SYSTEM REQUIREMENT SPECIFICATION FOR E-LEARNING TOOL

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ABSTRACT

Virtual education is an emerging concept. Here the classes are not taken face-to-face in a classroom but through an electronic medium as a substitute. These virtual classrooms are gaining importance everyday and very soon they are going to be an integral part of our world.

Taking up these virtual classes through an electronic medium is termed as E-Learning. Today E-Learning is no more a technical word that only a few people know. It is turning to be a part of everyone's life whether a student, employee or a housewife all tend to use E-Learning in one way or another. Larger organizations are turning towards E-Learning solution for proving training digitally.

As the number of Internet access points are growing rapidly, E-Learning is also gaining a new peak. This electronic medium serves best for dissemination of information. E-Learning is proving itself as a boon for students especially for the disabled who are not able to go and attend the lectures. All these emphasis the need for developing an Open Source software that can be used to generate rich multimedia presentation for E-Learning.

INTRODUCTION

This Software Requirements Specification specifies the requirements of the E-Learning tool using which people can generate multimedia presentations combining video, HTML, images and slides and publish it as a web page that is viewable an all popular web browsers.

Purpose:

The purpose of this software requirements specification is to verify that all the specifications are correct and are verified. This document also serves to ensure that the software is traceable throughout its software development life cycle.

Intended Audience:

This SRS would be used by the following people

Developers: The developers would use this document to implement the functionalities and to ensure traceability of the software.

Testers: The testers would use this document to know the interfaces and to test the software accordingly.

Users: The users would use this document to verify if the requirements specified satisfy their needs.

Scope of the project:

The purpose of this proposed Open Source software is to enable the creation of rich multimedia presentation that combines video frame with a slide frame and a table of contents that goes over the major portions of the presentation.

The deliverables of the software should be a presentation file with a hosting HTML page as a single compressed folder. This presentation can then be published in the Internet.

This project has a lot of scope for future development. Features like ability to capture videos for making presentation, templates for presentation, video transition effects and many more such functionalities can be implemented in the later versions of the software.

Overview of the document:

The first section of the document gave a brief description about the need of E-Learning tool and what it should establish. In the following sections we will describe the requirements, assumptions, dependencies, constraints and other such concepts about the software.

Overall description

Product Perspective:

E-Learning tool should enable the users to develop a rich multimedia presentation combining presentation slide, video and images. This software can be used for developing e-learning courses that can later be released on the Internet or delivered in some other electronic medium.

Product Features:

Some of the important features that this software should deliver are

1. Output an HTML file with video frame, slide frame and a table of contents. This HTML page must be viewable in all popular browsers.
2. Provide buttons for forwarding and rewinding the video.
3. The users should be able to click on some arbitrary link in the table of contents and start the video corresponding to that cue point with the appropriate presentation slide being displayed.
4. During execution of the presentation when the video reaches the next cue point change the presentation to the next slide.

User Classes and Characteristics:

There will be a wide variety of users for this software.

Educational Institutions: Institutions that conduct virtual classes would use this software for generating their e-learning courses.

Large Organizations: Organizations training their employees digitally would use this software for generating their training classes.

Open Source Community: As our product is going to be an Open Source product the Open Source community will use this software and implement additional functionalities to the product. Being an Open Source product this software and its code could be reused either partially or fully by other developers.

Operating Environment:

This product will be developed using Open Source software's like JAVA. So we would preferably use LINUX Operating System for developing this software.

Software Requirements:

Programming Environment: Net Beans
Platform: Linux / Windows.

Design and implementation constraints:

For ensuring platform independence of the software the implementation will be JAVA so the end users system must have a JAVA run time environment.

User Documentation:

A user document should be provided at the end of the development. It should have the following

1. A readme file to help the user with the installation of the software.
2. A well documented user manual.

Assumptions and Dependencies:

Assumptions: We have made the following assumptions

1. The user already has presentation slides (say ppt, ps etc), video and images for making the multimedia presentation.
2. The user has some previous knowledge of using similar software's.

Dependencies:

1. This software would need JAVA runtime environment and some additional packages for working.
2. It will need a player for previewing the video in the presentation.
3. It will need a web browser for viewing the published presentation.

Data Requirements:

Inputs: The software needs a number of inputs for generating the multimedia presentation. The inputs that the software will take are

1. Videos
2. Images
3. HTML
4. Presentation slides

Output: The user can preview the presentation at any point of time but multimedia presentation that can be viewed in a browser is given only as the final output.

General Constraints, Dependencies & Assumptions:

This software will need presentation slides, videos and images as inputs. The users need to generate all these inputs using other mediums.

User view of the software:

This software will have graphical user interface that are very user friendly. The user will have no difficulty in working with these user interfaces. The users will import required files into the software's window, place these files on the time line and edit the duration these files should be displayed.

Then the users can publish a multimedia presentation. All these operations will be made easy by the software's user interfaces.

External Interface Requirement:

The user interface is an important part of this software and will make the software very user friendly.

Input Screen:

The input screen should have some icons that will be used for opening the browse window and importing the input files. It should also show the files that are being imported. This screen should also have a time line over which the imported files can be placed and the duration of the files in the presentation can be adjusted.

