PracticePal

Fall 2023 Music BA Capstone Project

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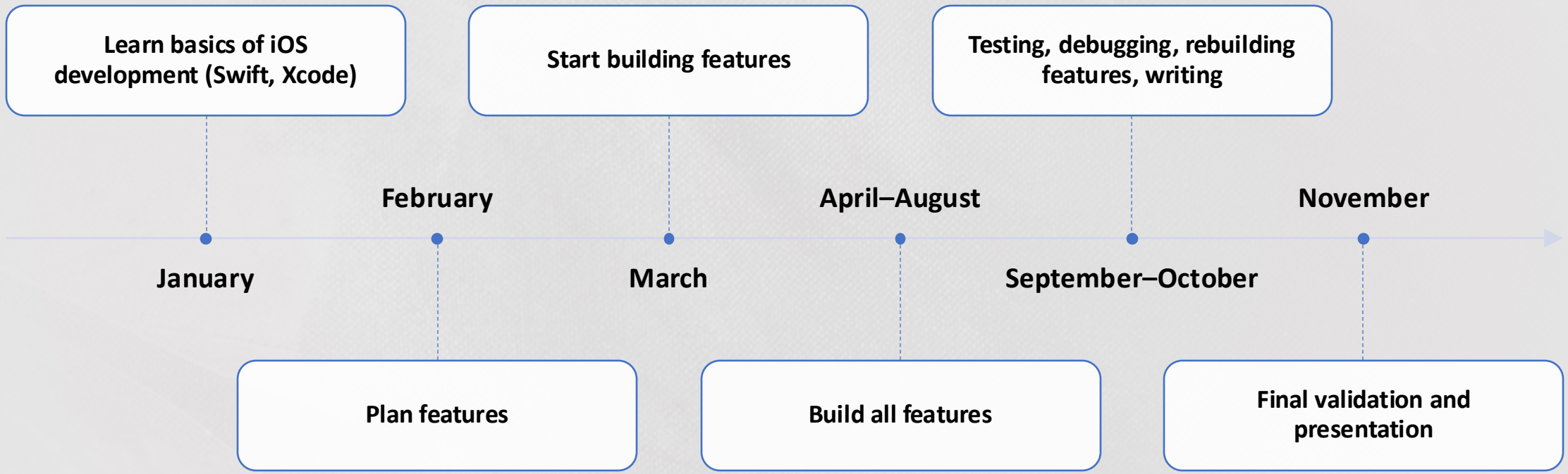
Introduction

- PracticePal is an iPhone iOS application that provides a purposeful practice tool for musicians
- I created PracticePal because I wanted to create a project that combined my background in music with the skills I have developed in my studies of Computer Science

