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**Table of Contents**

[***I.***](#_heading=h.gjdgxs) ***Team Profile 2***

[**1.**](#_heading=h.30j0zll) **Team Name 2**

[**2.**](#_heading=h.3znysh7) **Personal Information 2**

[**3.**](#_heading=h.2et92p0) **Group Processes 3**

[**4.**](#_heading=h.tyjcwt) **Career Plans 3**

[***II.***](#_heading=h.3dy6vkm) ***Tools 3***

[***III.***](#_heading=h.1t3h5sf) ***Project Description 3***

[**1.**](#_heading=h.4d34og8) **Aims 3**

[**2.**](#_heading=h.2s8eyo1) **Plans and Progress 4**

[**3.**](#_heading=h.17dp8vu) **Roles 9**

[**4. Scope and Limit 9**](#_heading=h.3rdcrjn)

[**5.**](#_heading=h.26in1rg) **Tools and Technologies 10**

[**6.**](#_heading=h.lnxbz9) **Testing 11**

[**7.**](#_heading=h.35nkun2) **Timeframe 12**

[**8.**](#_heading=h.1ksv4uv) **Risks 16**

[**9.**](#_heading=h.44sinio) **Group Processes and communications 17**

[***IV.***](#_heading=h.2jxsxqh) ***Skills and Jobs 19***

[***V.***](#_heading=h.z337ya) ***Feedback 19***

[***VI.***](#_heading=h.3j2qqm3) ***Group Reflection 19***

# Team Profile

## Team Name

We have chosen the name for our group to be “The Groot”. The name was approved byall members. This name represents the symbol of friendship and family. It has a strong meaning to all people who have watched the movie “Avengers: End Game”.

## Personal Information

***Table 1. Personal Information***

| **Name/Student ID** | **Personal Information** |
| --- | --- |
| **Dinh Pham**  **S3878568** | I graduated from a Canada college with a diploma in Biomedical Engineering. I came back to Vietnam and switched my major field because I haven’t enjoyed working in my background field, as well as the pandemic was overwhelming. Moreover, I have found myself enjoying computing and game developing. Therefore, I would like to be working as a game developer in the future.    In the past, I have learnt Python, database design, and some user-centered design for the applications. I would like to learn and strengthen my team collaboration skill set and make new friends from this project. |
| **Phat Bui**  **S3914615** | This is my first year as well as my first semester in university. I usually just sit in front of my laptop either playing games or surfing YouTube. However, I do spend my time doing other activities like going out with friends or working out. I have no experiences whatsoever about IT but I am very interested in IT and how people develop games. I’m very into gaming and it has helped me go through a lot of stuff, so my dream is to develop games and may be able to help others either through tough times or just distract them from the real world for a moment. |
| **Nguyen Huynh Hai Long  S3877624** | Being a first-year student in my second semester pursuing my studies in Electrical Engineering, I spend the majority of time on hobbies that are IT related such as researching about the development of modern technologies or practicing ways of building personalized computers from customizable components. Aside from that, I also partake in other hobbies like playing badminton on the weekends and engaging in online entertainment.  Currently, I have very little IT experience as I only know some basic coding knowledge in C/C++ alongside with only the general understanding of common computer parts and its function. I would like to learn more about other types of coding language (such as Java and Python) as well as improving my management skills and deepen the relationships with my team members. |
| **Vu Hoang Minh**  **s3903723** | I finished high school in Sweden and due to the pandemic, I decided to continue my studies in Vietnam. This is my second semester in RMIT in the IT program. In my free time, I enjoyed reading, working out at the gym, playing video games, and working on my personal project.  I am proficient in Python and Java and I can work with C#. |

## Group Processes

For the last four weeks of the semester, our team worked well together. Everyone was communicating with respect and care to the others. Tasks and works were completed on time with good quality. There were some conflicts regarding some written documentation among team members. However, we managed to resolve the problem easily.   
  
In the future, we would like to have higher efficiency in team collaboration where in-person meetings are hosted instead of online meetings. It allows us to communicate faster and better. Online meetings are often interfered with Internet issues, disruption from families, strange noises, and other elements.

