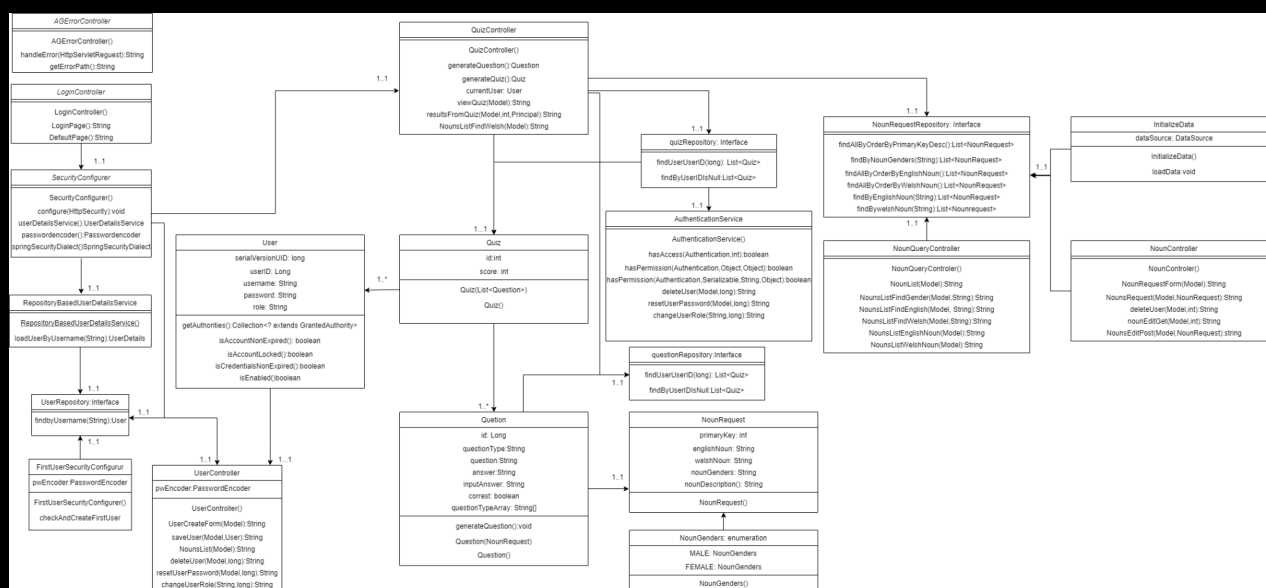# Academi Gymraeg Group Project
