Requirements and Functionality

Totally, this project has been divided into several parts.

**Map**

We need to build a map randomly according to the rules we set in advance. This map will contain the players, enemies, traps and some useful item. It has to build the map in specific rules to avoid BUGs such somewhere we can’t arrive.

**Player**

The player will have many properties. HP is used to display the healthy point of the player. When attacked, the HP will decrease. Player need consume MP to use some skills and magic. There will be a pack for player to contain some items such as weapons, armors, cash, drugs and others. Players can equip weapon and armors to enhance their ability. We will use the ATK to show the ability of attack. The DEF is use to show the defence.

**Enemy**

Each type of enemy has its own HP, ATK, DEF and skills. The enemies will emerge in the map in the rules we set in advance. The enemies will have grammar to search player and decide what to do. If enemy is far from players, it will stay static or move randomly in some rules. When the enemy was activated, it will search the way to player by the grammar and move to player.

**Skill**

The players and enemies will have some special skills. Some of the skills may attack the enemy in a bigger range, some may give the user some buffs and others will have special effects such as becoming invisible or moving in a flash.

**User Interface**

There will be some widget on the players and enemies to show the HP and other states. Below the main window is the state bar and pack bar. The properties and items will be shown on the bars. And we can use it to check the information of the player, change the equipment of the player and use some props. The game will have a start interface and end interface.

To achieve this, we need to:

1. Define the class Player which have the essential functions and data members as below:

Speed: to store player’s movement length in game window per unit time

HP：to store player’s HP, when HP reduce to 0, the game is over

MP：to store player’MP, when MP reduce to 0, player will not be able to use magic or skills:

ATK：Determines player’s attack can reduce how much HP of enemy

DEF：Can reduce HP decrease

Bag: to store the tools you get from the map, it may be defined as a list

Move function: can receive user’s input to control player’s movement, there will be totally 8 directions to move.

Attack function: can detect whether player’s weapon have collided with enemy, if so, then

reduce enemy’s HP.

Collision function: to detect whether player had collided with other object.

1. Define the class Enemy derived from Player which has common attributes with player

There is an additional function:

RandMove function: Enemy will move randomly in the game map, however, if player is in the detect radius, enemy will move towards to player by designate algorithm

1. Define the class Map to allow us to store the traps、doors or chests objects or data members, and there should be a function to edit the game map
2. Some functions to modify player’s attributes such as speed to achieve the specific skill
3. Write the main program that has the ability to transport the clock tick to other functions to update the screen to realize animation, that is to rewrite the object on the screen per unit time.
4. Use tools like pygame to help us to draw the user interface