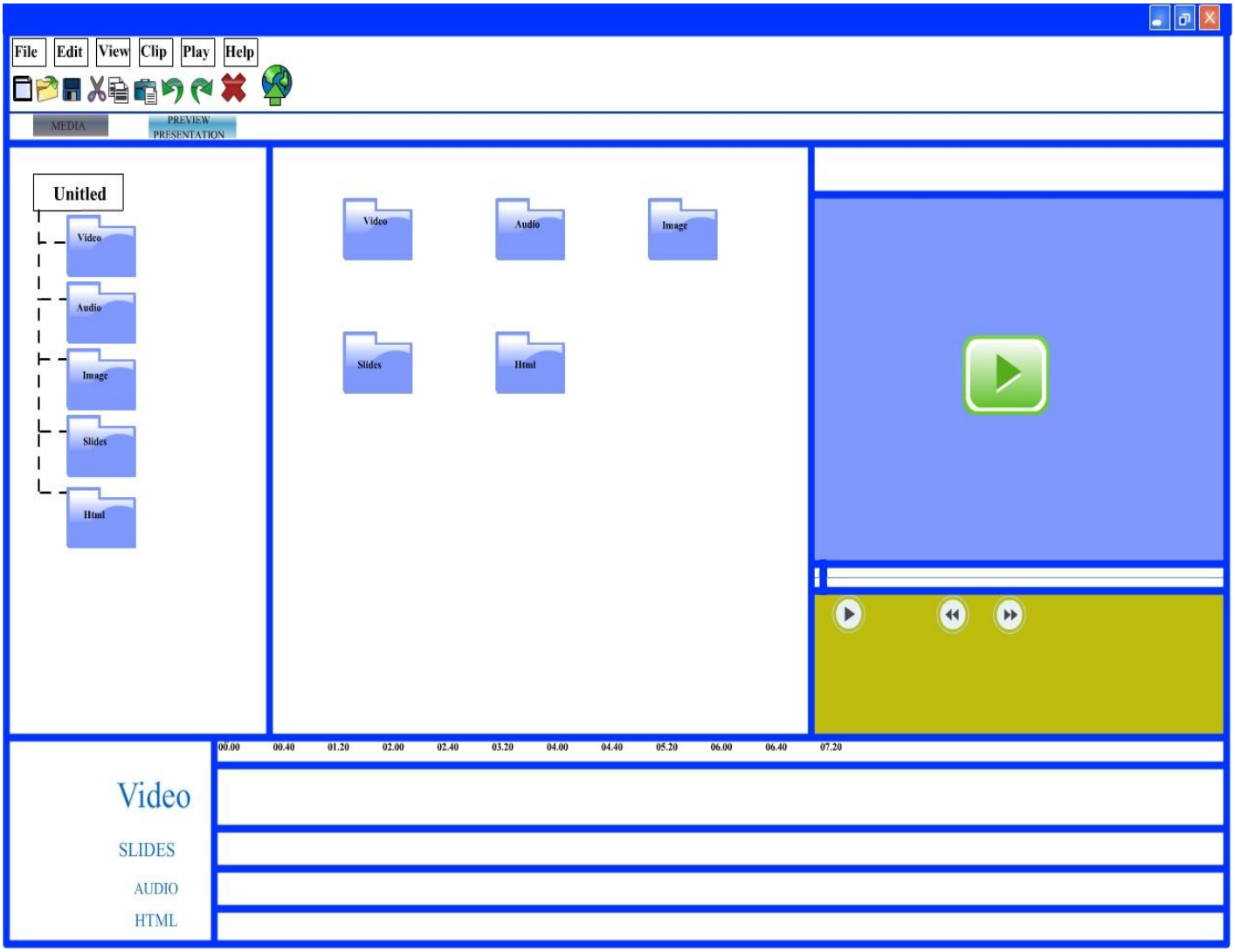
Preview Screen:

The preview screen should be able to show the presentation slides, video and the table of contents as a complete multimedia presentation.

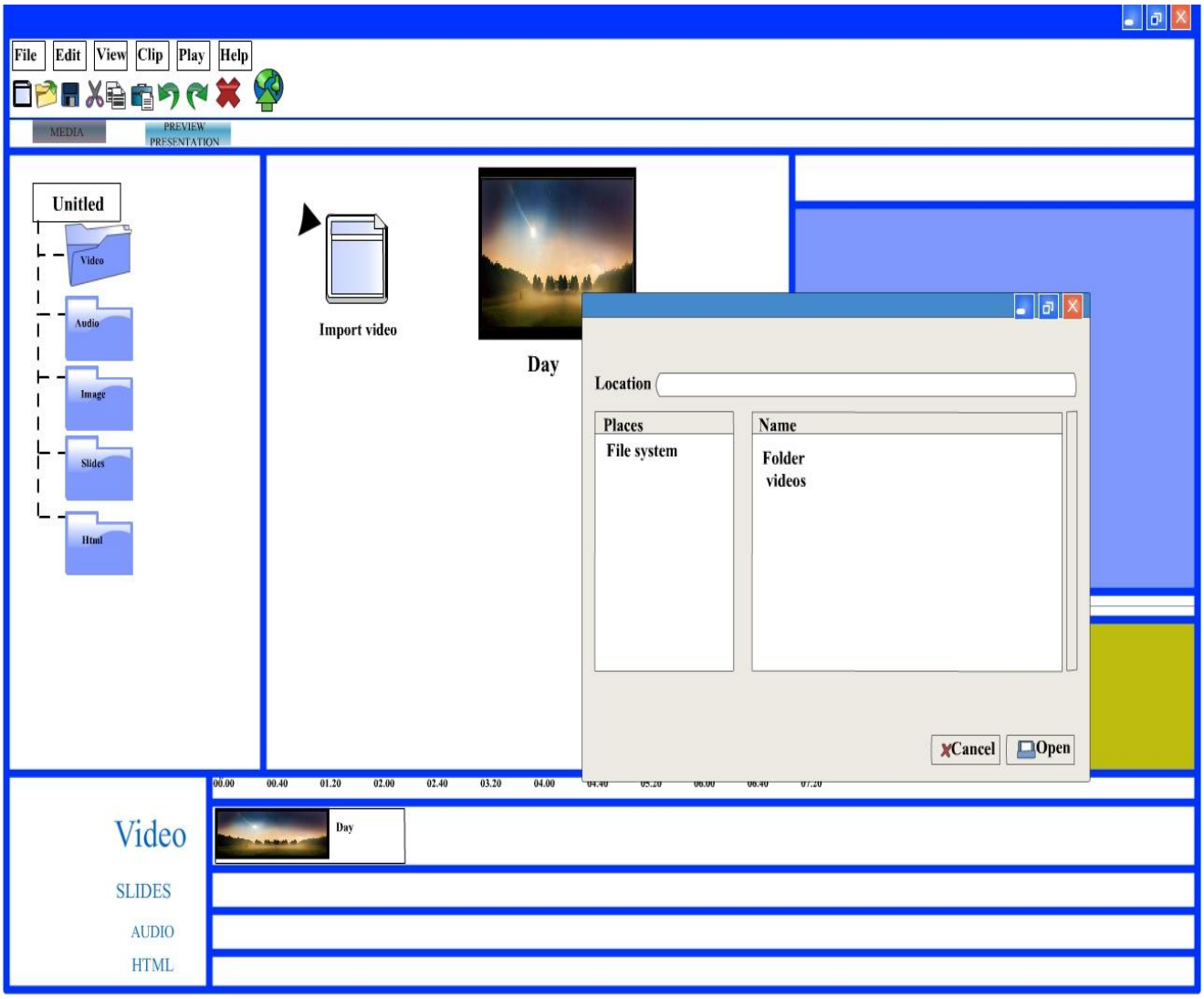
Publish Screen:

The publish screen must get the input from the user about where to store the presentation. It should show some animation representing the status of the publishing wizard.

