Bansilal Ramnath Agarwal Charitable Trust's

Vishwakarma University

Pune – 411 048

Design Document

on

MEDIA PLAYER WITH INTERACTIVE SUBTITLE

Submitted By

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C E R T I F I C A T E

This is to certify that the project entitled

MEDIA PLAYER WITH INTERACTIVE SUBTITLE

Submitted by

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is a bonafide work carried out by them under the supervision of Mr. Sanjesh Pawale and it is approved for the partial fulfillment of the requirement of Vishwakarma University for the award of the degree of Bachelor of Engineering (Computer Engineering) in the academic year 2017 -2021.

Mr. Sanjesh Pawale
(Project Guide)

(HOD.)

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A few words of appreciation for the people who have been a part of this project right from its inception. The making of this project is one of the significant academic challenges we have faced and without the support, patience and guidance of the people involved, this task would not have been completed. It is to them we owe our deepest gratitude's.

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ABSTRACT

Over the last decade, human computer interaction has become an active research area, which releases people from inactive, inflexible communication with machines. A rich media service is a dynamic, interactive collection of multimedia data such as audio, video, graphics, and subtitles.

The proposed solution of media player pertains to the intractability of subtitles. It implements the procedures of generating in a user interface an application window having a window frame and a plurality of panels within the frame. One panel of the said panels displaying subtitle statements with clickable functionality. Upon which the meaning of the respective word would be then displayed onto one of the said panels. The entirety of this process is done without the user having to switch any tab or without causing any inconvenience thereby helping the user comprehend the subtitles better and seamlessly.

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1) INTRODUCTION

Our goal is to make an efficient video player that not only plays the video and audio files smoothly and displays real time subtitles , but also has a feature which enables the user to search for meanings of the words which are being used in the video and present in the subtitles. The word to be searched is extracted from an inbuilt learning dictionary or an online dictionary along with an online search option.

While there are quite a few video players, only a small number of them facilitate the display of subtitles as and when the audio is played. Even fewer are able to sync the video with subtitles. This being one of the inconveniences, many a times the words that are used in the subtitles are not understood by a large number of audience.

Hence we aim to not merely sync up all three elements of the video, but also to allow the viewers to look up and understand the meanings of the dialouges in the video and hereby to make the video watching experience easy and comfortable for the user.

1.1) Purpose:

The purpose of our project is to develop a video player in such a manner that it will prove to be an interactive experience for the viewer. The video player will have subtitles playing along with the video which will improve comprehension. Our primary target is to make these subtitles reciprocative in nature which will aid the viewer in perceiving the meaning of the words and determine the interpretation of the video being played.

1.2) Scope:

- This media player is available for desktop operating systems such as Windows. While the platforms for this player could also be expanded to android and ios operating systems, the implementation of the same is a future scope of this project.
- Features: The project shall support audio and video files. It will play almost all video content. Some kinds of damaged, incomplete or unfinished videos can also run on this player.The UI of the media player shall include the media control icons such as play ( ), pause ( ), fast forward, back forward, and stop ( ) buttons.
- The current build of the project is available to read english subtitles. While the initial version of this player supports English language, it can also be upgraded to include other languages

and their word dictionaries in order to increase the reach, to further ease the viewing experience and to serve the audience from around the globe including the non English speaking viewers.

- Formats:

  Input formats: The media player can read formats such as:

  Video Coding Formats : MP4, MKV.

  Subtitles format: SRT file.

2) Literature Survey

There are various media players available in this world developed and manufactured by various other companies. The variety of players provide users with plenty of features and characteristics. As it goes the saying that you cannot have happiness without sorrows, applies here. Every player has a drawback which pulls it back from the race. The pros and cons of the various media players are given in detail here. And to overcome these problems we are devising the versatile media player.

