Enhancements To proxyMITY

Summer Internship 2013

Submitted in fulfillment of internship project

By

Development on Aakash Platform Team

Under the Guidance of

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Acknowledgement

We the summer interns team of Development on Aakash Platform are overwhelmed in all humbleness and gratefulness to acknowledge our depth to all those who have helped us to put our ideas and assigned work, well above the level of simplicity and into something concrete.

We all thank whole heartedly **Prof. D.B. Phatak** for selecting us a part of his valuable project, constantly motivating for doing better and showing complete confidence in our work.

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Abstract

As the name suggests, “proxyMITY” serves as a “proxy”, i.e. it provides virtual closeness (proximity) without the actual classroom. It is a “proxy Multimedia Integration Tool for You”, that helps teachers create dynamic rich-media lectures.

“proxyMITY Lectures viewed on Aakash” is an Open source software product. Published lecture that are released under **the Creative Commons License by Attributions 2.5** are edited and prepared for distribution using proxyMITY.

The main goal of this project is to enhance the proxyMITY application previously developed on Android Platform using Eclipse, android SDK and ADT Plugins to view the video lectures present in the SD-Card or on a Server using Aakash tablet. The newer version has enhanced user experience and added functionalities such as:

- Implementing Drag and Drop feature for enhancing GUI.
- Conducting quiz for self-evaluation of the student.
- Transcripts of the video lectures.

proxyMITY is an Open Source software and it is implemented using graphical user interface. Therefore it is going to be freely available. It is Platform Independent, easy to operate and maintain.

Introduction

1.1 Purpose

As the name suggests, “proxyMITY” serves as a “proxy”, i.e. it provides virtual closeness (proximity) without the actual classroom. It is a “Proxy Multimedia Integration Tool for You”, that helps teachers create dynamic rich-media lectures.

Enhancements of proxyMITY on Aakash Tablet will help users to get access to quality lectures of reputed teachers, for effective personalized learning. They have the flexibility of studying anytime, anywhere, and at their own pace.

They can also navigate through the topics within the lecture by tree functionality. They can also play the subtitles with the video for better understanding. Bookmarking feature helps users to create and update the bookmarks on the videos.

Transcript feature is available in case user wants to go read the contents of the lecture rather than viewing the video.The users can test their efficiency by attending quiz sections. This graphical user Interface environment is user friendly so the users feel comfortable.

1.2 Scope

“proxyMITY Lectures viewed on Aakash” is an Open source software product. Published lectures that are released under **the Creative Commons License by Attributions 2.5** are edited and prepared for distribution using proxyMITY.

The main goal is to implement in GUI and provide a user-friendly environment to user to view videos in SD-card as well as in server and provide accurate results to user so that the user may be stress free.

proxyMITY is Open Source software. Therefore it is going to be freely available. It is Platform- Independent and easy to operate and maintain.

1.3 Existing System

proxyMITY is available as an android application which has limited functionality. Students can select the video lectures and can navigate in it using tree structure. By using bookmarks they can update and store the video bookmarks in SQLite database. By selecting subtitles user can view the video subtitles.

1.4 Proposed System

Developing the proxyMITY tool on Android Platform using Eclipse, Android SDK and ADT Plugins. .It contains the features such as:

- User-friendly GUI.
- By attending Quiz session user can test the performance.
- Transcripts which can be viewed as a text file.

1.5 Definitions, Acronyms, and Abbreviations.

Acronym or Abbreviation	Description
ADT	Android Developments Tools
API	Application Programming Interface
AVD	Android Virtual Device
GUI	Graphical User Interface
IDE	Integrated Development Environment

proxyMITY	**proxy Multimedia Integration Tool For You**
SDD	**Software Design Document**
SRS	**Software Requirements Specification**
SDK	**Software Development Kit**
XML	**Extended Markup Language**

1.6 Overview

This Software Requirements Specification (SRS) is the requirements work product that formally specifies Enhancements to ProxyMITY. The objective of this document therefore is to formally describe the system's high level requirements including functional requirements, non-functional requirements and business rules and constraints. The detail structure of this document is organized as follows:

Section 2 of this document provides an overview of the domain that the proposed application will support. These include a general description of the application, user characteristics, general constraints, and any assumptions for this project.

Section 3 presents the detail requirements, which comprise the domain model.

Software Requirement Specification

2 .Overall Description

2.2.1 Product Functionality

- User can easily view the video lecture present in the SD-Card or on a server.
- The user can easily navigate through the video lecture using the tree functionality of this product.
- The user can store the videos by adding and updating the bookmark feature .
- The user can easily watch the videos along with transcripts.
- The user can take the quiz for self evaluation.

2.2.2 Operating Environment

- Any android operating system supported device.
- Android 2.2 or greater version of android operating system.

2.2.3 Design and Implementation Constraints

- Video format MP4(H.264) is not compatible with this software running Android 2.2 OS or above.

2.2.4 User Documentation

- User will be provided with the user manual along with the software.

2.2.5 Assumptions and Dependencies

- The deadline must be met.
- The product must be reliable.
- The product should provide best performance.
- It should provide user-friendly environment.
- The architecture must be open so that additional functionality may be added later.
- Tools we are going to use

    - JDK 1.6 or later
    - JRE 1.6 or later
    - Eclipse
    - Android SDK
    - ADT Plugins
    - Aakash Tablet

- From the very start of this project we are aware of time constraints so the main emphasis is on extensibility and parallel development. We shall try our best to ensure that project deadlines are met.

2.3 Specific Requirements

2.3.1 External Interface requirements

User Interfaces

- User interface must be user-friendly. The user interface shall be designed using various components available in ADT plugins such as video view for playing video lecture, expandable list view to display the tree structure to navigate through the video lecture, sliding drawer for hiding and showing the content and drag and drop the videos for viewing purpose.

Hardware Interfaces

- Any android operating system supported device.

- SD-Card to view the video lecture.

Software Interfaces

- The Eclipse Indigo 3.7 shall be used as development environment implementing the modules.
- Designing of modules and diagrams is done using YUML.

Communications Interfaces

- WI-FI connectivity will be required to view video lecture present on the server.

2.3.2 Functional Requirements

Navigate through the lecture: This software shall help the user to navigate through the video lecture so that user can jump to any desired position in the video lecture.

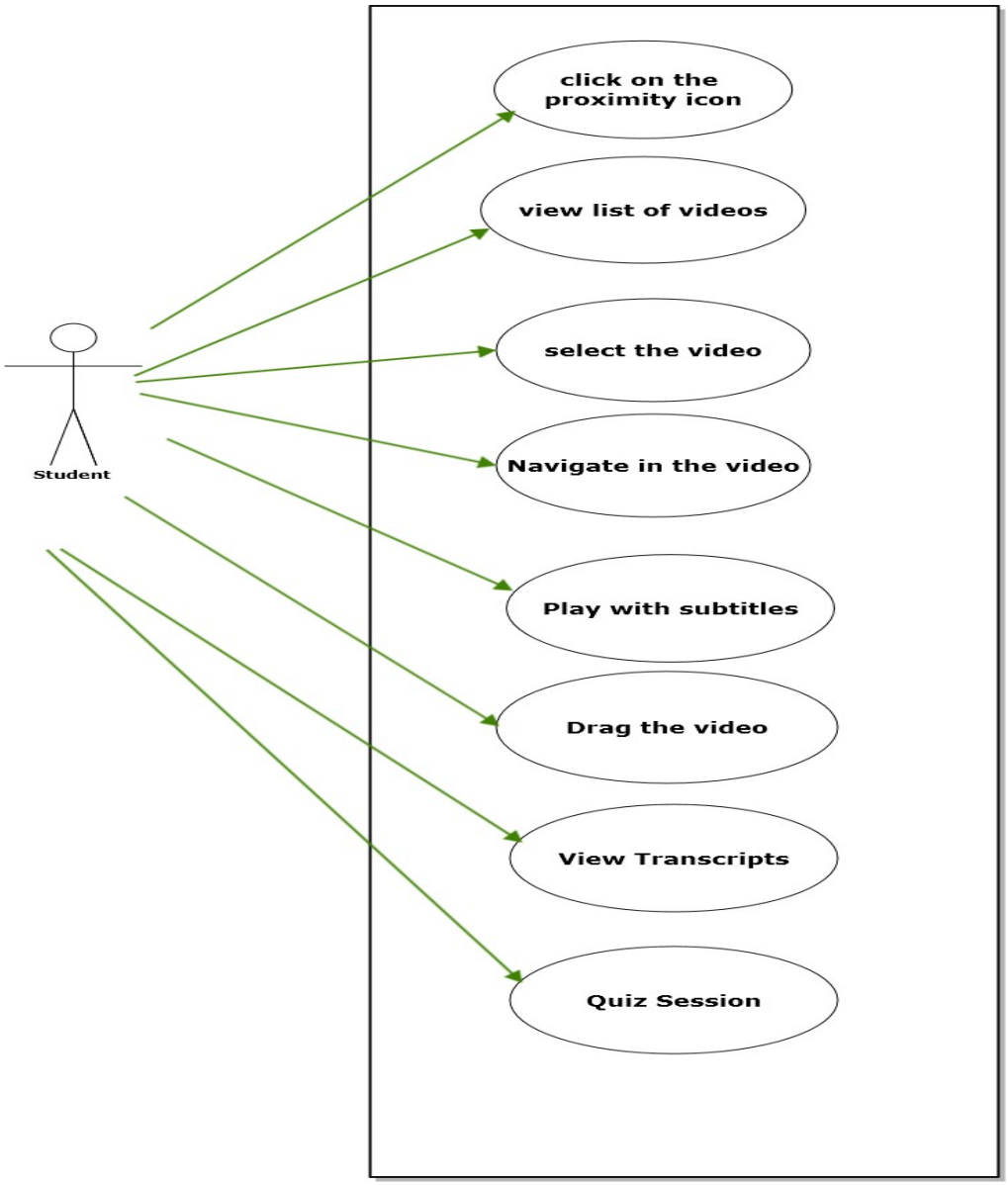
BookMark: This software shall help the user to bookmark the particular part of the video lecture which is then stored in database so that the user can watch that video lecture again from that particular time.

Transcripts: By using this user can easily get lecture videos

Quiz: This section helps the user to attend quiz in order to check their performance.