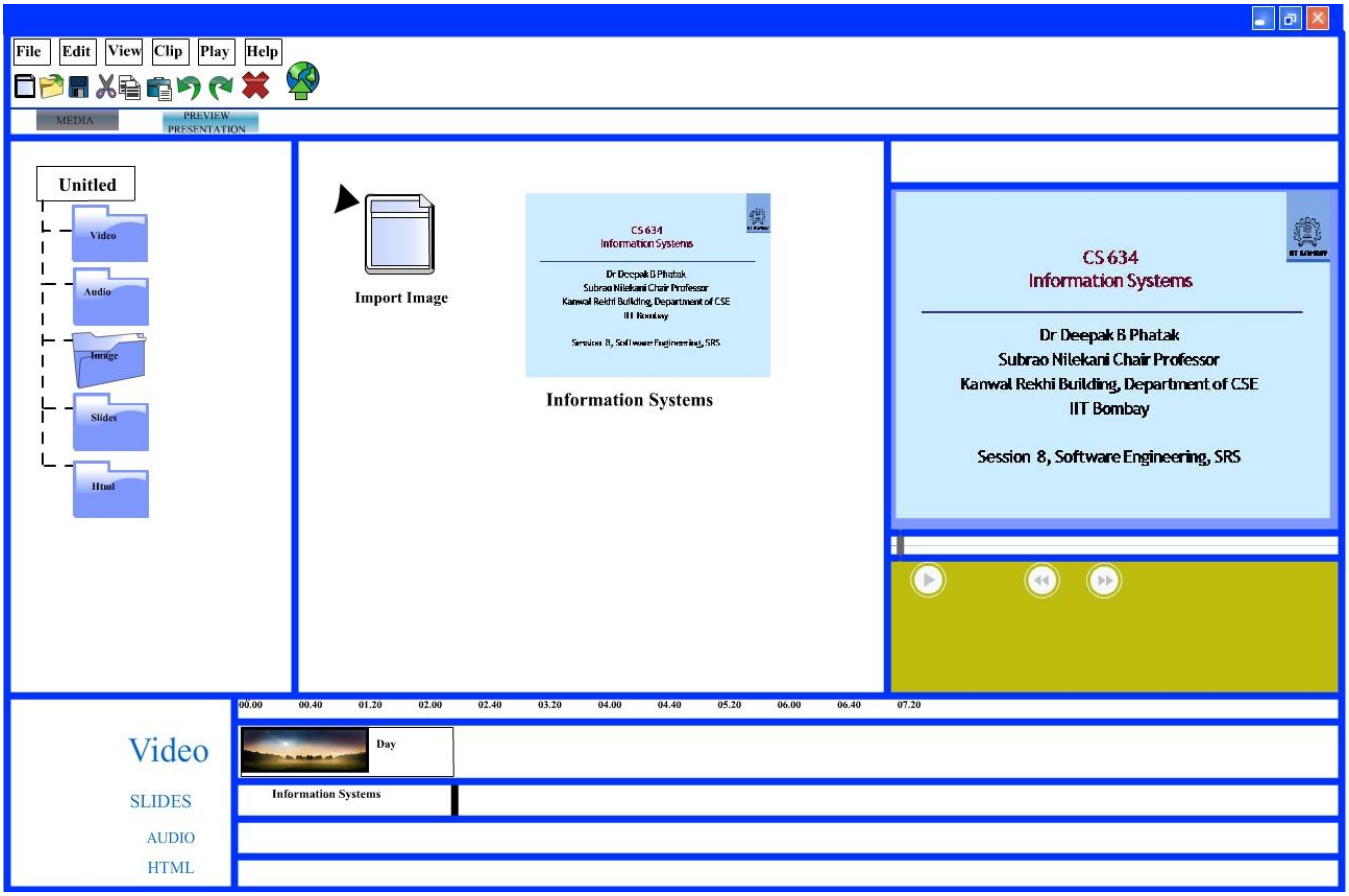
The user interfaces of this software are expected to be as follows



