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Assignment Cover Letter

(Individual Work)

Student Information:

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Course Code	: COMP6056	**Course Name**	: **Program Design Methods**
Class	: **L1AC**	**Name of Lecturer(s)**	: 1. Minaldi Loeis
			2. Jude Martinez
Major	: **CS**		
Title of Assignment (if any)	: Brave Heroes (Pygame RPG)		
Type of Assignment	: **Final Project**		
Submission Pattern			
Due Date	: **21-11-2018**	**Submission Date**	: **21-11-2018**

The assignment should meet the below requirements.

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Signature of Student: (Name of Student)
1. Stanley Tantysco

Brave Heroes (Pygame RPG)

Name : Stanley Tantysco

ID   : 2201814670

1. Introduction

Role-playing game is the game where player takes a role in an imaginary fantasy world. There   are some kinds of role-playing games such as RPG (Role-Playing Game), JRPG (Japanese Role-Playing Game), and MMORPG (Massively Multiplayer Online Role-playing Game). There are 3 main elements in RPG such as turn-based combat, different characters, and storyline. So, I create JRPG program based on mobile phone games which has stage selections in map.

2. Problems

2.1. Implementations

There were APIs that I used for implementations of my program such as pygame, random and sys. I also used real life mathematics in my program.

Pygame was the main API for designing my RPG program such as blitting images and text, command keys, and playing music. Not Only that, I also put nested loop inside my program, which can change interfaces every I clicked the buttons.

Random was another main API in my RPG program, which could get damage from damage range and got a monster from lists of monster in combat. Furthermore, it could give whether chance to do critical hit or not, which gave multiplied damage to opponent. Also, it could give chance to evade, which damage taken becomes zero (missed attack).

Sys was the API to close my program whenever I pressed q key to quit game such as inn interface,world map interface, game over scene, credit scene, or stage selection interface. Not Only that, I also put sys.exit() in quit button, so whenever I clicked it, it quit the game.

Finally, I used real life mathematics to put value of HP and damage range in monster objects, which made the game more challenging. I also put real life mathematics in leveling up character and get the damage of critical hit.

2.2 Game Mechanics

How the program works can be shown in a flowchart in section three. Now, I explain how detailed my program works.

First, I start the game by clicking the Start Button. Then, there will be player selection interface, which make you choose one of 3 characters. After you choose the character by clicking his/her name button, you will get through the intro and chapter 1 story to the inn interface.

