Understanding pop songs

Elaine Lin

Why do pop songs sound the same?

Why do pop songs sound the same?

- Musically simple

Why do pop songs sound the same?

- Musically simple
  - 4 chord songs

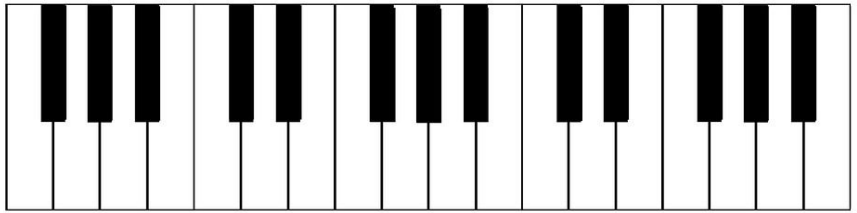
Why do pop songs sound the same?

- Musically simple
  - 4 chord songs
- **Song:** acoustic cover
  - Voice
  - Instrument

Song
Chords
Notes

Song

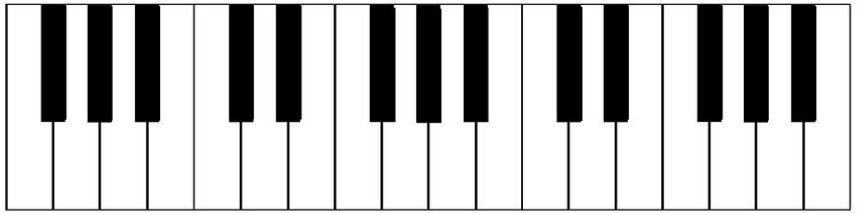
Voice



Instrument

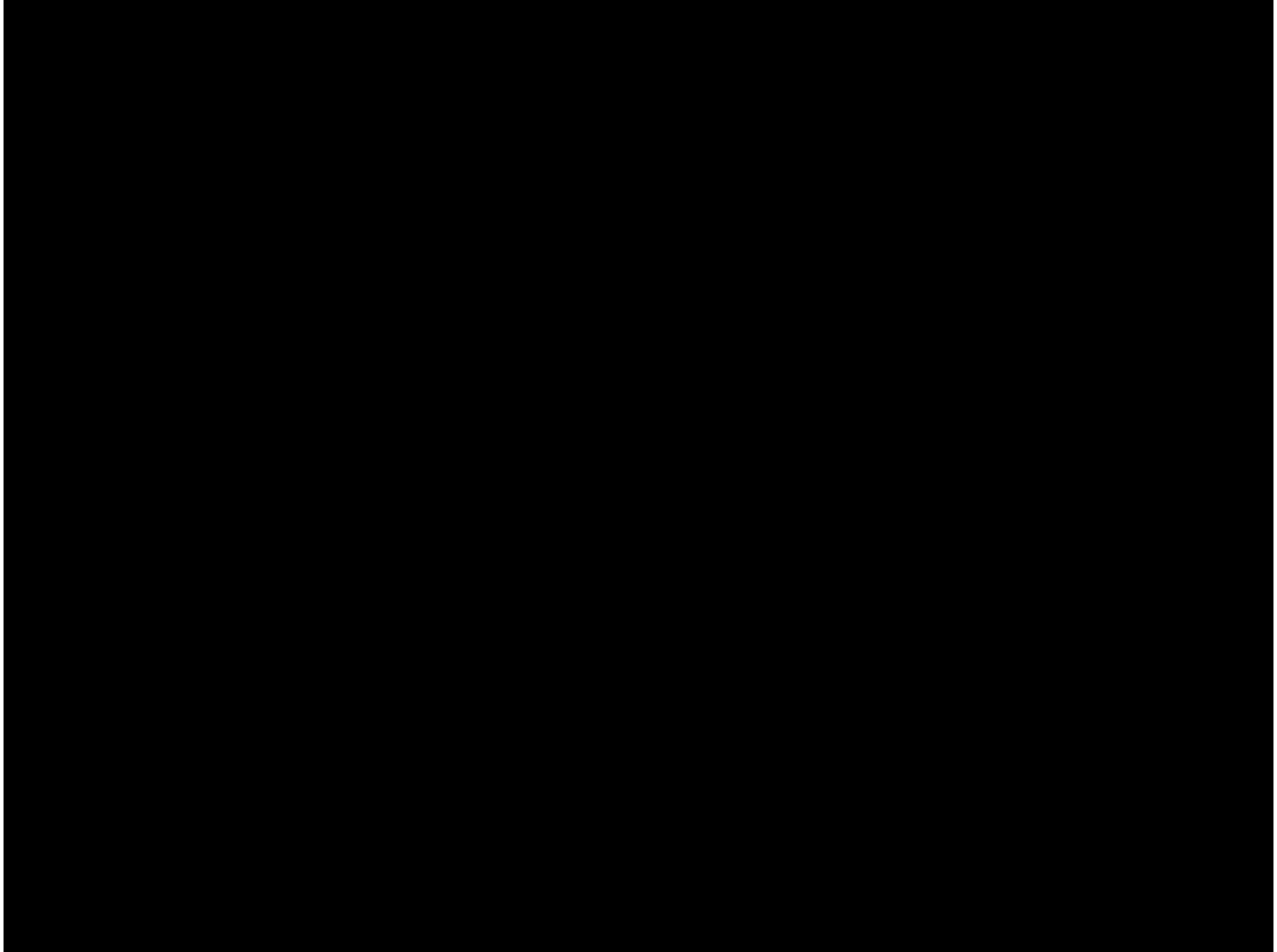
Song

Voice
Tune = Melody
1 note at a time



Instrument
Chords = Harmony
Multiple notes at a time

Video - Axis of Awesome



What is a chord?

What is a chord?

- **Chord:** notes played at the same time

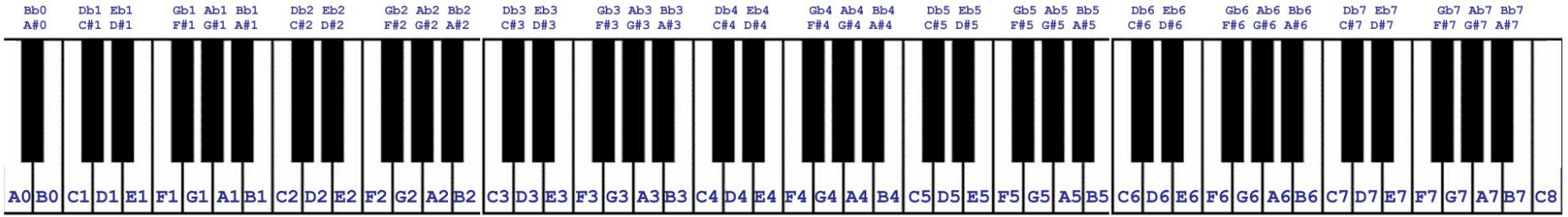
What is a chord?

