CS 319 - Object-Oriented Software Engineering

FINAL REPORT

TETFIT

Group 1-F

Irmak Akkuzuluoğlu
Irmak Türköz
Tibet Timur

1. Problems Encountered

a. Working as a Team

Working as a group sometimes turned out challenging. There were some serious arguments about the implementation between the group members resulting in lack of communication and unbalanced workload. More precisely, sticking to the reports got harder moreover some of the members who helped during the report phases were no longer communicating with the rest of the group. Therefore three of us had to design the project almost from scratch.

b. Lack of Usable Design

Starting from scratch led to many design related issues. We had to keep in mind the number of members that are implementing and shrink down some of the classes. Thus, the design which was created for this project was no longer usable. We had to redesign most of the project, trying to be as efficient as possible. The limited time interval made this process more difficult and stressful.

c. Implementing in Java

The problem about this method of implementing is not using anything else except a simple IDE while some of other groups were using game engines while which made the programming process much faster and we could've spend our time on implementing all the design and maybe we could even add more features instead of encounering extraordinary amounts of bugs.

2. Solutions To Problems

a. Working as a Team

We ended up working on our project as 3 members rather than 5, so we had to make some trade offs. Especially, sticking to the reports got harder as explained above. So, we decided to

make some major changes about the design of our project. The three of us tried to balance the workload as much as possible.
Irmak Türköz was responsible from the game logic and mechanism.
Tibet Timur was reposible of the graphical user interface design.
Irmak Akkuzuluoğlu was responsible of the debuging and recording our process for the reports.

b. Lack of Usable Design

The previous problem made our initial design ineligible. Therefore, we created a new design with the present members, which was really hard for we had very little time. What we have done is that we divided the parts very carefully, allowing individual work and design. But, we also made sure that every part that is created were compatible after every step.

c. Implementing in Java

Our solution was once again careful division of the workload. Tibet was responsible for GUI includes, in-game design and the main menu which has animated buttons and uniting the project in a whole project. while Irmak T. was working on the game logic and mechanism which includes a huge workload such as game play panel, game logic file and objects created in the game. Irmak A. was also working on the game mechanism for debugging and she debugged really huge problems in the game. Thanks to this, we limited the part that we had to revise Java.

What could have done in other way was to design our classes together at the first place. Our some members who mostly contributed to the analysis report's object and class diagrams in their way which forced everyone to design it in that way in design sate. However, it's possible to see much more easier ways when the implementation is in our hands. Since it was possible to implement it in much more easier way, the project's implementation does not cover exactly same as the designs and diagrams which also caused another trouble that we were left without design which enabled us communicate in the first place. The contribution and the communication of every each member in every each state should be a must in designing engineering projects. We lacked it, which caused the trouble of designing project in

such a way that only one person could work on it however, since there was only a few working on the implementation, it did not cause such a huge problem. Only that, the person who wrote the logic had tons of workload.

3. The Changes Made

There are countless changes that are made like classes, methods and design.

Game Play / Logic:

The game logic was implemented different than we designed. First of all, we used boolean array to determine our whole game since it would be much more efficient than implementing our program with integers. Moreover, we changed the objects:

There are 3 types of objects:

Block: which is the current falling object and it consists of either one of the shapes (I, J, L, O, T, S and Z)

Pit: This holds the value for stable unit squares which are bottomly spaced on the gameplay screen. The pit stays consistent until next block has been added to the stable units. (When current falling object collapses with a bottom object of the pit)

Graph: Graph is what we see on the screen at the moment. It changes rapidly with the timer and gathers information from both of the block and the pit.

The functions between these 3 classes form the game logic. What is given to the interface panel is the graph's current status. Also, notice that Timer of javax.swing been used in implementation. The timer action listener is called in the game logic to determine fall whereas inputs are gathered from the panel's action listener which is a keylistener. The reason we done this was to adjust the game considering user input, logic and the output. The output is given from the panel, keyboard listener also gathered from the panel whereas timer needed for logic so it placed under the game logic class. Since all of the logic was implemented by one person , there was not a need of much communication between classes. However, it was important to give logical names to variables when there was a need of help of another member. Tibet and Irmak A. helped debugging the code when needed. However, since there was lack of comments at the first place, explanation needed when debugging with

the other teammates. It is really important to handle the problems / making debug together since someone can notice others mistakes or even making explanation to a person may help the code's owner understand where the mistake was.