Start up screen

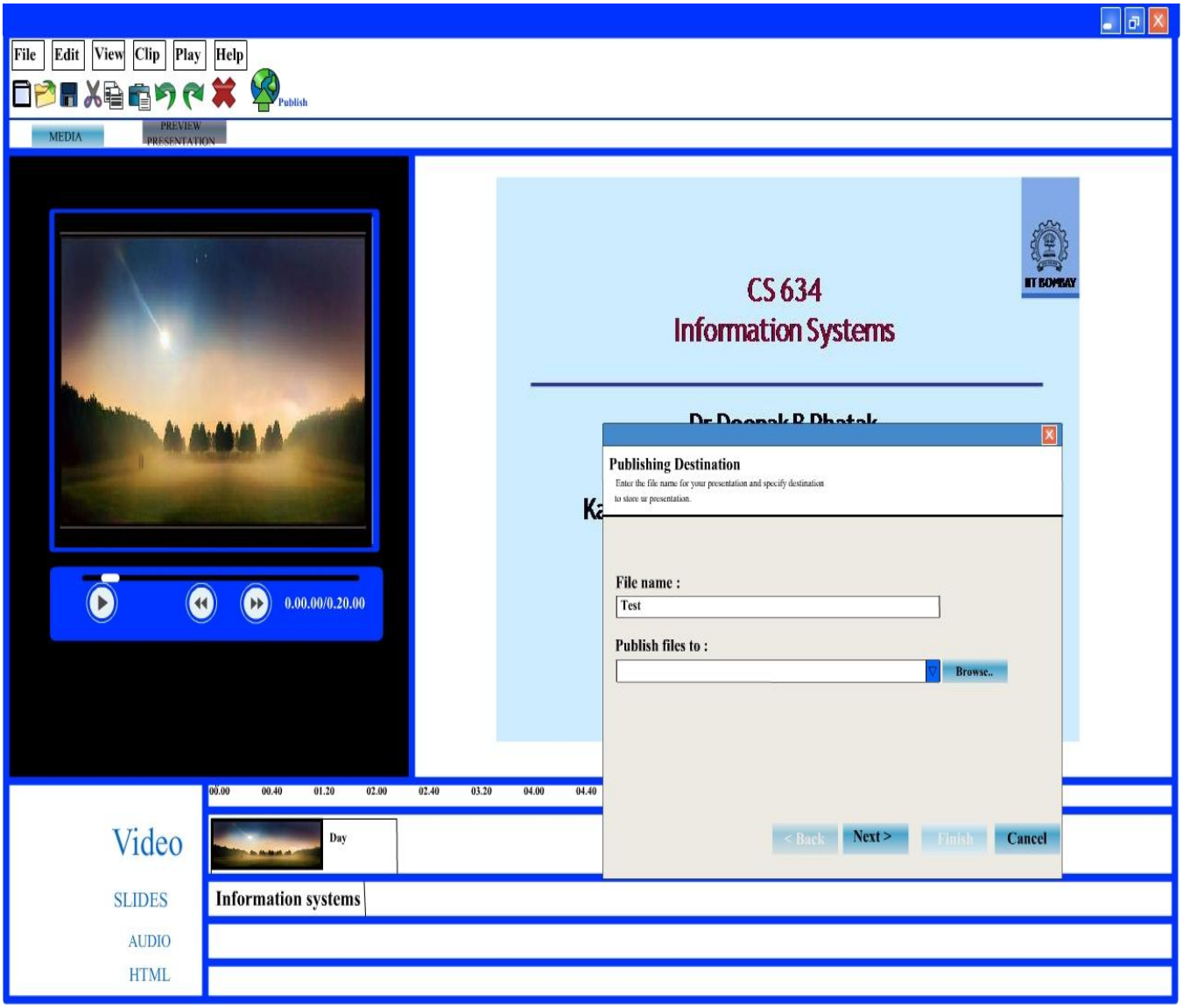


Getting a video input

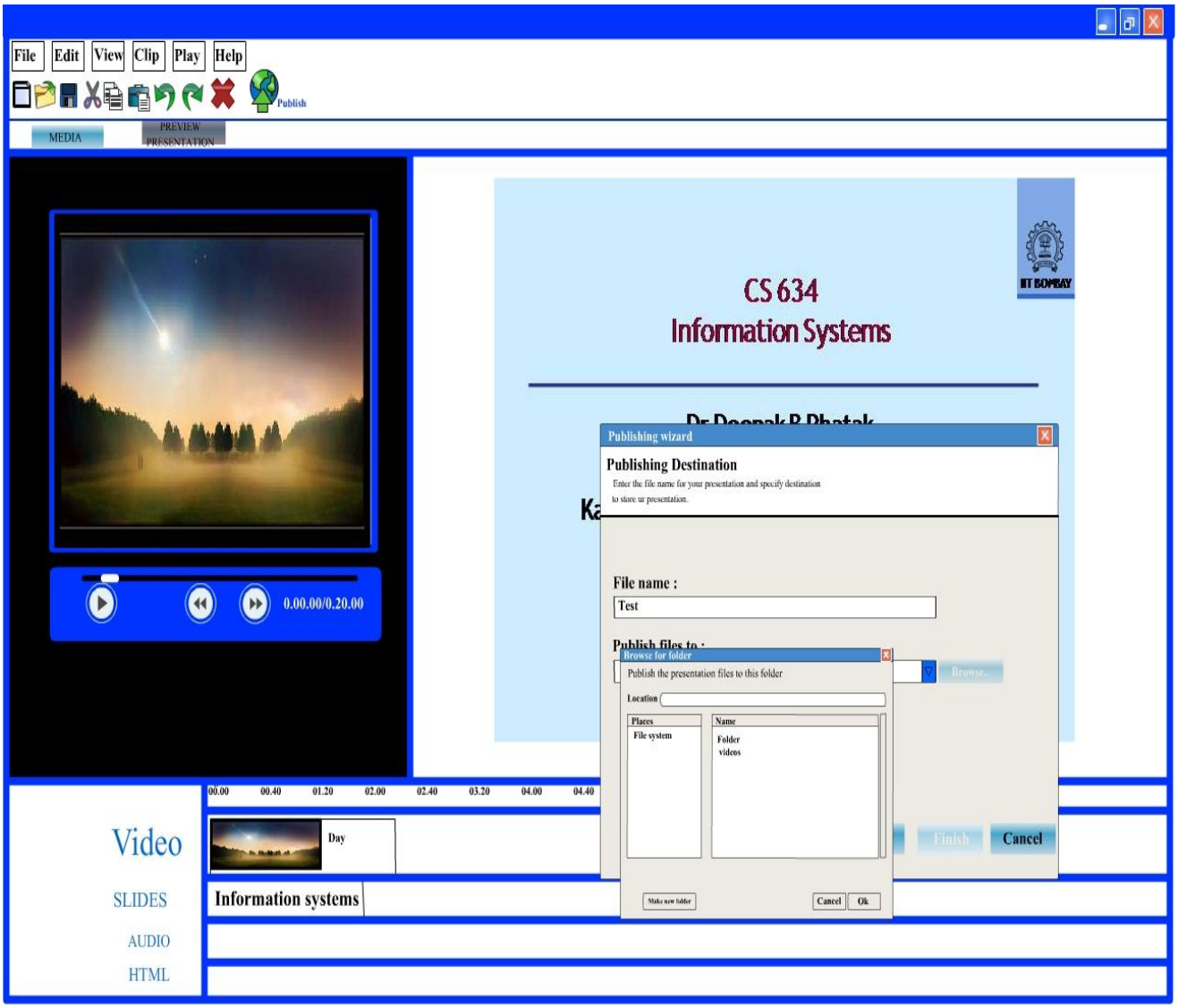


Getting a presentation slide as input

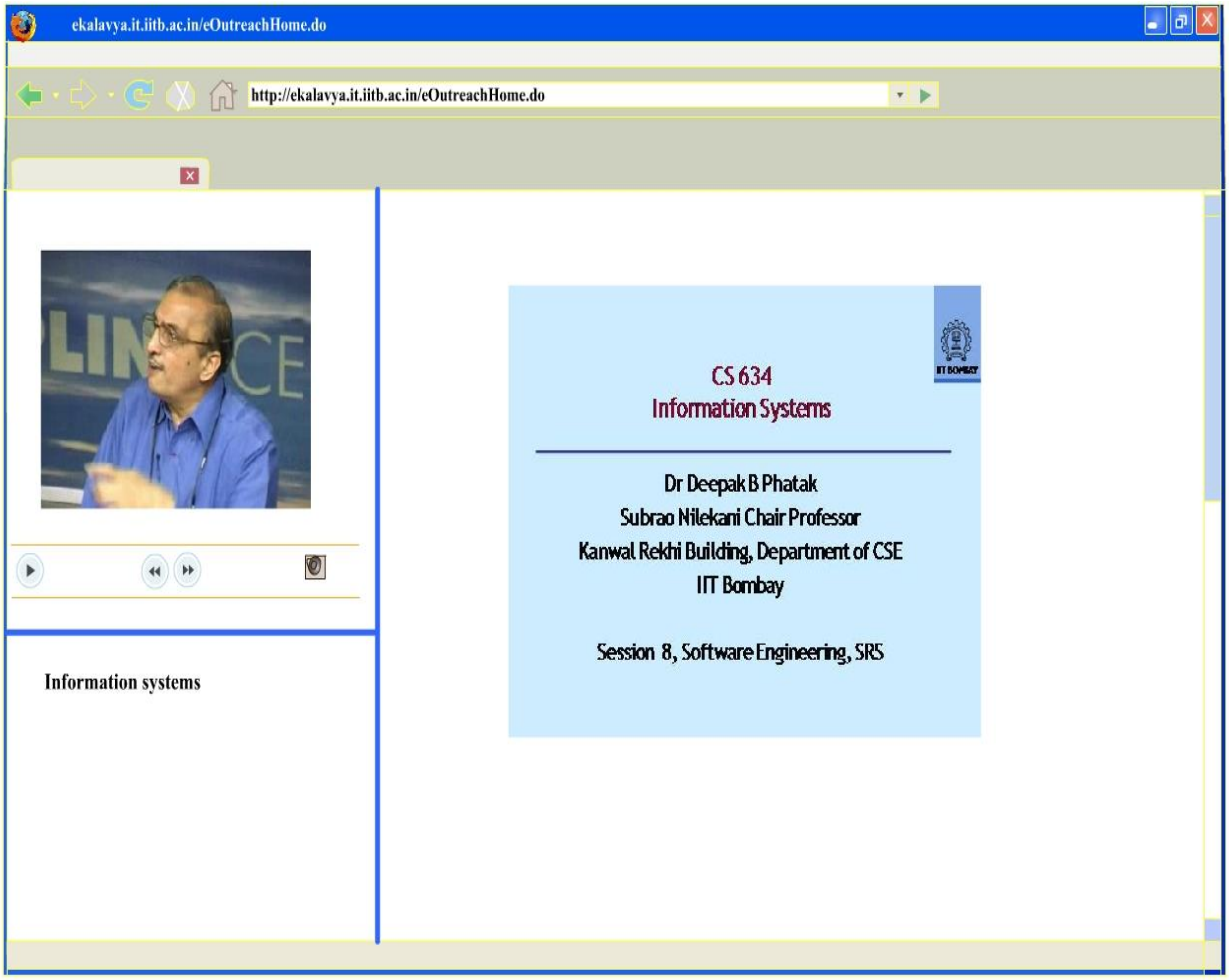
Preview screen



Publishing wizard



Getting destination folder in publishing wizard



Final output window

Hardware Interface:

1) E-learning tool will procedure a rich multimedia presentation and so a microphone or a speaker is needed on the hardware side for listening to the audio output.
2) Screen resolution of at least 800*600 or above will be preferable for viewing the multimedia presentation.

Software Interface:

It should be possible for E-learning tool to be implemented in both Windows and Linux Operating System environments.

The GUI and other parts of the E- learning tool software are to be done in JAVA. It should also embed a player within itself for presentation.

The output of this software will need a web browser for viewing it.

System Functionalities

Import and Organize media elements:

This software should be able to import video files, image files, HTML files and presentation slides specified by the user. Then the user should be able to organize these imported files over the time line and associate them with time and create cue points. It should then convert these media elements into compatible format.

Synchronize the media elements:

These converted files should then be synchronized. The various files are synchronized with one another and also with the time line for generating a single output.

Preview:

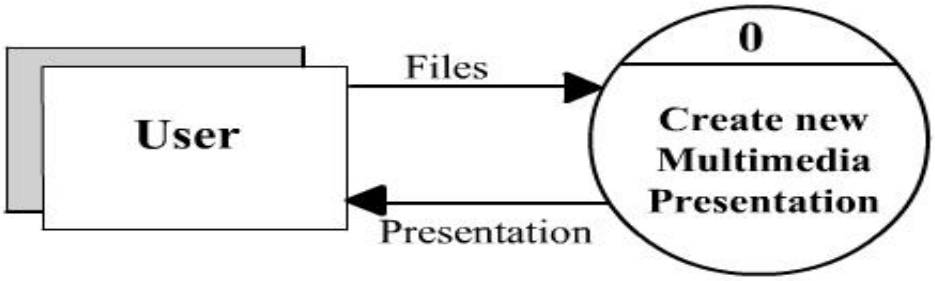
This software should allow the user to preview the presentation at any point when the presentation is being developed. It should have a preview tab selecting which would open the preview screen. The user can preview the presentation in this screen.

Publish:

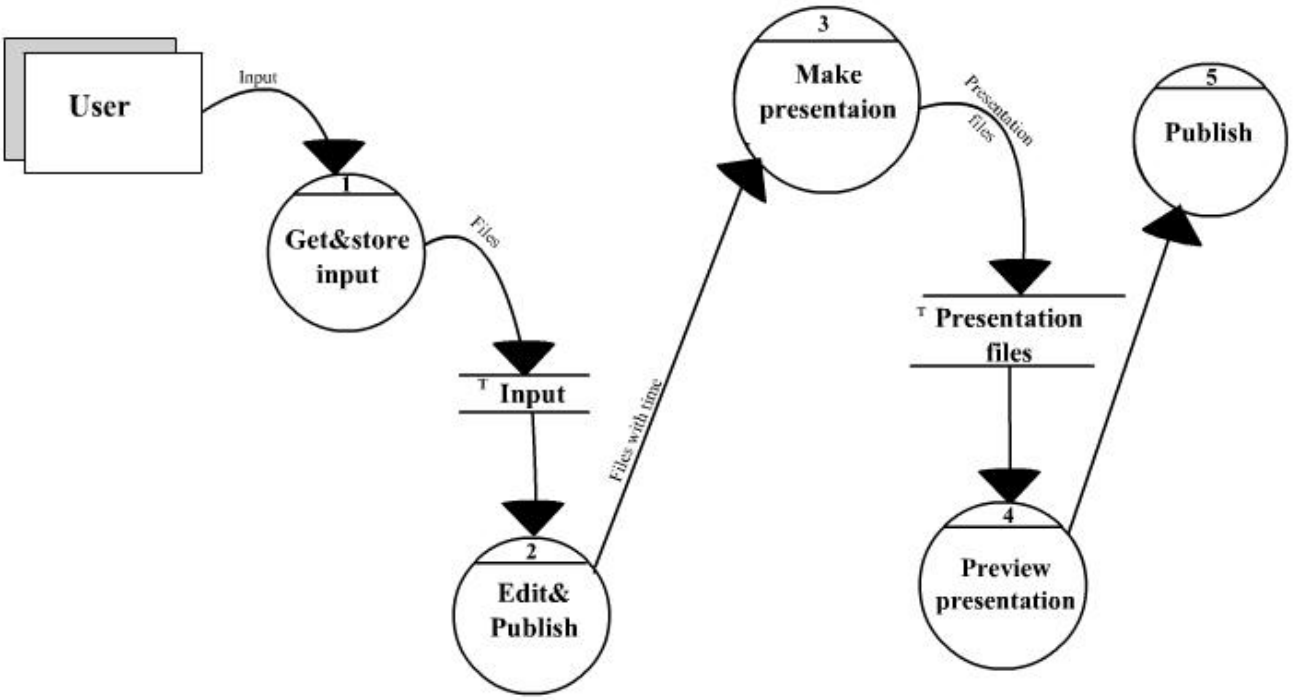
The E-Learning tool should generate a HTML page which would host the multi media presentation. It should make the HTML page and all the associated contents into a single compressed folder. The generated HTML page must be viewable in all web browsers. This E-Learning tool should have the following functionalities.