- **Chord:** notes played at the same time
- 2 main types:
  1. major ex: A
  2. minor ex: Am

Notes

Notes

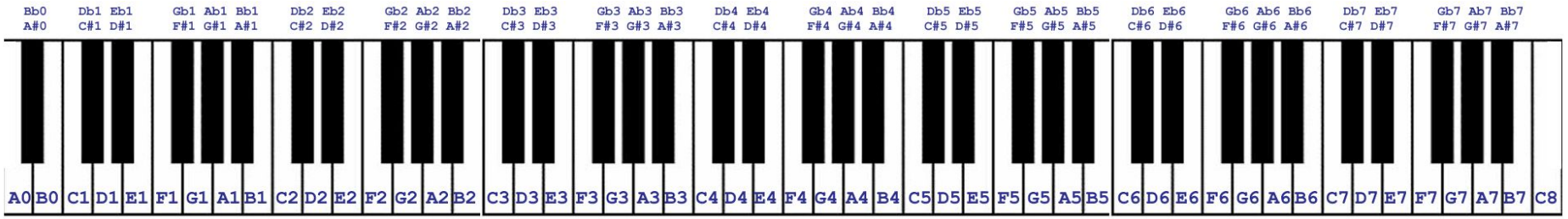
Piano range



Range = what notes an instrument can produce

Notes

Piano range



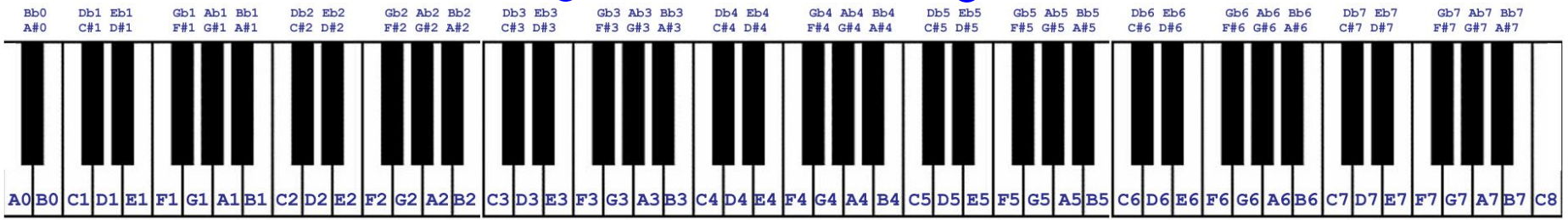
Ukulele range

Range = what notes an instrument can produce

Notes

Piano range

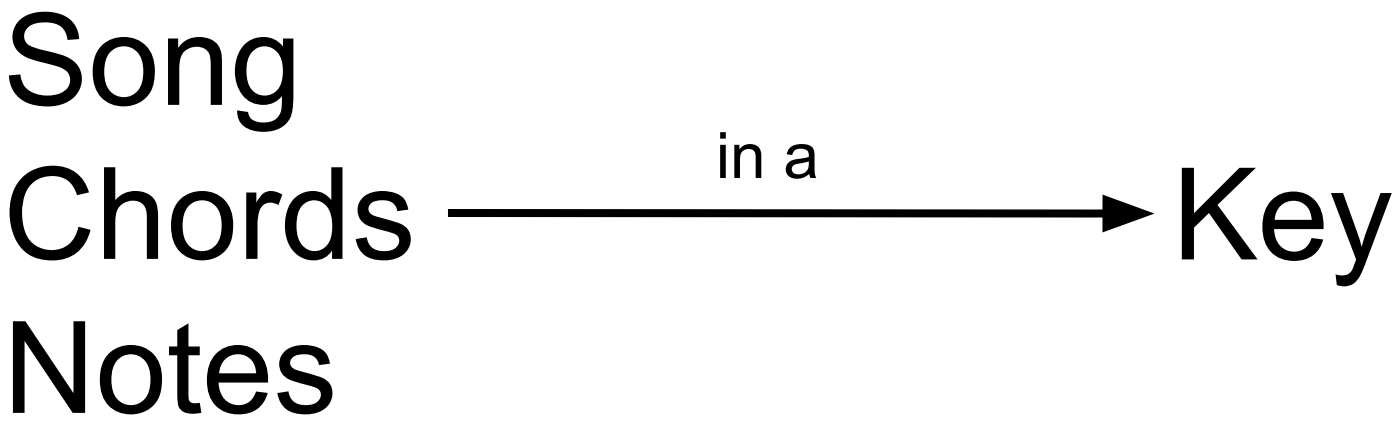
My voice range



Ukulele range

Range = what notes an instrument can produce

Song
Chords
Notes


Song
Chords
Notes
in a
Key

What is a key?

What is a key?

- **Key:** set of notes
- **Scale:** notes in the key ordered by pitch

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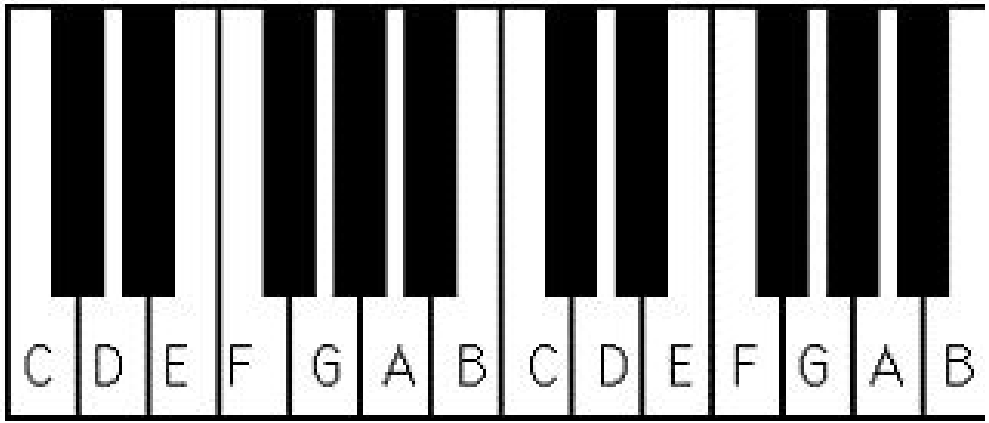
- **Key:** set of notes
- **Scale:** notes in the key ordered by pitch
- ex: C major = C, D, E, F, G, A, B



Chords in a key

- **Chord:** 3 notes played at the same time
  - Only use notes from the key

Chords in a key

- **Chord:** 3 notes played at the same time
  - Only use notes from the key
  - Types: major, minor, diminished
- ex: C major
  - C, Dm, Em, F, G, Am, Bdim

