

VIRTUAL REALITY FCI POSTER DAY

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SESSION 2018/2019

FACULTY OF COMPUTING AND INFORMATICS
MULTIMEDIA UNIVERSITY

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DECLARATION

I hereby declare that the work has been done by myself and no portion of the work contained in this thesis has been submitted in support of any application for any other degree or qualification on this or any other university or institution of learning.

A handwritten signature in black ink, consisting of a large loop followed by a series of smaller loops and a long horizontal stroke extending to the right.

Siti Syahirah bt Ibrahim

Faculty of Computing and Informatics

Multimedia University,

Date: 10/2/19

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To the loved one that stay beside me.

ABSTRACT

This project demonstrate FCI poster day in website by using VR elements. This is to keep up to date to the trends where VR is really popular amongst user. This website will be accessible by public without many hardware restriction. A major part of this project is to implement the functionality of VR into website.

This will be the first ever FCI poster day, made in VR and accessible through website. This will be pioneer project and a great marketing device to attract more students too.

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CHAPTER 1

1.1 Introduction

Virtual Reality (VR) is the use of computer integration which has been developed since the year 1960 from tele-operations technology in creating a totally artificial simulated environment. There are different levels of immersiveness depending on the application itself. Back in past, VR is super expensive that it is only use in big company for research or study purpose but now, its existence has occupy the modern day lifestyle. It is accessible and cheap for public to use. Due to this, society sometimes confound VR with AR-Augmented Reality. AR use existing environment and overlays new information on top of it while VR is design to stimulate one's physical presence in a distinct virtual environment. Since its existence, VR has undergone numerous revolution which group them into 3 major categories of immersiveness, non-immersive, semi-immersive and fully immersive VR system. The difference lays in the effect it brings into our sensory system. Semi immersive effects 1 or 2 sensory systems while immersive VR effects almost all sensory system and usually capable letting us immerse fully into the application/ game. The growth of VR has been used in various fields such as healthcare, education, tourism, military and even sport. This paper will elaborate more on the implementation of VR into web application by using pure HTML, CSS and JavaScript, by enforcing A-frame framework. The immersiveness of the system will be varying either partial immersive or fully immersive depending on the user's usage of mounted display, such as Google cardboard.

1.2 Problem Statement

Virtual Reality has becoming a fast method in representing actual venues in the digitals realm. The 2016 FCI poster day was held in MPH and part of the requirements for students presenting during the event was to prepare and upload digital demos and posters of their work. These digital assets can be a part of a VR presentation for the events with simplicity and elegance theme in delivering the events environments.

1.3 Project Objective

The objective of this project are:

- 1) Represent FCI poster day in VR for online viewing by visualize student uploads as virtual assets in the VR representation.
- 2) Incorporate navigation and interactive for viewers to select / view / download content from VR
- 3) Implementation of VR elements in a website that is accessible through a laptop / personal computer.

1.4 Project Scope

This system target MMU students and also public that have interest in MMU's student final year project.

1.5 Limitation

- The website is only accessible through a computer or laptop.
- It is accessible through website that allows java script in the desktop.
- Students only can upload .png and .mp4 media.
- Users need a minimum 8gb RAM computer to open the software.

CHAPTER 2

Literature Review

2.1 VR vs AR

Lately, the term Virtual Reality had become really famous among the modern life society. Virtual reality (VR) is a technology that uses head-mounted headsets with displays to generate the realistic images, sounds, and other sensations that gives user the illusion of displacement to another location. The term VR may be defined as virtual environment or an interactive artificial image portrayal enhanced by certain algorithm with aids of modern visual display modalities, to convince users that they are immersed in another space. VR allows user to create unlimited and endless worlds that people can walk around and interact with using their hands, to feel as if users were transported to another place. For example, a headset, it blocks the sight on real world and replace it with a world, created by mankind. The brains would think that they are at other place and sometimes, can be said as a mental teleportation. Only in the year 1987, the actual term virtual reality was coined. Jaron Lanier, an American computer philosopher and computer scientist. Created the term virtual reality (ColdFusion, 2017) Since its inception in the late 60s, VR hardware has existed largely in university research labs in hilariously big and bulky forms never to test the waters of mainstream consumer product. But more for understanding the limitation on human brains perception systems. Over the year, various companies, such as Nintendo, tried bringing VR for public to use but it was drop as the technology that time was expensive. Lately, VR has become quickly relevant especially to gamers, 3D artist, architects, real estate agents, teachers and student.

VR tends to be fully immersive with no real world stimuli affecting the experience, but it also can be non-immersive depending on the device and hardware use.

Augmented Reality (AR) or mixed reality is a contrast from VR. AR main purpose is to uplift the reality with numerous virtual item. For example, AR is when a person's real environment is augmented or supplemented with algorithm set up images. One of the most famous AR applications are Pokémon GO, Snapchat and Instagram face filters. (Fiarchuk) The term Augmented Reality is attributed to a former Boeing researcher, Thomas Corder back to the year 1990. Nowadays, AR technology is showing promises with existence of devices such as Microsoft HoloLens. For example, object can appears on tables, information can be display in floating windows, and graphic can be generated all seamlessly motion tracked to the users field of views.

What makes VR and AR a completely different technology, is that, both affects directly the perception and process of the human mind in an obvious way. As can be seen, the technology this time is vastly more powerful compare to in 80s and 90s and it is much more feasible. These technology shows incredible potential and estimated in the year 2025, will be fully use in day-to-day application.

2.2 Type of VR Immersion

Did you ever wonder how will VR environments works? The environment is made using the operation of 3 kinds of hardware which are sensor, effectors and linker and computer algorithm generates the network. With current technology, society tend to able to experience VR without the aids of any headset, although the experience

would not be fully immersive. These type of experience are recognizing as partial immersive VR. Feeling of being within an unrealistic and imaginative environment or world, is the perfect way of describing immersion. The purpose is to fulfil the synergy of our reality world with the imaginative world created by human, to grant user ability to which allows the person to probe their imagination more.

2.2.1 Non-Immersive VR

Non-immersive systems on the other hand, has limited immersion of VR technology. Most non-immersive VR are runs on desktop view only. The virtual world is viewed via a screen using a high-definition (HD) monitor using the desktop system. Basic tools of a computer can interact with the virtual environment or can be better up by 3D interaction. (AGO Compiler Group) The advantage of this type of VR system is that it does not need latest or powerful level of graphic performance, any hardware can be use and can be carry out on high- specification PC clones. Which results as the cost effective VR solution for application., However, that these systems are always outdated and can be considered lame as it do not has any advanced implementations, as the immersion feeling are narrowed to some existing 2D interaction devices. However, in the near future, one would expect the acceptance and recognition of this type of VR will growth. This is because it is expected that the. For the PC desktop user, VRML runs smoothly on it.

2.2.2 *Partial-immersive VR:*

Semi-immersive virtual reality in the world of VR technology is relatively new. (Lai, 2001) Flight simulator is an example of semi-immersive virtual reality. This system use high definition projector along with powerful graphics display embedded. The viewer does not need any virtual environment tools and receptive of the reality. It is cheaper and easier to use. However the range of uses of equipment and number of users are the limited and this is the backlash. A partial-immersive system consists of a relatively high-performance computer graphics system that can be linked to system such as high definition monitor, extensive screen projector system and numerous tv projection systems.

The programs boost the user's immersive sense using a wide field of view. Calibration of positioning of the projected image is crucial in order to prevent deformity as the resolution will resolve the textures, colors, and the competency of define shapes and the ability of the user to read text on-screen. The resolutions of projection systems also would range up to 3000 lines. In addition, images that have a much higher resolution than HMDs can be provided, and this practice enables the virtual experience to be shared. In addition, stereographic imaging can be achieved by synchronizing with the graphics system with some type of shuttered glasses.

What is Shutter Glasses? Shutter glass is a Liquid Crystal Shutter (LCS) glasses are vital findings if talking about partial-immersive systems as it is the only light headset. Stereopsis works on the principle that the observer must see slightly different images of the scene in each eye in order to perceive depth in a scene. (AGO Compiler Group) This happens because in reality human eyes are separated in the head, so the

perception it takes of a scene is from different position. The glasses will decide to block or allows an image produced on the VDU or projected display in order to achieve the stereoscopic effect.

2.2.3 Fully immersive VR:

It enables users to interact with others in a virtual 3D space, where users can also connect and work on documents using camera, audio and text. Looking at Immersive Terf, it provides all the skills humans need to amplify by using VR. Fully immersive VR systems provide the most exact perception. An HMD uses small monitors that has stereo, binocular or monocular images in front of each eye. The main difference is that the two screens are placed closely to our sight (50-70 mm), due to the HMD optical system. Binocular images can be provided by using only one display screen to display the same images. Fully immersive VR usually really troublesome in terms of the computing power and level of technology as it is compulsory to achieve an adequate balance of authenticity and the advancement is steadily upgrade the technologies.

Kalawsky compares the different VR implementations well (AGO Compiler Group). It is also important that these implementations are not considered to be separate limits for implementation. For example, a desktop system can be converted into a partial immersion by adding head mounted and the software already embedded in the system.

2.3 Details of the industry that use VR and type of VR is use the most.

There is different type of headset available for public to use that comes with different pricing and advantages. Nowadays, there are abundant implementation of VR in crucial sectors such as healthcare, military, and environment. (Mansell, 2017) It also reaches the public widely through games. Compare to the 80s, most games developed now are VR and AR focus. This is due to the feeling and sensation it gives to the players. VR involvement in healthcare has made our healthcare system more advanced. The traditional ways of treating a patients are left behind and most user pick a modern and safer way.

2.3.1 Healthcare

Healthcare is one of the largest sectors that implements virtual reality and benefit greatly. Society thinks the connection between VR and healthcare is only on surgical operations, and this ideology is wrong. Latest treatment using VR proven to do surgery using robots and skills development better that using the traditional ways. VR is used alongside other medical tools such as MRI scans as it helps the doctors in analysing the disease of a patients. Doctors also able to improve their skills especially on surgery as VR leaves the imprints of being in the real world, and our brain keeps all data as if they were practicing the real surgery. Plus, this implementation also able to reduce the needs for meddlesome procedure or surgery. As stated before, one of the famous implementation of this technology is in robotic

surgery. (Virtual Reality Society, 2017) Robotic surgery where doctors perform a surgery by using 3rd party equipment by using of a robotic device to cut down surgery time and risk. This due to the fact that a surgeon needs to be as precise as possible to avoid accidents during the operations.