A. Windows Media Player

Windows Media Player (abbreviated WMP) is a media player and media library application developed by Microsoft that is used for playing audio, video and viewing images on personal computers running the Microsoft Windows operating system, as well as on pocket PC and Windows Mobile-based devices. Editions of Windows Media Player were also released for Mac OS, Mac OS X and Solaris but development of these has since been discontinued. The various advantages of WMP are Customizable appearance, Good compatibility with several different MP3 devices, Easy enough to track down album artwork, automatically detects which codecs are required to play certain types of video files. The various limitations of WMP are Menus and program themselves require a bit of a learning curve, Does not always determine which codecs are needed should they be lacking in order to play a video file properly, Doesn't sync with the iPod, nor does it support Podcasts, Has a long way to go before it catches up with the features and usability of iTunes.

B. Flash

Flash is another media player available in the market. In moderation and used for specific purposes such as delivering video content is good and most computers come off the line with the latest "Flash Player" installed. Flash is installed in some form on roughly 95% of all computers. Just beware not to make too

much of the site out of flash. It simply isn't an efficient way of delivering content especially if that content changes often. Never ever use flash for the navigation of a site.

C. Winamp

Winamp appeared to be more user friendly among the media players.The various advantages of Winamp are Customizable appearance by downloading (designing for yourself) different skins, easy enough to use, access to several online radio stations, such as XM radio, Sufficient video playback.There are some limitations of Winamp and they are flimsy design; poor organization of different windows, audio controls, etc, Could use better access to online stores, Free version only allows 2x burning and ripping, Pro needed in order to encode MP3s, WMAs, etc

D. Adobe Media Player

In the list of frequently used media player one more name is Adobe Media Player.The various advantages of Adobe Media Player are its Clean design, Access to different streaming content. Some limitations of Adobe Media Player are that it runs on Flash, so expect to do more downloading if you don't have it installed already (which isn't unlikely), Loading streaming video can be very sluggish, Expect to see plenty of advertisements while using this player, Managing video downloads is frustrating, Could use a better variety of content, but more will certainly be added in the future, When downloading, it doesn't give the status of how the download is coming along.

E. VLC Media Player

VLC Media Player is the most popular media player. It‟s the most frequently used media player due to some of its incomparable features like it is Open source, which allows for endless customization, It is Powerful tool, fully featured for free, It plays a variety of media, including OGG, MP3, WMA, AVI, MPEG, etc But It is also having some limitations such as Its appearance needs a bit of tweaking, Skin selection could be better, For Preference changes to be made to the program, it must be restarted, Playlist is limited and buggy, something which will hopefully be fixed in later versions, No sync support Apart from the limitations enlisted above, the common disadvantage of all the players is that they cannot play multiple files at a single time. Also other players do not have the facilities like player shut down, system shutdown, timer, alarm, splitting windows and sliding screen. Considering all these demerits of various players we are trying to incorporate the facilities in our player which will overcome these demerits and thus will prove really versatile. The facility of shut down will help the user to automatically shut down the player as well as the system. The user can set the timer and be relaxed as it will automatically get switched off. The splitting window will enable the user to watch the different videos at the same time. Sliding screen is the function inserted in the designing of this player to avail the user with showing of desired file at the central position.

User Requirements

An important and difficult step of designing a software product is determining what the user actually wants it to do. When we know what users want in a software product and what activities that users must be able to perform then only a software product can create an impact in the market. When we talk about a media player. Users want their media player to be simple. It should not be so complex that it becomes difficult for them to understand. If we talk about VideoLan(VLC) media player why users prefer VLC over any other media player it is so because VLC has shortcut keys for it's functions like Play, Pause, Stop, Fast forward, Volume control, Screen resolution etc. these are the basic functions which user requires and apart from it a media player should support commonly used video and audio format like Mp4, Mkv, Mp3, Aac, Avi etc. our media player focus on enhancing user experience by including function like interactive subtitle which means if you have any difficulty in understanding certain word then you can click on that word and it will display meaning of that word without interruption. It will also focus on user interface with the help of skin colours and theme

Functional Requirements

functional requirements mainly focus on what the system should do. It is a description of the service that the software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behaviour.

1) GRAPHICAL INTERFACE:

1.1) MENU BAR: The menu bar will be displayed at the upper position of the media player where all the options regarding the software and the files will be given. For a particular task the user has to choose the proper option only. Users need to click on the desired option as displayed to perform that specific task.