Chords in any key

- Roman numerals represent relationships between chords
  - capital = major ex: IV
  - lowercase = minor ex: vi

Chords in any key

- Roman numerals represent relationships between chords
  - capital = major ex: IV
  - lowercase = minor ex: vi
- Major key
  - I ii iii IV V vi vii^{o}
- Minor key
  - i ii^{o} III iv v VI VII

Chords in key of C major

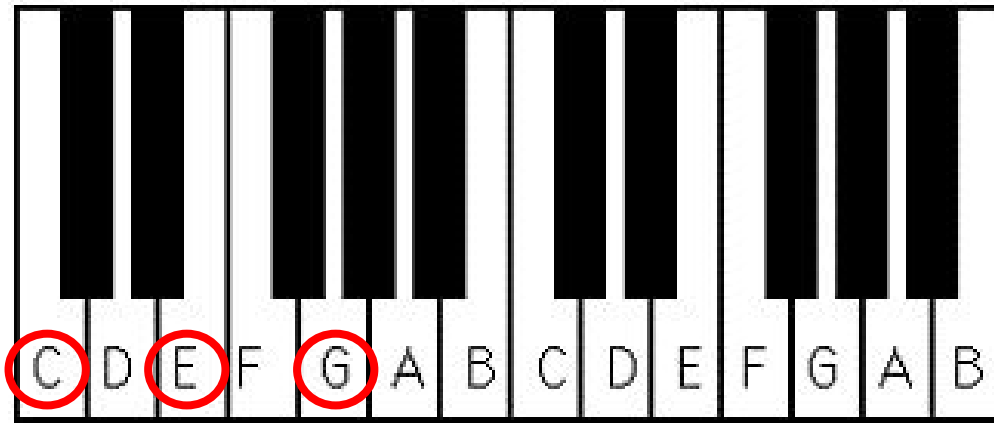
- C major = C, D, E, F, G, A, B

I	ii	iii	IV	V	vi	vii^{o}
C	Dm	Em	F	G	Am	Bdim

Chords in key of C major

- C major = C, D, E, F, G, A, B

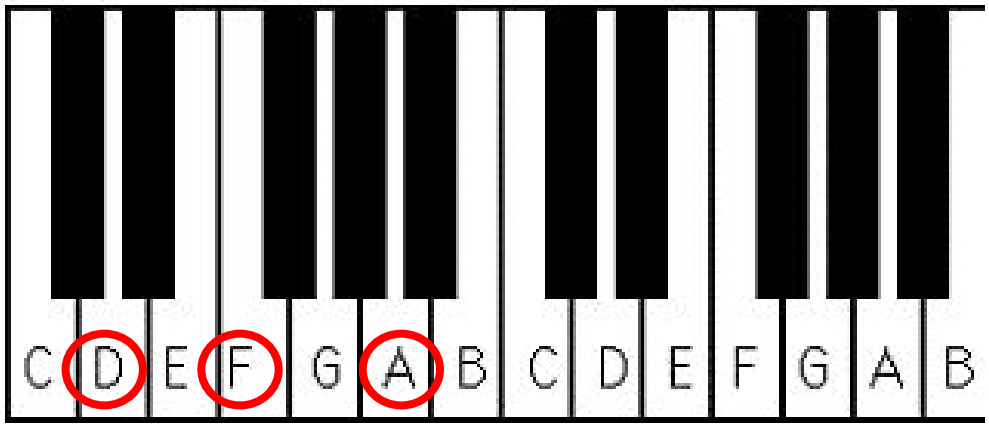
I
C major



Chords in key of C major

- C major = C, D, E, F, G, A, B

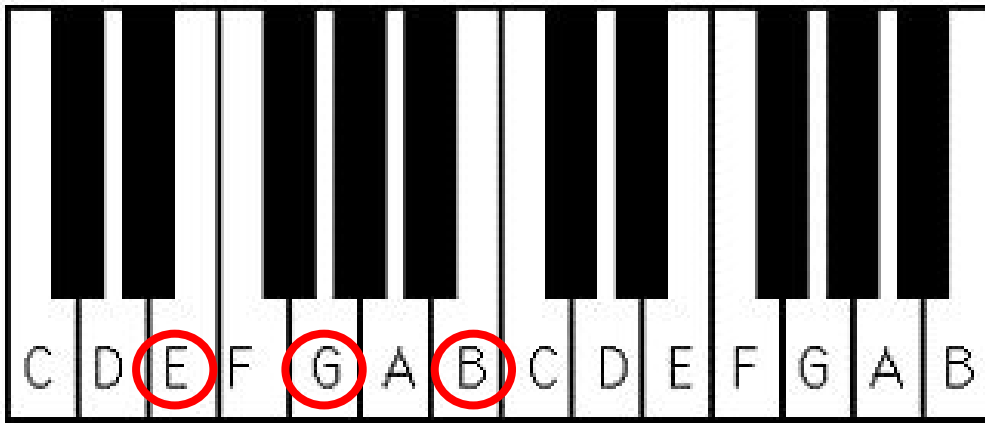
ii
D minor



Chords in key of C major

- C major = C, D, E, F, G, A, B

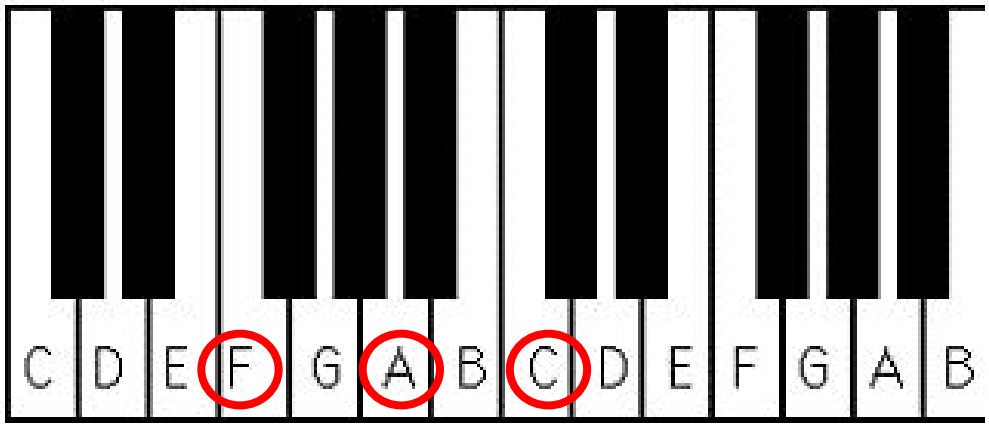
iii
E minor



Chords in key of C major

- C major = C, D, E, F, G, A, B

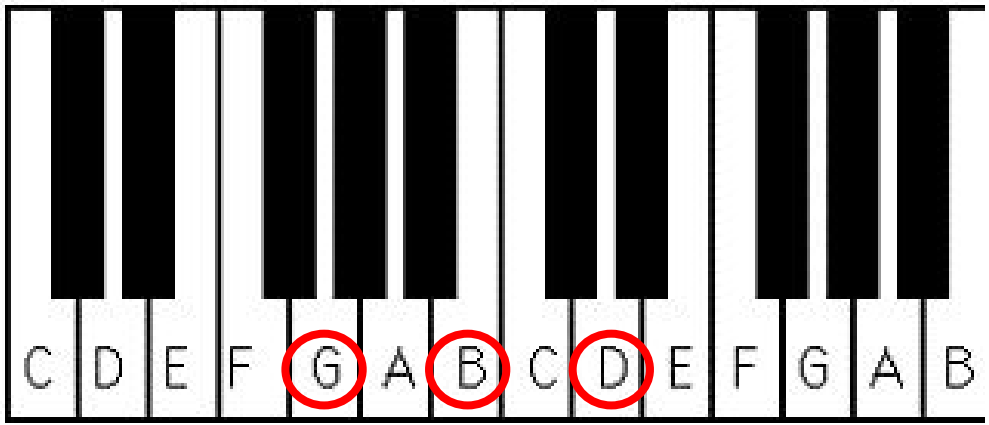
IV
F major



Chords in key of C major

- C major = C, D, E, F, G, A, B

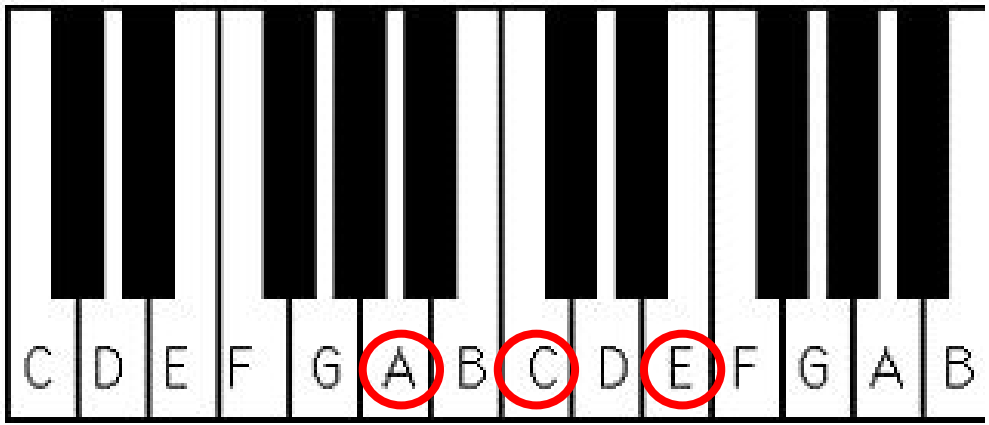
V
G major



Chords in key of C major

- C major = C, D, E, F, G, A, B

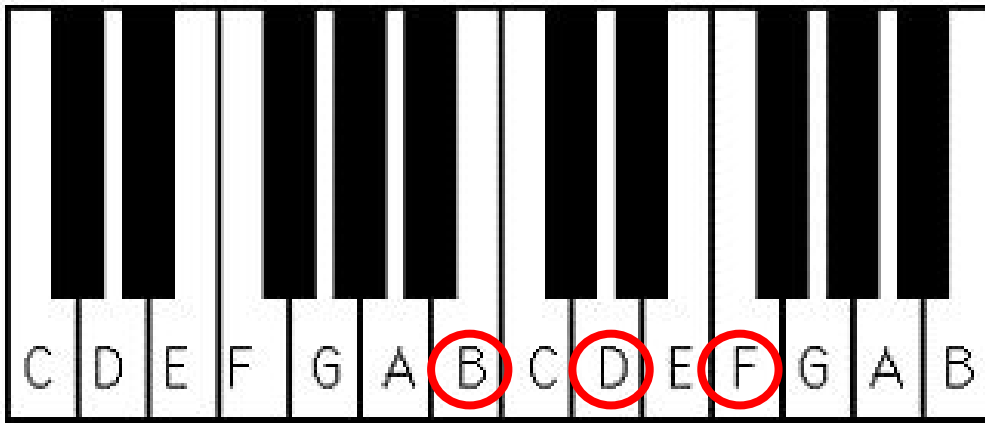
vi
A minor



Chords in key of C major

- C major = C, D, E, F, G, A, B

vii°
B dim



Chords in key of C major

- C major = C, D, E, F, G, A, B

I	ii	iii	IV	V	vi	vii^{o}
C	Dm	Em	F	G	Am	Bdim

Why 4 chords?

Why 4 chords?

- Mathematical reason
  - Preference for complementary frequencies
- Most common: I IV V vi

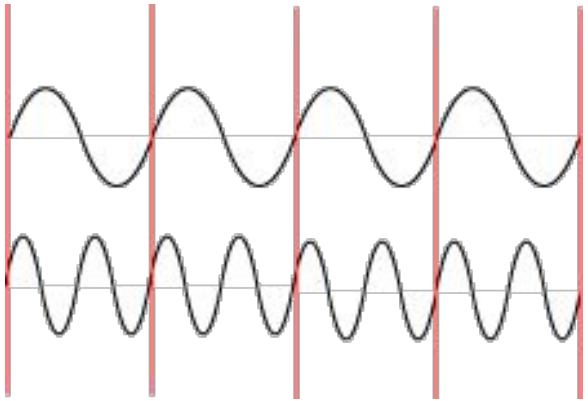
Why 4 chords?

- Musical notes made of evenly-spaced sound waves
- **Frequency:** how high or low a sound is

Why 4 chords?

