**Synquencer Visual UI Test Cases**

**Test Case 1**

**Description:** Tests the ability of the user to switch between instruments

**Instructions:**

1. Open a new sequence
2. Place a few notes on the piano roll
3. Switch to a new instrument using the dropdown menu
4. Place a few new notes
5. Switch back to the previous instrument using the dropdown menu

**Expected outcome:** Each instrument should have its own separate set of notes visible which is hidden when the user switches to a different instrument and reappears when the user switches back to it

**Test Case 2**

**Description:** Tests the ability of the user to change time signatures

**Instructions:**

1. Open a new sequence
2. Switch to each time signature and observe that the time dividing lines are correct
3. Switch to 3/4 time signature
4. Place a few notes at even spacing
5. Play the sequence
6. Switch to 6/8 time signature
7. Play the sequence

**Expected outcome:** The dividing lines for each time signature should be correct, and a 6/8 time signature should play at half the speed of the 3/4 time signature at the same tempo

**Test Case 3**

**Description:** Tests the ability of the user to change the length of the sequence

**Instructions:**

1. Open a new sequence
2. Scroll to the end of the sequence
3. Observe that the end of the sequence is visible
4. Increase the length of the sequence
5. Place notes near the end of the sequence
6. Play the sequence, ensuring these notes are audible
7. Shorten the sequence so that these notes are no longer included
8. Play the sequence again, ensuring that these notes are not audible

**Expected outcome:** Notes near the end of the sequence should be audible when the sequence is long enough to include them and inaudible when the sequence ends before the notes

**Test Case 4**

**Description:** Tests the ability of the user to scroll vertically and horizontally in the sequence

**Instructions:**

1. Open a new sequence
2. Place a few notes
3. Scroll vertically by moving the mouse wheel over the preview piano
4. Observe that the notes, background, and piano all move together
5. Scroll to the very top and ensure that G9 is the highest note visible (7 keys above C9)
6. Scroll to the very bottom and ensure that C-1 is the lowest note visible
7. Scroll back to where you placed the notes
8. Scroll horizontally by moving the mouse wheel over the piano roll
9. Observer that the notes and background move together
10. Scroll as far left as possible and ensure that you cannot scroll further back than 0
11. Scroll right until you reach the end of the sequence

**Expected outcome:** The notes, background, and piano should all move correctly together as the user scrolls up, down, left, and right. The user should not be able to scroll up further than G9, down lower than C-1, or left further than 0.

**Test Case 5**

**Description:** Tests the ability of the user to play the sequence back

**Instructions:**

1. Open a new sequence
2. Place different notes at even intervals, ensuring that there are notes in the first and last cells in the sequence
3. Press play and listen, ensuring that every note plays
4. Press play a second time, but press stop partially through the sequence

**Expected outcome:** All notes placed should be playing at even intervals, and every note should be heard. After pressing stop, no further notes should be heard.

**Test Case 6**

**Description:** Tests the ability of the user to preview notes by clicking the piano keys on the side of the piano roll

**Instructions:**

1. Open a new sequence
2. Click anywhere on the preview piano and listen for the piano sound
3. Switch instruments
4. Click the piano again and ensure that the correct instrument can be heard
5. Scroll to key C8 and click it, ensuring that a sound is heard
6. Scroll to key A0 and click it, ensuring that a sound is heard

**Expected outcome:** The user should be hearing a note when they click the piano, unless the key is above C8 or below A0, as these ranges are not supported by the audio engine and are only accessible for compatibility with the MIDI format. When the user switches instruments, a different sound should be audible.