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prj701report

Table of Contents

[Student information 2](#_Toc79690719)

[Abstract 3](#_Toc79690720)

[Introduction 4](#_Toc79690721)

[Background 5](#_Toc79690722)

[Problem description 6](#_Toc79690723)

[Methodology 6](#_Toc79690724)

[Analysis 7](#_Toc79690725)

[Design 8](#_Toc79690726)

# Student information

**Name:** Josh Munro

**Student ID:** 13496833

**Title of Project:** Weather Render

**The Qualification Name:** Bachelor of Information Technology

**Course ID:** PRJ701

**Year:** 2021

# Abstract

# Introduction

The purpose of the project was to use the skills and strengths I have learnt from the course and apply technical and software solution to a problem. I have studied at Nelson Marlborough Institute of Technology and have been working towards getting a Bachelor of IT. I am majoring in ‘Software Development’. Therefore, the problem and solution will be involved in something that is relevant to programming and digital mediums such as devices, app, websites.

Although I have strived for a career surrounded by software and programming, I am a very visual person. The visuals and creativity that is formed from technology especially in the website world has always gravitated to me. Although web development is primarily developed from scripts and scripting, I was still inspired to use my knowledge and passion for websites to bring an enjoyable experience to a user which solves a problem.

The problem I have identified in the technology world is how there is a gap between presenting information and the end user interpreting the information. Although the information can be useful and meaningful to some specific audiences, information needs to be interpreted and presented on a perspective that is understandable and relatable to the audience.

Therefore, with my skills for IT ‘Software development’ and visuals of a website I was able to marry these two together and provide a solution for weather apps and websites. The weather data/information for a region is good and accurate but there must be a way for individuals who can’t understand what some of the information means to a way in which they can be understood.

I believe the solution and research behind using 3d visual technology on the web will benefit the learning and understanding of content on a website. Thus, for my project I will study ways to implement 3d models and environments in a website successfully to provide a solution to this problem.

The report will contain the development process of my project. Including the methodology, analysis, design, implementation, outcomes, testing, and evaluation.

# Background

I have always been interested in IT and particularly ‘Software Development’. But though-out the course I have found a deeper connection and relationship of how technology and software have an emotional connection. My major is a Bachelor of Information Technology. At the end of the day, I have learnt that my responsibility is to represent data and information in a constructive way to an audience. But it goes deeper, we humans have developed emotions with the world around us whether we raise it or not.

There has always been an emotional connection between colours, shapes, perception from drawings, painting, movies, stories, poetry. All these different forms of art convey information, and that information is drawn from the emotional connection with the art. Likewise there is a connection between the users and information presented on a website (art) through a pixelated screen (medium of art).

Like the famous quote “A picture paints a thousand words.” In conclusion I have done research and software development to present information in an emotional sence which gives a greater meaning and purpose to the audience.

# Problem description

The objective of my project is to use 3d modelling environments designed for the web world to give better understanding and communication between data and information presented to the users. The project focused to solve the problem of interpreting data information about the weather. Majority of weather apps and websites have information that is hard to interpret and put into a real context. By using 3d web technology and libraries such as Three.js I will solve this problem by using visual cues and information to make the information easier and more relatable to the audience.

# Methodology

The methodology of the project is based upon IT solutions and processes. Therefore, the methodologies choices will be based in the category of Software Development lifecycle.

After careful analysis to find the right methodology for developing my project there were a few things to consider in my project.

I have a short time frame to complete a project to a very high standard. Due to the nature of the 11-week time frame there will be inconsistencies and features including design in my project that won’t meet my ambitions for the project.

The purpose of the project is using my research skills as well as technical terms to find a problem and work through it find the solution. Therefore, the methodology needs to be one that has some flexibility for the research, learning, and implementation to be comfortable together.

Although research comes before implementation the project is a big learning opportunity, therefore there will be changes in my project over time.

Through the process of elimination, I was able to narrow my choices down to these two methodologies.

Hybrid, Agile

Both methodologies will allow me have flexibility in the development of my project. It will provide opportunities to step back and makes changes earlier in the development process.

However, it will be great practice to have a comprehensive project that is worth sharing. I will still need some structure in place that will manage my progress and push me to move forward in obstacles and development stages rather than being completely stuck in the fine details of the project. For this reason, I have chosen the Hybrid software development lifecycle methodology.

The process is a compromise between Agile and the waterfall lifecycle. These two different methodologies meet together to allow some flexibility and structure, which is the best balance I need for my project.

# Analysis

# Design

Before the development of my project, I had to narrow down the problem and solution I wanted to cover for the project. I had to ask questions like ‘who am I doing this project for?’ ‘Does my project answer a question or solves a problem?’. I had to constructively pull all the features, ideas, and thoughts in my head and narrow them down to a concise brief. Every feature and design decision had to serve a purpose of solving a problem. Is the design sufficient to use as a backbone for the development of my project?

Since the methodology I have chosen is Hybrid and uses a combination of agile and waterfall lifecycles. I need to create a design and plan that limited errors and confusion in the development of the website. A concise plan and design can eliminate time loss due to going back to the drawing board because of poor planning.

# Project Plan

The project plan is broken into four separate phases. There will be a design phase, development phase, evaluation phase, testing phase.

## Research phase

Since there is a problem and must be met with a solution, I need to do some research to decide what technology frameworks, libraries will best suit the needs of the problem. In this case I have done some extensive research to see the best libraries and web frameworks for technology. I have discovered that Three.js is most popular and supported JavaScript library for WebGL/3d websites.

I knew that React.js is my favourite and preferred framework/library for web development. Therefore, I wanted to see how compatible Three.js and React.js are together. Turns out there is a library node package you can install that allows for Three.js environments to be easily declared and created through declarative tags and components inside React. Therefore, it is possible to use React Hooks ad state management with Three.js code to create Reactive and dynamic functionality within the 3d environment.

Research is also required for myself to

## Design Phase

The design phase will include the following:

* Wireframes
* Mockups
* UI Component Map
* Planning the Component state data
* Planning the Component prop data
* Creating a UML diagram representing the data
* CRUD table analysis