- Musical notes made of evenly-spaced sound waves
- **Frequency:** how high or low a sound is

Octave frequencies



Video - 4 chords

- C major chords
  - I = C
  - IV = F
  - V = G
  - vi = Am

Video - 4 chords

- C major chords
  - I = C
  - IV = F
  - V = G
  - vi = Am
- Order C, G, Am, F

Video - ukulele pop medley

Making song mash-ups

How 4 chord songs differ

How 4 chord songs differ

- Key of song
- Roman numerals of chords
  - Commonly use I IV V vi (C F G Am)
- Ordering of chords

Goal: sync up chords for different songs

Transposing songs

- **Transpose:** play song in a different key
- Same relationships between notes and chords

Transposing songs

- **Transpose:** play song in a different key
- Same relationships between notes and chords
- Reasons to transpose
  - Song mash-ups

Transposing songs

- **Transpose:** play song in a different key
- Same relationships between notes and chords
- Reasons to transpose
  - Song mash-ups
  - Easier to sing
  - Simpler ukulele chords

C major vs. G major

- C major chords
  - I = C
  - IV = F
  - V = G
  - vi = Am

C major vs. G major

- C major chords
  - I = C
  - IV = F
  - V = G
  - vi = Am
- G major chords
  - I = G
  - IV = C
  - V = D
  - vi = Em

Making pop songs sound different

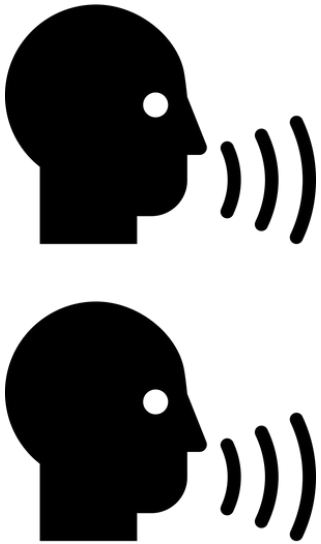
Instrument choice

Acoustic Covers

Voice

Ukulele

Acoustic Covers



2 Voices

Ukulele

Video - “Shape of You”

