G.C.E. O/L Grade 11 ICT · Lesson 4

4.3 Audio and Video Editing: Recording, Trimming, Formats and Software

Syllabus 13.3. You record the principal's speech at the prize-giving, a song for the school concert or a short video about the school garden. In this note you will learn how sound is **recorded** (sample rate and bit depth), how to **edit audio** in **Audacity** – trim, cut, split, fade, volume and noise reduction – the common **audio formats**, video **resolution** and **formats**, and how to **edit a video** on a **timeline** with transitions and titles, then **export** it.

1. Recording sound

A **microphone** changes sound waves into an electrical signal. The computer **measures (samples)** this signal thousands of times each second and stores each measurement as a number. **Sample rate** = samples per second (CD quality = **44,100 Hz = 44.1 kHz**). **Bit depth** = bits for each sample (CD = **16-bit**). Higher values = better quality but bigger files.

Worked example (uncompressed WAV, stereo = 2 channels): 44,100 × 16 × 2 × 60 s ÷ 8 = **10,584,000 bytes ≈ 10.09 MB** for one minute. That is why we usually save as **MP3**.

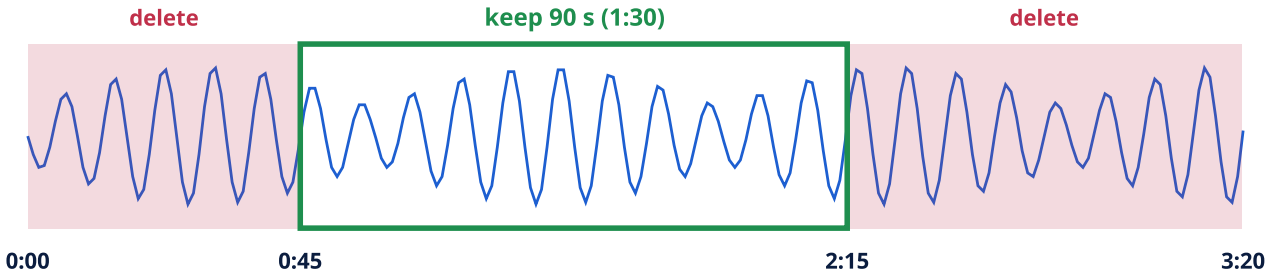
> 💡 Record in a quiet room, keep the mic about a hand-width from your mouth, and do a short test first.

2. Editing audio in Audacity

Edit	What it does
Trim	Remove unwanted parts at the start and end
Cut / Split	Cut a part out, or split one clip into two
Fade in / Fade out	Sound grows from silence / dies away smoothly
Amplify / Volume	Make the sound louder or softer
Noise reduction	Remove fan or traffic hiss

Example: the recording of the principal's speech is 3:20 long. You only need the prize-giving part from **0:45 to 2:15**. Select it and use **Trim** (Ctrl+T) – everything else is deleted. Kept = 135 − 45 = **90 s (1:30)**; removed = 110 s. Then add a **2 s fade-in** and a **3 s fade-out** so it does not start or stop suddenly.

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Trim: keep 0:45 → 2:15 of a 3:20 speech recording in Audacity
කප්පාදුව: 3:20 කථන පටිගත කිරීමෙන් 0:45 → 2:15 තබා ගැනීම

Figure 4.7 – Trimming a speech in Audacity: keep 0:45 → 2:15 (90 s), delete the rest.

> 💡 Time in m:ss → seconds: minutes × 60 + seconds. 2:15 = 2 × 60 + 15 = 135 s.

3. Audio file formats

Format	Compression	Notes
MP3	Lossy	Small; music and podcasts
WAV	Uncompressed	Best quality; very large
AAC / M4A	Lossy	Better than MP3 at the same size; phones, YouTube
OGG (Vorbis)	Lossy	Free and open format

4. Video basics – resolution and frame rate

A **video** is many frames (pictures) per second **plus a sound track**. Like images, video has a **resolution** in pixels. Phones usually record at **30 fps** (or 60 fps for smooth sport).

Name	Pixels (w × h)	Total pixels
720p (HD)	1280 × 720	921,600
1080p (Full HD)	1920 × 1080	2,073,600
4K (UHD)	3840 × 2160	8,294,400

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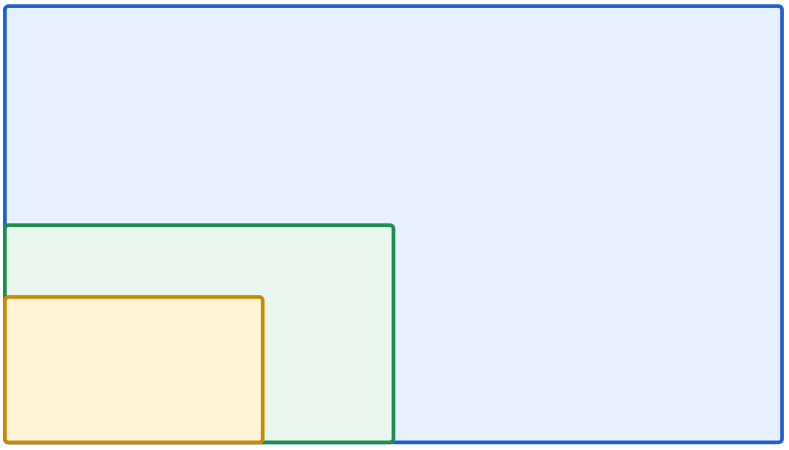


Figure 4.8 – 720p, 1080p and 4K drawn to scale. 4K has four times the pixels of Full HD.