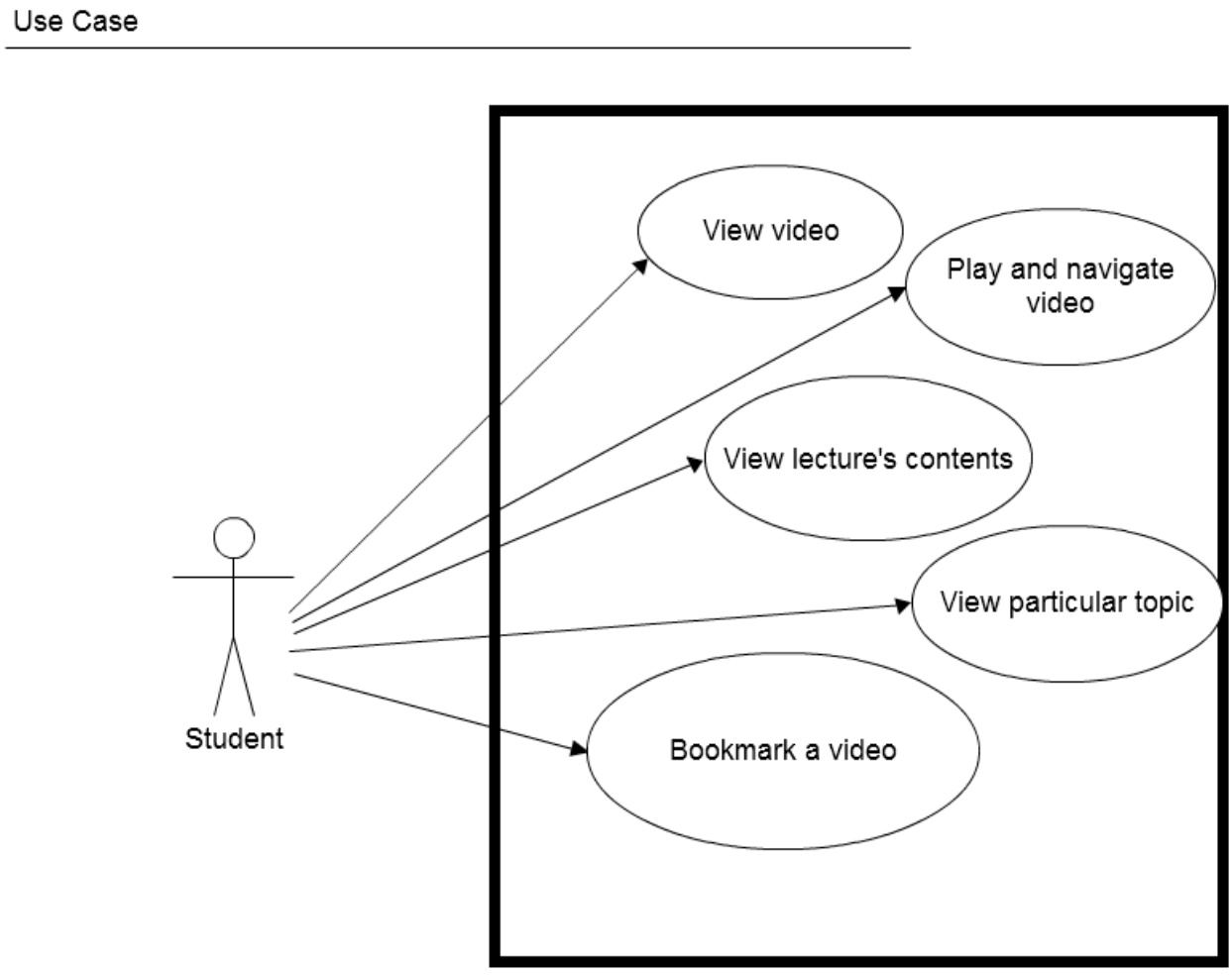
2.3.3 Behavioral Requirements

Use case Diagram for Application



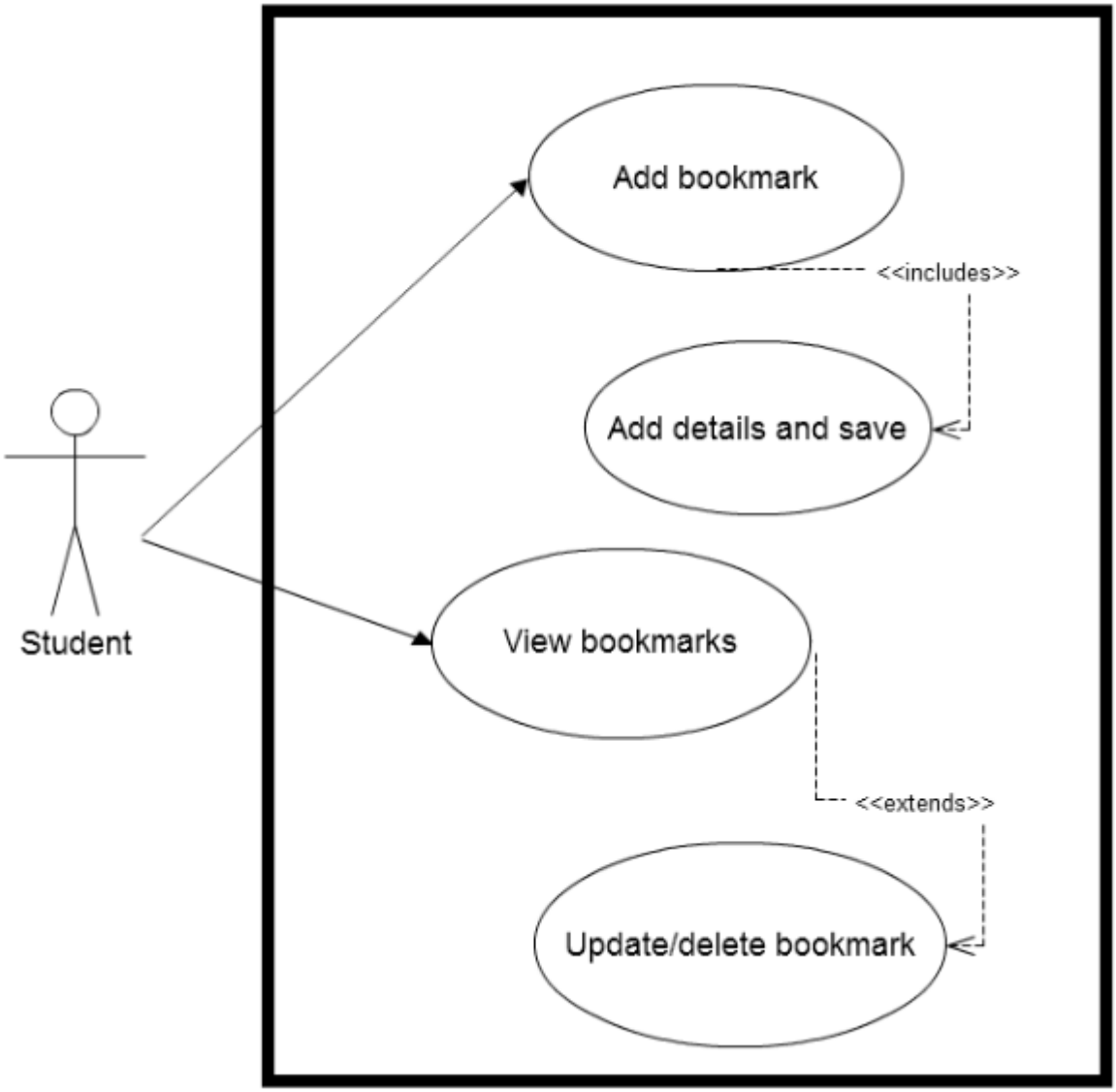
Fig(2.3.3)

Use case Diagram for Video Lecture



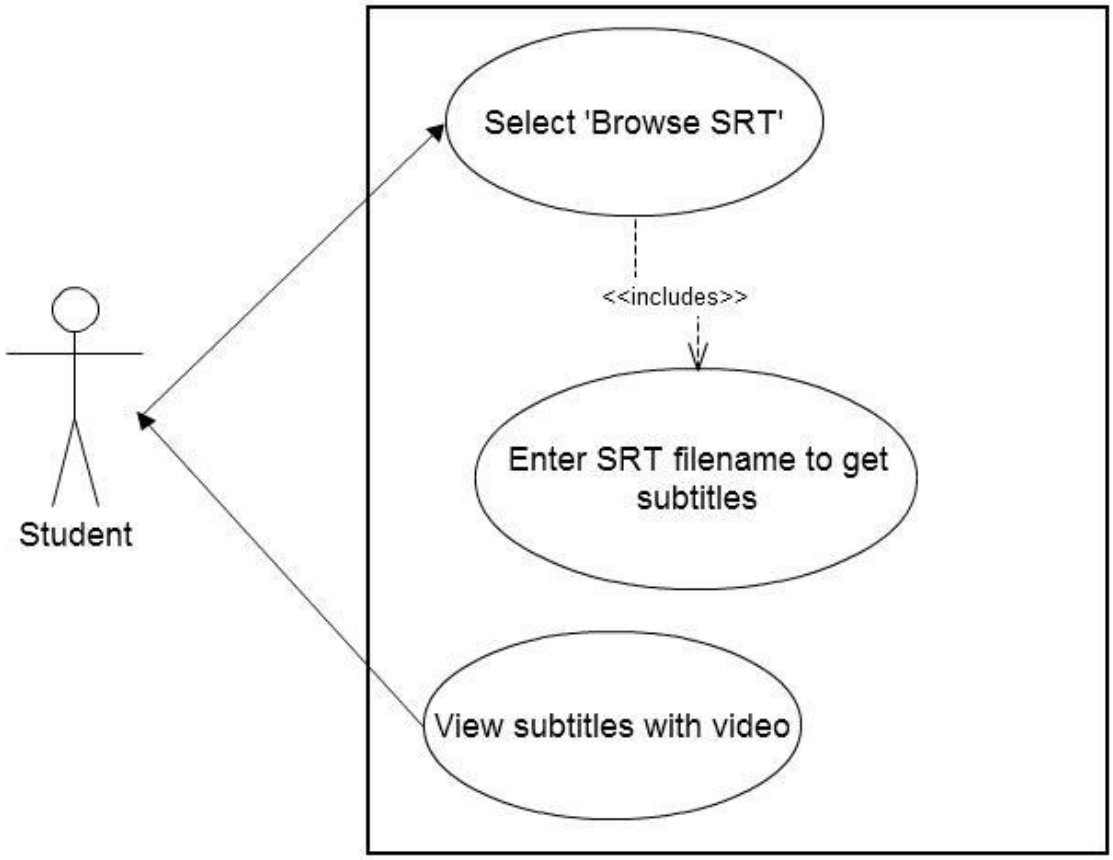
Fig(2.3.4)

Use case Diagram for Book Marking



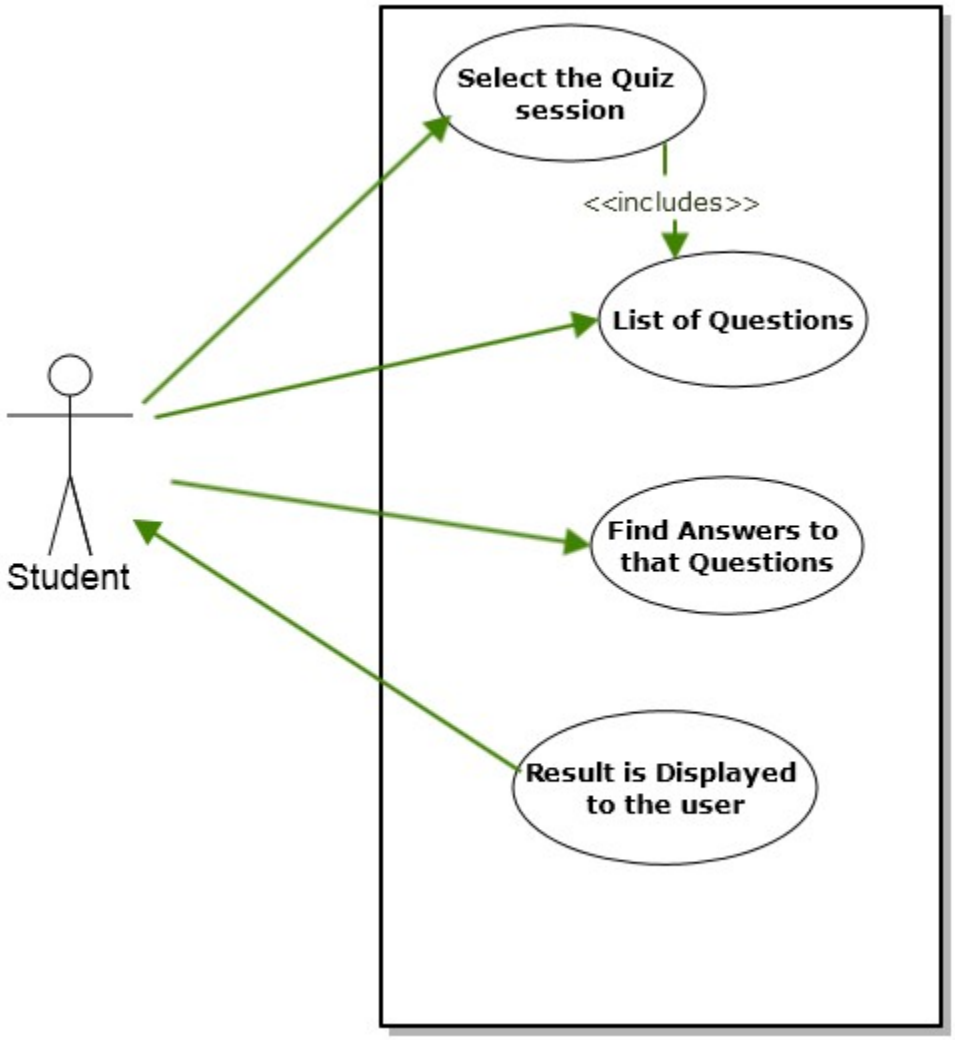
Fig(2.3.5)

Use case Diagram for Viewing Videos with Subtitles


Select 'Browse SRT'
<<includes>>
Enter SRT filename to get subtitles
View subtitles with video
Student

Fig(2.3.6)

Use case Diagram for Quiz Session



Fig(2.3.7)

2.4 Other Non-Functional Requirements

Maintainability: Software needs to be upgraded if required in future.

Reliability: System must be reliable and data should persist even after suffering some system crashes or booting of android supported devices.

Portability: We are using Java to make the software more portable so that it can run on any java enabled mobile phone.

Performance: We are using JSON so we can make the search easier and faster so it provides better efficiency when compared to others.

Flexibility: It is flexible according to the user and it provides friendly environment to the user.

3.DESIGN DOCUMENT AND IMPLEMENTATION

3.1 Resource Requirement

3.1.1 H/W Requirement

- Any android operating system supported device
- SD-Card to view the video lecture.

3.1.2 S/W Requirement

- The Eclipse Indigo 3.7 shall be used as development environment for implementing the modules.
- Designing of modules and diagrams is done using YUML.

3.2 Model Used (Iterative Model)

The iterative lifecycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which can then be reviewed in order to identify further requirements. This process is then repeated, producing a new version of the software for each cycle of the model , until the product is accepted as shown below:

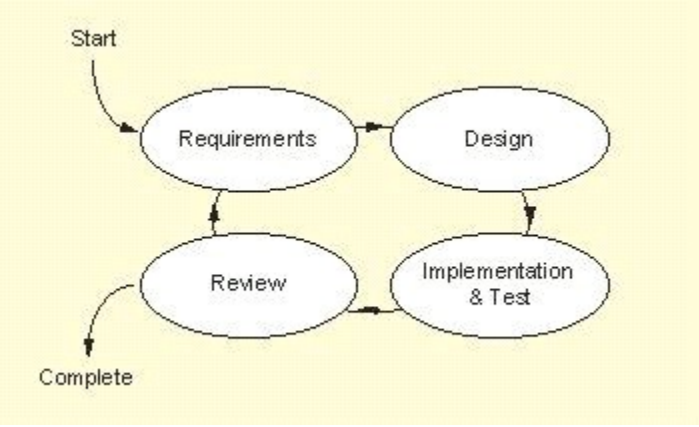


Fig. 3.2

A Requirements phase- This the Phase in which the requirements for the software are gathered and analyzed. Iteration should eventually result in a requirements phase that produces a complete and final specification of requirements.

A Design phase- This the Phase in which a software solution to meet the requirements is designed. This may be a new design, or an extension of an earlier design.

An Implementation and Test phase- when the software is coded integrated and tested.

A Review phase- This the Phase in which the software is evaluated, the current requirements are reviewed, and changes and additions to requirements proposed.

