Dev Zaveri, Tyler McCluskey, Ken Chambers, Navid Hoque

CMPSC 470 Sections 001, 001, 002, 001 [in order of names]

Nelson

29 April 2024

**Project Development Methodology**

**1. Introduction:**

The project aims to develop a JavaScript to Car Interpreter (CIL) application. CIL is a custom scripting language designed to control a simulated car, allowing users to write scripts to control car actions such as driving, stopping, reversing, honking, and reading sensor data. The interpreter translates JavaScript code input by the user into CIL, enabling the simulation of car actions based on the provided code.

**2. Project Goals:**

Develop a web-based interpreter that accepts JavaScript code input and translates it into CIL.

Implement basic car control functions such as driving, stopping, reversing, honking, and reading sensor data.

Support features like conditionals (if-else statements) and loops (while loops) for decision-making and repetition.

Provide a user-friendly interface for inputting JavaScript code and displaying interpreted CIL output.

Incorporate visual elements such as an animated car and loading animation to enhance user experience.

**3. Development Methodology:**

The project will follow an iterative and incremental development approach, incorporating elements of Agile methodology. The development process will be divided into the following phases:

**a. Planning Phase:**

Define project objectives, scope, and requirements.

Identify key features and functionalities to be implemented.

Create a project roadmap and timeline for development iterations.

**b. Design Phase:**

Design the user interface (UI) for the web application, including input textarea, output display area, and visual elements like the animated car.

Define the architecture and components of the interpreter, outlining how JavaScript code will be translated into CIL.

Determine the file structure and organization of the project.

**c. Implementation Phase:**

Develop the backend functionality using Node.js for server-side scripting.

Implement the interpreter logic to parse and translate JavaScript code into CIL.

Create the frontend UI using HTML, CSS, and JavaScript to provide a user-friendly interface for input and output display.

Integrate visual elements such as the animated car and loading animation into the UI.

**d. Testing Phase:**

Conduct unit tests to validate the functionality of individual components and modules.

Perform integration tests to ensure seamless interaction between frontend and backend components.

Conduct user acceptance testing (UAT) to gather feedback from stakeholders and end-users.

Address any bugs, issues, or usability concerns identified during testing.

**e. Deployment Phase:**

Deploy the web application to a hosting environment, ensuring it is accessible to users.

Monitor and optimize performance, security, and scalability of the deployed application.

Provide user documentation and support resources for using the interpreter.

**4. Tools and Technologies:**

Node.js: For server-side scripting and backend development.

HTML, CSS, JavaScript: For frontend development and creating the user interface.

Git/GitHub: For version control and collaboration among team members.

Testing frameworks/tools: To conduct unit tests, integration tests, and user acceptance testing.

Web hosting platform: To deploy the web application and make it accessible to users.

**5. Conclusion:**

The project development methodology outlined above provides a structured approach to building the JavaScript to CIL interpreter web application. By following an iterative and incremental development process, the project aims to deliver a robust and user-friendly solution that meets the requirements and expectations of stakeholders and end-users. Collaboration, feedback, and continuous improvement will be key principles throughout the development lifecycle.