Video format	Notes
MP4	Most common; phones, YouTube, WhatsApp
AVI	Old Windows format; large files
MOV	Apple QuickTime; iPhone videos
MKV	Holds many audio and subtitle tracks

5. Editing a video on a timeline

Step	What you do
Import	Bring clips, photos and music into the project
Timeline	Put clips in order on video and audio tracks
Trim / Split	Keep only the useful part of each clip
Transitions	Fade or dissolve between two clips
Titles and captions	Add text on the video
Export / Render	Save the finished video as MP4

Example: a video called **“Our School Garden”**. Each clip is trimmed so only the useful part is kept: Title 5 s, Interview with the teacher 80 s, Students planting trees 35 s, Credits 10 s. The finished video is 5 + 80 + 35 + 10 = **130 s (2:10)**.

Clip	Original length	Keep (start → end)	Kept
Title: Our School Garden	0:05	0:00 → 0:05	5 s
Interview with the teacher	2:30	0:20 → 1:40	80 s
Students planting trees	1:00	0:10 → 0:45	35 s
Credits	0:10	0:00 → 0:10	10 s

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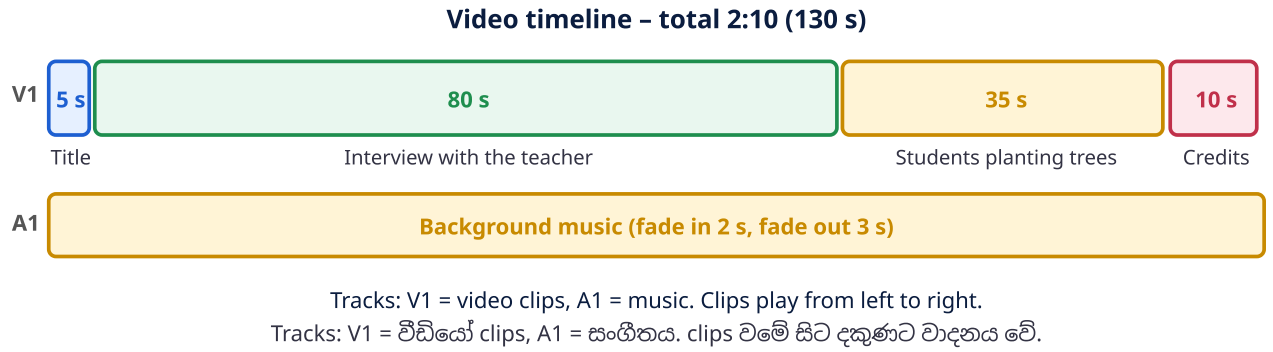


Figure 4.9 – Video timeline: four trimmed clips on track V1 and music on track A1 (total 2:10).

💡 **Save** keeps the project file (you can still edit). **Export/Render** makes the final MP4 that others can watch. Always keep the project file too!

6. Audio and video software

Audacity Audacity	**OpenShot** OpenShot
Shotcut Shotcut	**DaVinci Resolve** DaVinci Resolve
CapCut CapCut	**Microsoft Clipchamp** Microsoft Clipchamp

NEW 2026 **2026:** Editors like CapCut, Clipchamp and DaVinci Resolve now have **AI tools**: automatic captions, background-noise removal and “remove silence”. Always check auto-captions – they often get Sinhala and Tamil names wrong.

Key Words

Microphone – Changes sound into an electrical signal.	**Sample rate** – Number of sound measurements per second (Hz).
Bit depth (audio) – Bits used to store each sample.	**Trim** – Keep the selected part and delete the rest.
Split – Cut one clip into two at the playhead.	**Fade in / out** – Sound or picture slowly starts or ends.
Noise reduction – Removing background hiss or hum.	**Video resolution** – Pixel size of video frames, e.g. 1080p.
Timeline (video) – Tracks where clips are arranged in time order.	**Transition** – An effect between two clips, e.g. fade.

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Export / Render – Making the final video file, e.g. MP4.

Codec / format – How audio or video is stored, e.g. MP3, MP4.

Sample Q&A

1. What is sample rate?

> **Answer:** The number of sound samples taken each second, e.g. 44.1 kHz.

2. Which audio format is uncompressed?

> **Answer:** WAV.

3. A 3:20 recording is trimmed to 0:45–2:15. How long is it now?

> **Answer:** 90 s (1:30).

4. What does fade-out do?

> **Answer:** Makes the sound get softer until silence at the end.