3.3 HighLevelDesign Document

3.3.1 Use Case Diagram

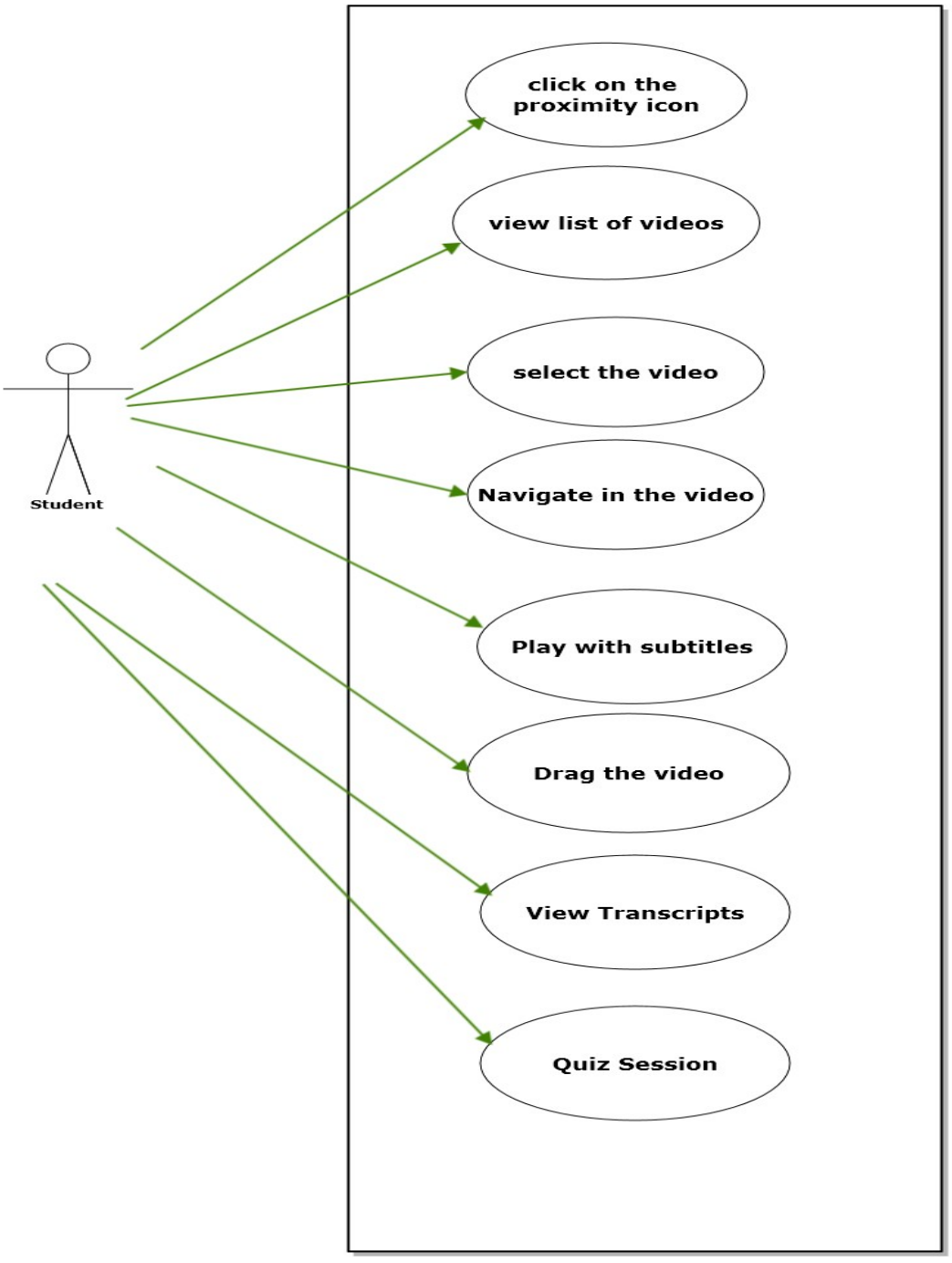


Fig3.3.1 Use Case diagram for Application

3.3.2 Data Flow Diagram

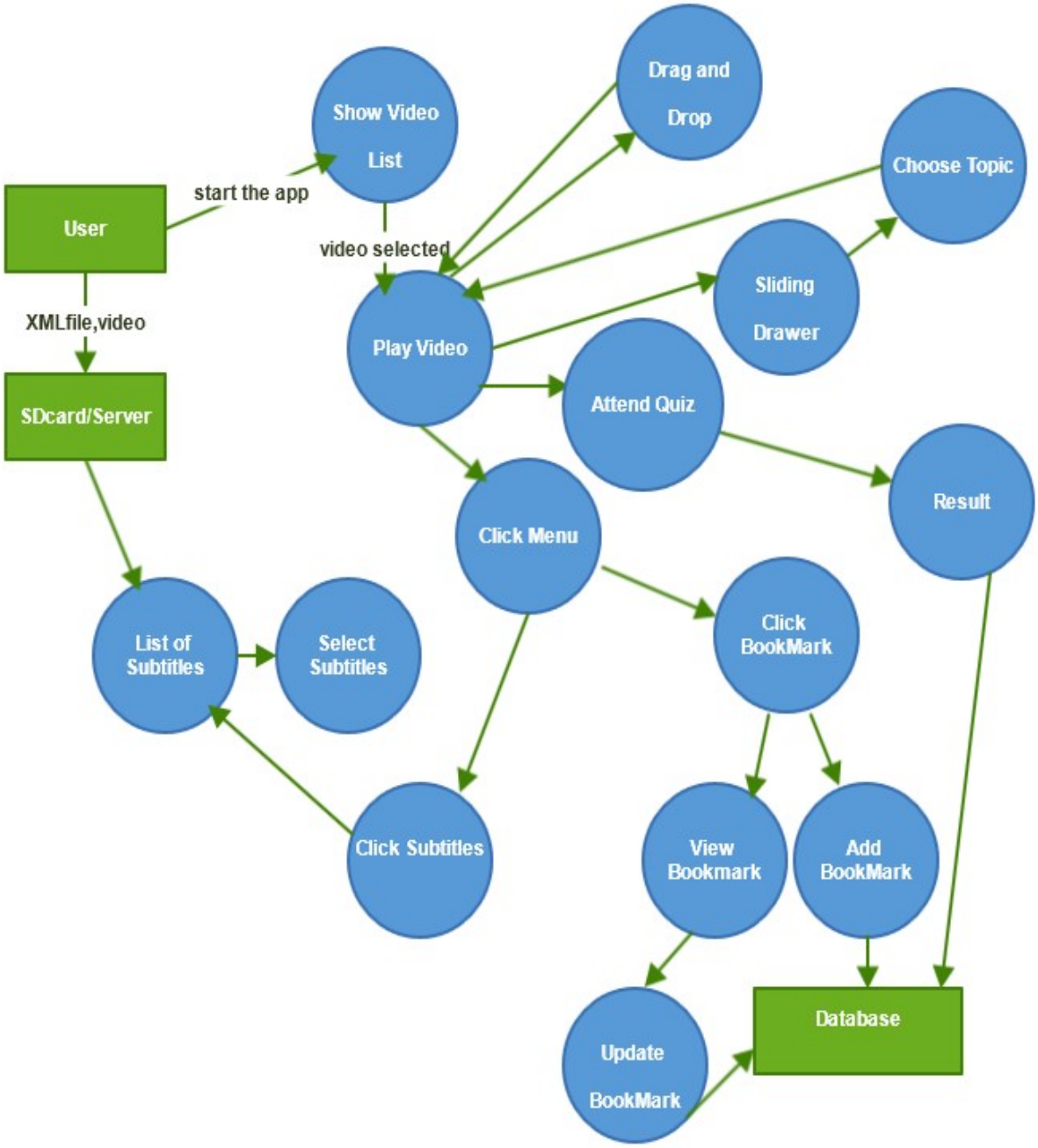


Fig3.3.2 Dataflow Diagram For the Application

3.3.3 Activity Diagram

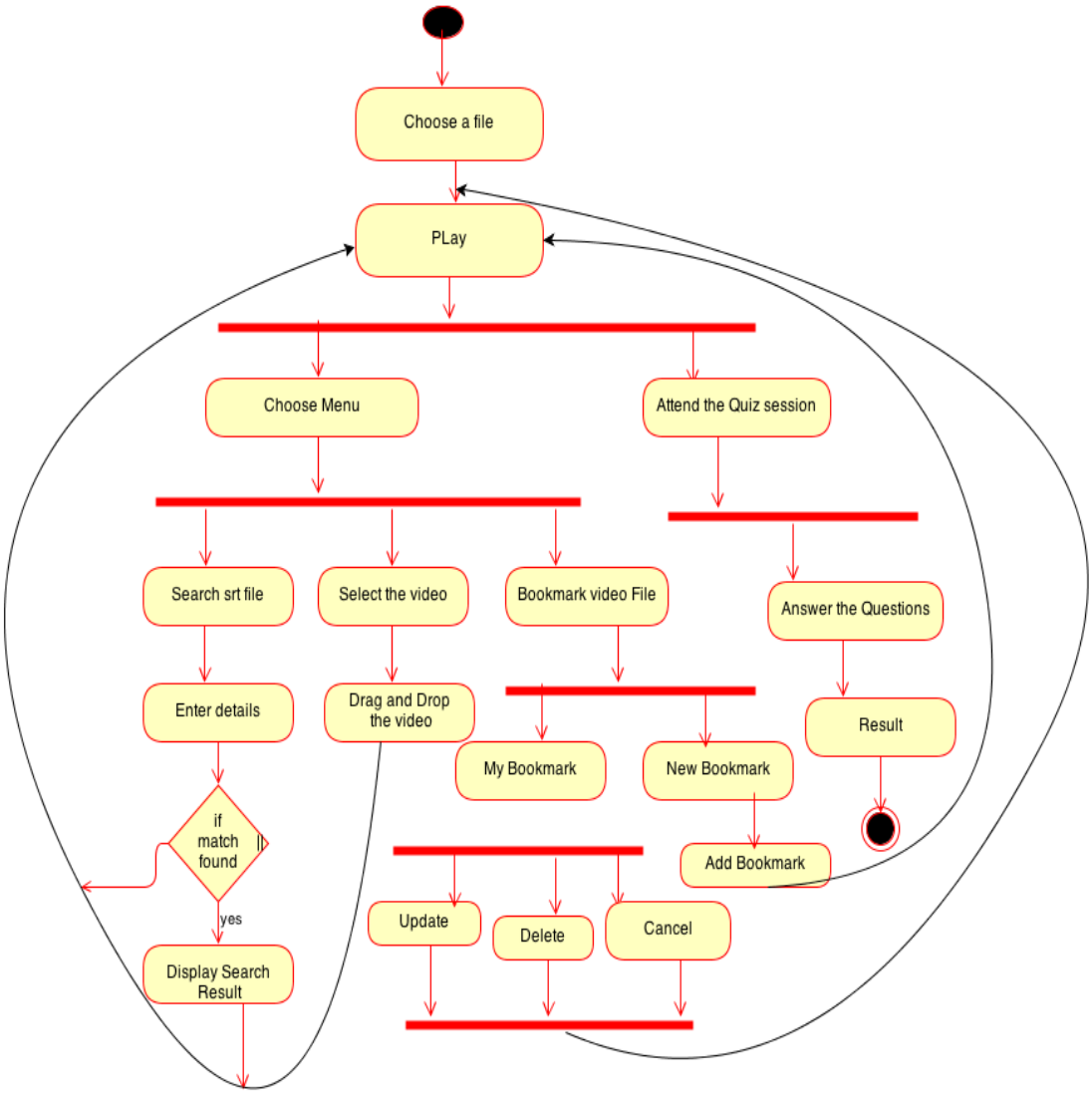


Fig3.3.3 Activity Diagram for the Application

3.3.4 Sequence Diagram

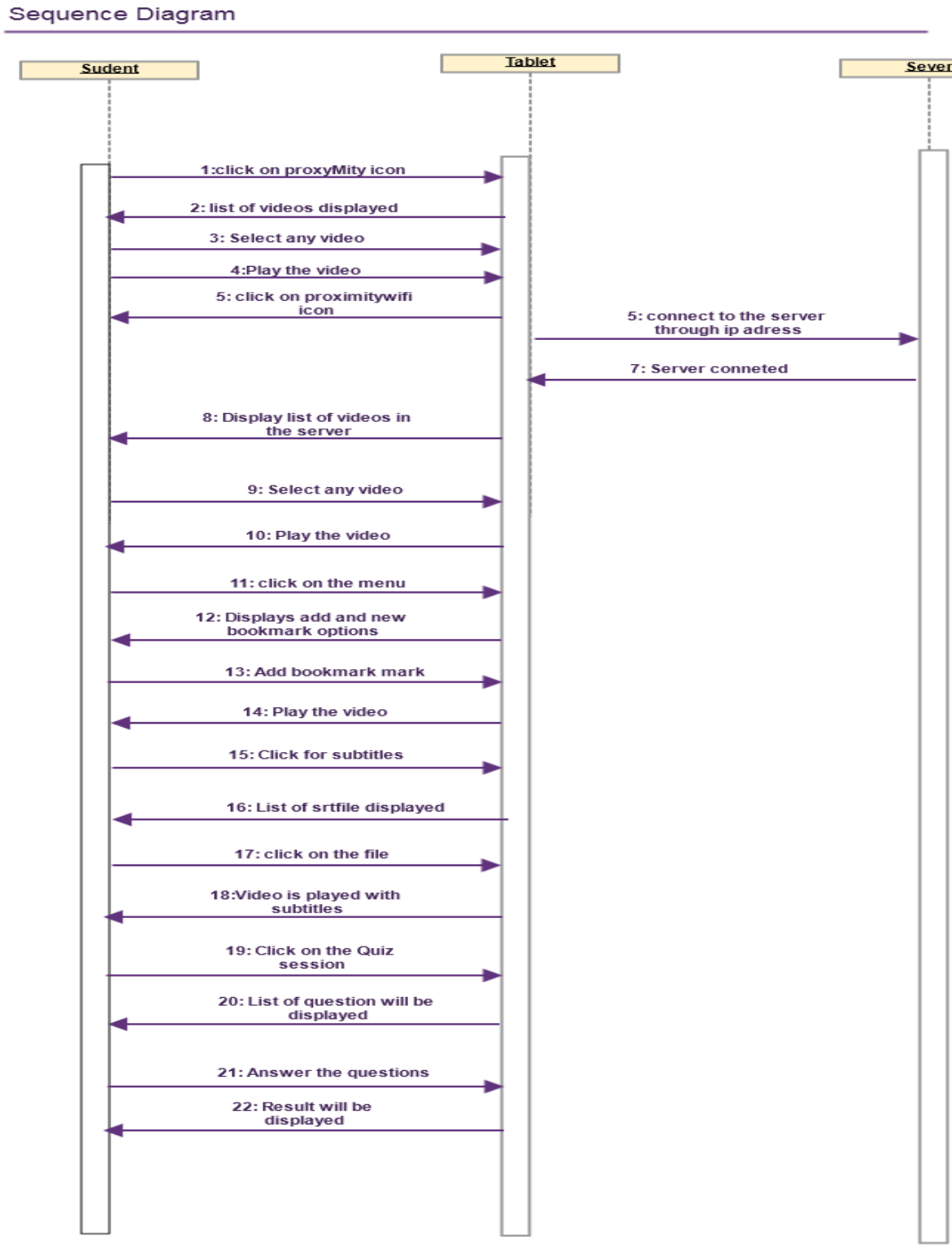


Fig3.3.4 Sequence Diagram for the Application

3.3.5

3.3.5 State chart Diagram

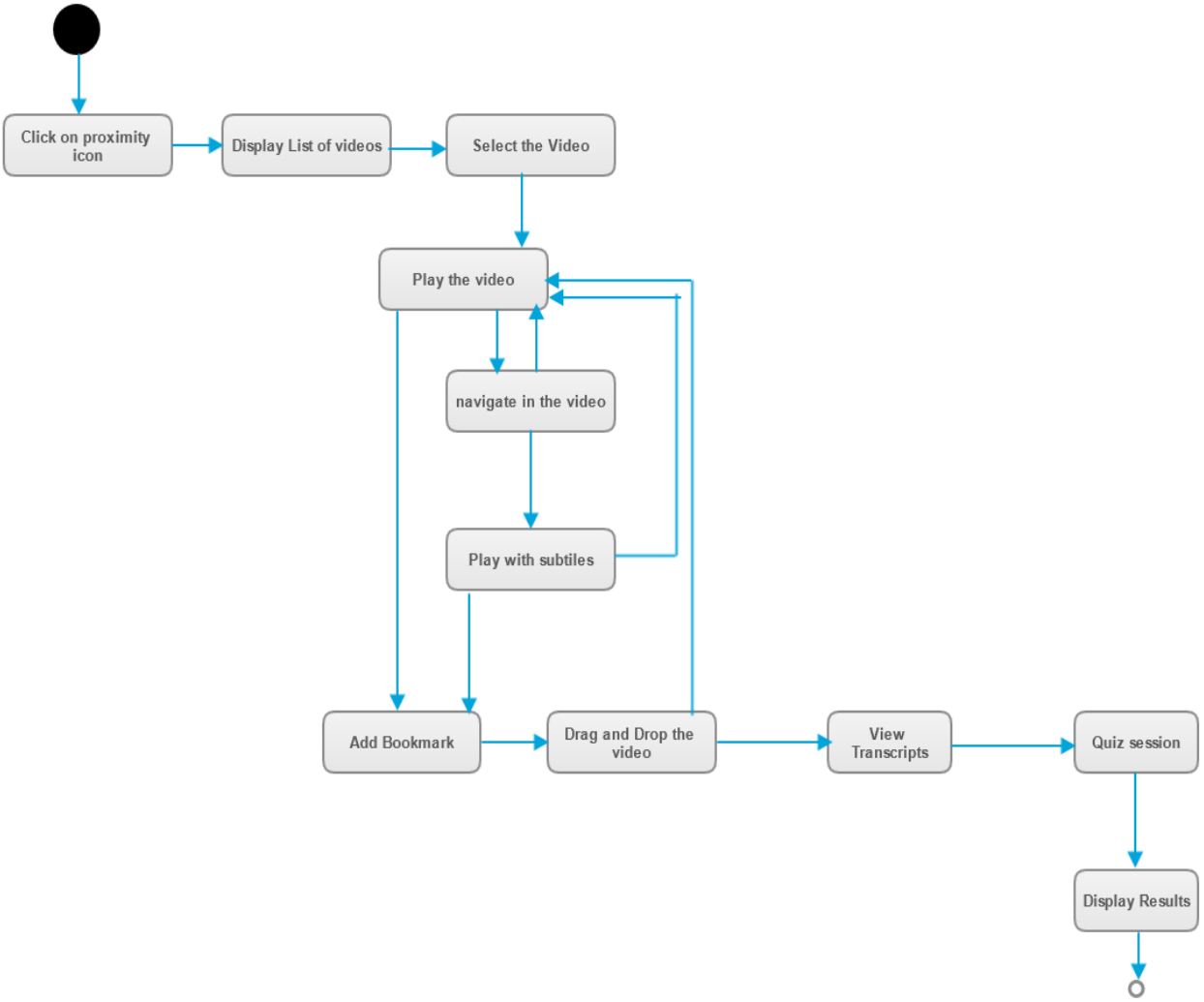


Fig3.3.5 **State chart Diagram for the Application**

3.3.6 Class Diagram

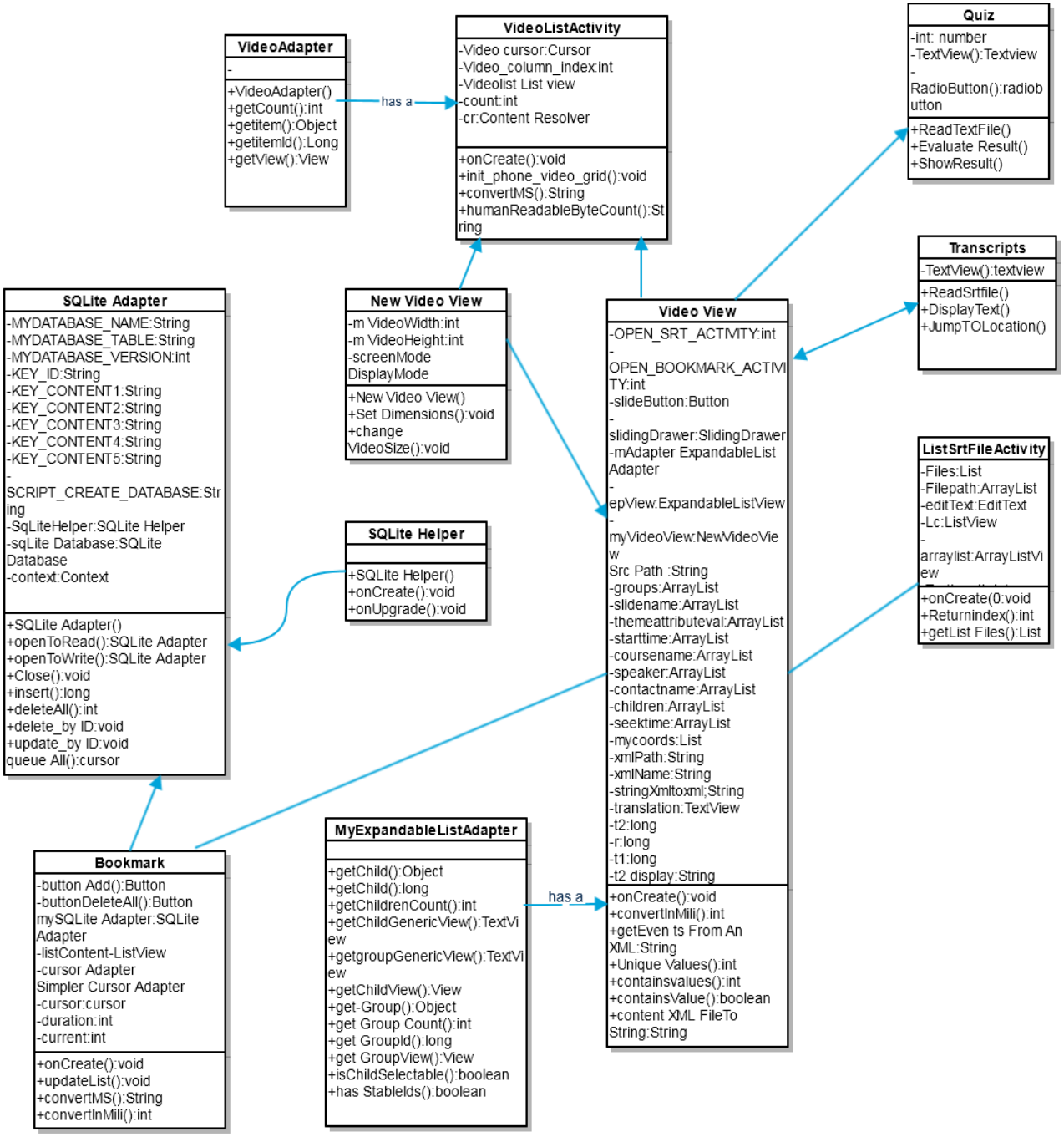


Fig3.3.6 Class Diagram for the Application

3.4Low Level Design Document

3.4.1 Flow-chart

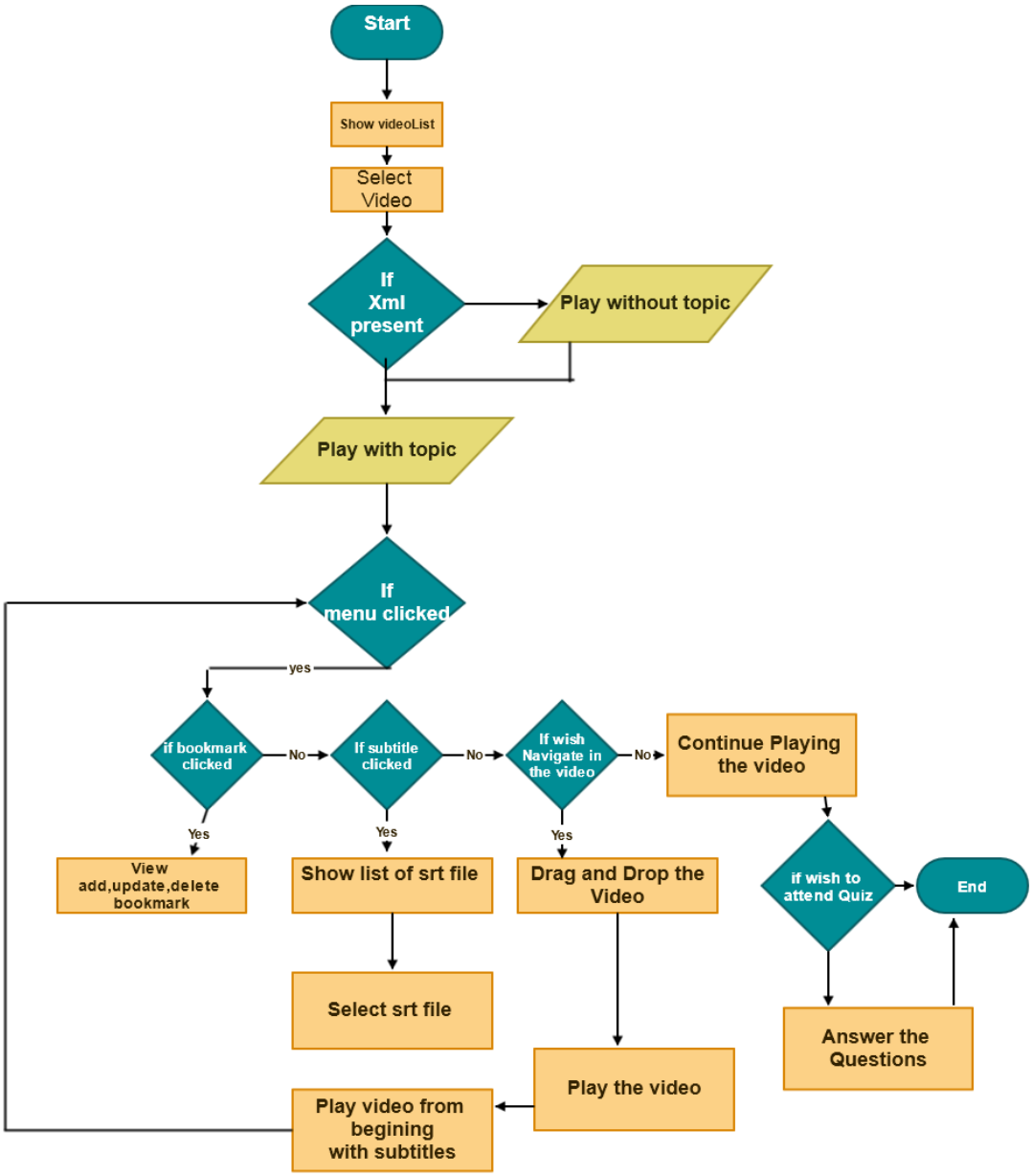


Fig3.4.1 Flowchart for the Application

4.USER MANUAL FOR proxyMITY

Introduction

- proxyMITY is an open source software product.

- Published lecture that are released under the **Creative Commons License by Attributions 2.5** are edited and prepared for distribution using proxyMITY.

- When you switch ON the tablet you will see on the screen, the display similar as shown in the figure below.

Figure(4.1)

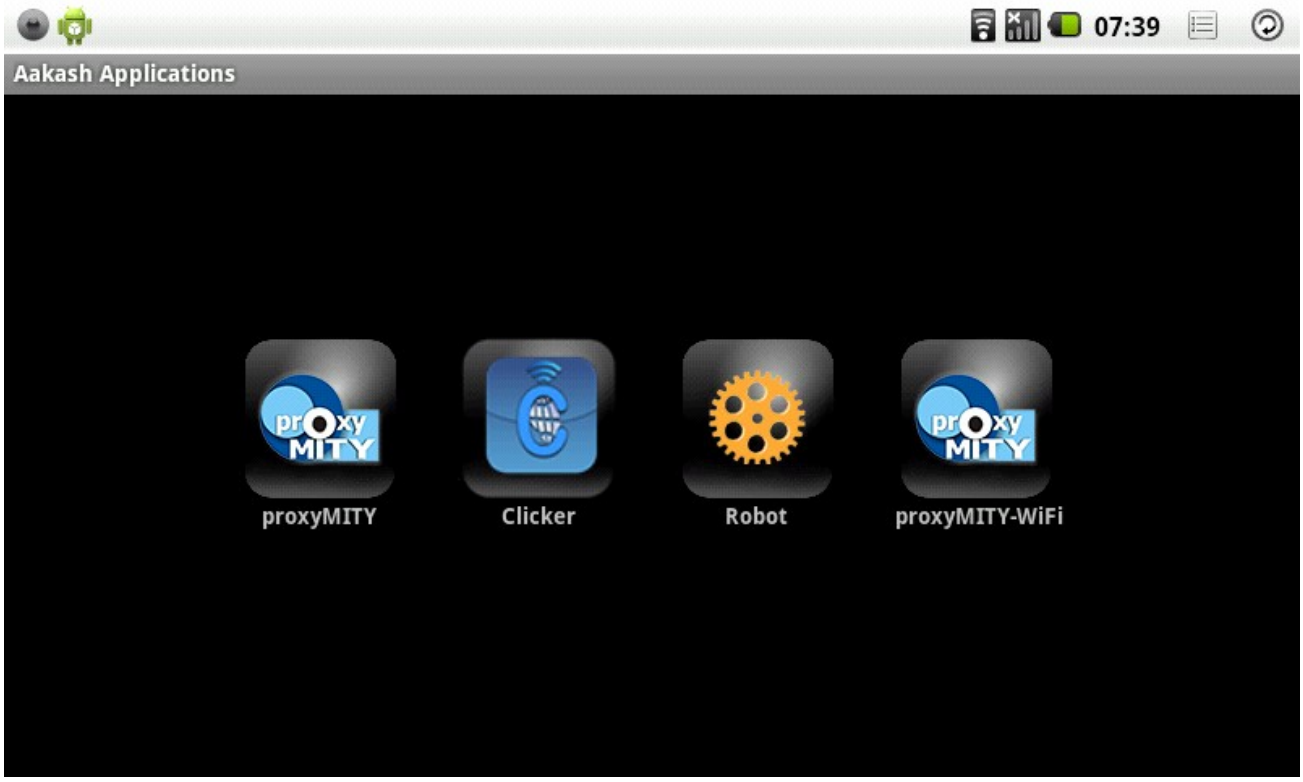
- Click on the launcher icon provided on the right hand side of the screen of the tablet as shown in the figure below.