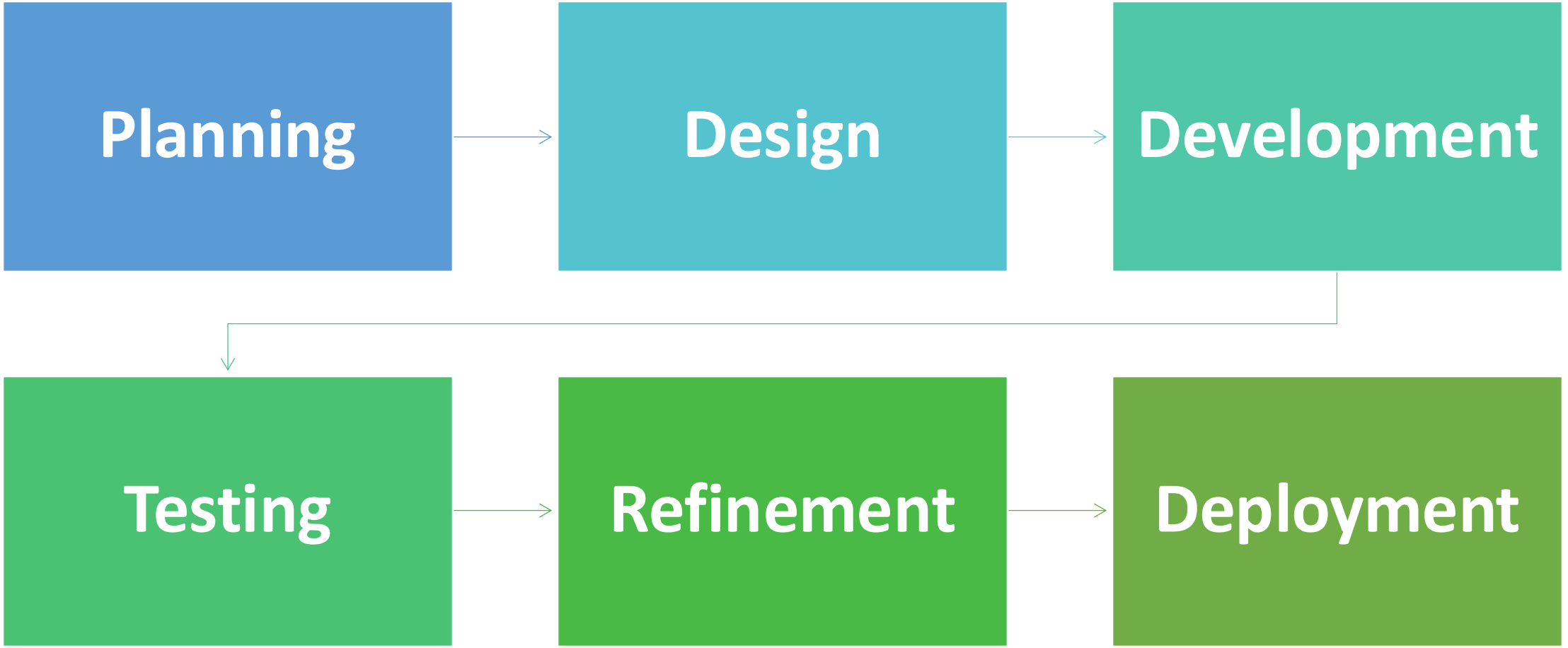
Objectives

Music:	Determine the tools required by musicians for purposeful practicing.
User Interface Design:	Acquire skills in designing an intuitive and user-friendly interface.
Coding:	Develop proficiency in writing and implementing Swift.
Application Testing:	Gain expertise in testing and validating application functionality.

Timeline


Learn basics of iOS development (Swift, Xcode)
Start building features
Testing, debugging, rebuilding features, writing
January
February
March
April–August
September–October
November
Plan features
Build all features
Final validation and presentation

