GALGOTIAS UNIVERSITY

(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

JAVA INTERNET DOWNLOAD MANAGER

A Project Report of Evaluation 3 Project – 2

Submitted by

ARITRA DAS

16SCSE101323

1613101177

in partial fulfillment for the award of the degree

of

BACHELORS OF TECHNOLOGY

IN

Computer

Science and

Engineering

SCHOOL OF COMPUTER SCIENCE

Under the Supervision of

Mr. JAYDEEP KISHORE

Associate Professor

MAY 2020

TABLE OF CONTENTS

Department of Computer Science and Engineering
GALGOTIA UNIVERSITY
GREATER NOIDA-UP
https://www.galgotiasuniversity.edu.in/

ABSTRACT

This project presents the programming and development of a Java Internet download Manager. The project would help to download any kind of material from any website for ex: videos, music, rar file etc. This download manager can even stream YouTube videos without any buffering. It also works as a YouTube video converter which can convert Video files to music files in real time. Java IDM supports a wide range of proxy servers such as firewall, ftp, http, https protocols, redirected cookies, audio files and MPEG video processing. In the proposed system, we were going to design the easy & useful environment of Downloading files quickly from internet. It's designed in java & that's why you can use this software on any operating system as compared to other Download managers it's much better.

Downloading of file from single server may cause a time delay depending upon the network traffic and load on that particular server, but our software design supports multilevel download with the implementation of the multithreading feature, by which depending upon the number of the URL's submitted by the user for the a single file download and the file size the initiation of download will create threads on to each URL and the file is divided into equal number of parts and each thread is assigned with the work of downloading the part of the requested file. Synchronization of the threads lead to the download the parts of the file

from different servers simultaneously and integrating them into a single file after the total download of all the parts. By this feature, load on a server or network traffic will not affect the final downloading time of a file because of the switching between the threads for sharing the load of threads, working on high network traffic and heavy loaded servers.

Hence, the design of this software is going to provide us a high-speed download of files with multiple and multilevel downloading facilities. If we need to download a file of size 1GB from internet, instead of downloading it from one server, our software provides a facility, where it accepts other sources (URL's) of the same file, if available to download the same servers.

Department of Computer Science and Engineering
GALGOTIA UNIVERSITY
GREATER NOIDA-UP
https://www.galgotiasuniversity.edu.in/

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people and we are extremely privileged to have got this all along the completion of our project. All that we have done is only due to such supervision and assistance and we would not forget to thank them.

I owe my deep gratitude to our project guide Mr. Jaydeep Kishore, who took keen interest on our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good system.

We are thankful to and fortunate enough to get constant encouragement, support and guidance from all Teaching staffs of "DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING" which helped us in successfully completing our project work. Also, we would like to extend our sincere esteems to all staff in laboratory for their timely support.

Department of Computer Science and Engineering
GALGOTIA UNIVERSITY
GREATER NOIDA-UP
https://www.galgotiasuniversity.edu.in/

INTRODUCTION

1. **Java download manager** is a computer software program dedicated to downloading files from the Internet for offline storage or execution. Some download managers can also be used to accelerate download speeds by downloading from multiple sources at once. Although web browsers such as Google Chrome and Firefox may have download managers incorporated as a feature, they are differentiated by the fact that they do not prioritize accurate, complete and unbroken downloads. While some download managers are independent programs that can download any data over one or more protocols (e.g. http), many are integrated into installers or update managers and used to download parts of a specific program (or set of programs); examples of the latter include Google's and Adobe's update managers.

2. Most download managers come with features like video and audio grabbing from popular websites like YouTube, can pause and resume downloads, and impose speed restrictions. Additionally, most of the commercial download managers can download following user planned schedules. A few download managers claim to increase the download speed by a factor of many times.

3. Most major web browsers have integrated download managers.

4. Related to download managers are two other breeds of Internet programs, file-sharing peer-to-peer applications (eMule, BitTorrent, Gnutella) and stream recorders (such as StreamBox VCR). While download managers are designed to give users greater control over downloads, some *downloaders* are created to give that control to content distributors instead. Some software companies, for example Adobe, provide such downloaders for downloading software on their own site. Presumably this increases reliability and reduces their technical support costs. A possible reason is increasing the control over redistribution of their software (even when the software is freeware).