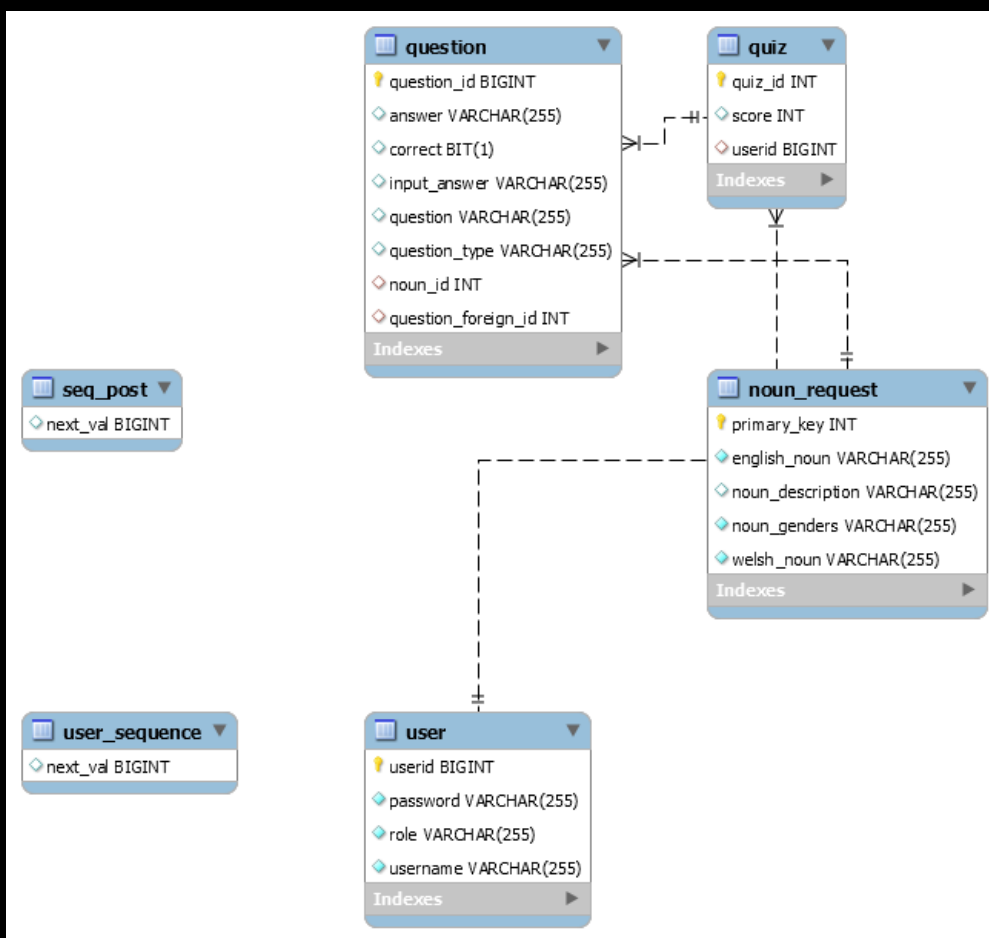
System
Documentation
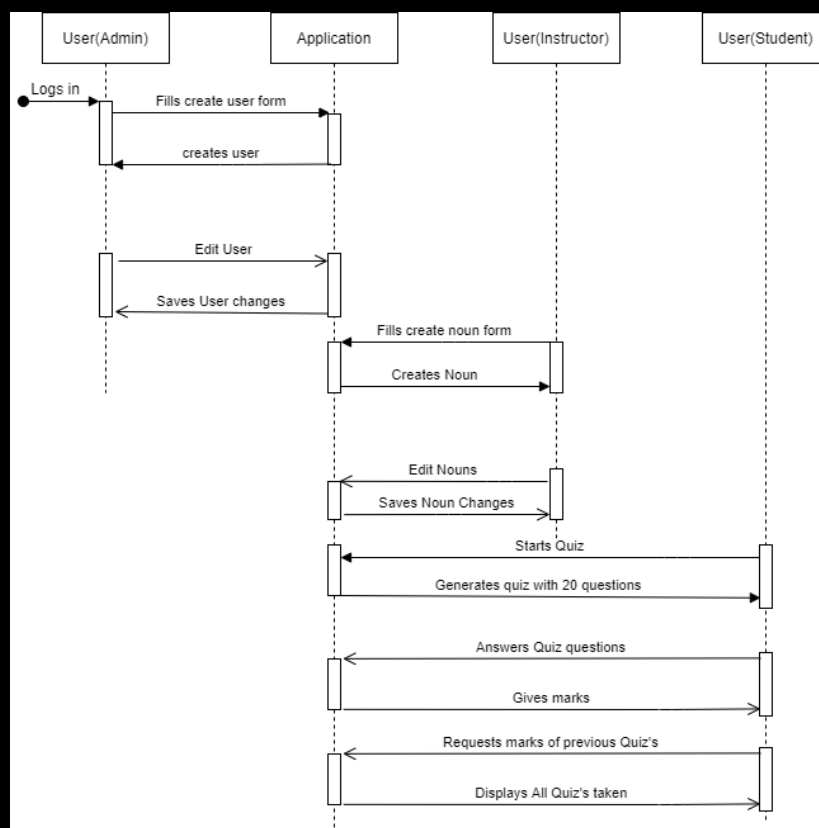
Group 5

