

Creating GPL'ed multimedia assets

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Outline

The GPL

GPL'ed multimedia

Example of GPL'ed music

Final words

Why do we use the GPL?

We use it because it:

- ▶ Ensures everyone can spread around your project.
- ▶ Ensures everyone can fix bugs, add features, help out.
- ▶ Ensures the above properties are not taken away.

Major reason for the above properties:

- ▶ Source code must be made available!

What is source code?

From the GPL version 3:

1. *Source Code.*

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

And later:

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities.

GPL'ed multimedia

It's very easy:

- ▶ Make the preferred form of modification available.
- ▶ Ensure the final product can be made using FOSS tools.
- ▶ Include the scripts and tools you use to make the final product.

... right?

Stay reasonable

Don't overthink it, stay reasonable:

- ▶ We don't care about the analog world.
 - ▶ A digital picture of a real-world scene.
 - ▶ A recording of a live band playing.
- ▶ We don't require perfect fidelity.
 - ▶ Ogg Vorbis vs. FLAC
 - ▶ JPEG vs. PNG
- ▶ We don't require the whole history.
 - ▶ Excerpts of a larger work.
 - ▶ Undo history.

Use common sense, look at how we do it for program code.

Examples

Images:

- ▶ Vector art: SVG
- ▶ Bitmap art: XCF, all separate layers
- ▶ Rendered art: Blender/Povray/etc files
- ▶ Photographs: RAWs if available, original JPEGs otherwise

Sound and music:

- ▶ Recorded sound/music: all original tracks
- ▶ Electronic music: score, samples used, softsynth setup

Problematic source

Sometimes the source is troublesome:

1. Too big to distribute (eg, gigabytes of audio/video)
2. Too computationally demanding (raytracing, movie rendering)

Find a reasonable solution, for example:

1. Use the "written offer" clause of the GPL.
2. Point to a company/institute that offers computational resources.

What *not* to do

Don't:

1. Provide source code in a proprietary format.
2. Do anything that requires proprietary software to build.
3. Use commercial fonts, image/sound libraries.
4. Say that you consider the "object code" the source.

If you do anything of the above, just don't use the GPL for your work.

Example of GPL'ed music

Source code consists of:

- ▶ Music score in ABC format
- ▶ Csound orchestra definition
- ▶ Makefile

Compilers, libraries, etc:

- ▶ abcmidi, abcm2ps, csound, fluidsynth, fluid-soundfont-gm, vorbis-tools, make

The resulting "object code":

- ▶ Ogg Vorbis soundtrack
- ▶ PDF sheet music

```

X:1
T:Space (Starfighter intro)
C:Guus Sliepen
M:2/2
L:1/8
Q:120
K:Bb
V:1 clef=treble
%%MIDI channel 1
[| z8          | z8          | z8          | z8
|| "Eb" e6 dc | f4 d4      | "Cm" e6 dc | f4 d4
| "Gm" B6 AG | d4 B4      | "F" A8-    | "Dm" A8
| "Eb" e6 dc | f4 d4      | "Cm" e6 dc | g4 e4
| "Gm" d6 cB | f4 d4      | "F" c8     | "Bb" d8
|]
V:2 clef=treble
%%MIDI channel 2
[| C8-         | [CF]8-     | [CFB]8-    | [CFBe]8
|| [EGB]8-    | [EGB]8     | [CEG]8-    | [CEG]8
| [B,DG]8-   | [B,DG]8    | [A,CF]8-   | [A,DF]8
| [EGB]8-    | [EGB]8     | [CEG]8-    | [CEG]8
| [B,DG]8-   | [B,DG]8    | [A,CF]8-   | [B,DF]8
|]

```

```
sr = 48000
ksmps = 32
nchnls = 2
0dbfs = 1
```

```
gifluid fluidEngine; start fluidsynth engine
ifont fluidLoad "/usr/share/sounds/sf2/FluidR3_GM.sf2", gifluid, 1
fluidProgramSelect gifluid, 1, ifont, 0, 98 ; Crystal
fluidProgramSelect gifluid, 2, ifont, 0, 89 ; Warm pad
```

```
instr 1, 2
    ikey    notnum
    ivel    ampmidi 127
            fluidNote gifluid, p1, ikey, ivel
endin
```

```
instr 99
    iamp init 1.6
    al, ar fluidOut gifluid
    arl, arr freeverb al, ar, 0.9, 0.1, sr
    outs (arl + al) * iamp, (arr + ar) * iamp
endin
```

```
SONGS = space warm-up
OGG = $(SONGS:%=%.ogg)
PDF = $(SONGS:%=%.pdf)

all: $(OGG)
pdf: $(PDF)

%.mid: %.abc
      abc2midi $< -o $@

%.wav: %.mid %.csd
      csound -d -o $@ -T -F $^

%.ogg: %.wav
      oggenc $<

%.pdf: %.abc
      abcm2ps -B 4 -O - $< | ps2pdf - $@

clean:
      rm -f $(MID) $(WAV) $(OGG) $(PDF)

.PHONY: all clean
```

Space (Starfighter intro)

Guis Sliepen

♩ = 120

The first system of the musical score consists of two staves. The top staff is a treble clef with a key signature of two flats (B-flat and E-flat) and a 3/4 time signature. It contains a whole rest for the first four measures. The bottom staff is an alto clef with the same key signature and time signature. It features a series of chords: a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The chords are connected by a long horizontal line, indicating they are sustained.

The second system of the musical score consists of two staves. The top staff is a treble clef with a key signature of two flats and a 3/4 time signature. It contains a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The bottom staff is an alto clef with the same key signature and time signature. It features a series of chords: a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The chords are connected by a long horizontal line, indicating they are sustained. Above the first measure of the top staff is the chord label $E\flat$, and above the second measure is the chord label Cm .

The third system of the musical score consists of two staves. The top staff is a treble clef with a key signature of two flats and a 3/4 time signature. It contains a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The bottom staff is an alto clef with the same key signature and time signature. It features a series of chords: a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The chords are connected by a long horizontal line, indicating they are sustained. Above the first measure of the top staff is the chord label Gm , above the second measure is F , and above the third measure is Dm .

The fourth system of the musical score consists of two staves. The top staff is a treble clef with a key signature of two flats and a 3/4 time signature. It contains a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The bottom staff is an alto clef with the same key signature and time signature. It features a series of chords: a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The chords are connected by a long horizontal line, indicating they are sustained. Above the first measure of the top staff is the chord label $E\flat$, and above the second measure is the chord label Cm .

The fifth system of the musical score consists of two staves. The top staff is a treble clef with a key signature of two flats and a 3/4 time signature. It contains a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The bottom staff is an alto clef with the same key signature and time signature. It features a series of chords: a whole note chord in the first measure, followed by a half note chord in the second measure, and then two measures of a half note chord. The chords are connected by a long horizontal line, indicating they are sustained. Above the first measure of the top staff is the chord label Gm , above the second measure is F , and above the third measure is $B\flat$.

Other examples

Other examples of multimedia with source (not necessarily GPL):

- ▶ Blender movies
- ▶ POV-Ray gallery
- ▶ ShaderToys
- ▶ Tracker modules
- ▶ ...

Looking forward to seeing your GPL'ed work!

Conclusions

- ▶ GPL'ed multimedia is certainly possible
- ▶ Even music and graphics can be made "programmer-style"

Thank you!