Computer Programming

Semester 3

Report from the project

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Project Topic and my Solution

My project topic is a simple RPG game.

I approached it knowing full well that it would be text based and the only "*Real*" interactions between two characters that wouldn't be 100% scripted would be fighting but that I would also want the story to not only be player-dependent but also character statistic depended.

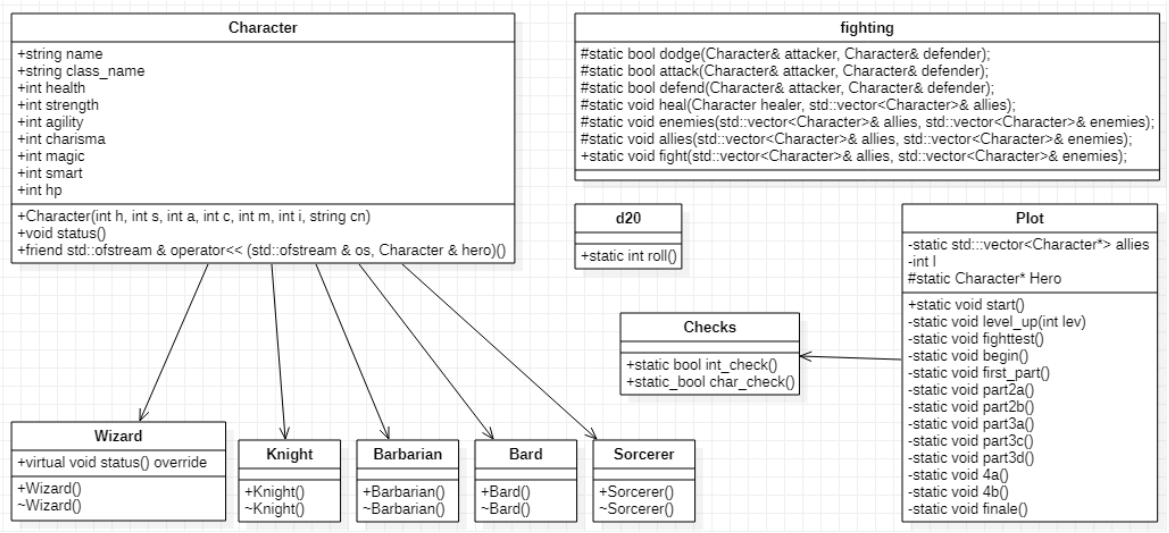
I also knew that I would want a simulation of a 20-sided dice (later called d20) for two reasons: establish an element of randomness in the game and pay homage to classic pen and paper RPG games like Dungeons & Dragons.

With these two things in mind the first thing I decided on were the statistics and their scale. I settled on 6 of them: health, strength, agility, charisma, magic and intelligence. Their base values range from 0 to 20 making interesting calculations combined with the d20.

When that was finished, I decided to write the fighting system. I took some time but in the end I'm quite happy with the result. I made it a turn-based system with turns divided between teams, not single fighters.

After that it was smooth sailing as all that was left was to write some kind of story.

Class Diagram and Main Classes description



Classes in my project depicted as Class Diagram created in StarUML

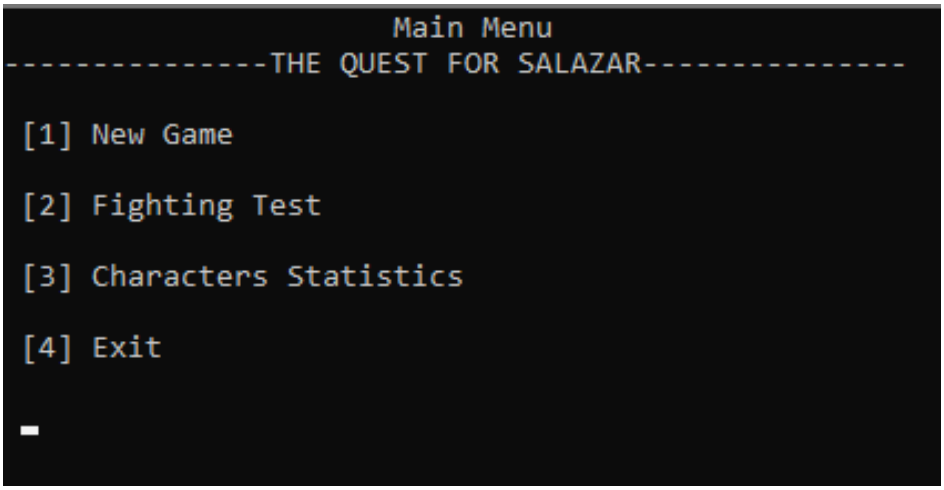
The three most important classes in my project are *Character*, *fighting* and *Plot*.