Figure(4.2)

- Then you will see on the screen all the application present in the tablet.
- Then click on the **Aakash Applications** icon present in the tablet as shown in the figure below.

Figure(4.3)

- On click of the **Aakash Applications** icon you will see the icons of all the applications present in the **Aakash Applications** as shown in the figure below.



Figure(4.4)

- To view the lecture using SD card/pendrive, select the proxyMITY icon present in the **Aakash Application**s as shown in the figure below.

Figure(4.5)

- To view the lectures using Wi-Fi , select the proxyMITY-WiFi icon present in the **Aakash Applications** as shown in the figure below.

Figure(4.5.1)

- **View lecture from proxyMITY**

- **View lecture using SDCard/Pendrive**

- The lectures videos which are to be viewed using proxyMITY must be present in the SDCard/pendrive.

- Insert the pendrive/SD card in the USB slot provided on the top right hand side of the Aakash tablet.

- Wait for 10 seconds for the pendrive/SD card to be detected by the Aakash tablet.

- A message stating PREPARING SD CARD will be displayed on the notification bar on the top of the Aakash tablet screen as shown in the figure below.

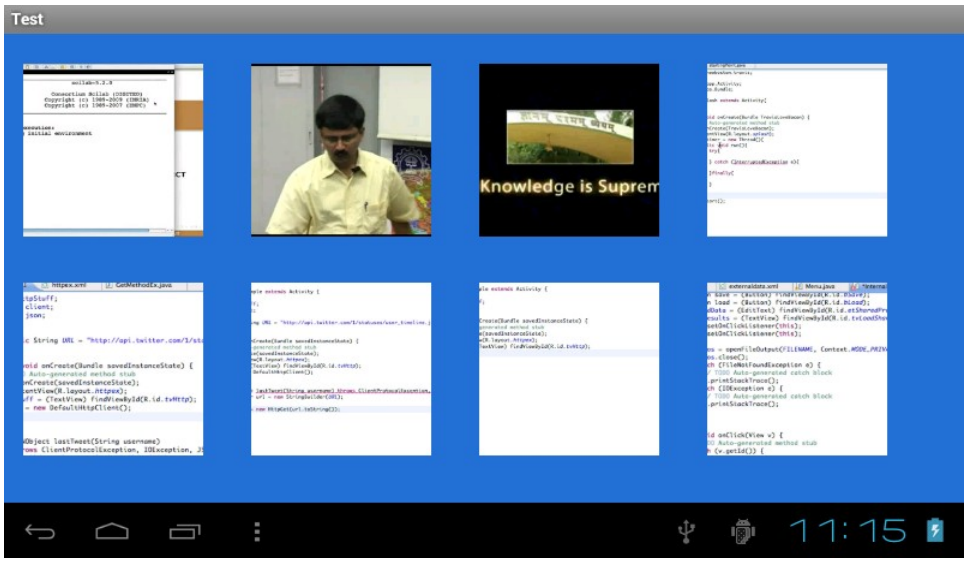
- This means the pendrive/SD card is ready for use.

