Project Windows Media Player
Compiled Documentation

BSSE 2nd year(B) Fourth semester

Advance Software Engineering

Submitted to: Sir Umair Khan

Group Members:

Mahrukh Tariq
Saima

ABSTRACT

In the last few years, Media players were made to play both audio and video files. Our main goal at the start of this project was to introduce a simple to use media player with maximum possible features that a user can avail on desktop. Our Media Player can only be run on desktop as it is desktop-based application. Our Mp3 Radio project not only provides the minimal functionalities of a Media player such as play, stop, next and previous but also functionalities like fast-forward, reverse, shuffle and repeat! At the end, this is a stream-lined, small project that executes faster and efficiently. A perfect match for day-to-day users!!

Table of Contents

1. PROJECT DESCRIPTION

Introduction:

A media player is a software program designed to play multimedia contents like music, videos and movies, as they stream in from the network like Internet, or from local storage on a hard drive or other resource. Media players commonly display standard media control icons known from physical devices such as CD Players and Tape Recorders, they are play (▶), pause (⏸), fast forward, back forward, and stop (■) buttons. In addition, Media Players usually have progress bar to locate the current position in the duration of the media file.

Project Purpose:

This project aims to be a media player that serves as a streamlined, small program that executes fast, does its job and stays out of the way. We can say that this is something without flash, bang and glitter!

- **Goals of Project**

The main goal of this project is to create a Media Player that can be used to play media files from local storage. Along with play, the Media player makes it possible to switch from one media file to another, pause when intended as well as shuffle or play all at a time.
It would be made obvious to remain stick to the goals at every review session of the project status.

Notable Contributions/ Related Work:

One of the most popular in this category is the free, open-source Media player called VLC™
Originally designed by students at a French university, VLC is now a global project with worldwide contributors. It is popular for a number of reasons, including its cross-platform flexibility, at home on all popular operating system.

Mainstream operating systems have at least one built-in Media player. For example, Windows comes with Windows Media Player while macOS comes

with QuickTime Player. Android OS comes with Google Play Music as default Media Player.

Other considerable Media Players are GOM Player, Media Monkey, Media Player Classic and many more.

Scope of the Work:

- **Current Situation**

There is no shortage of media players to choose from, nearly all of which are free. Many, including VLC, have browser plugins so that the player will automatically open music or movie files while surfing.

- **The Context of the Work**

While, as explained in the goals and purpose, this project has the basis to be efficient, easy to use, consisting of most desired features as demanded by day-to-day users.

Comparison of Techniques and Methodologies

For this purpose, the mostly used VLC Media Player can be referred, as it is cross-platform and like most multimedia frameworks, has a very modular design which makes it easier to include modules/plugins for new file formats, interfaces or streaming methods. The VLC core creates its own graph of modules dynamically, depending on the situation: input protocol, input file format, input codec, video card capabilities and other parameters.
The default GUI is based on Be API on BeOS, Cocoa for macOS and Qt 4 for Linux and Windows. VLC supports all audio and video formats supported by libavcodec and libavformat. VLC can be extended through scripting as it uses the Lua scripting language. VLC can generate a number of music visualization displays.

2. Project Features

- **Load a File:**
  "Load a File" is a button on player that gives us an option to select a song from our Initial directory "D:\\" , we also have an extra feature which is to add an mp3 and also a video song in the same list, at a time we can play them by using the "Play All" button.

- **Play All:**
  "Play All" is the button that will play all songs one by one that are chosen by "load a file" button and are present in the list.

- **Repeat Once On/Repeat Off:**
  When you press the button "Repeat Off' after choosing a single song then the text will change to "Repeat Once on" and that one song will be run repeatedly until the is pressed again in order to "Repeat Off".

- **Shuffle On and Shuffle Off:**
  Shuffle is a logic to play songs from the list in random manner so we used a built-in function random that has the ability to work with the number in the field. Here, it works with song's index number in the list. List is basically a structure that gives every song a unique number and save their locations and names in it.