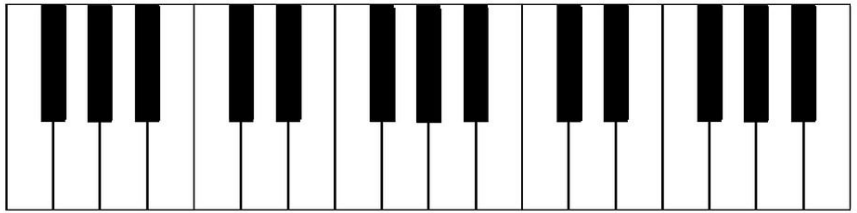
Acoustic Covers

Voice

Guitar

Acoustic Covers

Voice



Piano

Actual pop songs

Voice

Guitar

Bass

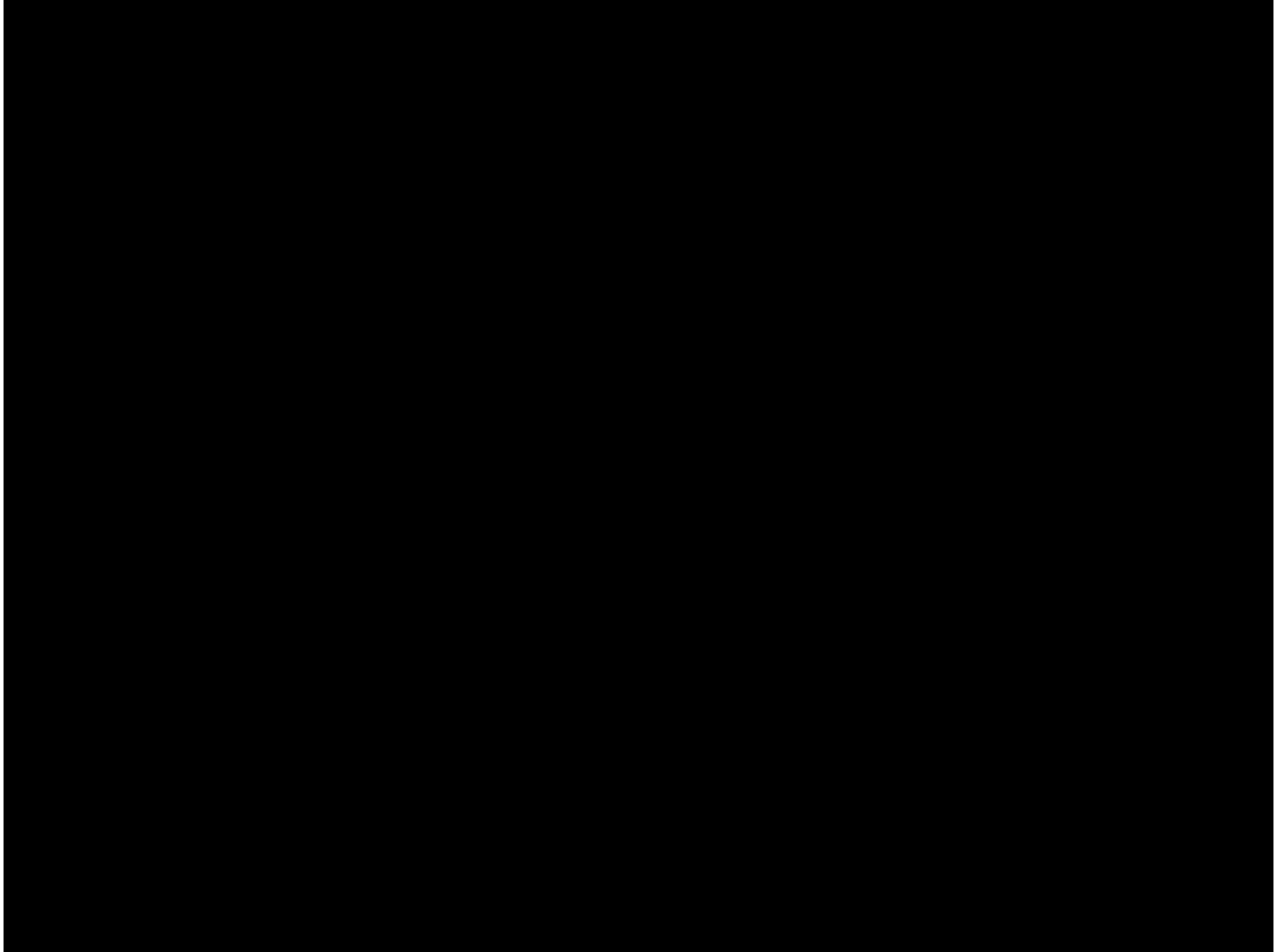
Drums

Instrument range