Dataflow Diagram

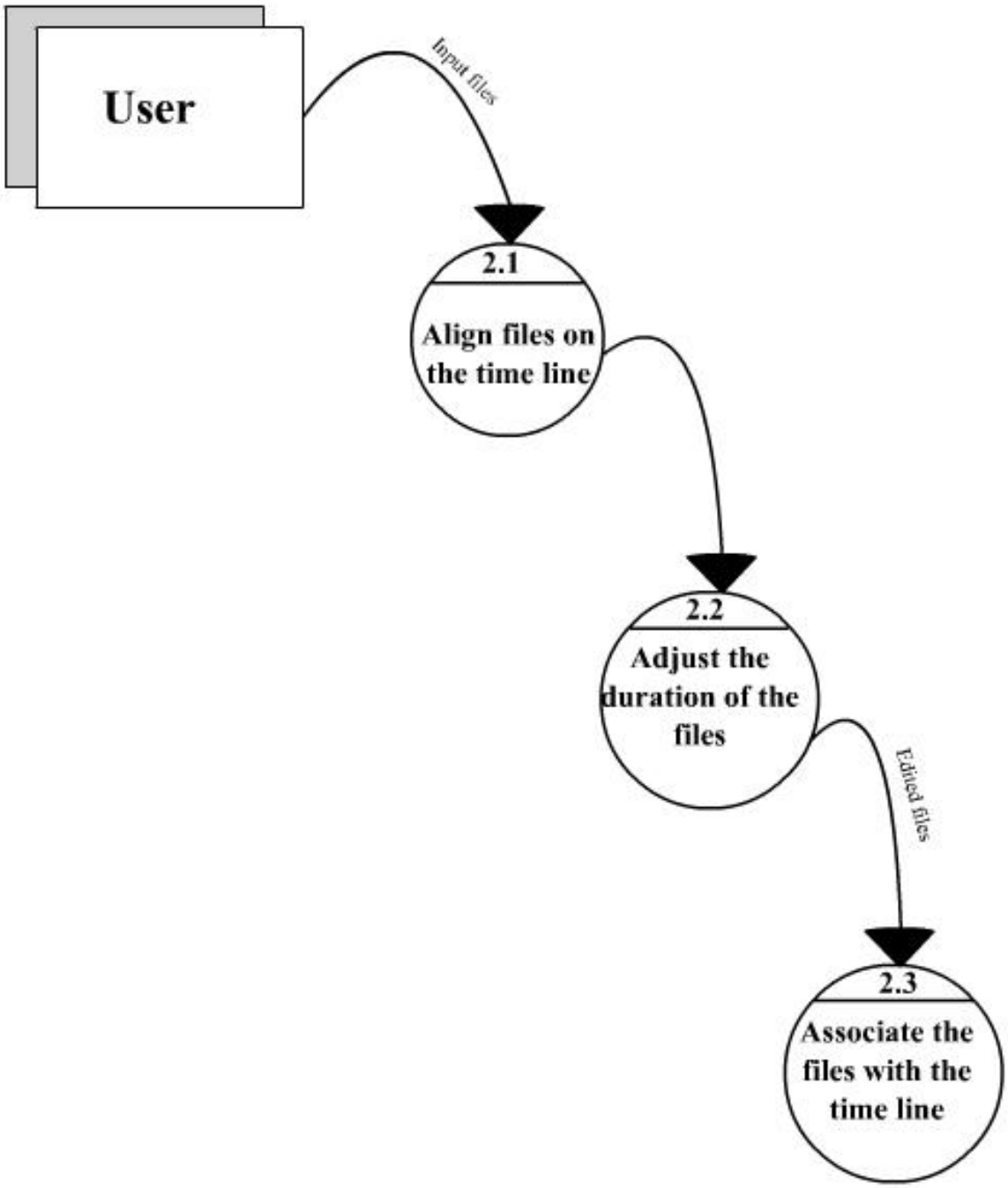
LEVEL 0



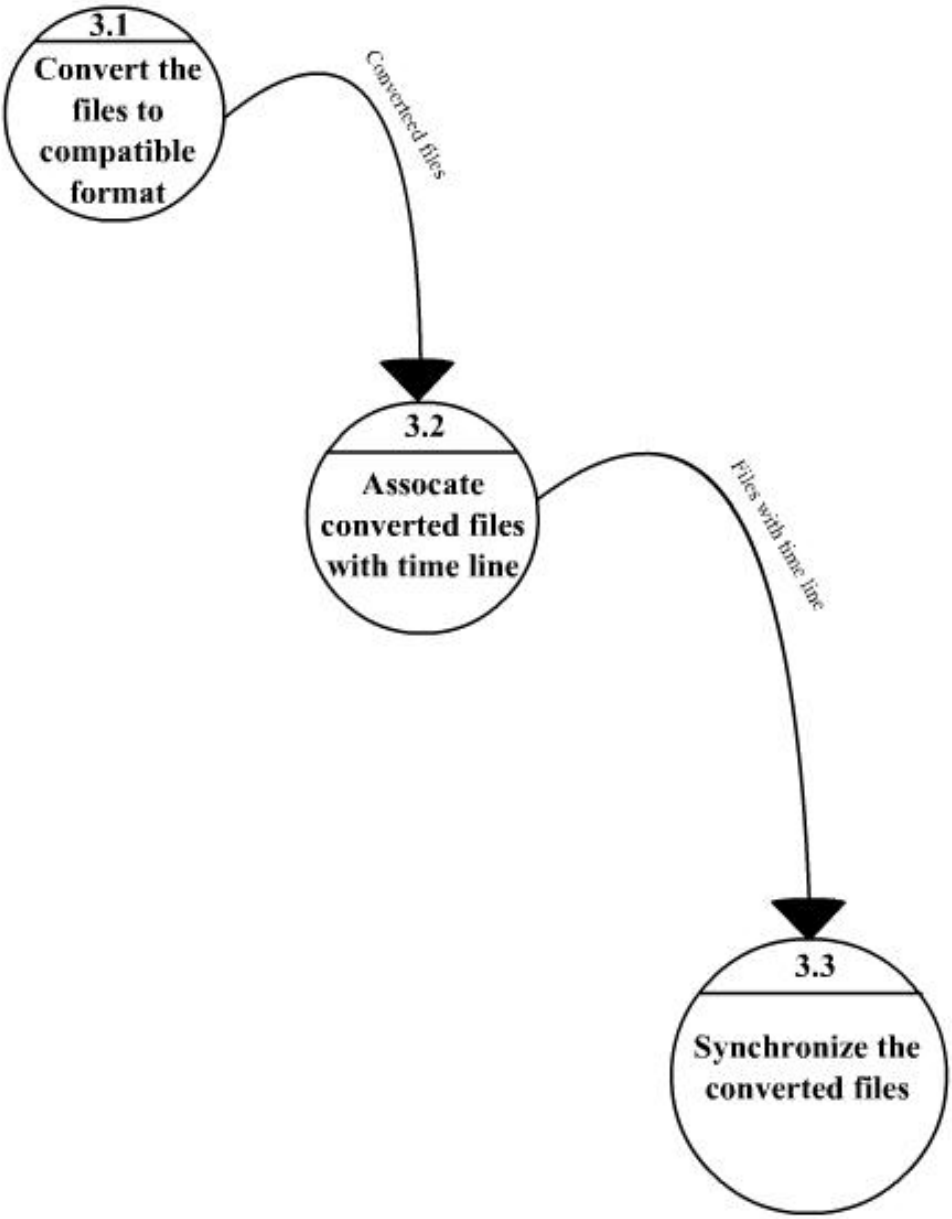
LEVEL 1


User
Input
1
Get&store input
Files
T Input
2
Edit& Publish
Files with time
3
Make presentaion
Presentation files
T Presentation files
4
Preview presentation
5
Publish

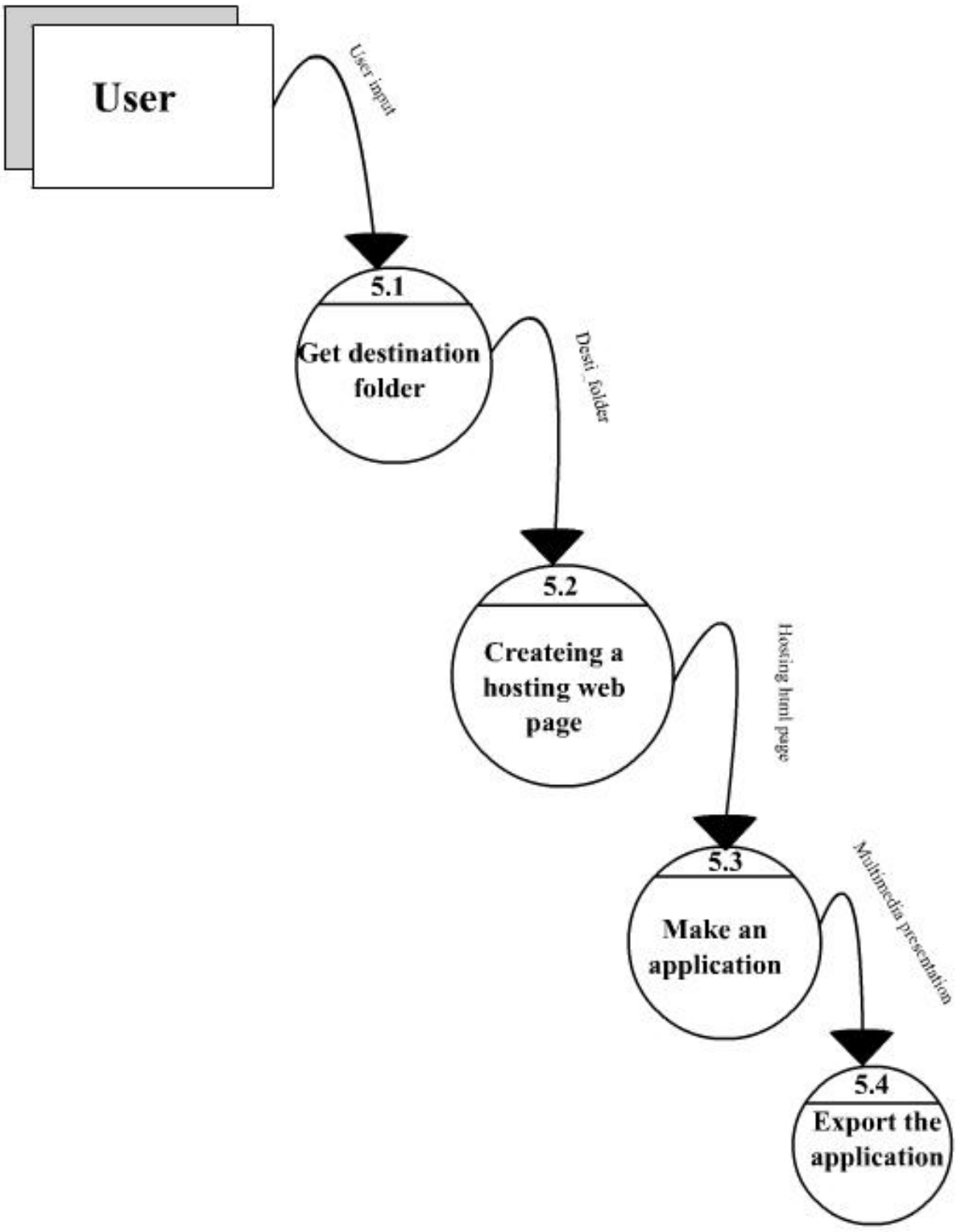
LEVEL 2


User
Input files
2.1
Align files on the time line
2.2
Adjust the duration of the files
Edited files
2.3
Associate the files with the time line

LEVEL 2


3.1
Convert the files to compatible format
Converted files
3.2
Assocate converted files with time line
Files with time line
3.3
Synchronize the converted files

LEVEL 2


User
User input
5.1
Get destination folder
Desti_folder
5.2
Createing a hosting web page
Hosting html page
5.3
Make an application
Multimedia presentation
5.4
Export the application

Non Functional Requirements

Performance Requirements:

This software should perform the same way irrespective to its Operating System environments. Time taken for importing files and publishing the multimedia presentation should be minimum.

Safety Requirements:

This requirement does not apply for our software as this is can't pose a threat in no way.

Security Requirements:

As all the operations are to be done within a single system security is not an issue for this software.

Quality requirements:

Quality has a number of attributes some of the important attributes for this software are

Portability: As this software is to work on multiple platforms portability is an essential attribute and we ensure this by using JAVA as our programming language.