2.3.2 Education

The aspiration in the implementation of VR in education is to boost the exploration and sense of curiosity of a student. Second Life is one of the most viral VR platform that embedded teaching and socializing. Others VR application that have the same purpose is Kaneva and IMVU. Among the advantages of VR in education are reduce the cost of interaction, locations, and engagement. For example, it is common for teacher to engage with the whole class they in charge of. It is their duty to make the class active in order to get the student's attention. Kids especially, their attention span is limited and they easily became fatigue, and this is the biggest problems, all teachers around the globe has to face. By embedded the learning with VR, this would more likely snatched their attention longer.

In the VR environments, a student may able to explore more difficult and dangerous task or experiments, but in a safe and conducive environment. Plus the virtual world is flexible. (Virtual Reality Society, 2017) It's capability to adapt change according to user's need is really fast and impressive. Thus, this technique should be used as complimentary ways of teaching. It is publicly known that kids curiosity and imagination is way higher than adults, so, they able to adapt to VR much better than adults.

Plus, this also would help more on kids that find social interaction hard in order to ensure they engage at the same rate as other kids too. Kids nowadays consider books and pencil as a turn off in studying and claims to study better using technology. This is due to the exposure of abundance of new technology on our surrounding at this modern time. The kids need to do certain task in order to gain the reward.

2.3.3 Military

How does virtual reality fit into military history? Looking back at the development of VR at its early stage, in the year of 80s, the development focus more for military and research purposes, due to the expensive price at that time. One of the famous examples, is flight simulators. The latest models implements the most updated technology in the hardware and software to provide an immersive flying experience to trainee pilots. (Virtual Reality Society, 2017) Modern flight simulators manipulate the very latest technology in virtual reality technology to keep improving the realness experience during training.

Now, the flight simulators are implemented on others mode too such as tanks, submarines and jeeps. All of this, are a support equipment in military services. Plus, trainee also experience the feeling of being in war in order to improve their combat skills. The experience may improve the trainee skills as they facing deadly situation but actually, in a safe environment. This training also, may reduce the cost or expenses by the government. It is a win-win situation as the tax payer's money are well manage. The concept of this training is for soldiers to brace a real combat

situation. The soldiers also would have ‘experience’ in handling all the dangerous situations. This is important for them, as in dangerous situation, each seconds, and decision made is life threatening or lifesaving. When a soldier become platoon leaders, they will be in charge of their man’s life too. VR also educate the soldiers on communication in following orders beside than combat and survival technique.

2.4 Relation of VR and website (implementation of VR in web app)

WebVR is a JavaScript API for creating immersive 3D, virtual reality experiences in your browser. WebVR was originally conceived at Mozilla by Vladimir Vukievic.

A-Frame uses the WebVR API to gain access to VR headset sensor data (position, orientation) to transform the camera and to render content directly to VR headsets. Note that WebVR, which provides data, should not be confused nor conflated with WebGL, which provides graphics and rendering.

2.4.1 Language

There are numerous ways on how to write a VR program. What importance is one’s technique and understanding on how the VR would works. The most famous tools are using Virtual Reality Modelling Language (VRML). VRML is a programming language specialized in creating 3D texture and illusion. It is quite similar to Hypertext Markup Language (HTML) but using textual representation to defined 3D illusion presentation methods. Users need a VRML viewer or browser which can be plug-in for existing browser. Among most use are Platinum’s Cosmo Player, WebFX, WorldView and Whurlwind.

Besides that, HTML is a great platform for building website VR. By using HTML, user can use Text Editor or even Notepad for editing. HTML also much simpler to learn and less complex compare to VRML. One of important element in using HTML, is mastering the Cascading Style Sheets (CSS) and JavaScript. CSS are use in describing the style and presentation of the HTML document while JavaScript is an object oriented computer programming language to create interactive effects in a website.

2.2.2 Video

(Qumu Enterprise Video, 2018) There is numerous type of file for video created for the past 150 years since the start of use of computer. Each have its own ups and downs. Each also unique to one another and not all are compatible with everything. This abundant amount is for user to have the power of choosing in completing their works.

MPEG:

This format was developed by The Moving Picture Expert Group and it was the first popular video format on the web. It also used to be supported by all browser, however, it does not support in HTML5.

AVI:

AVI also known as Audio Video Interleave is Microsoft developed as their first response to Quick Time. It was release a year after Quick Time was release. However, eventually, Microsoft replace AVI with WMV as their biggest fear is internet pirate community affinity for the AVI.

WMV:

WMV is Window Media and it has different type such as .wmv, .wma, .asf, .asx. These are Microsoft second container and these type are extremely common due to Microsoft market share it also comes pre-loaded on all Windows machine.

QuickTime:

This format is created by Apple but also supported in Windows as well, made it the first largely successful multimedia format. This format was released in 1991 and still popular until today.

Flash:

Created by Marcomedia, but then, bought by Adobe and this container format is used by the Adobe Flash plugin. Despite its popularity, it was in middle of controversy. Flash was banned by all iOS device such as iPads and iPhones as Steve Jobs notice bug in this format. Plus, as more website are now moving towards HTML5 video, most of them does not require plug in.

WebM:

WebM is an open media file format mainly for website and it is intended for royalty-free alternative to use in HTML5 elements. It consists of compressed video streams with either VP8 or VP9 video codec. Also, it audio streams compressed with the Vorbis or Opus codec and WebVTT text tracks.

MP4:

MP4 or MPEG-4 is the same format. The whole MPEG series was created by the International Standard Organization for Standardization (ISO). Their objectives is to create an industry standard video format and to unify others format. MP4 is a fusion version of QuickTime and the older version, MPEG. Thu, Apple also separated QuickTime from their format and made MP4 the default format for latest update in QuickTime.

Summary Table

Table 2.1 Summary Video Format

Name	Type	Availability in HTML
MPEG	.mpg .mpeg	Unavailable
AVI	.avi	Unavailable
WMV	.wmv	Unavailable
QuickTime	.mov	Unavailable
Flash	.swf .flv	Unavailable
WebM	.webm	Available
MP4	.mp4	Available

2.2.3 Image

(Caroline, 2010) Picture plays the biggest role since the VR world start with image and not audio or video. Thus, just like others, there are a few type of image format available in the market. (Editorial Team, 2018) Each has their own advantages and disadvantages.

TIFF:

Developed by Aldus, Tagged Image File Format (TIFF) image create very large files sizes and it also uncompressed. This lead to detailed image data. Despite the large size, it has high colour flexibility and content. Image can be grayscale or CMYK for print or RGB for web and can has layers and image tags. This type use mostly in photo editor software such as Photoshop as well as page layout software such as Quack. The image produced is a high quality image format. The only cons for TIFF is it is very large file size-long transfer time which lead to huge disk space consumption and slow loading time.

JPEG:

JPEG is short form of Joint Photographic Experts Group. JPEG format compressed all image in order to minimize the storage usage. This format use widely digital camera due to its capability in small size storage. JPEG also use widely in website as it easily fit in a web page and compatible with most operating system. However, as JPEG compressed picture, some of image detail loses in order to fit the size. It also has 24-bit colour, with up to 16 million colours. It is rich in colours made it photographer first choice. The turndown of JPEG is that it tends to discard data

beside does not supported transparency. In some cases, after compression, JPEG tends to create artifact.

GIF:

GIF stands for Graphic Interchange Format has limited to 8 bit palette with only 256 colours. This format compressed image but the difference with JPEG is that this format lossless. It also has limited colour range that make it suitable for web only. Plus, no photographer would ever use this to store picture. It mostly use for graphics, diagrams and logos. GIF also works better for image with flat regions of colours.

PNG:

Portable Network Graphics (PNG) created to replace GIF as GIF patent was owned by one company and everyone wants free things. It also provides full range of colour and have better compression. It uses for web image and unsuitable for printing and as the image seems bitmapped, photography doesn't like to save image in this format. Among pros of PNG is that it is lossless and compare to GIF, PNG create smaller file size. It also supports transparency better than GIF. However, it is not good for large image because they tend to generate very large files and not all browser supported JPEG.

RAW:

RAW usually contains data from digital camera and they never been processed and therefore cannot be edited or printed yet. There is numerous type of RAW format as different company use different proprietary format. It is also uncompressed which

result in larger file size. Most user will convert it into TIFF format for re-editing purpose.

Summary Table

Table 2.2 Summary Image Format

Name	Type	Compression	Availability in HTML
TIFF	.tiff	Uncompressed	Available
JPEG	.jpg	Compressed	Available
GIF	.gif	Compressed	Available
PNG	.png	Compressed	Available
RAW	-	Uncompressed	Unavailable

2.2.4 Audio

(Gordon, 2012) There is numerous type of audio format available in market such as WAV, AIFF, MP3 and the list just goes on and on. But only some of them can be used in html. All format existed will be discuss later on.

WAV:

WAV audio are uncompressed. Uncompressed means they are the exact copies of the original audio source. WAV is a universal product. Since they are uncompressed, they tale up a lot of unnecessary space.

AIFF:

AIFF have pretty much the same feature like WAV which both are uncompressed. Both have the same quality and the data storage differ only a bit. AIFF produced by Apple, thus, apple user see it more often. Just like WAV, AIFF also takes a lot of unnecessary space. Thus, both are recommended for video editing only.

FLAC:

FLAC also known as The Free Lossless Audio Codec (FLAC) is one of most pick choice if a user decide to store lossless music. FLAC compressed the audio so it takes less space. Plus, FLAC also open source, which quite handy for most user.

ALAC:

Apple Lossless (ALAC) is similar to FLAC. It compresses lossless fie but, it is made by Apple. However, its compression is not as good as FLAC, so the files bigger than FLAC. The biggest difference is that it is supported by iTunes and iOS.

APE:

APE is highly compressed lossless file, which result in most space saving by the user. However, this format is not a compatible with most media players. This format also make the processor works more as it harder to decode.

MP3:

MPED Audio Layer 3 or MP3 for short, is the most famous format uses around the world. It is lossy and commonly use with downloading music. This format is not the most efficient to use but the well-supported. Users can not go wrong with using this format.

AAC:

(Altunian, 2018) Advanced Audio Coding (AAC) is similar to MP3, and it is more efficient compare to MP3. AAC have the same quality as MP3 but as smaller space and its popularity are thanks to Apple's iTunes. AAC also as compatible as MP3, so it is hard to go wrong with this media.