## Career Plans

**Dinh Pham:** I want to be a game developer where I would work for companies that create the greatest games such as League of Legends, Genshin Impact, and so much more. To do that, I must build my strong foundation in programming, and expose myself to tools and technologies that are being used for the game development industry.

**Phat Bui:** My career goal is also to become a game developer, but I don’t really want to work for big game companies like Dinh since there are reports, articles about crunches and workplace harassment happening in their offices. Instead, working for a somewhat indie game studio I believe is the best option plus it’s best for beginners like me to work with small projects first. However, for me to work in the game industry even for a small game studio I must at least know some basic knowledge about the tools and programs used for game development, so that is my goal for now.

**Minh Vu**: Unlike some of the other guys in my group, my career goal is to become a machine learning engineer. Where I work may not matter but the most important thing is I am able to work with cutting edge technology in the field of Machine learning. To achieve this goal, I am learning the foundations of Machine Learning and AI and I will work on some personal project to test my knowledge and know what I needed to learn.

**Long Nguyen:** In the distant future, I want to achieve my goal of being an IT consultant and working for well-known companies that have high influences in the IT world and would allow me to grow when working under them. To obtain this goal of mine, I would need to expand my knowledge in the operation of different computer systems, equip myself with the ability to troubleshoot hardware along with software and be able to develop good collaboration as well as organizational skills.

# Tools

During the first week of the project, our group has formed the following GitHub repository to store out html file of the documentation. We also used the **Paging** feature of GitHub to host a website for displaying the html file’s content in live server with a solid URL. The links to our website and repository are given below:

GitHub Link: https://github.com/DuploMinh/COSC2083-Groot-ASM3

Group’s website: <https://duplominh.github.io/COSC2083-Groot-ASM3/>

# Project Description

## Aims

​​The aim for our group’s project is to produce a chess game to players who are staying home during the pandemic time interval and enjoy a challenging strategy/puzzle game. To build such a playable and enjoyable chess games, we are going to introduce these features into our game:

* **Time Challenge:** A clock time will test player’s ability to make right and fast decisions on their pawns’ moves.
* **Puzzle Mode:** Pre-designed chess games that will test the ability of player to turn the tide of the battle.
* **Player vs Player Mode:** Allow two players to compete

Aside from those advance game modes we just introduced, we also must make sure that the game is operating well with normal standard for chess rules, as well as the Artificial Intelligence of the game to help it beats toughest players.

When it comes to project, task-prioritizing and planning are the most important aspects. Building a fully functional chess game is the most important thing to do in our project. We must make sure that the game is working properly with normal game mode. This is the core of the game since it derives the gameplay, game AI, and so much more. Subsequently, we can build extra features and game modes afterward for higher challenge to players.

## Plans and Progress

**a.** **Motivation**

Among four ideas of members in the group, we have chosen the “Game Building” idea because we all shared our passion for the gaming industry. We all wanted to experience and learn to build a game ourselves.

**b.** **Plan**

We have worked together to form up a routine that will bring the project to success. The following tasks are the things that need to be done to complete the project:

* **Idea Discussion:** Forming Ideas
* **Establish Collaboration Environment:** Choose tools to organize group activities
* **Planning:** Forming plans and tasks for the project
* **Documentation:**  Record project’s progress
* **Gameplay:** Design Gameplay
* **Graphical User Interface:** Design user interface
* **Rules (Game):** Design help settings
* **Clock-timing (Game):** Build timing features
* **Puzzle (Game):** Build puzzle features

In the following sections, we would like to provide specification and details to the proposed tasks. Moreover, we will discuss further changes in the future on how these tasks will be potentially modified, according to the project’s progress.

**1.** **Idea Discussion**

We formed out group in week 8, which is 4 weeks left from the end of the semester. We wanted to make a group discussion on project’s idea first, as well as deciding other elements and factors. Without a project’s idea, we couldn’t initiate any plans and aims for the project.

