MULTIMEDIA TRANSCODER

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Problem Statement

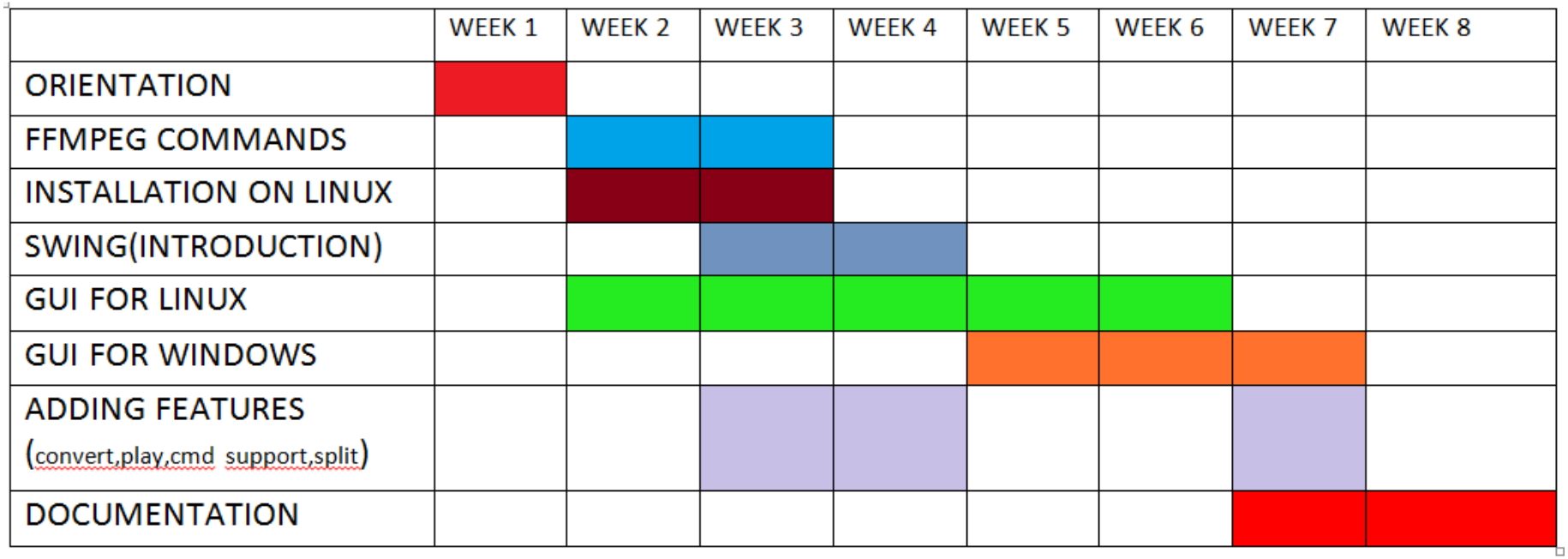
To create a Multimedia Transcoding tool to convert video/audio to different formats that are supported by different platforms

e.g. Aakash tablet, HTML5 browsers

Approach

- Identified tool for converting(FFmpeg).
- Tested FFmpeg for different formats, time taken for conversion, checked the quality of output audio/video file
- Tested video formats compatible on Aakash tablet(3gp,mp4) and HTML5(webM,mp4) based browsers
- Installed FFmpeg and dependent libraries on Ubuntu
- Created GUI in Java Swing for Ubuntu environment
- Added features like progress bar,command line support,themes,media player
- Ported the same GUI for Windows OS