Development Process



App Features

- Calendar Notes
- Tuner
- Tuning Drone
- Metronome
- Recorder

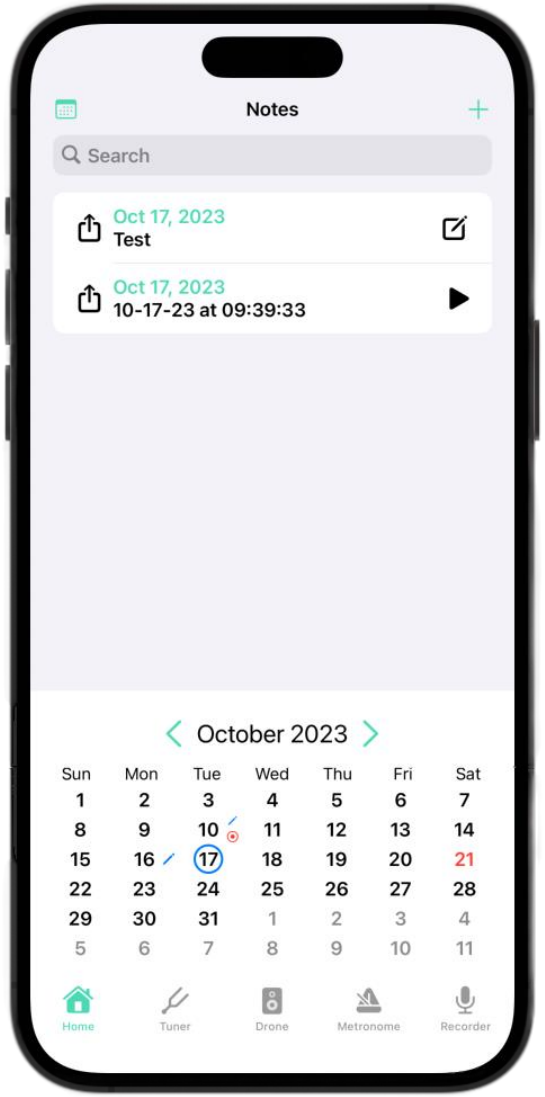
Calendar Notes

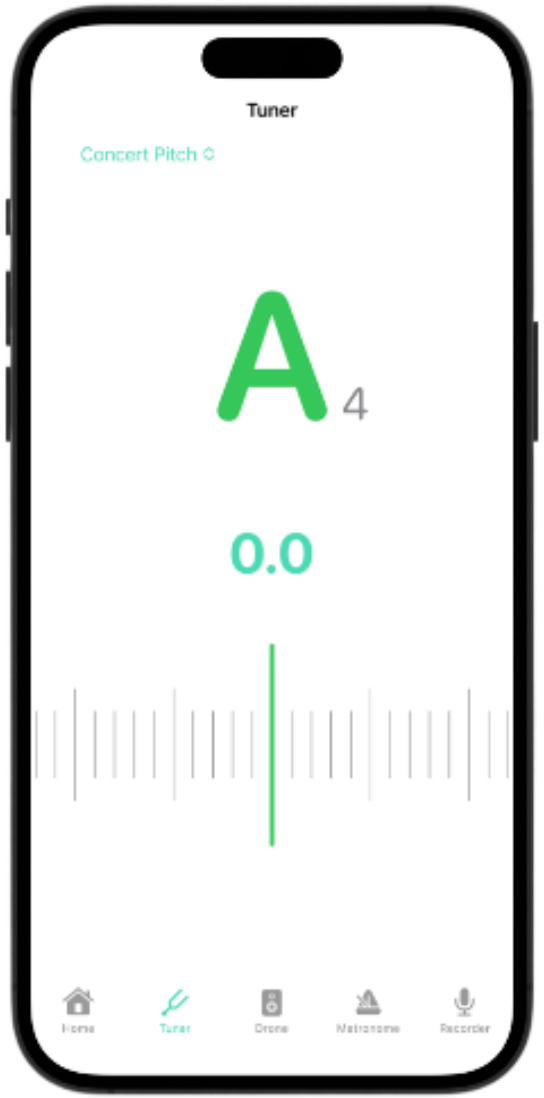
Displays notes and recordings by day

Add, Edit, or Delete Notes

Filter and search for notes and recordings

Export button for sharing or saving in the device's file manager or iCloud





Tuner