Once you get in the inn interface, there will be 6 buttons such Help Button, Save Button, Load Button, Shop Button, Back Button and Battle Button. When you click the Shop Button, you will enter the shop interface where 4 items can be bought such as potion, attack up, HP up, and critical hit up. Help Button only shows how to play instruction. Save Button shows 3 Data Buttons where player data can be saved. Load Button shows 3 Data Buttons where player can load his/her character's data. Back Button only returns to Menu Interface.
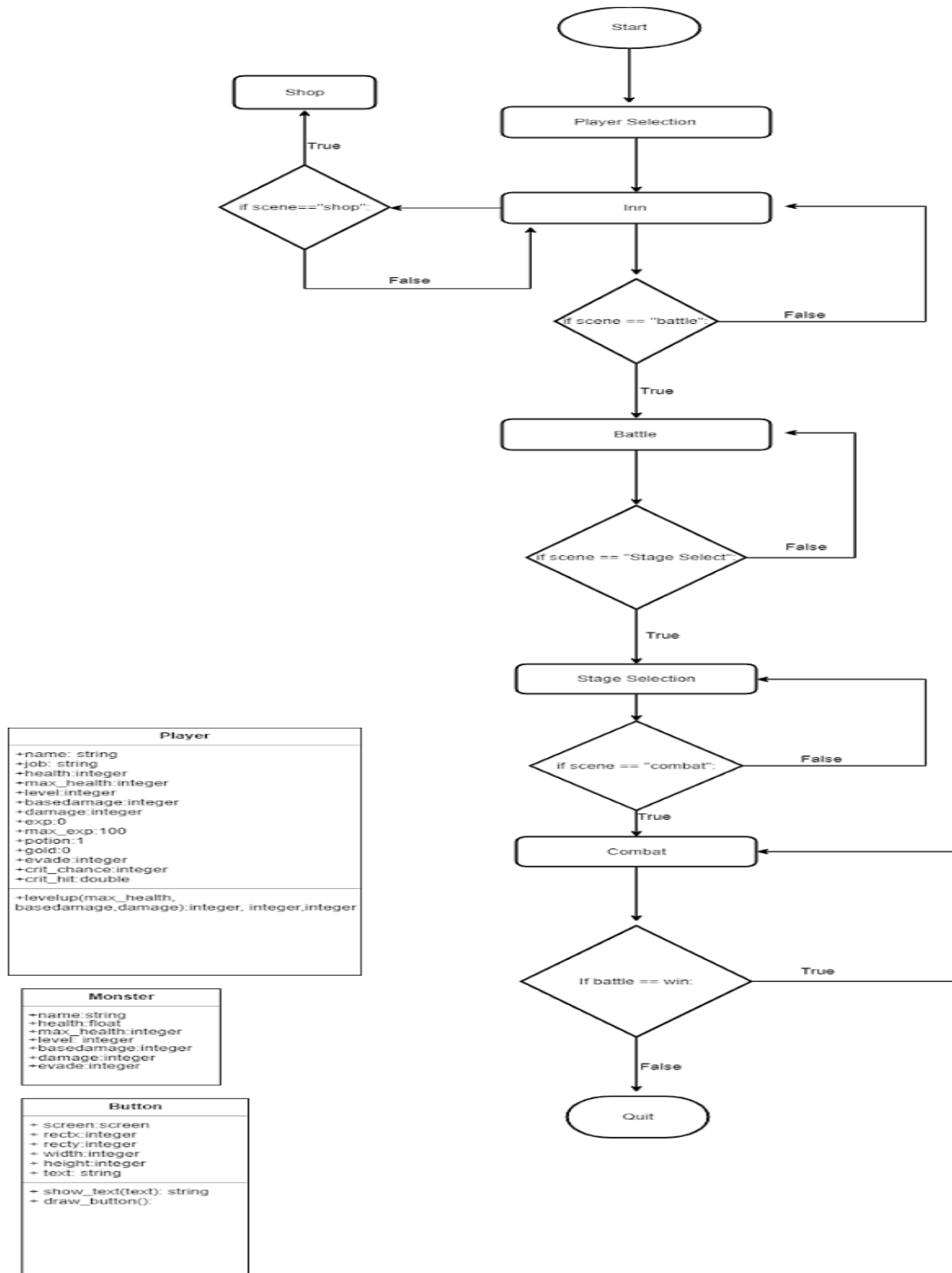
Next, when you click Battle Button, you will enter the world map interface. In the world map interface, there will be 6 areas that can chosen by clicking their buttons. However, each area is connected to specific chapter story. For example, chapter 1 is connected to forest area, so you can only access to forest area. Once you enter the area, there will be 2 buttons such as Dungeon and Boss Fight. When you enter the dungeon by clicking its button, you will get random enemy and fight against it by using 3 command keys such attack key, item key, and run key. If you press attack key, your character will attack monster. If you press item key when your character's HP is low, your character's HP will be fully recovered. If you press run key, you will return to stage selection, but it can only be usable in dungeon. After you press attack or item key in your turn, the enemy will attack you automatically. After enemy turn is done, you will get your turn and so on.

Finally, the combat will end if your character's HP or enemy's HP drops to 0 or less than 0. If enemy's HP drops to 0 or less than 0, you will proceed to win scene. In the win scene, you will get experience point and gold. Then, you press enter key to return to stage selection. But, if your character's HP drops to 0 or less than 0, you will proceed to lose scene, which means it's Game Over. Then, you press q key to quit game.

2.3 Class Explanation

There are 3 class functions in my program such as Player class, Monster class, and Button class. Player class has many attributes such as name, job, hp, max hp, level, minimum damage, maximum damage, experience point, max experience point, potion, gold, evade, critical hit chance, and critical hit in its constructor. Player class has also levelup function. Monster class has attributes such as name, hp, max hp, minimum damage, maximum damage, level, and evade in its constructor. Finally, Button class has attributes such as rectx, recty, width, height, text, and screen. Button class has show text function and blit button function.

