

Game Dev: Save & Load

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The Request

We want to **serialize** our game:

1. The engine should be able to write to a file its **state**
2. The engine should be able to read a file saved previously
3. The system should be easy to expand as the engine grows
4. Should be simple to debug
5. Save files should be human readable

The Proposal

- Create a method for **load** and **save** for all modules.
- *App* will hold the core **load** and **save** methods.
- *App* should handle the creation of the file.
- *App* will create a section in the file for each module.
- *App* will control the timing so the calls to load / save are not in the middle of a frame.

The Test

In order to test the functionality:

- We will have a load happening when pressing “l”
- ... and save when pressing “s”
- The only information that we will serialize is camera position
- Check *solution.exe* in *Game/* directory

To Do 1

“Create methods to save and load that can be called anytime, even if they will one execute by the very end of the frame.”

- They should receive the file name to load / save
- Should the save method be **const** ?
- They will be very short methods that will remember the file name
- ... then call the real methods (empty for now)
- If we receive both in the same frame, in which **order** should we call them ?

To Do 2

“Create new virtual methods to Load and Save”

- Very similar to Awake method
- Should save be **const** ?

To Do 3

“Create a simulation of the xml file to read”

- Very similar to config.xml
- Define how you will store the camera position

To Do 4

“Create a method to actually load an xml file, then call all the modules to load themselves”

- Start by opening the file as a xml_document (as with config file)
- Iterate all modules and call their **load** method
- As an argument send the xml section as with config file
- Make sure you print all possible errors using **LOG**

To Do 5

“Call load / save methods when pressing l/s”

- To read keys, check how the camera is moved with arrow keys

To Do 6

“Create a method to load the state. For now it will be camera's x and y”

- As with config file, read the xml node you receive
- Then set the camera position

To Do 7

“Create a method to save the current state”

- First fill a pugui::xml_document calling all modules
- Use .append_* [methods from pugui xml](#)
- Then put it all in memory using:
- The use FS to save the file

```
std::stringstream stream;  
  
my_xml_document.save(stream);
```

To Do 8

“Create a method to save the state of the renderer”

- We just want to save the camera position
- Use *append_child* and *append_attribute*
- Example:

```
pugi::xml_node cam = data.append_child("new_child");  
cam.append_attribute("my_attribute") = 55;
```

Homework

- Add a method to control volume to ModuleAudio
- Change volume with +/- from the numeric keyboard
- Add default volume in *config.xml*
- Make the current volume to be saved and loaded