Class Diagram

Description of Data Store

To store the data in this system we have used a MySQL database. In this database we have a table called noun_request. Within this table we store the primary_key, engish_noun, noun_description, noun_genders and welsh_noun. This means that all the information we need to make questions and quizzes are all in the same place so that they are easy to retrieve.

The user's data is stored in a separate table to the nouns. This table is called user. Stored in this table is the userid, password, role, and username. The passwords are encrypted using bcrypt.

question
- 🔑 question_id BIGINT
- ◇ answer VARCHAR(255)
- ◇ correct BIT(1)
- ◇ input_answer VARCHAR(255)
- ◇ question VARCHAR(255)
- ◇ question_type VARCHAR(255)
- ◇ noun_id INT
- ◇ question_foreign_id INT
- Indexes ▶

quiz
- 🔑 quiz_id INT
- ◇ score INT
- ◇ userid BIGINT
- Indexes ▶

seq_post ▼
- ◇ next_val BIGINT

noun_request
- 🔑 primary_key INT
- ◇ english_noun VARCHAR(255)
- ◇ noun_description VARCHAR(255)
- ◇ noun_genders VARCHAR(255)
- ◇ welsh_noun VARCHAR(255)
- Indexes ▶

user_sequence ▼
- ◇ next_val BIGINT

user ▼
- 🔑 userid BIGINT
- ◇ password VARCHAR(255)
- ◇ role VARCHAR(255)
- ◇ username VARCHAR(255)
- Indexes ▶

Sequence Diagram

Security System

This system uses passwords for each user for security, this is to ensure only authorised users can perform designated actions and to ensure the security of the newly made passwords, we used bcrypt. Bcrypt will provide protection against breaches including attempts made by admins.

The security system is able to prevent unauthorised actions by there being no way to access features available to only other roles. If a base layer user is on the application, they will not be able to access the pages that require higher permissions, an error will occur and the user can not proceed.

Unless someone is able to access the database without authorisation; I believe that it is not easily possible to defeat the protections that we have put in place. It would also be extremely difficult for an unauthorised individual to gain access to the database thanks to 'Spring boot security' being, for the most part, the foundations and structure for our security. Which is more secure against things such as SQL injection by preventing malicious code.

Quiz results can only be seen by the student who took them, which are done through a PreAuthotize method and sql query, which takes the current user as a parameter to ensure that they are the expected and therefore authorised user.

In order to ensure high levels of security and to police confidentiality; passwords cannot be viewed by any user (including admins) they are only shown as encrypted files. In keeping confidentiality, passwords can only be reset to be default "password" and nothing else with administrator permissions. When creating a new user, passwords are validated to ensure security. An admin must enter a password that contains a lowercase and uppercase letter, one number and be a minimum of 8 characters.

Roles

Software Designer - Ethan Quilter

Project Coordinator - Thomas Quinn
Chief Programmer - Owen West
Programmer - John Nuttall
Coordinator and Designer - Ben Webb
Programmer - Tom Owen

Group Attribution Log

Ethan Quilter(100%) - Designed the database and entity relationships. Designed the final version of the UML diagrams.

Thomas Quinn(100%) - Helped make sure the team stayed on track by organising meetings, designating tasks to each member of the team as well. Tom also helped with a range of tasks to help other members complete their task especially with the user guide, design and documentation.

Owen West (100%) - Coded the main parts of the program and helped other members of the team with how the project should be laid out. Also did the installation guide and bundle which was meant to be for Tom Owen.

John Nuttall(100%) - Helped Owen with the coding of the project and tested the project and installation bundle.

Ben Webb(100%) - Made a first draft of the UML diagrams to help set the team off with a basic plan. Helped to organise the team by making sure all the documentation was done. By creating a plan at each meeting so the team would hit each point in the spec. Also set up and formatted each of the documents and documentation. Helped to complete the user guide and the documentation documents.