Figure(4.6)

- Now in the Aakash Applications select the proxyMITY icon as shown in the figure
- A list of lectures will be displayed as shown in the sample figure below.

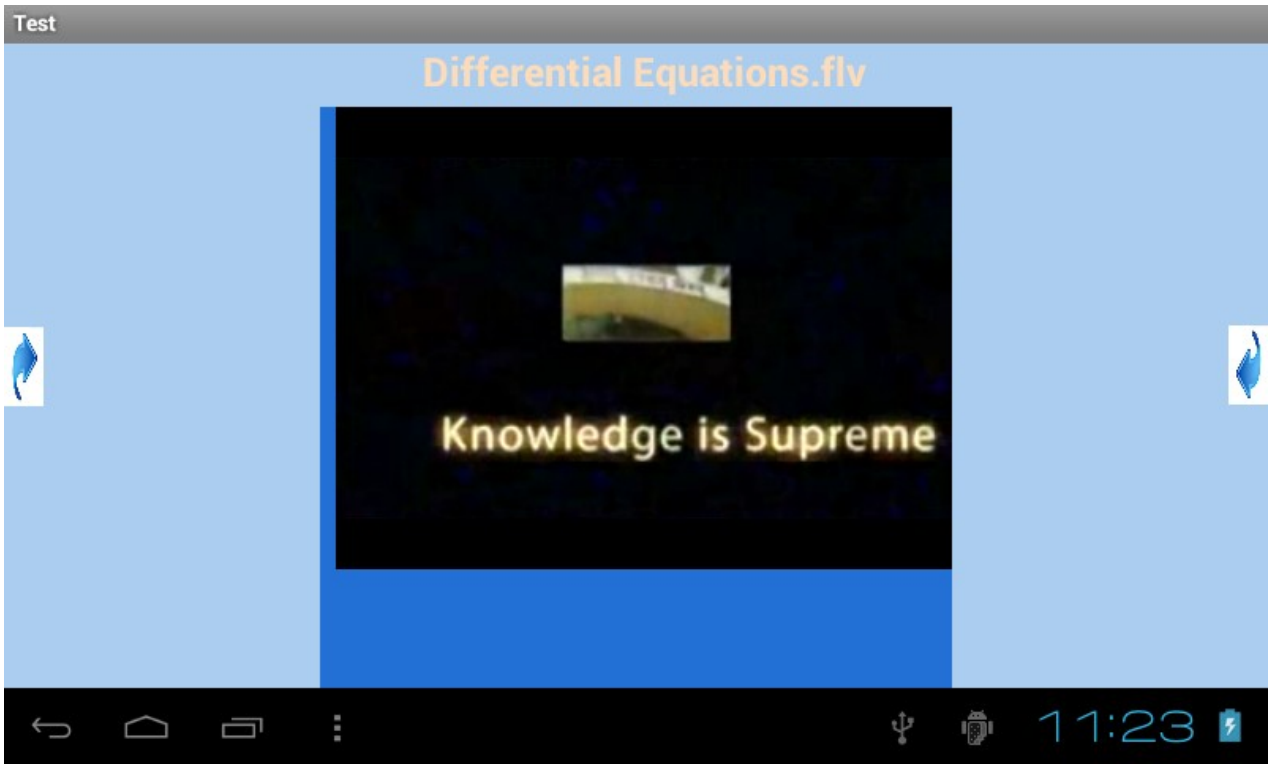
- The lectures will be played automatically from SDCard/pendrive.

- An example video list is displayed in the form of thumbnails
  As shown in the figure below



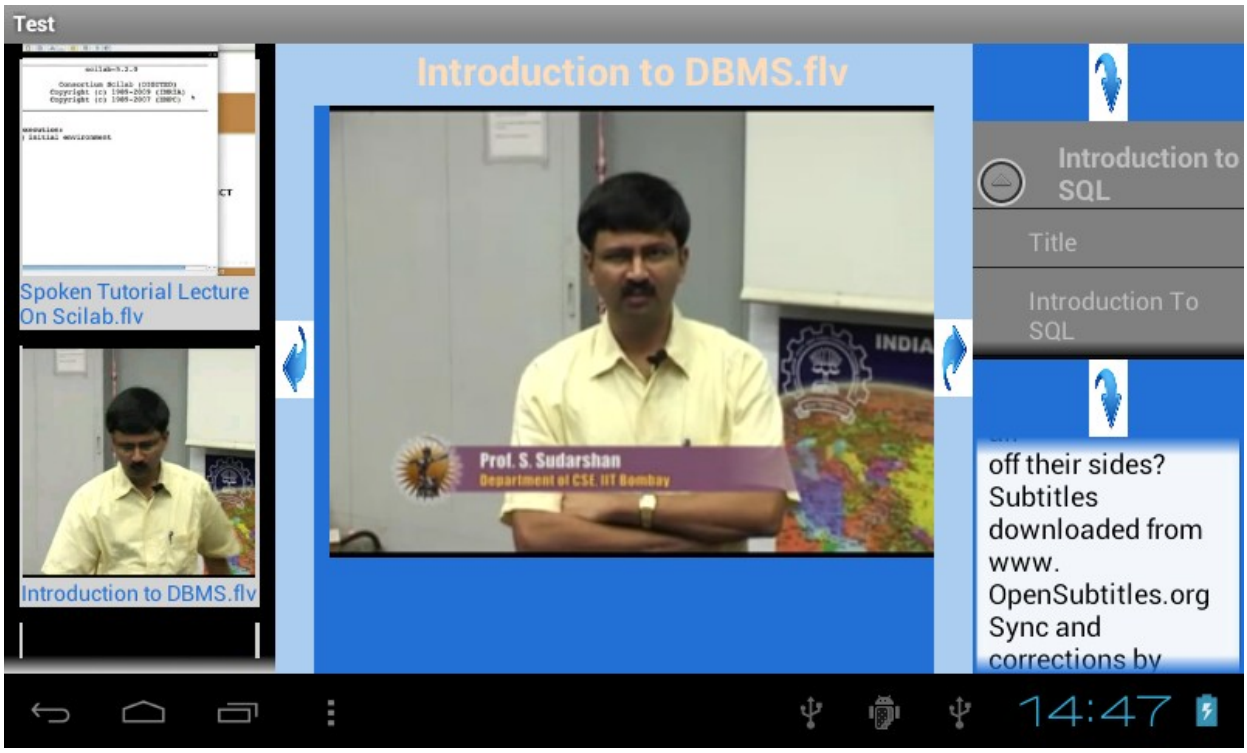
Figure(4.7)

- From the above list of videos the user can select any one of them and this will be displayed as shown in the figure below



Figure(4.8)

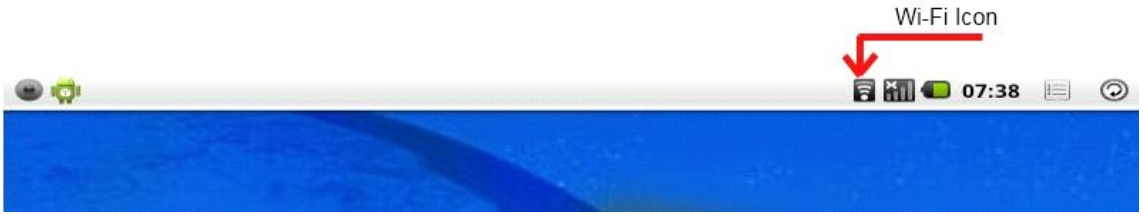
- If u click on the right arrow then it displays structure of the video and transcripts.
- If u click on the left arrow a list of video lectures will be displayed as shown in figure below



Figure(4.9)

- **View the lecture using Wi-Fi connectivity.**

- Connect Aakash Tablet with Wi-Fi.
- You can see an icon for Wi-Fi connection on top of the screen of tablet as shown figure below. This means that tablet is connected with Wi-Fi.



Figure(4.10)

- Now in the **Aakash Applications** click on the **proxyMITY-WiFi** icon as shown in the figure5.5
- Select the menu button present on top as shown in figure below .

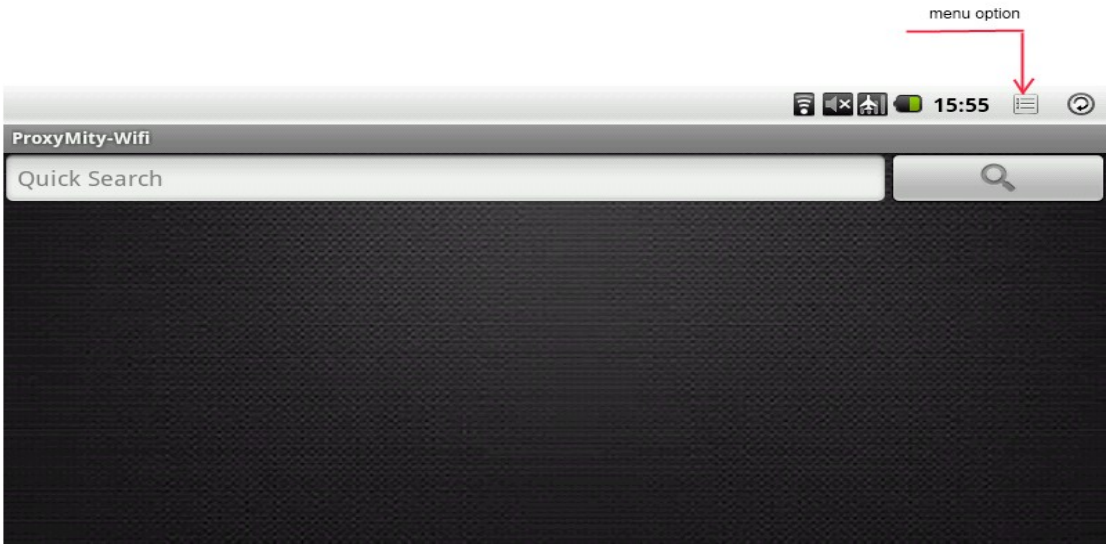
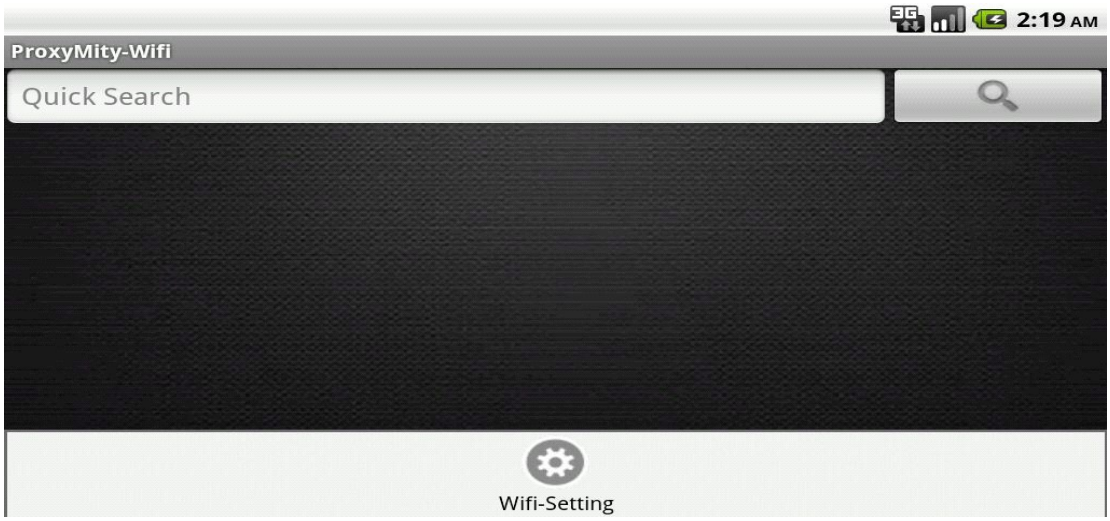


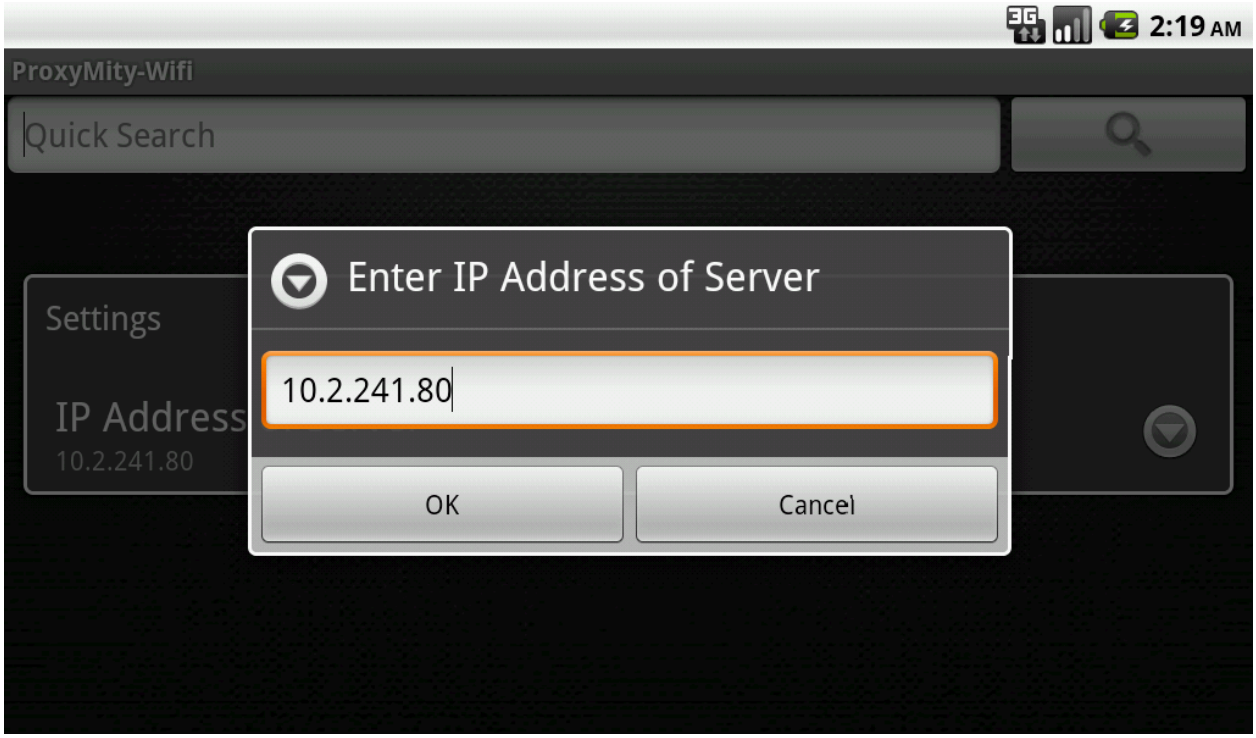
Figure (4.11)

- Then ‘Wifi-Setting’ option in menu is displayed as shown in the figure below.



Figure(4.12)

- A dialog box is displayed with an input text field as shown in figure below



Figure(4.13)

- Enter the IP address of the server from where you want to fetch the video lecture. (eg: 10.105.14.224)
- Select OK to confirm.

- Then you will a list of video lectures present on the server as shown in the figure below.

