WASHINGTON STATE MIDDLE SCHOOL COMPUTER SCIENCE COMPETITION 2019

May 11, 2019

Team Test
Grades 7-8
90 Minutes

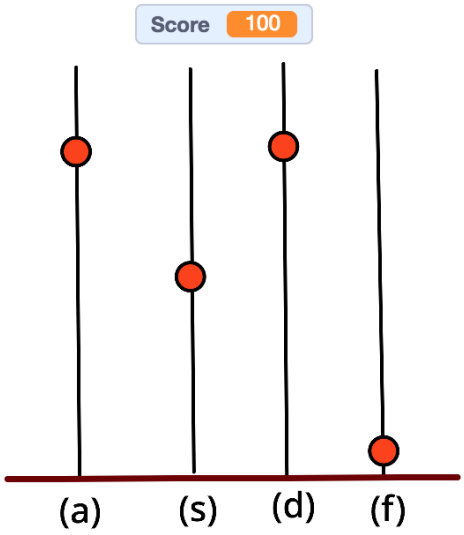
Please read these directions carefully before beginning. Breaking any of the rules is grounds for disqualification.

- Do not turn this page and begin working on the test until the start of the test is announced. Once time starts, you will have 90 minutes to complete this test.
- You are only allowed to consult with your teammates during the competition. No talking to anyone else (including coaches) is permitted.
- No devices of any kind (calculators, phones, etc.) besides computers are allowed during the test.
- You are not permitted to have any internet browser windows open during the test. Researching other projects on Scratch is not allowed - you should only be working on ONE project!
- Items with a +2 point value are bonuses – choose which ones you want to include in your game.
- If you do not complete all of the required items, the rest of your test will not be graded and you will be disqualified.
- Partial credit can be awarded if you include a bonus item that is not fully functional.
- Bonus points will be awarded for game design and special effects.

Guitar Hero

Your goal is to create a working version of the classic game, Guitar Hero. As steady stream of notes move down the screen, the objective of the game is to strike the right button at the exact moment the note reaches the bottom of the screen. Throughout gameplay the user gains points as a reward for their accuracy.

Example:



Main Ideas:

1. A random sequence of notes(shown as the red dots in this example) moves from the top of the screen to the bottom of the the screen.
2. The notes slide down the four black guitar strings.
3. The user is required to strike a key (a, s, d, f in the example) on their keyboard the moment the note on that string reaches the bottom.
4. A score variable increases when the user strikes the right note at the right time. Otherwise, when the note passes the bottom, the score decreases.

Required Items :

Background

- ❏ A guitar sprite or background with four strings and a bridge (line at the bottom of the example).

Note Sprite

- ❏ A small note sprite(shown as the red dot in the example) to be the notes on the guitar which move down the string when played.
- ❏ Periodically clone the note sprite, and have the clones start at the top of a randomly selected string.
- ❏ The clone of each note should move down the string and delete itself when it gets to the bottom.

User input

- ❏ Users can interact with the game
- ❏ There should be **instructions** so that the user knows which keys to use (a, s, d or f in the example).
- ❏ The user only gains a point if the right key was pressed at the right time.

Variables

- ❏ The game starts with **Score, Hits, Misses,** and **Time** set to 0.
- ❏ Points are added to **Score** each time the player hits the right key.
- ❏ Points are subtracted from **Score** each time the player doesn't hit the right key or misses a key. If the **Score** goes too negative, the game is over.
- ❏ Each time a note reaches the bottom without being hit, **Misses** increases by 1. Each Time the use hits the right note, **Hits** increases by 1.
- ❏ **Time** changes throughout gameplay until a time limit is reached and the game is over.
- ❏ When the game ends, the score is displayed on the Game Over backdrop and the user is told their accuracy : **Hits / (Misses+Hits**).
- ❏ **Score** and **Time** reset to 0 when the game is restarted or played again.

Gameplay

- ❏ A "Start" screen with the game title, and a Play button appears when the Green Flag is clicked.
- ❏ The game begins when the Play button is clicked.
- ❏ When the game ends, a "Game Over" screen appears with the final **Score** and a button to "Play Again". The Play Again button restarts the game.

Bonus Features :

+ 2pts each
A sweet song plays in the background.
Different note sounds are played through the speakers during gameplay depending on which key is hit.
An error sound is played when user hits the wrong note.
The start screen allows players to choose different difficulty settings that can make gameplay harder.
The game over screen gives the user additional information about their performance, like their accuracy, hits, and misses
Have some note sprites which are “power notes” where the user needs to hold down a key to gain extra points.
Have screen animations (color change, moving pieces etc) when notes a struck