School of Science, Computing and Engineering Technologies

COS30043
Interface Design and Development
Custom Web Application

Overview

This project is designed to help you develop practical skills in building modern web applications using Vue.js (version 3) and the Bootstrap framework. Through this project, you will learn how to structure an application, implement interactive features, and apply best practices in web development.

The project must use Vue.js version 3 and the Bootstrap grid system, and it must be deployed on the university's web server — the Mercury server. It must also be created using build tools such as Vite or Vue CLI.

This project consists of three stages, with each stage progressively building up your application and enhancing its functionality and complexity.

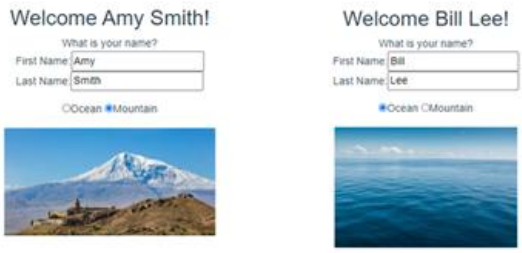
Stage 1: Start Up

In this stage, you will use development tools to create a basic application.

All the requirements in this stage are neutral and can be applied to any type of web application. Please start thinking about your project idea, as we will implement a real-world application in Stage 2.

1. Create a new project using Vite or Vue CLI, and add Vue Router.
2. Create three simple single-file components: Home.vue, News.vue, and About.vue.
3. Home Page:
    - Include at least a title, a welcome paragraph, and two images.
    - In Stage 2, you can design the home page to serve the purpose of your intended web application.
4. News Page:
    - Display a list of news items read from a local JSON file.
    - Each news item should include at least four fields, such as date, title, short news content, and category.
    - Users must be able to search based on date, title, content, and category.
    - The news list must contain enough items to demonstrate pagination.
5. About Page:
    - Include a short paragraph about your web application.
    - Include two input fields for the user's first name and last name. Display a welcome message based on the user's name.

- Show an image based on the user's selection from two radio buttons, such as "Mountain" or "Ocean".



6. The web app should be responsive to three different devices, so that distinct layouts are visible when the viewport changes.

Stage 2: Application Logic

In this stage, you are expected to build an application that incorporates real-world functionality and practical features. You should extend your Stage 1 application by expanding the router, using additional files, and integrating your new functionalities and features into the existing app created in Stage 1. You should not create an entirely new application.

You have the freedom to choose the theme of your application, such as an e-commerce site, event management system, educational course platform, or real estate listing website. You are not limited to these examples — feel free to choose any theme that interests you. Regardless of the theme you choose, your application must meet the following technical and functional requirements. Additionally, you must integrate further functionalities and features to ensure that your application operates effectively and provides real-world utility.

2.1 Technical Requirements

Your application must incorporate the following technical aspects:

- Utilise Vue.js components, router, and custom directives to build a modular and maintainable codebase.
- Demonstrate proficient use of arrays for dynamic data handling.
- Implement core Vue.js directives such as v-bind, v-model, v-if, v-for, and v-on to create interactive and reactive user interfaces.
- Utilise a form with data validation.
- Follow a mobile-first approach, ensuring your application is fully responsive across at least three device sizes.
- Prioritise accessibility in input forms and tables to ensure usability for all users.
- Apply coding conventions consistently, including proper case usage and indentation for readability and professionalism.
- Utilise methods and computed properties in Vue.js.
- Implement pagination for lists or data displays.
- Incorporate data from external sources or APIs.

2.2 Functional Requirements

Your application must incorporate the following functional aspects:

- Implement features for user registration, login, and differentiated content visibility between authenticated and unauthenticated users.
- Include functionality for all users to search for content and apply filters to refine results.
- Integrate social features, such as liking or voting on content.
- Allow authorised users to create, edit, and delete content.
- Maintain persistent data storage, using a backend database, JSON files, or similar methods.

2.3 Project Report

You should include a project report that provides a clear and concise overview of your application. The report should include:

- The main functionality of your app.
- A description of the technical components and tools you have used.
- Highlights of any innovative features or unique approaches you have implemented.
- A brief reflection on the challenges you encountered and how you addressed them.

