Pattern Editor

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Introduction

The pattern editor is the window in the center of the window when you start PLEBTracker. This window displays one pattern of song data. You can see four vertical 'tracks' seperated by vertical bars "||". When this pattern is played, it is played from top to bottom.

Within a track there are 4 fields to edit.

1. Note [C-4] A musical note, and its octave.
2. Instrument [00] Which instrument to play from the instrument list.
3. Volume [3F] How loud this instrument should be playing on this note.
4. Effect [204] Does any number of things.

Notes

The first field in a track is the note and octave. || [[C-2]] 00 3F 444 ||

To change octaves within the pattern editor press SHIFT and the number key of which octave to change to. When you press SHIFT + 2 the interface will say OCT: 1, this is correct. The bottom two rows of your keyboard (beginning with 'a' and 'z') will play notes in octave 1. The number row and row beginning with 'q' will play notes in octave 2.

The default key signature of the tracker is Chromatic C, which means when the tracker populates the keyboard bindings to the notes they represent. 'q' and 'z' will be C (because the key is C,) and each key as you go along the keyboard will increase by a halfstep (because the scale is Chromatic.) It is possible to change the key and scale in the meta window (TAB + q.) When changing Key, press the key that represents the key you want in the default chromatic C bindings (q sets the key to C, 2 sets the key to C#, etc.)

There are two options when choosing a scale, if you choose to use one (you can still just use the Chromatic C bindings and just choose the notes of that key yourself if you want.) The two options are to used one of the scales provided by pressing the up and down buttons by the scale display. There are many scales to choose from. However if you want to create your own scale and populate the key bindings to keys of any arbitrary scale you can edit the *scale construction* by hovering over the scale display. Observe what happens to the scale display when you change the scale using the up and down arrows (then hover over the scale.) The numbers that you see represent the

difference in semi-tones (half-steps) between notes in a scale. You can change this scale to any scale (that stays within one octave.)

Instrument

The second field in a track is the Instrument. ||C-2 [[00]] 3F 444||

The instrument can not be set to an instrument that does not yet exist, so when you begin the tracker for the first time, this can't be anything but 00 until a new instrument is made.

When the instrument for an entry within a track is set, the instrument is played. This means that the volume envelope begins again and the wave and pulse indicies are (re)set according to this instrument's fields.

Volume

The third field in a track is the Volume. ||C-2 00 [[3F]] 444||

The range of volume that is possible to be enterred within the pattern editor is 00 to 3F hexadecimal. 3F is full volume and 00 is silent. If a sound must be louder, consider increasing the volume of the instrument (in the instrument's Volume Table, TAB + a) and lowering the volume of uses of that instrument elsewhere in the song. Or create a copy of that instrument at a higher volume and use that instrument when you need a louder version of the original.

Effects

The fourth field in a track is the Effect. ||C-2 00 3F [[444]] ||

Effects change how sounds produced in that track sound. There are two types of effects:

On-row effects [R] perform an action once as soon as the tracker reaches that row.

Per-segment effects [S] continue to be applied throughout the row that it is applied.

0XY [S]	**Arpeggio up (0,X,Y,0,X,...)**
1XX [S]	**Portamento up by factor of XX**
2XX [S]	**Portamento down by factor of XX**
3XX [S]	**Portamento to note by a factor of XX**
4XY [S]	**Vibrato (X=Speed, Y=Depth)**
5XX [R]	**Set wave parameter 1 to XX**
6XX [R]	**Set wave parameter 2 to XX**
7XX [R]	**Set wave index of track to XX**
8XX [R]	**Set pulse parameter to XX00**
9XX [R]	**Set pulse index of track to XX**
AXX [S]	**Volume slide up by rate (XX+FF) / FF**
BXX [S]	**Volume slide down by rate (XX+FF)/FF**
C__ [_]	**Undefined**
D__ [_]	**Undefined**
E__ [_]	**Undefined**
F__ [_]	**Undefined**

- Note to self: 9XX is now 7XX, CXX is now 9XX, delete this after porting songs

0XY Arpeggio up

This effect affects the frequency of the waveform currently playing in its track. The effect rapidly alternates 3 different frequencies within one row. The three frequencies are: the ones it's currently playing (base frequency), X semi-tones (half-steps) above the base, then Y semi-tones above the base.