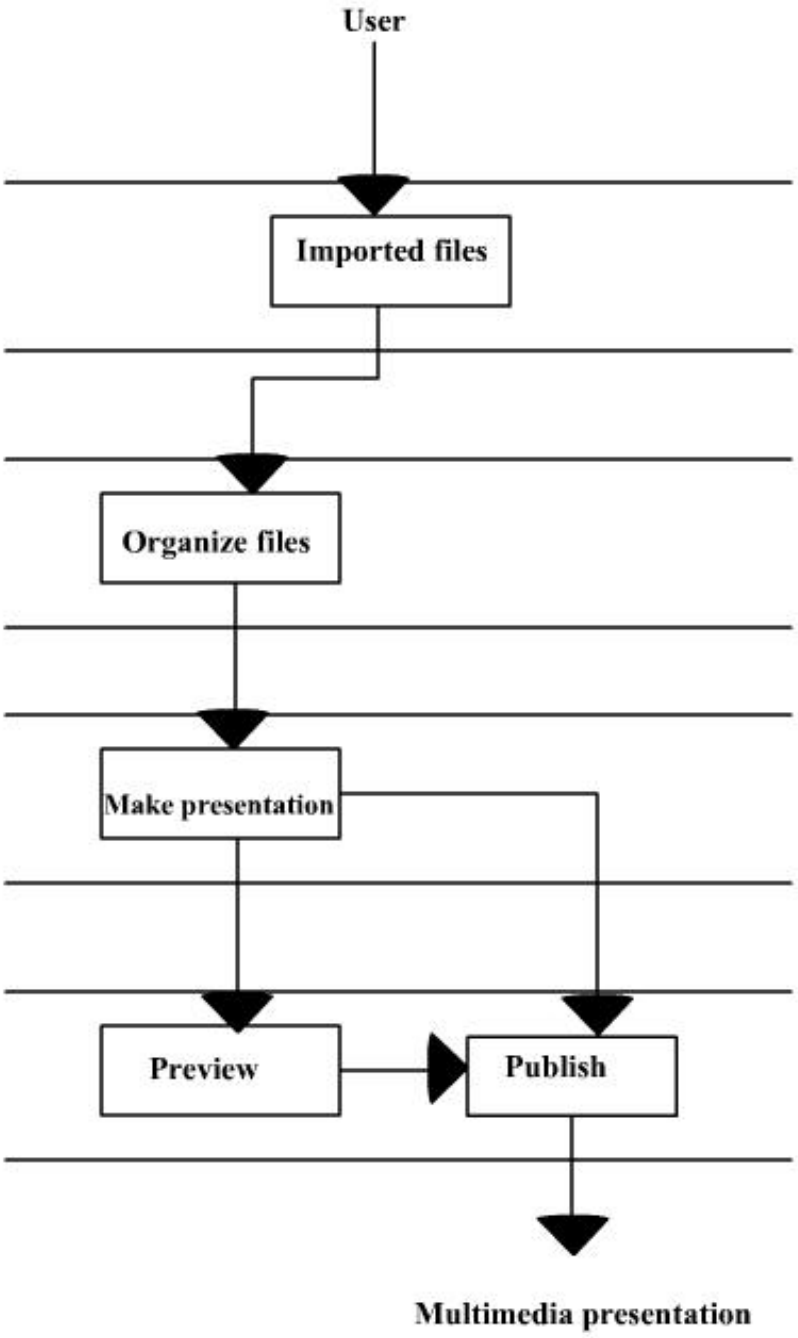
User Training: We assume that the users already have some previous experience in working with similar software's. So the users will not need any specific training for using this software.

Testability: As a basic characteristic the software needs to be testable to ensure correctness.

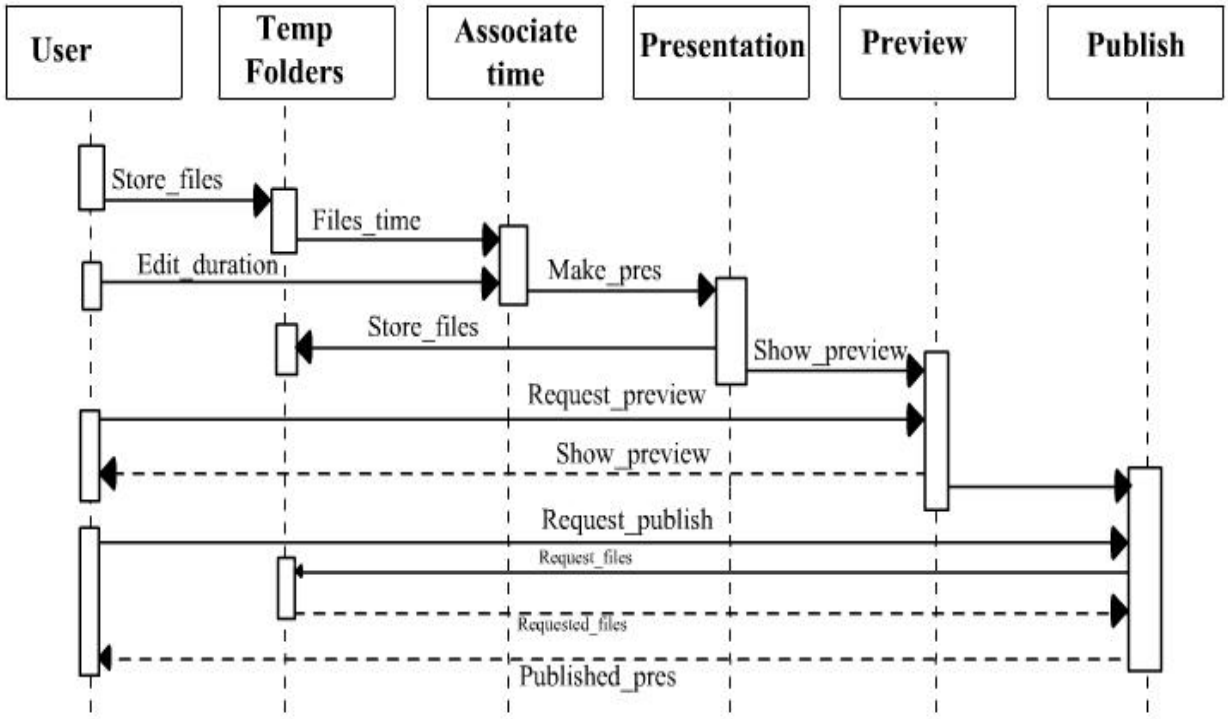
Work flow

1. The software imports the input files .
2. They are placed on the time line and the duration of each file in the presentation are adjusted.
3. These files are converted into compatible format and synchronized to make a multimedia presentation.
4. The presentation can be previewed and published.
5. The multimedia presentation is given as the output.

Workflow diagram



Sequence diagram



Appendices

Definition, Acronyms and Abbreviations:

E-Learning : Electronic learning.
Virtual classes: Classes that are taken through a electronic medium as a substitute.
User: The person who will use the product.
Presentation slide: Presentation such as ppt, pps,ps,etc..
Multimedia presentation: Presentations containing multimedia elements like video, images, etc..

References:

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