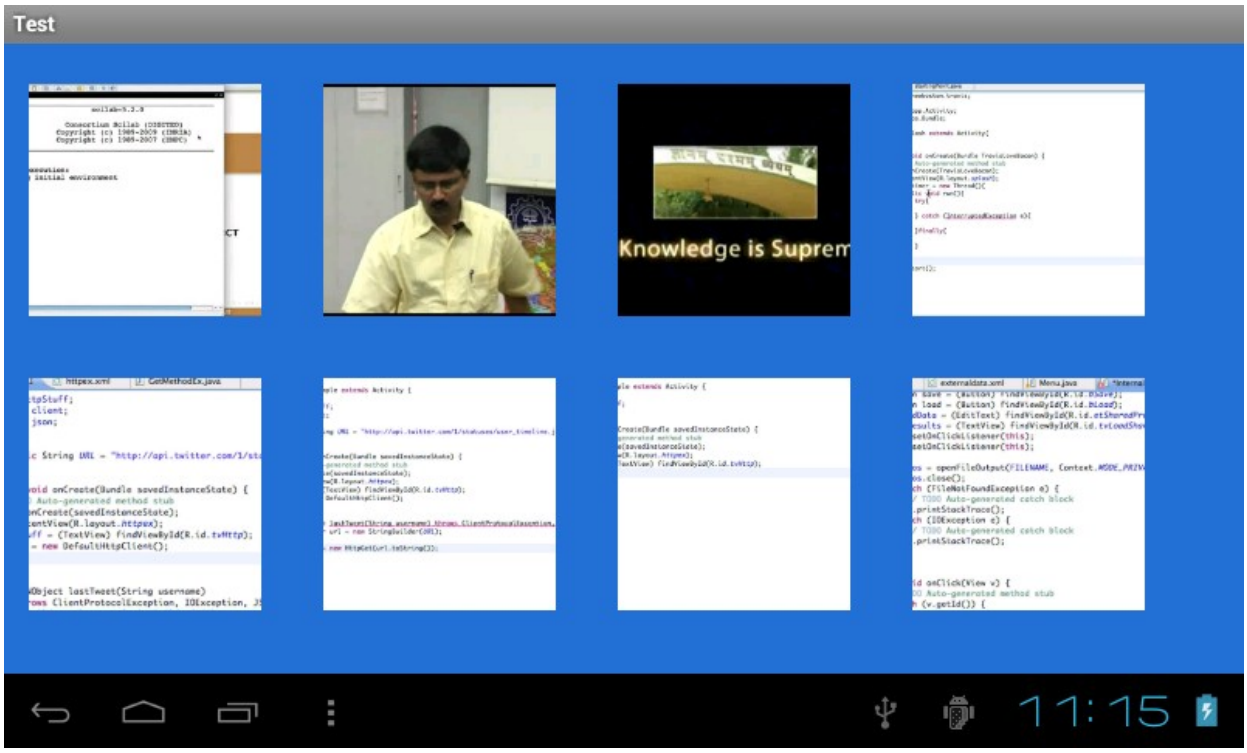
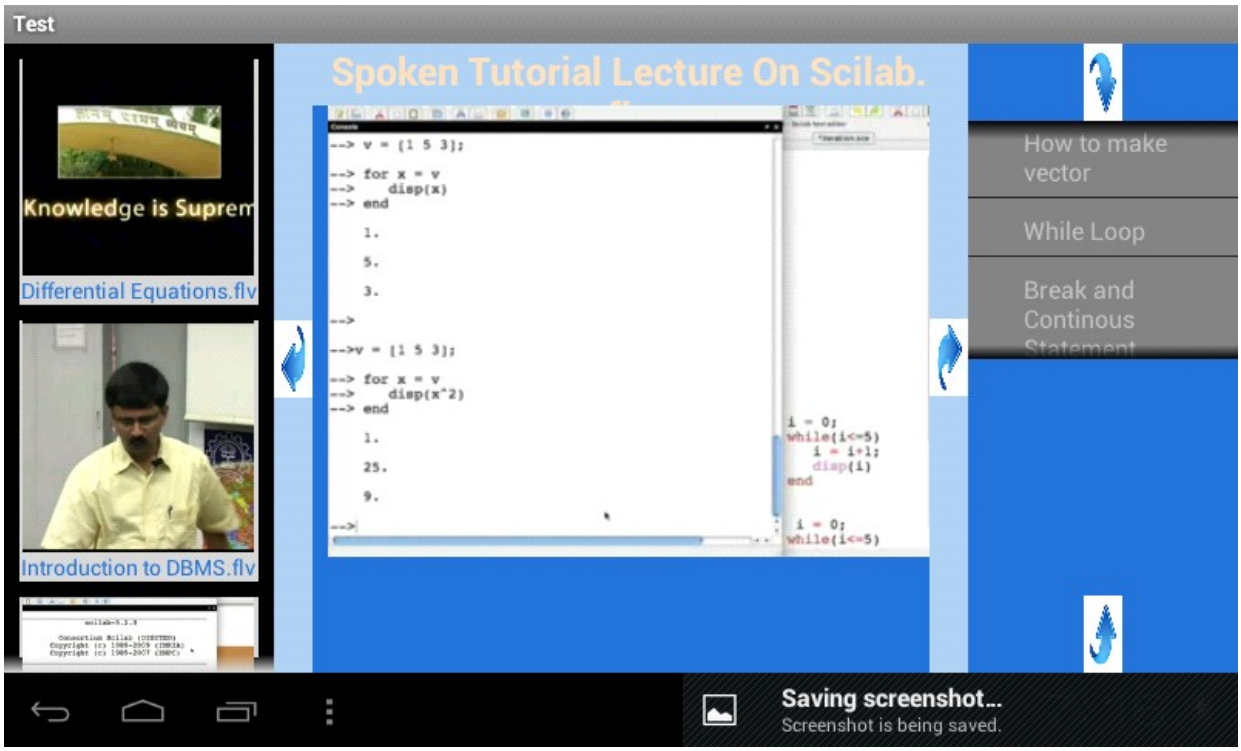


Figure (4.14)

- **<u>FUNCTIONALITY</u>**

- **NAVIGATION**

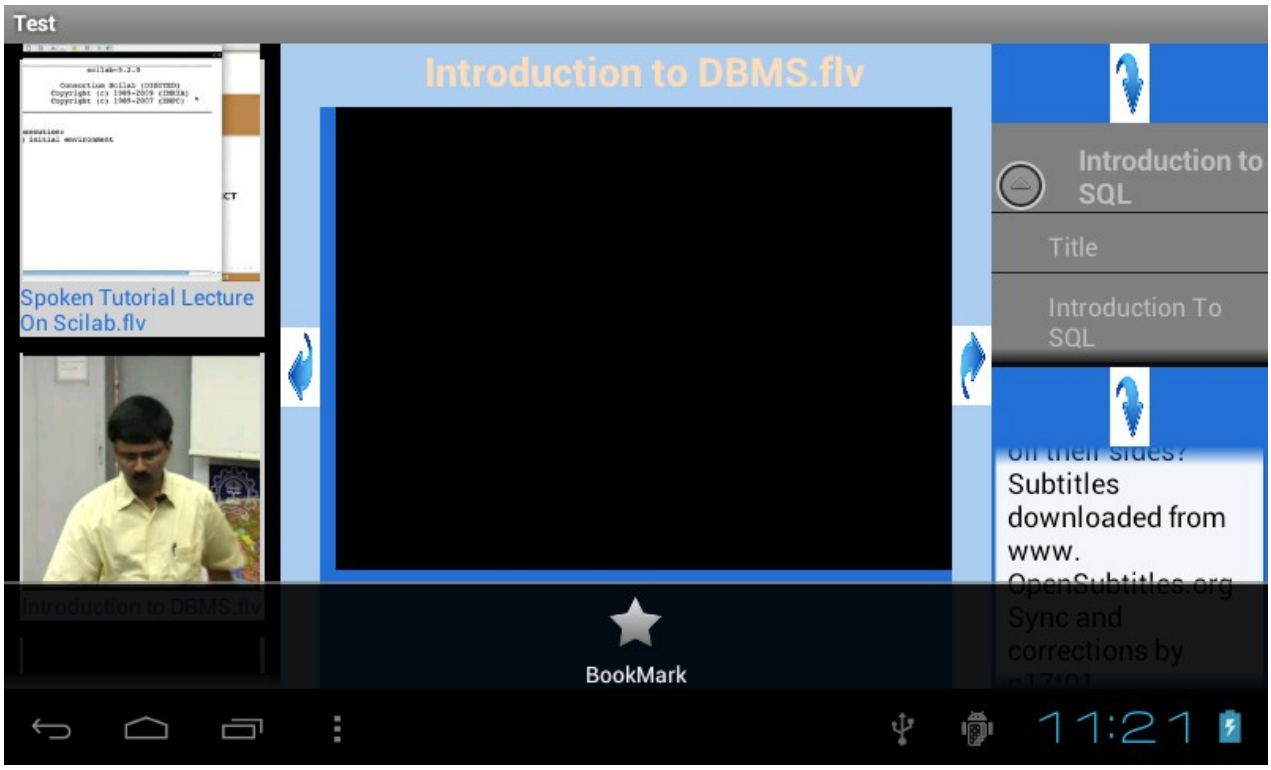
- To navigate through the video lecture select the arrow button placed on the extreme right hand side of the video lecture display as shown in the figure below.
- A list of topics will be displayed on the extreme right.
- Select the desired topic to view.



Figure(4.15)

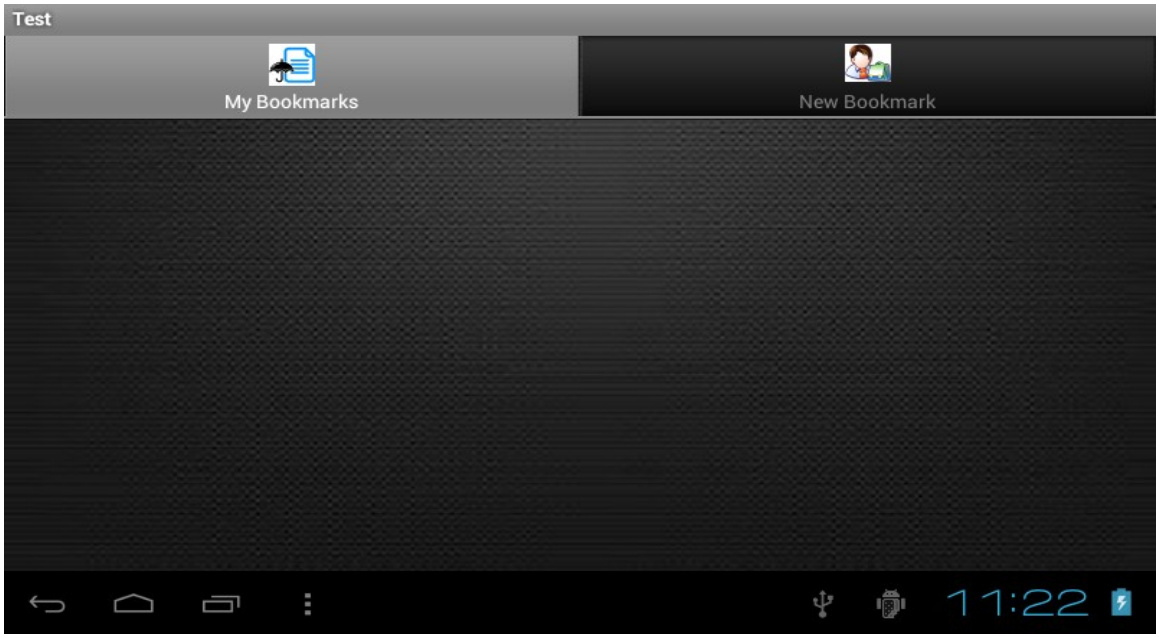
Bookmark

- To bookmark from particular time in the video lecture select the menu button present on top ..
- Click on the menu button and select the bookmark option as shown in the figure .



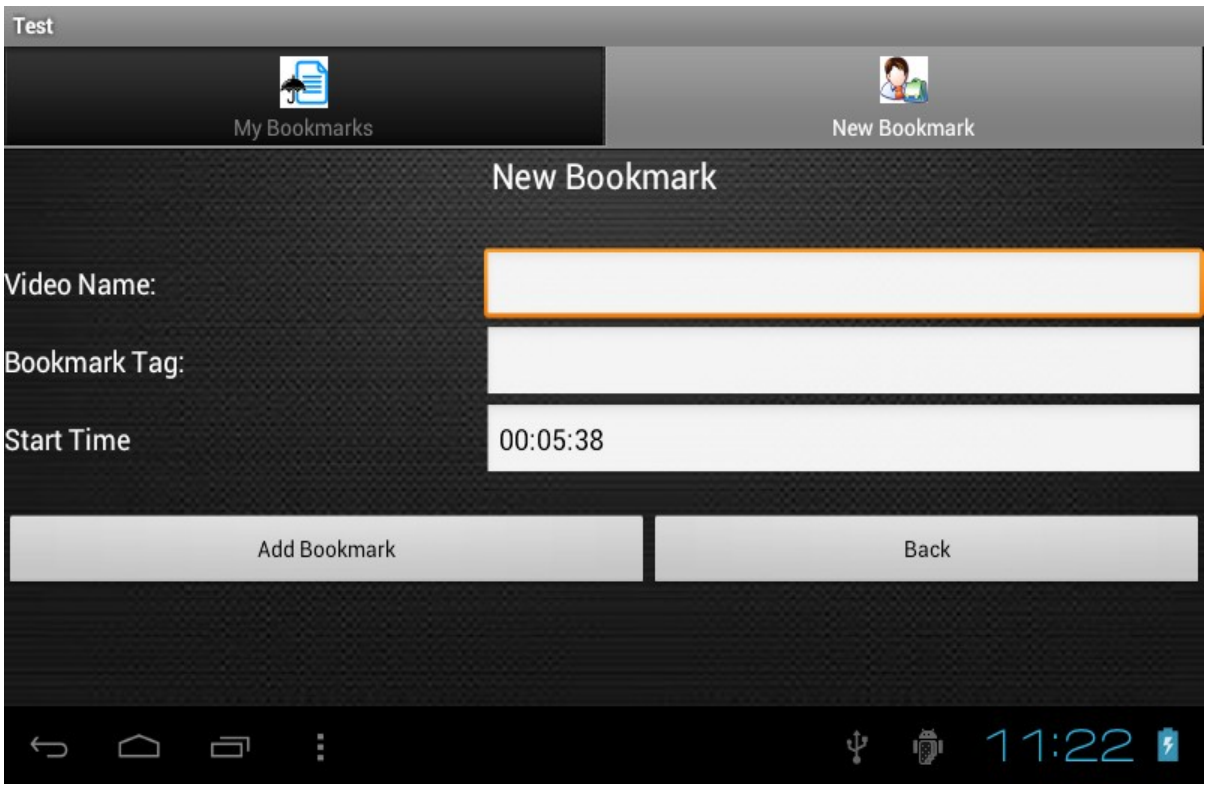
Figure(4.16)

- Click on the bookmark option and the bookmark tab will be displayed as shown in the figure below



Figure(4.17)