Ogg Vorbis:

The Vorbis format are much familiar with name Ogg Vorbis because of its usage of Ogg container. This format is free and open source and alternative to MP3 and AAC. However, since it is not popular as MP3 or AAC, not much player can use this.

WMA:

Window Media Audio belongs to Microsoft even it has the same property as MP3 and AAC. It has not much advantages against others format as they also not well supported.

Summary Table

Table 2.3 Summary Audio Format

Media Name	Type	Compression	Compatibility	Availability in HTML
WAV	Lossless	Uncompressed	Very Compatible	Available
AIFF	Lossless	Uncompressed	Very Compatible	Unavailable
FLAC	Lossless	Compressed	Very Compatible	Unavailable
Apple Lossless	Lossless	Compressed	Supported by iTunes only	Unavailable
APE	Lossless	Compressed	Not so compatible	Unavailable
MP3	Lossy	Compressed	Very Compatible	Available
AAC	Lossy	Compressed	Very Compatible	Unavailable
Ogg Vorbis	Lossy	Compressed	Very Compatible	Available
WMA	Lossy	Compressed	Not so compatible	Unavailable

CHAPTER 3

Requirements and Theoretical Framework

3.1 System Requirement

3.1.1 HTML, CSS, JS

In building a website, HTML, CSS and JS are the main basic element

HTML is a markup language that is the basic structure of a web page no matter how complex its design is. It's a vital any web professional. It provides the basic component of a sites, that can be improved by CSS and JavaScript.

CSS stands for Cascading Style Sheets. This language percept HTML design elements of a website should actually materialize on the front-end of the website. CSS helps to style this content so it appears to the user the way it was intended to be seen. If HTML is the drywall, CSS is the paint. Whereas HTML was the core of your website, CSS is what gives your entire website its style. Those slick colours, interesting fonts, and background images? (LindsayKolowich, 2018)All thanks to CSS. This language affects the entire mood and tone of a web page, making it an incredibly powerful tool - and an important skill for web developers to learn. It's also what allows websites to adapt to different screen sizes and device types.

JavaScript is a bit harder than HTML or CSS, and it wasn't released in beta form until 1995. Nowadays, JavaScript is sustained by most modern web browsers and it's being use in all website to run much powerful and complex functionality. JavaScript lets programmer to create interactive website. Most of the dynamic characteristic of a web page able to run with existence of JavaScript, which augments a browser's default controls and behaviours applications.

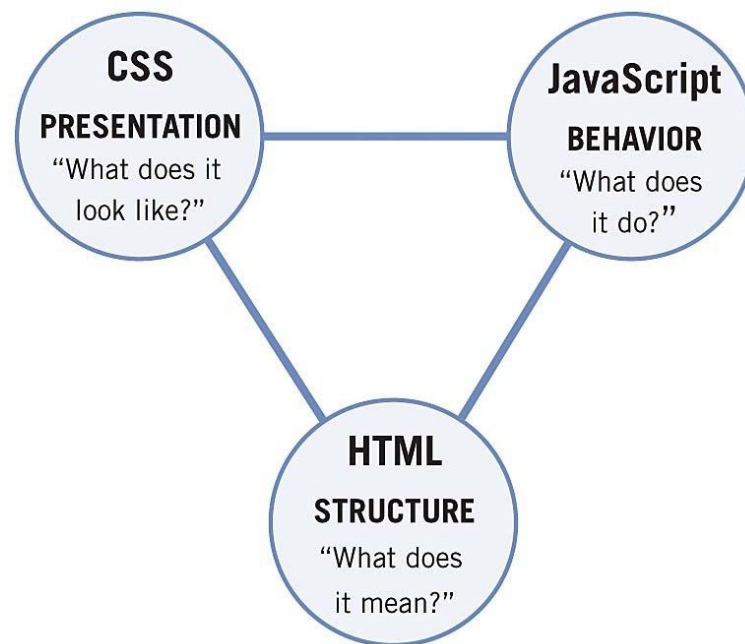


Figure 3.1 Illustration relationship

The illustration above shows and simplifies the relationship between HTML, CSS and JS in developing a web programming.

3.1.2 A-Frame Framework

A-Frame is one of the most approachable VR framework among VR communities since it is an independent open source project. It is a web framework originated from Mozilla that being advanced as an easy and also compelling in creating VR content. It has a powerful entity-component framework that provides a declarative, extensible and compassable structure to three.js. Its implementation is on top of HTML. Despite it is fully capable of supporting the whole spectrum, its goal, is to be a fully immersive VR by making use of positional tracking and control to the fullest. It also able to works on flat 3D or non-immersive VR such as website on desktop.

A-Frame support numerous platform such as desktop with headset, mobile with headset, flat on desktop, HoloLens, and even Window Mixed Reality. Plus, most head set such as HTC Vive, Oculus Rift, Google Daydream and even Google Cardboard support A-Frame framework. Furthermore, A-Frame framework also works and support on browser like Firefox 55+ Windows, Chromium, Super medium, Chrome for Android and also Microsoft Edge. (A-Frame)

3.1.3 Use Case Diagram

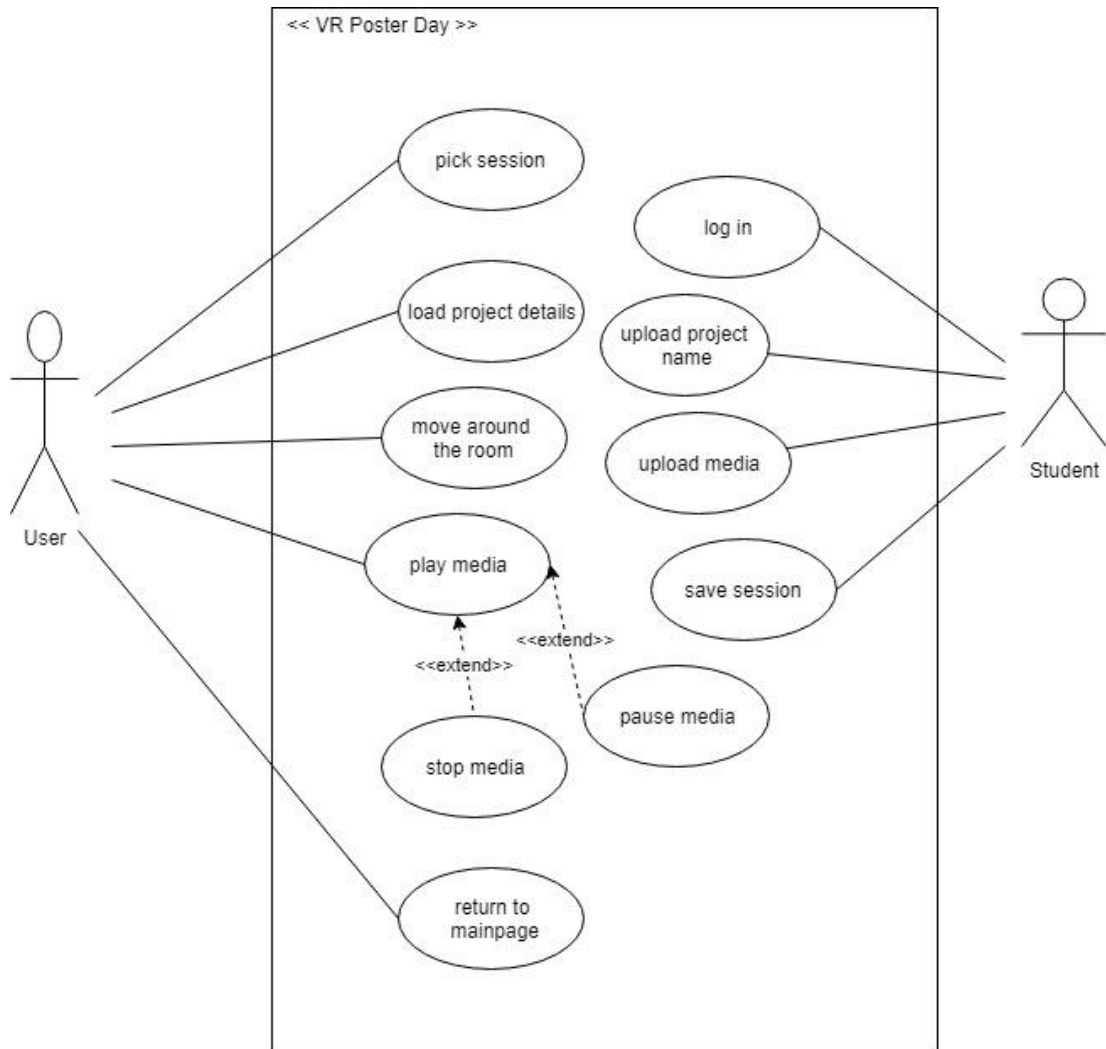


Figure 3.2 Use Case Diagram

The use case diagram above shows the interaction between users and students to the VR poster day website. The user will be directed to main page. User will choose the activities wanted to be done. They can either pick a session or shows the details of MMU VR Poster Day. Their inputs will be directed to respective room. Then, the users may walk and explore the room. They also can play the video on the website.

Student also will be directed into the main page. They will choose the 'Student log in' option and will be directed into log in page. Upon successful log in, they will be able to upload and save their project details, images and video. Once the student clicks save buttons, their media will be saved. If the log in fails, they will stay at the log in page.

