

# Lesson 3: Good Vibrations

Computing

**Data Representation**

Dharini Krishnamoorthy

*Materials from the Teach Computing Curriculum created by the National Centre for Computing Education*



# Task 1 - The Form of Sound

You will be using the free audio editing software Audacity for this task.

## Part 1: Playback

<b>Steps</b>	<b>Instructions</b>
<b>Open</b> the sound file tone.mid.440.wav.	Use the menus: <b>File</b> ▷ <b>Open</b> Or Use the keyboard shortcut: Ctrl ⊕ O
<b>Play</b> the sound file.	Click the <b>Play</b> button. Or Press the Space key.



# Task 1 - The Form of Sound

## Part 2: Zooming in and out

Steps	Instructions
<p><b>Zoom in</b> on a section of the sound, until it becomes apparent that you are looking at a waveform.</p> <p>Note: To “zoom in” essentially means to view a shorter period of time.</p>	<p>Click on the <b>Zoom</b> tool or press F4. Then: Click to zoom in. Shift-click to zoom out.</p> <p>Alternative:</p> <p>Click on <b>Zoom-in</b> or press Ctrl ⊕ 1 Click on <b>Zoom-out</b> or press Ctrl ⊕ 3</p>

Repeat **parts 1 and 2** with files **octave-C1.wav** and **count.wav**.

Zoom in on the different waveforms and explore how different types of sound (simple tones, musical instruments, speech) have distinctly different waveforms.



# Task 1 - The Form of Sound

**Part 3:** Select and play a section of the audio

<b>Steps</b>	<b>Instructions</b>
<b>Open</b> the sound file count.wav.	
The distinct words in the audio are visible when you examine the form of the wave. <b>Select</b> one of the words in the audio.	Click on the <b>Selection</b> tool or press F1. Then: Click and drag on the area that you want to select.  Note: It is a lot like selecting a word in a word processor.



# Task 1 - The Form of Sound

**Part 3:** Select and play a section of the audio

<b>Steps</b>	<b>Instructions</b>
<b>Play</b> the selected section of the audio.	Click the <b>Play</b> button. or Press the Space key. This will only play back the selected section.

Repeat **part 3 steps** for **octave-C1.wav**.



# Task 2 - Analogue to Digital

## Introduction

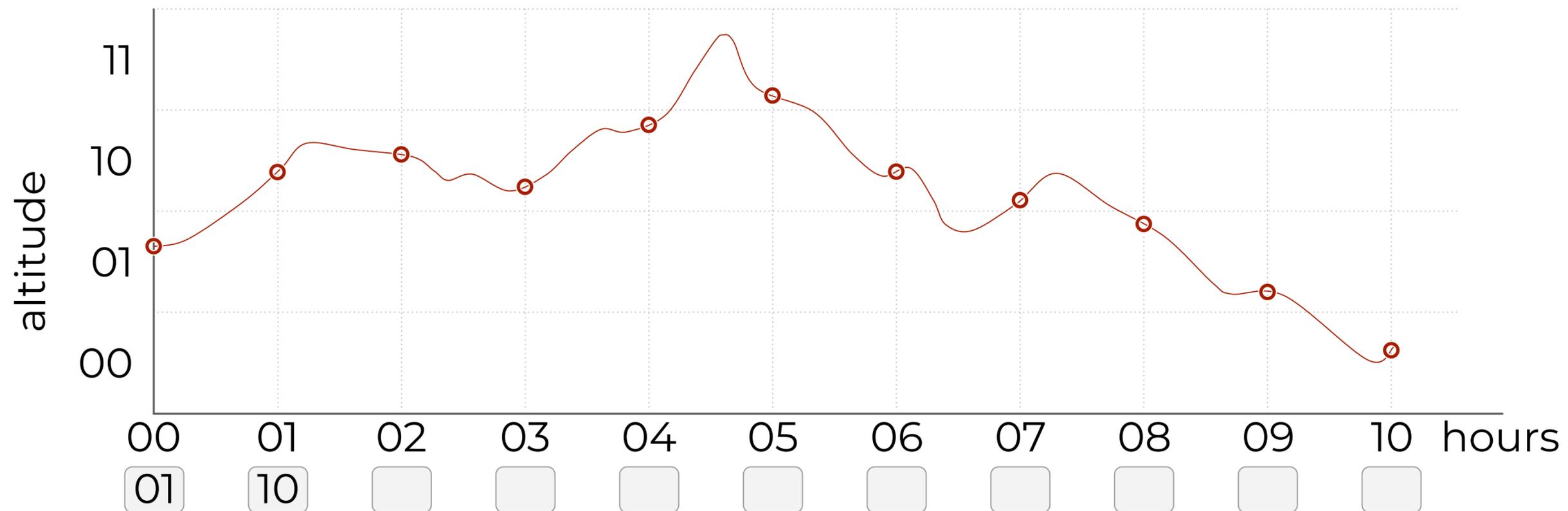
Carrie is going hiking on a 10-hour trail on Mount Digi. She promises her worrying parents that she will send hourly updates with her altitude (her height above sea level), so that they can trace how she's doing. Her precise altitude is not really important, so they agree that she will send 2-bit 'codes' for her altitude.