5. Download acceleration, also known as multipart download, is a term for the method employed by software such as download managers to download a single file by splitting it in segments and using several simultaneous connections to download these segments from a single server.

6. The reason for doing so is to circumvent server side limitations of bandwidth per connection. Because in normal networking situations all individual connections are treated equally, rather than actual file transfers, multiple connections yields an advantage on saturated links over simple connections, both in terms of total bandwidth allocation and resilience. However, since a client could exploit an arbitrary number of connections to demand an arbitrary share of a server's bandwidth, a server will often implement a maximum number of simultaneous connections per client.

7. This is not to be confused with segmented downloading, which allows a client to download segments of a file simultaneously from multiple servers.

8. **Java Internet download manager** (IDM) is a tool to manage and schedule downloads. It can use full bandwidth. It has recovery and resume capabilities to restore the interrupted downloads due to lost connection, network issues, and power outages.
9. IDM supports a wide range of proxy servers such as firewall, FTP, and HTTP protocols, redirected cookies, MP3 audio and MPEG video processing. It efficiently collaborates with Opera, Avant Browser, AOL, MSN Explorer, Netscape, MyIE2, and other popular browsers to manage the download.

PURPOSE

Java is one of the most popular and widely used programming language and platform. A platform is an environment that helps to develop and run programs written in any programming language.

Java is fast, reliable and secure. From desktop to web applications, scientific supercomputers to gaming consoles, cell phones to the Internet, Java is used in every nook and corner.

This project is a prototype for the download manager and it is restricted within the college premises. This has been implemented under the guidance of college professors. This project is useful for downloading any kind of files and is useful for streaming YouTube videos directly.

This project basically focuses on the implementation of download manager by using the concept of java by using ECLIPSE.

MOTIVATION AND SCOPE

We can consider much future scope to this application. The following are some of there.

- In future we can provide more features like after downloading files store files by there category, like .jpg, .jpeg, .png, .gif in Pictures folder, Media files in Media folder etc.
- In future we can store the data up to the fixed time period.
- By creating jar file, we can launch it on internet.
- In future, we can try to connect it to mobile devices so that it can be accessed anywhere.
- Downloading several files from a site automatically according to simple rules.
- Automatic recursive downloads.
- Pausing the downloading of large files.
- Scheduled downloads (including, automatic hang-up and shutdown).
- Variable bandwidth usage.

LITERATURE SURVEY

2.1. EXISTING SYSTEMS

In the software development field, file download refers to the ability of software to identify data or web addresses into files. Internet Download Managers extract the files from the specific web addresses and create the same data in our local hard disk.

2.2 APPLICATION POWERED BY DOWNLOAD MANAGERS

1. Torrent - The Bit Torrent protocol addresses this by decentralizing the distribution, leveraging the ability of people to network "peer-to-peer", among themselves.**[1]**

2. XDCC BOTS - Unlike peer-to-peer transfers, XDCC servers are often hosted on connections with very high upstream bandwidth, sometimes in excess of 100 Mbit.**[2]**

3. FTP - An FTP server is an important component in FTP architecture and helps in exchanging of files over internet.**[3]**

2.3 PROPOSED SYSTEM

This project is a prototype for Internet Download Manager and it is restricted within the college premises. This has been implemented under the guidance of college professors. This project is useful for gaining the description and knowledge about web addresses.

2.4 SOFTWARE PERSPECTIVE

The “Java Internet Download Manager” application stores the following data: -

1. Multimedia files: - It can analyze the web address and according change its working procedure to download the file which can be accessed using the web address.

2. Streaming: - With the latest feature, it can also stream videos from YouTube almost without buffering (depends on the Bandwidth).

2.5 PROBLEM STATEMENT

The prime challenges Download Manager applications face in today's world are:

1. They are not free. Once the trial period is over you've to pay to activate it.

2. Cannot download multiple files.

3. These kind of download managers have clunky interface therefore, difficult for a user to understand.

HARDWARE SPECIFICATIONS

The most primary hardware interfaces used are as follows:

1. System Configuration

2. Network Interface card (NIC)

3. Router (For Internet)

SOFTWARE SPECIFICATION

Following are the software used for the initialization, formulation and fabrication of our project:

Software used	**Description**
Operating system (Windows 10 Home Edition)	We have chosen Windows operating system for its best support and user-friendliness.
IDE (Eclipse IDE for Java Developers Version: Neon.3 Release (4.6.3) Build id: 20170314-1500)	We have chosen Eclipse ide for the project.
Wget (Version: 1.20)	Helps to download files other than YouTube videos.

