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Classes: Sec 2 Express/Normal Academic

Prior knowledge
Students should already know:
- Coding using Microsoft block editor; Music tab 'Play tone (Hz) for (ms) 1 beat', 'set tempo to (bpm)'
- Notes that make up C major, F major, A minor, G major chords
- Notes of the keyboard CDEFGABC
- Melody and chords of the song 'Best day of my life', chords of the songs 'Im yours' and 'All of me'

Module objectives
By the end of the module, students should be able to:
- Create a keyboard unique to their group that plays 1 octave of the keyboard (Coding)
- Improve the function of their keyboard; function that plays intervals or chords on top of single notes (Coding)
- Explore the tempo functions: Rest (ms), Change tempo by (bpm) (Coding)
- Name and play all the notes of the keyboard within an octave including black keys: C, C#/Db, D, D#/Eb, F, F#/Gb, G, G#/Ab, A, A#/Bb, B, C (Music)
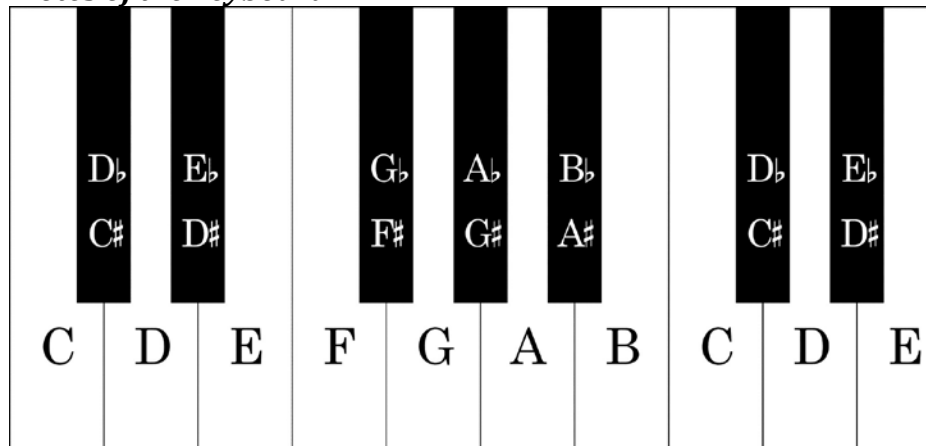- Name and play the notes that make up D minor, E minor chords (Music)

Timeline	Activity	Lesson Objectives	Resources
Term 3 Week 1	Recap: - Notes of the keyboard CDEFGABC, C major, F major, A minor, G major chords (Music) - Music function in Microsoft block editor (Coding) Task details: - Create a keyboard in groups of 4, including o Constructing the keyboard using suitable materials,	- Students to be able to name and play the black keys of the keyboard	Keyboard handout (Annex A): Notes of the keyboard, chords Microbit Microsoft block editor

	o Attaching copper strips and wires to 6 microbits per group, each microbit is programmed to play 2 notes on the keyboard, depending on which of the 2 keys it is attached to is played o Improve on the function of the keyboard, to include intervals and chords (eg: C major chord CEG is sounded on the keyboard when only C note is pressed, using radio function in JavaScript Blocks Editor) Lesson: • Individual work- Students to learn and play the black keys on the keyboard, C#/Db, D#,Eb, F#/Gb, G#/Ab, A#/Bb • Individual work- Students to programme their microbits to play 2 assigned notes each		
Term 3 Week 2 & Week 3	• Recap black keys on the keyboard (Week 2) • *Music test: Name black keys on the keyboard (Week 3)* Groupwork- Week 2 & Week 3: • Break into groups of 4, construct keyboard using materials (colouring materials, acrylic board, copper strips, wires)		
Term 3 Week 4 to Week 6	Music: • Recap notes of C major, F major, G major, A minor (Week 4) • Recap chords of 'Im yours' (C major-G major-A minor- F major), 'All of me' (A minor-F major-C major-G major) (Week 4) • Individual work- Students to learn and play the notes of D minor and E minor (Week 4) • *Music test: Notes of D minor and E minor (Week 5)*	• Program 2 microbits to play notes of a chord when 1 of them is pressed using the radio function in JavaScript block	Keyboard handout (Annex A): Notes of the keyboard, chords JavaScript block editor

	Groupwork- Coding:
	• Introduce radio function in JavaScript Block Editor
	• Challenge: Students to program 'Radio send number 101', 'radio received number 101', and play the notes of C major chord CEG, followed by 'show string C major'
	• Challenge extension:
	  ○ Students to program for F major, A minor, and G major respectively
	  ○ Students to explore the tempo functions 'rest (ms)', and 'change tempo by (bpm)'
	• End of challenge: Students to try out playing with both hands; right hand melody, left hand single bass note → that sounds as a chord instead of a single note
		editor
		• Students to be able to name and play D minor and E minor	

Term 3 Week 7	Presentation/Showcase		Rubrics

ANNEX A

Notes of the keyboard

Black key chords (Optional)

C# / Db	C#, E#, G# / Db, F, Ab	C#m	C#, E, G#
Eb	Eb, G, Bb	Ebm	Eb, Gb, Bb
F# / Gb	F#, A#, C# / Gb, Bb, Db	F#m	F#, A, C#
Ab	Ab, C, Eb	G#m	G#, B, D#
Bb	Bb, D, F	Bbm	Bb, Db, F

List of chords

Major* chords	Notes	Minor* chords	Notes
C	C, E, G	Cm	C, Eb, G
D	D, F#, A	Dm	D, F, A
E	E, G#, B	Em	E, G, B
F	F, A, C	Fm	F, Ab, C
G	G, B, D	Gm	G, Bb, D
A	A, C#, E	Am	A, C, E
B	B, D#, F#	Bm	B, D, F#

*Difference between major and minor chords is the middle note; Listen out for the different mood/feel between the 2 types of chords!