Personal Reflection:-

Coding an Arabian Soundscape: A Critical Reflection

Setting the Stage: Identity, Platform, and Intent

I embarked on this EarSketch coding project to merge my musical heritage with modern production, creating an "Arabian Soundscape" that combines Middle Eastern *maqam* melodies with hip-hop and R&B rhythms. Early brainstorming revealed my limited understanding of how coding concepts interconnect, as my initial concept map showed isolated terms without functional relationships (Appendix A, Figure 1). I also came to recognise that EarSketch is not a neutral tool but a platform that datafies user creations, reflecting what van Dijck (2014) describes as *platform logic*. Every musical snippet I coded became part of a data ecosystem, giving me the agency to experiment freely and *play by ear* as I translated cultural sound into digital form.

Initially, I described my piece as R&B-influenced with Arabic elements. Peer reviewer Sophia observed that it sounded closer to hip-hop or trap, which clarified my project's hybrid identity (Appendix D, Figure 2). This exchange confirmed Danielson's (1997) idea that musical meaning is co-created with listeners, as seen in Umm Kulthūm's performances shaped by audience response. Sophia's feedback guided how I framed and refined my work, aligning with early reflections (Appendix B) where I struggled to make the loop sound like a full composition rather than a sequence of ideas.

Creative Process

Algorithmic Melody on a Hijaz Scale

A pivotal moment was coding a melody using the Hijaz scale, known for its expressive tone. I wrote a Python loop to generate a rapid Hijaz run, achieving precision beyond my playing ability. This illustrated how programming automates complex musical gestures and enables creativity that extends performance boundaries (Horn et al., 2022; Manaris & Brown, 2014). Yet, algorithms embody their makers' values (Mittelstadt et al., 2016). My choices of tempo and note spacing reflected personal and cultural bias. To humanise the sound, I added a slight *ritardando (gradual speed decrease)* on the final note, embedding value-sensitive design that emphasised authenticity and emotion.

The cultural context of *Maqam Hijaz* was vital. Its microtonal nuances are lost in Western tuning. The AMAR Foundation (2015) explains that a "piano Hijaz" does not convey the true mode, while Sami

Abu Shumays (2022) elaborates that its emotional colour relies on subtle quarter-tone inflections. Acknowledging this limitation, I approximated its spirit frustratingly.

A turning point was discovering RD_WORLD_PERCUSSION_ETHNICSTRING loops and layered them to emulate the stringed intros used by Fairouz (Arabic Singer) (Appendix B). This experimentation reflected Danielson's (1997) argument that musical structures carry cultural meaning and must be treated as living traditions rather than exotic effects.

Layering Beats and Structure through Code

Midway through composition, I realised the track lacked cohesion. Using makeBeat() and fitMedia(), I created a 4/4 kick-snare pattern and a soft pad layer that unified the piece, demonstrating how code supports arrangement through repetition (Horn et al., 2022; Music Tech, 2022). I noted my frustration for rewriting the makeBeat() line multiple times until the rhythm felt natural (Appendix B). The mix initially sounded muddy because the pad overlapped the melody. Müller (2021) explains that overlapping frequencies mask each other, so I lowered the pad's volume and filtered out low-mid tones to restore clarity.

A creative highlight came when I added an oud-like string (Middle Eastern String instrument) track to answer the synth melody. By staggering their entries, I simulated two instruments in dialogue. This mirrored my Week 9 reflection where offsetting string loops by 0.25 beats created space and prevented robotic timing (Appendix B). Hearing this coded conversation revealed how algorithmic composition can reproduce the interplay of live musicianship (Mittelstadt et al., 2016).

Feedback, Refinement, and Reflection

Peer feedback became a catalyst for refinement. Keshia praised the project's originality and emotional tone but noted that smoother transitions and clearer code organisation would strengthen its flow (Appendix D, Figure 1). Her criticism, while frustrating, reflected Manaris & Brown (2014) idea that structured code improves readability and collaborative understanding. Thus I found an appreciation for organisation as my Week 12 reflection shows how reorganising the hashtags and code sequence eliminated errors and improved readability (Appendix C, Figure 6). Documenting each step deepened my understanding of how structure in code parallels structure in music.

Additionally, Sophia valued the bold fusion of Arabic and trap sounds but found my hashtags and spacing confusing, suggesting stronger continuity toward the ending. In response, I refined the outro by reversing the Hijaz scale to create a gradual descent using list-reversal syntax (GeeksforGeeks, 2025), extending reverb for cohesion. Together, their critiques reinforced that clarity in code and

sound follow the same structural logic: both rely on well-organised sequencing and deliberate transitions (Appendix C, Figure 6).

Integrating Learning, Culture, and Ethics

This project evolved into an exploration of learning through culture. Because the music represented my identity, each technical challenge became personally meaningful. EarSketch's model of *learning coding through music* (Georgia Tech Center for Music Technology, 2024; CEISMC, 2018) proved effective as list slicing in Python was no longer abstract syntax but a compositional tool. Thus, Horn et al. (2022) argue that situating computation in authentic creativity demystifies technology, and I found that coding and artistry reinforced one another. My trial-and-error became a form of discovery, where even errors such as '*TypeError: track must be an integer'* turned into learning opportunities (Appendix C, Figures 3 & 4; EarSketch, 2025).

Moreover, ethical awareness guided my creative decisions. I avoided cultural appropriation by composing original material and only sampling sounds from EarSketch. The "Big Pimpin'" lawsuit, in which Jay-Z's team (Western Artists) was challenged for using an Egyptian song without permission, underscored the need for contextual respect (Pitchfork, 2015). Ableton (2024) and MaqamWorld (2024) emphasise that maqam scales represent living traditions rather than decorative sounds, a point echoed by Al-Bustan Seeds of Culture (2023), which promotes responsible preservation of Arabic arts.