3.1.4 Application Context diagram

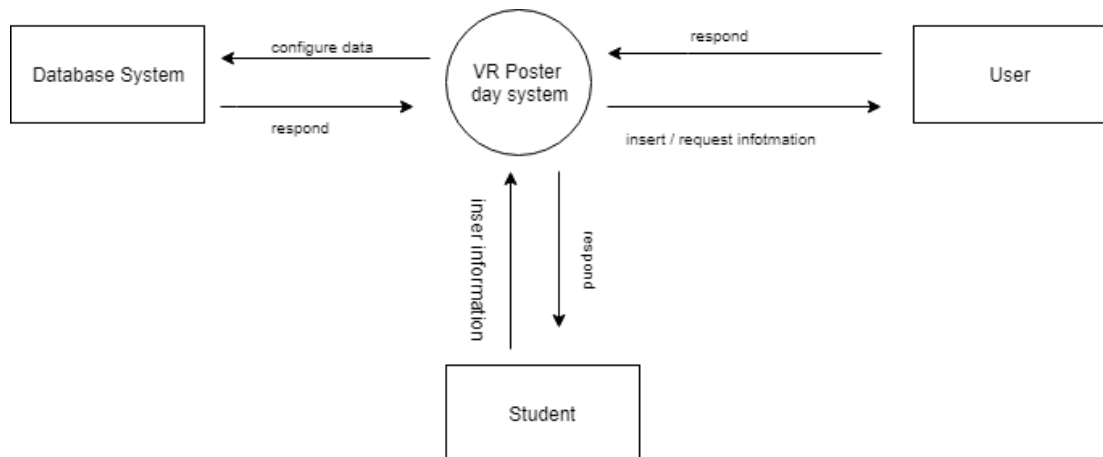


Figure 3.3 Application Context Diagram

The context diagram above shows the VR poster day website has 3 important entities. Each entities plays equally important roles for the website to perform system functionalities. The website receive user information as input. The system will direct them to their room. The database will show relative results. The students will be directed to their log in page for them to upload their media details. By using this method, the website will shows the right rooms the user should be in and students may saves their data successfully into the system.

3.1.5 Application Flowchart

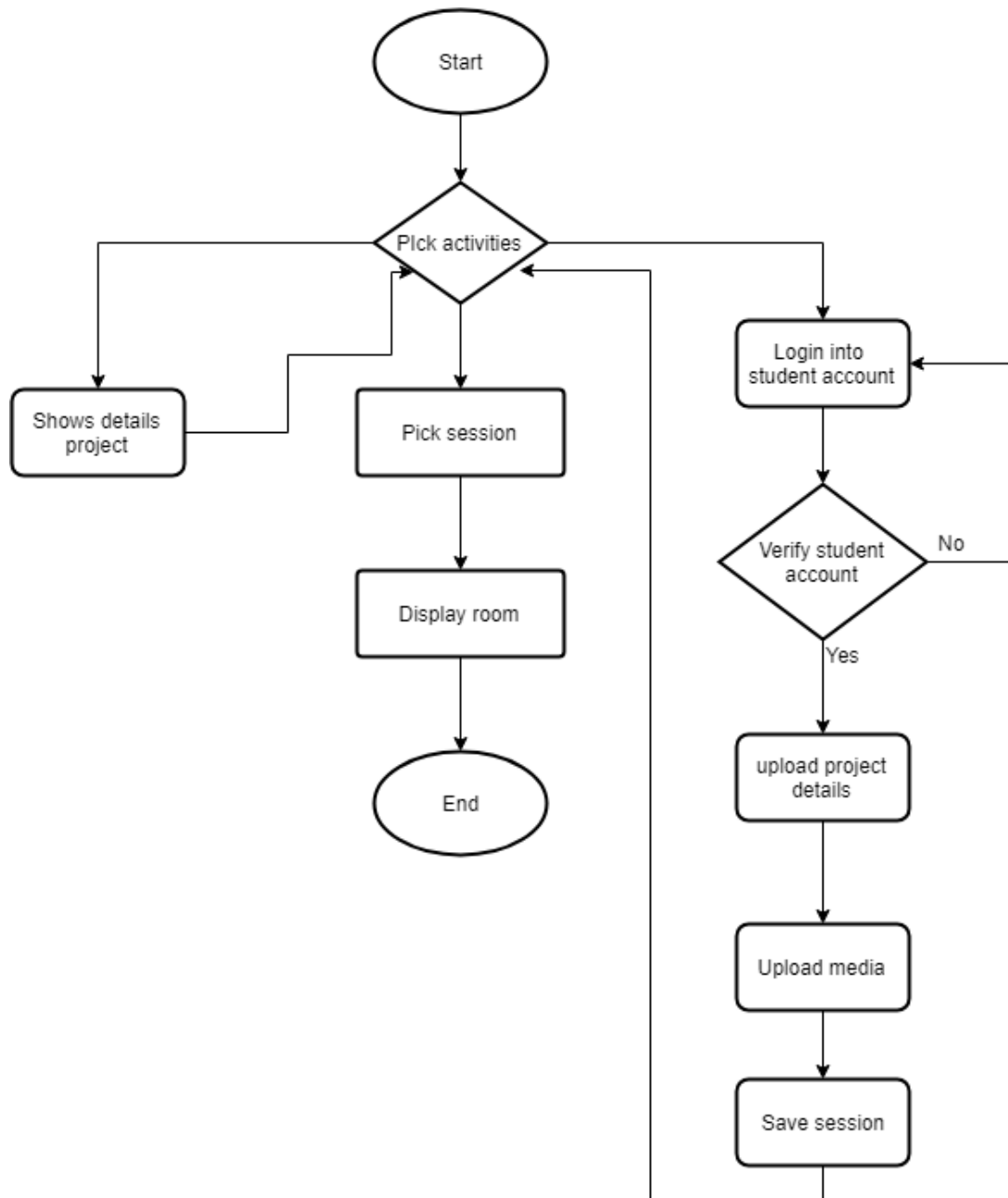


Figure 3.4 Flowchart

On starting of the website, users and student will be shown main page. There will be 3 options. For students, they will click on 'Student Log In' and will be directed into log in page. After submit their log in details, the system will verify the username and password. If fails, the student will stay on log in page. If log in successful, the student will be directed into student page. They will key in their project name and media and save. Then, they will be directed back to main page.

For users, they have 2 option, to either enter any session room, or go through the MMU VR Poster day details. If the choose the details, they will be shown the details of the project. Once they click cancel button, they will be on main page again. There, they can choose the session they want. They also able to go back to main page. Once in any room, the students able to walk and view video of any student's project.

3.1.6 Application Sequence diagram

3.1.6.1 User

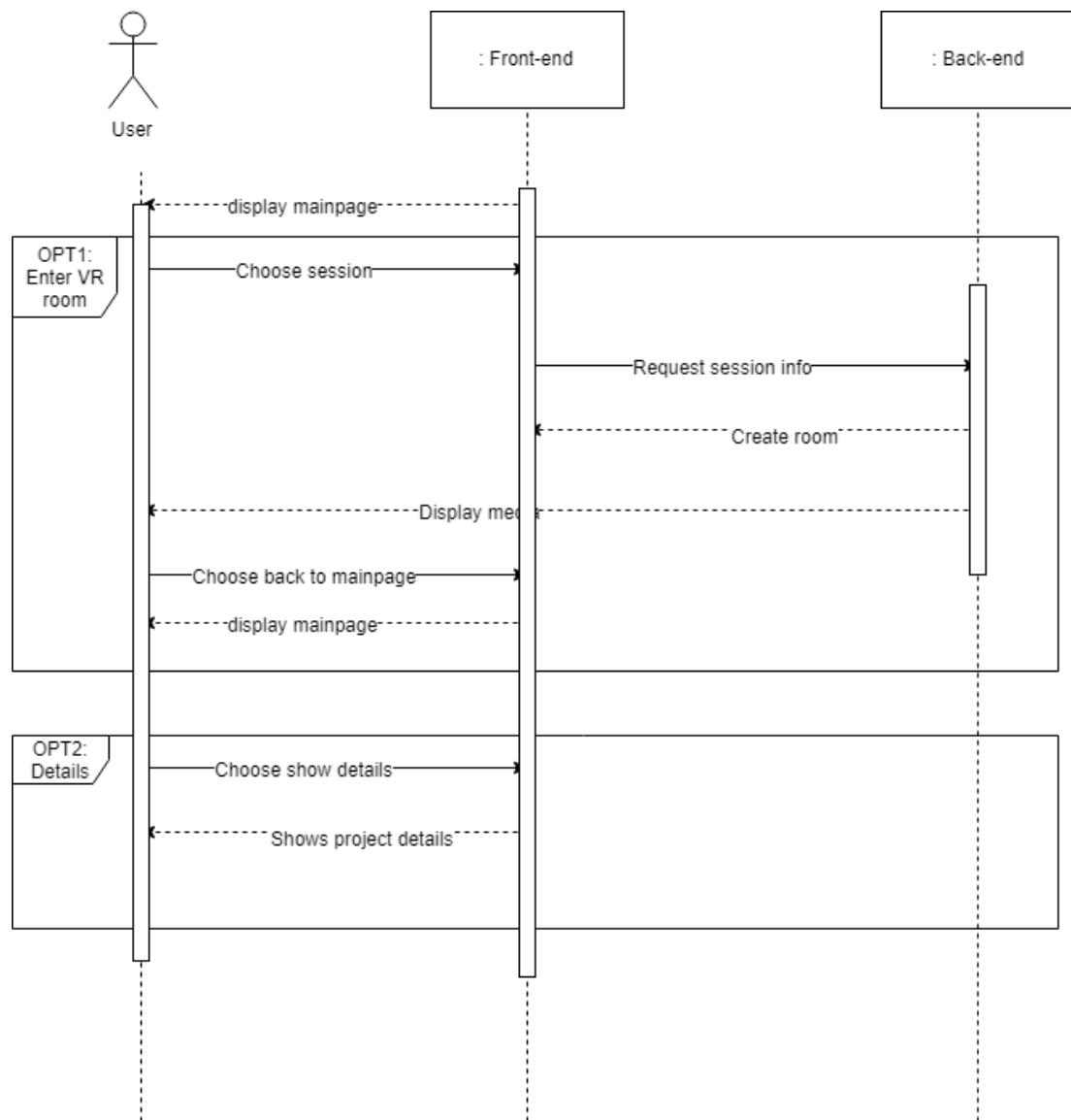


Figure 3.5 User Sequence Diagram

Sequence diagram above shows the main function of system front-end and the database with user. User is required to interact with the front-end at the main page. User have 2 option of loading the details of VR project or viewing one of the session room. The user insert information into the system front-end, the system front-end analyse the information and send it to the database. Once the data receive, the database will send out respective respond- the session room pick by user- Then, user can pick to move around the room to view the images and video inside the room.

If the user want to change session, they can send info to go back to main page and begin the whole process again.