3. Design

```
                                    ┌─────────┐
                                    │  Start  │
                                    └────┬────┘
                                         │
                                         ▼
    ┌────────┐              ┌──────────────────────┐
    │  Shop  │              │   Player Selection   │
    └────▲───┘              └──────────┬───────────┘
         │                             │
       True                           ▼
         │              ┌──────────────────────┐
    ◇ if scene=="shop": ◇ ◄────────│         Inn          │◄──────────┐
         │                         └──────────┬───────────┘           │
       False                                  │                       │
         └──────────────────┐                ▼                        │
                            └──► ◇ if scene == "battle": ◇ ──False────┘
                                         │
                                       True
                                         │
                                         ▼
                              ┌──────────────────┐
                              │      Battle      │◄──────────┐
                              └────────┬─────────┘           │
                                       │                     │
                                       ▼                     │
                          ◇ if scene == "Stage Select": ◇ ──False──┘
                                       │
                                     True
                                       │
                                       ▼
                              ┌──────────────────┐
                              │ Stage Selection  │◄──────────┐
                              └────────┬─────────┘           │
                                       │                     │
                                       ▼                     │
                             ◇ if scene == "combat": ◇ ──False──┘
                                       │
                                     True
                                       │
                                       ▼
                              ┌──────────────────┐
                              │      Combat      │◄──────────┐
                              └────────┬─────────┘           │
                                       │                     │
                                       ▼                     │
                             ◇ If battle == win: ◇ ──True─────┘
                                       │
                                     False
                                       │
                                       ▼
                                 ┌──────────┐
                                 │   Quit   │
                                 └──────────┘
```

```
┌─────────────────────────────────────────────┐
│                    Player                    │
├─────────────────────────────────────────────┤
│ +name: string                                │
│ +job: string                                 │
│ +health:integer                              │
│ +max_health:integer                          │
│ +level:integer                               │
│ +basedamage:integer                          │
│ +damage:integer                              │
│ +exp:0                                       │
│ +max_exp:100                                 │
│ +potion:1                                    │
│ +gold:0                                      │
│ +evade:integer                               │
│ +crit_chance:integer                         │
│ +crit_hit:double                             │
├─────────────────────────────────────────────┤
│ +levelup(max_health,                         │
│ basedamage,damage):integer, integer,integer  │
│                                              │
│                                              │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────┐
│          Monster            │
├─────────────────────────────┤
│ +name:string                │
│ +health:float               │
│ +max_health:integer         │
│ +level: integer             │
│ +basedamage:integer         │
│ +damage:integer             │
│ +evade:integer              │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│          Button             │
├─────────────────────────────┤
│ + screen:screen             │
│ + rectx:integer             │
│ + recty:integer             │
│ + width:integer             │
│ + height:integer            │
│ + text: string              │
├─────────────────────────────┤
│ + show_text(text): string   │
│ + draw_button():            │
│                             │
│                             │
│                             │
└─────────────────────────────┘
```

