the `guitar-fretboard` package

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Contents

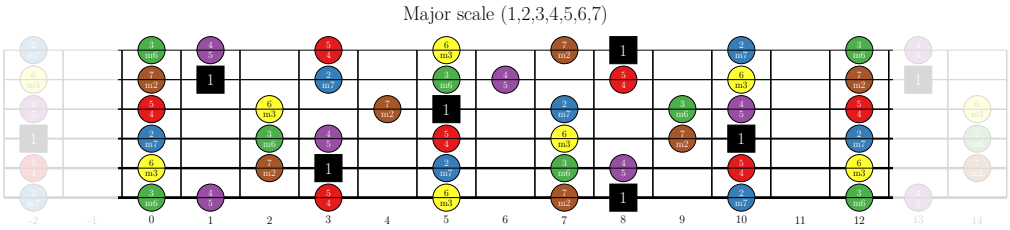
1 Introduction

The `guitar-fretboard` package can be used to generate some nice-looking guitar fretboard diagrams. Those diagrams can highlight scales, arpeggios or more generic intervals on the guitar neck.

It comes with all battery included to allow you to:

- Create scale diagrams in any tonality for any strung instruments (including guitar, bass, ukulele) in both right and left handed configuration.
- Transpose notes or scales.
- Create diagrams in alternate tuning.
- Create generic diagrams with normal, shaded and highlighted notes.
- and more.

As an example here is the Major scale in key of G:



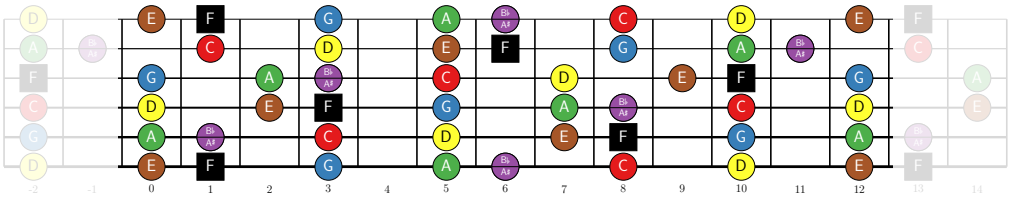

```
\begin{fb}[frets before = 2, frets after = 2,
    legend text = {Major scale (1,2,3,4,5,6,7)},
```

```
    fret numbers visible]
  \foreach \i in {1, 2, 3, 4, 5, 6, 7} {
    \note[lower]{\i}
  }
\end{fb}
```

The major scale consists of following intervals from the tonic (root) note: perfect unison, major second, major third, perfect fourth, perfect fifth, major sixth and major seventh. These intervals are represented as {1,2,3,4,5,6,7}. Each interval has its own color for an easier lookup and memorization.

The note names can be displayed instead of intervals. The F Major scale is composed of F,G,A,B♭,C,D and E:

F Major scale (F, G, A, B♭, C, D, E)

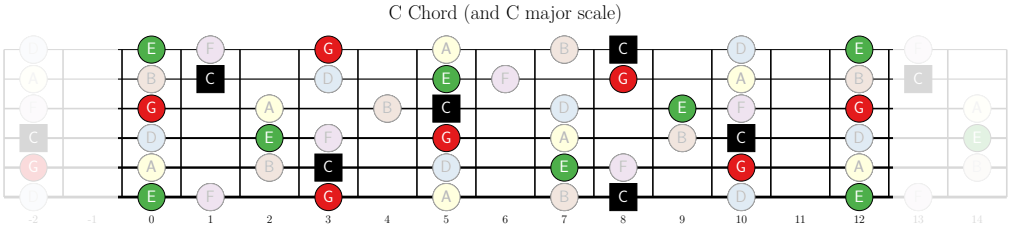


```
\begin{fb}[frets before = 2, frets after = 2,
    transpose = 5,
    transpose pitch,
    legend text = {F Major scale (\pF, \pG, \pA, \pBb, \pC, \pD, \pE)},
    fret numbers visible]
  \foreach \i in { C, D, E, F, G, F, A, B} {
    \note[lower]{\i}
  }
\end{fb}
```

The F scale is the same as the C one but we raise it by 5 semi tones. `guitar-fretboard` is able to convert the pitch name as well. The pitch transposition is based on semi-tones and may not be always accurate in terms of harmony since not intervals are used in the process.