VLC (Version: 3.0.6)	Default Media Player for streaming option.
YouTube-dl	Helps to download YouTube files.

IMPLEMENTATION

Environment variables

Environment variables are global system variables accessible by all the processes running under the Operating System (OS). Environment variables are useful to store system-wide values such as the directories to search for the executable programs (PATH) and the OS version. Examples of environment variables in Windows OS are:

- COMPUTENAME, USERNAME: stores the computer and current user name.
- OS: the operating system.
- SystemRoot: the system root directory.
- PATH: stores a list of directories for searching executable programs.

In setting up JDK and Java applications, you will encounter these environment variables: PATH, CLASSPATH, JAVA_HOME and JRE_HOME. In short:

- PATH: maintains a list of directories. The OS searches the PATH entries for executable programs, such as Java Compiler (javac) and Java Runtime (java).
- CLASSPATH: maintain a list of directories (containing many Java class files) and JAR file (a single-file archive of Java classes). The Java Compiler and Java Runtime searches the CLASSPATH entries for Java classes referenced in your program.

- JAVA_HOME and JRE_HOME: maintain the locations of JDK and JRE installed directory, respectively.

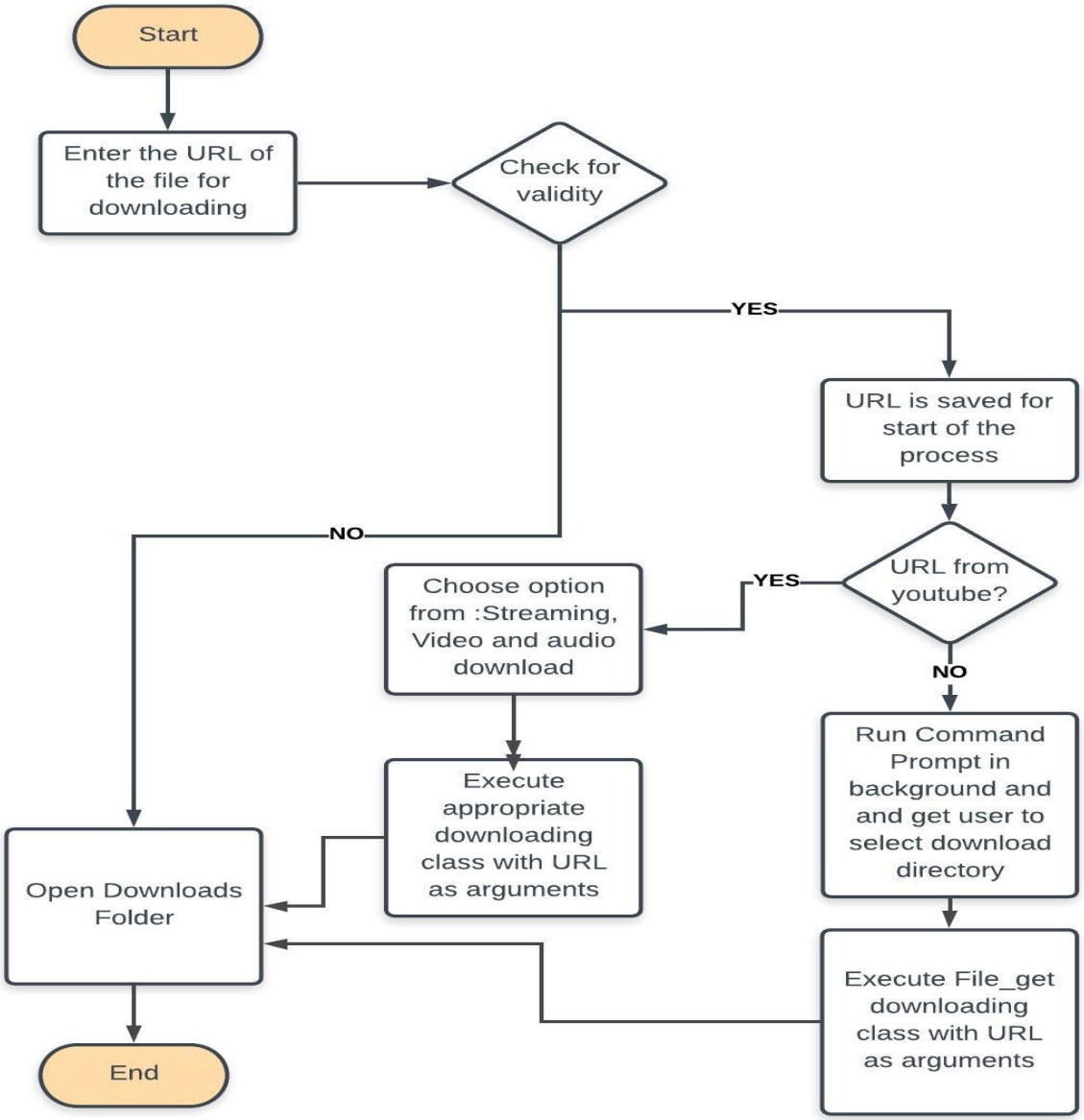
Designing of GUI for the interaction

GUI stands for Graphical User Interface, a term used not only in Java but in all programming languages that support the development of GUIs.

A program's graphical user interface presents an easy-to-use visual display to the user. It is made up of graphical components (e.g., buttons, labels, windows) through which the user can interact with the page or application.JavaFX features an entirely different set of graphic components as well as a new terminology and has many features that interface with web programming, such as support for Cascading Style Sheets (CSS), a web component for embedding a web page inside an FX application, and the functionality to play web multimedia content.

ARCHITECTURE DIAGRAM

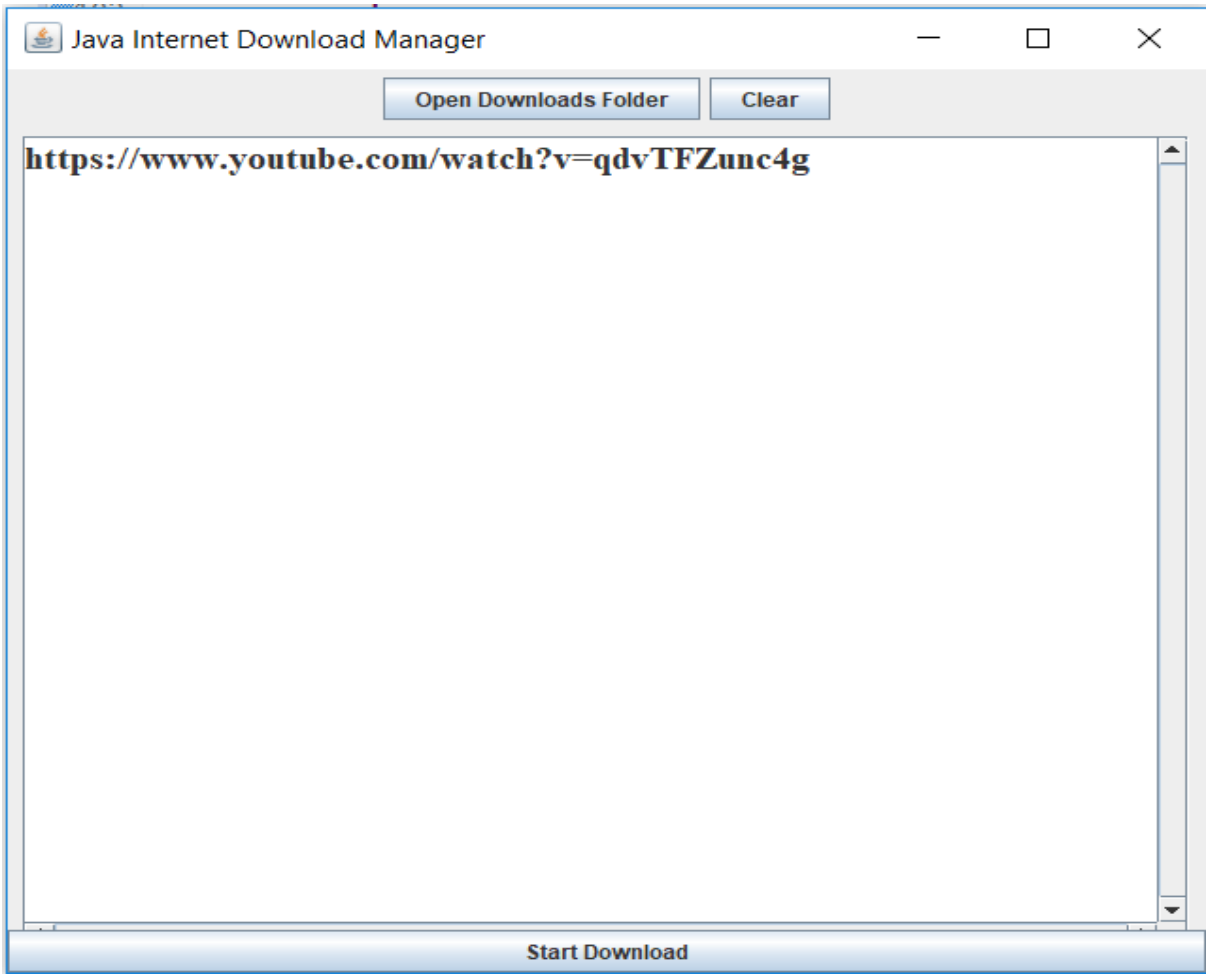
Process Flowchart:



The Java Internet Download Manager takes the user input in the text field and then analyses if the URL is a valid address or not. The second step consists of checking whether the address is from YouTube or not, so that the program can pass the URL as arguments to the most appropriate class for process. If it is from YouTube, it will be up to the user to stream, download video or download audio exclusively. Alternately, if the address is from any other

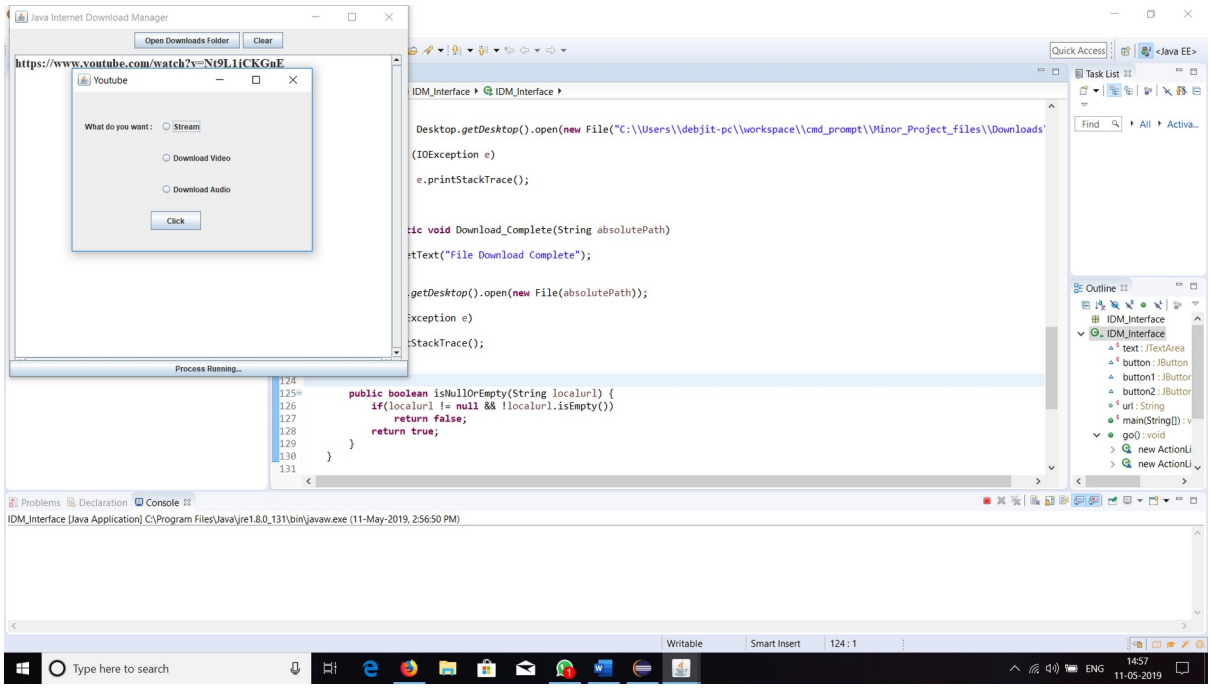
website, it will ask for download directory and the download the file towards the path specified

RESULT



(Fig. 3.1: Interface Screenshot)

This is the opening application screen where the text field is available for the pasting of the web address of the file which the user wants to download. The open downloads folder is the option available to open the default download directory.The clear button clears the text field and start download button is for the download process to start.