Tom Owen (0%) - Didn't turn up to our meeting or answer many messages we sent him so no tasks could be delegated

Academi Gymraeg Installation Guide

1. Set up the database schema using the script below
    a. It can be run within an SQL software such as SQL Workbench or through the command line such as
       mysql> source \pathToFile\setup.sql; or
   mysql -h hostname -u user database < pathToFile/setup.sql

    More information on executing an SQL script can be found [here.](here)

```sql
CREATE DATABASE `academigymraeg` /*!40100 DEFAULT CHARACTER SET utf8 */ /*!800
16 DEFAULT ENCRYPTION='N' */;

CREATE USER 'ag-admin'@'%' IDENTIFIED BY 'AcademiGymraeg';

GRANT ALL PRIVILEGES ON academigymraeg.* TO 'ag-admin'@'%';
```

2. Drop the 'AcademiGymraeg.war' file into the \webapps folder of tomcat e.g.
   C:\PathToTomcat\webapps
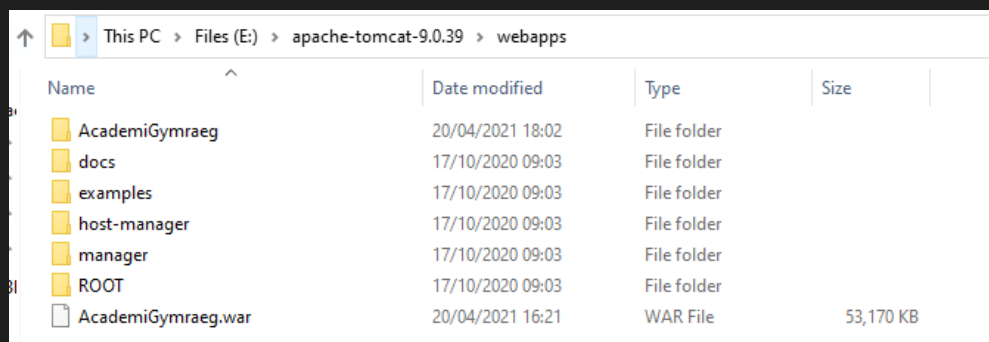
3. Within the tomcat directory, open the file 'server.xml' within the \conf folder
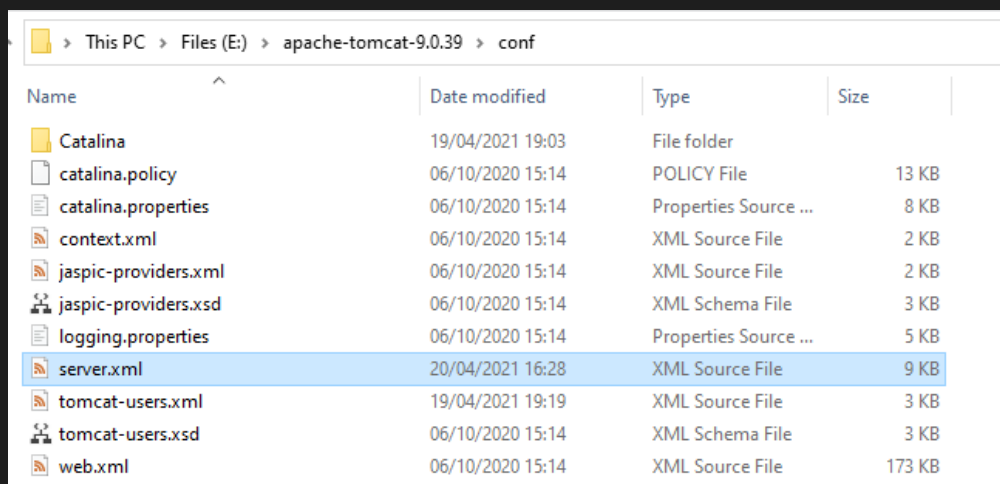
4. Add the script below to inside the <GlobalNamingResources> tag

```
<Resource auth="Container" driverClassName="com.mysql.jdbc.Driver"
          maxActive="20"
          maxIdle="0"
          maxWait="10000"
          name="jdbc/academigymraeg"
          password="AcademiGymraeg"
          username="ag-admin"
          type="javax.sql.DataSource"
          url="jdbc:mysql://localhost/academigymraeg?serverTimezone=GMT"/>
```

5. Start up Tomcat by doing one of the following
   a. Navigating to the tomcat directory \bin folder in the command line of your OS and running 'startup' from there

   ```
   E:\>cd E:\apache-tomcat-9.0.39\bin

   E:\apache-tomcat-9.0.39\bin>startup
   ```

   b. Running the startup.sh file (through a Shell such as on Linux or MacOS) or by running the startup.bat (through command line on windows) within your \bin folder of the tomcat directory.