1.2) STATUS BAR: The status bar is used for displaying the duration of the running file. Users can also seek in different positions of the file during run time through this status bar.

1.3) INTERMEDIATE FRAME: This is required for displaying the frame of the video file and the picture contained by the audio file.

1.4) VOLUME CONTROL: It gives the facility to the user to control the volume of the video or audio file when it is running.

2) PORTABILITY:

2.1) MEMORY REQUIREMENT: Memory required for this software is made by java and it is very logical.

2.2) DIFFERENT MODE: This software is able to work in three different modes.

1>Video

2>Audio

3>Photo viewer

According to the file type it will automatically run in its suitable mode.

3)FACILITIES :

3.1) PLAYLIST : It will keep the record of files which should be played next or files which have been played before.

3.2) RESOLUTION CONTROL : The users can change the colour , contrast & brightness when required.

3.3) FAST FORWARD: They can forward the media file with respect to the time when they want.

3.4) SMART STYLE: The color interface of this software is not static. There are 7 different types of interface color. The users can change the interface color of their own choice.

3.5) DEDICATED HELP DESCRIPTION: All function of the keys is described in the help option. So if a user faces some problem due to use of this software, they can visit the help option and it will provide a reliable service.

3.6) UPDATE LINK : Like other famous software , it will give a link for update of this software for better experience.

4)ADD MULTIPLE FILES

4.1) ADD FILES BY DRAG AND DROP: User can directly add those files which he wants to play by drag and drop with the mouse. User can only add some limited file type like mp3.wav

4.2) ADD FILES BY BROWSING: User will input the file by browsing the different directory or path of the file where it is located. The software automatically fetches the file from the given path.

5) FEASIBLE TO ACCESS

5.1) Open File: user will select the media file which he/she wants to play by opening their computer directory.

5.2) START OPTION DESCRIPTION: The selected or the added media files will be played one by one after the user presses the start button by mouse click. So, there will be a start button.

5.3) PAUSE/RESUME OPTION DESCRIPTION: There will be a button which will pause and resume the running file, by clicking that button the user can pause/resume the running media file.

Non-Functional Requirements

A non-functional requirement (NFR) is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. They are contrasted with functional requirements that define specific behavior or functions. Non-functional requirements define how a system is supposed to *be*.

1) **RELIABILITY:** The media player should be portable. So moving from one OS to another OS does not create any problem. It should run on any operating system. User experience should be smooth which means a software should be reliable enough that it shouldn't crash while usage.

2) **SECURITY:** Privacy of information, the export of restricted technologies, intellectual property rights, etc. should be audited. Users personal information should be encrypted. A software should have a proper formulating security policies and the software system follow legal and compliance rules.

3) **QUALITY:** It means a media player should support all the video and audio formats like Mp4, Mkv, Mp3, Aac, Avi etc. the display of the video should be good with properly synchronized video and audio.

4) **PERFORMANCE:** The media player should be able to play one single track at a time. A media player should have a quick response time which means when we want to perform certain functions like play, pause, open file then it should be responsive when we click that option with a key or a mouse click.

5) **EXTENSIBILITY:** This term refers to adding features, and carry-forward of customizations at the next major version upgrade. Whenever we create a software then there's always a possibility to improve it because users requirements can change over time so our media player should have the capability to be modified and upgraded for it's better version.

3.6) SOFTWARE REQUIREMENTS

3.6.1) Development Requirements:

The PC system must meet the following requirements:

a. Pentium 200MHz or greater

b. Windows 98 SE/ME/2000/XP

c. 40MB of available hard disc space

d. CD-ROM drive (double speed or greater)

e. USB port (2.0) supported

f. VGA graphic

3.6.2 Deployment Requirements

Desktop Apps

OperatingSystem -TechnicalRequirement
Windows-Windows 7, 8.1 and 10
Mac- MacOS 10.12+
Linux- Ubuntu LTS releases 16.04 or later

Though not officially supported, the Linux desktop app also runs on RHEL/CentOS 7+.