(Fig 3.2: YouTube Decision Process)

The software analyzes the given URL, and checks if it from YouTube or not.

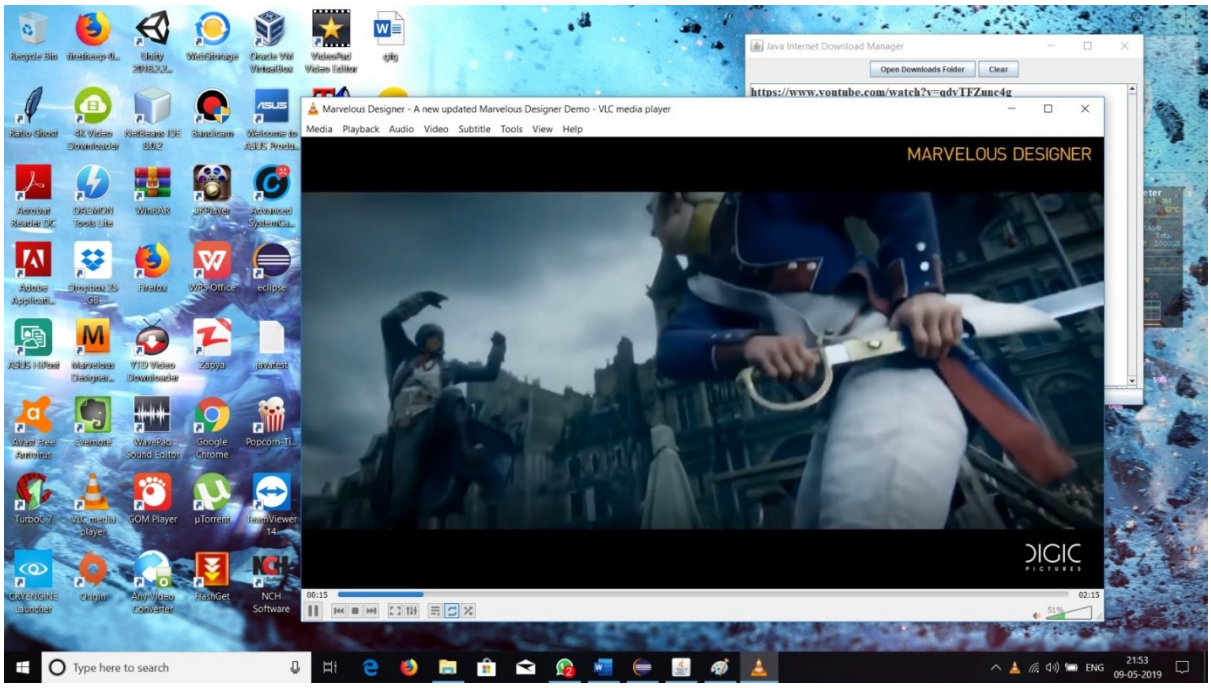
Provided that the URL is from YouTube, it shows a dialog box with three options:

- Stream
- Download Video
- Download Audio

Streaming: It uses default media player for streaming the YouTube video.

Download Video: this option extracts the video from the webpage and opens the default download directory after download complete.

Download Audio: this option extracts the audio from the webpage and opens the default download directory after download complete.