3.1.6.2 Student

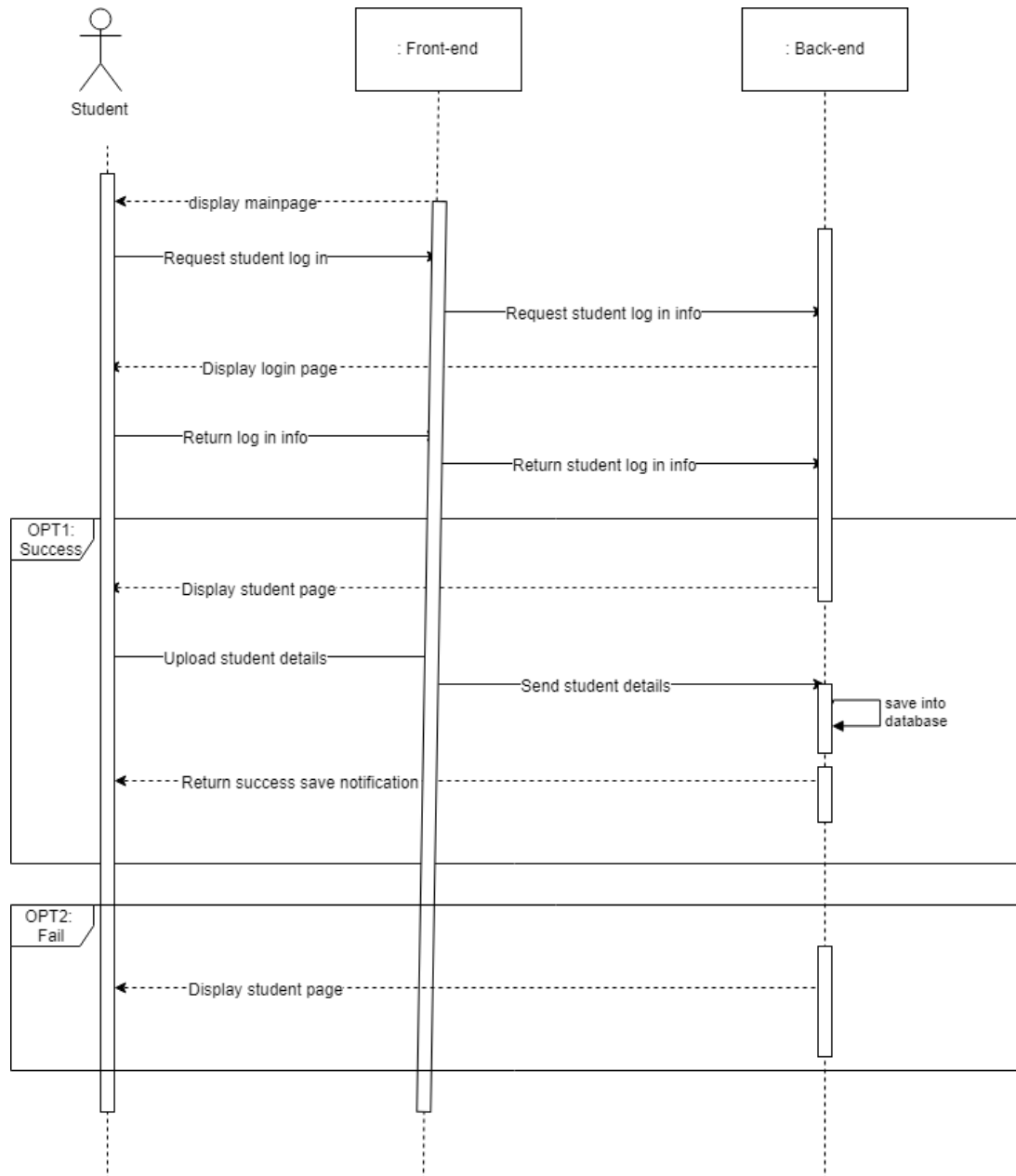


Figure 3.6 Student Sequence Diagram

Sequence diagram above shows the other function of system front-end and the database that involve only student. Student is required to interact with the front-end at the main page. The student will pick on login button at the main page to be able to upload their image poster and video. If the log in successful, the student will be directed to student page where they can write the project name and upload their files. If the log in fails, error message will pop out and they will stay at the page.

If their upload successfully complete, notification will pop out, and they can leave the student page.

Chapter 4

Design and Research Methodology

4.1 Overview

As stated on previous chapter, the system created using HTML, CSS, JS and AFrame framework. The system relies heavily on AFrame framework that works easily as if using WebGL. Although the system become slow to run on low specification laptop or computers, it is due to the layering and object loading on the VR website.

4.2 Hardware specification

To run the system, user will need a really powerful computer due to its running on a website. The apps created with numerous layers and object that makes it need lots of power to runs.

Min RAM needed: 32gb

4.3 Design of system

4.3.1 Login System

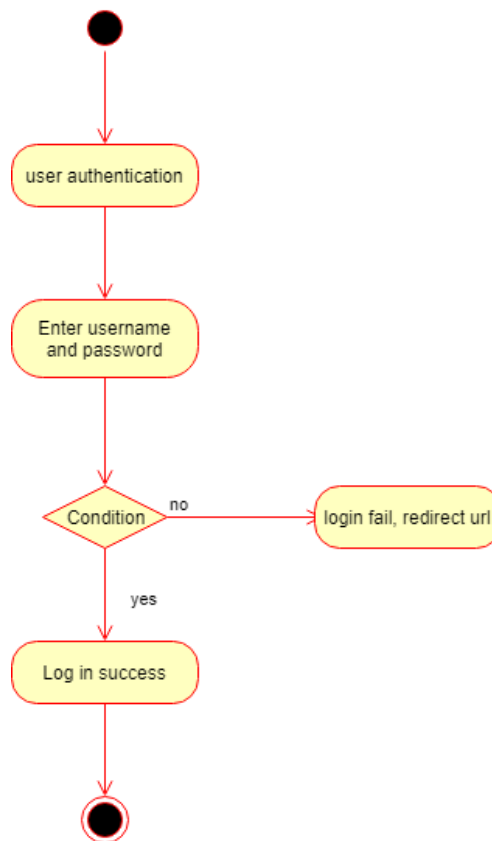


Figure 4.1 Login System

The state diagram shows that system starts as student will need to verify authentication. Then, they enter the username and password information. If the log in success, they directed to student page, while if fail, they will be directed to the same login page.

4.3.2 System State Diagram

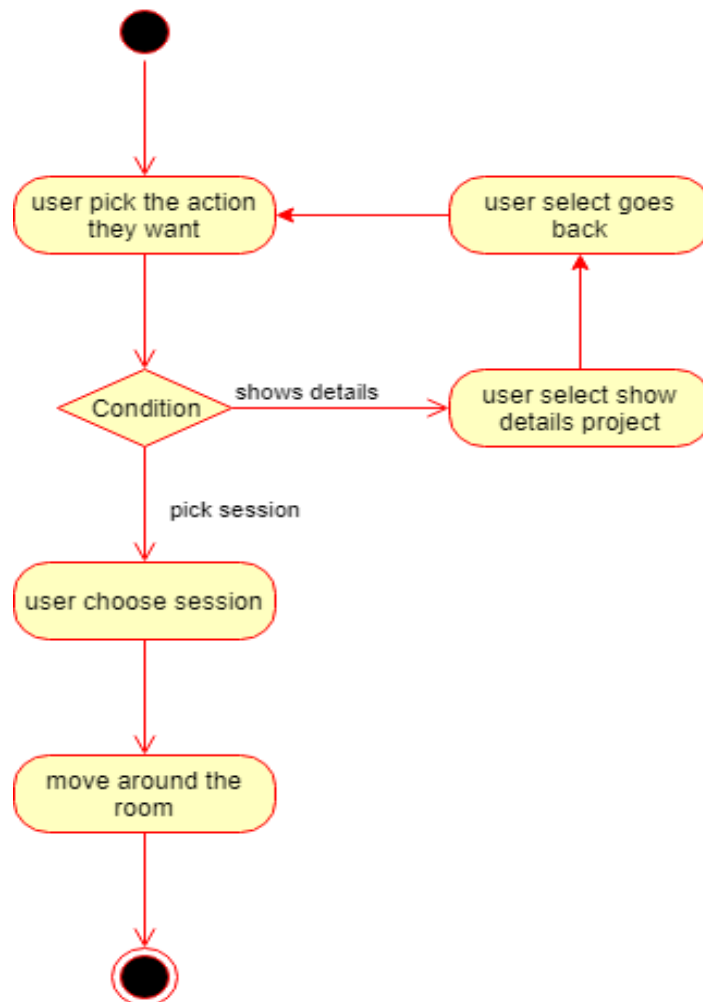


Figure 4.2 System State Diagram

The state diagram shows the overall of the systems. User will start at the main page where they will pick the action they want. If the pick shows details, they will see the project details layering on top of main page. Then, they can go back to the main page. If the user chooses to enter any session room, they will be directed to the room. They also can move around the room to explore the rooms.

4.4 Database

All student's data will be kept into online database, wrote using MySQL query. The system only kept the project id, project name, image and video of the student. Below is the illustration of the table:

Table 4.1 Database

Name	Data type	Note
Project ID	int(5)	PK,NN,AI
Project Name	varchar(255)	
Image	varchar(255)	
Video	varchar(255)	

The MySQL code will be attached in the appendix.

Chapter 5

Implementation

5.1 Major Module

This chapter will be the walkway on how the programs works. During the initial state of programs, users and students will be on the mainpage.

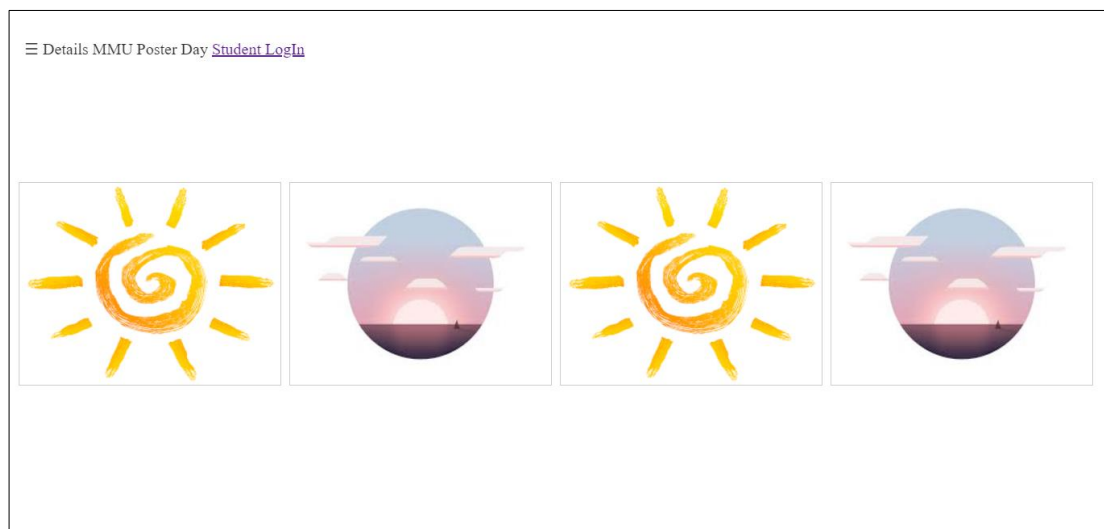



Figure 5.1 Main Page

If you are a student, and wish to upload your FYP documents, you need to select 'Student Login' option at the top header. And you will be directed to continue login.