PC Web

Browser-TechnicalRequirement
Chrome-v77+
Firefox- v68+
Safari- v12+
Edge- v44+

Mobile Apps

OperatingSystem -TechnicalRequirement
iOS- iPhone 5s devices and later with iOS 11+
Android- Android devices with Android 7+

Mobile Web

Browser- Technical Requirement
iOS- iOS 11+ with Safari 12+ or Chrome 77+
Android-Android 7+ with Chrome 77+

3.7) Constraints and Assumptions:

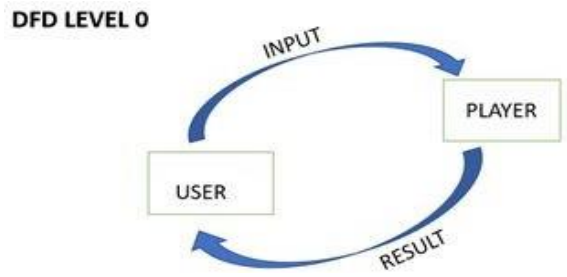
Constraints:

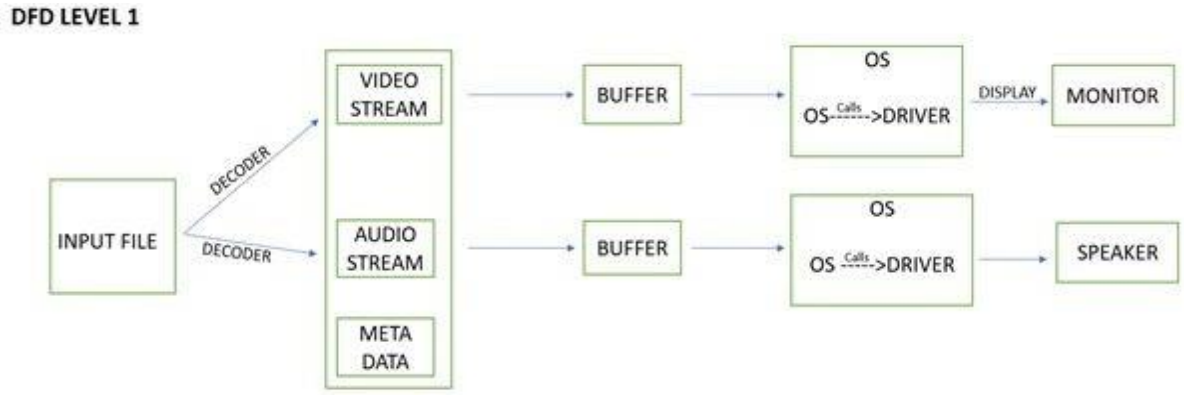
- If the Windows is updated to a much higher version and if the media player is not then the system might not work.
- According to the user's requirements the system has to be updated.
- If the format for decoding is other than MP4, MKV then the system might not work.

Assumptions:

- It has been assumed that the player will play damaged files also.
- It has been assumed that players will have the audio/video filters.
- We are assuming that audio files will also be added.

3.8) Data Flow Diagram(DFD):