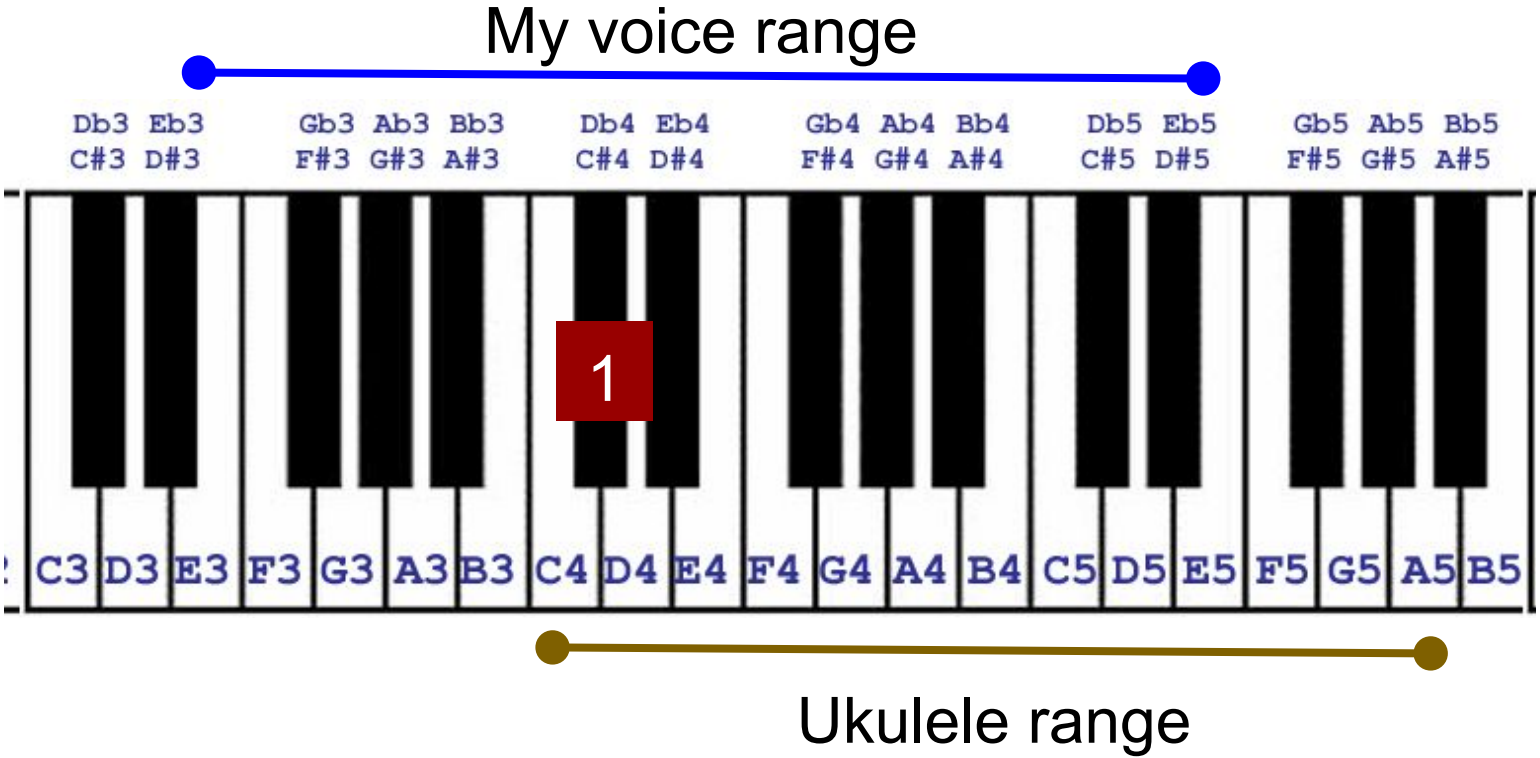
Video - 4 chords

- E major chords
  - I = E
  - IV = A
  - V = B
  - vi = C#m
- Order C#m E B A

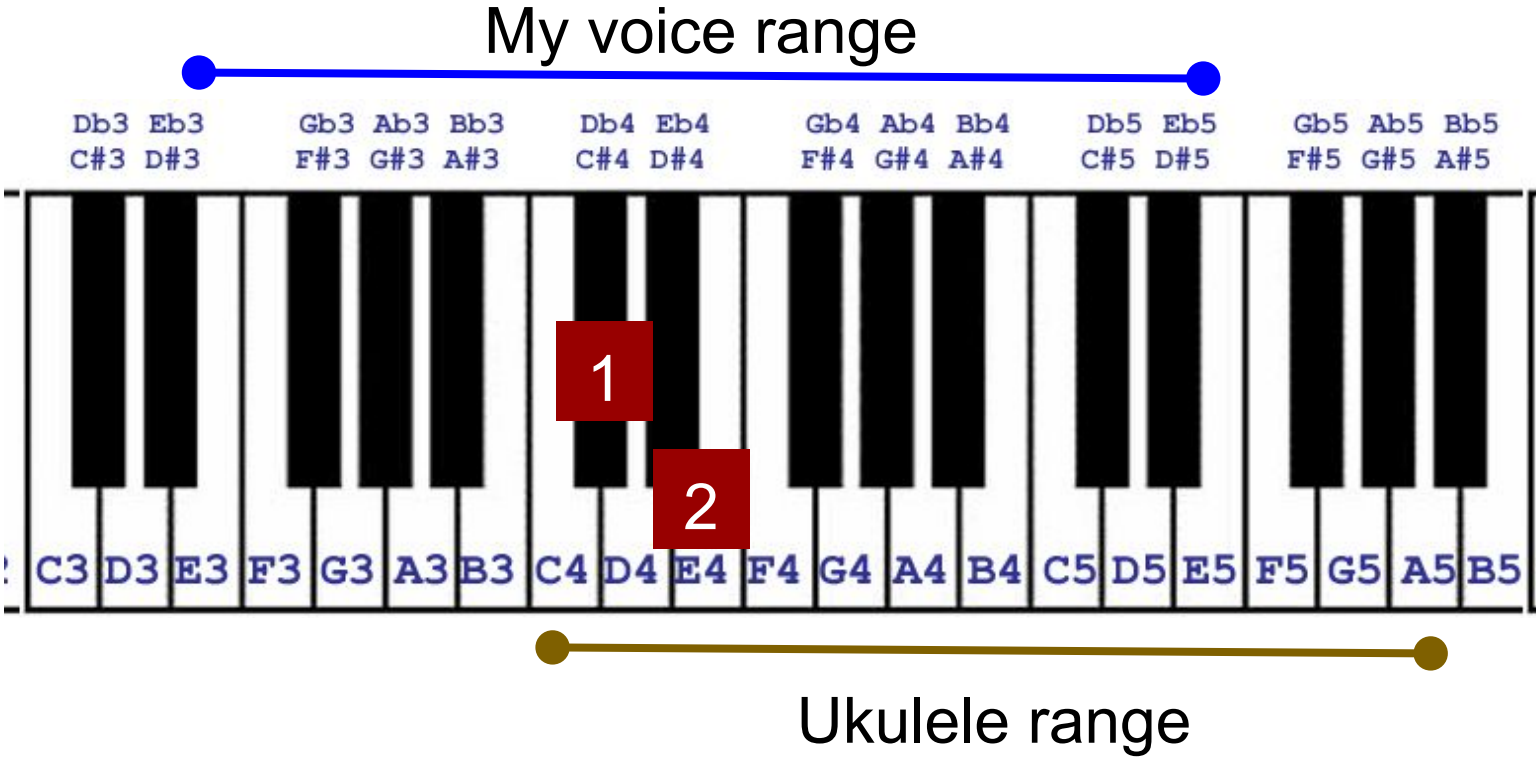
Video - “Counting Stars”



