these settings control file uploads and media handling.
 - Attempt to upload a file that violates one of the settings (e.g., too large, wrong extension) to observe the error.

Source Code

Global and Media settings are configured through the Joomla backend interface. No direct source code is involved.

Input

- Joomla administrator access.
- (Optional) A file to test media upload restrictions.

Expected Output

- Changes made in Global Configuration reflected across the website (e.g., updated site name in browser tab, offline mode activation).
- Understanding of how media settings control file uploads and security.
- Observation of error messages when attempting to upload restricted files.

Laboratory 11: Configure Joomla Site with Personal Settings

Aim

To personalize a Joomla website by configuring user-specific settings, user groups, and access control levels (ACL).

Procedure

1. **Access User Manager:** Log in to Joomla Administrator -> Users -> Manage.
2. **Create New User:** Click "New" to create a new user account with basic details.
3. **Create New User Group:** Go to Users -> Groups. Click "New" to create a new user group (e.g., "Content Creators").
4. **Assign User to Group:** Edit the newly created user and assign them to the "Content Creators" group.
5. **Configure Access Control Levels (ACL):**
 - o Go to Users -> Access Levels.
 - o Create a new access level (e.g., "Special Content Access") and assign the "Content Creators" group to it.
6. **Restrict Content/Module Access:**
 - o Create a new article or module.
 - o In its settings, find the "Access" option and set it to "Special Content Access".
 - o Log out of the administrator and log in as the newly created user. Verify if they can see/edit the restricted content/module.
 - o Log out and try to access the content as a public user.

Source Code

User and ACL management are handled via the Joomla backend. No direct source code is involved.

Input

- Joomla administrator access.
- Details for new user accounts and groups.
- Content/modules to apply access restrictions to.

Expected Output

- New user accounts and user groups created.
- Users successfully assigned to groups.
- Content and modules displaying or being hidden based on the configured access levels and user logins.

Laboratory 12: Joomla Language Manager

Aim

To understand how to manage and configure languages in Joomla for multi-language websites.

Procedure

1. **Access Language Manager:** Log in to Joomla Administrator -> System -> Manage -> Languages.
2. **Install New Language:**
 - Click "Install Language" and select a new language from the list (e.g., Spanish, French).
 - Install the language.
3. **Set Default Language:** In the "Content" tab of the Language Manager, set the newly installed language as the default for the site. Observe if the backend interface changes.
4. **Create Language Content:**
 - Go to Content -> Articles.
 - Create two versions of an article, one in the default language and one in the newly installed language. In the article settings, assign the correct language.
5. **Enable Language Filter Plugin:** Go to Extensions -> Plugins and ensure the "System - Language Filter" plugin is enabled.
6. **Create Language Switcher Module:** Go to Extensions -> Modules, click "New", and select "Language Switcher". Publish it in a suitable position.
7. **Create Menu for Each Language:** Create separate menus for each language, linking to the respective language content.
8. **Verify Frontend:** Browse the website and use the language switcher to see content change based on the selected language.

Source Code

Language management is done via the Joomla backend. No direct source code is involved.

Input

- Joomla administrator access.
- Content translated into different languages.

Expected Output

- New languages successfully installed and available.
- Joomla backend potentially switching to the default language.
- A functional language switcher on the frontend, allowing users to switch between different language versions of content.

Laboratory 13: Template Manager

Aim

To gain a comprehensive understanding of the Joomla Template Manager, including assigning templates to specific pages and customizing template styles.

Procedure

1. **Access Template Manager:** Log in to Joomla Administrator -> Extensions -> Templates -> Styles.
2. **Review Installed Templates:** Observe the list of installed templates and their default status.
3. **Duplicate a Template Style:** Select an existing template style (e.g., Cassiopeia - Default) and click "Duplicate". This creates a new style based on the original.
4. **Assign Template Style to Specific Pages:**
 - Edit the duplicated template style.
 - Go to the "Menu Assignment" tab.
 - Change the assignment from "On all pages" to "Only on the selected pages" and choose a specific menu item (e.g., your "About Us" page).
5. **Customize Template Style Options:**
 - Edit the duplicated template style again.
 - Go to the "Advanced" or "Options" tab (depending on the template).
 - Change a visual setting (e.g., site title color, background color, layout options if available).
 - Save the changes.
6. **Verify Frontend:** Browse the website. The custom template style with its unique settings should only apply to the assigned pages, while other pages retain the default template style.