Gantt Chart

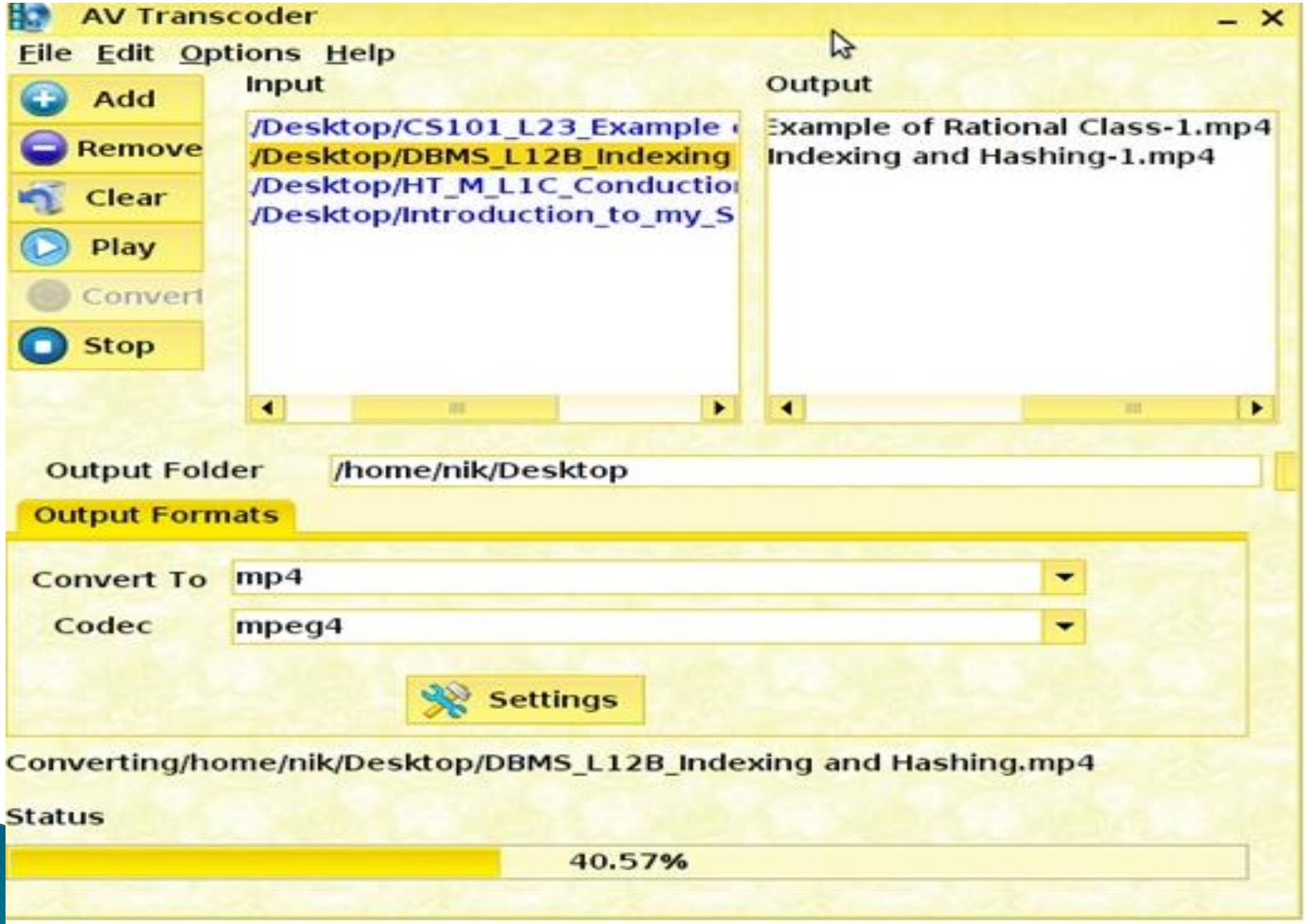


	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
ORIENTATION								
FFMPEG COMMANDS								
INSTALLATION ON LINUX								
SWING(INTRODUCTION)								
GUI FOR LINUX								
GUI FOR WINDOWS								
ADDING FEATURES (convert,play,cmd support,split)								
DOCUMENTATION								

About FFmpeg

- Its an open source tool
- FFmpeg is the leading multimedia framework, able to decode, encode, transcode, mux, demux, stream, filter and play most of the audio/video file formats available today
- FFmpeg tools includes FFmpeg, FFserver, FFplay and FFprobe which can be used by end users for transcoding, streaming, playing media files, files details respectively