Transparency was another ethical consideration. Following best practices in algorithmic accountability (Mittelstadt et al., 2016), I annotated my script to credit tutorials and inspirations. My journal notes how I documented these steps to acknowledge community knowledge (Appendix B). This made visible the human choices behind the algorithm and aligned with calls for openness in digital art. Collaboration further reinforced this ethos: Sophia's and Keshia's feedback influenced genre framing, texture, and structure (Appendix D) . Danielson (1997) describes how musicians and audiences co-construct meaning, and this peer interaction echoed that dynamic within a digital creative environment.

Conclusion: Lifelong Trajectory

The most significant outcome was not only the finished track but the transformation in how I approach technology and creativity. I developed technical fluency alongside critical awareness, learning to code with artistic sensitivity and compose with analytical intent. I plan to continue exploring generative music and live coding while maintaining cultural and ethical mindfulness.

Moreover, my initial concept map showed coding as a set of disconnected actions (Appendix A, Figure 1), reflecting what van Dijck (2014) calls a surface-level engagement with platform logic. By contrast, my final concept map (Appendix A, Figure 2) visualises code as an interconnected structure where loops, variables, and conditionals work relationally. This shift mirrors my learning through EarSketch, where I moved from seeing programming as mechanical to recognising it as an expressive, data-driven framework that shapes both sound and creative agency. While I was sceptical about fusing these worlds, Horn et al. (2022) suggest that humans have always used tools to expand creative expression. My final composition, uniting hip-hop rhythm with Arabian melody, embodied that fusion of human intention and algorithmic precision. It stands as both a reflection of identity and a motivation to pursue further exploration with code in creative spaces.

References

Ableton. (2024). *Maqam tuning presets for Live 12 (by Sami Abu Shumays).* Ableton. https://tuning.ableton.com/arabic-maqam/maqam-guide/

Al-Bustan Seeds of Culture. (2023). *About us.* Al-Bustan Seeds of Culture. https://www.albustanseeds.org/about/

AMAR Foundation. (2015). *The Hijaz maqam.* AMAR Foundation. https://www.amar-foundation.org/098-the-hijaz-maqam/

CEISMC, Georgia Tech. (2018). *EarSketch coding and music remixing student-teacher workshops.* Georgia Institute of Technology. https://ceismc.gatech.edu/ceismc-offers-earsketch-coding-and-music-remixing-student-teacher-workshops-during-annual-computer

Danielson, V. (1997). *The voice of Egypt: Umm Kulthūm, Arabic song, and Egyptian society in the twentieth century.* University of Chicago Press. https://www.cambridge.org/core/journals/yearbook-for-traditional-music/article/abs/virginia-danielson-the-voice-of-egypt-umm-kulthum-arabic-song-and-egyptian-society-in-the-twentieth-century-chicago-the-university-of-chicago-press-1997-xiii-273-pp-transcriptions-photographs-maps-figures-notes-glossary-bibliography-index/7E5C1B944E8CB607CDE06F0547C1DE6A

EarSketch. (2025). *EarSketch how-to guide (light background version).* Georgia Institute of Technology. https://assets.ctfassets.net/mb5xi7u8wemi/7pMzumo4UNxvRkKMnFAPMK/a938fc5adbf63a17fb515b469aeb000d/EarSketch_How_To_Guide_lightBkgd.pdf

GeeksforGeeks. (2025). *How to reverse a list in Python using slicing.* https://www.geeksforgeeks.org/python/how-to-reverse-a-list-in-python-using-slicing/

Georgia Tech Center for Music Technology. (2024). *EarSketch: Teaching coding through music.* Georgia Institute of Technology. https://gtcmt.gatech.edu/earsketch

Horn, M. S., West, M., & Roberts, C. (2022). *Introduction to digital music with Python programming: Learning music with code (1st ed.).* Focal Press. https://doi.org/10.4324/9781003033240

Manaris, B., & Brown, A. R. (2014). *Making music with computers: Creative programming in Python.* CRC Press. https://doi.org/10.1201/b15104

MaqamWorld. (2024). *Maqam Hijaz.* MaqamWorld. https://maqamworld.com/en/maqam/hijaz.php

Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society, 3*(2), 2053951716679679. https://doi.org/10.1177/2053951716679679

Müller, M. (2021). *Fundamentals of music processing: Using Python and Jupyter notebooks.* Springer International Publishing. https://doi.org/10.1007/978-3-030-69808-9

Music Tech. (2022, October 16). *Pattern sequencing with makeBeat in EarSketch (Part I)* [Video]. YouTube. https://www.youtube.com/watch?v=fQRlVfSq3Uo

Pitchfork. (2015, October 21). *Jay-Z triumphs in Big Pimpin' lawsuit.* https://pitchfork.com/news/61766-jay-z-triumphs-in-big-pimpin-lawsuit/

Sami Abu Shumays. (2022, July 8). *Arabic maqam for beginners: Hijaz maqam explained* [Video]. YouTube. https://www.youtube.com/watch?v=L9JXcviLqtA

van Dijck, J. (2014). Datafication, dataism and dataveillance: Big data between scientific paradigm and ideology. *Surveillance & Society, 12*(2), 197–208. https://doi.org/10.24908/ss.v12i2.4776