This section of the worksheet contains a graph of Carrie's altitude along the route. You need to work out the messages that she will send to her parents every hour.



## Task 2 - Analogue to Digital

The first section of the worksheet contains a graph of Carrie's altitude along the route. You need to **work out the messages that she will send to her parents** every hour. The first two messages have been filled in.



# Task 3 - Back to Analogue

## Introduction

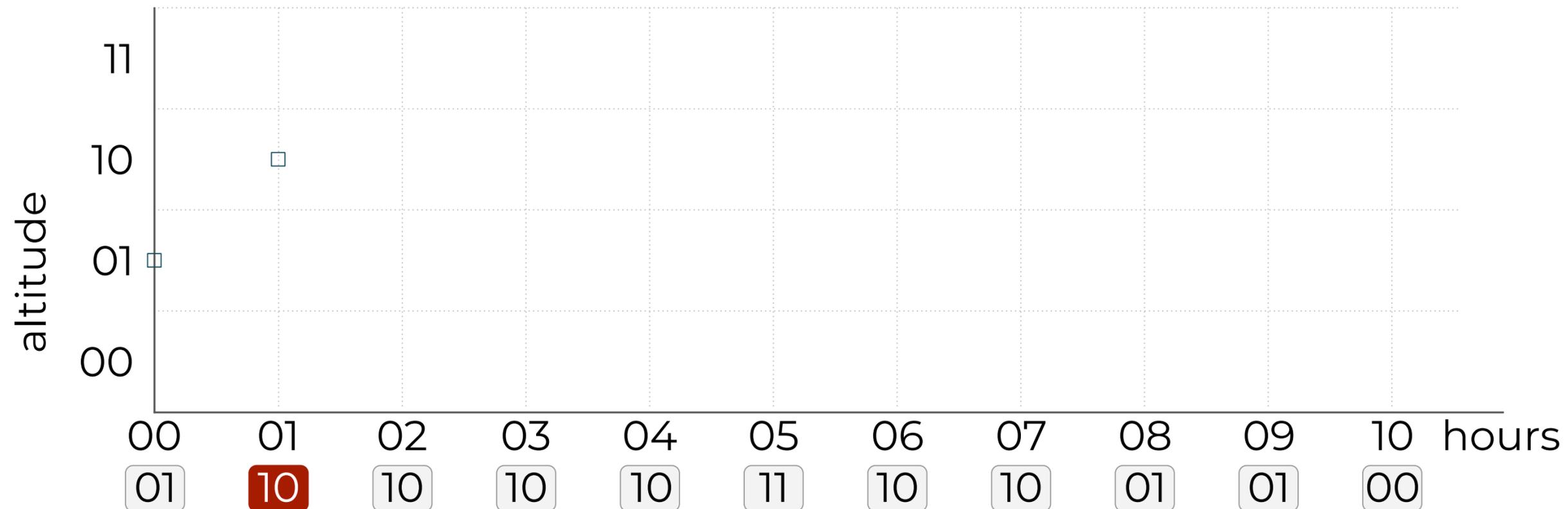
Carrie is going hiking on a 10-hour trail on Mount Digi. She promises her worrying parents that she will send hourly updates with her altitude (how high she is), so that they can trace how she's doing. Her precise altitude is not really important, so they agree that she will send 2-bit 'codes' for how high she is.

This section of the worksheet contains the messages that Carrie's parents have received. You need to work out her (approximate) route, based on these messages.



# Task 3 - Back to Analogue

This section of the worksheet contains Carrie's messages to her parents in 2 bits every hour. You need **to work out her (approximate) route, based on these messages**. The first two points on her route has been filled in.



**Click here to download  
additional assets for  
this lesson**

