Tap Tap Revolution

CS 257 Final Project Proposal

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CS 257 Software Design
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Project Goal

The game we plan to implement is based off an app called Tap Tap Revolution. The objective of the game is to tap out a beat to music, which is symbolized by colored dots representing each beat. The dots float towards the user at a regular speed, and the user is supposed to tap when the dot reaches the edge of the screen, in time with the music. There are four rows of dots going from the top of the screen to the bottom of the screen. Usually, there are multiple songs and levels of difficulty, but for our project, we will pick one song and make the game more difficult as the song goes on by increasing the number of dots.

Implementation Detail

For this project, we will implement the following things:
- Finding the beat in the song
- Playing music in the background
- Using the beat data to generate music notes that will display on screen
- Creating animation of music notes moving on screen.
- Receiving keyboard input and recording the time for each key pressed
- Scoring with a system that compares timestamp between beat and keyboard press
- Alerting the user each time points are gained.
- Displaying the user's total points
- Displaying play/pause and volume options for user
- Displaying the user's progress towards completing a song

Design Pattern

For this project, we intend to implement the Model View Controller pattern. The class we create for the user interface – the View – will display the game itself and track the keys the user presses. A Controller will relay this information to the Model, which is constantly comparing the actual beats of the song with the input from the user. The Model will notify the View of score increases – when this happens, our GUI (View) will briefly display the points the user racked up (ex: +3 points! You're on fire!).

Task Roles

Because we are incorporating both visual animation and audio elements in the project, there are a number of topics that we need to research in order to know how to combine these different aspects together, as well as the possible limitations we will have on our project and a realistic sense of what we can accomplish given our time frame. To that end, the following are our task roles:

- *Music Incorporation*: Sarah
    - Compiling list of songs with constant beat and recording beats
    - Open sound file and play/pause feature in Java
    - Researching beat detection software

- *Recording user keystrokes*: Lydia
    - Capturing timestamp on key press
    - Researching optimal library/module imports for capturing system or program timestamp with best accuracy

- *Graphics*: Lucy
    - Research different graphic library options

- *Scoring and synchronization options*: Nayely
    - Establishing ranges for acceptable time delays on keypress
    - Managing potential timestamp discrepancies between when game begins and when audio playback starts
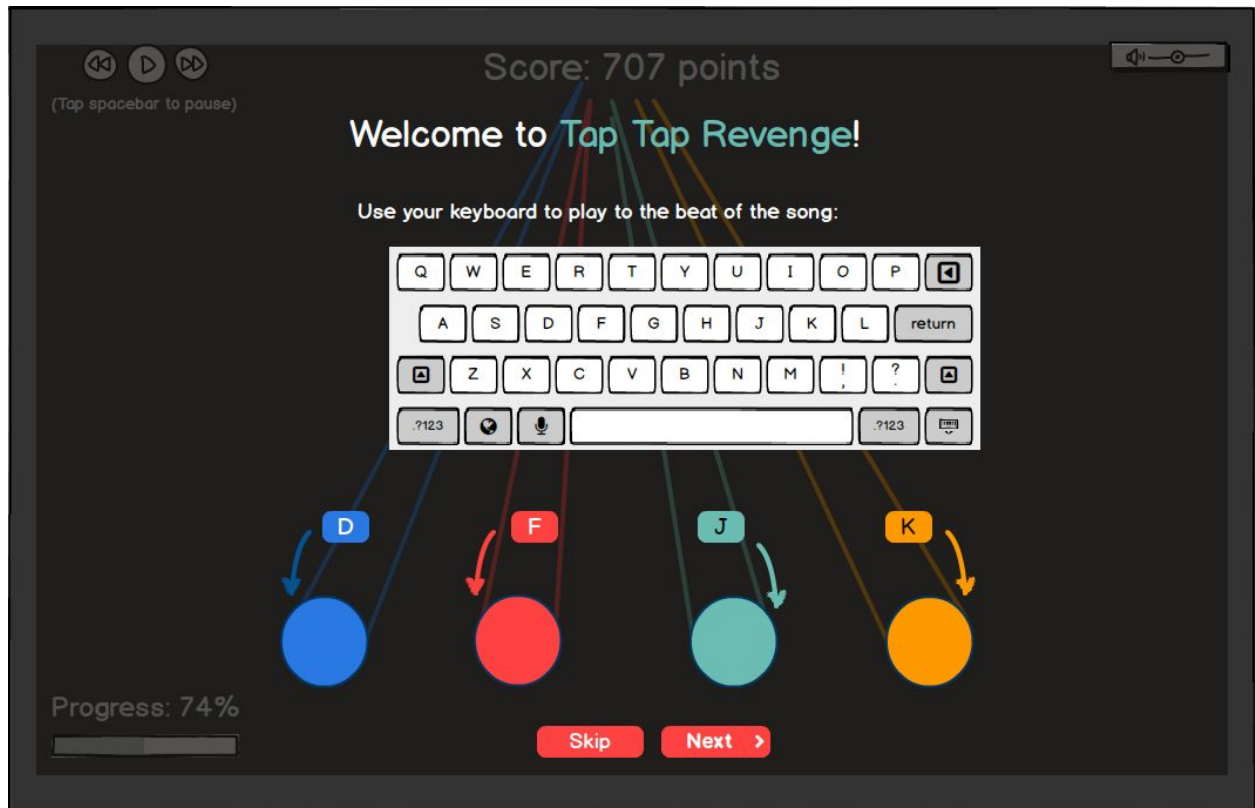
UI Sketches