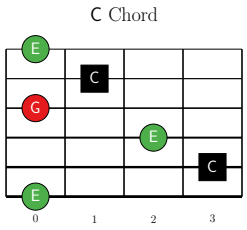
Chords can also be displayed. In that case you can easily see new C chord shapes showing up. If you are playing in C Major, the scale can also be displayed. This helps you to find new embellishments when soloing:

C Chord (and C major scale)



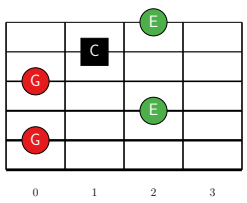
```
\begin{fb}[frets before = 2, frets after = 2,
    legend text = {C Chord (and C major scale)},
    fret numbers visible]
  \foreach \i in {C, E, G} {
    \note{\i}
  }
  \foreach \i in {D, F, A, B} {
    \note[shade]{\i}
  }
\end{fb}
```

The classical C open chord can also be displayed. In that case the ⟨*limit*⟩ option is used to only place the G on the 3rd string.




```
\begin{fb}[frets min = 0, frets max = 3,
    legend text = {\pC Chord},
    fret numbers visible]
  \note{C} \note{E} \note[limit={3}]{G}
\end{fb}
```

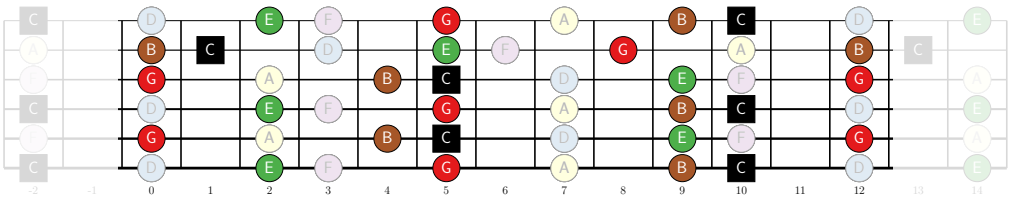
The same chord in open G tuning. Again `guitar-fretboard` does all the magic for you as long as you ask nicely.




```
\begin{fb}[frets min = 0, frets max = 3,
    tuning={2,7,2,7,11,2},
    legend text = {\pC Chord in open \pG tuning},
    fret numbers visible]
  \note{C} \note[limit={1,4}]{E} \note{G}
\end{fb}
```

And the C M7 arpeggio within the whole scale in open G tuning:

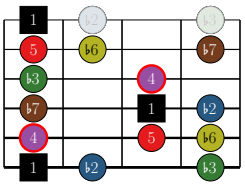
C M7 arpeggio in open G tuning



```
\begin{fb}[frets before = 2, frets after = 2,
    tuning={2,7,2,7,11,2},
    legend text = {\pC M7 arpeggio in open \pG tuning},
    fret numbers visible]
  \foreach \i in {C, E, G, B} {
    \note{\i}
  }
  \foreach \i in {D, F, A} {
    \note[shade]{\i}
  }
\end{fb}
```

If you want to display a scale mode you can also emphasis the characteristic notes (the note that colors the mode, you want to play that note). Here is an example with a generic Phrygian mode:

Phrygian scale



```
\begin{fb}[frets min=3, frets max=6,
    transpose = -5,
    legend text = {Phrygian scale}]
  \foreach \i in {1,b2,b3,5,b6,b7} {
    \note{\i}
  }
  \foreach \i in {b2,b3} {
    \note[limit={1},shade]{\i}
  }
  \note[highlight]{4}
\end{fb}
```

2 Definitions

Under the hood all computation is done using semitones (from 0 to 11) relative to C.

Semitone	Note	Internal name	Note command
0	C	C	\pC
1	C♯ / D♭	CS / Db	\pCS / \pDb
2	D	D	\pD
3	D♯ / E♭	DS / Eb	\pDS / \pEb
4	E	E	\pE
5	F	F	\pF
6	F♯ / G♭	FS / Gb	\pFS / \pGb
7	G	G	\pG
8	G♯ / A♭	GS / Ab	\pGS / \pAb
9	A	A	\pA
10	A♯ / B♭	AS / Bb	\pAS / \pBb
11	B	B	\pB

From here we won't distinguish a note from an interval since they are defined from semitones.

2.1 Fretboard definition

`\begin{fb}`[⟨*options*⟩]
⟨*environment content*⟩
`\end{fb}`

This is the main environment to create a fretboard. Several [⟨*options*⟩] can be passed to customize the environment.

/fb/fretboard=⟨*style*⟩

Style applied to the main `tikz` environment.

/fb/scale=⟨*scale*⟩ (0.3)

Scale factor applied to the `tikz` environment.

/fb/frets min=⟨*frets min*⟩ (0)

Lowest fret to be displayed.

/fb/frets max=⟨*frets max*⟩ (12)

Highest fret to be displayed.

/fb/frets before=⟨*frets before*⟩ (0)

Number of frets displayed before the lowest one. This area will be shaded. This is useful for a larger view of the neck while focusing on small part.

/fb/frets after=⟨*frets after*⟩ (0)

Same as `/fb/frets before` but after highest fret.

/fb/frets offset=⟨*frets offset*⟩ (0.5)

Offset to shift the frets on the x axis. You probably don't want to play with this setting.

/fb/tuning=⟨*tuning*⟩ (4, 9, 2, 7, 11, 4)

The instrument tuning from lowest (6^{th}) to highest (1^{st}) string. Keep in mind that all is matter of semitones relative to `C`. For a bass you probably want to use `{4, 9, 2, 7}`, for Dropped `D`, `{2, 9, 2, 7, 11, 4}`, etc.