- **Fast-Forward and Rewind:**
  User is provided with the facility to fast-forward and rewind for the currently playing media file.

- **Close:**
  User can exit the media player application with an interactive close button.

3. Project Resources

The project we are referring to runs on Windows 10 Operating System.

Platform

The GUI is built on .NET Framework mainly C# Windows Forms and the backend is built using C# classes and concepts.

Concept & Technique

The overall modules and project work are created using Data Structures, mainly:

- ⇨ List View class (which is basically a simple list).

Data Structure

List

We could imagine the **list** as an **ordered sequence (line) of elements**. Now take an example that when we buy grocery from a shop, then after the payment we get the slip. In the list, we can read each of the elements, as well as add new purchases in it.

Abstract Data Structure "List"

Now, we can take a more basic definition of the structured List.

"**List is a linear data structure**, which contains a sequence of elements. The list has the property **length** (count of elements) and its elements are **arranged consecutively**."

The list permits to add and remove elements on it. Like we already mentioned, an ADT can have several implementations. An example of such ADT is the interface **System.Collections.IList**

This project supports various media files formats along with music visualization displays.

4. Modules for the Project:

Some important modules are listed below:

1.Audio Module.
2.Video Module.
3.Play List Module.

Audio Module:

In the Windows media player, first we added the feature that it can play audio file at a time then we added a feature to select multiple songs at a time.

Video Module:

The Windows media player can play the both video and audio songs. And both can be added in the same list of the player.

Play List Module:

In the Player, when we select the songs from our any folder then the songs are added in the list which is the “Play List” of the player.

5. SOFTWARE DEVELOPMENT MODEL:

RAD (Rapid Application Development), a type of incremental model, is the software development approach used to develop our project. It is much better for Media Player as compared to conventional waterfall model due to the required flexibility. By using RAD, the project development was made possible to be more productive, interactive and satisfactory for users as well as efficient due to quick user feedback for further developments and improvements. Prototyping was considered for design specifications (mainly for the GUI).

6. REQUIREMENT ANALYSIS

These are the following requirements of our project:

a) Minimum Hardware Requirement

Operating System: windows XP,windows 7, windows 8, windows 10
RAM: 128 MB or above
Processor type: Intel Pentium IV (Any higher processor)
Keyboard: 104-keyboard (Any Upgraded)
HDD Capacity: 10 GB or above (Minimum 2 GB)
Processor Speed: 700Mhz & higher (Minimum 450 MHz)
Monitor: 17'' Color/Mono (Any Upgraded)
Mouse: 3-button/2-Button

b) Software Requirement

Our Media Player will be supported at those versions of visual, Microsoft Visual Studio 10,13,15,17 (versions).

Front End: Windows Form

Back End: C#

c) Functional Requirements:

- **Support for Multiple Extensions:** It should be able to add multiple extensions like *.mp3, *.wma , .*wav.

- **Multiple Files:** It should be efficient enough to add more than one file at a time in the list of the song.

- **Basic GUI Features:** It is simple to use as it have a 'Load File' button to load files either of any extension of mp3 and video file in the play list of the media player. Then, there should be a 'Play All' button that should play the songs present in the play list one by one and if we want to repeat any particular song from the list then user should be able to

select the song and click on the 'Repeat Once' button. If User wants to Shuffle the songs present in the list then he/she should click on a 'Shuffle' button it will play the songs present in the playlist randomly.

- **Facilities :** 'Next', 'Stop', 'Previous' buttons should facilitate the user to jump on to the next song and to jump on the previous song as well as to stop the song at any moment.

- **mp3 and Video Streaming:** It should be able to play all acceptable file formats of audio and video.

d) Non-Functional Requirements:

- **Interface:** Interface must be made user-friendly and interactive so that the user can play desired mp3 or video song from the player.