We wanted to choose the ideas from the members of the group because we scanned through all the ideas, and recognized these ideas were properly developed and had potential for future expansion. We initially had to choose between these four topics coming from all the members:

* **Game Collection Development**
* **Vietnamese grammar correction**
* **Robotics**
* **Mobile Game**

We have chosen the “Game Collection Development” idea because it was fascinating, and we believe that the project will be successful. Moreover, it is practical to achieve because we have the knowledge and the abilities to achieve the goals by completing simple games first, before moving on to difficult ones. That’s why we named it Game Collection.

**2.** **Establish Collaboration Environment**

A group project needs an environment that enables collaboration, teamwork for efficiency. Moreover, constant communication helps to resolve misunderstanding, as well as ensure that everyone is catching up to the deadlines and being responsible for their work. Likewise, team members are encouraged to exchange their questions and ideas clearly and effectively to other members.

We have chosen GitHub – A cloud repository that enables real-time collaboration – to store our codes, as well as keeping track of changes and modifications of the versions. Likewise, we use Messenger as a communication channel for members because Vietnamese students use Facebook as a common social media platform to exchange information, as well as updating their social life. Since we are practicing social distance in the next couple weeks, an online communication channel is a must for maintaining schedules and group activities. These tools have shown positive results on communication activities since we started to use these tools, thus, we will maintain the positivity.

Finally, we will use Google Drive to store the versions of the document files, since we will be updating the files regularly where technical document is distributed evenly to group members. This will help the team to collaborate real time with editing and updating the documents, and records modifications and adjustments made by members for fast recovery from fatal mistakes.

**3.** **Planning**

With all the tools prepared, we’ve started to create plans, goals and aims for the project’s success. Since we started from week 8, we had 3 weeks from the due date of the project’s documentation and presentation. With such a time- constraint, we decided that completing the documentation for the project is out top priority. Nonetheless, we will attempt to build the Gameplay for the project.

First, we started to work individually for the documentation since there are many aspects for writing. Each person was responsible for writing 2-3 parts of the documentation’s **Project Description**. The deadline for the documentation was scheduled to be on Sunday, September 5th, 2021. We specifically chose this date because we wanted to make sure that all members are doing good and allow flexibilities on time for making necessary changes on the documentation, as well as helping other members.

Secondly, we will work together as a group to complete the other parts in the documentation that requires group collaboration, such as **Group Reflection** and **Feedback**. The deadline for this task is from September 5th to September 9th. Since these needs group activities heavily, we will be actively engaging in daily conversation with other team members for improvements and help.

Next, we’d like to design the web site for our documentation, which will be done by **Minh Vu.** We will apply some **JavaScript** programming language to design and decorate our website. We would like to provide functions such as **Button** and for cross-reference between each section, as well as **Hyperlink** for reference to our presentation video and website sources that we used.

Next up, we will be working on our presentation video for project submission. We will be discussing over our ideas, initial goals and aims, progress, achievements, experiences, and future goals. We will create PowerPoint slides to improve visual experiences and understanding of audience on the presentation, as well as present our products in better details.

Simultaneously, we will start to build and develop the game application. We will start off our game collection with building a chess game. We would like to spend the last 4 weeks of the semester to complete our documentation, as well as build at least the gameplay feature for the project. If we have an extra 12 weeks for this project, we will complete the advance game modes for the game, as well as build at least one extra game (Tetris, Chinese chess games, etc.). Specifically, for the chess game implementation, details will be discussed further in the following sections.

Finally, we would like to complete the project by submitting all files and documentations regarding the project by September 19th, 2021. We assigned the responsibility to **Dinh Pham** for the submission, avoiding collisions where the files are submitted multiple times (avoid wrong file-version submission).

**4.** **Documentation**

Documents are written and saved as doc files. We will apply rules and fonts design to protect the consistency of the documentations. Specifically, we will be using mainly **Times New Roman** font, with a font size of 12, and 1.5 line spacing for a clear visual.

All works and tasks were distributed evenly to all group members. All documentation is store on Google Drive, and dates are update regularly when changes are made to the files.

