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Individual report on building tic-tac-toe game

Mobile Application Development (COMP2008)

# Introduction

I am Flavio Ranatunga who is following the Mobile Application Development unit (COMP2008), Assignment 1 was done by me and my teammates, Thilina Athukorala, Joel Kumara and Dilhan Rubera. In this report I will discuss about the role I was assigned to, the methodologies used, what challenges the team and I faced, the solutions brought up by the team, what I learned and finally the thoughts about the result. My assigned task was to design the tracking functionality of the game.

# Methodology

The team and I used several systematic approaches to come up with the implementation of the tic-tac-toe mobile game. Prior to implementing research was carried out among the team members on the scope of the project, broke down the features of the game and allocated among us. The team also planned on sketching drafts to get an understanding of how the game and the other several fragments should look like in both portrait and landscape modes. One of my primary tasks of the project was to develop the Tracker class, which keeps track of timers, motions, and game progress. To construct a productive and modular class, I followed the best requirements possible in Java and Android development. Such capabilities as move tracking, undo capability, and turn timers are included in this class. Testing was also done in collaboration with each other after a critical functionality was implemented, the game allowed many combinations thereby as we all participated it was easier to identify any bugs in the code.

# Contribution

My primary role in terms of contributions is to design and implement the tracking functionality. The tracker class which contains some important features for the game to run like observing the move count and displaying it to the players in game thereby assisting them in making crucial moves which could lead them to a win, undo operation for players to reverse a mistake or reset the game and managing a timer for the player’s turn. My efforts were also given to designing the 5 by 5 grid, orientation management of several Ui elements in profile fragment and grid fragment and player profile class to update the player data as a game ended and display it to the user when entering the profile fragment. As a member of the group, I believe that I contributed 25% for the project’s implementation and believe that my teammates also contributed similarly.

# Challenges

As we progressed the team and I encountered multiple difficulties. One of the requirements needed by the specification of the tic-tac-toe game was to ensure that the UI components and layout seamlessly transition between portrait and landscape configurations, however the process did not execute as planned since the data within the app was lost each time the layout changed, this is due to recreation of the fragment every time, this indicated that when the orientation changes essential data of the game including the board, players’ turn and timer reset. To overcome this issue, we had to look further into Android's fragment lifecycle and refer to the fourth lecture and previously done fourth practical. We looked at several methods for keeping the important data intact during configuration changes. Initially, we tried using bundles to store and restore the data, but we ran into many issues because fragments did not work properly with bundles. As a result, live data became an essential component of the project because it allowed us to transfer player, timer, move, and grid data from one end to the other. The tracking feature of the player, specifically in terms of showing and updating player statistics, posed another big obstacle to us during the project. The tracking feature was initially incorporated into the fragment created by one of my team members. However, we quickly discovered that the fragment structure was unable to manage the text view necessary for real-time player data display due to configuration issues.

# Solutions and Innovations

The timing mechanism efficiently regulates how much time is left for a player, making the current player think crucially before a move is made, this function had benefited the playing ability of the players. To make the player versus. AI game mode more realistic, we had to delay the AI's response time so that it appears as though it is planning its next move. This technique was acquired via the tracker class’s timer functionality. The Main activity data class, which manages the live data for the application, was where the tracker object was set up. This allowed for seamless data addition to and editing of the player's data object. The view model feature also played a significant role in our project because it uses the fragment lifecycle extensively.

# Collaboration and Communication

The outcome of the project was significantly relied on how the members collaborated and communicated with each other. When the team was unable to meet in person, online sessions were scheduled so that we wouldn't be late in discussing our tasks. Due to frequent updates and discussions about the task, everyone knew what the other person was pursuing.

# Lessons Learned

This assignment led me to a better understanding of coming up with a result by collaborating in a close group of four. Thanks to the project I learned more about java and android development in technical perspective and recognized the importance of flexible code designs for the whole team to work with together. Regarding cooperation, I became more mindful of how important open interaction is when progressing with group work, in the planning phase every members contribution to share ideas was essential to have a good foundation to the project. In the future I would also like to emphasize on the usage of version control GitHub for example. In the future, I'd like to place more emphasis on using version control tools like GitHub. It may have resolved several issues we had as a team, including the inability of members to read the most recent code in real time and lowering the possibility of conflicts among ourselves in the codebase.

# Conclusion

In summary developing the tic-tac-toe game with my team members brought up an extremely accomplishing and educational experience. I'm glad to have contributed to the implementation of the gameplay tracking feature, which I believe was essential to achieving the project's objectives. Apart from contributing to developing my android development skills this assignment also helped me to be better at collaborating with others in a team. This assignment not only helped me improve my abilities in android development, but it also improved my ability to work in a team environment. I am pleased with our team's overall performance and am looking forward to using the knowledge and lessons we learned from this project to future endeavors.