Transposition menu

Target note display

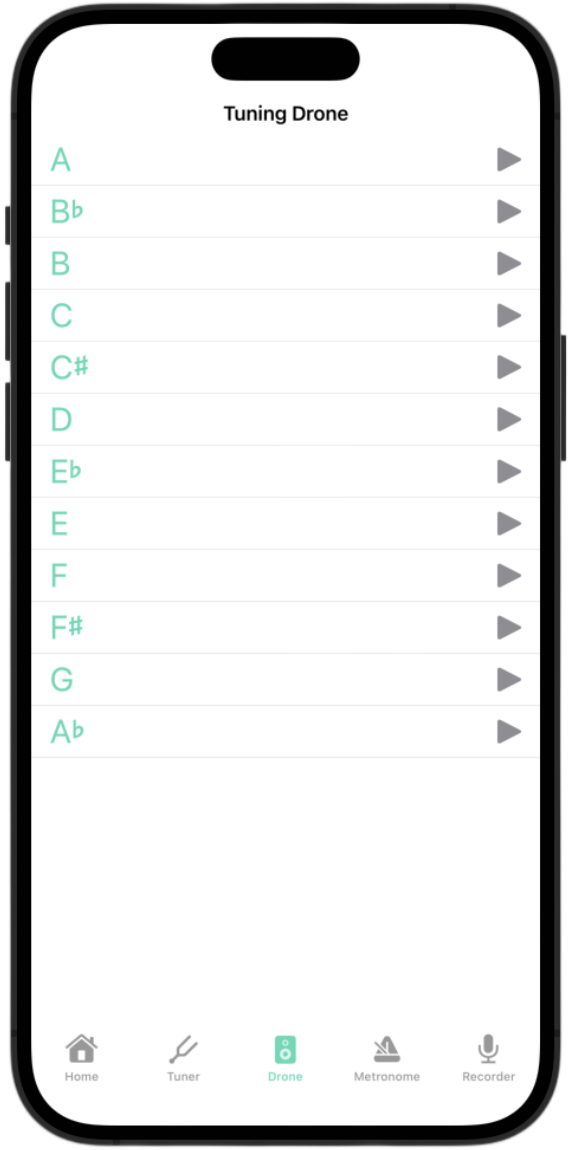
Interval (in cents) from target note

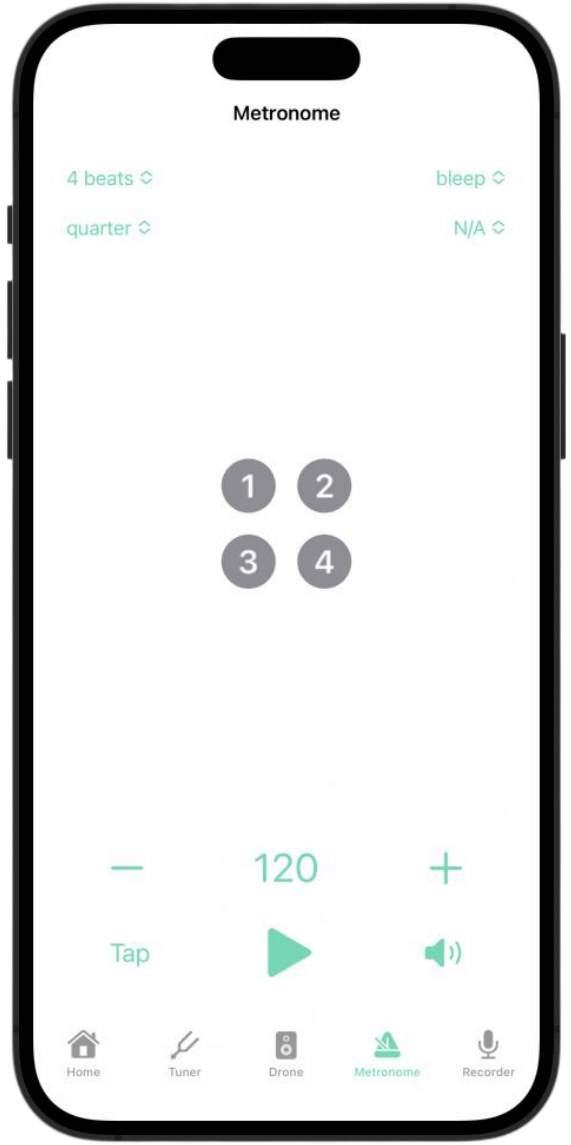
Tuning animation

Tuning Drone

Tap a note to play/stop continuous drone

Twelve distinct pitches and their overtones





Metronome

Dropdown menus for beats, subdivision, grouping, and sound

Tempo controls (increment, decrement, tap tempo)

