Vitor Cavalcante

Professor Bhatt

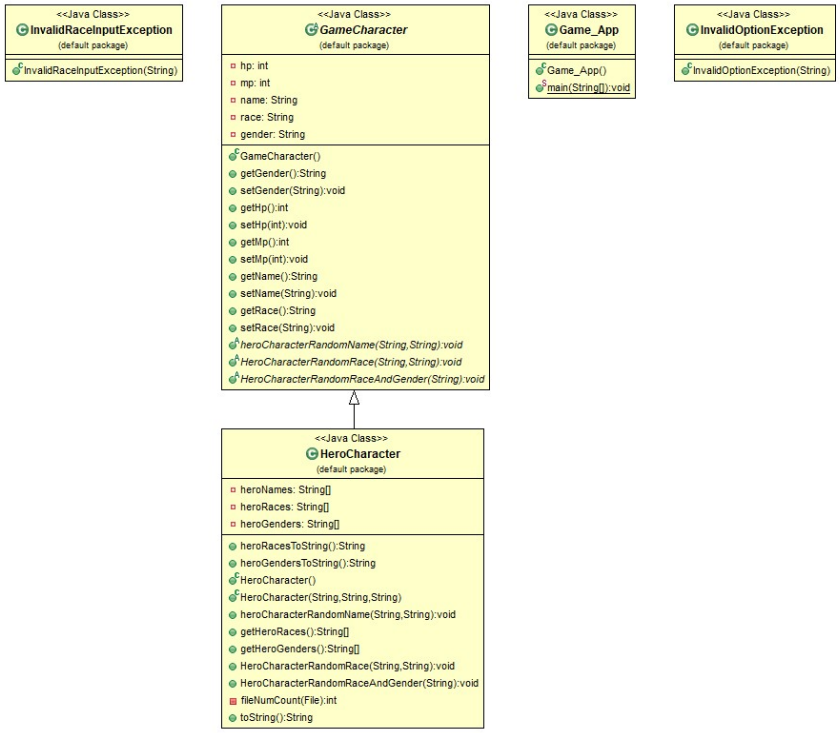
CSCI 185 - W02

12/11/2018

D&D Character Generator Project

The focus of this project was to come up with a Dungeons and Dragons Character Generator. The program has different functions to randomly generates a random name given the race and gender specified, random race given the name and gender, and random race and gender given a name.

Here is the UML Diagram of the project:



The program starts with an abstract class where it will have all the basic instance variables to create any possible character with its implementation; possible uses would be

a random enemy generator, random ally generator, among others. The variables consist of hp (Health Points), mp (Mana Points), name, race, and gender. All the variables are set to private with getters and setters methods to have access to them.

```java
public abstract class GameCharacter {

    private int hp;
    private int mp;
    private String name;
    private String race;
    private String gender;

    public GameCharacter()
    {
        hp = 100;
        mp = 100;
        name = "PotatoMan";
        race = "Vegetable";
        gender = "Food";
    }

    public String getGender() {
        return gender;
    }

    public void setGender(String gender) {
        this.gender = gender;
    }

    public int getHp() {
        return hp;
    }

    public void setHp(int hp) {
        this.hp = hp;
    }

    public int getMp() {
        return mp;
    }

    public void setMp(int mp) {
        this.mp = mp;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getRace() {
        return race;
    }
```

By importing many different text files with random names given the character race and gender the program is able to generate over 200 different name variations without including the differentiation when it comes to race types and genders. The way in which I implemented them was by calling the Scanner class on a text file given the race and gender accordingly. This way I have access to the names with the right race and gender.

```
public void heroCharacterRandomName(String race, String gender)
{
    String properRace = race;
    String properGender = gender;

    //Checks if the first characters for both race and gender are capitalized, if not it does so.
    if(Character.isLowerCase(properRace.charAt(0)))
        properRace = properRace.substring(0,1).toUpperCase() + properRace.substring(1, properRace.le
    if(Character.isLowerCase(properGender.charAt(0)))
        properGender = properGender.substring(0,1).toUpperCase() + properGender.substring(1, properG

    HeroCharacter.this.setRace(properRace);
    HeroCharacter.this.setGender(properGender);

    File txt = new File("C:\\Users\\vitor\\eclipse-workspace\\Project\\src\\" + race + gender + "nam
```

Additionally, I capitalized the parameters if the first character of the strings were lowercase. This way I could reach a standard output and having both the race and gender always display capitalized as shown in the picture above.

To successfully be able to randomly selected a name of a text file I scanned every word in the text file into an array called heroNames. I first scanned the text file to found out how many words were in the text file by checking how many capitalized initials are

there and setting heroNames array to that size. I then stored the names and removed the commas accordingly as shown in the pictures below.

```
//create a method to count amount of names from textfile which accepts a filepath as a argument and returns an integer
private int fileNumCount(File filePath) throws FileNotFoundException
{
    Scanner sc = new Scanner(filePath);
    int nameCount = 0;

    String nameList = "";

    while(sc.hasNext())
    {
        nameList += sc.next() + " ";
    }

    //System.out.println("namelist  : " + nameList);

    for(int i = 0; i < nameList.length(); i++)
    {
        if(Character.isUpperCase(nameList.charAt(i)))
        {
            nameCount++;
        }
    }

    return nameCount;

}
```

```
try {

    //count number of names in txt file
    int arraySize = this.fileNumCount(txt);

    //set heroName array size to that count
    heroNames = new String[arraySize];

    Scanner sc = new Scanner(txt);
    String name;

    //scans the name, removes the ',', and adds to the array
    for(int i = 0; i < heroNames.length; i++)
    {
        name = sc.next();

        //removes the ','
        String newName = name.replaceFirst(",", "");

        //stores it in the array
        heroNames[i] = newName;
    }

    //creates a random integer number within the heroName array length
    Random rnd = new Random();
    int randomNumber = rnd.nextInt(heroNames.length);

    //System.out.println("The Random Number Is: " + randomNumber);

    //sets the object name variable equal to the name of the random index based on the random integer value
    HeroCharacter.this.setName(heroNames[randomNumber]);
    //System.out.println("The random name is: " + heroNames[randomNumber]);

}
catch (FileNotFoundException e) {

    e.printStackTrace();
}
```

In the application class the user has the option to select between 3 choices, each corresponding to a type of hero character generator method. I've included some exceptions to handle wrong inputs when it comes to the selection the options and choosing the wrong race

through the InvalidOptionException and InvalidRaceInputException classes. Once the character is generated it asks for the user if he/she wants to generate another character. Here is a sample of the output:

```
Welcome to the D&D Character Generator!

Please enter the option number you wish to use:
[Option: 1] Generates a random name given the race and gender.
[Option: 2] Generates a random race given a name and gender.
[Option: 3] Generates a random race and gender given a name.

1
Please enter the desired race you want from the options below:
[Dragonborn, Dwarf, Eladrin, Elf, Human, Halfling, Tiefling]

Human
Please enter the desired gender you want from the options below:
[Male, Female]

Female
Your Hero is: Tura, The Female Human

Do you wish to use the D&D Character Generator again? [Y,N]
N
Thanks for using the D&D Character Generator! See you next time!
```