Lab 2 - Product Specification Outline

CS 411W Lab II

Monarch Course Explorer Specification

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1 Introduction

1.1 Purpose

This document provides the software requirements specification for Monarch Course Explorer, a project built as a platform to facilitate the exchange of information between students and faculty that will assist students with making informed decisions when registering for classes.

1.2 Scope

The goal of Monarch Course Explorer is to is to be a centralized resource that makes information about courses more accessible to students and faculty at Old Dominion University. Students will benefit from Monarch Course Explorer features that allow them to access course syllabi, access feedback from other students, and receive course recommendations by making the most well-informed choices for courses that align with their lifestyles and busy schedules. Faculty will benefit from Monarch Course Explorer by enabling professors to receive timely feedback from students, curriculum committee members to have a tool to assist them with evaluation of syllabi, and academic advisors to access more specific information about courses to better assist students.

1.3 Definitions, Acronyms, and Abbreviations

- **Beautiful Soup:** A Python library for parsing structured data.
- **Django:** A free and open-source, Python-based web framework that follows the model–template–views architectural pattern.
- **HTML:** Hypertext Markup Language, standard markup language for documents designed to be displayed in a web browser.
- **MIDAS:** Monarch Identification and Authorization System, Old Dominion University's log-in and password management system.
- **NLP:** A subfield of computer science and artificial intelligence (AI) that focuses on the interaction between computers and humans in natural language.
- **PostgreSQL:** A free and open-source relational database management system emphasizing extensibility and SQL compliance.
- **RWP:** Real World Product that will be developed and used.
- **spaCy:** An open-source software library for advanced natural language processing, written in the programming languages Python and Cython.
- **SSO:** Single Sign On. A method for providing a single login across multiple related services.

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Example:
Radio Frequency Identification (RFID) – an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be attached to or incorporated into a product, animal, or person for the purpose of identification using radio waves.

1.4 References

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1.5 Overview

This document is organized in IEEE 830 standard format by feature.

Section one of the document covers the introduction of the Monarch Course Explorer application. This section will briefly go over the purpose, scope, research sources, and definitions of terminology used in this document.

Section two of the document covers the overall description of Monarch Course Explorer and provides a general overview of the architectural design, functionality, user characteristics of Monarch Course Explorer.

Section three outlines the specific detailed requirements of Monarch Course Explorer that is organized by feature functionality.

2 General Description

Monarch Course Explorer a web application that will be accessed from a modern web browser connected to the internet. To achieve Monarch Course Explorer's goal to be a centralized resource that makes information about courses more accessible to students and faculty at Old Dominion University, the prototype will have most of the features implemented from the real-world product such as viewing course syllabi, viewing course feedback, comparing courses, and getting a course recommendation.

2.1 Prototype Architecture Description

The major components of the Monarch Course Explorer prototype consist of a frontend and backend facilitated through the use of Django's web framework where users will interact with the application on the frontend. User requests will then be processed of the backend by the server

and PostgreSQL database. The components of the Monarch Course Explorer prototype are outlined in the MFCD in Figure 1.

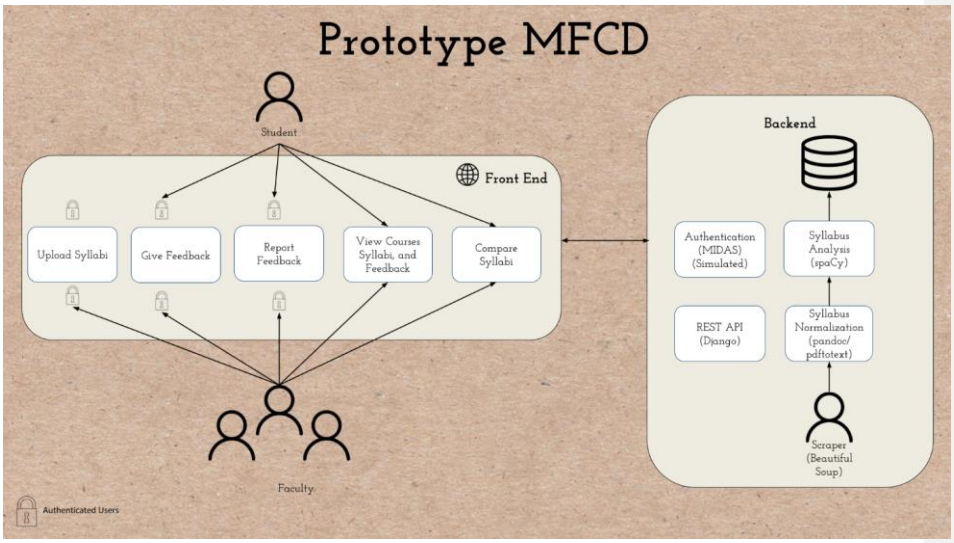

Figure 1:Prototype Major Functional Diagram

2.2 Prototype Functional Description

The Monarch Course Explorer prototype general functional features involve:

- user authentication
- uploading, viewing, and analyzing syllabi
- filtering sections of syllabi
- submitting and viewing feedback
- course comparisons
- completing a preferences questionnaire and receiving course recommendations

User authentication will restrict users of Monarch Course Explore to be students of faculty of Old Dominion University and will be partially implemented in the Monarch Course Explorer prototype.

Syllabi will be able to be uploaded in different formats and viewed on Monarch Course Explore. Monarch Course Explore will be able to perform analyses of syllabi and filter sections from it. The Monarch Course Explorer prototype will fully implement all those functions, while partially implementing analyzing syllabi to a restricted file type such as markdown files.

Monarch Course Explorer will allow students to post feedback and professors to respond to feedback that both will be viewable to all users. All of these functions will be fully implemented by the Monarch Course Explorer prototype.

Students will be able to compare course taught by different professors, take a quiz outlining their preferences, and receive a course recommendation based on answers from the quiz. All functions for this feature will be fully implemented by the prototype.

2.3 External Interfaces

This section will cover the hardware interfaces, software interfaces, user interfaces, and communications protocols interfaces used with in and by the Monarch Course Explorer prototype.

2.3.1 Hardware Interfaces

Since the Monarch Course Explorer prototype is a Web application, it can be used on any desktop or mobile device through a Web browser connected to a reliable internet connection.

2.3.2 Software Interfaces

The Monarch Course Explorer prototype will utilize the Django web framework to connect front-end development with a PostgreSQL database on the backend. The components of the Monarch Course Explorer prototype will be run in local Docker containers.

2.3.3 User Interfaces

The Monarch Course Explorer prototype will utilize multiple user interfaces based on the user type such as student or faculty. Each type of user will have interfaces that grant them privileges to features unique to their user type.

2.3.4 Communications Protocols and Interfaces

The Monarch Course Explorer prototype will use the Hypertext Transfer Protocol (HTTP) between the user and the front-end. The front-end will use HTTP GET and POST requests to communicate through the Django web framework connected to the backend database using TCP/IP.