

Report- Learnology

1 Design

1.1 High-Level View

URL: <http://learnology.herokuapp.com/>

Learnology is a web platform for people to share or exchange their skills and knowledges. People can take courses created by other people, or create courses to teach others.

Without a Learnology account, guest can visit the website, browse and search for courses, read general information. People can sign up for a Learnology account, either through website directly or through Facebook Login. With the Learnology account, users have their own profile where they could manage their personal information to show other people. Users can create courses and enroll in courses.

Course enrollment is through application. User's application will be sent to the teacher, teacher can decide whether to accept or reject the application. User is able to comment on the course and everyone could see the comments.

1.2 Sections

1.2.1 Title Page

This page consists of two section

A panel with the three newest courses created. The title of the course will link you to the respective course.

The second panel shows the top 3 teachers based on the number of courses they have created. Their screen names will send you to their respective profile.

1.2.2 Navigation Bar

Navigation Bar has the following functionalities:

- Link to Home Page
- Link to Category Page
- Link to Create Course Page (Only available for logged-in users)
- Search for either course or user using keywords. By clicking search, user will be directed to Search Result page.
- Link to Admin Page (Only available for logged-in admin user)
- Login button which opens the login modal (Only for guests)

Login modal is consisted of two sections:

- Direct login using account email and password:
 - By clicking login button, email and password are sent to server for validation.
 - If the email does not exists in the validation database, an error message will be shown on login modal telling the user that the email is not registered, and link to sign-up modal is provided. Login fail.

- If the password does not match, an error message will be shown on login modal telling the user that password does not match. Login fail.
 - If the password and email matches, server's session is assigned to the specific user. And user is logged in successfully. User will be directed back to the page where he logged in from and the page will be updated accordingly.
- Login with Facebook:
 - The button (for first time users) will open up the dialog box from Facebook to confirm that you want to set an account with our app.
 - Once accepted an account with a random screen name (you can change) is created and like the regular sign-up, will directly send you to the edit-profile page where you can fill in your profile.
 - Logging out is the same whether you are a Facebook or regular user
 - If you are already have an account, clicking the Facebook login button will sign you in the same way as regular sign in.
- Sign-up button which opens the sign-up modal (Only for guests)
 - User must provide a valid email address, password (re-type password is required) to sign up.
 - Email is validated once the email field lose focus. Email value will be send to server to check if the email is already registered. If so, error message will be shown on sign-up modal telling user that the email is registered.
 - Password, and re-type password must match to continue sign-up.
 - If screen name is provided, screen name will be validated. No space is allowed for the screen name. If screen name is not provided, database will generate a short id to screen name. User can update his screen name.
 - Screen name and email are unique field in user database.
 - Once the validation on form passes, user's info will be sent to server for sign-up, and will be recorded in user database. Server's session will be set to the specific user (screen name) and user will be directed to Edit-Profile page.
- User's screen name which links to user's profile (Only for logged in user)
- Log-out button which opens the log-out modal (Only for logged in user)

1.2.3 Categories

- The category page consists of two components:
 - Set of search links with different category type parameters which will allow you to search by category.
 - Clicking the buttons below the pictures will send you to search with the category type
- A list of Top 10 courses per category.
 - Ranking is based on the product of the number of votes and overall rating.
 - The buttons will change the list to the category specified in the button
 - The courses in the list will link you to the specified course

1.2.4 Search

- The search box in the navigation bar allows users to search for courses or users by their name
- Pressing the search button will redirect user to the results page which shows a list of the search results
- When a user rates a course a 4 or higher out of 5, the course category and teacher name is added to the user's favorites field in the database
- Future searches will rank courses with same category and teacher name higher on the results list

1.2.5 Profile

- Profile page shows user's general information (screen name, first and last name if available, location, and contact info if user chooses to share), user's description, and the courses user applied, is taking, finished, and created.
- Everyone can access user's profile page, but edit-profile and edit-description icons, button to create a course are only shown to the profile account owner.
- If session is account own, edit profile icon is shown on "About" panel header which links to Edit-Profile page. Edit description icon is shown on "Description" panel header which hide the description div and opens a form for user to change description without refreshing the page. Create a course button will be shown under the courses created which links to Course Creation page.