/fb/transpose=⟨*semitones*⟩ (0)

Number of semitones to apply to current fretboard definition.

/fb/transpose pitch=⟨*transpose pitch*⟩ (false)

If true the note pitches will also be transposed. Note this is non-sense for intervals.

/fb/string=⟨*style*⟩ (0)

String drawing style.

/fb/string width=⟨*string width*⟩ (0.5pt)

Initial width of the highest (thinnest) string (1^{st}).

/fb/string factor=⟨*string factor*⟩ (0.5pt)

A growth factor to be applied when drawing strings from the highest (1^{st}) to the lowest (biggest one).

/fb/frets=⟨*style*⟩

Style for drawn frets.

/fb/fret numbers=⟨*style*⟩

Style for fret numbers.

/fb/fret numbers position=⟨*fret numbers position*⟩ (0.75)

Fret numbers position below fretboard.

/fb/note=⟨*style*⟩

Default style for note (See **/notes/NOTE/style** → P. 7).

/fb/split note=⟨*style*⟩

Default style for split note (See **/notes/NOTE/split style** → P. 7).

/fb/highlight note=⟨*style*⟩

Default style for highlighted note (See **/notes/NOTE/highlight style** → P. 7).

/fb/overlay=⟨*style*⟩

Style for overlay mask applied over **/fb/frets before** → P. 5 and **/fb/frets after** → P. 5.

/fb/legend text=⟨*text*⟩

The fretboard legend.

/fb/legend=⟨*style*⟩

The fretboard legend style.

`\note[`⟨*options*⟩`]{`⟨*name*⟩`}`

Place note ⟨*name*⟩ on the fretboard. This command only makes sense in a `fb` → P. 5 environment.
`[`⟨*options*⟩`]` are the same as `\newnote` → P. 7 and can be overridden.
Examples:

```
% Display a squared unisson.
\note[style/.append style={shape=rectangle}]{1}
```

```
% Display shaded notes
\foreach \i in {D, F, A, B} {
  \note[shade]{\i}
}
```

```
% Display a C open chord
\note[style/.append style={rectangle}]{C}
\note{E}
\note[limit={3}]{G}
```

2.2 Color definition

(todo)

2.3 Note definition

`guitar-fretboard` comes with a lot of interval and pitch definitions. Still you can add your owns.

`\newnote[`⟨*options*⟩`]{`⟨*name*⟩`}`

Creates a new note ⟨*name*⟩ relatively from C. The new note can be referred by ⟨*name*⟩ when displaying it on the fretboard. ⟨*name*⟩ will be a part of a `PGF` key thus some characters such as sharp(#) cannot be used. By an arbitrary convention a note is designed by X, the flatten Xb and the sharped XS.
For a new note a new PFG tree is created under `/notes/NOTE`.

`/notes/NOTE/semitones=`⟨*semitones*⟩ (0)

Number of semitones from C.

`/notes/NOTE/text=`⟨*text*⟩ (`{`⟨*name*⟩`}`)

Displayed note name. For pitches, you can use the `\pX` shortcuts such as `\pA`, `\pBb` `\pFS` and so on.

`/notes/NOTE/lower text=`⟨*lower text*⟩

Same as `/notes/NOTE/text` but for lower part text.

`/notes/NOTE/limit=`⟨*limit*⟩

Set a string limit when placing the notes. This can be useful when drawing a chord. You may only want to use this option when displaying note using `\note` → P. 6.

/notes/NOTE/style=⟨*style*⟩

A style definition to be applied to the note when the lower part is omitted.

/notes/NOTE/split style=⟨*split style*⟩

A style definition to be applied to the note when the lower part is displayed.

/notes/NOTE/highlight style=⟨*highlight style*⟩

A style definition to be applied to emphasis the displayed note. This is useful for target or characteristic notes.

/notes/NOTE/lower=⟨*boolean*⟩ (false)

Set to true is you want to display both text and lower text.

/notes/NOTE/shade=⟨*boolean*⟩ (false)

Set to true if you want to shade the note to make it less important than others.

Examples:

```
% Definition of C
\newnote[semitones=0,
  text=\pC,
  style/.append style={fill=bg1, text=fg1}%
]{C}
```

```
% Definition of D#/Eb
\newnote[semitones=3,
  text=\pDS,
  lower text=\pEb,,
  style/.append style={fill=bg2s, text=fg2s}%
]{DS}
```

\copynote[⟨*options*⟩]{⟨*from*⟩}{⟨*to*⟩}

Copies note from ⟨*from*⟩ to ⟨*to*⟩.
[⟨*options*⟩] are the same as **\newnote** → P. 7.
Examples:

```
% Definition of Unison (1) which is C.
\copynote[text=1,]{C}{1}
```

```
% Definition of Major Third which is E. The inversed interval
↪  is a minor
% sixth.
\copynote[text=M3,lower text=m6]{E}{M3}
```