Source Code

Template management and styling are handled through the Joomla backend interface. No direct source code is involved, though the underlying template files are PHP, CSS, and XML.

Input

- Joomla administrator access.
- Existing template styles.
- Specific menu items to assign templates to.

Expected Output

- Multiple template styles visible in the Template Manager.
- A specific template style applied only to designated pages on the frontend.
- Visual customizations made to a template style appearing correctly on the assigned pages.

Laboratory 14: Adding Forums, Web Links

Aim

To integrate forum functionality and manage web links within a Joomla website.

Procedure

1. **Adding Forums (using a component):**
 - **Research Forum Components:** Search the Joomla Extensions Directory (JED) for popular forum components (e.g., Kunena).
 - **Install Component:** Download and install a chosen forum component via Extensions -> Manage -> Install.
 - **Configure Forum:** Access the newly installed forum component from the "Components" menu. Create forum categories, topics, and configure user permissions.
 - **Create Forum Menu Item:** Create a menu item that links to the main forum page.
 - **Test Forum:** Log in as different user types (registered, guest) and test posting, replying, etc.
2. **Adding Web Links:**
 - **Access Weblinks Component:** Go to Components -> Weblinks.
 - **Create Weblinks Categories:** Create categories for your links (e.g., "Resources", "Partners").
 - **Create New Weblink:** Click "New" to add a new weblink. Provide a title, URL, description, and assign it to a category.
 - **Create Weblinks Menu Item:** Create a menu item that links to a single weblink, a list of weblinks, or a category of weblinks.

Source Code

Adding forums typically involves installing a third-party component. Weblinks are managed through a core Joomla component. No direct source code is written by the user.

Input

- Joomla administrator access.
- (For forums) A downloaded .zip package of a Joomla forum component.
- URLs and descriptions for weblinks.

Expected Output

- A functional forum integrated into the Joomla website, accessible via a menu item.
- Web links created and categorized, displayed on the frontend via menu items, and correctly redirecting to the specified URLs.

Laboratory 15: Creation of Websites and Personal Homepages

Aim

To apply all learned concepts to create a complete, functional website and a personal homepage within Joomla.

Procedure

1. **Plan Website Structure:** Outline the pages, menus, and content required for a small website (e.g., Home, About, Services, Contact).
2. **Choose/Create Template:** Select an appropriate template (either a default one, a downloaded one, or your custom template from Lab 3).
3. **Create Categories & Articles:** Populate the site with relevant content, organizing it into categories.
4. **Build Menus:** Create primary and secondary navigation menus, linking to all major pages and content.
5. **Add Modules:** Place various modules (e.g., Latest Articles, Custom HTML for banners, Login Form) in appropriate template positions.
6. **Configure Global Settings:** Adjust site name, meta descriptions, and other global settings.
7. **Create Personal Homepage:**
 - Create a new category for "Personal Pages".
 - Create an article for your personal homepage, including your details, skills, and perhaps a small portfolio.
 - Create a dedicated menu item for this personal homepage, perhaps in a separate "User Menu".
 - Ensure proper access control if this page is only for registered users.
8. **Review and Refine:** Thoroughly test all links, forms, and functionalities. Ensure the website is responsive and visually appealing.

Source Code

This lab is an integration of all previous labs. No new source code is typically written, but the configuration of various Joomla elements (articles, menus, modules, templates) is crucial.

Input

- All knowledge and skills gained from previous labs.
- Content (text, images) for the website and personal homepage.
- A clear vision for the website's layout and functionality.

Expected Output

- A fully functional Joomla website with multiple pages, organized content, and clear navigation.
- A dedicated personal homepage integrated into the website, accessible via a menu item.
- A well-structured and visually appealing website demonstrating proficiency in Joomla.