Keyboard Hero

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Background & Goals

- Inspiration
  - Mikey enjoys game dev
  - Sam took music theory this semester
  - Jim is a wizard
- Description
  - Rhythm game similar to guitar hero
  - Users select a mood, and then a level will be randomly generated
  - Notes begin at the top of the screen and descend
  - You will get a score based on how well you combo your notes

Class Concepts

"Humankind has not woven the web of life.
We are but one thread within it.
Whatever we do to the web, we do to ourselves.
All things are bound together.
All things connect."
- Chief Seattle

- Thread Synchronization
  - Using mutex to prevent race conditions when calculating scores and combo
- Parallelism with Threads
  - Using threads to move the notes in the UI in parallel
  - Music threads and the UI threads are moving in parallel
- File Systems
  - Write the score of each game to a file
  - Read the file at the end of the game and display the top 5 score
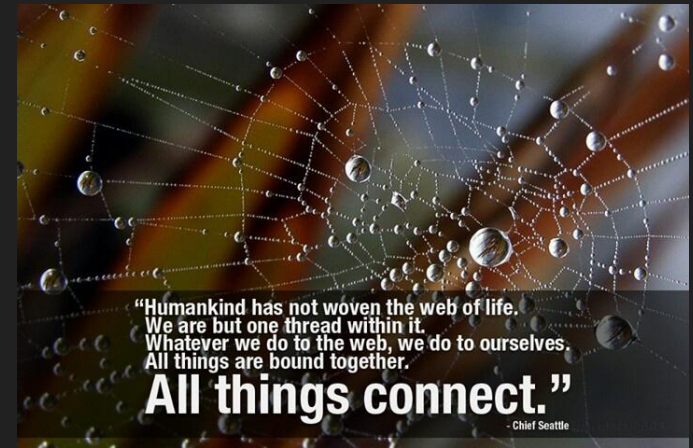
Implementation Details

- Music
  - The base of the music struct is a hashmap that contains the mood as keys and scales as values.
  - Generating Scales, selects random scale from mood, uses a weighted selection for song notes and saves needed data.
  - Play Music
- UI
  - Reads note and duration data
  - Employ curses.h to draw the board and move notes
  - Each note use a thread for moving
  - Threads are synchronized to calculate score and combo
    - Scores times a multiplier when combo reaches 10 and 20
  - Write score to file and display top 5 scores

THE CATS' QUADRILLE.

From a Drawing by George Cruickshank.

London. Printed & Published Oct 12, 1829, by Engelmann, Graf. Coindet & Co. No 14, Newman St. & by Engelmann, & Co. Paris

Challenges with Implementation

- Syncing up the data between all the different work
- Using/learning SDL, curses, etc.
- Creating UI and movement using thread
- Generalizing Scales as Moods

Demo!

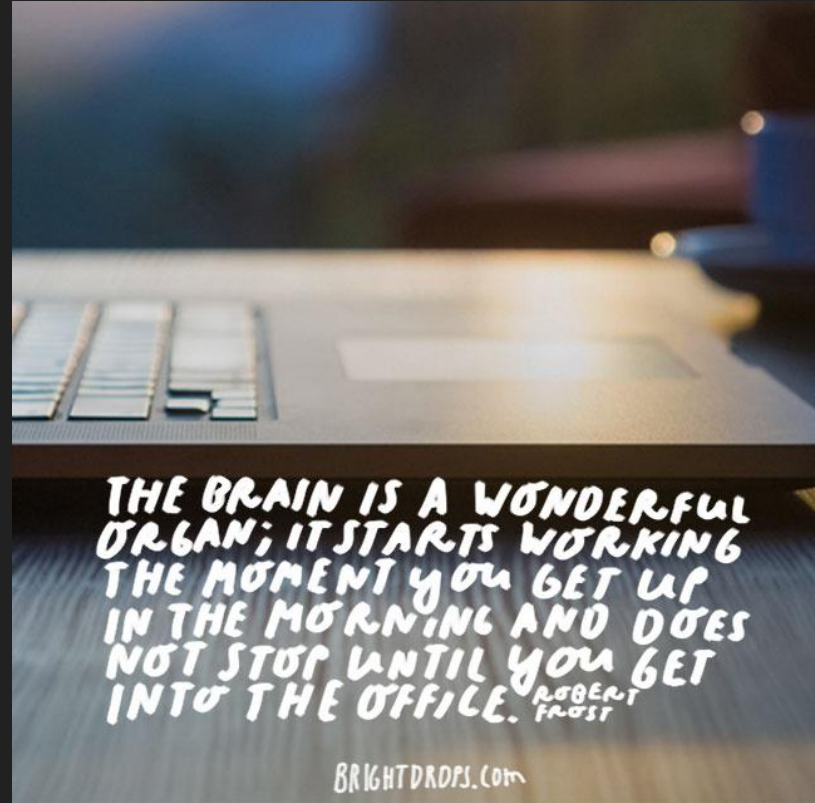# Final Thoughts

- Future Direction
  - Backtrack
  - Cadences (More musical music)
  - Proper Menu System
  - More gameplay variation

Thank You!