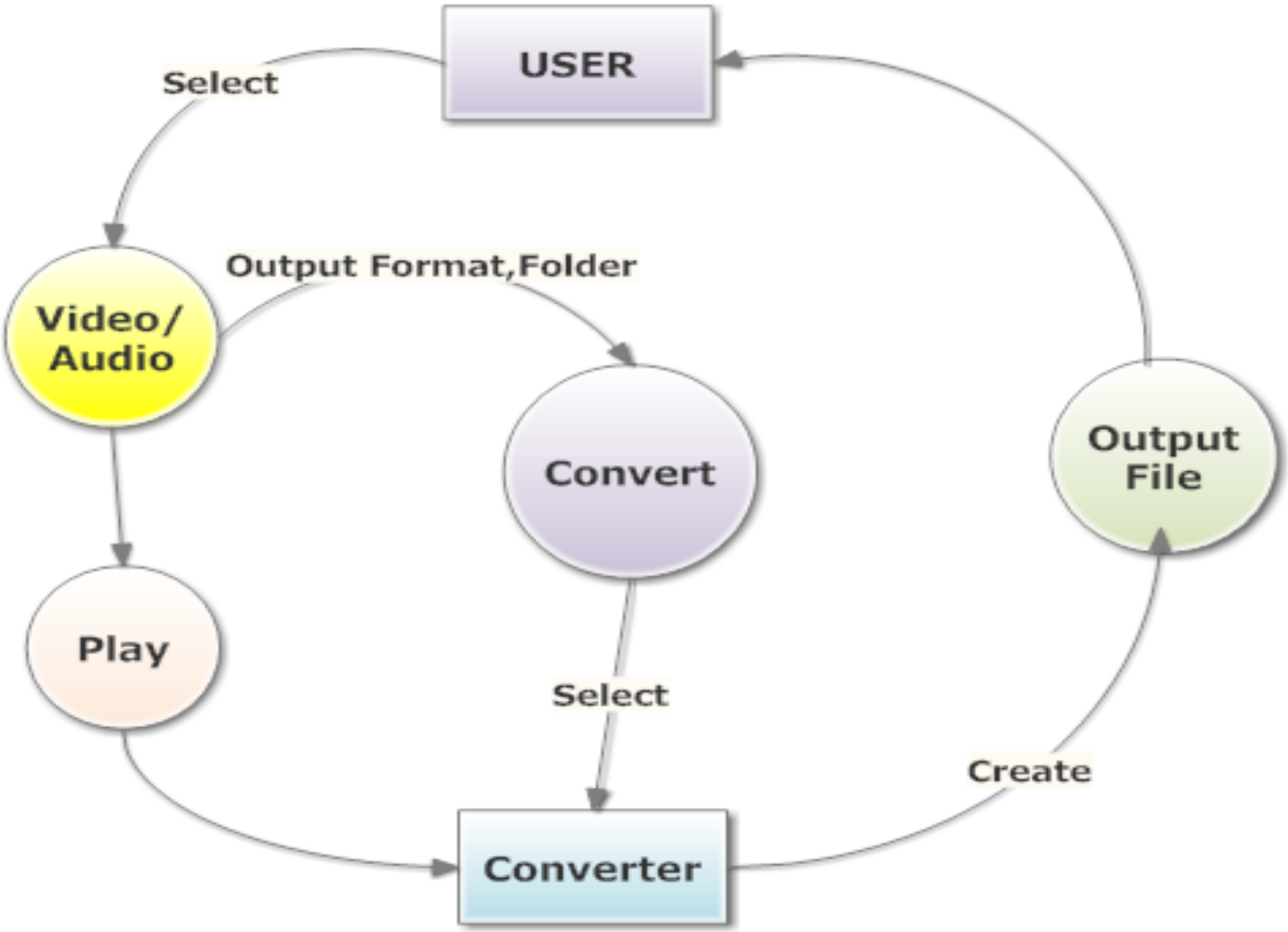
Credits: www.ffmpeg.org


AV Transcoder
File Edit Options Help
Add
Remove
Clear
Play
Convert
Stop
Input
/Desktop/CS101_L23_Example
/Desktop/DBMS_L12B_Indexing
/Desktop/HT_M_L1C_Conductio
/Desktop/Introduction_to_my_S
Output
Example of Rational Class-1.mp4
Indexing and Hashing-1.mp4
Output Folder
/home/nik/Desktop
Output Formats
Convert To
mp4
Codec
mpeg4
Settings
Converting/home/nik/Desktop/DBMS_L12B_Indexing and Hashing.mp4
Status
40.57%