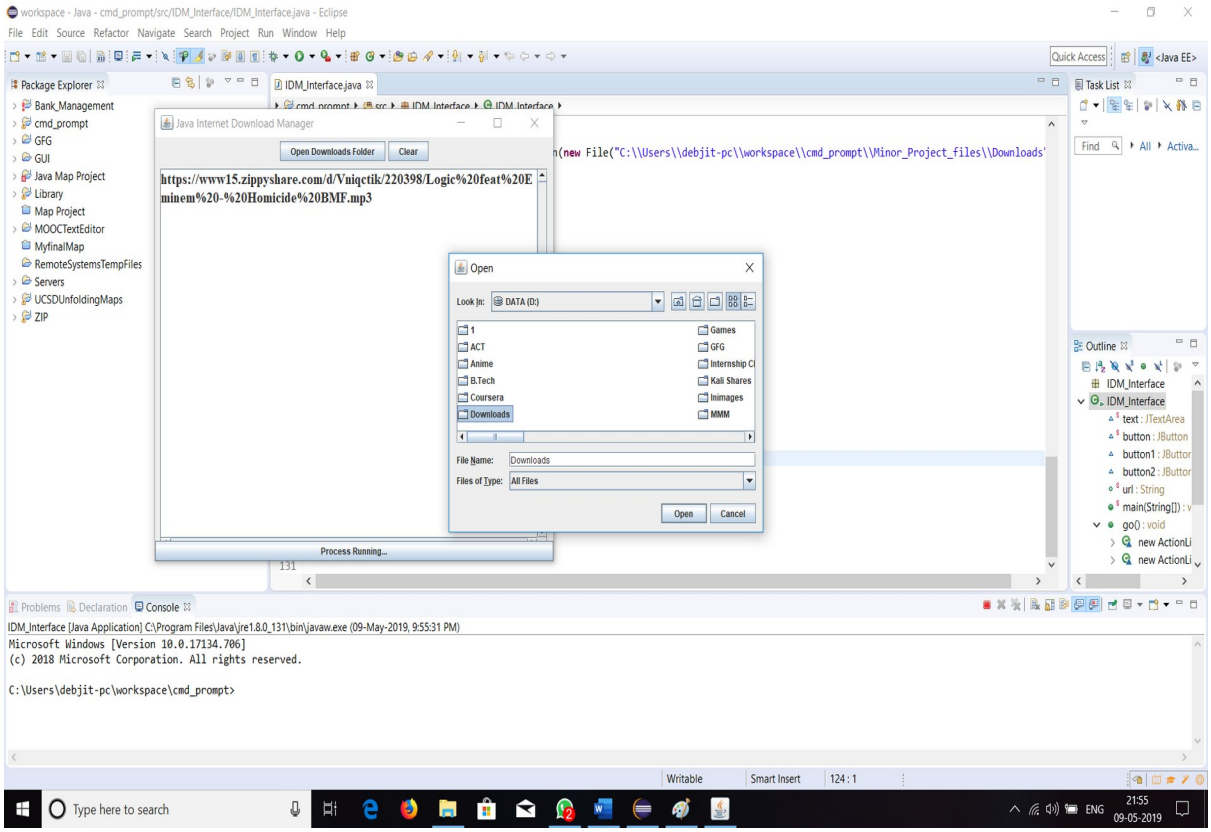
(Fig 3.3: Streaming)

When the user gives a URL from YouTube, and selects the option of streaming, the VLC software (default media player) starts streaming the specified YouTube URL.

The streaming is one of the best features of this software, since through streaming, we can:

