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# 1. Introduction

## 1.1 Brief

The project is to develop a media player application with cross platform capabilities. This will be a desktop application and will be developed for Windows, Linux, Mac, or any other computer operating system. The application main purpose will be to allow the users to play videos and listen to audio in an easy manner. The application is developed using the Qt framework and makes use of C++ language to provide a quality cross platform application.

# 2. Project Objectives

To identify the project objectives, we first need to identify what the customers are expecting from a media player and then take the feasible ideas and implement it on the project to solve the customers problem and at the same time satisfy them with the product. In this project there are multiple objectives that I am hoping to achieve but at the end of the project my main goal is to provide an easy to use but effective media player for the user.

# 3. Functionalities and Project Scope

## 3.1 Functional requirements

* It should be a cross platform application
* The users should be able to play videos
* The users should be able to play audio
* The user should be able to skip the audio or video to specific duration
* They should be able to pause and play the audios and videos
* The user should be able to increase and reduces the playback speed of the videos
* The user should be able to control the volume of the audios and videos

## 3.2 Non-functional requirements

* The application should be user friendly
* The application should not take a large amount of memory to function
* The application should have an entertainment area

## 3.3 Initial Project Scope

1. Identify the functionalities that a media player contains
2. Identify the media functionalities that are required by users
3. Create an initial design for the application
4. The proposed system will allow:
5. Users to watch videos from any folder in their computer
6. Users to listen to audio from any folder in their computer
7. Users to pause and play videos and audios
8. Allows users to reduce and increase volume
9. Allow users to skip forward and backward in their audio or video
10. Allow users to increase or reduce the playback speed of a video
11. The application will be a desktop application and will be cross platform application.

# 4. Initial Risk List

In every project there are risk, some of the risk may be internal and some may be external, but it is important to manage these risks because when the risk occurs, we know exactly what to do and how to do it. If there is no proper risk management, there is a high chance that the project might even fail. These are the risk for this project and how they should be managed alone with the chance of each risk occurring:

|  |  |  |
| --- | --- | --- |
| **Risk Plan** | | |
| **Risk** | **Probability of Occurrence** | **Management Strategy** |
| Schedule Overrun | High | To ensure that my schedule is not overrun with work a clear plan is made on which part should be done and precautions are also planned if I miss a deadline of a particular part of the system. |
| Technical Difficulties | Moderate | To minimize the technical difficulties of the project a GitHub repository is kept so that even if the computer crashes or does not function the work done on the project would not be lost. |
| Scope creep | Moderate | To avoid scope creep a proper scope for the project is made and will be strictly followed to avoid scope creep. Any function that is not there in the scope would be added only when all the task in the scope is done and has more time to spare. |
| User Acceptance | Low | A substantial amount of research was done on the area of the project to identify what the user like and what they want to ensure that the user accepts the application. |

# 5. Initial Quality Plan

In any given project quality is something that should be maintained through the process of the project and within the product itself. When a customer uses a product one of the key things that they check for is the quality of the product so not having a good quality product may even cause the entire project to fail. So, during this project the following quality checks where done to maintain quality and to make this project a success.

|  |  |
| --- | --- |
| **Quality Plans** | |
| **Quality Check** | **Management Strategy** |
| Major deliverables | To ensure that the main requirements are met a plan was made in the planning stage on the work process to ensure that the main requirements are not rushed, and they maintain quality. |
| Quality control activities | During the project quality control activities will be done to ensure that a quality standard is maintained. One activity that will be done is getting user reviews on the application |
| Feasibility study | A feasibility study was done to ensure what is planned could be done within the time and with the resources available. |

# 6. Designs

## 6.1 Screenshots of the system

### 6.2.1 Home Window

A picture containing text

Description automatically generated

This is the first window that is shows up when the software is runed and is considered as the home window of the application. This window allows users to either go to the audio window to play mp3 files or allows the user to go to the video window to play videos. It also contains an entertainment area where users can watch videos from the entertainment area by simply clicking them.

### 6.2.2 Audio Player Window

A picture containing graphical user interface

Description automatically generated

This window is the audio player, and it allows users to play any type of mp3 file from there computer. This audio player allows users to fully control the audio that is played, some of the functionalities include volume control, duration control and basic media player functions such as play, stop and pause.

### 6.2.3 Video Player Window

A screenshot of a video game

Description automatically generated

This is the video player and allows users to play any type of video regardless of the video file format. This video player allows users to enjoy playing videos with its easy-to-use friendly user interface. It has all the functionalities that a media player needs such as volume control, duration control, playback speed control and the basic pause and play options to satisfy the needs of the users.

# 7. Cross Platform Capabilities

## 7.1 Brief

One of the main goals of the project was that this application was cross platform and runs on any operating system without any bugs or crashes. So, to ensure it works the way we wanted testing was done on the application with two different types of operating systems. The operating systems that were used was windows and Ubuntu Linux. There were crucial things that needed to be done for the application to work properly this was the issue mostly in windows operating system. Each of these issues are discussed below along with how to resolve if the issues were encountered. In addition, it also shows proof that the application works perfectly in both Windows and Ubuntu Linux operating systems.