Fig A. Introduction screen upon game launch. The "Skip" button glosses over the remainder of the tutorial and leads directly to the song selection and difficulty settings (see Fig. C).
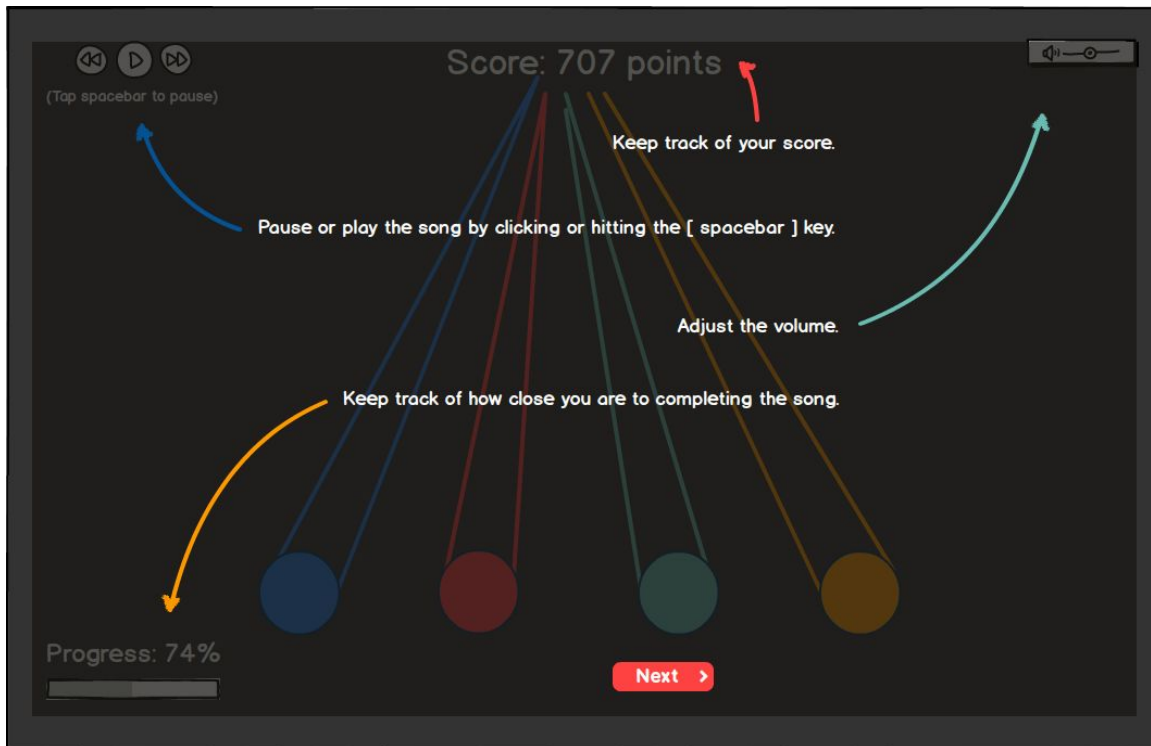
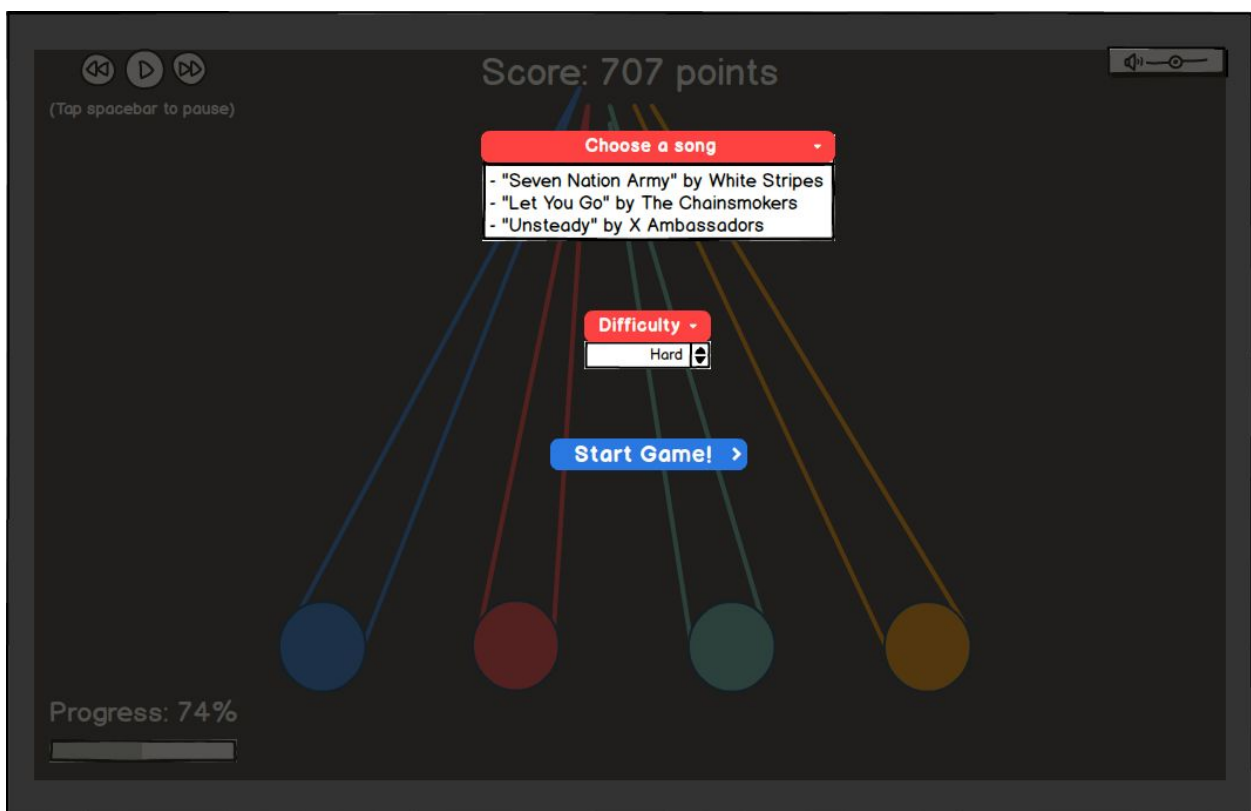*Fig B. Tutorial screen introduces the user to the app's features.*