   Note: If you do not have a tomcat_users.xml file setup with a user it may prevent you from completing these commands. If so: go to \conf\tomcat_users.xml and add the following lines of code. **Make sure** this is not in the commented section (within <!-- {here} -->) as the user won't be recognised. Change the password to be secure also.

```
<role rolename="manager-script"/>
<user username="admin" password="password"
roles="manager-gui, manager-script"/>
```

   c. You should see something similar to the code below at the end of the log without error. If your system does not display this, the log data (and any unexpected errors) can be found in E:\apache-tomcat-9.0.39\logs\catalina.{todays date}.log file

```
20-Apr-
2021 18:20:11.548 INFO [main] org.apache.catalina.startup.Catalina.start Se
rver startup in [14404] milliseconds
```

6. Go to your tomcat directory in the web browser and add /AcademiGymraeg and you should see a website that looks like the image below. The installation is now complete!
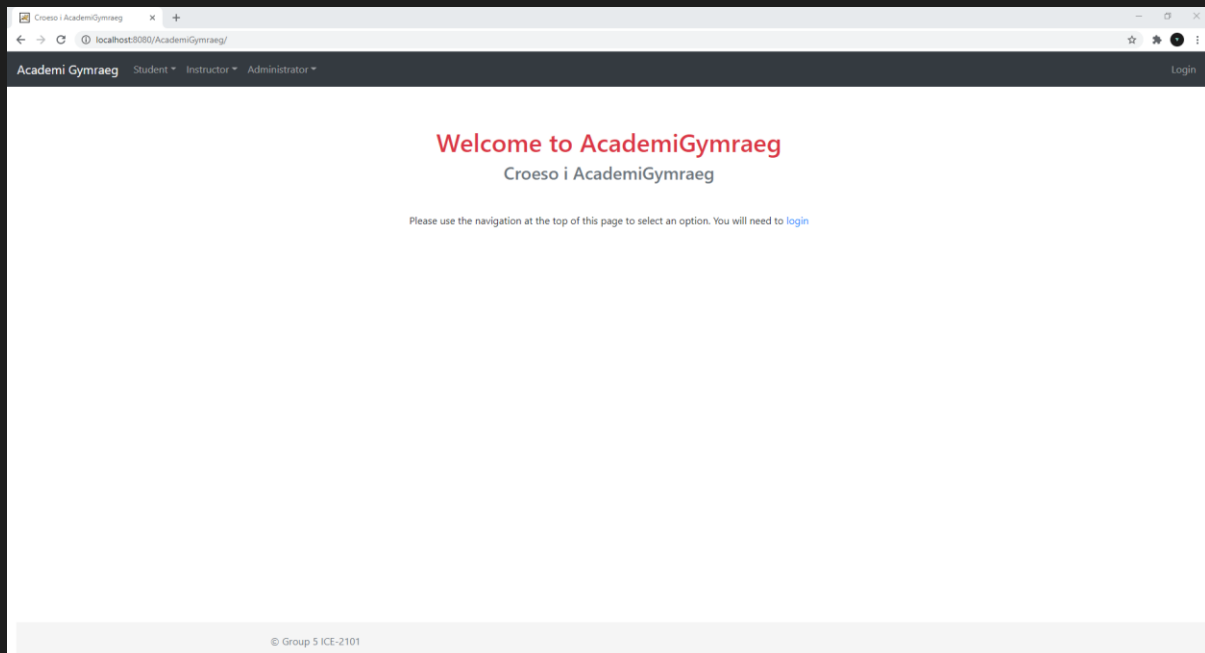
Academi Gymraeg
Group Project