## 7.2 Windows

### 7.2.1 Screenshots of the application running on windows

#### 7.2.1.1 Home Window

Graphical user interface, text, application

Description automatically generated

#### 7.2.1.2 Audio Player Window

Graphical user interface, text, application

Description automatically generated

#### 7.2.1.3 Video Player Window

A screenshot of a video game

Description automatically generated with medium confidence

### 7.2.2 Technical Documentation for Windows Operating System

#### 7.2.2.1 Required to run the application

When running the Qt project in windows it needs all the project files that was created during the development of the project and one more key thing that is the K-Lite Codec Pack software, it is a collection of DirectShow filters, codecs, and tools. The codecs and DirectShow filters are required for encoding and decoding audio and video formats.

This codec pack is required because in windows operating system it makes use of DirectShow architecture and even though it does not encode and decode some file formats it does support any type of file format as long there are filters to parse and decode it, so what K-Lite Codec pack does is it provides filters to DirectShow architecture so that any type of format could be encoded and decoded on windows operating system.

#### 7.2.2.2 Guide to installing additional software

This is the step-by-step process on how to install the K-Lite Codec Pack which is required to run the application on Windows.

* Step - 1

Go to the Following link to download the K-Lite Codec Pack: <https://codecguide.com/download_kl.htm>

* Step - 2

Text

Description automatically generated

Next download the Basic package by clicking the highlighted area

* Step - 3

Graphical user interface, text, application

Description automatically generated

Then you will be taken to the following page, then click on the highlighted area and the download should start

* Step – 4

After it is been downloaded run the setup for the software. During the setup just run the setup by clicking NEXT without changing any of the settings as it is not required.

* Step – 5

After when the K-Lite-Codec pack is installed on your device just run the application and it should be able to play the videos and audios of any every well-known file format and some of the least know file formats.

### 7.2.3 Testing

To ensure that this application meets the quality standards that was set during the planning stage of the project a substantial amount of testing was done and due to these testing many minor bugs were found and fixed during the development of the application. One type of test that was done was by running different types every well-known file format to ensure that those file formats are playable in the application.

### 7.2.4 Bugs and Issues

During the testing stage of the project most bugs were identified and resolved and currently in the application there are no bugs or issues. but there is only one issue that you may face that is if u do not install the K-Lite Codec Pack properly then the following error message will be shown:



To resolve this try uninstalling the K-Lite Codec Pack and reinstalling it again and this should fix the error because it is caused when the K-Lite Codec Pack is not available.

Or install the standard package of K-Lite Codec Pack because you might be trying to play a file format that the basic package of K-Lite Codec pack does not provide the filter for so getting the standard package should fix the error.

## 7.3 Ubuntu Linux

### 7.3.1 Screenshots of the application running on Linux

#### 7.3.1.1 Home Window

A screenshot of a computer

Description automatically generated with medium confidence

#### 7.3.1.2 Audio Player Window

A screenshot of a computer

Description automatically generated

#### 7.3.1.3 Video Player Window

A screenshot of a computer

Description automatically generated with medium confidence

### 7.3.2 Technical Documentation for Ubuntu Linux Operating System

When running the Qt project in Ubuntu Linux it needs all the project files that was created during the development of the project and nothing else. It was tested in a virtual machine with the Ubuntu Linux running as the operating system and to run the QT project no additional codex filters or any other additional software was not required. But if u run into any errors it will be because of the media codex so to resolve it just type the following commands in the terminal (sudo apt install ubuntu-restricted-extras). Then it will ask you to put the system password and then after you enter it will show a list packages to be installed so just press enter to begin the installation. You will also run into an End User License Agreement just accept it and all the packages will be installed. Once this process is done it you should be able to play any type of media because of the installed media codex.

### 7.3.3 Testing

A large amount of testing was not done in the Linux operating system due to the time limits, but a small amount of testing was done to ensure it works just as perfectly it did in the windows operating system. And during the initial testing process bugs were not found and so the testing was not continued to a larger scale.

### 7.3.4 Bugs and Issues

There were no issues or bugs found in the current version of the media player and works perfectly to provide a quality experience to satisfy the users.

# 8. User Documentation

This is a very easy application to use as traditional icons are used so that user already knows what each of those icons stand for and when the user clicks on a button to do a task everything is done behind the scenes to avoid the user getting frustrated or confused. This is a very user friendly but effective application that is developed to satisfy the user’s needs when playing media. Here is a list of all the main functions and what each of them do so the user can have a better understanding of them.

* Icon, rectangle

  Description automatically generated with medium confidence This opens a file explorer where the users can select a video or audio to play
* Icon

  Description automatically generated This plays the audio or the video file
* Icon

  Description automatically generated This pauses the audio or the video file
* Icon

  Description automatically generated This stops the audio or the video file completely
* Icon

  Description automatically generated This mutes the audio or the video file and sets the volume to 0
* A picture containing text, clipart

  Description automatically generated This unmutes the audio or the video file or set the volume to 60
* A picture containing furniture, table, window, console table

  Description automatically generated This increases the speed of the video to 1.5 (Normal speed is 1.0)
* Shape

  Description automatically generated This reduces the speed of the video to 0.5 (Normal speed is 1.0)
* Icon

  Description automatically generated This sets the video speed to the normal speed which is 1.0
* A picture containing text, clipart

  Description automatically generated This closes the window which the user is in

# 10. Additional Information

The entire project could be accessed by GitHub along with this report and the program files. In addition, it also contains the setup for the K-Lite Codec Pack that was used. It could be accessed by the following link below:

https://github.com/nnwijesuriya/SE-Y03-C-Plus-And-Cross-Platform-Development