Log In

Student ID

Enter StudentID

Student ID

Enter Password

Login

Back

Figure 5.2 Log In Page

Next, students will need to key in their ID. They will need to take the ID and password before starting the login. If the log in fail, they will stay at the page. If the log in is successful, they will be directed to student page, where they can upload their project details.

Student Final Year Project Detail

Project ID:

Project Name:

No file chosen

Note: Please upload image file with format .png only

No file chosen

Note: Please upload video file with format .mp4 only

Figure 5.3 Student Page

Once the upload complete, a pop out message will comes out to notify the student. They can leave the page by closing the browser or click on ‘back’ @undo button.

For users, they may choose to read the detail of the project or jumps straight into any of the VR session. To view the details of project, click on detail option on the header, and project detail will be overlay on the website.

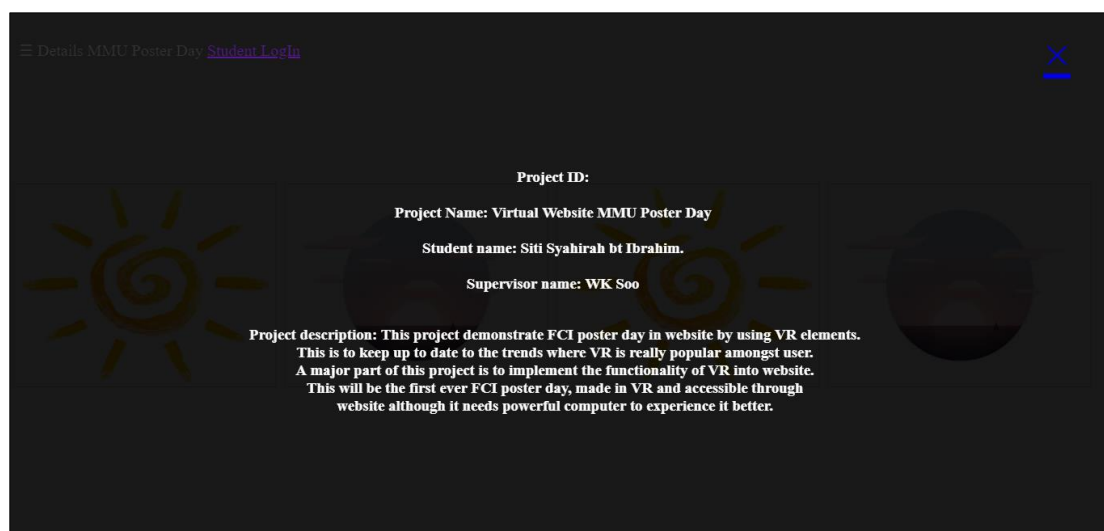


Figure 5.4 Project Details

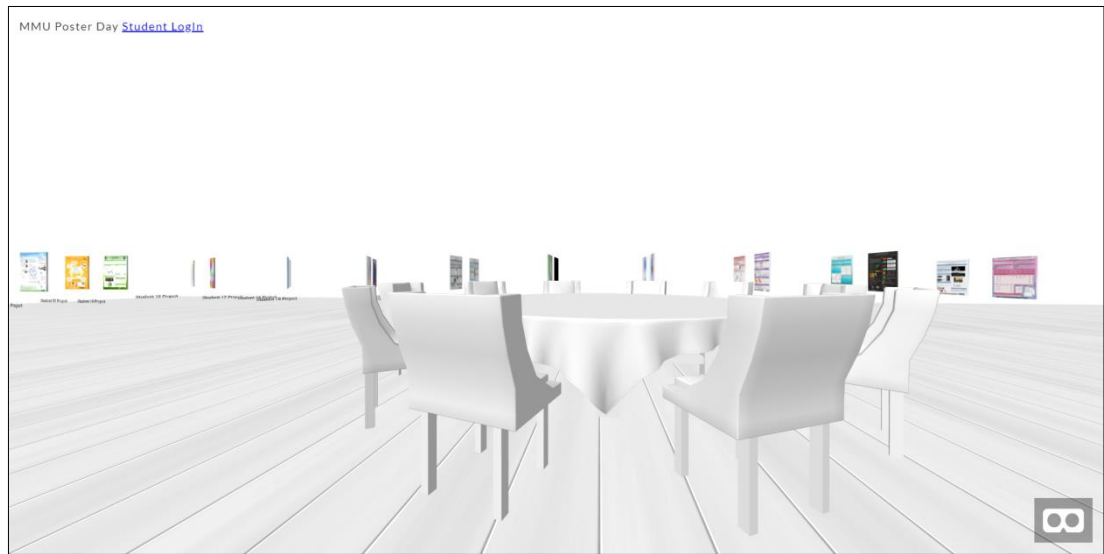


Figure 5.5 Room view 1

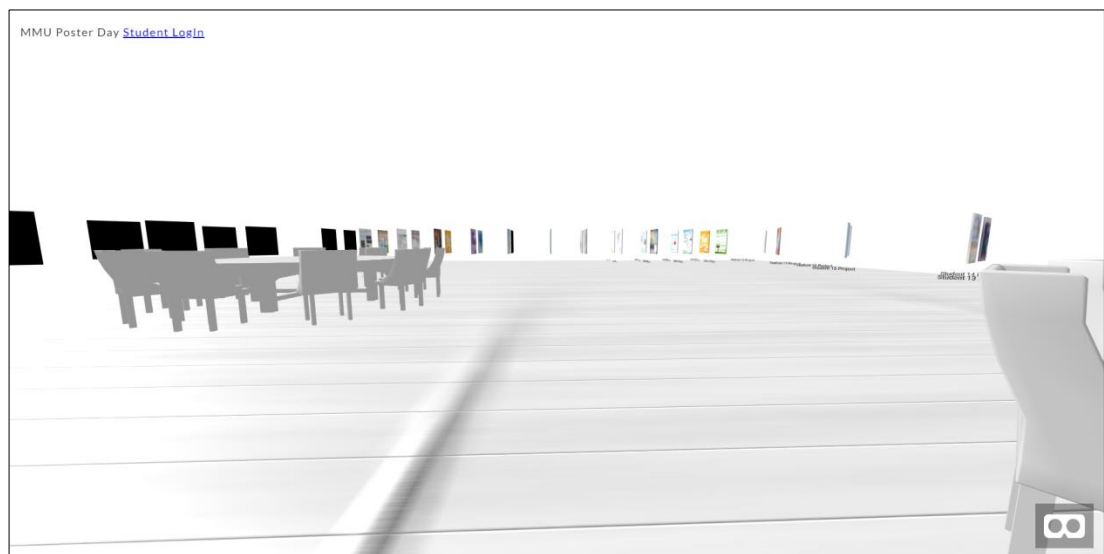


Figure 5.6 Room view 2

Users can move around by using keyboard, W for forward, S for reverse, D for right and A for left.

5.2 Algorithm /Pseudocode

This chapter will be looking at the pseudocode in the implementation of the application. Pseudocode is the imitation and informal language that helps programmers develop algorithms code and it is a "text-based" algorithmic design tool.

5.2.1 Log In

header.php

check for cookie

if exist set control panel with options and logout

if none exist check session,

if exist set control panel with options,

if none exist

exit

ask for login and password with remember option (will set cookie)

user inputs details, database check to see if user exists

5.2.3 *Student upload*

Below is the pseudocode for student upload function.

```
IF (NOT LOGIN YET) PRINT LOGIN PROMPT
ELSE
  IF ( category NOT SELECTED) THEN
    PRINT ERROR MESSAGES
    CALL studentpage
  ELSE IF (ProjectId NOT SELECTED) THEN
    PRINT ERROR MESSAGES
    CALL newitem.php
  ELSE IF (ProjectId INVALID) THEN
    PRINT ERROR MESSAGES
    CALL newitem.php
  ELSE IF (ProjectName INVALID) THEN
    PRINT ERROR MESSAGES
    CALL newitem.php
  ELSE IF ( image INVALID) THEN
    PRINT ERROR MESSAGES
    CALL newitem.php
  ELSE IF ( video INVALID) THEN
```

```
        PRINT ERROR MESSAGES
    END IF
END IF
END IF
END IF
END IF
END IF
OPENFILE studentpage
WRITE ProjectID
WRITE ProjectName
WRITE image
WRITE video
CLOSEFILE studentpage
OPENFILE latest
WRITE ProjectID
CLOSEFILE latest
END IF
```

Chapter 6

Testing

6.1 Overview

To start the testing test case must be done to guide the testing process. This is to help the testing process become smoother. This chapter cover 11 test case that are the requirement of the application system.

Table 6.1 Testing Log In Username

Requirement ID	REQ_F001	Test Case ID	TC-01-001
Description	Test Log In (Username)	Pass/Fail	PASS

Table 6.2 Testing Log In Password

Requirement ID	REQ_F001	Test Case ID	TC-01-002
Description	Test Log In (Password)	Pass/Fail	PASS

Table 6.3 Testing Test Upload

Requirement ID	REQ_F002	Test Case ID	TC-02-001
Description	Test Upload Project Name	Pass/Fail	PASS

Table 6.4 Testing Navigation Forward

Requirement ID	REQ_F003	Test Case ID	TC-03-001
Description	Navigation (forward)	Pass/Fail	PASS

Table 6.5 Testing Navigation Backward

Requirement ID	REQ_F003	Test Case ID	TC-03-002
Description	Navigation (backward)	Pass/Fail	PASS

Table 6.6 Testing View Image

Requirement ID	REQ_F004	Test Case ID	TC-04-001
Description	View Image	Pass/Fail	PASS

Table 6.7 Testing View Video

Requirement ID	REQ_F005	Test Case ID	TC-05-001
Description	View Video	Pass/Fail	FAIL

Table 6.8 Testing Save Image

Requirement ID	REQ_F006	Test Case ID	TC-06-001
Description	Save Image	Pass/Fail	PASS

Table 6.9 Testing Change Session

Requirement ID	REQ_F007	Test Case ID	TC-07-001
Description	Change Session	Pass/Fail	PASS

Chapter 7

Conclusion

This project provides huge chances in exploring on virtual reality and its implementation on website. This project involves numerous researchers and coding practices, especially implementation of A-Frame framework, establishing server connection, sending and receiving contents through server. This project replaces the traditional poster day and make use of new technology in promoting MMU Poster day. The work done able to achieve the objectives of this project. Furthermore, there are still huge potential for more improvement in the future, such as faster user movement, and better representation of the room itself. The future works on MMU Poster Day VR website would allow the system to provide better service in future.