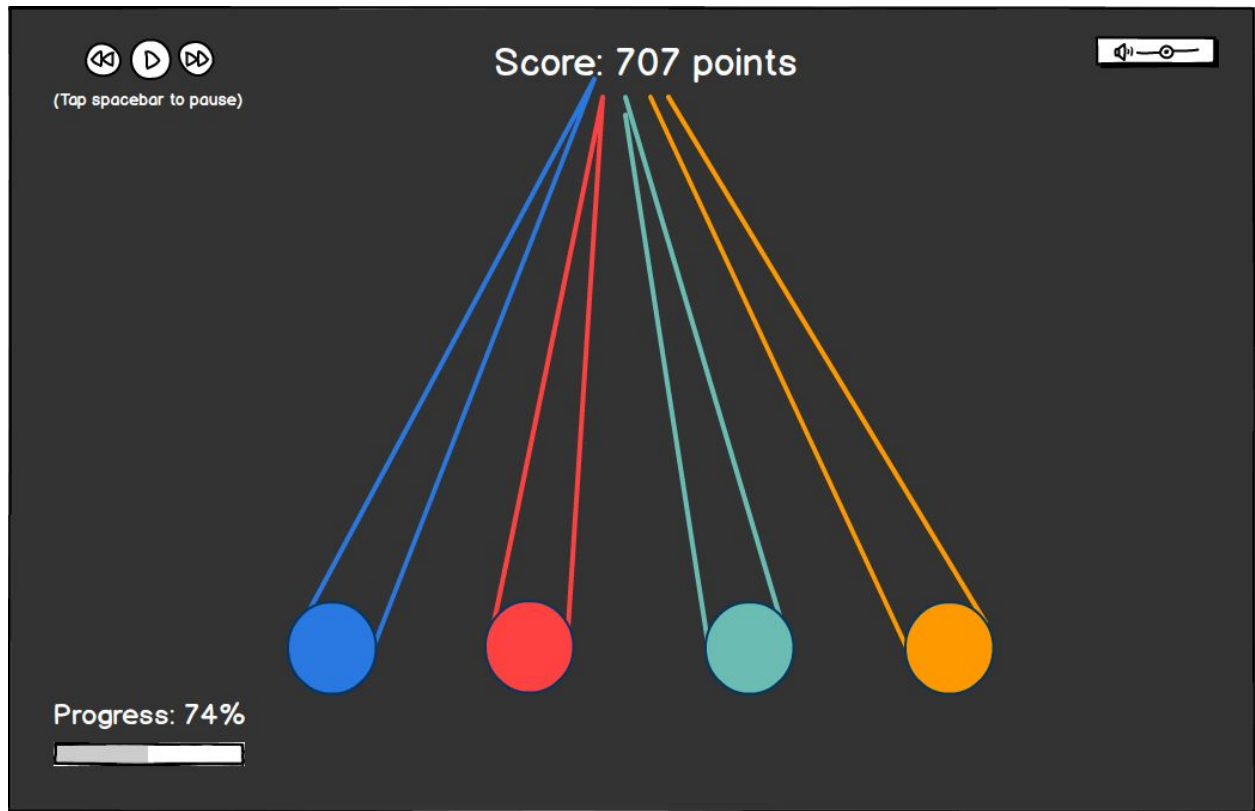*Fig C. Settings screen prompts the user to select a song and choose the difficulty level.*

Fig D. Display of main game screen.