

# 1 GsoC application for Mixxx

Hello, my name is Anastasis Grammenos. I am a 22 years old student at Csd AuTh, in my 3d year. (Actually is the 4th year but due to personal reasons I was not enrolled in classes for 8 months, so I missed 2 semesters).

I grew up and live in Thessaloniki/Greece.

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## 1.1 Musical background

I play the guitar and I know my way around a piano. Also in the past 2 years I've been jamming with electronic music and I am really into analog gear (I don't own anything yet). As far as DJing goes, I don't really know how to do it, since usually when I pick the music it sets people off! But I still like doing in for my self from time to time.

## 1.2 Programming background

I've done work in C, C++, python and a bit of Java (although I hate it), mainly for school projects and my own satisfaction. I really like the "low level" approach C/C++ offers and I think it's a great language to base a project on.

I know my way around a database, since I work in a photography shop, where we have one made by a coworker and from time to time we need to run strange queries and fix some mistakes other users might do. Currently we are working on a replacement of the old DB with a new one with PostgreSQL, witch is way more advanced that the one we have right now.

I am a full time Arch Linux user in both my laptop and desktop, with the exception of photoshop and other adobe programs I use for photography reasons.

That said I do not consider my self a linux power user, I just try to become one. (there are still a lot of manpages to read)

I have moderate experience with git, but since I never used it in a big project I don't know all the rebase stuff, reverting changes etc.

## 1.3 Mixxx specific requirements

### 1.3.1 Scons

I downloaded scons, and i've been playing with it, building my old C code. Since it's basically a python script, I don't think it will be hard to get to know it.

Also I looked at your SConstruct. WOW, that's cool!!! I didn't even think there was such an amazing tool a week ago.

### 1.3.2 Git

As mentioned above I have knowledge of git but only the basic stuff. Sadly I deleted some old repos with C and C++ but here is my github if you'd like to have a look at it. (I use it mainly to keep track of my config files) <https://github.com/gramanas>

### 1.3.3 Qt

I've seen some tutorials about it, but I can't say I know it. I am of course willing to learn everything since I believe it's a great tool to have in my toolbox. Since it's based on C++ I don't think it will take a lot of time to get acquainted with it.

### 1.3.4 Portaudio

Well, I know nothing about it! It has something to do with audio i think :) I will look at it tho in the coming weeks.

## 1.4 Mixxx development environment

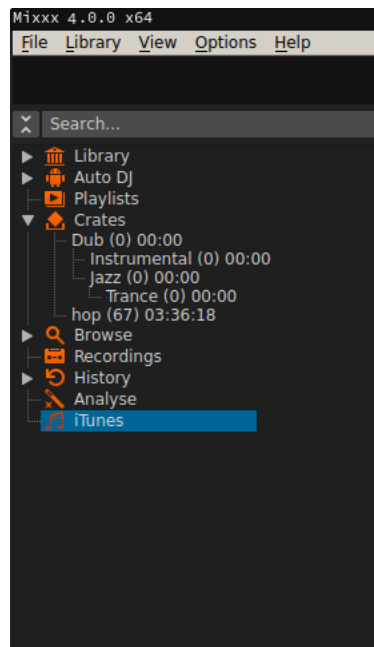
So far I managed to set a running developer environment for the project using emacs, gdb debugger and rtags. I have also downloaded and set up eclipse and QtCreator in case I need them.

I am able to run tests, and currently working on a bug. <https://bugs.launchpad.net/mixxx/+bug/1663444>

I'll issue a pull request when I have time, since now I am working most of the day in a temp job. (It ends soon)

## 2 My summer project

### 2.1 Nested Crates



A preview for the nested crates. Tree like view. (If you don't listen to the Jazz/Trance sub-genre of Dub, you should!! :D )

The following is derived by the comments on launchpad and my thoughts on them.

### 2.1.1 Overview

Crates as I plan to implement them, is like a multi level tagging system. Let's say you have the following structure:

- Metal
- Metal/Instrumental
- Metal/Instrumental/Stoner
- Metal/Stoner
- Metal/Stoner/Fast
- Metal/Thrash
- Metal/Thrash/Favourites

When you click on the Metal crate you want to see EVERYTHING that is metal. Thus the recursive view. When you want a sub-genre you just press the corresponding crate. Remember those can be smart-crates (when they come into existence) so this is pretty powerful.

A song in the Metal/Stoner crate is a Metal song that is also Stoner. So I think the above makes sense and is pretty natural.

### 2.1.2 Details

1. What can a crate contain?

A crate can contain the following:

- Another crate (smart or not)
- Songs

2. Can a song be in multiple crates?

Yes.

3. What happens when I click on a crate

Recursively lists all the songs that exist in the crate or the subcrates that it contains. DISTINCT! (eliminates duplicate songs)

"mixxx's unique selling point!"

4. What happens when I drag&drop a crate into another one

If the crate you drag is a parent crate to the one you drop it then nothing happens. (or an error!)

Else the drag crate and everything that it contains become members of the drop crate. (like moving files in a file system)

5. How do I insert a song to a multilevel crate

You place the song to the crate you want it to become a member of. If you have multiple levels, the above still holds. If a crate/song belongs to a child, it belongs to the parent as well.

6. How many levels will be supported?

As many as the user wants.

7. What if I want two crates with different parents have the same name?

Every crate will contain information about it's parent, so the following can work:

- Crate1/sameSubcrateName
- Crate2/sameSubcrateName

8. What will happen if a user tries to remove a track from a top crate, which is also member of a lower level child crate? Will both be removed?

