How to add a new effect to Nutcracker.
Sean Meighan
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Assumptions:
You already have Code::Blocks installed and configured
You have installed the mingw C++ compiler
You have compiled and created the wxWidgets libraries.

The test of the above 3 is that you can build the xLights project. Setting up your environment is in the ToolConfig.txt document in the nutcracker_c directory.

If yes, then let's go through the steps to add a new effect into the Nutcracker tab in xLights.

1) Add your effect controls to the visual layout.
   a) In Code::Blocks, go to Resources > xLights > wxPanel > EffectsPanel

   b) Add a page to Choicebook1 by clicking on the wxPanel widget on the Standard tab, then click on Choicebook1.

   c) Set the page name to the name of your effect (referred to subsequently as <YourEffect>). Your effect name should NOT contain any text in parentheses, e.g. "(under development)".

   d) Set the var name of the wxPanel to Panel1_<YourEffect>

   e) Drop a wxFlexGridSizer onto the wxPanel. Set the sizer Cols to 2 and Growable cols to 1.

   f) Add your controls to the FlexGrid Sizer. In most cases, static text will go in the first column and controls in the second column. All items should be left justified, have a border width of 2, use the default pos and default size. Slider and text controls in the second column should be set to expand. wxChoice controls should NOT expand.

   g) Static text can use the default var name and identifier. Keep static text as short as possible. The goal is the keep Choicebook1 from growing any wider than it already is.

   h) Controls should have a var name of:
      <ControlType>_<YourEffect>_<Function>
      For example: "Slider_YourEffect_Count"

      The control identifier should look like:
      ID_<CONTROLTYPE>_<EffectName>_<Function>
      For example: "ID_SLIDER_YourEffect_Count"

2) Copy renderTwinkle.cpp to renderYourEffect.cpp

3) There are the 5 places where code needs to be modified to add your effect. The easy way to find these locations is to do a search through the project for "RenderTwinkle".

    a) **xLightsMain.h**: add an entry into the RGB_EFFECTS_e enum near line 200. It is critical that this list matches the order in Choicebook1.

```
eff_YOUREFFECT,
```

    b) **Effects.h**: add an entry in the list (similar to the other effects). Try to keep them in alphabetical order. For example:

```
void RenderYourEffect(int Count, int Steps, bool Strobe);
```

    c) **pixelBuffer.cpp**: add to the end of the file, similar to the other entries:

```
void PixelBufferClass::RenderYourEffect(int Count, int Steps, bool Strobe)
{
    Effect[CurrentLayer].RenderYourEffect(Count, int Steps, bool Strobe);
}
```

    d) **TabSequence.cpp**: In function RenderEffectFromMap() near lines 800-900, add:

```
else if (effect == wxT("YourEffect"))
{
   buffer.RenderYourEffect(
       wxAtoi(SettingsMap[LayerStr+wxT("SLIDER_Twinkle_Count")]),
       wxAtoi(SettingsMap[LayerStr+wxT("SLIDER_Twinkle_Steps")]),
       SettingsMap[LayerStr+wxT("CHECKBOX_Twinkle_Strobe")]==wxT("1")
   );
}
```

    e) **TabSequence.cpp**: In function PlayRgbEffect1() near lines 900-1000 we need to add our choice into the switch selection. This code starts with

```
switch (Choicebook1->GetSelection())
{
 case eff_NONE:
     break;   // none
 case eff_BARS:
..
..

case eff_YOUREFFECT:
     buffer.RenderYourEffect(Slider_YourEffect1_Count->GetValue());
     break;
```

4) Compile project. When you select "YourEffect", or whatever name you picked, it should create a twinkle effect.

5) Modify your renderYourEffect.cpp and make the effect do what you really expect. If you change the parameters passed to your render function, then you will need to revisit step 2 above.

6) This step is only required if you want to create a Windows installer file (setup.exe).
   a) Run "Inno Setup"
   b) Open the xLights.iss file in the nutcracker_c directory.
   c) Run Compile to build a setup.exe, it will be found in ../nutcracker_c/output

```
Enjoy your new effect in Nutcracker 3!
```