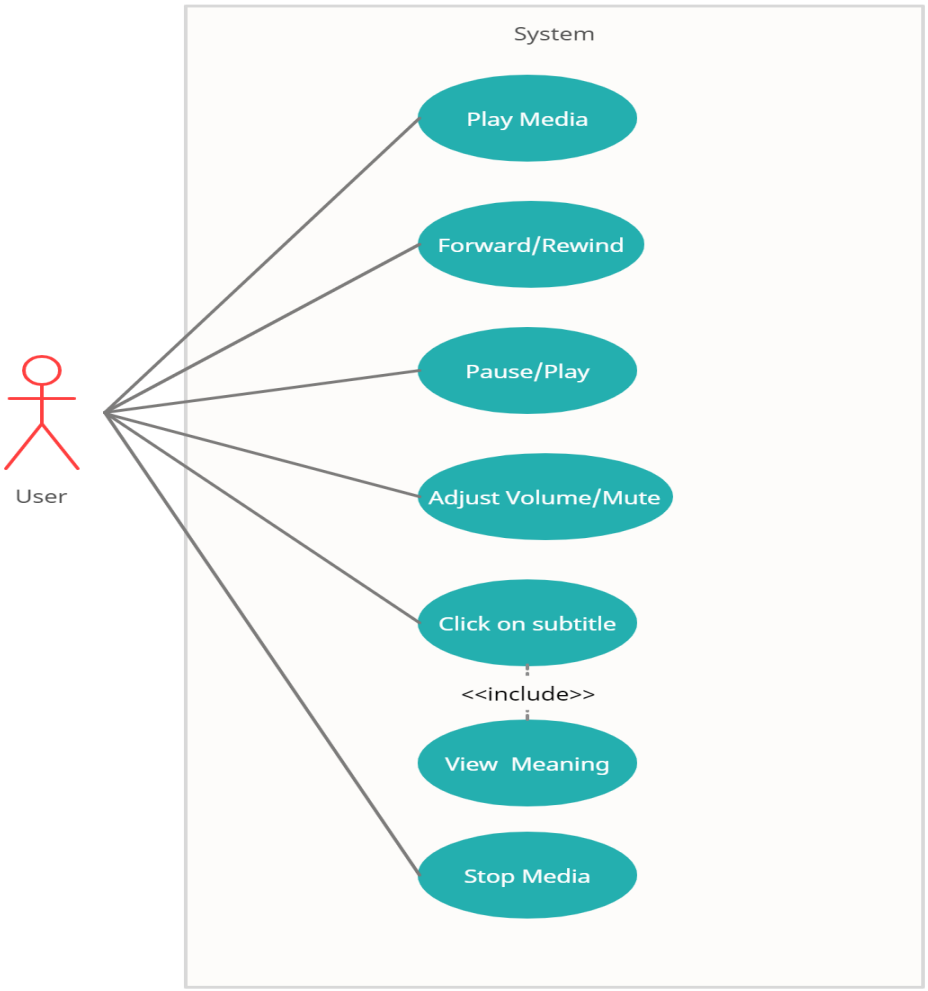




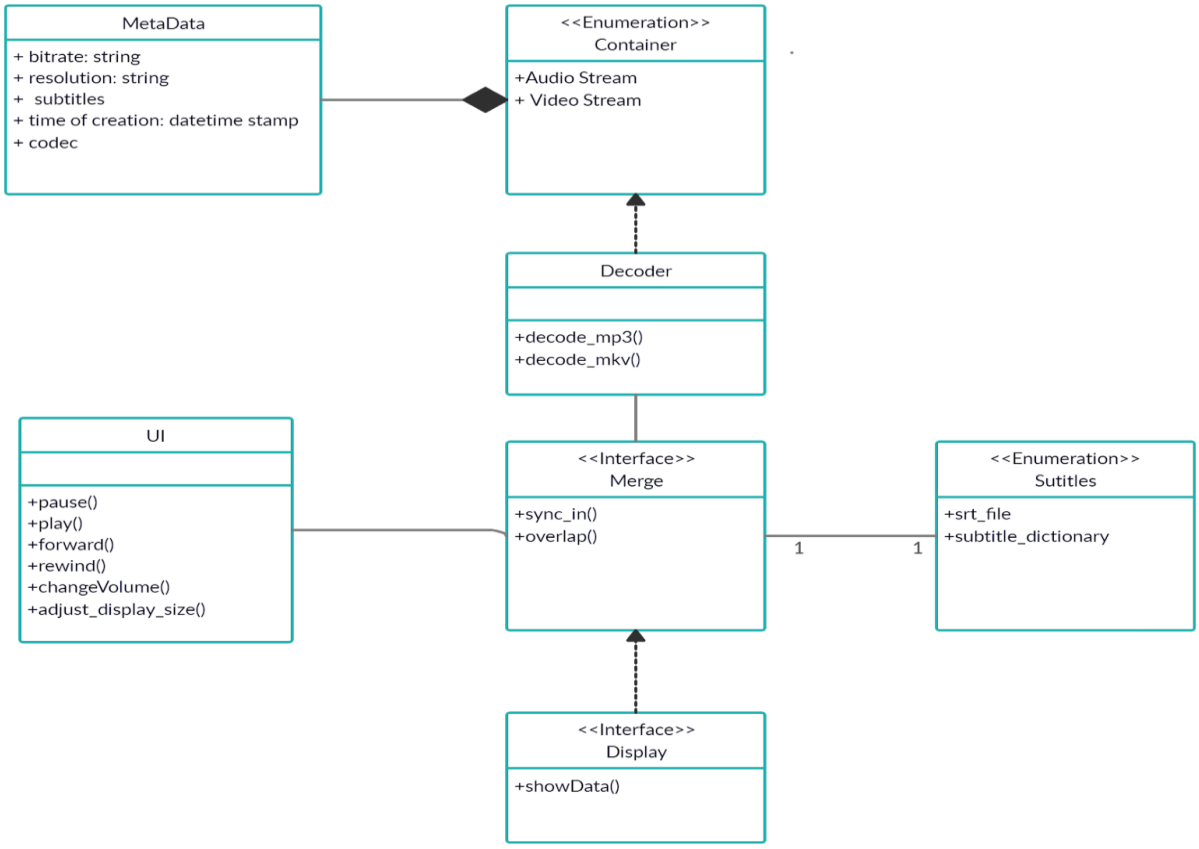
4) DETAIL DESIGN

4.1) UML DIAGRAMS

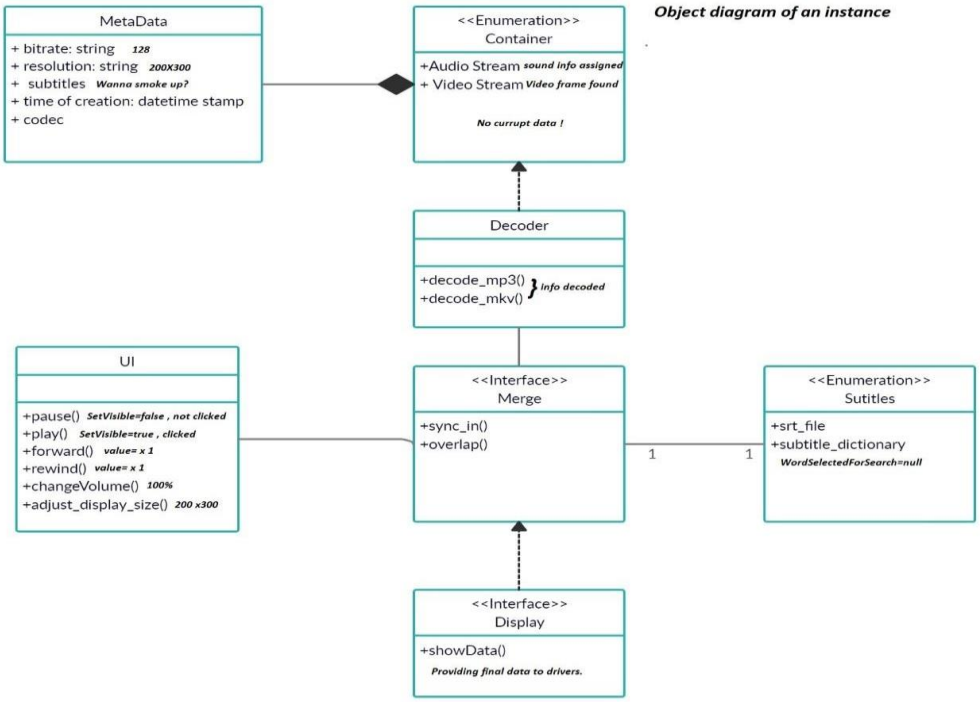
4.1.1) Use Case Diagram



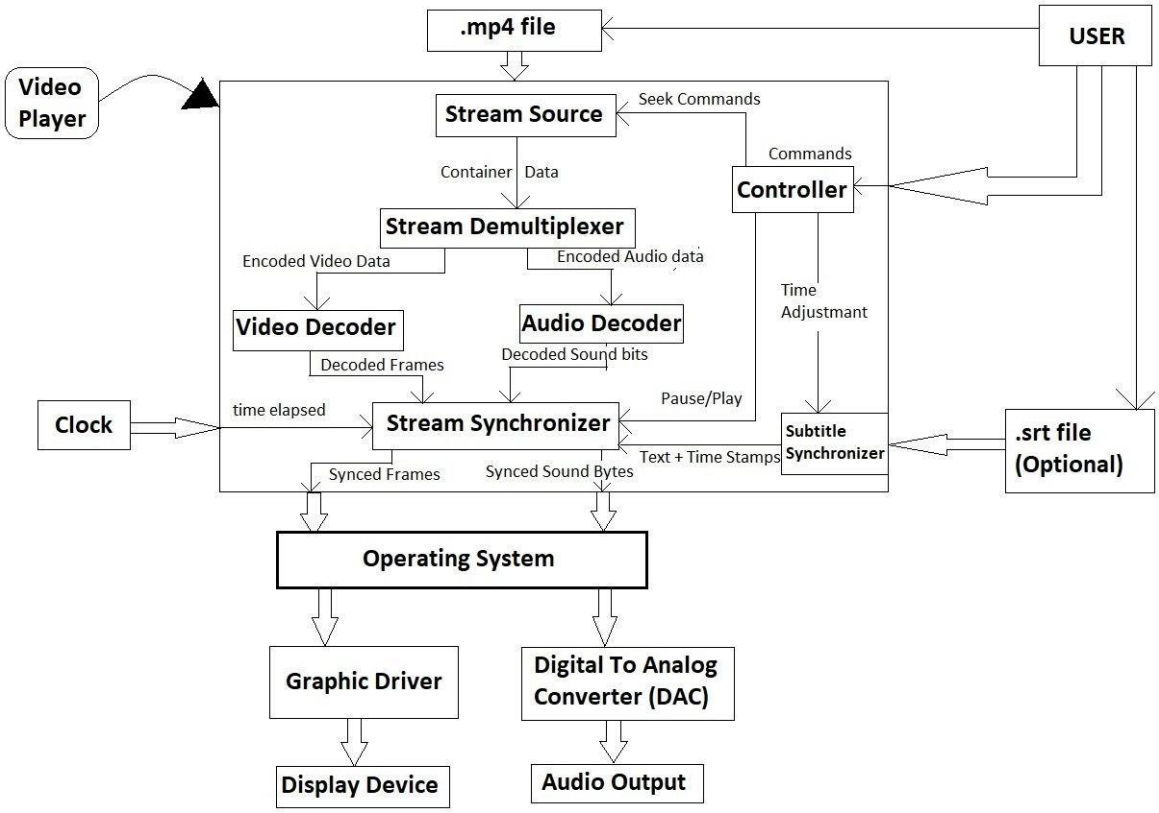
4.1.2) Class Diagram



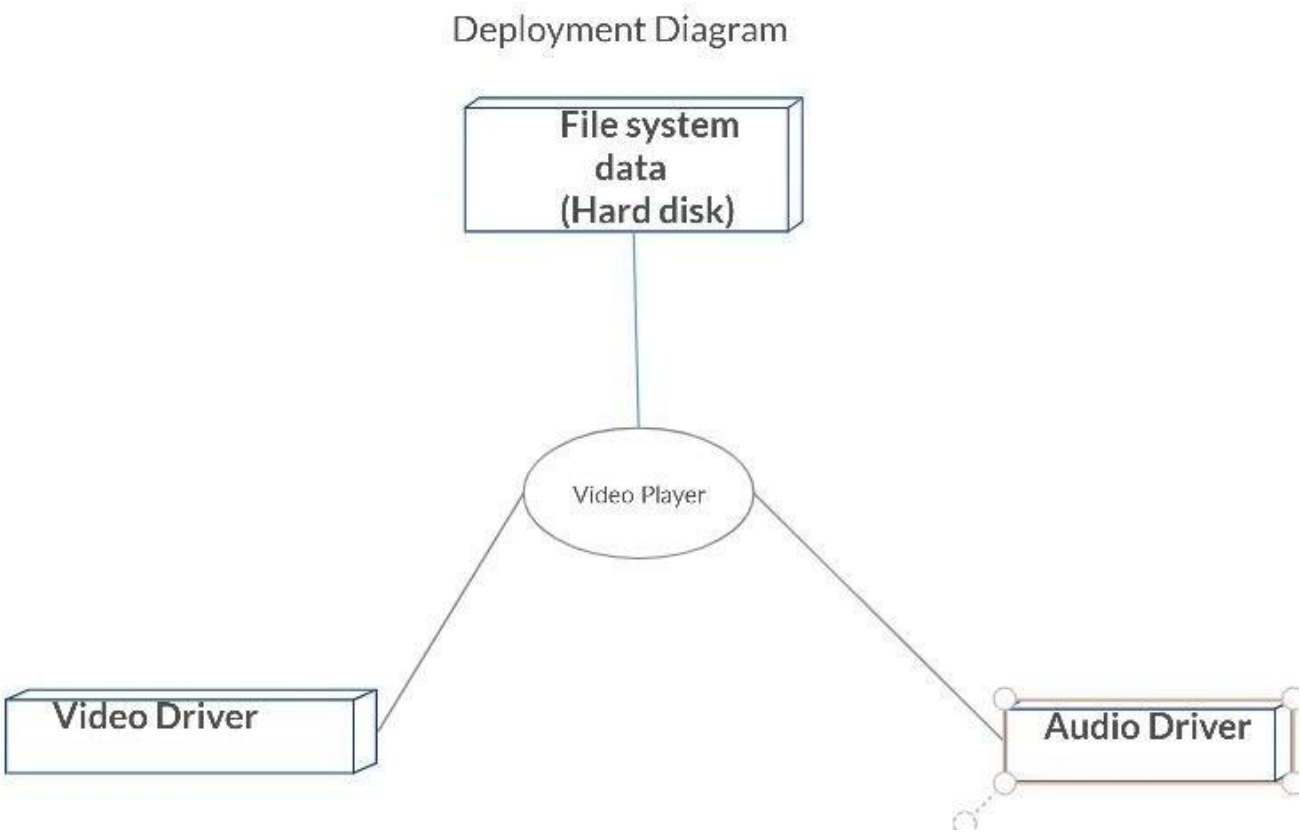
4.1.3) Object Diagram



4.1.4) Component Diagram



4.1.5) Deployment Diagram



5) Testing

5.1) Test Cases

- To check if the video playback is smooth and in good quality
- To check if the audio is clear and in sync with the video
- To check if the subtitles are displayed at the right times
- If a word on the subtitles is clicked, the video should be paused and its meaning should be displayed on screen.
- All UI tools should be working properly like the play/pause/seek buttons.
- Files of all supported formats need to be checked if they are playing properly.

5.2) Tools Used To Carry Out Tests

- Working Display Monitor
- Working Audio Hardware like Speakers or Headsets.
- Video Files of Various formats like MP4, AV1, MKV, etc.
- Subtitle (.srt) files.
- Internet Connection

REFERENCES

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CONCLUSION:

Our effort is to obtain efficiency with the better perception of the videos and improved understanding of the words, also by using this player users save their time. By using this media player, we can access the meaning of the subtitles in the video as and when it will be used. This application provides the GUI interface and eases the understanding and interpretation of the video. A worth analysis of design principles has been followed in the development of this project. To conclude, this player can smoothlyplay the videos along with syncing up the audio as well as subtitle files. The UI of the player executes the necessary functions and allows the user to interact with the video player.

Soon some new and enhanced features will be added to the above-mentioned media player suchas auto generated subtitles will be implemented, Dictionaries for different languages will be added to it, File format converter will also be implemented.