Appendix

Appendix A: Concept Maps

Figure 1: Week 1

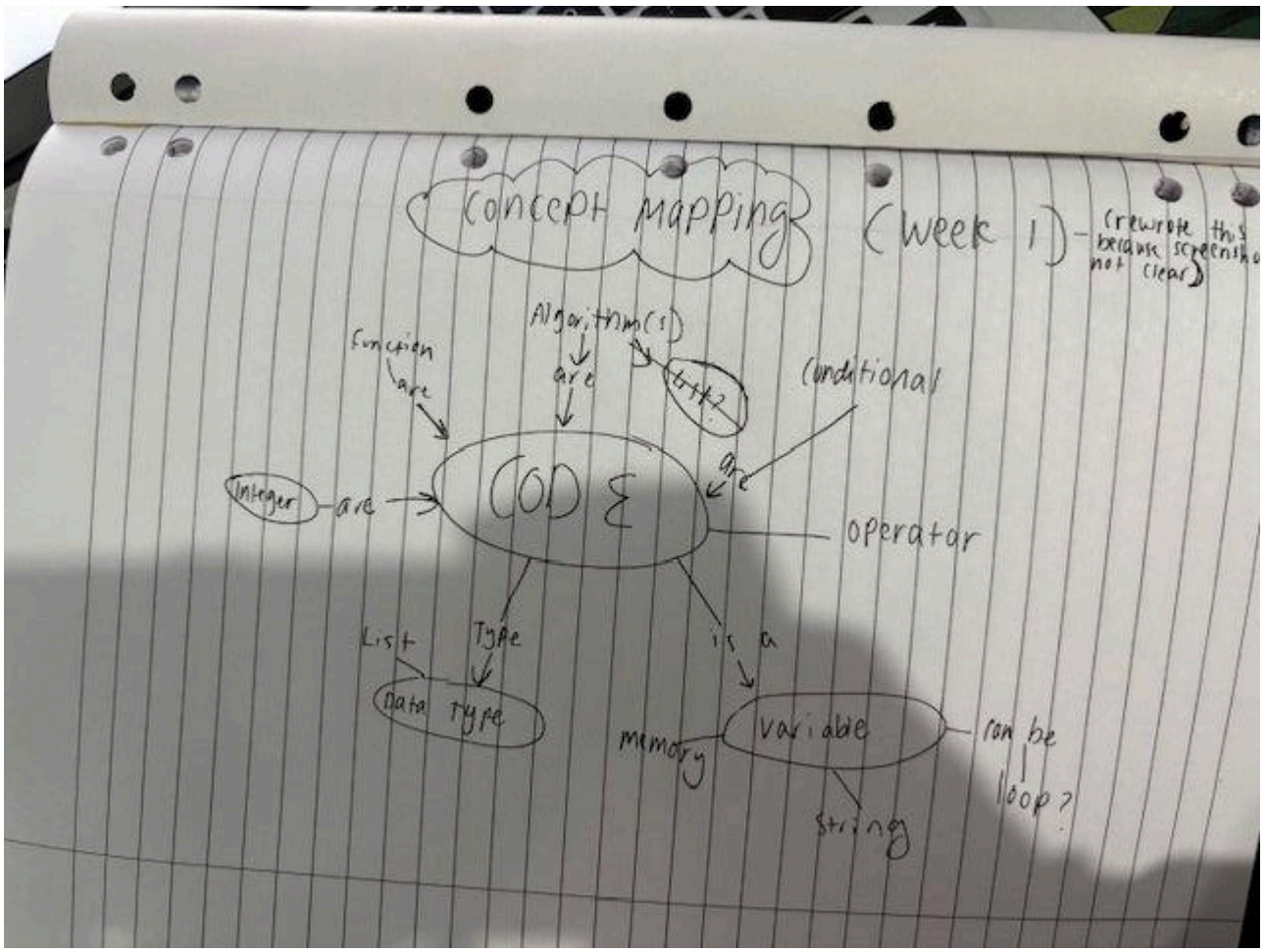
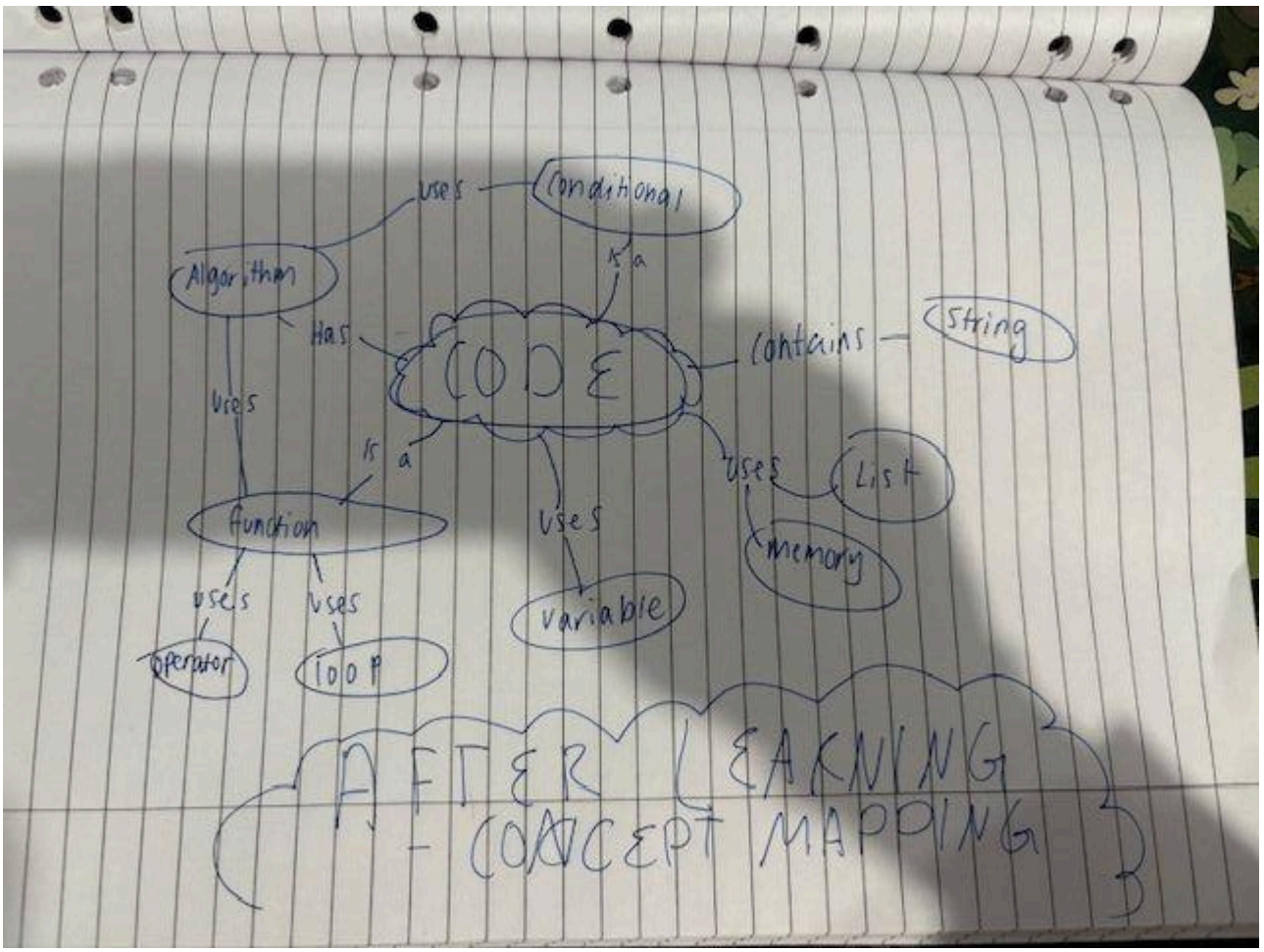