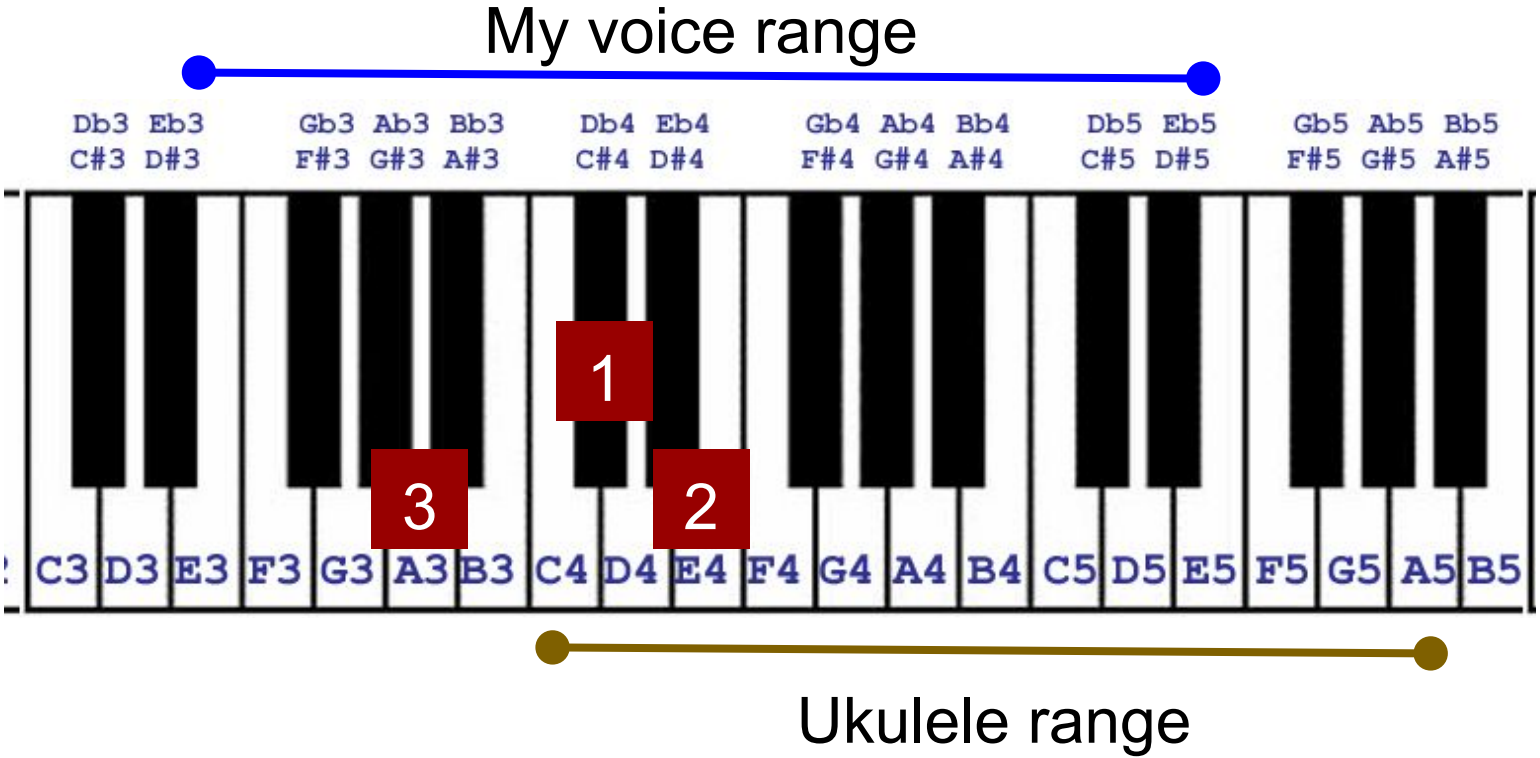
Notes


My voice range
Db3 Eb3
C#3 D#3
Gb3 Ab3 Bb3
F#3 G#3 A#3
Db4 Eb4
C#4 D#4
Gb4 Ab4 Bb4
F#4 G#4 A#4
Db5 Eb5
C#5 D#5
Gb5 Ab5 Bb5
F#5 G#5 A#5
1
C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5 D5 E5 F5 G5 A5 B5
Ukulele range

Notes


My voice range
Db3 Eb3
C#3 D#3
Gb3 Ab3 Bb3
F#3 G#3 A#3
Db4 Eb4
C#4 D#4
Gb4 Ab4 Bb4
F#4 G#4 A#4
Db5 Eb5
C#5 D#5
Gb5 Ab5 Bb5
F#5 G#5 A#5
1
2
C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5 D5 E5 F5 G5 A5 B5
Ukulele range