4. Result

Menu Interface
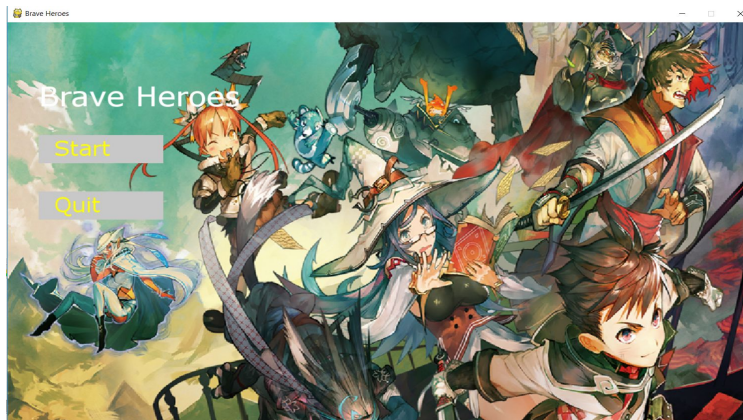
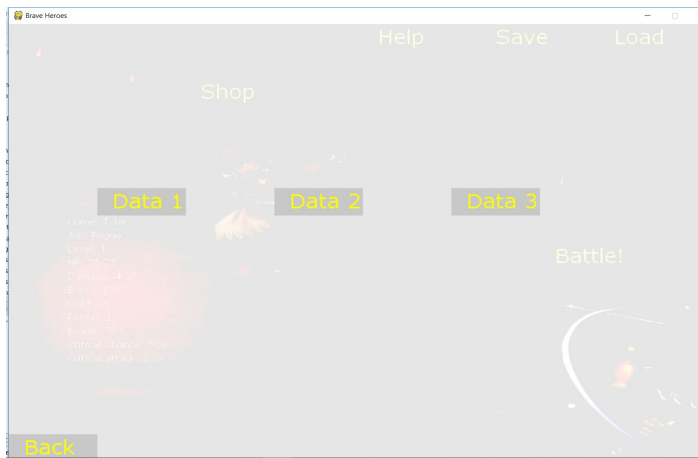**Player Selection Interface**
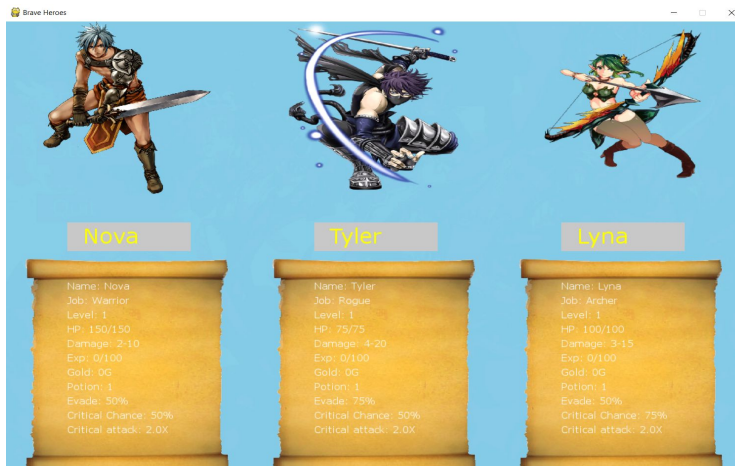
Inn Interface
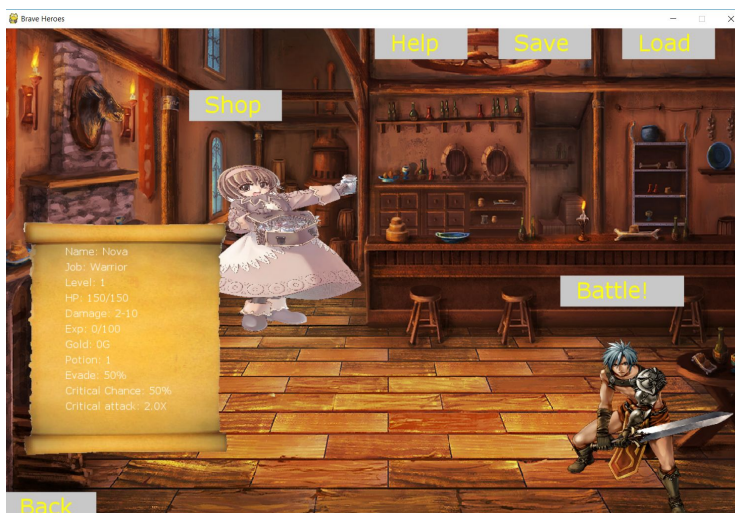
Shop Interface
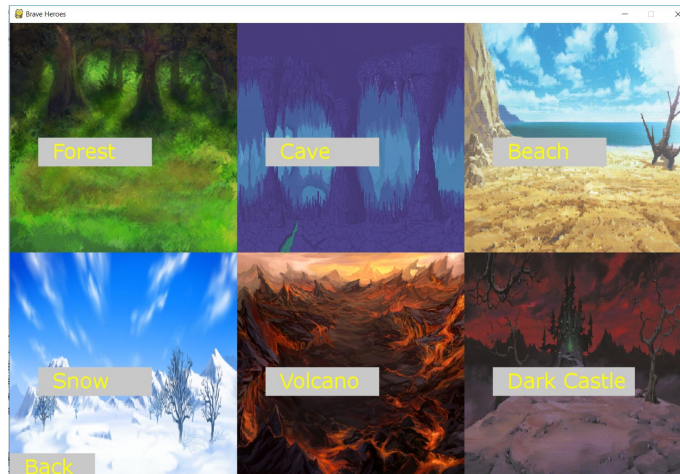

Save and Load Menu Interface

Help Interface

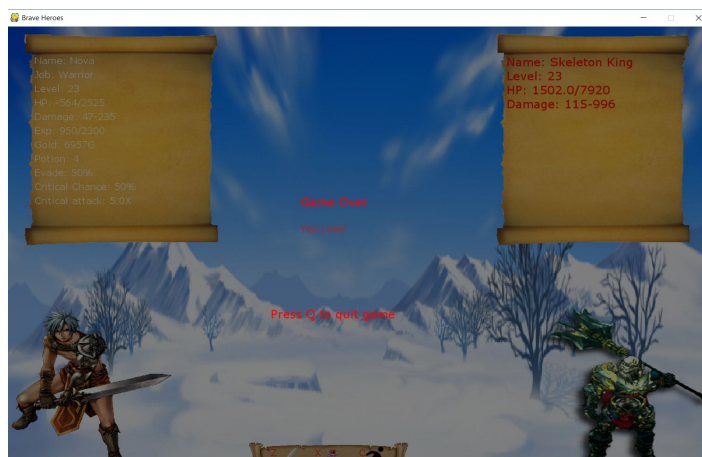# World Map Interface

Stage Selection Interface

Combat Interface

Win Scene Interface

Lose Scene Interface

5. References

Anonymous, 2018. Retrieved Nov 20, 2018, from:
https://www.techopedia.com/definition/27052/role-playing-game-rpg