Play/stop button and mute button

Dynamic visual display

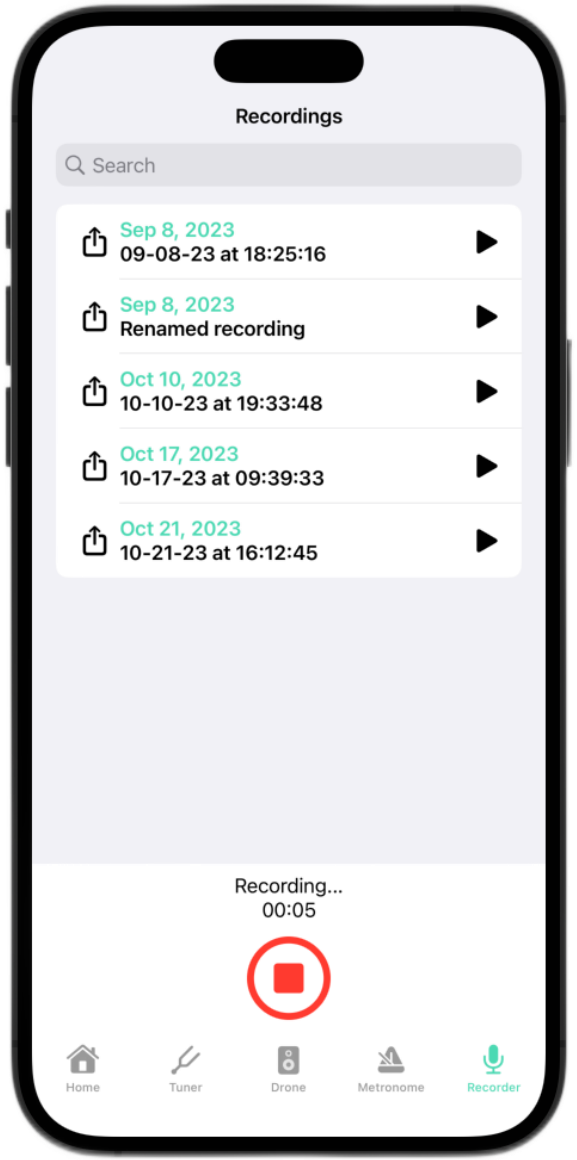
Recorder

Record/stop recording button with elapsed time

List of recordings with play/stop button

Tap to edit default name (creation date)

Export button for sharing or saving in the device's file manager or iCloud



User Experience

Sharing notes as text files and recordings as audio files is “quick and convenient.”

Users liked how they had the “option to tune with a drone or visual tuner.”

“The colors on the tuner change when you are sharp or flat.”

Users really liked the “very customizable” visual representation of the beats in the user interface of the metronome.

One user especially loved “how the recordings and notes integrate on the home screen. It makes it easier to track progress.”

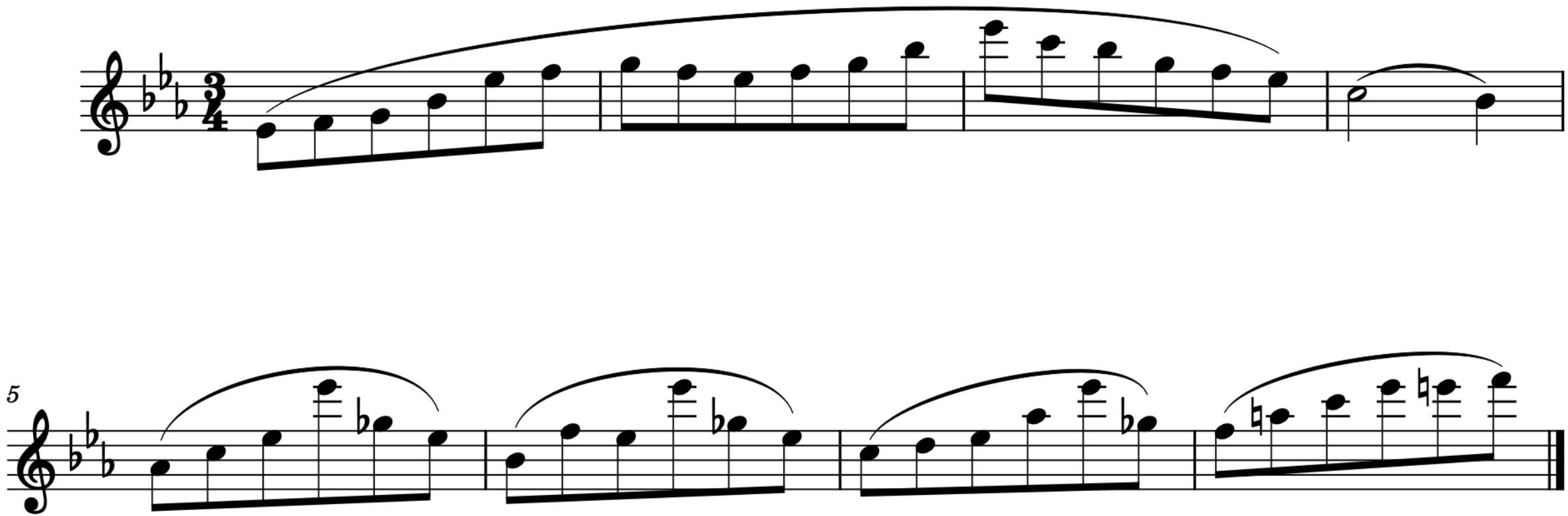
Future Improvements

- Fun tuning animations (such as an elephant to match the app's icon) would be a fun addition to the user experience.
- Expand the functions of the tuning drone to include single-tone drones.
- Use MIDI to synthesize drone sounds (both single-tones and overtones).
- Add "a fun metronome animation that could incorporate the elephant."
- Optimize the audio engines to improve overall efficiency.

Next Steps

- Look into obtaining a design patent
- Final debugging and implementing the future improvements

Demo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