Figure 2: Week 12



Appendix B: Journal

Written Journal Reflection

Amira's A2 Project Journal: Development Reflection (NOTE:: THESE ARE REORGANISED INTO A TIMELINE AS RANDOM NOTES WERE SCATTERED AROUND)

Week 7 – Starting Point & A1 Pitch

At the beginning of this project, I pitched a 16-second piece based on a basic RnB/hip hop loop with some melodic variation inspired by Arabic music. The original code used a single synth layer pitched along the Hijaz scale and ran fairly linearly. I used the EarSketch template and tried to manually recreate the feel of those haunting instrumental intros from older Arabic songs. The idea was there, but it didn't feel rich enough and it sounded repetitive and thin. I didnt want to add to what i have and make it sound choppy or weird, ended up doing that anyway cause its what i wanted.

At that time, I didn't fully understand how layering worked or how to create contrasting textures using multiple tracks. I remember being stuck on the question: "How do I make this sound like a *composition* instead of just a loop?"

Week 8 – Exploring makeBeat() and Finding Flow

I watched the MyLeat "10 makeBeat in EarSketch" tutorial, which opened my eyes to using

beat patterns as a rhythmic base instead of only relying on full loops. I added `makeBeat()` to build a textured pad layer, almost like a bed underneath everything. The beat pattern I came up with was:

beat_intro = "-0-0--00--0-00--0-00-0--00-"

I didn't get this right the first time but originally I wrote something like `--0-0-0-0-` which made it feel too stiff. I rewrote this line five or six times and listened back until the groove started to settle. That was the first time I felt like the code was *musically doing something.*

Week 9 – Adding Layers & Ethnic Feel

This was probably my biggest turning point. I found the RD_WORLD_PERCUSSION_ETHNICSTRING_ loops by accident while searching the EarSketch library. I was like, *wait—this actually sounds like the stringed intros Fairouz uses.*

I added each ethnic loop to a separate track:

```
fitMedia("RD_WORLD_PERCUSSION_ETHNICSTRING_1", ethnic1, 6, 15)
fitMedia("RD_WORLD_PERCUSSION_ETHNICSTRING_2", ethnic2, 6.25, 15.25)
fitMedia("RD_WORLD_PERCUSSION_ETHNICSTRING_3", ethnic3, 6.5, 15.5)
```

I offset each one by 0.25 to make the sound more spacious and less robotic. I also added delay and reverb like this:

```
setEffect(ethnic1, DELAY, DELAY_TIME, 0.3)
setEffect(ethnic2, DELAY, DELAY_TIME, 0.35)
```

At first, I thought it sounded chaotic but after tweaking the volume and effects, the texture became really immersive. I kept this idea.

Week 10 – Mishaps, Fixes & Happy Accidents

This week had a lot of trial and error. One major error was when I used a `setEffect()` function on a track before I'd even created it. I got this error:

```
TypeError: track must be an integer
```

I also kept trying to use `setEffect(vocalTrack, "reverb", "mix", 0.6, 9, 12)` and kept getting:

```
ValueError: function argument is not within the set of acceptable values.
```

Eventually, I was mixing up function syntax with how you'd apply effects in traditional DAWs like Logic or Ableton.

Week 11 – The Vocal Realization

I kept calling my piece RnB-based, but I had a moment where I realized: actually, the RnB

influence is not in the beat, but in the *vocals. AND THE BEAT WAS LOWKEY SOUNDING BETTER WITH HIP HOP AND TRAP SOUNDS.*

I was drawn to the runs and melodic phrasing you hear in Arabic singing. I used `KHALID_NORM_VOX_HARMONY_1/2/3` and spaced them out. Originally I had them back to back, but it sounded too full. I edited it to this (you need to create multiple lines of code instead of one because you cant skip a beat kept doing it till i figure it out) :

```
fitMedia(KHALID_NORM_VOX_HARMONY_1, vocalTrack, 1, 2)
fitMedia(KHALID_NORM_VOX_HARMONY_2, vocalTrack, 5, 6)
```

The gaps helped the harmony breathe and gave more shape to the track.

Week 12 – The Ending & Personal Touches
I wanted to end with a nod to those dramatic instrumental outros in older Arabic music. I created a mini-scale run:

```
ending_scale = [12, 11, 9, 7, 5, 4, 2, 0]
```

I repeated it again in reverse with reverb and delay.

There was a moment where I accidentally overlapped the ethnic strings and ending melody and I thought it sounded too busy. I nearly deleted it, but after listening more, I decided to keep it. It felt like a reflection of the chaotic but intentional layering in traditional music ensembles.

OVERALL
This whole project became a blend of experimenting, researching maqam music, and also just letting myself mess up and try again. I played with `setEffect()` parameters constantly, like this:

```
setEffect(t, VOLUME, GAIN, 0, fade_start, -40, fade_end)
```

The fade-out took me multiple tries to get right.

Most of what I made came from trial-and-error and letting inspiration guide code. I wouldn't call this a "song" and it’s a creative composition, where every section is meaningful. I didn’t just follow tutorials but I started that way, but each layer ended up being my own decision. Even the errors were part of learning.

Now i needed to organise my notes in code as my hashtags were all over the place and werent in sequence so i went through and edited

Also i went through as final touches by removing every line of overlap until when i pressed run the code would run successfully with no errors and overlaps.