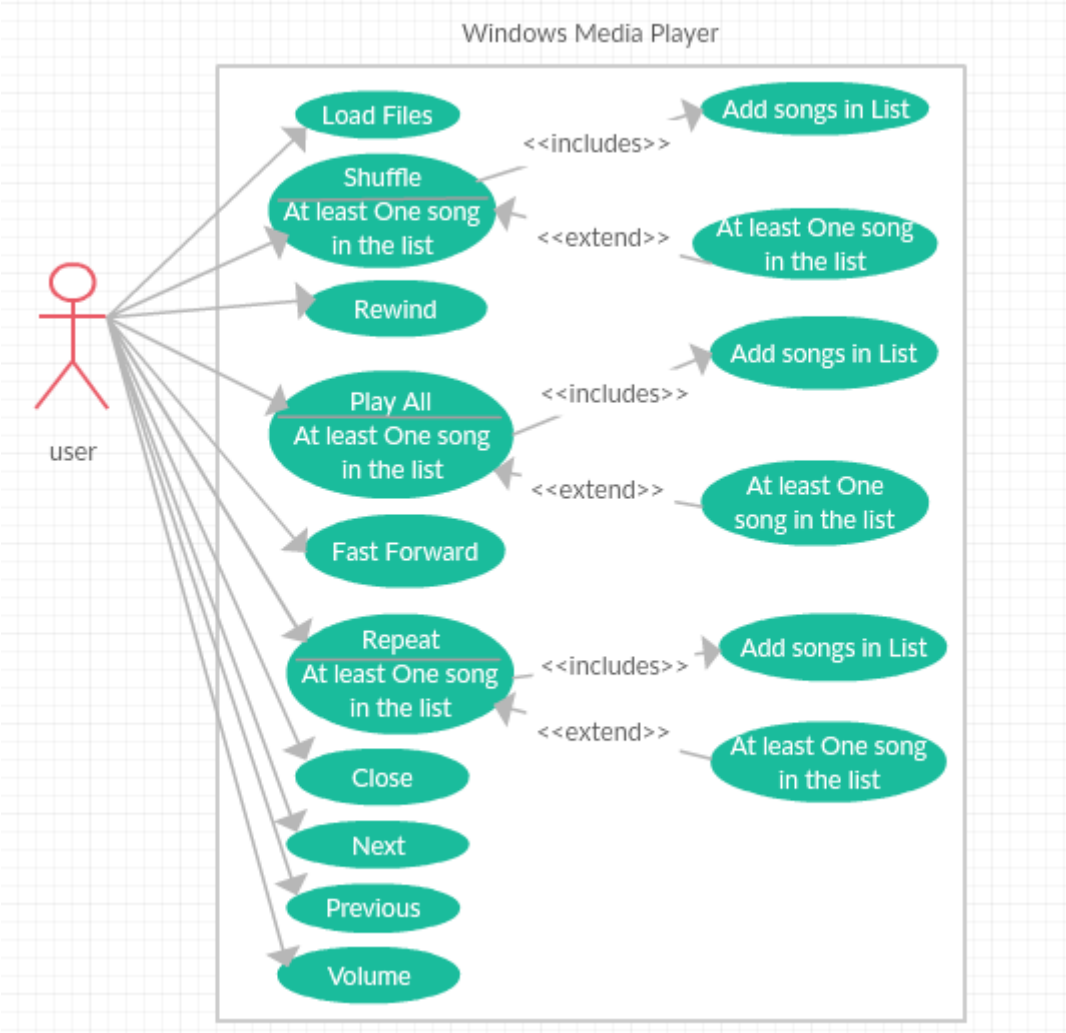
- **Reliability:** The system must have reliability in order to ensure that all the files with acceptable file formats added in playlist, are provided with all features.

- **Efficiency:** The System must be efficient and responsive in least possible time as well as could respond to exceptions or unexpected events.