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APPENDIX A

Faculty of Computing and Informatics

Final Year Project Report (FYP2)

Commercialisation Proposal Guidelines (for Application-Based Projects)

1. Executive Summary

Virtual Reality (VR) is the use of computer integration which has been developed since the year 1960 from tele-operations technology in creating a totally artificial simulated environment. There are different levels of immersiveness depending on the application itself. The growth of VR has been used in various fields such as healthcare, education, tourism, military and even sport. Thus, implementing MMU Poster Day in virtual website would be one of a kind.

2. Market Analysis

Virtual website has been implemented in numerous field especially art, and the most common events is virtual museum. Plus, in education, most application focus on learning and exposing student's new skills. But none implements it in exposing student's skills to be view by public. In Malaysia especially, there is no university that has ever runs their poster day virtually.

3. Problem Statement

The 2016 FCI poster day was held in MPH and part of the requirements for students presenting during the event was to prepare and upload digital demos and posters of

their work. These digital assets are being kept in the server and all student's effort will be wasted.

4. Unique Value Proposition

Implementation of poster day on virtual website affects both students and university. From the student's point of view, this application allows public to analyze their skills much better and the effort they would put in FYP will increase as it affect them in a long run. The better the presentation of the student's FYP, the higher chance for their skills to be recognize especially for employer.

This would also affect the university's reputation and increase students intake since society knows that MMU is capable at producing a competitive and skillfully programmer in long run.

5. Objectives

The objective of this project are:

- 1) Represent FCI poster day in VR for online viewing by visualize student uploads as virtual assets in the VR representation.
- 2) Incorporate navigation and interactive for viewers to select / view / download content from VR
- 3) Implementation of VR elements in a website that is accessible through a laptop / personal computer.

6. Methods and Scope of Work

The implementation of this systems is using HTML, CSS and JS and using A-Frame framework. The framework has predefined JavaScript that makes developers works easier. Developers also may develop the website into a fully immersive website by using head set and joystick.

7. Business Model

The building cost also low since A-Frame framework is an open source and free software available on market.

8. Milestones and Key metrics

Developing the project would be depending on the developer's skills. With more powerful hard ware and virtual environment equipment, the development of the project would be lower.

9. Project Outcome

This project would be successful when it could be use on the poster itself. This would increase more view from public. Plus, besides student's image, their video also should be able to run on the websites.

10. Strength, Weakness, Opportunity, and Threat (SWOT) analysis

Strengths:

Strength of this project is that it makes use of student's data. This one of a kind system, would be pioneer for VR to be embedded in art and education sectors.

Weaknesses:

The biggest weakness of this project is that it consumes too many memory and computer RAM. This would lead users need a powerful computer to run the system smoothly.

Opportunities:

To develop the system is relatively do-able since VR and website development is getting rapid day by day.

Threats:

So far, there is no university that ever presents their poster day on virtual website.

This unique idea would be the first that combines education and entertainment and art

APPENDIX B

APPENDIX C

Coding:

HTML files.

mainpage.html

```
<!DOCTYPE html>
<html lang="en" class="no-js">
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<meta name="description" content="Add a description" />
<link rel="stylesheet" type="text/css" href="css/mainpage.css" />
<link href='https://fonts.googleapis.com/css?family=Caudex' rel='stylesheet'>
</head>
<body>

<h1> <span style="font-size:20px; cursor:pointer" onclick="openNav()">&#9776;
Details</span>   MMU Poster Day <a href="register.html">Student LogIn</a>
</h1>

<div id="myNav" class="overlay">
  <a href="javascript:void(0)" class="closebtn" onclick="closeNav()">&times;</a>
  <div class="overlay-content">
    <h3> Project ID:  <br><br>
      Project Name: Virtual Website MMU Poster Day <br><br>
      Student name: Siti Syahirah bt Ibrahim. <br><br>
      Supervisor name: WK Soo <br><br>
      <p>Project description: This project demonstrate FCI poster day in website by
using VR elements.<br>
      This is to keep up to date to the trends where VR is really popular amongst
user.<br>
      A major part of this project is to implement the functionality of VR into
website.<br>
      This will be the first ever FCI poster day, made in VR and accessible
through<br>
      website although it needs powerful computer to experience it better.<br> </p>
    </h3>
  </div>
</div>

<div class="container2">
  <a target="_blank" href="index.html">
    
```



```

    <div class="middle">
      <div class="text2">Day 1 Morning</div>
    </div>
  </a>
</div>

<div class="container2">
  <a target="_blank" href=".html">
    
    <div class="middle">
      <div class="text2">Day 1 Evening</div>
    </div>
  </a>
</div>

<div class="container2">
  <a target="_blank" href=".html">
    
    <div class="middle">
      <div class="text2">Day 2 Morning</div>
    </div>
  </a>
</div>

<div class="container2">
  <a target="_blank" href=".html">
    
    <div class="middle">
      <div class="text2">Day 2 Evening</div>
    </div>
  </a>
</div>

<script>
function openNav() {
  document.getElementById("myNav").style.height = "100%";
}

function closeNav() {
  document.getElementById("myNav").style.height = "0%";
}
</script>

</body>

```

</html>

CSS files.

mainpage.css

```
h1 {
    z-index: 9999;
    font-weight: 500;
    padding: 50px 20px;
    position: fixed;
    -webkit-backface-visibility: hidden;
    top: 0;
    left: 0;
    color: #333333;
    padding: 20px;
    font-size: 20px;
}

h1 a a-link {
    font-size: 12px;
    text-transform: uppercase;
    display: inline-block;
    padding: 0 0 0 10px;
    color: #666666;
    font-weight: 700;
}

h1 a a-link:hover{
    color: #1a1a1a;
}

h3{
    color: white;
    font-family:'Caudex';
    font-size: 25px;
}

.container2 {
    border: 1px solid #ccc;
    float: left;
    position: relative;
    width: 24%;
    height: 25%;
    margin: 5px;
    top: 200px;
}
```

```

.image {
  opacity: 1;
  display: block;
  width: 100%;
  height: 250px;
  transition: .5s ease;
  backface-visibility: hidden;
}

.middle {
  transition: .5s ease;
  opacity: 0;
  position: absolute;
  top: 50%;
  left: 50%;
  transform: translate(-50%, -50%);
  -ms-transform: translate(-50%, -50%);
  text-align: center;
}

.container2:hover .image {
  opacity: 0.3;
}

.container2:hover .middle {
  opacity: 1;
}

.text2 {
  background-color: #4CAF50;
  color: white;
  font-size: 16px;
  padding: 16px 32px;
}

h2 {
  color: white;
}

.overlay {
  height: 0%;
  width: 100%;
  position: fixed;
  z-index: 1;

```

```

top: 0;
left: 0;
background-color: rgb(0,0,0);
background-color: rgba(0,0,0, 0.9);
overflow-y: hidden;
transition: 0.5s;
}

.overlay-content {
position: relative;
top: 25%;
width: 100%;
text-align: center;
margin-top: 30px;
    font-family: 'Caudex';
}

.overlay a-scene {
padding: 8px;
text-decoration: none;
font-size: 36px;
color: #818181;
display: block;
transition: 0.3s;
}

.overlay .closebtn {
position: absolute;
top: 20px;
right: 45px;
font-size: 60px;
}

@media screen and (max-height: 450px) {
.overlay {overflow-y: auto;}
.overlay .closebtn {
font-size: 40px;
top: 15px;
right: 35px;
}
}

```

form.css

```
body, html {
height: 100%;
font-family: Arial, Helvetica, sans-serif;
}

* {
box-sizing: border-box;
}

.background-img {
/* The image used */
background-image: url("img/MMU_LOGO.png");
min-height: 150px;
/* Center and scale the image nicely */
background-position: top;
background-repeat: no-repeat;
background-size: contain;
position: relative;
}
.form-only{
background-image: none;
}

/* Add styles to the form container */
.container {
position: absolute;
right: 0;
margin: 20px;
max-width: 300px;
padding: 16px;
background-color: white;
}

/* Full-width input fields */
input[type=text], input[type=password] {
width: 100%;
padding: 15px;
margin: 5px 0 22px 0;
border: none;
background: #f1f1f1;
}

input[type=text]:focus, input[type=password]:focus {
background-color: #ddd;
outline: none;
}

a{
background-color: #2a3a6d;
```

```

color: white;
padding: 16px 20px;
border: none;
cursor: pointer;
width: 100%;
opacity: 0.9;
text-align: center;
text-decoration: none;
display: inline-block;
font-size: 16px;
margin: 4px 2px;
}

/* Set a style for the submit button */
.btn {
background-color: #2a3a6d;
color: white;
padding: 16px 20px;
border: none;
cursor: pointer;
width: 100%;
opacity: 0.9;
}

.btn:hover {
opacity: 1;
}

```

default.css

```

/* Default_ori set. DO not change Style */
@import
url(http://fonts.googleapis.com/css?family=Lato:400,700|Alegreya+SC:700|Cutive+Mono);

html { height: 100%; }

*,
*:after,
*:before {
    -webkit-box-sizing: border-box;
    -moz-box-sizing: border-box;
    box-sizing: border-box;
    padding: 0;
    margin: 0;
}

/* Clearfix hack by Nicolas Gallagher: http://nicolasgallagher.com/micro-clearfix-hack/ */
.clearfix:before,
.clearfix:after {
    content: " ";
}

```

```

display: table;
}

.clearfix:after {
clear: both;
}

.clearfix {
*zoom: 1;
}

body {
font-family: 'Lato', Calibri, Arial, Helvetica, sans-serif;
background: #ffb3d9;
font-weight: 400;
font-size: 15px;
color: #333;
overflow: hidden;
height: 100%;
}

a {
color: #666666;
text-decoration: none;
}

h1 {
z-index: 9999;
font-weight: 500;
padding: 50px 20px;
position: fixed;
-webkit-backface-visibility: hidden;
top: 0;
left: 0;
color: #333333;
padding: 20px;
font-size: 20px;
}

h1 a {
font-size: 12px;
text-transform: uppercase;
display: inline-block;
padding: 0 0 0 10px;
color: #666666;
font-weight: 700;
}

h1 a:hover{
color: #1a1a1a;
}

```

JAVASCRIPT (JS) files.