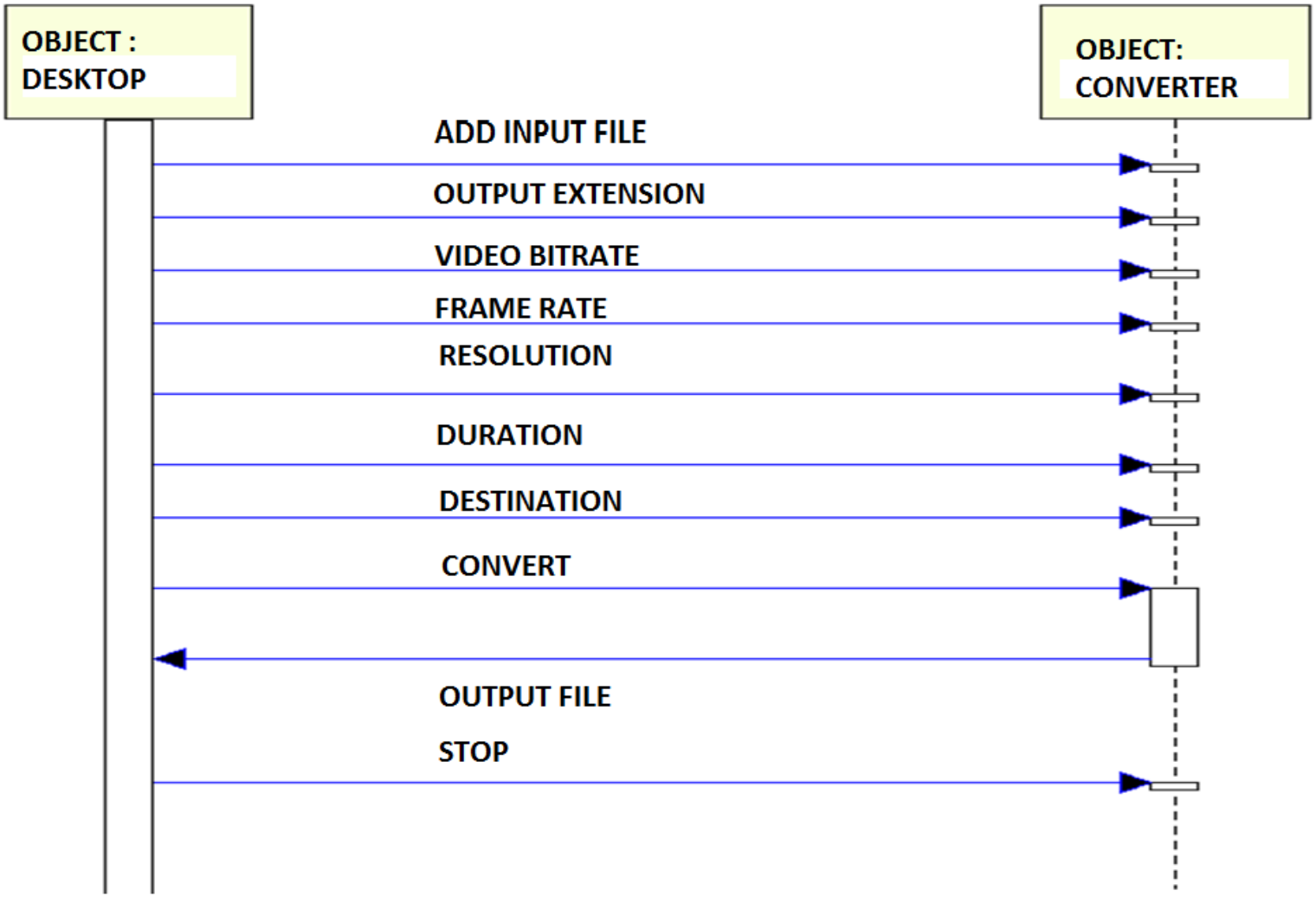
Main features

- Converter
- Split video
- Audio extraction

DFD FOR “AV Transcoder”