Stage 3: Advanced Features

In this stage, you are encouraged to explore and self-learn a technique for implementing an advanced feature in your web application. The technique should not be a very basic one. It should be related to Vue.js, and the feature you implement should significantly enhance your application.

You are required to record a video of **3 to 20 minutes** in which you introduce the technique and explain how to implement it, as if teaching a tutorial. You may use PowerPoint to provide an introduction or summarise key points, but we are more interested in seeing how you actively engage with the development environment, demonstrate live coding by making real-time changes to your code, and clearly explain the technique with a solid understanding, rather than simply talking over a PowerPoint or Word document. This is also your opportunity to demonstrate your advanced skills.

Your face must be visible throughout the video.

Submission

- Upload your website to Mercury and make sure it is working.
- Submit a zip file of all source code files to Canvas.
- Submit your project's Mercury URL in the Canvas comments.
- If you have reached Stage 2, submit your project report to Canvas.

- If you have reached Stage 3, provide the video URL in the Canvas comments and upload your video to YouTube or a cloud drive. Make sure the video permissions allow others to access it. If you encounter YouTube length limitations, you may submit two video links.

Stage 1 Marking Rubric (20 marks)

Criteria	Excellent	Satisfactory	Needs Improvement
Project Setup and Structure (7 marks)	Project fully set up, router works, all pages created properly. (6–7 marks)	Project mostly set up, router present, minor issues. (4–5 marks)	Project setup incomplete, router missing, or major errors. (0–3 marks)
Home page, About page, and responsiveness (6 marks)	Fulfills all requirements for the two pages; layout is responsive across 3 devices. (5–6 marks)	Pages mostly complete, minor issues regarding content or responsiveness. (3–4 marks)	Pages incomplete or little to no responsiveness. (0–2 marks)
News Page (7 marks)	Fully completed, includes loading JSON file, shows list with pagination, full search functionality. (6–7 marks)	Data loads and displays, minor issues in functionality. (4–5 marks)	Data not properly loaded, search and pagination not functional or missing. (0–3 marks)

Stage 2 Marking Rubric (25 marks)

Criteria	Excellent	Satisfactory	Needs Improvement
Technical Requirements (10 marks)	All technical specifications fully implemented. (8–10 marks)	Most technical specifications met, but minor errors or issues are present. (4–7 marks)	Major technical issues or missing elements. (0–3 marks)
Functional Requirements (10 marks)	All functional requirements fully met. The app demonstrates sufficient complexity for real-world use. (8–10 marks)	Basic functionality works, but some features are incomplete. Overall usable but needs refinement. (4–7 marks)	Basic functionality is missing or poorly implemented. The app is difficult to use. (0–3 marks)
Report and Code (5 marks)	Clear, well-structured report that covers all the required elements. (4–5 marks)	Report covers basic elements but lacks depth. (2–3 marks)	Report is poorly written or lacks critical information. (0–1 marks)

Stage 3 Marking Rubric (20 marks)

Criteria	Excellent	Satisfactory	Needs Improvement
1. Technique Complexity & Relevance (6 marks)	Technique is advanced, relevant, and significantly enhances the application. Demonstrates depth of research. (5-6 marks)	Technique is moderately advanced and somewhat relevant. (3-4 marks)	Technique is basic or poorly integrated into the app. Little evidence of self-learning. (0–2 marks)
2. Implementation Quality (6 marks)	Feature is well-implemented, fully functional. (5-6 marks)	Feature is partially implemented with minor issues. (3-4 marks)	Feature is incomplete or non-functional. (0–2 marks)
3. Video Content & Live Coding (8 marks)	Clear, well-structured explanation. Live coding is smooth and effectively teaches the technique. (6-8 marks)	Explanation covers main points but lacks depth or clarity. Live coding works but may have minor issues. (3–5 marks)	Explanation is unclear or disorganised. Live coding is incomplete or ineffective. (0–2 marks)