Java-Progamming Final Project's Report in team 19

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Introduction

This is a text adventure game with a Lord of the Rings theme. You start by choosing one of three characters that you like, each with their own unique attributes, and then begin your adventure. The game ends when you acquire the Sword of the Kings. The game map is a graph structure made up of dozens of points, divided into wilderness maps and town maps. In towns, you can complete quests to get items, and in the wilderness, you can fight monsters. Monsters drop items needed for quests, and by completing quests, you can get equipment to enhance your attributes.

Here is the github address of this project: https://github.com/J1anYi/java-programming-text-adventure
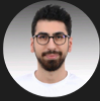
Work Process of code.

The main function is within the `Game` class, which contains a main loop that is critical to the game's operation. The `GameRepository` is responsible for copying JSON assets to the runtime environment. The `Event` class is mainly in charge of interaction-related aspects, such as attacks, tasks, and so on. `Scene` primarily deals with settings, which are mainly divided into wilderness and town scenes.

TeamWork.

My Name: Jianyi Zhou, My teammate: Cem Baran Kurukaya. The team number:19.

Unfortunately, my teammate did not fulfill the tasks I assigned to him well, or rather, did not do anything at all. I reached out early via email and WhatsApp, but he seems to have not attended classes due to visa issues. I also saw his name on the no-show list for the recent Advanced IT course final exam, and I suspect he hasn't arrived in Belgium, so I completed the entire project by myself. Below, I will list the chat history with him.

⊗ **Cem Baran Kurukaya** <Cem.Bara...

Thursday, 9 November 2023 at 12:4

To: ⊗ Jianyi Zhou

Dear Jianyi Zhou,

First of all I would like to thank you for your kind attitude. I am also excited to work wtih you.

I have to say sadly that I have no experience in Java but I do my best, you can be sure about that. Also I have registered the classes very late because of my visa situation. That's why I missed the classes but I am trying to catch up with the records in canvas.

As for the project, your plan seems perfect to me! You are more experienced than me, so I will stick to the plan.

Here is the my contact informations, so we can communicate faster than e-mail I guess:

Phone (BE): +32 466 30 39 37 (incl. whatsapp)

I cannot wait to work with you!
Best Regards.
CEM BARAN KURUKAYA

Gönderen: Jianyi Zhou <Jianyi.Zhou@vub.be>

Gönderen: Jianyi Zhou <Jianyi.Zhou@vub.be>
Gönderildi: 9 Kasım 2023 Perşembe 10:12
Kime: Cem Baran Kurukaya <Cem.Baran.Kurukaya@vub.be>
Konu: Java Programming Project Teamwork

Dear Cem Baran Kurukaya,

I'm Jianyi Zhou, and I'm very happy that we are paired together for the Java programming project in this course. I actually have some experience with Java programming from work, so if you follow my guidance, this text adventure game should be a piece of cake for us.
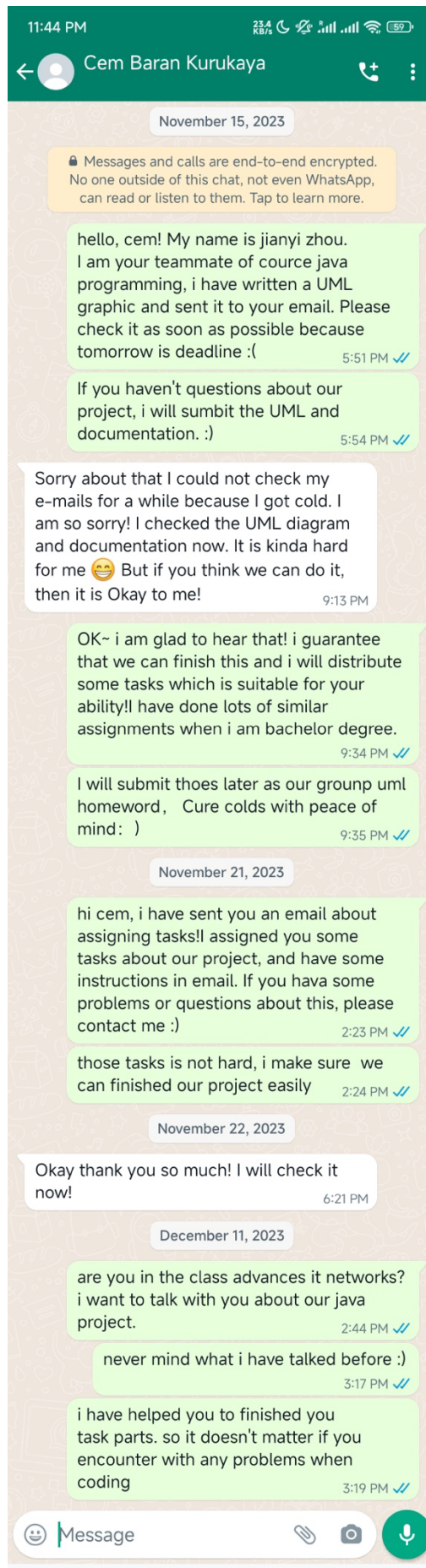
Here is the general workflow I propose:

First, we discuss UML, coding, integration, and testing. I will first write a simple UML diagram, consult you for feedback, and if you agree, I will make a more detailed UML diagram, and then divide up the tasks between us. I will set up a simple game framework on GitHub, and then you and I will complete our assigned tasks in our own branches within the allotted time, later merging and testing, which will complete this project.

I wrote a simple UML first, consulted your opinion, and then wrote a detailed UML diagram and assigned tasks to each of us. I set up a simple game framework on GitHub. Within the agreed time, we both complete the assigned tasks in our own branches. Afterwards, we merge and test our work, which will complete this project.

If we follow this workflow, I believe we can smoothly complete this project. If you have any other thoughts, please let me know. I'm looking forward to working with you!

Best regards,
Jianyi Zhou

Cem Baran Kurukaya

🔒 Messages and calls are end-to-end encrypted. No one outside of this chat, not even WhatsApp, can read or listen to them. Tap to learn more.

hello, cem! My name is jianyi zhou. I am your teammate of cource java programming, i have written a UML graphic and sent it to your email. Please check it as soon as possible because tomorrow is deadline :(5:51 PM ✓✓

If you haven't questions about our project, i will sumbit the UML and documentation. :) 5:54 PM ✓✓

Sorry about that I could not check my e-mails for a while because I got cold. I am so sorry! I checked the UML diagram and documentation now. It is kinda hard for me 😁 But if you think we can do it, then it is Okay to me! 9:13 PM

OK~ i am glad to hear that! i guarantee that we can finish this and i will distribute some tasks which is suitable for your ability!I have done lots of similar assignments when i am bachelor degree. 9:34 PM ✓✓

I will submit thoes later as our grounp uml homeword，Cure colds with peace of mind：) 9:35 PM ✓✓

November 21, 2023

hi cem, i have sent you an email about assigning tasks!I assigned you some tasks about our project, and have some instructions in email. If you hava some problems or questions about this, please contact me :) 2:23 PM ✓✓

those tasks is not hard, i make sure we can finished our project easily 2:24 PM ✓✓

November 22, 2023

Okay thank you so much! I will check it now! 6:21 PM

December 11, 2023

are you in the class advances it networks? i want to talk with you about our java project. 2:44 PM ✓✓

never mind what i have talked before :) 3:17 PM ✓✓

i have helped you to finished you task parts. so it doesn't matter if you encounter with any problems when coding 3:19 PM ✓✓

Message

Design Choices:

Describe the overall design of the game

The structure of a text adventure game with three main classes: Scene, Event, and Game, as well as a Character class.

Game Class: This class is central to the game's logic. It contains attributes such as the current scene (currentScene) and the protagonist (protagonist). The Game class also defines methods to start (start()), load (load()), run (run()), and exit (exit()) the game.

Event Class: This class is responsible for triggering events within the game. It includes a method to trigger an event (trigger()) and another to return a string representation of the event (toString()).