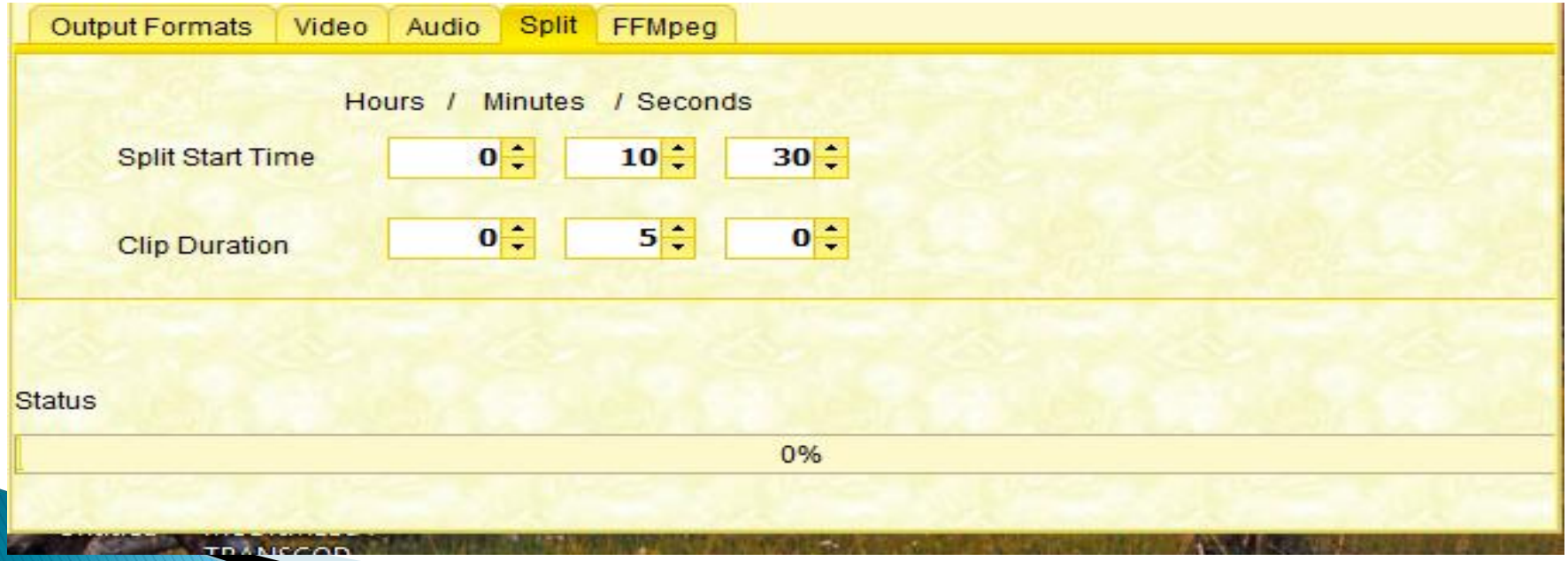


Video-Video conversion



SPLIT

- Video/Audio can be split from any point by specifying the start time and duration
- While we split we can convert the video at the same time