- Watch the video even if it is region blocked
- 90% reduction of buffering

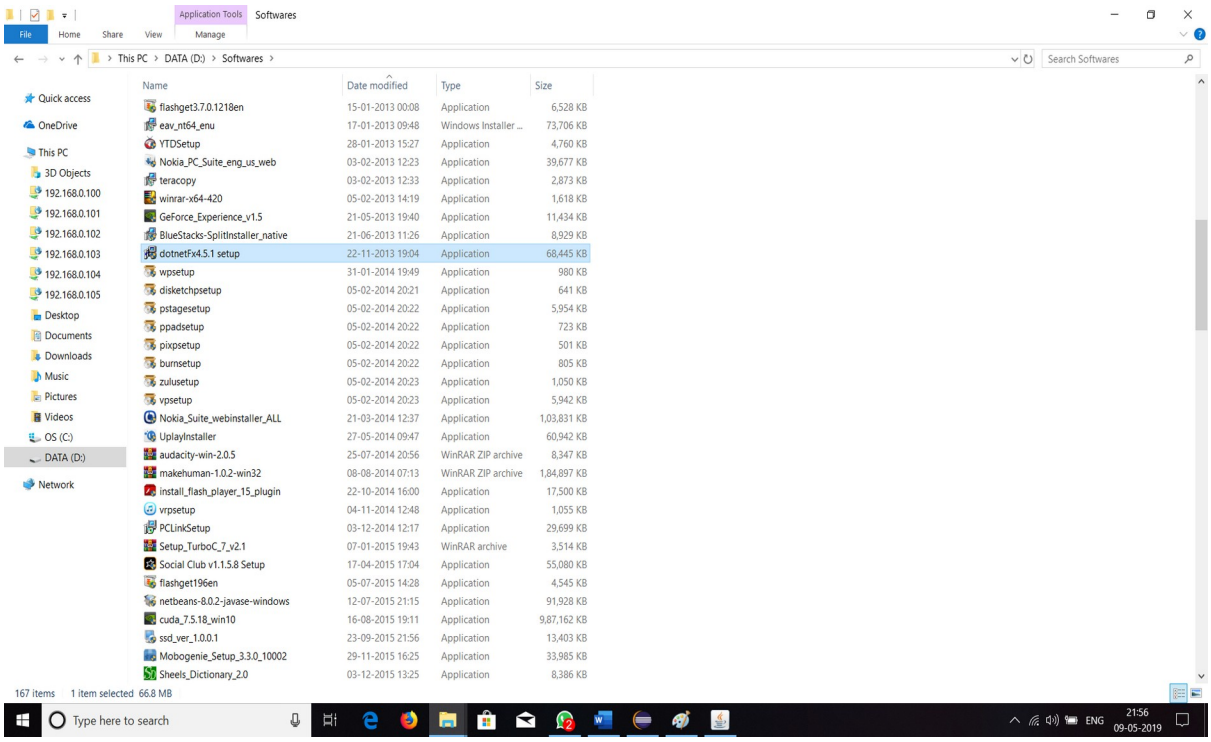
Data is not wasted in loading comments and video suggestions



(Fig 3.4: Software Download)

This is the screenshot of the software running for downloading file form web address which is not from the YouTube.

The software automatically analyses the URL and asks for the download directory selection for saving the file. Then the file downloading process starts downloading the file from the specific web address in the correct file extension.



(Fig 3.5: Automatic Download Directory Access)

The software, after downloading the file from the internet, automatically opens the directory where the file was set to be downloaded.

FUTURE SCOPE

We can consider much future scope to this application. The following are some of there.

- In future we can provide more features like after downloading files store files by there category, like .jpg, .jpeg, .png, .gif in Pictures folder, Media files in Media folder etc.
- In future we can store the data up to the fixed time period.
- By creating jar file, we can launch it on internet.
- In future, we can try to connect it to mobile devices so that it can be accessed anywhere.
- Downloading several files from a site automatically according to simple rules.
- Automatic recursive downloads.
- Pausing the downloading of large files.
- Scheduled downloads (including, automatic hang-up and shutdown).
- Variable bandwidth usage.

CONCLUSIONS

As per the requirement and specification, we have developed a Java base application which helps to download any kind of file, converts mp4 to audio files and is useful for streaming YouTube videos directly.

This can be concluded that an Internet Download Manager is a useful software for the easy downloading and management of files.

Furthermore, the potential of java can be acknowledged through this project where it interacts with many complex command line programs, command prompt and also has an interactive graphical user interface (GUI).

The design of this software is going to provide us a high-speed download of files with multiple and multilevel downloading facilities.

If we need to download a file of size 1GB from internet, instead of downloading it from one server, our software provides a facility, where it accepts other sources (URL's) of the same file, if available to download the same single file from different servers.

Overall the project has met most of its goals and we are very happy with its success. We have now identified numerous areas of slack and inexperience that would have improved our overall progress, but we now consider these lessons that we will carry forward to achieve success in future projects.

REFERENCES

- *Wikipedia, The Free Encyclopedia*, s.v. " Internet Download Manager," (accessed December 10, 2018), https://en.wikipedia.org/wiki/Internet_Download_Manager

- *Wikipedia, The Free Encyclopedia*, s.v. " Java (programming language)," (accessed December 14, 2018), https://en.wikipedia.org/wiki/Java_(programming_language)

- *Wikipedia, The Free Encyclopedia*, s.v. " Java virtual machine," (accessed January 06, 2019), https://en.wikipedia.org/wiki/Java_virtual_machine

- *Wikipedia, The Free Encyclopedia*, s.v. " *Wget*," (accessed January 16, 2019), https://en.wikipedia.org/wiki/Wget

- *Wikipedia, The Free Encyclopedia*, s.v. " Eclipse (software)," (accessed January 23, 2019), https://en.wikipedia.org/wiki/Eclipse_(software)