Scene Class: The Scene class manages the different scenes in the game. It holds a list of events (List<Event>) and a map of characters (Map<String, Character>). It also includes methods to act within a scene (act()) and to convert the scene to a string representation (toString()).

Character Class: Although not the main focus, the Character class still plays a significant role in the game. It includes attributes like health, weapon, armor, and a description. The class also has various getters and setters.

why certain design elements were chosen.

As a gamer, when I play games like World of Warcraft, there are always events such as adding attacks and quests, as well as a variety of scenes, ending with various interactive NPCs and characters. Therefore, I chose Event Class, Scene Class, and Character Class as the main classes. Text-based games always need a main loop, and it would not be very neat or meaningful to have the main loop in the main function, so I added an extra Game class to serve as the entry point for the game's main loop.

Special Elements in Code:

I feel that the only class with special elements is the `GameRepository` class. The function of this class is to load JSON file assets (including map resources, item resources, character resources, etc.) into the running Java classes. It uses an external package, and the main code is:

```
magics = objectMapper.readValue(file, new TypeReference<List<Magic>>()
{});
```

The most interesting part is the connection of points in various maps to form an undirected graph, done by the `connectScenes()` function in the `Scene` class. There is a `List` class called `nextScene` which, during initialization, contains `Scene` objects, but only the `description` attribute (used to find the actual points). Therefore, it's necessary to connect based on this attribute. The logic is to first find `Scene` objects with the same `description`, connect them, and then remove the original 'dummy' one. The problem arises because the `List` does not support adding and removing while iterating, which I couldn't solve. It was only after seeing a similar issue on a search engine that I understood the root of the problem.

Game Manual:

Map

This game map is offered in the report or github(https://github.com/J1anYi/java-programming-text-adventure).
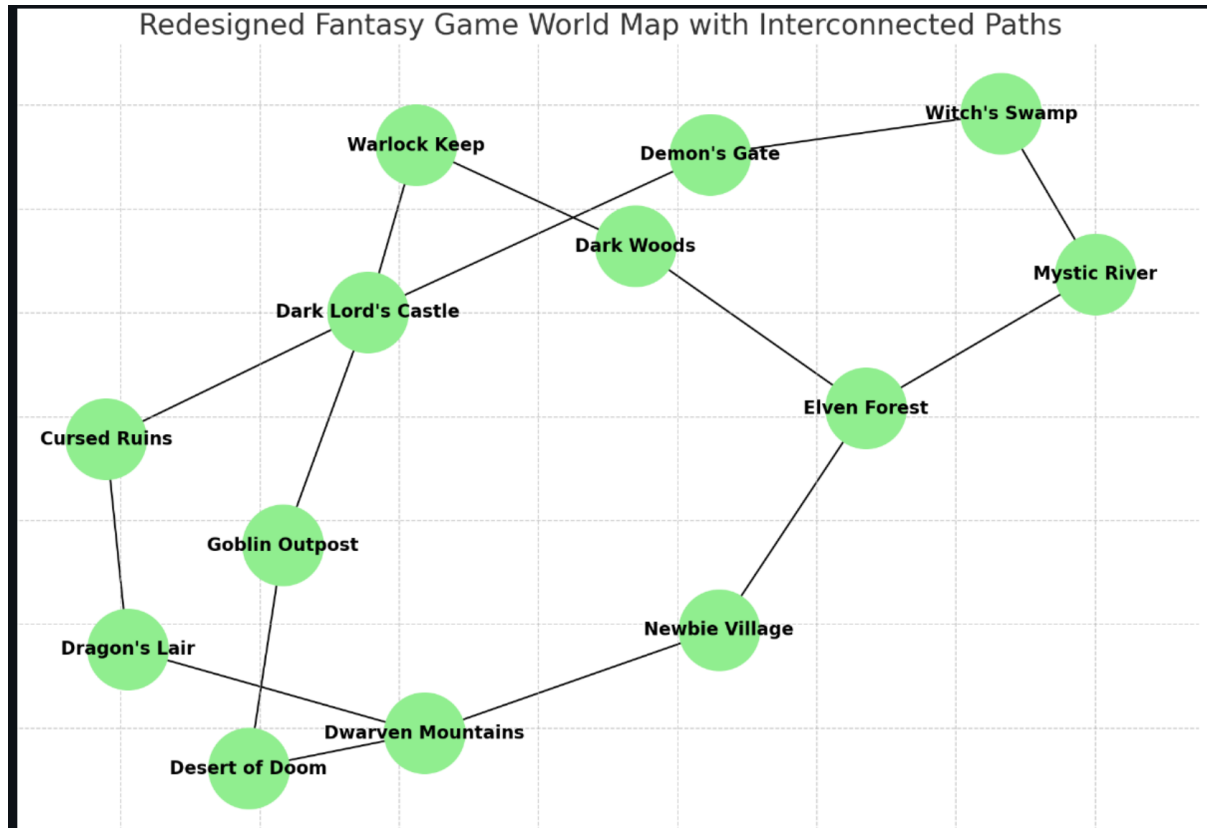
Characters Choice:

At the start of the game, you can choose from three characters, each with different attributes.

```
-------------------------------------------------
Please choose your protagonist:
0. Character{health=80, weapon=Goods{description='Refined Longbow', amount=1}Weapon{attackPower=30},
1. Character{health=120, weapon=Goods{description='Heavy Battle Axe', amount=1}Weapon{attackPower=25
2. Character{health=70, weapon=Goods{description='Wizard's Staff', amount=1}Weapon{attackPower=20},
```

starting location:

The starting location is Newble Village by default.

Game objective:

The game ends when you obtain the Ring of Power.

Ways to end the game:

There is currently only one way to end the game. You complete a quest in Newble Village which requires the Sword of the King, and the reward is the Ring of Power. Once completed, the game ends.

There are two ways to obtain the Sword of the King: one is to defeat the Witch-King of Angmar at Dark Lord's Castle, who will drop the quest item Sword of the King.

The second is to defeat the Orc Grunt in the Dark Woods, which will also drop the Sword of the King.

The first method is the normal progression, and the second is an easter egg. The first method requires good armor and weapons, which can be obtained by completing quests in Warlock. The quest item Scroll of Ancient Lore can be found by defeating the Goblin Scout in the Elven Forest or the Haradrim Raider in the Desert of Doom.

After equipping the armor and weapons, you can defeat the Witch-King of Angmar and obtain the quest item, Sword of the King.

Game controls:

On the initial interface, you can trigger the current scene's event (option 1), check the character's attributes (option 2), or exit the game (option 3).

```
------------------------------------------------
Current scene: Newbie Village
Current protagonist: Dwarf Warrior, famous for their incredible strength and indestructible armor.
Please write your next action:
1. Walk around in the current scene
2. View Protagonist Panel
3. Exit the game
```

Triggering the current event in town gives three options: 1 is to choose the next scene, 2 is to view the task board, and 3 is incomplete due to workload issues

```
Walking around in this scene:
Please choice the event number you want to do:
1. Go to the next scene
2. go to task board
3. go to marketplace
```

In the wilderness scenes, there are two options, with the difference being that option two allows you to choose a monster to attack.

```
Walking around in this scene:
Please choice the event number you want to do:
1. Go to the next scene
2. attack monster
```

When viewing the character panel, the first line introduces all of the attributes, and the second allows for a detailed examination of the character's possessions. Finally, there is an

option to equip the possessions already owned.

```
Please write your next action:
1. Walk around in the current scene
2. View Protagonist Panel
3. Exit the game
2
Protagonist Panel
--------------------------------------------------
Character{health=120, weapon=Goods{description='Heavy Battle Axe', amount=1}Weapon{attackPower=25}, armor=Goods{description='Heavy Full Body Armor', amount=1}Armor{defens
--------------------------------------------------
Your possessions:
--------------------------------------------------
Please choice the event number you want to do:
1. install Equipment
2. exit this panel
```