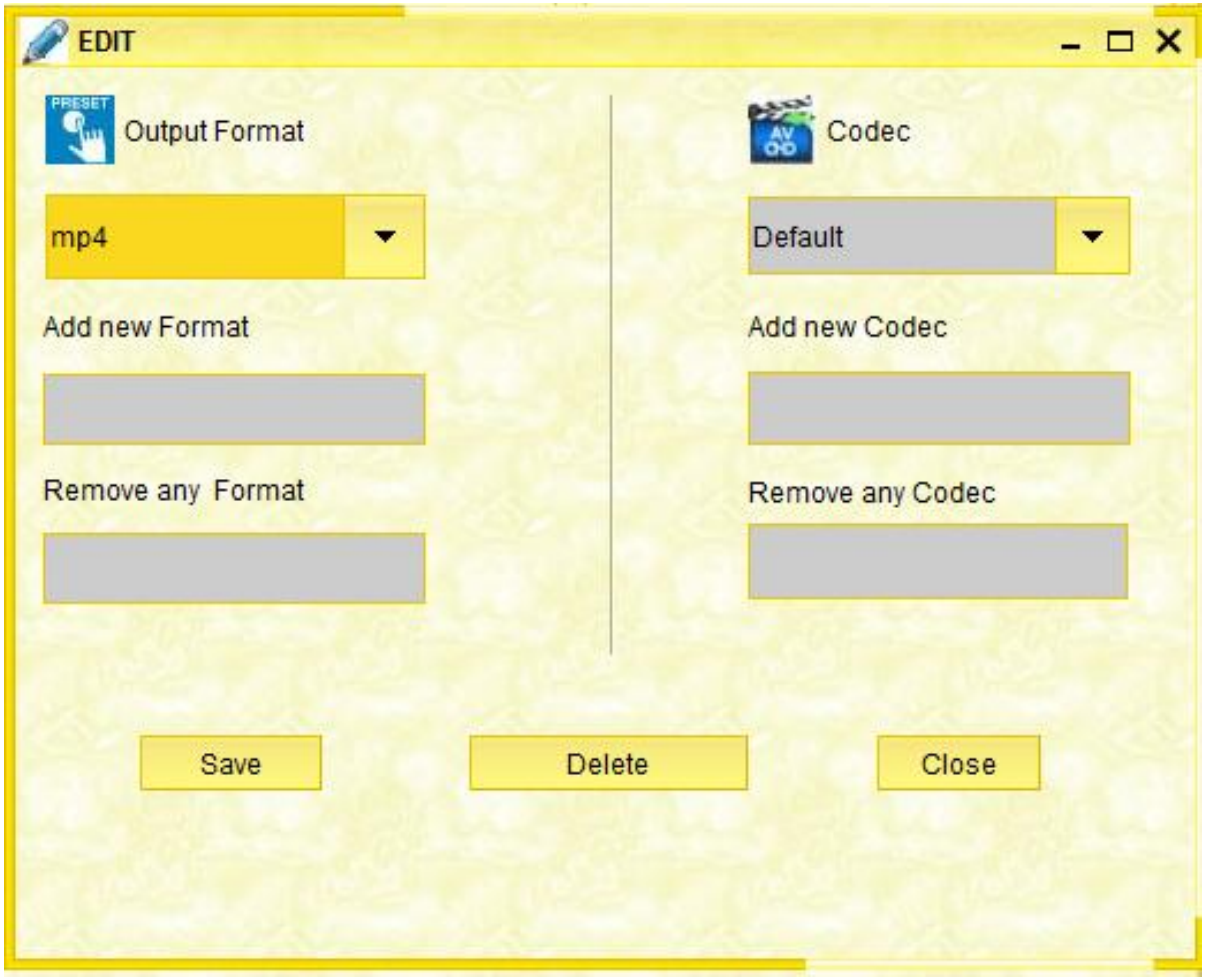


Audio Extraction

any video format (mp4,3gp,avi etc)

audio format(mp3,aac etc)

AV Transcoder uses Json to add and delete formats and codec.



Demo

A.V.Transcoder

How is “AV Transcoder” useful for Aakash Tablet?

- Aakash tablet supports mp4 and 3gp formats and with “AV transcoder” videos from other formats can be easily converted to these formats.
- The compressed video will have its size reduced so it will require less memory ,thus many videos can be stored in limited memory space of Aakash.

  eg.size of a 219 MB lecture was reduced to 29 MB when Mpeg-4(H264) was converted to Mpeg-4(H263) and adjusting video bit rate and resolution without noticeable change in the quality when played on Aakash tablet.
- Set the settings depending upon the quality of video required

  frame rate
  video bit rate
  resolution
  aspect ratio
  audio sample rate
  audio bit rate
  audio channel
- Split
- Audio extraction

CONVERT REPORT

	TYPE	SIZE (MB)	DURATION	VIDEO CODEC	RESOLUTION	FRAME RATE	AUDIO CODEC	SAMPLE RATE	TIME TAKEN TO CONVERT
CS101_L23_Example of Rational Class.mp4	Video	219	38 MIN 16SEC	H264-MPEG-AVC	720x576	25	MPEG AAC	48000Hz	
CS101_L23_Example of Rational Class.mp4	Video	28.5	38 MIN 16SEC	MPEG4	320x240	25	MPEG AAC	48000Hz	6 Min 26 sec
CS101_L23_Example of Rational Class.3gp	Video	9.2	38 MIN 16SEC	MPEG4	176x144	25	AMR	8000Hz	6 min 2 sec
CS101_L23_Example of Rational Class.3gp	Video	22	38 MIN 16SEC	MPEG4	352x288	25	AMR	8000Hz	7 min 36 sec
CS101_L23_Example of Rational Class.mp3	Audio	18.4	38 MIN 16SEC				MPEG Audio layer	48000Hz	1 min 10 sec

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REFERENCES

- www.ffmpeg.org
- Transcoding -Wikipedia
- Java Swing (Robert Eckstein, Marc Loy and Dave Wood)
- JAVA-Complete Reference
- stackoverflow.com
- Codec-Wikipedia


Thank You

QUESTIONS