User Guide

Group 5

System Administrator

Adding a New User

1. Click on the "Administrator" tab on the navigation bar.
2. Then click on the "Add a User" tab.
3. Next type in your login details and login.
4. After that type in the user details and the role of the user you want to add using the text boxes and the drop down boxes.
5. Finally click the "Create User" button.
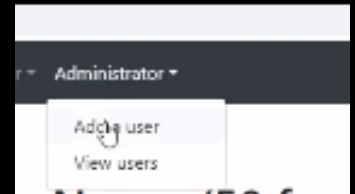
Viewing Users

1. Click on the "Administrator" tab on the navigation bar.
2. Then click on the "View Users" tab.
3. From here you can press the red bin button to delete a user.
4. Or you can edit a user's role using the drop down box and the "OK" button.

Instructor

View nouns on database

1. Click on the student tab on the instructor tab on the navigation bar.
2. Next login.
3. Then click on the "view nouns" tab under the instructor drop down menu.
4. You can now view all the nouns on the system.

Edit nouns

1. Start by viewing the nouns (by following steps above).
2. Select the noun you wish to edit by clicking the blue pen symbol to the left of its nounID.

3. From here amend any field you wish, be it the english, welsh nouns, gender or description.
4. Press the 'Submit noun' button at the bottom of the page in order to save any amendments made to the database.

Add nouns

1. Firstly, go to the instructor tab on the navigation bar.
2. Then click on the "Add a noun" tab under the instructor drop down menu.
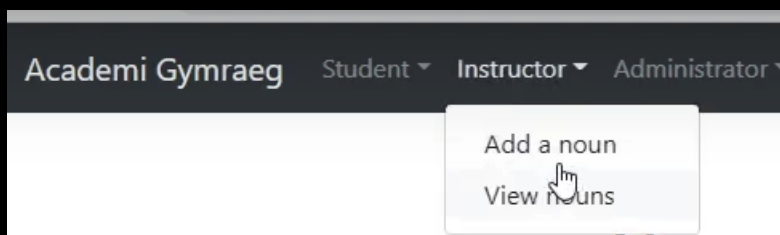
3. Proceed with filling in the boxes with the appropriate data

Add a new Noun

English noun
Fruits

Welsh noun
Ffrwythau

Ffrwythau

Gender of the noun
Male

Noun Description
Noun description here..

Submit noun

4. Press the 'submit noun' button when finished to save the noun and exit that page.

Student

Taking a test

1. Click on the student tab on the student tab on the navigation bar.
2. Then click on the "Take a Test" tab.

3. Next login.
4. Once logged in, the quiz will load up with randomised questions. Complete the quiz.
5. Once you have completed the test press the "Submit Quiz" button.
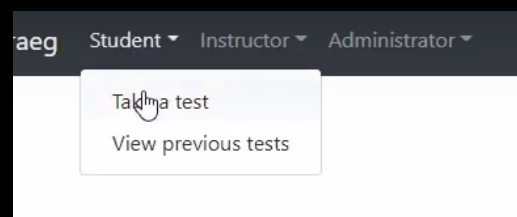
Take a quiz

This quiz does not use diacritics (â, ê, î, ô, û, ŵ, ŷ) so please use the substitute english letter instead?

What is the meaning of a English Noun 'Bread' in Welsh?

What is the gender of the Welsh noun 'Pen'?

What is the meaning of a Welsh Noun 'Parot' in English?

What is the meaning of a Welsh Noun 'Braich' in English?

What is the meaning of a English Noun 'Jeans' in Welsh?

What is the meaning of a Welsh Noun 'Bachgen' in English?

6. You will be taken to the answers page where you can review the quiz you have just taken.

<u>Viewing Previous Test</u>

1. Click the "Student" tab on the navigation bar.
2. Then click on "View previous Tests".
3. Then you can view all of your previous tests. If you click on the one you want to view it will open the full test.