Main Menu(GUI):

In this part of implementation GUI is created a bit different than the previous reports. Main menu screen, in other words, the screen the player encounters as soon as the game is executed is a little less functional. The load game feature is not implemented due to the lack of time. So that button is not created. Nevertheless that screen is still good enough with a decent background image and decorated and animated functional buttons.The gameplay screen, is also less appealing than the reports promised. The side panel is not implemented due to unplanned coding arrangement since the new member was added to the group and then the work is shared among the willing members.

4. How Implementation Went

Implementation got devastating sometimes, but we did not give nonetheless. Especially, the parts that we were not that familiar like GUI gave us a hard time but we handled it. Our interrupted communication and understanding of each other helped us a lot, the three of us succeeded in working as a group.

5. Final State of Implementation

We have achieved most of the things we have planned. Our opening page is working great with all the buttons except the help option. We did not have enough time create a tutorial, so that button does not lead to anywhere. When the new game button is pressed it successfully opens up a new game. But the modes are unfortunately not implemented. The basic game starts and goes on until a brick hits the top of the screen after landing on the pile. If the player achieves get one of the highest 5 scores then the game will ask it to enter a name which will be recorded into high scores table. When the high score button is pressed on the opening screen the highest 5 scores are displayed.The controls and over all the brick moves perform flawlessly as well as the high scores. The rest is going to be future work.

6. User's Guide

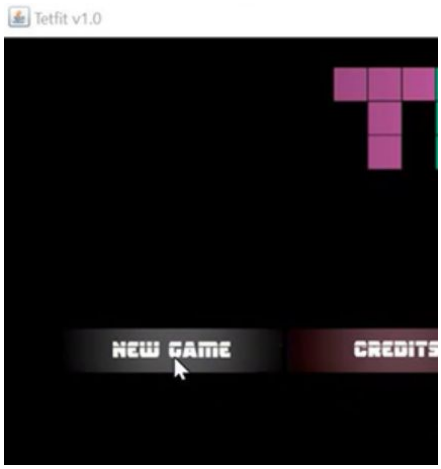
Installation

The game is a simple java (jar) executable file which has no need installation. It is possible to move the file anywhere and execute.

Image 6.1 : The Main Menu Panel

Game

When this file is executed the player will encounter a main menu before the gameplay for some options to change the settings or check the high scores.



Once the player press the "New Game" button the game screen pops up.

Image 6.2: Animated button

Controls

The player controls the blocks with arrow buttons:

UP : Turns the block to left

DOWN: Turns the block to right

LEFT: Moves the block to left

RIGHT: Moves the block the right

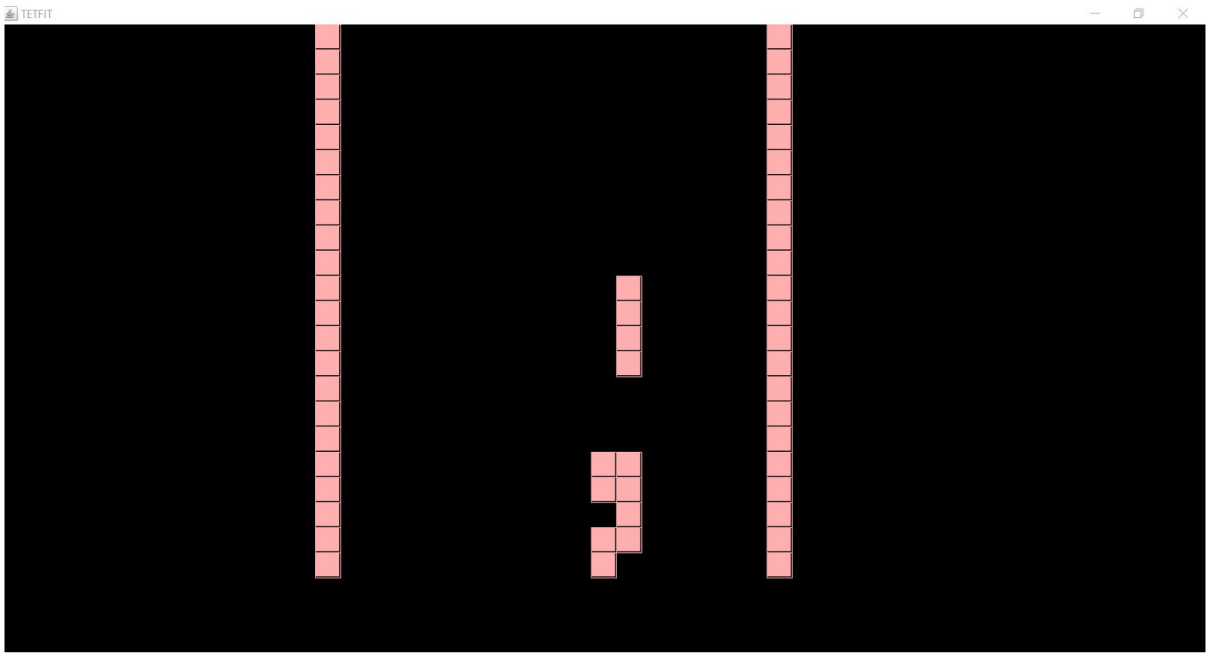


Image 6.3 : Beginning of the Game

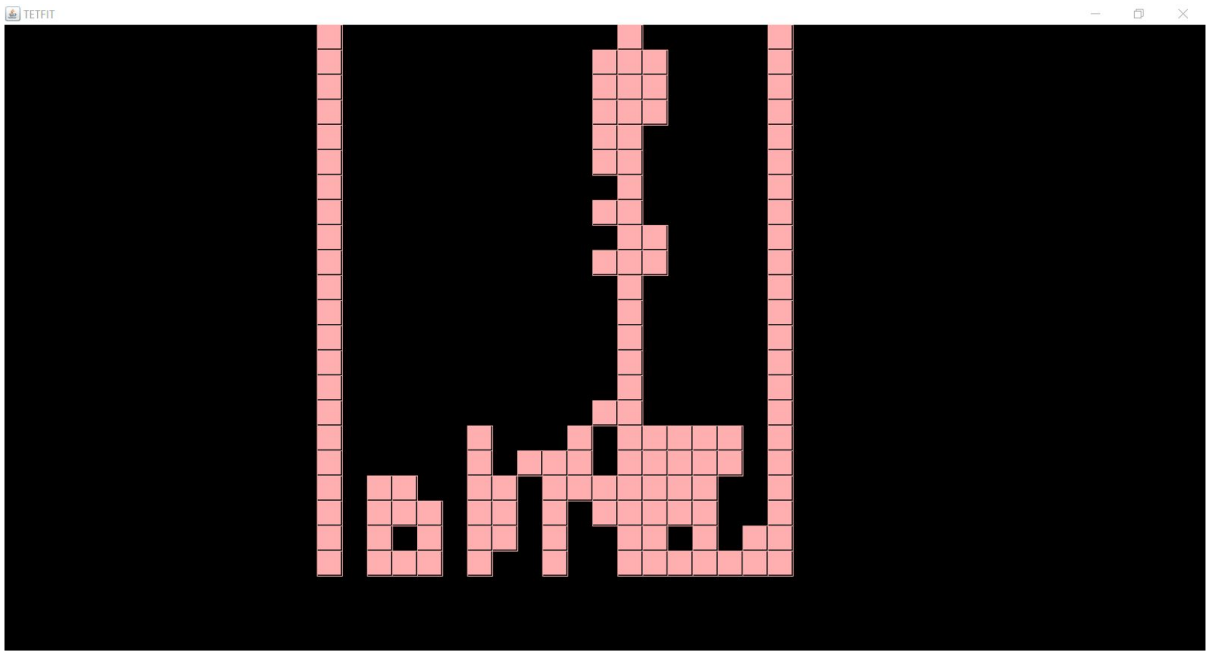


Image 6.4 : Game Over state of the Game.

7. Conclusion:

As it is explained in the previous sections of the report, the project is in an inadequate form. As a group we failed to cooperate and work in a schedule which is explained in the course description. Nevertheless the willing members did a serious work in a short and limited time and managed to create a working game in some way and did most of their share of the work. Coding and debugging in Java was fun but also time consuming which made this work slow at the same time. There were lots of differences in the implementations when we compare to the reports. The reasons are:

- Some classes and instances were time consuming to code in a short time
- While coding the targeted project, we realised that there were so easier and functional ideas which led us to do something else.
- Finally, there were some parts we intended to create but the time was not enough.

In the final weeks of this process the three members who was willing to continue the project, did some serious effort and managed to cooperate completely hassle-free. The final state of the implementation was not enough to say it is a complete a term project but still it is something we managed to do in a short interval and current fluency in Java.