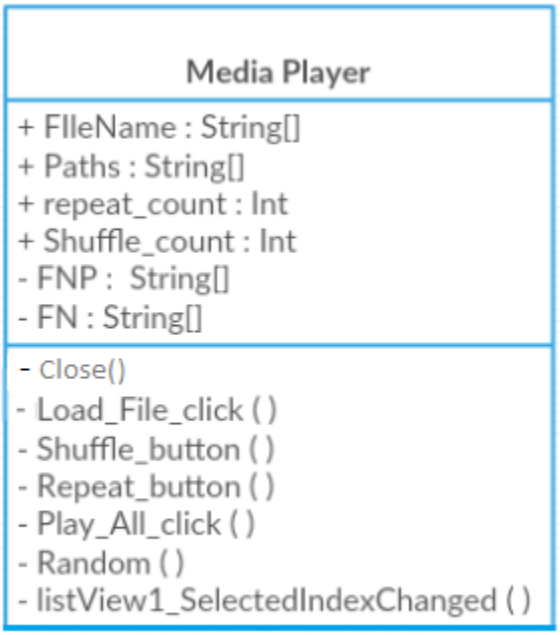
- **Repeat Facility:** Repeat once a song is a non-functional requirement because without it media player should work perfectly. Not all of the users want to repeat song, but it's necessary.

7. SYSTEM DESIGN (DIAGRAMS)

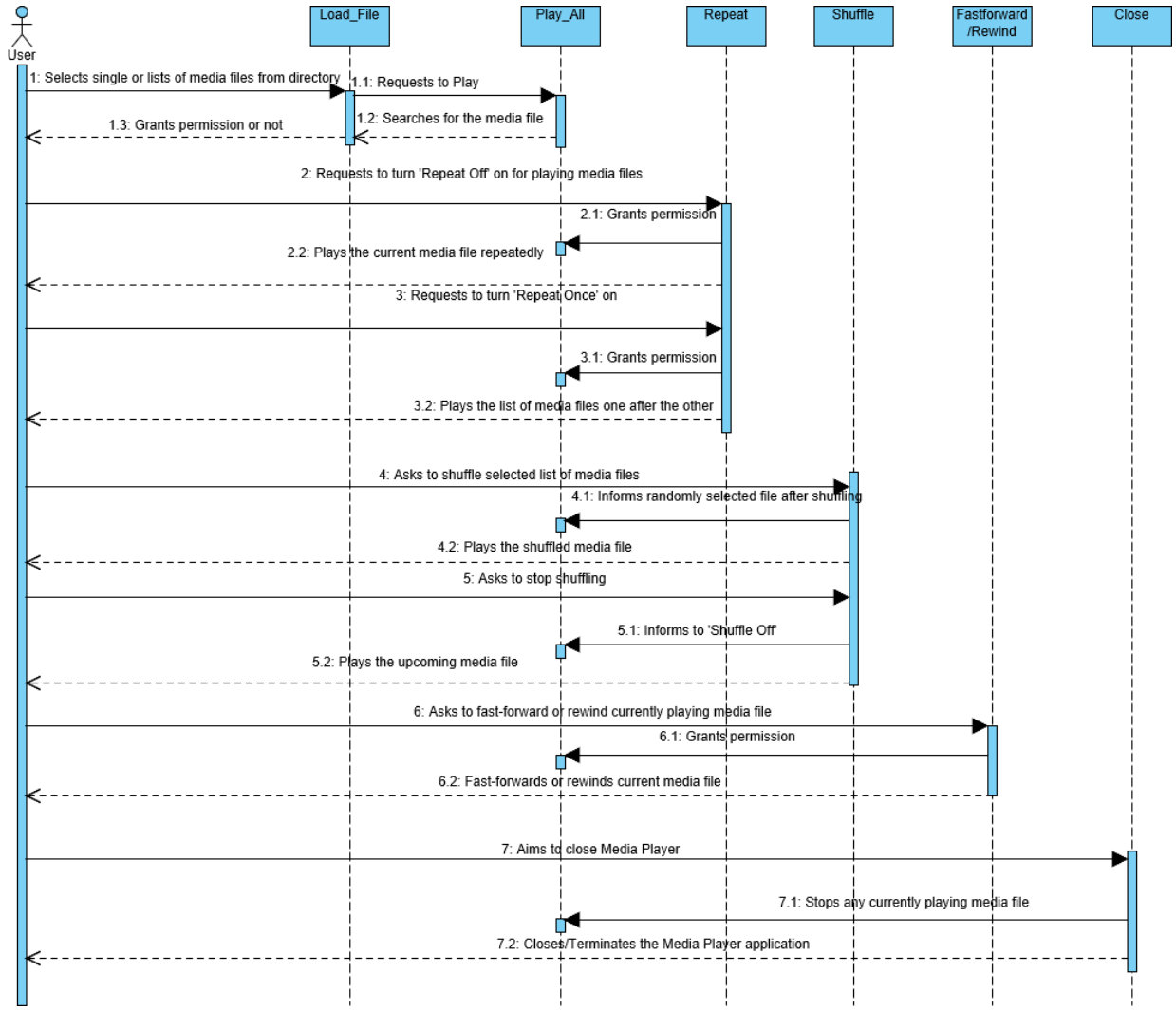
Use-Case Diagram:



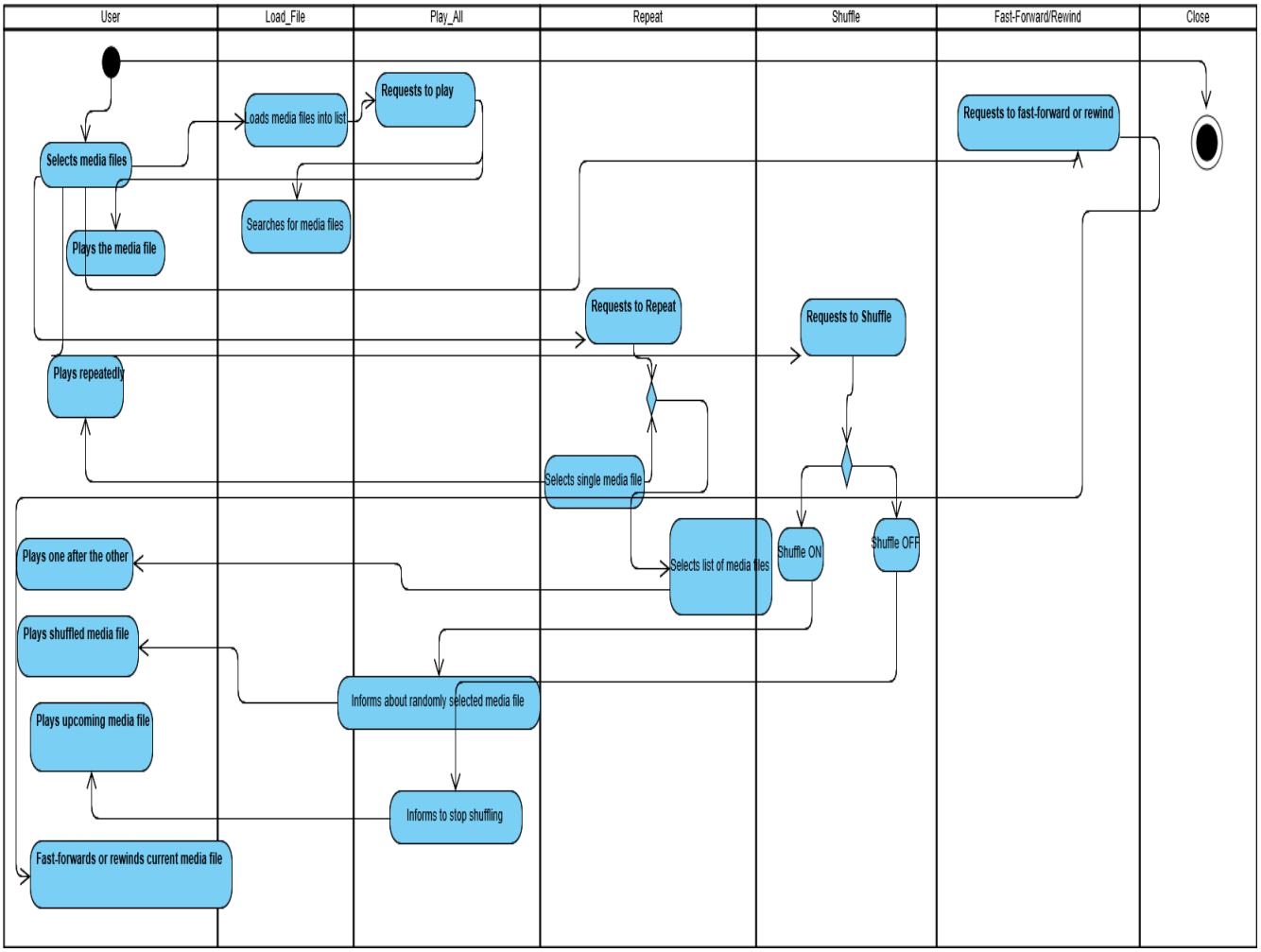
CLASS DIAGRAM



SEQUENCE DIAGRAM



ACTIVITY DIAGRAM



8. SDLC Tools Comparison

a. Analysis Tools

- **Visure** is a leading provider of requirements management and analysis tools offering a comprehensive collaborative platform including full traceability, integration with MS Word/Excel, risk management, test management, bug tracking, requirements testing, requirements quality analysis, Requirement versioning, powerful reporting and standard compliance templates.

- **Process Street** is one of the most user-friendly Requirements Management tool to manage processes, team workflow, checklists and operating procedures. It's easy and time-saving to interact with a client via this tool. By using Process street one can design one's own processes, without being experts in it.

b. Design Tools

- **Visual Paradigm** is a UML CASE Tool that can support all UML diagrams. It can reverse engineer diagram from code and vice versa. Available as free community edition plan.

  We have used visual paradigm for the design phase of this project

- **Star UML** is an open source project to develop fast, flexible, extensible, free UML diagrams. This is a tool to create class diagrams and other types of diagrams in the UML. Star UML can also reverse engineer code to produce the corresponding UML diagrams and vice versa.

c. Documentation Tools

- **Sublime Text** is one of the most well-known text editors and it does support markdown editing by installing the Markdown Editing Package and linking with it.

- **Text** provides a visual representation of the markdown text and images can also be visualized directly within the text. Additionally, it provides portability and allows for conversion between different formats such as PDF, Word, ePub etc. The only drawback is that it is not free.

  We have used Microsoft Word as the documentation tool for this project.

d. Database Management Tools

- **Oracle RDBMS** the most widely used object-rational database management tool. Its latest version is based on cloud computing. It supports Windows, UNIX and Linux versions. It is secure and supports large databases with reduced processing time.

- **Microsoft SQL Server** is a commercial tool that's compatible with Oracle , and has efficient database management capability. It is compatible with Linux and Windows Operating System

e. Project Management Tools

- **Trello** is a web-based project management application. From startups to companies, Trello provides visual way for teams to collaborate on any project. It is flexible and easy to use and keeps the track of each and every detail, also it keeps the data secure and private.

✓ Quick overview on front and back of cards

- ✓ Easy organizations with tags and labels
- ✓ User friendly drag and drop functionality
- ✓ Check-list with progress meters
- ✓ Easy uploading of files and attachments
- ✓ Data filtering
- ✓ Commenting / feedback on collaboration
- ✓ Deadline reminders

RedHat, National Geographic, Google, Adobe and British Red Cross are some of its main customers.