**5.** **Web Design**

The web is designed using pre-built format of Minh Vu. He has used this format for his website in Assignment 2 and he offered to use it for our project.

**6.** **Presentation**

Presentation is prepared with a PowerPoint slide, and recorded videos of four members. The final video will be submitted by combining these four videos. Group is not able to record a full video because we are practicing social distancing.

**7.** **Gameplay**

First, we will make sure that the gameplay is matching with standards of available chess games on the market. Specifically, the game will apply standard chess rules. It will allow users to make their moves with a time ticking. The player will be able to choose the color for their pawns (as white will move first, and black moves after). The picture below (Nuwer, 2013) illustrates a sample of the project:

***Figure 1. Sample Chess Board***

*A chess board with chess pieces

Description automatically generated with medium confidence*

Since we will be using Unity to implement this gameplay in 2D style, the above pictures illustrate our future product precisely. However, we will make essential changes to the chessboard color since the color in the picture is hard to differentiate, especially for color-blind users.

Moreover, there will be side-bar options for users to selectively choose to pause the game, exit the game, or make changes in the setting function. The AI of the game will be re-built with existed database and documentation of chess moves available on open sources such as personal projects, group projects, and personal blogs:

* **Easy:** Intermediate AI level
* **Medium:** Challenging AI level
* **Hard:** Extreme Challenging AI level

We would be able to achieve easy AI for our product. However, Medium, and Hard mode are hard to design since we need to do lots of research on possible moves for the AI with little time we have.

There will also be a pop-up message where the user has conquered the game’s AI by checkmate, or vice versa. We will also consider a “Undo” button where it allows users to revert their moves, fixing their mistakes in Easy mode only. Winner is decided by checkmate or the quantity of pawns they have left.

**8.** **Graphical User Interface**

We would like to design the GUI for the gameplay as aesthetics as possible, bring a decent experience for users. Since it is only a 2D game, it would be simple enough to build a simple GUI. With the help from Unity, this should be achievable.

**9.** **Rules**

Game rule follows the chess game rule standard, which can be found in the following hyperlinks:

· <http://www.sakkpalota.hu/index.php/en/chess/rules>

· <https://www.chess.com/learn-how-to-play-chess>

Essentially, all rules will be implemented in the game where pawns will follow strictly. Error warnings will be generated when users attempt on impossible moves of a pawn.

**10.** **Clock-timing**

We will implement a clocking system which constrains single move of user by maximum of one minute, and a total of 60 minutes until the game is over. When the clock exceeds 60 minutes, the game is over, and the winner is decided based on the existing pawns on the board of each side.

We believe this system provides a higher challenge to player. Moreover, it brings a true feeling to the player where they experience the format of a championship match.

**11.** **Puzzle**

We plan on building the puzzle mode where arranged gameplays are available for players to solve. These gameplays will mostly put players in difficult position of winning, thus challenging their abilities and tactics to recover from disadvantages. It is promising to bring a different taste to normal gameplays of players.

**c.** **Progress**

At the end of the project, we have completed the documentation and presentation parts. We have also started to design simple features of the games where we were designing the Easy mode for the Gameplay. It was harder than our initial expectations. We had to do such massive research on the implementation, as well as designs for the AI where it’s able to make its moves. Furthermore, designing the puzzles and time-clocking was also time consuming since we needed to apply math and GUI design. Overall, we were able to partially achieve the small goals of the initial plans. If we were given another 12 weeks, we believe we would be able to bring this project to success.

A more detail schedules will be discussed in the **Timeframe** section. Please refer to this section for a more specific plan and explanation.

## Roles

Since we are going to build a chess game on a 2D platform, we are using Unity as a game development tool. In a chess game building, these are roles that need to be filled:

* **AI Designer:** Design game AI
* **GUI Designer:** Design UI for the game
* **Puzzle Designer:** Design puzzles for the game
* **Tester:** These are players who would rate the performance of the game product
* **Unity Developer:** Essential role for the game design
* **Project Leader:** Make up plans and make sure the project does well.
* **Documentary:** Record of project’s progress

Since this is an offline game, it won’t be available for sale on third-party markets such as Steam, Epic, etc. Therefore, there won’t be any roles related to Business and Marketing.