1.2.6 Edit Profile

- User can change their general information (screen name, first name, last name, gender, account email, contact email, phone number, and address) and profile image here.
- User can upload profile image from his local drive.
- Form will be validated on both front-end and back-end.
- Only the account owner can access his/her Edit-Profile page, everyone else who's trying to access the page will be directed to Learnology home page.

1.2.7 Course

Course Page has the following functionalities:

- Course Information:
 - o Course name, id, category, price if applicable, pre-requisite, etc.
 - o Instructor's general info and contact info, with link to Instructor's profile page.
- Course Control
 - o Enroll (Only for logged-in user who has not applied or enrolled to the course)
 - By clicking the enroll button, an Enroll modal opens, and user can choose to send a message to the teacher or not. The user with his/her message will be shown in the Course Edit Page for teacher.
 - o Manage Course (Only for logged-in user who created the course)
 - Manage Course button links to Course Edit Page for the teacher.
 - o Delete Course (only seen by owner of the course)
 - Deletes course from the system.
 - o Report (seen by users but not the owner)

- Users can report the course if there to be any problems. Admins will see it in the admin page and appropriate action will take place if necessary.
 - Unflag course (only seen by admins and course was reported)
 - Return course to its normal state if situation is resolved.
- Comments and Ratings
 - Only those with an account (not the owner of the course) can comment and rate a course
 - Admins are the only ones that can delete a comment
 - A comment is also associated with a rating and the overall rating is displayed at the top of the course page
 - The commenting form is displayed when you are logged in. It is in the comments section of the page.
 - The form consists of your screen name (locked in) a rating input 1-5 and a text area for the comment.
 - Submitting this will make the comment appear on the page.

1.2.8 Course Creation

Course Creation page is where user can create a course by providing the required course information and click submit button. The course will be recorded in the Course database collection.

1.2.9 Edit Course

Edit Course Page has two sections.

- Modify Course general information
- Manage Students
 - Teacher will see applied students' information (as well as the message sent from application) and enrolled students' information.
 - Teacher can accept or reject applied students. Once student is rejected, the student will be removed from application list. Once student is accepted, the student will be removed from application list and will be added to enrolled students.
 - Teacher can remove student from enrolled students if the student has finished the course.

1.2.10 Admin

- Admin page can only be accessed by admin users (redirects back to home page if not)
- Admins have access to a list of users and courses. Where they are about to search by screen name or by course title
- Admins can set another user as an admin (admins cannot delete other admins) as well as deleting courses and users
- They can also filter courses that have been reported and appropriate actions are handled by themselves. Contacting user or deletion.
- The list of users and course will link to their respective pages.

1.2.11 About Us

- Page about our group

1.2.12 Footer

Footer has link to About Us Page.

2 Security

2.1 Password Encryption

In Learnology, passwords are encrypted and stored using mongoose-bcrypt.

(<https://github.com/proswdev/mongoose-bcrypt>). Mongoose-bcrypt is a module that uses Bcrypt (a password hashing function). As mentioned on the bcrypt website, “The module will go through a series of rounds to give a secure hash”. This is one way encryption so that nobody can decrypt the hashing result. Mongoose-bcrypt has its own method to validate the password so we are not simply comparing strings in our server.

2.2 MongoDB Injection

The search box is one of the few areas where users can send anything they want to query the server. In order to prevent injection attacks, all query terms are validated to ensure that they are strings. Furthermore, search terms are tested using regex to only allow alphanumeric characters, spaces, hyphens, and underscores.

3 Testing

Basic testing was performed on the app using the Mocha framework, in addition to other tertiary modules used for particular purposes. Rewire was used to test functions that would not otherwise be accessible by the Mocha framework. Jsdm and jsdom-global were used to test functions that interacted with front-end nodes.

4 Video Demo

URL: <https://www.youtube.com/watch?v=nV73VOSsVGg>

5 Others/Notes

- Admin user account:
 - o Email: cat@qq.com
 - o Password: cat