[Technical] The sound of 0XY can sound differently based on whether the value you set for the amount of segments within a row (SEG) is less than the value of ARPEGGIO_SPEED (default 6.) However for all SEG values above or equal to 6 this effect should sound equivalent.

1xx Portamento up

This effect increases the frequency of the sound in this track upwards. Every increase of 6 will have an increase of 1 semitone by the end of that row. For instance 106 will modulate the frequency up one semitone, where 10C will modulate the frequency by two semitones.

[Technical] If you want to know precisely how the sound changes, every segment it performs $frq = frq/(\sqrt[12]{2})^{(6.0 . XX/SEG)}$**. The 6 is just to give some extra fineness.**

2xx Portamento down

This effect decreases the frequency of the sound in this track downwards. This works in the same way as 1xx Portamento up.

[Technical] Same as 1xx, but multiplies $frq = frq.(\sqrt[12]{2})^{(6.0.XX/SEG)}$

3xx Portamento to note

This effect modulates the frequency that the track was already at to the frequency of the last note specified in this track. The parameters on this effect are very fine and 300 *does not perform no portamento.* When using this, play around with the parameters until it sounds right, try large and small values like 310, 350, 380, until you find a speed that sounds good.

[Technical] My implementation of this I dont feel confident of, and that is why I can't provide quantitative information on its use. The frequency is exponentially interpolated between frq and nextfrq. This is done as follows:

$$
\begin{aligned}
note &= log_{\sqrt[12]{2}} frq \\
nextnote &= log_{\sqrt[12]{2}} nextfrq \\
dif &= 12.0.(nextnote - note)/(256 - XX) \\
frq &= (\sqrt[12]{2})^{note+dif}
\end{aligned}
$$

4xy Vibrato

This effect vibrates a track's frequency upward and downward rapidly within the range of one semi-tone. The X parameter defines the speed and Y parameter defines the depth. A lower speed is slower, and a higher speed is faster. A depth of F is an entire semitone in one direction (half-step), but since vibrato decreases then increases, the full range of F is two semitones (whole-step, from a half-step below.)

5xx Set Wave Parameter

This sets the Wave parameter utilized by some certain waveforms in the wave table. Sets the wave parameter to XX.

6xx Set Wave Parameter 2

This sets the second Wave parameter utilized by some certain waveforms in the wave table to XX.

7xx Set Wave Index

Sets the operating position in the wave table to XX. Notice that not all XXXX possible indicies of the wave table can be reached with this effect. If this actually becomes a problem, you could insert some jumps within the wavetable and point to those jumps. Not ideal, but this is more or less a convenience function.

8xx Set Pulse Parameter

Sets the pulse parameter to XX00. This is helpful for using an instrument whose pulse effect does not set (only adds) to the pulse parameter.

9xx Set Pulse Index

Sets the operating position in the pulse table to XX. Same caveat as 7xx.

Axx Volume slide up

Increases the volume of the instrument playing in this track. In actuality, this increases what the tracker thinks the volume of the track in the *pattern* is (as opposed to the volume of the Instrument in the volume window.) Because of this, effect Axx will never make an instrument louder than how loud it is when listened to at volume 3F in the pattern window.

The volume is increased by a rate of $1 + (XX/255)$, so by the end of that row the volume should be at $volume * (1 + XX/255)$

Bxx Volume slide down

Decreases the volume of the instrument playing in this track.

The volume is decreased by a rate of $(XX/255)$, so by the end of the row the volume should be at $volume * (XX/255)$

C__ Undefined

D__ Undefined

E__ Undefined

F__ Undefined