- **MS Project**- An amazing tool provided by Microsoft. It is cloud based as well as available as on-premise solution.MS Project is comprised of 3 main modules:

Project Management

Portfolio Management

Resource Management

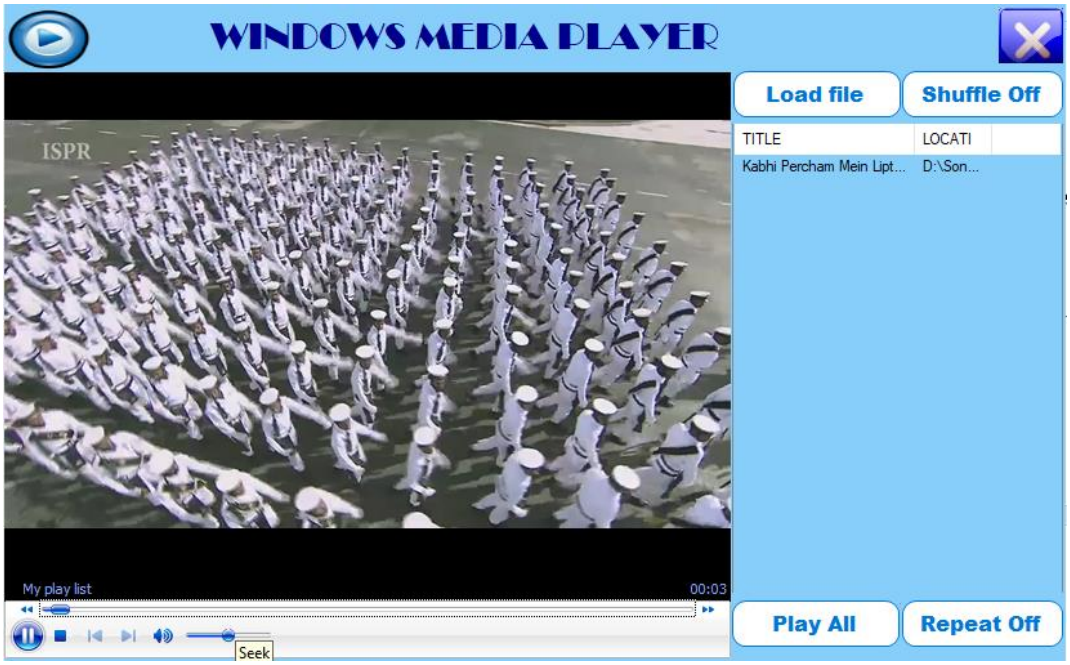
Although it is considered as best tool in terms of usability and complexity, its free plan is not available.

- ✓ Easy integration with various software
- ✓ Full visibility of project processes, tasks
- ✓ Built in templates

Major IT giants like Intel and Accenture use MS Project for their successful project management.

We have used Google doc. as the version control system for this project

9. Project User Interface:



10. Conclusion:

We have given our best by trying to create a software application that is efficient & user-interactive at the same time!
This Media Player application can be further enhanced with increased features and functionalities and by an approach to its complete availability as a cross-platform application.

11. Future Modules:

1.Subtitle module
2.Favorite-List
3.SizeAble

Subtitle Module
This can be added in the future likewise in VLC.

Favorite-List Module
We can also add this module by using filing in the c sharp. To make available the songs which are user favorite.

Sizeable Module
We can also make then player sizeable.

12. Related Links:

http://www.digitaldeliftp.com/Recommendations/gaplyrtools.html
https://www.streambox.com/media-player-tools/

13. Related Articles:

When iTunes isn't enough: The best media players for PC and Mac
https://www.digitaltrends.com/computing/best-media-players/

Plex adds personalized, streaming news to its media player software
https://techcrunch.com/2017/09/26/plex-adds-personalized-streaming-news-to-its-media-player-software/

Hackers distribute Malware-Infected Media Player to Hundreds of Mac Users
https://motherboard.vice.com/en_us/article/bj789w/elmedia-player-malware-hack-mac-trojan

Portable Media Players Market Expansion Projected to Gain an Uptick During 2017 – 2025
http://www.digitaljournal.com/pr/3900783