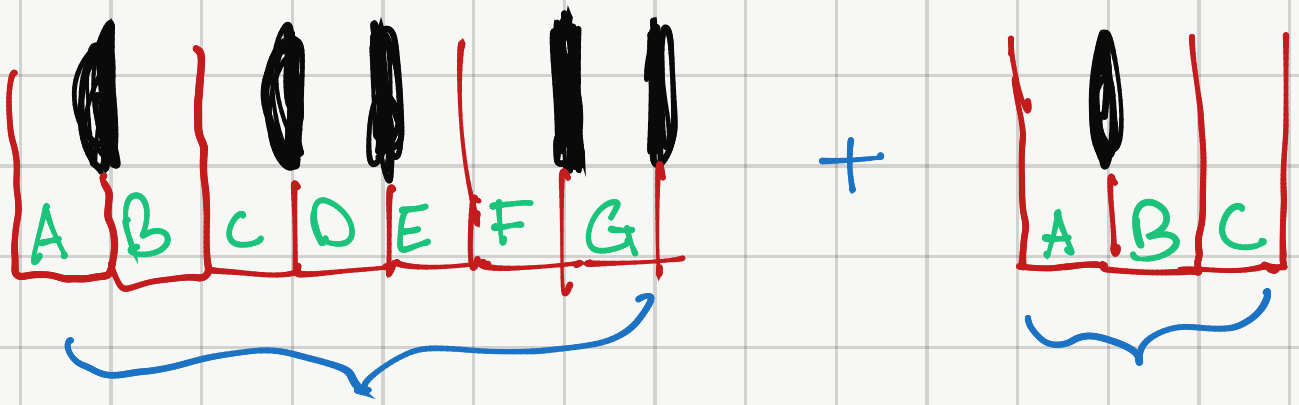
Guitar Piano Finger Algorithm

Oct 26, 2016, 5:06 PM

Piano

- 88 keys
  - ↳ A - C



6 | 1

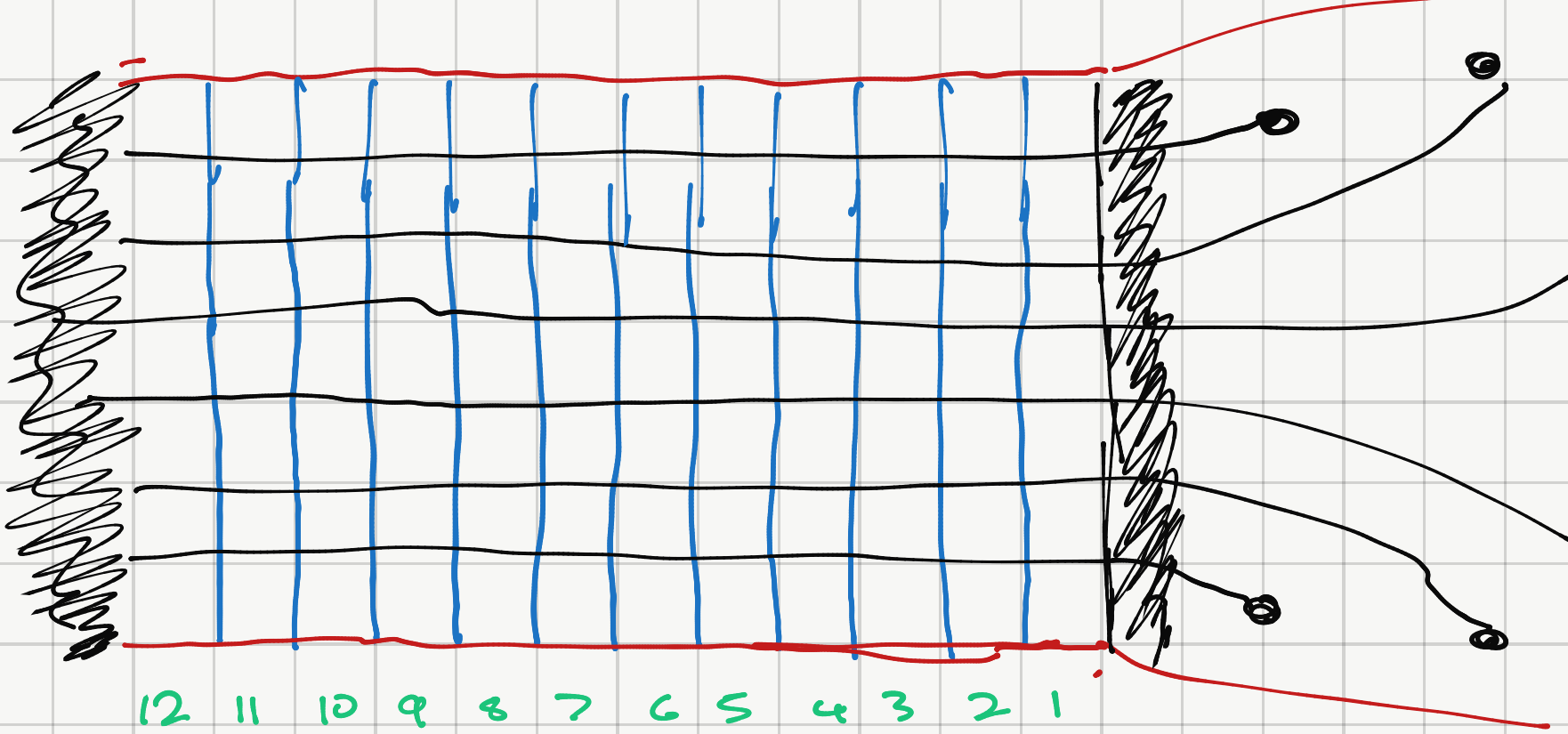
$6 \cdot 12) + (1 \cdot 4)$

= 88 keys

↳ $6\frac{1}{3}$ octaves

Guitar

- For the sake of playability, we will only use notes in the first 12 frets. As a given note n is the same note as $n+12$ down an octave, we can easily modify the code without changing much while maintaining our other assumptions.



- Aside from intution and counting by hand, we can figure out the range using the interval distance between each String.

Let each String be a part of the set of vertices S such that $s_1, s_2, \ldots, s_n$ make up the set. Each vertices in connected by a weight, E, which represents the interval distance between S_i and S_j. E represents repeated notes.

Given $n = 6$ and $f = 12$

$$E_1 = \{S_1, S_2\} = 5$$
$$E_2 = \{S_2, S_3\} = 5$$
$$E_3 = \{S_3, S_4\} = 5$$
$$E_4 = \{S_4, S_5\} = 4$$
$$E_5 = \{S_5, S_6\} = 5$$

$$\text{Notes} = \text{Strings} \cdot \text{Frets} - \sum_{i=1}^{n+1} |E_i|$$

$$= n \cdot f - \sum E$$

$$= 6 \cdot 12 - (5 \cdot 4 + 4)$$

$$= 72 - 24 - (2 = 36$$

So, there are 72 notes with 36 different notes.

This is more easily and logically found by taking the notes of the first or last string and then adding unrepeated notes, AKA intervals

$$= n \cdot f + \sum E$$

$$= 1 \cdot 12 + 24$$

$$= 36$$