University of Essex

School of Computer Science and
Electrical Engineering

CAPSTONE PROJECT DISSERTATION

GoLearn - Learning Resource Management System

Bradley Beasley

Supervisor: **Dr Alexandoros Voudoris**

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Abstract

There are plenty of services and programs out there for allowing Teachers to upload resources and for their learners to access them. Most of these are not purpose designed for places of learning, such as school, colleges and universities. Those that exist for this specific use-case tend to be over-engineered and can be overly complicated (Moodle is a good example of this). The purpose of GoLearn is to provide a simple LRM experience for teachers and students to interact with the same resources without a large amount of overhead in setting up the system: it should work out of the box.

This report contains a look into methods of implementation for web applications in general, plus the choices in technology and design that were made for GoLearn.

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Introduction

CHAPTER 2

Background

2.1 Similar Services

There are various LRMS's available in the market, with some of the more popular one being:

Udemy is a free to access learning site that puts a paywall over all of the courses. Creators can sign up to the site and create a course very quickly. Learners can sign up to courses (paying whatever charge is applied) and have unlimited access to them. They can access these from their own 'Courses' dashboard.

Skillshare is a similar service to Udemy, but is subscription based rather than pay per course. This means that learners can access all of the courses on the site for a monthly fee. Creators can create courses and upload them to the site, with the same access restrictions as Udemy.

LearnDash is a WordPress plugin that allows you to create and sell courses on your WordPress site. It is a very popular plugin, with over 50,000 active installs and a 4.5-star rating on the WordPress plugin repository. It is a very powerful plugin, with a lot of features, but it is also very complex and can be difficult to use. [1]

Being a plugin for WP, it is very easy to customise how the plugin looks by modifying the theme on the site to best suit the business / individual's needs. The plugin allows teachers to create courses and students to access them, with a lot of customisation options for the courses.

Moodle[2] is the closest comparison that is currently available to GoLearn. It is a PHP based LMS that is very powerful and feature-rich. It allows learning institutions to design

their own courses/modules and add specific 'student' users to them. This is a very similar model to what GoLearn is aiming to achieve. The main difference is that Moodle is very complex and can be difficult to use. It is also very resource-intensive, requiring a lot of server resources to run effectively.

2.2 Tech Stacks

A 'Tech Stack' is the term used to describe the combination of programming languages, frameworks, libraries, and tools that are used to build a software application. The choice of a tech stack is crucial as it can affect the performance, scalability, and maintainability of the application. The following are some of the popular tech stacks used in web development:

LAMP/LEMP Stacks This stack consists of 4 major components: Linux, Apache/Nginx, MySQL and PHP. Linux is the OS that is used in the stack, with Apache or (E)nginx as the web server, MySQL as the database and PHP as the server-side language. This stack is very popular and is used by many web developers. It is used by various Frameworks (such as Laravel), as well as in frameworkless applications.

PHP is the programming language of choice for this kind of stack for websites and applications that need to render the pages dynamically, but don't need a lot of reactivity to user input on the page. For for example, a blog or a news site would be a good use case for this stack, as they largely need to retrieve data from a db when a page is loaded, and can use caching strategies easily to only make a DB request for cached pages after a certain period after the cached content was stored.

On the other hand, applications that have a lot of user interaction to perform CRUD operations would be harder to write within this stack, as JS would have to be loaded and ran to submit the changed data. Other stacks (as mentioned below) instead rely less on page loads to perform actions, and instead are designed with responsive and reactive implementations in mind.

MEAN/MERN/MEVN Stacks The 'M' refers to the database implementation used (such as mySql, MongoDB...), the 'E' refers to ExpressJS, which is a NodeJS framework used for all forms of JS applications, and is the layer between the templating framework and NodeJS to serve an application. The 'V', 'A' and 'R' refer to the templating framework used to create the layouts used, and reference 'VueJS', 'AngularJS' and 'ReactJS' respectively. The 'N' refers to the

2.3 Databases and ORMs

what is a database. what is an ORM popular databases and ORMs

CHAPTER 3

Technical Specification

3.1 Framework

Which stack was chosen and why which framework was chosen within that stack and why

3.2 Database and ORM

Which database was chosen and why which ORM was chosen and why

CHAPTER 4

Implementation

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4.2 User Management

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CHAPTER 5

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CHAPTER 7

Conclusions

Bibliography

[1] J. Ferriman, "Learndash 3.0." https://www.learndash.com/best-wordpress-lms-plugin/, 5 2019.

[2] Moodle, "Moodle." https://moodle.org/, 1 2024.

[0] **Information** *This document was written in LaTex and compiled with PDFTex and BibTex*