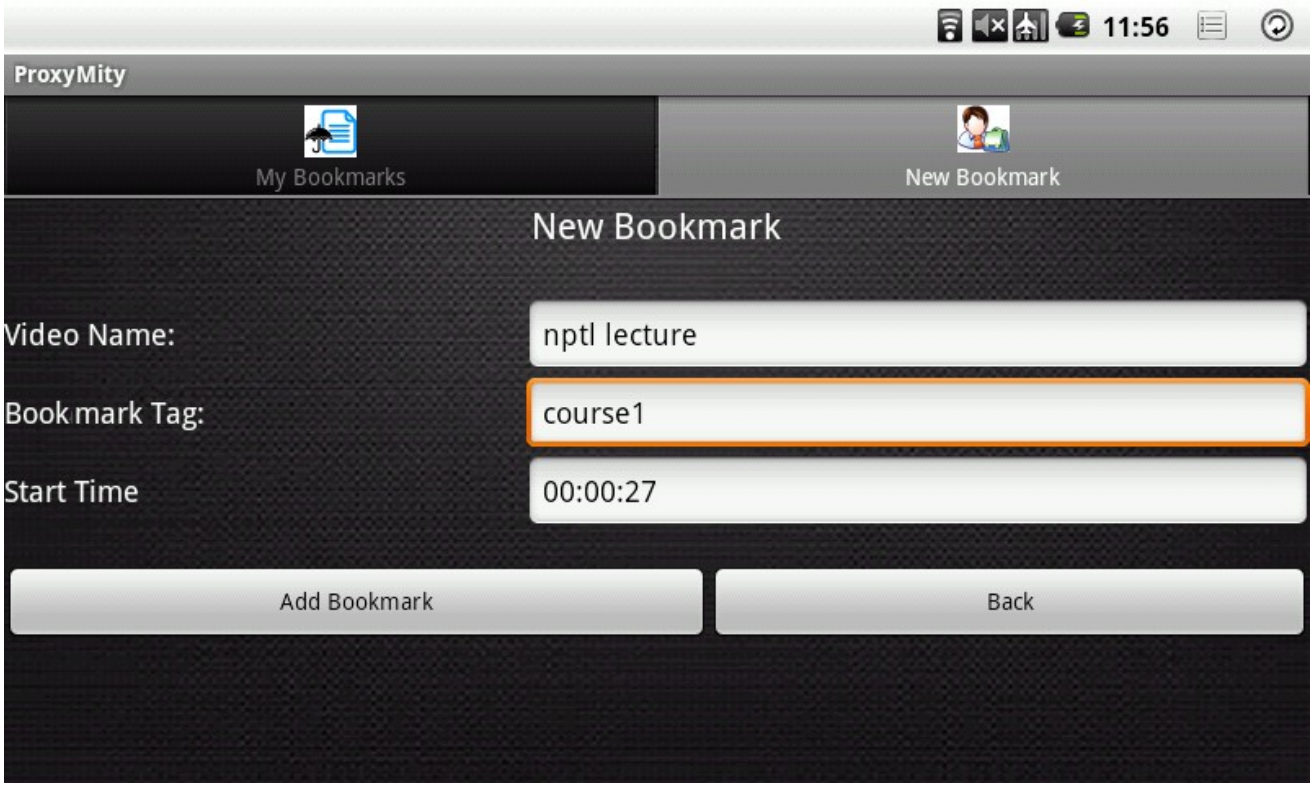
- You can select the bookmark from My Bookmarks tab to view the video lecture present in the SD-card/pendrive/server from the time as saved in the My Bookmark.
- To create a new bookmark click on new Bookmark option and the new bookmark option tab will be displayed as shown in the figure below.



Figure(4.18)

- Then you have to enter the Video name and the Bookmark Tag.

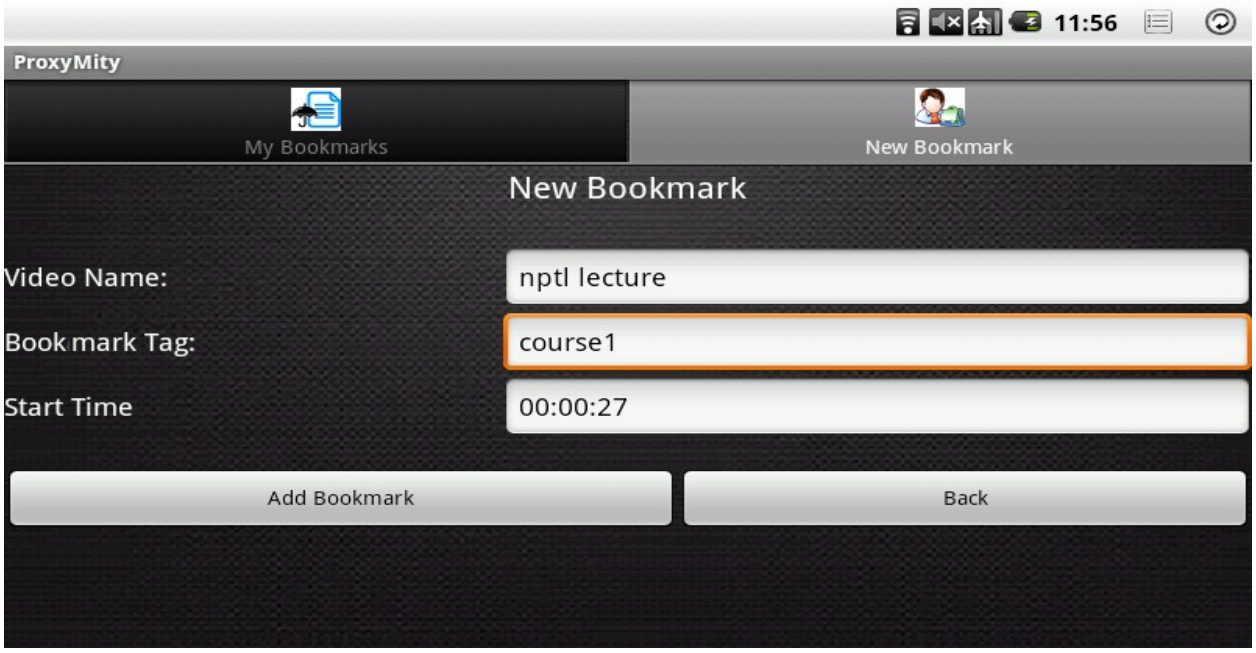
- The start time is the time of the video lecture when you selected the bookmark option from menu.



Figure(4.19)

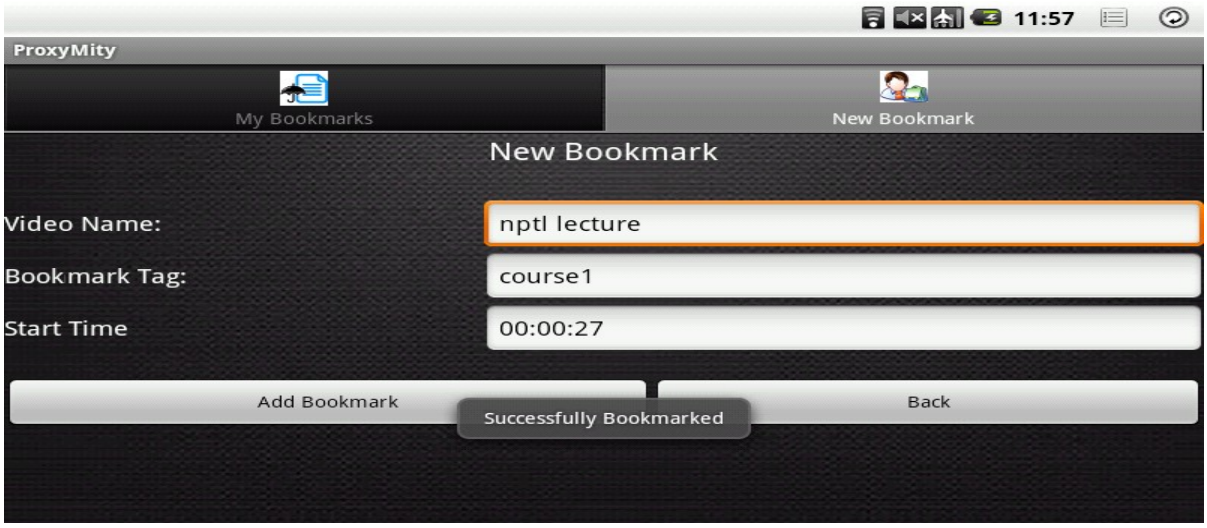
- Then you have to enter the Video name and the Bookmark Tag.

- The start time is the time of the video lecture when you selected the bookmark option from menu.



Figure(4.20)

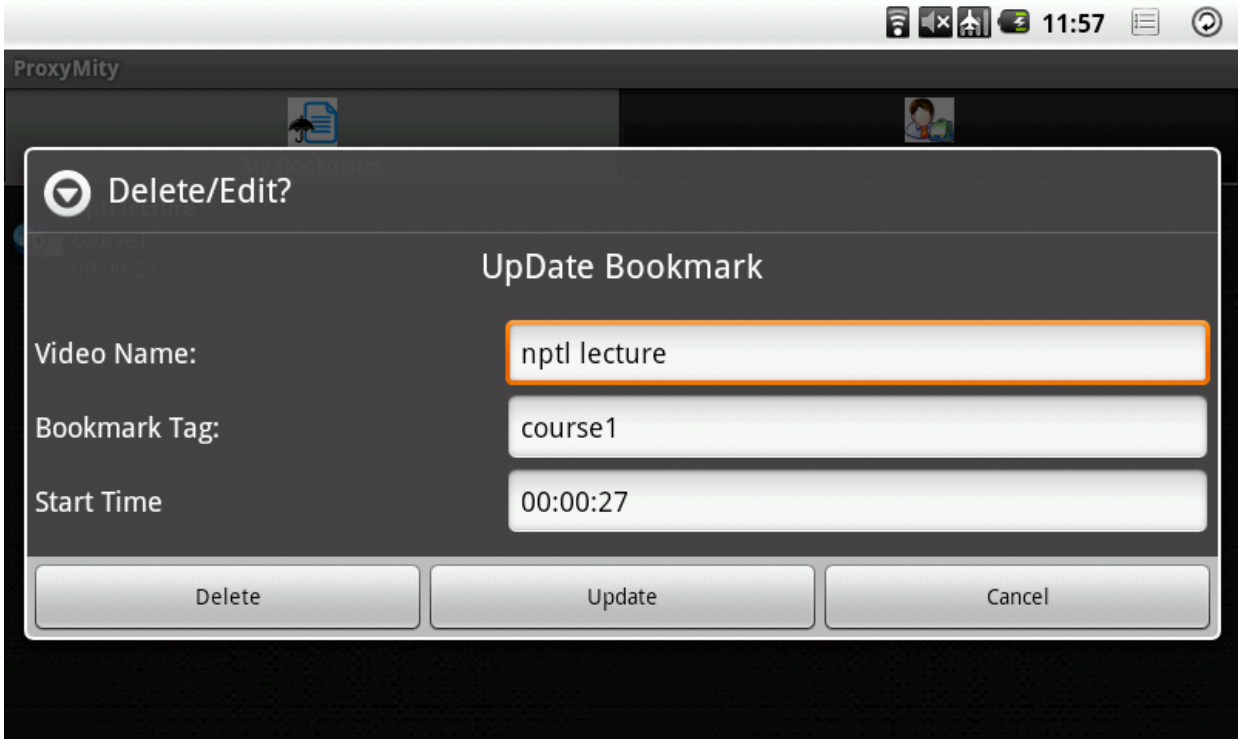
- Now select Add Bookmark button to save the bookmark.
- When bookmark is saved, a message is displayed as shown in the figure below.



Figure(4.21)

The bookmark is the saved in the My Bookmarks tab as shown in the figure below

- To update/delete the bookmark in the My Bookmark tab keep that particular bookmark pressed till you see a dialog box as shown in the figure below.

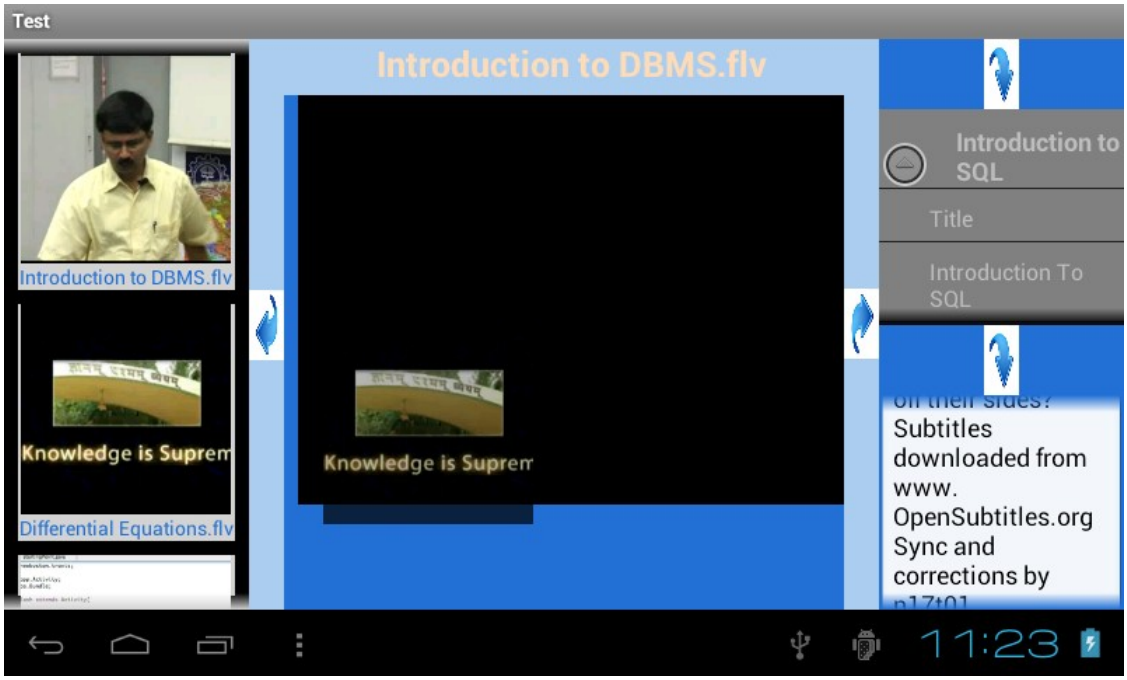


. Figure(4.22)

- Now you can update/delete that particular bookmark.