5. What is the pixel size of 1080p?

> **Answer:** 1920 × 1080.

6. Name a free audio editor and a free video editor.

> **Answer:** Audacity; OpenShot (or Shotcut).

MCQ

1. A device that changes sound into an electrical signal is a

A. microphone
B. scanner
C. webcam light
D. speaker

2. CD-quality sample rate is

A. 1080 Hz
B. 24 kHz exactly
C. 44.1 kHz
D. 8 Hz

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3. Size of 1 minute of uncompressed stereo audio at 44.1 kHz, 16-bit is about

A. 10.09 MB
B. 1 MB
C. 100 MB
D. 16 KB

4. A 3:20 speech is trimmed to keep 0:45–2:15. The kept part is

A. 200 seconds
B. 90 seconds
C. 135 seconds
D. 110 seconds

5. Keeping only the selected part and deleting the rest is

A. Fade in
B. Split
C. Trim
D. Amplify

6. Making music slowly get quieter at the end is

A. Fade in
B. Split
C. Noise reduction
D. Fade out

7. Removing the hum of a ceiling fan from a recording uses

A. Fade in
B. Crop
C. Noise reduction
D. Export

8. Which audio format is uncompressed?

A. MP3
B. OGG
C. AAC
D. WAV

9. Which is a free and open audio format?

A. AVI
B. OGG
C. MOV
D. BMP

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10. 1080p (Full HD) video is

A. 1920 × 1080
B. 1280 × 720
C. 3840 × 2160
D. 1080 × 1080

11. 4K video has how many times the pixels of 1080p?

A. 3
B. 4
C. 8
D. 2

12. The most common video format for phones and YouTube is

A. TIFF
B. WAV
C. MP4
D. GIF

13. Clips of 5 s, 80 s, 35 s, 10 s are joined. Total length?

A. 2:10
B. 1:30
C. 2:30
D. 1:10

14. A smooth fade or dissolve between two clips is a

A. caption
B. render
C. codec
D. transition

15. Which is a free audio editor?

A. Synfig
B. Audacity
C. Excel
D. Inkscape

Structured Questions

1. (i) What is sample rate? (1 mark)
(ii) Why is WAV much larger than MP3? (2 marks) *(3 marks)*

> (i) Number of samples taken per second (1). (ii) WAV is uncompressed (1); MP3 is lossy and removes sounds we hardly hear (1).

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2. Nimal recorded a 3:20 speech. He keeps 0:45 to 2:15.
(i) How long is the kept part in seconds? (2 marks)
(ii) Name the Audacity tools to remove the rest and to make the start smooth. (2 marks) *(4 marks)*

> (i) 135 − 45 (1) = 90 s (1). (ii) Trim (1); Fade in (1).

3. Give the pixel size of 720p and 4K, and one advantage and one disadvantage of 4K. (4 marks) *(4 marks)*

> 720p = 1280 × 720 (1); 4K = 3840 × 2160 (1); advantage: much sharper picture (1); disadvantage: very large files / needs more storage and a strong computer (1).

4. List the steps to make a 2-minute school garden video in OpenShot. (5 marks) *(5 marks)*

> Import clips and music (1); place them on the timeline in order (1); trim/split clips to the useful parts (1); add transitions and titles (1); export as MP4 (1).

5. What is the difference between saving a project and exporting a video? (2 marks) *(2 marks)*

> Save keeps an editable project file (1); export makes the final video file (e.g. MP4) to share (1).

Summary

- Microphone records; sample rate (44.1 kHz) and bit depth (16-bit) set quality.
- Audio size = rate × bits × channels × seconds ÷ 8 bytes.
- Edit: trim, cut/split, fade in/out, volume, noise reduction (Audacity).
- Kept length = end − start (convert m:ss to seconds first).
- Audio formats: MP3, AAC/M4A, OGG lossy; WAV uncompressed.
- Video: 720p 1280×720, 1080p 1920×1080, 4K 3840×2160; 30 fps typical.
- Video formats MP4, AVI, MOV, MKV; edit: import, timeline, trim, transitions, titles, export.
- Software: Audacity, OpenShot, Shotcut, DaVinci Resolve, CapCut, Clipchamp.

MCQ answer key – 4.3

1. **A** – Mic = input for sound.
2. **C** – 44,100 samples per second.
3. **A** – 44,100 × 16 × 2 × 60 ÷ 8 = 10,584,000 bytes.
4. **B** – 135 − 45 = 90.
5. **C** – Trim keeps the selection.
6. **D** – Fade out = slowly to silence.
7. **C** – Noise reduction removes steady background noise.
8. **D** – WAV stores raw samples.
9. **B** – OGG Vorbis is open.
10. **A** – Full HD = 1920 × 1080.

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11. **B** – 3840 × 2160 = 4 × (1920 × 1080).
12. **C** – MP4 plays almost everywhere.
13. **A** – 5 + 80 + 35 + 10 = 130 s = 2:10.
14. **D** – Transitions join clips smoothly.
15. **B** – Audacity edits sound.

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