Since in the structure I propose for the crates every song a child has, is also in the parent crate, removing a track from a child crate will also remove it from the parents. If you want to remove a track from a child crate but keep it in the parent one you simply move it in the parent.

It is important to notice that every song exists once in each crate AND all his children (and subchildren and so on). If you want to add a song to Rock and to Rock/Instrumental you just add it to the later since it gets recursively shown when selecting Rock later. If you want to add a song to Rock but NOT Rock/Instrumental you add it to the crate Rock, and if you want to add a song to Rock/Instrumental and NOT Rock, you simply can't do that because by definition if a song is Rock/Instrumental it is also just Rock.

9. Can the user distinguish a track in a top crate from one on some levels below?

This is something I hadn't thought of since I saw no real use in that information but after Daniel pointed it out I gave it some thought and I now understand that this distinction needs to be visible, so when you play a track deep in the crate tree you have to know which subcrate contains it, in order to figure out what to play next.

I think I have one good solution. In the library view a column will be added named "Crates" There will be comma separated values with the names of the crates containing the song. Full path is required for nested crates (e.g. Rock/Instrumental).

Sorting will not be possible through this column since if the user want's to see his content based on the crates he can just go to the crate view. (This column will exist there as well for consistency)

### 2.1.3 Implementation

Here are some first thoughts on the way the above will get implemented.

In order for crates to be able to hold both other crates and songs some modifications need to be made in the database schema.

A new table with columns:

<u>PARENT_ID</u>	<u>CHILD_ID</u>
...	...

Here the CRATE\_ID will be linked with other CRATE\_ID's depending on the parent/child state of those.

While populating this table checks will occur so that a crate can't be it's own parent, or a child can't have his parent as a child etc. The whole crate side of the database might need a revamp for this to work efficiently and be expandable at the same time. I will look at it in depth in time.

### 2.1.4 The future

A cool thing to do next is a Crate Export feature.

Imagine you have a folder in your file system with your music ordered as such: Genre/Artist/Album/Track.mp3 (like most of us already do). Imagine now spending hours making crates with the awesome system defined above with all your songs and with this you can perform virtually everywhere.

This is when Crate Export comes handy. Rick-click on a crate select Crate Export and pick a target folder. Then you will have a folder on your hard drive with your music ordered just like in the crates. This copies the songs from the library to a new folder structure in your target folder. You can then put this in your external hard drive and DJ on the fly even with VLC!

This feature kind of exists in foobar 2000 player but I can't find any links to show you.

## 2.2 Search filter for Crates

Due to the nested crate's complexity I will work on search filters first, while keeping in mind the future adjustments it might need in order to work well with nested crates.

### 2.2.1 Overview

1. What is the search filter for crates

Typing "crate:" in the search bar, will act like a filter listing whatever any song within a crate named whatever comes after "crate:" (fuzzy style). Like "artist:"

2. What about nested crates

Say you have a top level crate named (creatively) Crate1 with subcrates and songs nested under it. Typing crate:Crate1 in the search will list every song this crate contains and every subcrate's song as well.

3. What about the same name subcrates we talked before

Typing crate:sameSubcrateName will get you both the crates with the same name. If you want your search to stay in one crate you have to type it's parent crate (in case this is the same as well, you need the full path)

### 2.2.2 Implementation

Here I will make things work like the other filters, already existing (artist: etc).

I believe this part will be not that hard to pull off.

I will have a more detailed plan for the implementation after the community bonding period where I will read the whole code, and understand it completely.

## 3 Timeline

### 3.1 May 4 - 30

For the first period, I'll be actively working on bugs and reading the code to get a broader understanding of the project's structure. I'll probably ask questions, so please bear with me. I'll focus on the database and the crate functionality for obvious reasons.

### 3.2 May 30 - June 30

As a first goal I will work on the search filter for crates. This seems the easiest part of the project and I believe it can be done at most by July 10. Here some job will be done to prevent big changes later when I implement the nested crates.

### 3.3 June 30 - July 24

Work on nested crates will take place in this round. The first database schema and some code modification. Will also work on the aforementioned Crate column for the library view.

### 3.4 July 28 - August 21

By late August most of the work should be completed, with the final tests and GUI revamps remaining to complete the project.

## 4 General notes

I've never been a part of something as big as mixxx. I bet it will be an amazing experience. As far as I can tell, I would like to be part of the dev team, since I find it a really nice piece of software and a great way to start my "career" as a programmer.

I believe that, just like music, coding can be and is a form of art. I like code that follows a standard (spaces or tabs, not both, is one example of what I mean by code standards). I also like code that has comments because it's accessible. Skimming through mixxx's git repo I saw that some code is not very well commented. As a side quest for the summer I'd like to organise it (since it will immensely help with understanding how the program works, as a whole) by adding `//` comments and `/*` explanations `*/` before classes and functions, to make the mixxx development an easy task for the years to come.

For this I would require some guidance from the veterans of the program. I think a good time to do this would be in the month I have to get acquainted with the code and the dev team before the summer starts.

### 4.1 In case anyone is interested

I use Emacs as an editor. I also use it as an IDE for C/C++/python etc.

I am familiar with the terminal and I try to do everything in it. For example as I write this in Emacs's org-mode I have tmux open with cmus, mutt and weechat for music, mails and IRC respectively.

## 5 Outro

Feel free to ask me anything about anything, I usually am on mixxx's IRC (nick: gramanas) or via this mail. [anastasis.gramm2@gmail.com](mailto:anastasis.gramm2@gmail.com) I hope we get to work together!