DEPARTMENT OF
Chemistry
Repair Ticketing System

Installation Guide

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Table of Contents

Introduction

The Chemistry Repair Ticketing System is a web-based application where you can submit repair ticket requests to a Queen's Chemistry Technician. By doing so, you are able to get equipment owned and maintained by the Queen's Chemistry Department fixed, managed all in one place. The web application is hosted on the Queen's Dept. of Chemistry's servers.

Installation Steps

1. **Download and install these applications onto a server**
   a. *MySQL:* MySQL is the database that is used
   b. *PHP:* The server-side language used in the development
   c. *Apache:* The program that is used to serve the website over the internet. The domain name that will be used for this website will link to apache.
   d. PHP Extension PDO: (For connecting to the database) This is the extension that is used to connect the PHP code to the database. This should already be enabled but if you are not able to log in, this may not be enabled. Check the maintenance guide for debugging suggestions.
   e. *PHP Extension LDAP:* (For active directory) This is the extension that is used to connect the PHP code to the active directory. This needs to be installed as it probably is not active by default. If it is already installed (or possibly even if you just installed it) it probably needs to be enabled. To do this you will need to go into the php.ini file which can be found in your PHP installation folder. This file (a text file) has configurations for PHP where you will need to enable the LDAP extension. There are many tutorials online that go into detail.
2. **Start MySQL and Apache services**
3. **Find the correct directory from the Apache server**
   a. This can vary on the installation. In some cases apache uses a directory called "htdocs". In other cases it uses a directory called "www/html". Once you have figured out the correct directory to use, you will need to copy the project into it.

b. If you want the domain to be example.com/Repairs, you will need to create a "Repairs" folder inside "htdocs" (or the correct alternative) and have our project in "Repairs".

4. **Import the database file provided into MySQL.**
    a. The file is called repairticketsystem-structure.sql
    b. The other file, repairticketsystem-testing.sql is the same but it has the data we generated through our testing. It can be used to check that everything works.

5. **You will, and should, probably change the username and password of the MySQL server. Once changed in MySQL, you will need to change it in config.php.**

6. **You will need to change the password of the email account used for our email functionality. You will need to do this in config.php file by changing the $ePass variable to be the correct password. You will also need to set $activateEmail to true because it is disabled by default since we do not have access to the email that will be used.**

7. **Connect active directory to the website**
    a. You will need to specify which active directory our website should use. You will need 2 pieces of information for this. The first is the active directory domain. For example.com, the active directory domain will be "dc=example,dc=com". You will also need the active directory URL. If the active directory is at ldap.forumsys.com then that will be the URL. You will need to go into config.php and change these 2 values in the code. They are labelled with comments.

Development Tools Used

HTML

Hypertext Markup Language (HTML) is a standard markup language that we used to create the Repair Ticketing System web application. It is the building block of the website in which keywords are used in order to create a structure for the web page/application. Since HTML only provides the bare elements of a website, it is used in combination of Cascading Style Sheets (CSS) and Javascript for design and functionality.

CSS

Cascading Style Sheets (CSS) are a style sheet language that we used to describe the presentation of the HTML written pages. CSS files are written with a .css extension that is separate from the other source code files. In order to apply the components written in these files, the .css files are imported in the corresponding file the page is designed in the <header>.
Ex. <link href="public/css/style.css" rel="stylesheet">

PHP

Hypertext Preprocessor (PHP) is a free server scripting language that we used to help make dynamic and interactive web pages. PHP is a language that we use to communicate with our server, where our database is stored. It generates front end (HTML) content to be displayed to users. Source code files are written with the .php extension and can be written in combination with HTML code. The keyword <?php> within HTML code indicates the use of PHP where it helped us include other HTML written files within another HTML file. In addition, PHP allows us to establish a connection with the SQL Database in order to make queries.

JavaScript

Javascript is a client-side language that helps us with website functionality. It is used to add front end functionality to the website that regular HTML lacks. We also used AJAX (mentioned below) to give javascript the ability to communicate with server-side PHP scripts.

MySQL

MySQL is a database that we used to store all of our information. We can read and write to the database using PHP scripts as mentioned above.

DEPARTMENT OF
Chemistry
Repair Ticketing System

Frameworks Used

Bootstrap

     Bootstrap is a free and open-source front-end web framework that we used in the design of the web application. The bootstrap file contains HTML and CSS-based design templates that aided us in the design of typography, forms, buttons, navigation, and other interface components. Bootstrap allowed us to create a responsive web application so that users are able to view the website on all sizes of screens from desktop to mobile.

     The bootstrap files are found here: *./public/bootstrap-4.0.0-dist*

PHP JWT (https://github.com/firebase/php-jwt)

     PHP JWT is a JSON Web Token framework that we used for authentication. JSON Web Tokens, or JWTs, are ways to store authentication information for websites. The alternative would be to make a server call every time authentication is needed. This framework works client-side only and so does not require any server calls to authenticate a user. It only requires an initial server call to create the JWT.

Canvas JS (https://canvasjs.com/javascript-charts/)

     Canvas JS is a responsive HTML5 charting library that we used in order to aid us in the creation of the statistics page.

Invoice Generator (https://invoice-generator.com/)

     Invoice generator is an API that we used to generate the invoices on the invoice page. We send the information over and it responds back with a generated pdf invoice.

JQuery and AJAX

     Jquery is a javascript framework that makes it easier to use with HTML elements. It adds various functionality to altering website content. We also

DEPARTMENT OF
Chemistry
Repair Ticketing System

used a JQuery addition called JQuery date format. This allows us to alter date formats and was mainly use for the statistics page.

AJAX is a javascript framework that allows javascript, a normally client-side only language, to communicate with the PHP scripts on our server. This allows us to make the website more functional and gives us more freedom with making server calls.

SQL Database

The SQL Database is the .sql file found in the Repair Ticketing System directory. This file contains the creation of the relational database tables that store the repair tickets information submitted through the web application.

Active Directory

The connection to active directory is made in the file config.php in the folder "includes". Change the $dc and $adurl variables to the appropriate information for your active directory.

If you have everything properly installed and login still isn't working, then there may be a conflict with the information provided. The website assumes that logging in occurs with a username and a password and that the other information available is first name, last name, and email. If any of this information is missing in the active directory, the website may not work. Make sure that the information follows these columns. If you wish to log in with email, you can make the value of the username data the same as the email.