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# 0.27 - How the game works, The current structure, and the current best strategy to win

## How the game works/what I’ve learned about the Game

So while working on the game to make the save modes and restructuring the game I figured out how the game works in terms of structure (which isn’t very apparent on first glance) so I wanted to document that and my changes.

The main thing to know about the game is the variables and the structure. I’ll start with the variables which I have not changed except for adding one global dictionary called GAMEINFO.

The backend of the game was mostly written by Mitch Lemeiux and utilizes dictionaries and objects. For those unfamiliar as I was a dictionary in python is simply a list that is indexed by a key instead of it’s number.

For example

Animals = [ “Dogs”, “cats”, “frogs”] where animals is a list of items where you acesss the string “Dogs” by using x[0] where it’s the 0th element

Animals = {“playerpet” : “Dogs”, “npc pet”: “cats”, “extra pet”: “frogs”} where animals is now a dictionary with syntax { key : value}. So to access the string “Dogs” by using x [“playerpet”].

Dictionaries are valuable to use over lists because it’s more apparent in the code what information you’re trying to access. For example it’s much more clear to know what item you’re referring to if your dictionary is keyed by the item and you see ITEMS[“Eng Phys Shirt”] vs ITEMS[362].

The game also uses object oriented programming (OOP) with several game class to define the types of objects used. Hopefully the reader of this is familiar with objects and understands the advantages of using them so I will not go over them.

The main variables in the game that store all the information are also global (defined in the top of the GameFunctions.py file except for QUESTS which is at the bottom) and are in allcaps. These variables are global so they can be passed between functions by simply definining them in the function as “global PLAYER” for instance to be able to access the player’s attributes. Otherwise variables defined and used in the function are local to that function unless passed as an attribute to the function and then returned by the fucntion. The variables are acessed by the main file by using “from GameFunctions import \*” which imports all the variables, functions, and imports of the GameFunctions file.

Bellow is the definition of the main global variables in the game

1. PLAYER #The main character. player is an object instance of class character.
2. ITEMS #All the items. This a dictionary of objects of class equipment keyed by their lowcase equipment name (item.name). Remember the lowercase, may trip you up if referencing upercase version in the file.
3. MAPS #All the locations. A tuple of objects of class Map inxed by there x,y,z coordinate (MAPS[x][y][z])
4. INTERACT #All the interactables (stationary things that need something). This a dictionary of objects of class Interact keyed by their lowcase name (interact.name). Remember the lowercase, may trip you up if referencing upercase version in the file.
5. QUESTS #Quest statuses. This is a dictionary of flags (1 or 0) for the status of the quest keyed by quest name.
6. ENEMIES #All the npcs. This a dictionary of objects of class Enemy keyed by their lowcase equipment name (item.name.lower()). Remember the lowercase, may trip you up if referencing upercase version in the file.
7. GAMEINFO #Miscellaneous game info. Dictionary of all sorts of variables

You can 5 of the main variables are dictionaries which store the instance objects of all the different classes for the whole game. PLAYER is the main player object that is your player and MAPS is a special array that is indexed by it’s [x][y][z] coordinate for example MAPS[x][y][z] is one location (to be honest I’m not sure exactly how maps works but I’ll let you know when I do).

The dictionaries are filled with instance objects from each of the classes seen bellow. They all have different attributes (object variables) and methods (object functions) which a full list that can be seen in the GameClasses.py file.

1. class Equipment:
2. class Character:
3. class Enemy:
4. class Interact:
5. class Map:

Knowing these basics, seeing how it’s done in the code, and following the description in the Github readme (see copy pasted below) you should be able to follow how to add things to the game (but ask questions if you don’t).

In general try to keep this structure and put any other long ascii display or mode into another file:

EngPhysAdventure \_\_\_\_ = the setup, main loop, and ending. Run this to run the game.

GameFunctions.py = The main mechanics of the game and the quests. All non-class functions. Where the global variables are dfined

GameClasses.py = Class definitions and their coresponding methods.

Startup.py = All the map locations, items, npcs (called enemies), and interactables are defined. Also creates the dictionaries of them.

AsciiArt.py = Where all of the ascii art display files are

## The Game Structure/execution

Because the game as become much more non-linear with the ability to restart, save, continue at the end, restart at the end, and even play the game in the game I want to outline how it now runs from variable initialization to how the game runs while you’re playing it.

### Game Initialization

### Game Structure

One thing to say about the game right now is it seems very unrobust. If varaibles and definitions aren’t in the right order in the code the game will break or glitch. This makes me suspect that with increasing complexity the game will become even more finicky which may be able to be solved with better organizations/functional code. If there’s anything you see that looks bad/unrefined/can be done better please feel free to change it in a spate branch. I am by no means the most experienced at writing code, using python, or software development. In the future to make it easier manage the software development side I’d like to use better defined test cases, follow a proper python style guide, and think about code optimization

-Brendan Fallon

## Best Strategy to Win for speed running or otherwise

-Brendan Fallon

# 0.26.1 – SpeedRun Update