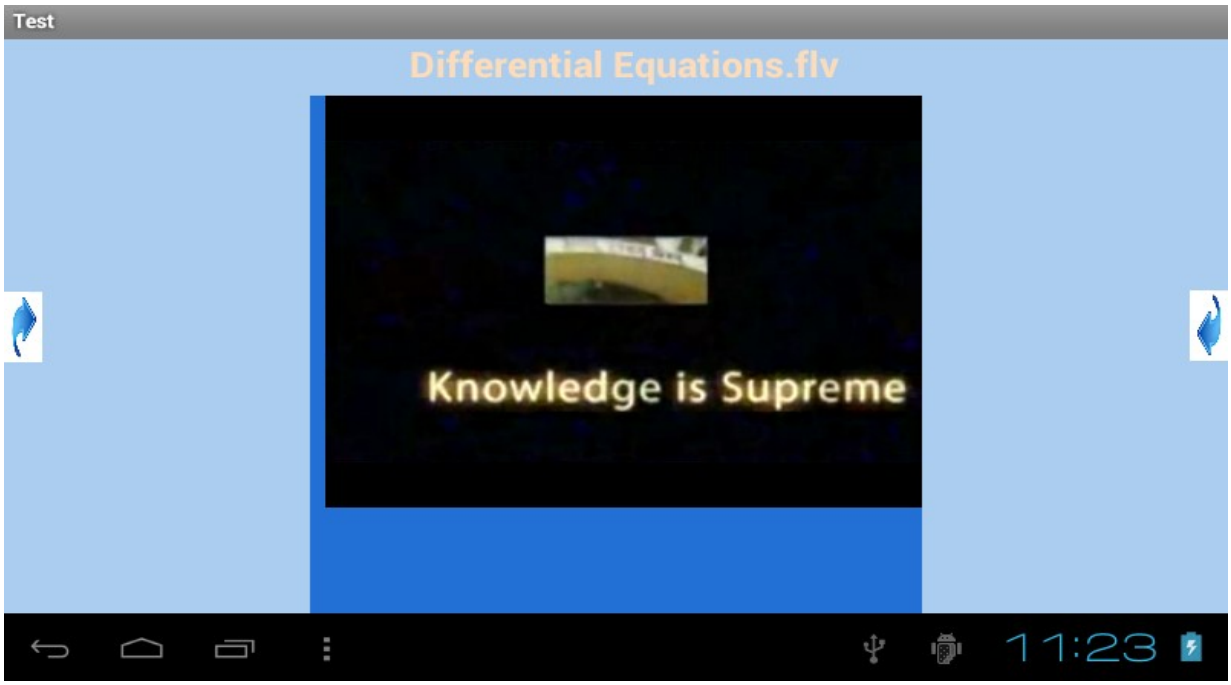
- **Drag And Drop**

- By clicking on the left arrow a list of videos will be displayed as shown in the figure
- The user can select any one of videos among them and they can easily drag and drop it at the centre as shown in the figure below.



Figure(4.25)

- The video is played as shown in the figure below



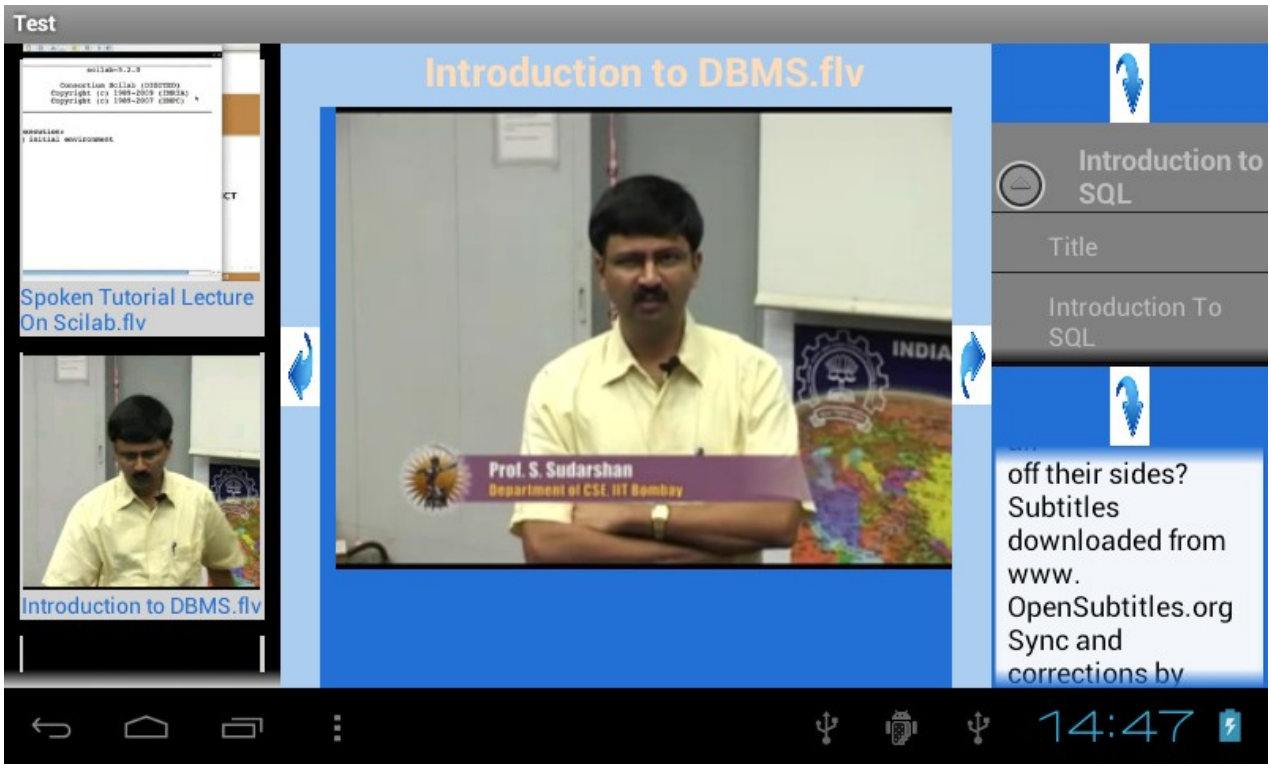
Figure(4.26)

- **Transcripts**

This feature provides the overall description of the particular video on the right side.

By clicking on the particular sentence we can navigate in the video.

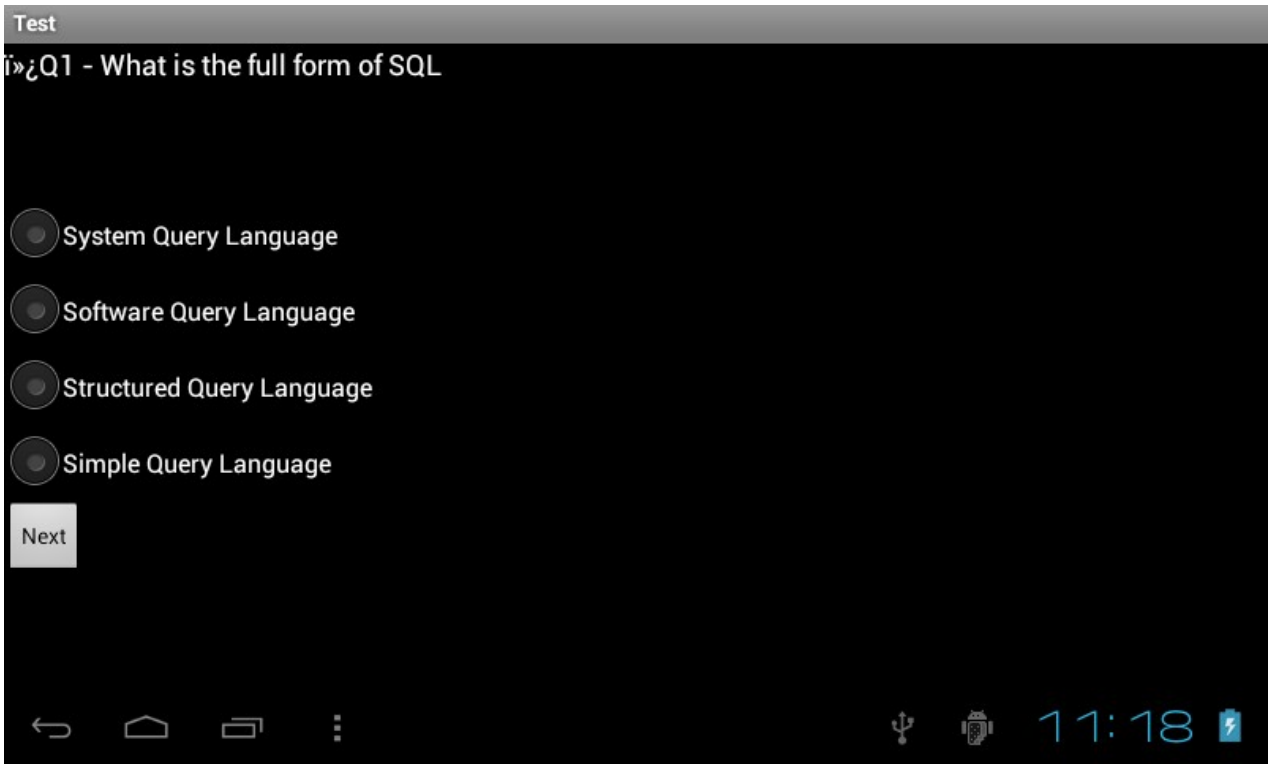
By clicking on the toggle button we can extend the part of transcripts.



Figure(4.27)

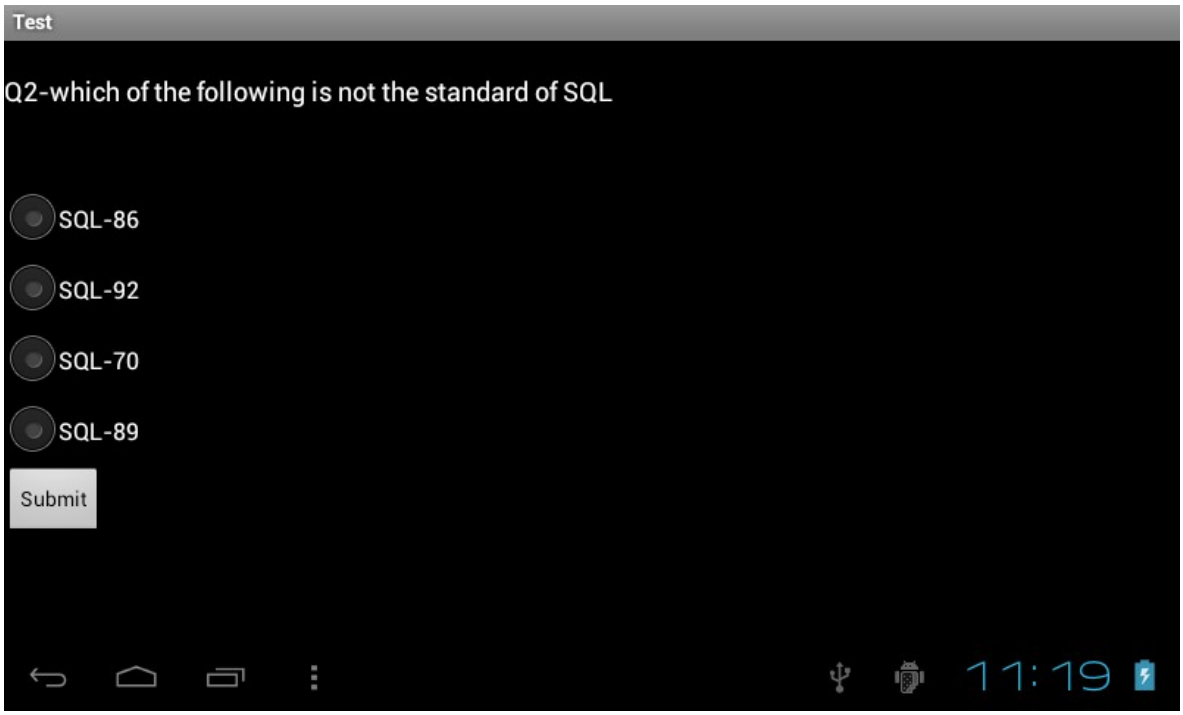
- **Quiz Session**

  - After listening all the lectures the student can attend the quiz session in order to test their efficiency .
  - The Quiz session contains questions and each question contains four choices and as shown in the figure below



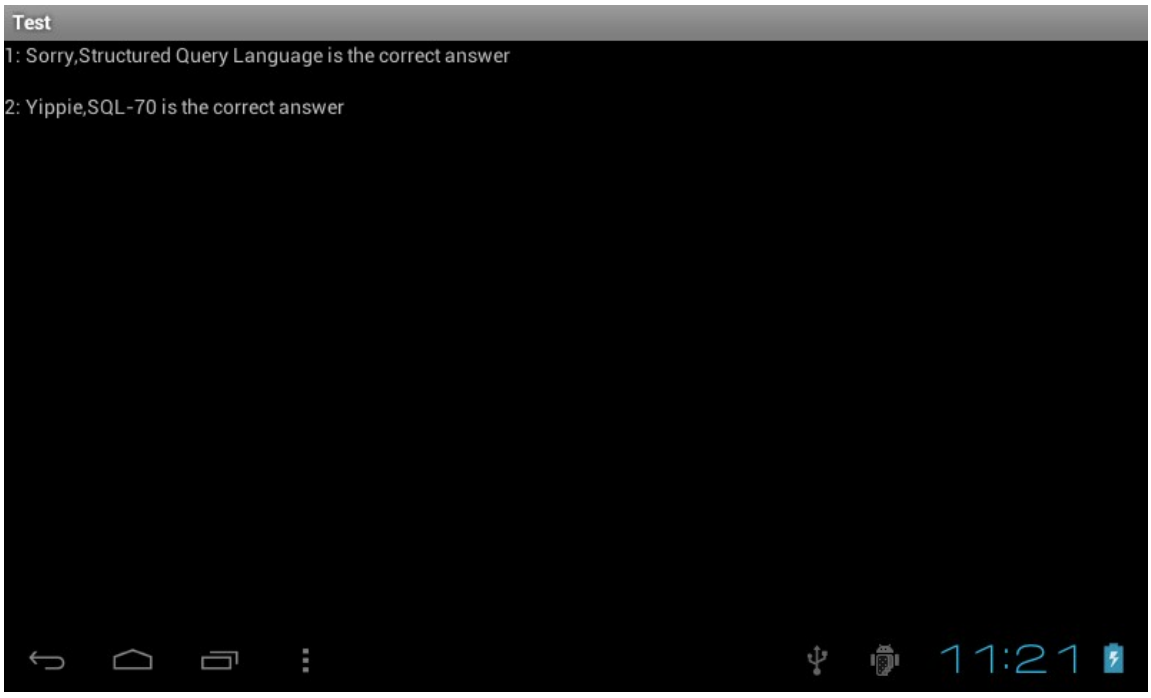
Figure(4.28)

- By clicking on next button,the next question is displayed after completing the quiz click on the submit button as shown in the figure below.



Figure(4.29)

- Then the result is displayed as shown in the figure below



Figure(4.30)

Summary and Conclusion

- **Summary**

- First we implemented the tree structure using ExpandableListView into a Sliding Drawer. The required XML was parsed using XML Pull Parser.

- This implementation was tested in Aakash tablet. The video files stored in the android device will be displayed through a List View in android.

- Video View was used to display the video.

- Seek to function was added with each topic to play the video from particular position. Both these features were integrated and again tested in the tablet. Menu for Bookmarks and Browse srt file was created using the Menu and Menu Items class in Android. For saving the new bookmarks Sqlite Database was used. For playing subtitles along with the video the corresponding file can be searched through a list of srt files.

- After Every 15minutes there will be a quiz session for better understanding of the topic.

- Transcripts also implemented for better understanding so that user can simultaneously listen and read the topic.

-

5.2Further Enhancements

- Supporting for different video formats .

- Playing the audio of the lecture in different languages.

6 References

IEEE recommended practice for software requirements specifications-IEEE standard 830-1993.

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