More than just making a track, I learned to *think in layers,* to *trust my ear,* and to *not be afraid to experiment.*

Appendix C: *ScreenShots of Progress*
Figure 1:

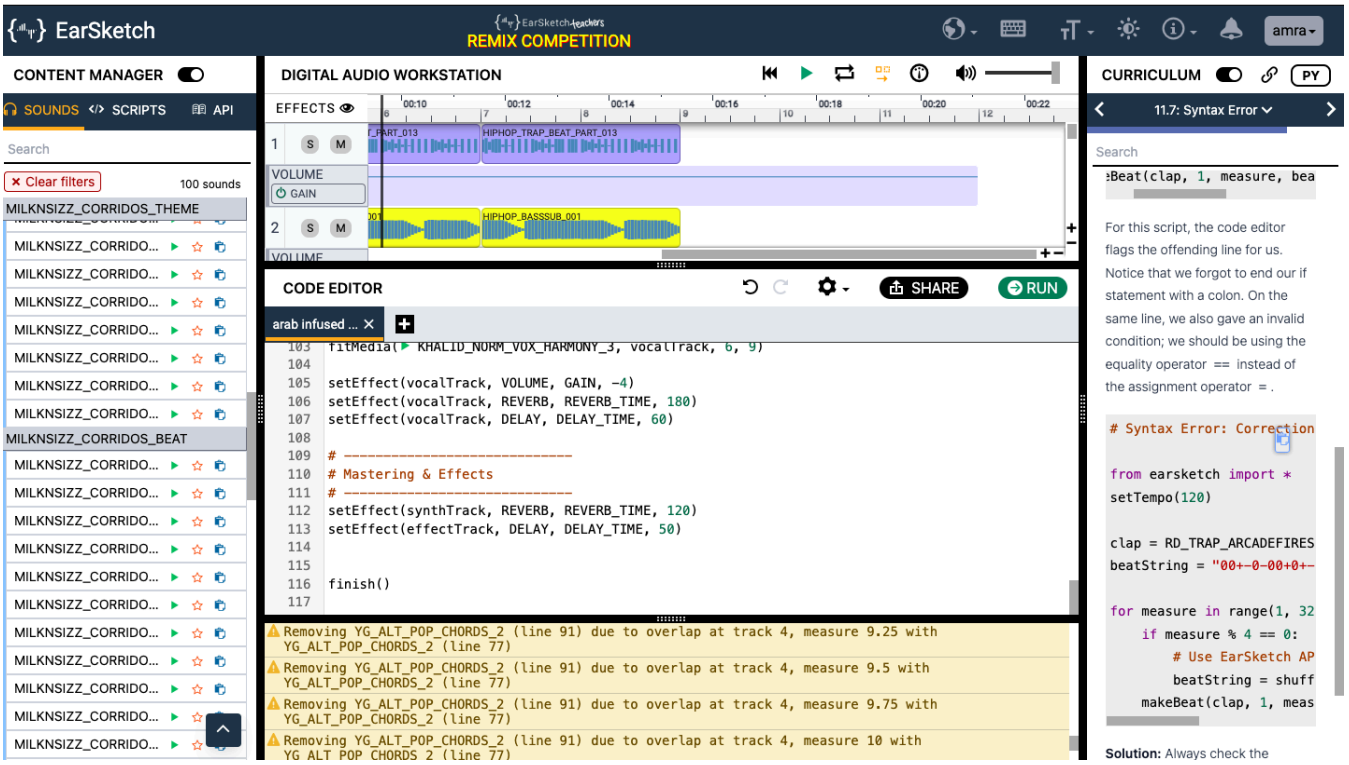


Figure 2:

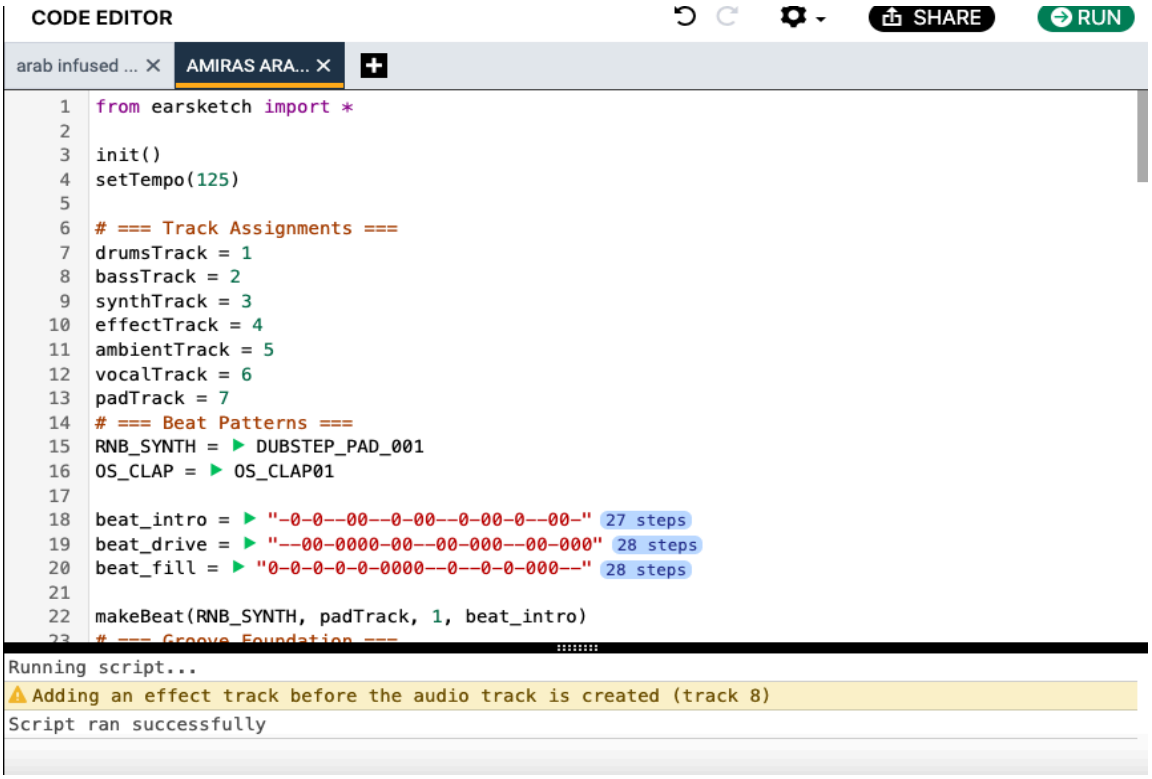


Figure 3:

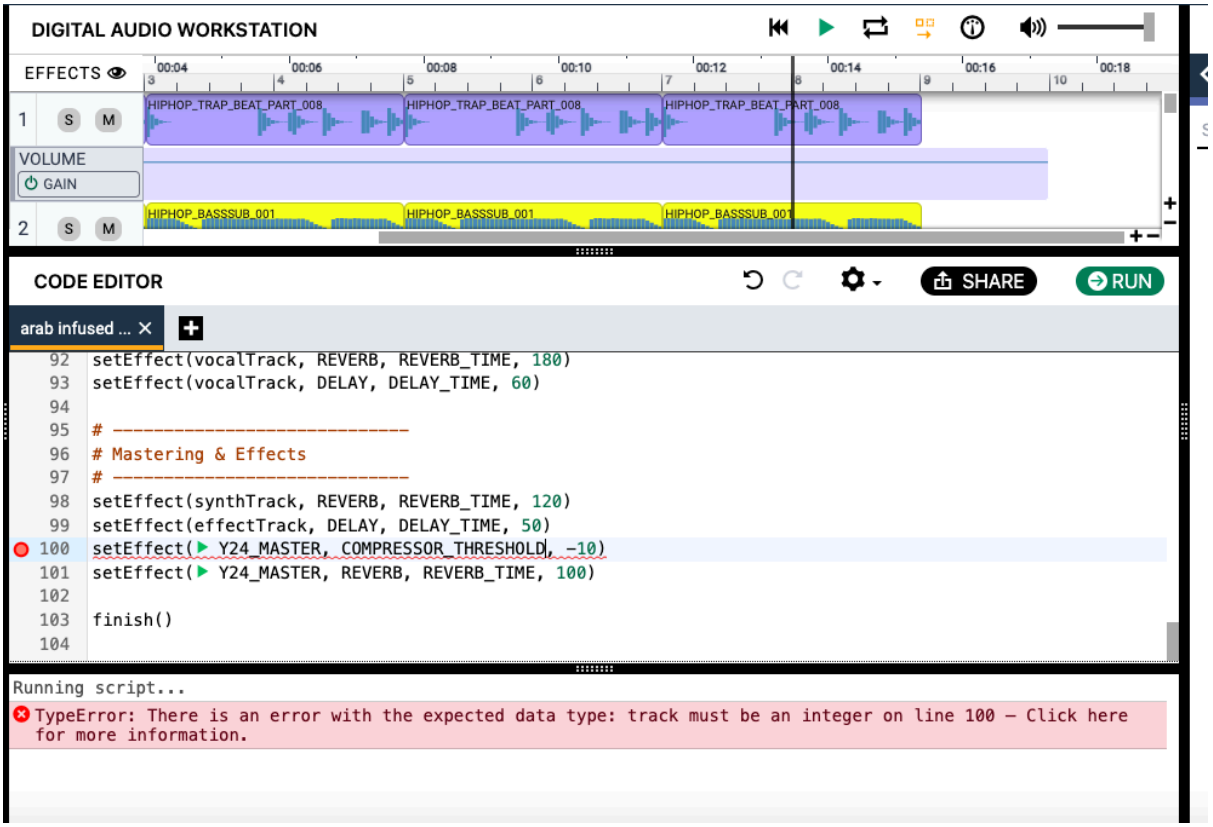


Figure 4:

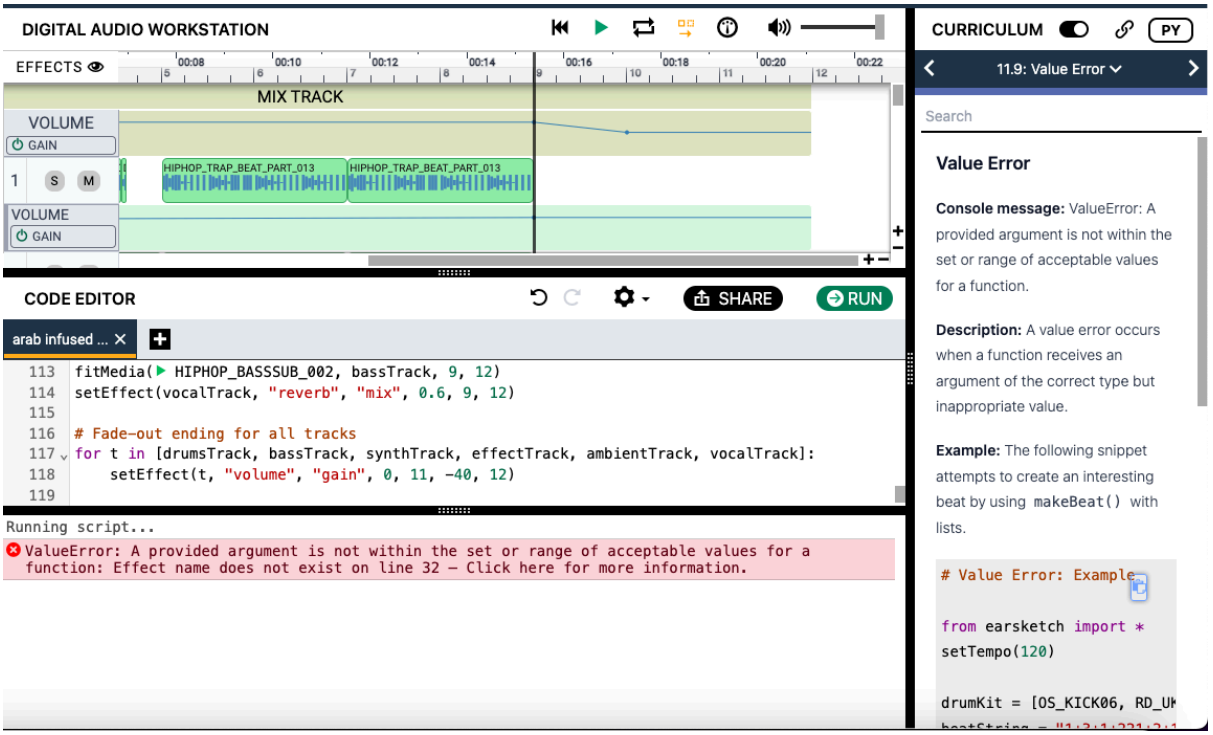


Figure 5:

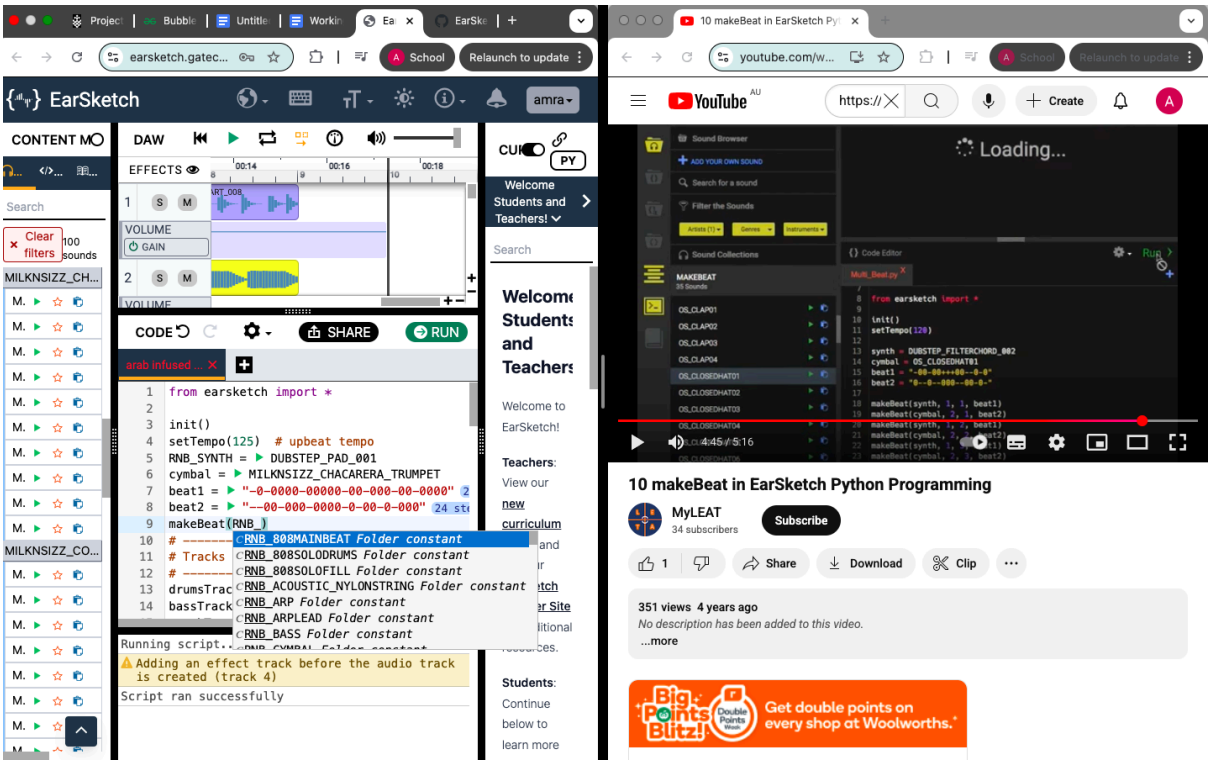
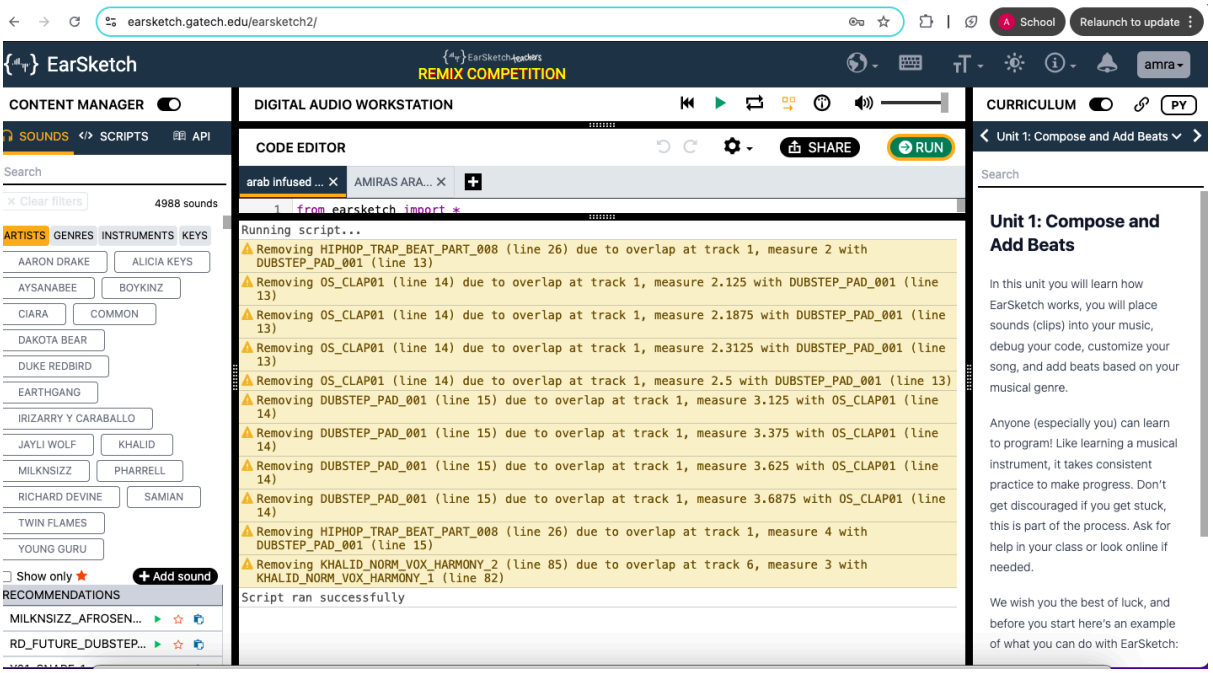