Class *Character* stores beforementioned statistics and is a base for each and every character created in this game. It has five inheriting classes which are constructed using the Character constructor with set values.

The *fighting* class stores just functions. These functions together create a turn-based fighting system in my game. They call each other with fight being the main one, called from the outside of the class.

Plot is responsible for story, plot and consequences of actions. It contains vector of Character* allies and Character* Hero which is also the 1st (0th index) element of this vector. Both of them are used by most, if not all function inside of *Plot* as well as those inside *Checks*. It also contains the most functions of any class. Even though most of them are quite simple, consisting mostly of "cout"s, their number couldn't be lessened as they diverge are converge as a result of character statistics and player choices.

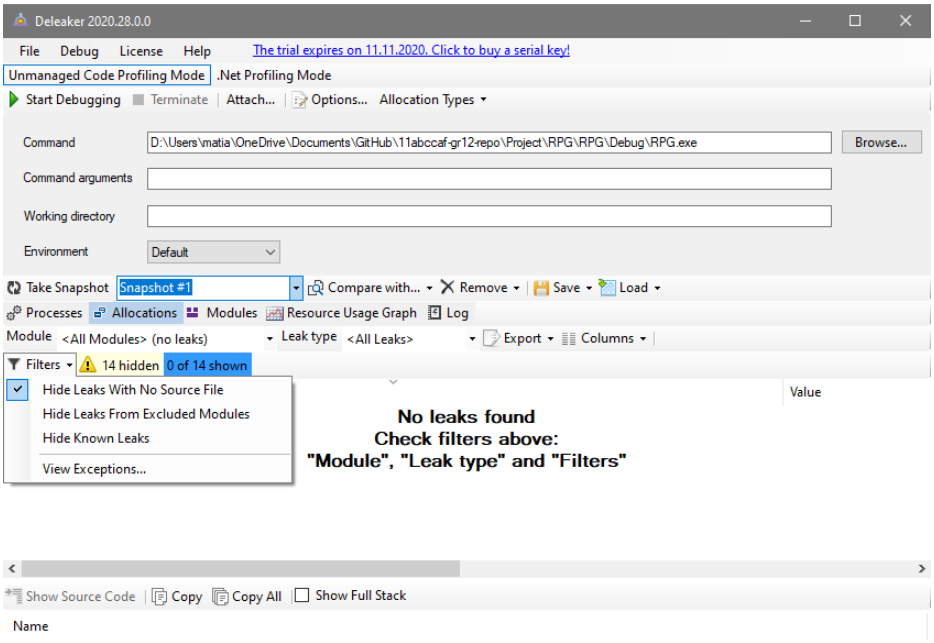
Running / Testing



Starting screen of my project

My program was run multiple times both from compiler (Visual Studio 2019) and straight from the .exe file. It runs as expected and without any errors or warnings.

Memory Leaks



Screenshot from Deleaker confirming lack of memory leaks in my program

I managed to get rid of all of the memory leaks as confirmed by the attached screenshot from a program called Deleaker which tests program in respect to memory leaks.

Conclusions

I encountered some problems along the way which coupled with time restrictions made it quite difficult for me to progress but at the end I managed to successfully complete the project. In order to achieve it I had to understand classes and make sure I remember things like file I/O or dynamic memory allocation correctly.