Most JS files implemented are precompiled and can be access through A-Frame framework website or documentation web. User can decide either to download offline or call the files online. For this project, .js files is called online.

PHP files.

login.php

```
<?php
include 'connect_mysql.php';
global $msg;
?>
<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="form.css" >
</head>
<body>

<div class="background-img"></div>
<h1> Log In</h1>

<div class="form-only">
  <?php

  connect();
  $msg = "";

  if ( isset($_POST['login']) && !empty($_POST['login']) ) {

    $validate = mysqli_query($conn, "SELECT name, password FROM users
WHERE
  name LIKE '". mysqli_escape_string($conn, $_POST['sid']) ."
  AND password='". mysqli_escape_string($conn, $_POST['pswrd']) ."'");

    if (mysqli_num_rows($validate) > 0) {
      setcookie("valid",true,time()+172800);
```



```

        $_SESSION['sid'] = $_POST['sid'];
        mysqli_close($conn);
        echo '<meta http-equiv="refresh" content="0; url=index.html">';
    }else{
        $msg = '<font color="red">Error: Incorrect username/password </font>';
    }
}

?>
<form method="post" action="<?php echo
htmlspecialchars($_SERVER["PHP_SELF"]); ?>">
    <p><?php echo $msg; ?></p>
    <label for="StudentID"><b>Student ID</b></label> <br>
    <input type="text" name="sid" placeholder="Student ID" required=""
oninvalid="this.setCustomValidity('ID is empty')" oninput="setCustomValidity(')">
    <label for="Password"><b>Password</b></label> <br>
    <input type="text" name="pswd" placeholder="Password" required=""
oninvalid="this.setCustomValidity('Password is empty')"
oninput="setCustomValidity(')">
    <br> <br>
    <input type="submit" class="btn" name="login" value="Login">
    <br> <br>
    <a href="index.html" class="button">Back</a>
</form>
</div>

</body>
</html>

```

studentpage.php

```

<?php
include 'connect_mysql.php';

global $msg;
?>
<!DOCTYPE html>
<html>
<head>
    <link rel="stylesheet" href="StudentPage.css" >
</head>

```

```

<body>
<div class="bg-img">
<h2>Student Final Year Project Detail</h2>

<?php
if( isset($_POST['sub']) && !empty($_POST['sub']) ){
    connect ();
    $_POST['details'] = str_replace("\n", '_', $_POST['details']);
    $add = mysqli_query($conn, "INSERT INTO new_table(ProjectID, ProjectName,
image, vid)
VALUES('".mysqli_escape_string($conn, $_POST['ProjectID'])."',
'".mysqli_escape_string($conn, $_POST['ProjectName'])."',
'".mysqli_escape_string($conn, $_POST['image'])."',
'".mysqli_escape_string($conn, $_POST['vid'])."')"); // add item with details
$msg = 'hhh';
if ($add) {
    $msg = '<font color="green">Item added successfully redirecting.....</font>';
    mysqli_close($conn); // close connection
    echo '<meta http-equiv="refresh" content="0; url=products.php">';
}else{
    $msg = '<font color="green">'.mysqli_error($conn).'</font>';
    die();
}
}

?>
<form id="project" action="<?php echo
htmlspecialchars($_SERVER["PHP_SELF"])?>" method="post">

    Project <?php echo $msg ?> ID: <input type="text" name="ProjectID" ><br><br>
    Project Name: <input type="text" name="ProjectName"><br><br><br>

    <input type="file" name="pic" accept="image/png" required="">
    <input type="submit">
    <p><strong>Note:</strong> Please upload image file with format .png only</p>
    <br> <br>
    <input type="file" name="vid" accept="video/mp4" required="">
    <input type="submit">
    <p><strong>Note:</strong> Please upload video file with format .mp4 only</p>
    <br><br>
    <input id="sub" type="submit" value="Submit">
</form>

</div>
</body>
</html>

```

MySQL Code:

```
CREATE DATABASE IF NOT EXISTS `studentdata` /*!40100 DEFAULT CHARACTER
SET latin1 */;
USE `studentdata`;
-- MySQL dump 10.13 Distrib 5.7.17, for macos10.12 (x86_64)
--
-- Host: 127.0.0.1 Database: studentdata
-----
-- Server version      5.7.22-ndb-7.5.10-cluster-gpl

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT
*/;
/*!40101 SET
@OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION
*/;
/*!40101 SET NAMES utf8 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS,
UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS,
FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE,
SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
-- Table structure for table `data2019`
--

DROP TABLE IF EXISTS `data2019`;
/*!40101 SET @saved_cs_client = @@character_set_client */;
/*!40101 SET character_set_client = utf8 */;
CREATE TABLE `data2019` (
  `projectID` int(11) NOT NULL AUTO_INCREMENT,
  `ProjectName` varchar(255) DEFAULT NULL,
  `poster` varchar(255) DEFAULT NULL,
  `video` varchar(255) DEFAULT NULL,
  PRIMARY KEY (`projectID`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `data2019`
--
```

```
LOCK TABLES `data2019` WRITE;
/*!40000 ALTER TABLE `data2019` DISABLE KEYS */;
/*!40000 ALTER TABLE `data2019` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Dumping routines for database 'studentdata'
--
/*!40103 SET TIME_ZONE=@OLD_TIME_ZONE */;

/*!40101 SET SQL_MODE=@OLD_SQL_MODE */;
/*!40014 SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS */;
/*!40014 SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS */;
/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS
*/;
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
/*!40111 SET SQL_NOTES=@OLD_SQL_NOTES */;

-- Dump completed on 2019-02-12 15:43:37
```

Test Case

Test Case ID: TC-01-001	
Related Feature ID: F001	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Log in	Test Executed by: Siti Syahirah
Objective: Test Username (Valid Username) Test Execution date: 10/2/2019	
Covered Test Coverage Items: -	

Pre-Conditions: User need to be MMU student and taking FYP subject and at the mainpage.
--

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Click "Login" Button	-	Directed to log in page	Directed to log in page	Pass	
2	Fill in the Username field	1	The system do not display any error	The system do not display any error	Pass	Use project id number
3	Fill in the Password field	1	The system do not display any error	The system do not display any error	Pass	Use project id number
4	Click "Login" Button	-	User directed to the student page.	User directed to the student page.	Pass	

Table 7.1 Test Case Log In (Username)

Test Case ID: TC-01-002	
Related Feature ID: F001	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Log in	Test Executed by: Siti Syahirah
Objective: Test Password (Valid password)	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be MMU student and taking FYP subject and at the mainpage

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Click "Login" Button	-	Directed to log in page	Directed to log in page	Pass	
2	Fill in the Username field	1	The system do not display any error	The system do not display any error	Pass	Use project id number
3	Fill in the Password field	1	The system do not display any error	The system do not display any error	Pass	Use project id number
4	Click "Login" Button	-	User directed to the student page.	User directed to the student page.	Pass	

Table 7.2 Test Case Log In (Password)

Test Case ID: TC-02-001	
Related Feature ID: F002	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Upload Files	Test Executed by: Siti Syahirah
Objective: Test ability to upload files (project name)	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: Student already log in and at student page.
--

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Click "Project name" box	-	Directed to box	Directed to box	Pass	
2	Write the Project name	Student 1 FYP topics	The system do not display any error	The system do not display any error	Pass	
3	Click "save"	-	The system do not display any error	The system do not display any error	Pass	

Table 7.3 Test Case Upload File

Test Case ID: TC-03-001	
Related Feature ID: F003	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Navigation	Test Executed by: Siti Syahirah
Objective: User can move (forward)	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be inside the room
--

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Wait for all objects to load	-	All object load	All object load	Pass	
2	Click "W" on keyboard to move forward	W	User move forward	User move forward	Pass	

Table 7.4 Test Case Navigation (forward)

Test Case ID: TC-03-002	
Related Feature ID: F003	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Navigation	Test Executed by: Siti Syahirah
Objective: User can move (reverse)	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be inside the room
--

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Wait for all objects to load	-	All object load	All object load	Pass	
2	Click "S" on keyboard to move backward	S	User move backward	User move backward	Pass	

Table 7.5 Test Case Navigation (backward)

Test Case ID: TC-04-001	
Related Feature ID: F004	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: View Image	Test Executed by: Siti Syahirah
Objective: User can view image	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be inside the room.

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Move to destination image	-	User move accordingly	User move accordingly	Pass	
2	User may view the image		The system shows the student's poster	The system shows the student's poster	Pass	

Table 7.6 Test Case View Image

Test Case ID: TC-05-001	
Related Feature ID: F005	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: View Video	Test Executed by: Siti Syahirah
Objective: User can view video	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be inside the room.

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Move to destination video	-	User move accordingly	User move accordingly	Pass	
2	Click on the video		The system plays the video	The system plays the video	Fail	

Table 7.7 Test Case View Video

Test Case ID: TC-06-001	
Related Feature ID: F006	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Save image	Test Executed by: Siti Syahirah
Objective: User can save image	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be inside the room.

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Move to destination image	-	User move accordingly	User move accordingly	Pass	
2	User may view the image		The system shows the student's poster	The system shows the student's poster	Pass	

Table 7.8 Test Case Save Image

Test Case ID: TC-07-001	
Related Feature ID: F007	Test Designed by: Siti Syahirah
Test Priority (Low/Medium/High): High	Test Designed date: 10/2/2019
Module Name: Change Session	Test Executed by: Siti Syahirah
Objective: User can pick session	Test Execution date: 10/2/2019
Covered Test Coverage Items: -	

Pre-Conditions: User need to be at the mainpage
--

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Click on the chosen session	Day 1 morning	User directed into the room	User directed into the room	Pass	

Table 7.9 Test Case Change Session