Figure 6:




```
# The use of setEffect() with startValue, endValue over time to fade volume is based on
# the EarSketch effects tutorial (Nuevo Foundation, 2025) and the CEISMC EarSketch sound-effects lesson.
# My implementation here adapts that technique and making it original for the ending of my composition.
# Clean Fade-out: starts after everything (ensures ending plays fully)
# final_end is when all final ending clips have finished
# not the happiest with this part as it does not flow as nicely as i want it too but it still
# gives the extended instrumental effect old arabic songs have which is what i wanted
final_end = final_start + 2.5   # buffer covering the ending sequences
fade_start = final_end
fade_end = fade_start + 2.0

for t in [padTrack, drumsTrack, bassTrack, synthTrack, effectTrack, ethnic1, ethnic2, ethnic3, ambientTra
    # long fade out so it feels smooth; no overlap conflicts because tracks are distinct
    setEffect(t, VOLUME, GAIN, 0, fade_start, -40, fade_end)

#   Notes & references (inline comments above lines show where I adapted ideas)
# - Hijaz / maqam ideas referenced from MaqamWorld (2024) and AMAR Foundation (2015)
# - EarSketch usage patterns & makeBeat idea referenced from EarSketch (2025) guide and Music Tech tutori
# - I (Amira) wrote the melodic sequencing, timing choices, and the ending blend logic
# - All external library loops used are EarSketch library assets (loop names used directly)
# End of project - Amira
finish()
```

Appendix D: Peer Reviews

Figure 1:

Peer Review 1 – Keshia

Reviewer Name: Keshia M
Project Creator: Amira Abou Ali
Project Creator Email: amira.abouali@student.uts.edu.au

Date: 12/10/25
Project: Arabian Soundscape

1. What Do You Like About This Project?

I really like that this project feels emotional and personal. It sounds different from what most people have made, and that makes it memorable. The Arabic sounds mixed with the trap beats give it a strong mood. You can tell it was made carefully and not rushed. I also like how the sounds seem to build a story even though there are no lyrics. Despite the limitations were able to mimic it, i thought you took a sound from something, but was surprised it was from scratch.

2. What Is the Project Trying to Say or Do?

It feels like the project is trying to express culture through modern music. To me, it shows how old and new styles can work together. It has a dramatic energy that feels powerful but also soft in parts. I think it's about identity and mood rather than just being a song. Honestly when you explained what it sounded like to you it was very interesting, its something that you made with a vision by putting different understandings of music you like together, its pretty cool.

3. What's the Level of Progress Given the Time Remaining?

It sounds like the main sections are done. The start, middle, and ending all flow well. The only thing that might need work is adjusting some volumes or making the code itself look more organised. It sounds good, i know length is something your worried about but honestly its fine since you hit all elements. Otherwise, you are ahead of where you need to be and it feels achievable before the deadline.

4. How Well Does It Work?

It works really well as a full piece. The sounds fit together nicely and the instruments don't clash. The mood comes across clearly. The only thing that might help is to make the different sound elements flow better, it feels a bit out of nowhere but that could also be its charm.

5. How Clear is the Code?

Even though I don't make music code, I could follow it when you explained what each part does. The comments make sense and the sections are easy to tell apart. Maybe just add a few short explanations about what each instrument or sound effect adds to the track.

6. What's One Idea to Make It Even Better?

You could try adding a short sound or sample at the beginning that connects to the story or mood. It might make the intro feel more complete.

7. Ask a Thoughtful Question

How did you choose which instruments or sounds to include? Did you start with a mood in mind or did it build up as you experimented?

8. Final Thoughts

It's really creative and different. The mix of sounds feels emotional and confident. It's definitely one of the most original projects I've heard! Good job Amira!!

Figure 2:

Peer Review 2 – Sophia

Reviewer Name: Sophia L
Project Creator: Amira Abou Ali
Project Creator Email: amira.abouali@student.uts.edu.au

Date: 12/10/25
Project: Arabian Soundscape

1. What Do You Like About This Project?

I like how bold it sounds. The beats are strong and catchy, and the Arabic-style instruments make it feel dramatic. I like that it doesn't sound like something from a preset. It feels like you really shaped it yourself.

2. What Is the Project Trying to Say or Do?

It sounds like you are exploring identity and sound together. It feels like a mix of culture and modern rhythm. I'm not sure it's fully R&B though, it gives more hip-hop or trap energy in some parts, maybe rephrasing this but it works great.

3. What's the Level of Progress Given the Time Remaining?

It’s almost done and feels like a complete piece already. Maybe just smooth out how the ending connects to the rest. You’ve clearly put a lot of work into it and seem well on track to finish.

4. How Well Does It Work?

The idea and feeling both come across clearly. It has energy and flow. The only part that could use more work is the hashtags. I was a bit lost about how things come together until you explained, i think its better if its written as well though.

5. How Clear is the Code?

It’s laid out clearly. I recognise the if statements well but Maybe space it out a little more and keep comments short so it’s easy to read quickly.

6. What’s One Idea to Make It Even Better?

You could add instruments that are played by Arab musicians if you are comfortable with importing sound bits.

7. Ask a Thoughtful Question

Would you ever add vocals or lyrics to this, or do you prefer it to stay instrumental?

8. Final Thoughts

It’s strong and emotional. The project already feels finished and sounds like something that could fit into a creative game scene, maybe even mine!!