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| Custom game Engine Made in Pygame Planning |
| Provided by, Robust Program |
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**Introduction of Python**

Python is an extremely powerful scripting language as it combines the ability to write powerful code with easy readability for the coder. This two combined allows the coder to create powerful scripts that can be used to manipulate the computer or used to create extremely useful database handling programs. In this case, we will be using python to create our game engine and the game based on the custom game engine.

However, the Python scripting language is extremely limited much like C++ and required extra libraries to handle the art, sprites and screens. This is solved through the usage of the Python gaming library, Pygame. The libraries have many pre-built functions that allow us to build up a custom game engine using Pygame. The second problem with Python is that you will need to have the user install python for the whole game to work; however, the problem can be easily fixed through the usage of programs that “freezes” the program in an exe that can then be distributed for other people.

With all of the problems solved easily through trusted 3rd party sources and with an extremely easy to learn language, Python seems like the best choice for our 2D game, as programming a 2D game will not require an extremely powerful programming language like C++.

Overall Advantages of python

* Python is a simple programming language that sets up the building blocks of game programming
* It saves tons of space when compared to C++ or Java
* Code has to be strictly indented, encouraging cleaner code
* You can write programs much faster than other languages

Overall Disadvantages of Python

* Python is extremely high-level, meaning that low-level problems cannot be handled by Python
* Python is also extremely slow (much slower than Java)

While python has its advantages and disadvantages, it boils down to the game and why Python was chosen. Python is an extremely simple language that requires little space. Since the game will be a simple 2D game, extremely powerful, low-level, programming will not be required, meaning that Python is perfect for this project.

**Introduction of Pygame**

Quote from the official Pygame Website on the about page:

*“Pygame is a set of Python modules designed for writing games. Pygame adds functionality on top of the excellent SDL library. This allows you to create fully featured games and multimedia programs in the python language. Pygame is highly portable and runs on nearly every platform and operating system. Pygame itself has been downloaded millions of times, and has had millions of visits to its website.”*

Other than what has being provided, other benefits of Pygame is that it is portable, does not require OpenGL, uses C and Assembly Code for core functions (meaning faster run time) and as with all Python scripts, it requires little amount of code.

*Tools Download Links*

The program that will make the python exe is called, “*cx\_freeze*”. The link to it is here:

[*http://cx-freeze.sourceforge.net/*](http://cx-freeze.sourceforge.net/)

The python libraries that will help make the game with its functions that can load up images and sound is called, “*pygame*”. The link to it is here:

[*http://www.pygame.org/news.html*](http://www.pygame.org/news.html)

**Research and Design**

*What is it?*

The engine is supposed to be a flexible game engine that allows the user to modify the engine to suit their needs. The engine should allow for custom sprites and allow for more sprites to be added by the user.

*How is it done?*

It is done through the use of configuration files (.ini) and xml files (.xml) to control the sprites and how sprites are loaded.