Notes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C#4 D#4
Gb4 Ab4 Bb4
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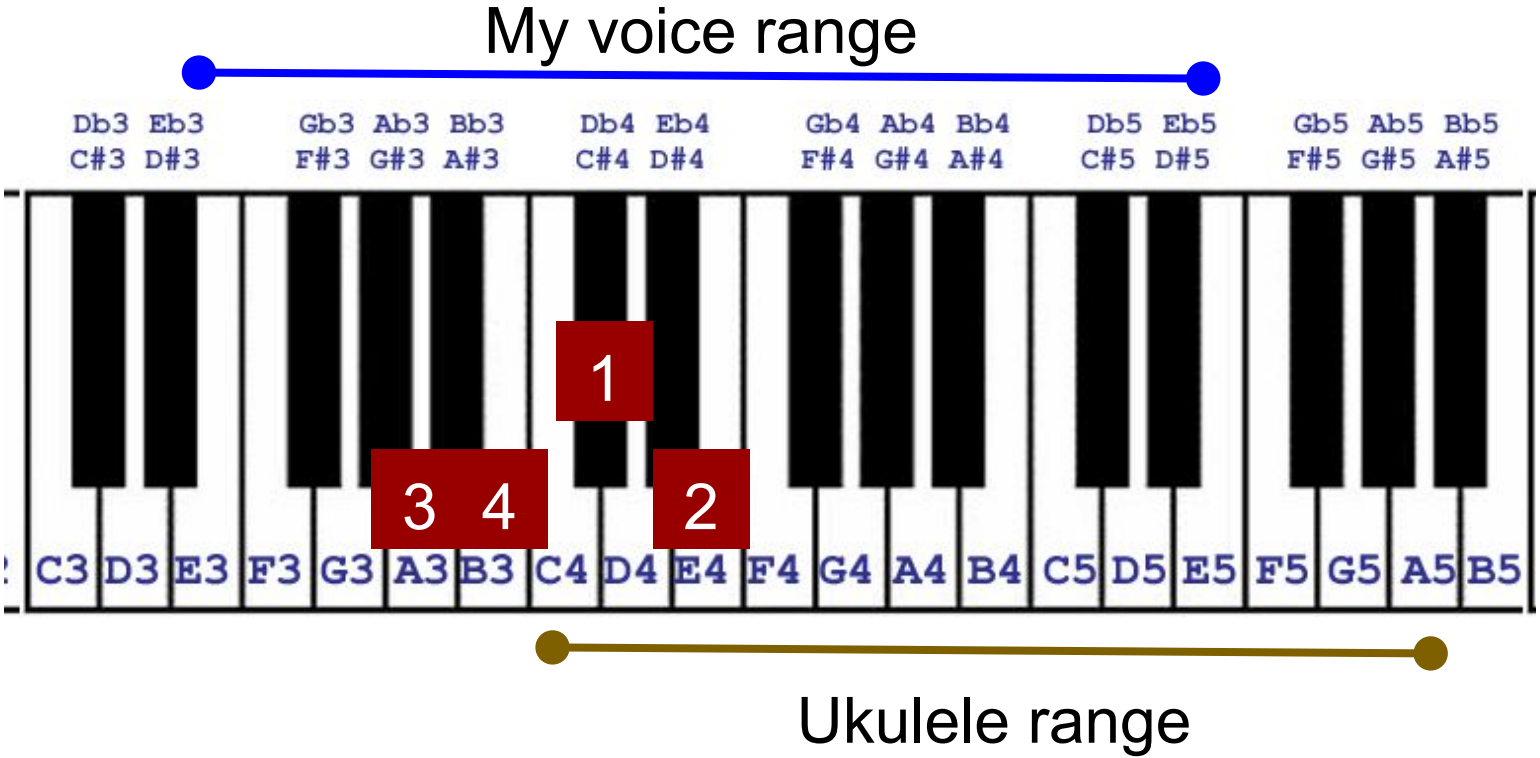
Db5 Eb5
C#5 D#5
Gb5 Ab5 Bb5
F#5 G#5 A#5
1
2
3
C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5 D5 E5 F5 G5 A5 B5
Ukulele range

Notes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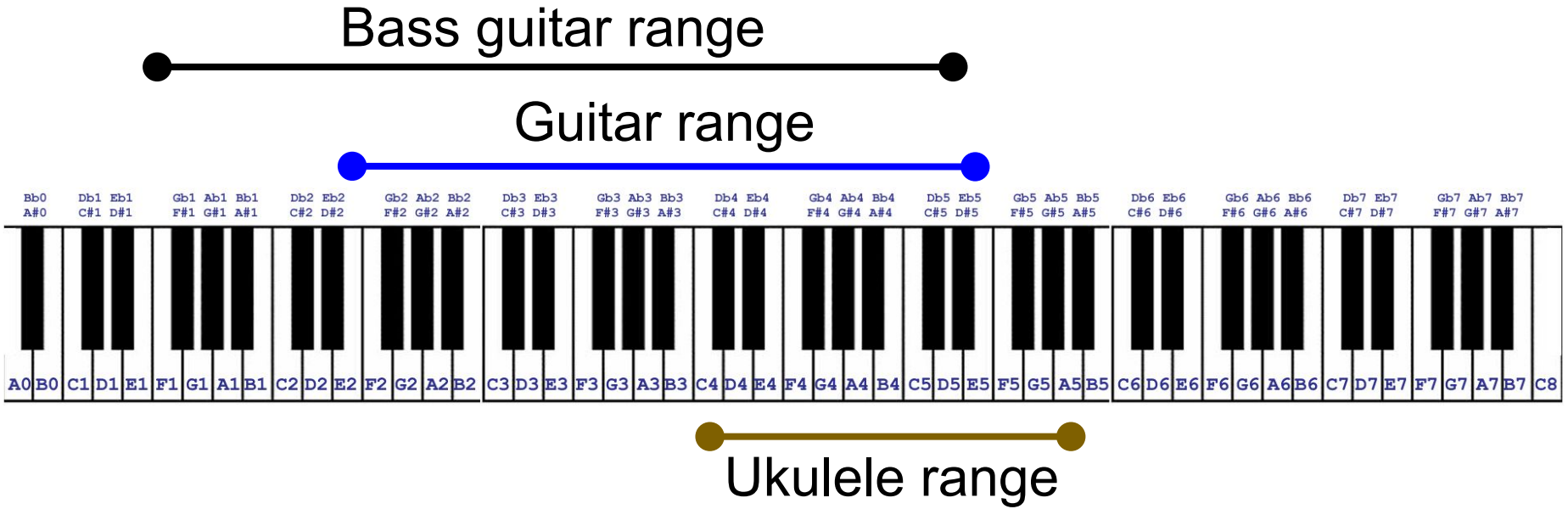
Gb4 Ab4 Bb4
F#4 G#4 A#4
Db5 Eb5
C#5 D#5
Gb5 Ab5 Bb5
F#5 G#5 A#5
1
3 4
2
C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5 D5 E5 F5 G5 A5 B5
Ukulele range

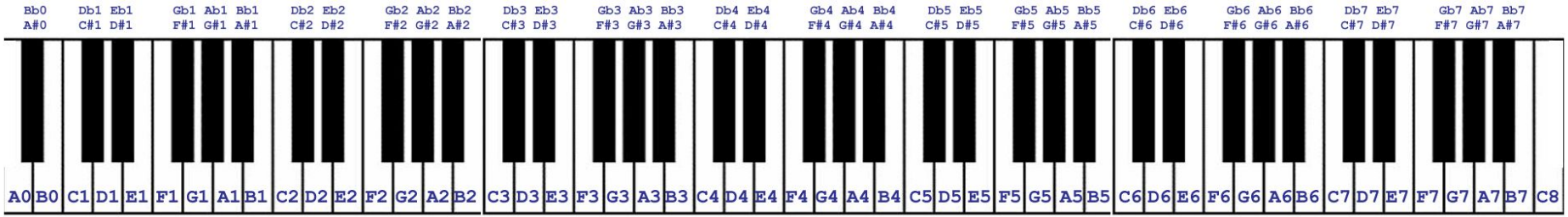
Stringed instruments



Human voice

Elvis Presley range

My voice range



Christina Aguilera range

1. 4 chord songs
2. song, chords, notes $\xrightarrow{\text{in a}}$ key
3. song mashups

Links

- hooktheory.com
  - search songs by structure
- musicparsed.com
  - multi-column view for song chords