The table below illustrates the firm roles for group’s members:

***Table 1. Group Roles***

| **Name** | **Roles** |
| --- | --- |
| Dinh Pham | Puzzle Designer, Documentary |
| Minh Vu | Engine/AI designer |
| Long | Research, Survey |
| Phat Bui | Documentary, Unity Developer |

## 4. Scope and Limit

**a. Scope**

Our first aim for the project is to complete its documentation and preparation for actual project’s development in the future within the last four weeks of the semester. The documentation will keep track of records where we can trace back on what tasks and features were achieved, as well as making sure that we have back-up resources to present the product to our potential investors and clients in the future.

Second project’s aim is to successfully build the chess game with extended advance features and game modes. The game will be developed after document’s completion, and the game-building period will be prolonged for 12 weeks. The game will be fully tested and improved by collecting user’s experience with surveys.   
  
**b. Limitations**  
Although we have developed a well-built plan for the project’s progression, we still have some issues regarding the use of game engine. Since we are students and financially limited on budget, we don’t have access to full package of Unity Engine. Using free version may restrict the implementation of some features in the game, such as settings and the general GUI of the game. The overall quality may not meet the player’s expectation and satisfaction.

## Tools and Technologies

We have decided on choosing the Unity engine as it is relatively simple and easy to learn among the game engines commonly available on the market. The most recent stable version of the Unity engine and editor at the time of this text is 2021.1.19 is the version we will use. Unity engine uses C# as the scripting language. Unity is free for students and non-commercial projects so we will not have to pay for this.   
  
Deriving from this, Visual Studio will be the primary integrated development environment (IDE). It has good support for both C# and Unity development. We will use Visual Studio 2019 Community Edition as it is the most recent free-to-use edition of Visual Studio, compared to other versions that incur a license cost. The specific versions of the software we use may change through the project as new updates may be available.   
  
In addtition, we will need a server to run any network functions for our project. We will host this server on Azure as we in RMIT have free credit for this service. As we do not expect too many users for the duration of our project, we believe that one server will suffice though we can always increase the number of servers available.   
  
Our website will be hosted using GitHub pages as we have done with our previous assignment. We will use the Jekyll web framework to simplify the web development process. Minh has experience with C# and Visual Studio as well as some experience with developing Unity applications.

## Testing

For testing purposes, we will be sending invitations via banners and emails to RMIT students, as well as our friends for testing game demos. Ideally, we would like to invite at least 5 participants, but no more than 10 participants. These candidates will be given our product’s demos, and we will be recoding directly their real reactions, comments, and suggestions on the gameplay.

On the other hand, we will test the basic concept of our application by sending out surveys through RMIT email to as many recipients as possible. The surveys will be collecting player’s expectation, feedbacks and criticizes on the product. We would prefer to receiving approximately 100 responds from responders. These feedbacks will be powerful tool for the product’s revision on its features for improvements and bug fixes. Moreover, this will determine whether our features have been appropriate for the user pool.   
  
We will be producing game-demo (uncompleted product) when we implement a new feature into the product. The participants we’ve invited will be presented with these game demos and requested to complete trials for each function we were desired to collect feedbacks. We will conduct tests that will focus on product’s functionalities tests before requesting helps from our participants, making sure that testing plans are appropriate and reasonable. We want to make sure the tests will be as efficient and less time-consuming as possible for our group and the participants.   
  
Nevertheless, in each of the testing session, participants are required to note down their experience with the demos. There will be a lot of questions in our questionary list. Mostly, we want to receive their responses on the core questionnaire list implement changes accordingly. The following is a small sample of our questionnaires:

* **Was the feature necessary?**
* **Was the feature appropriate?**
* **How satisfy was the participant with the implementation?**
* **What was good?**
* **What was not good?**
* **What can be improved?**
* **What features would be implemented next?**
* **Other suggestions?**

## Timeframe

In this section, we would like to provide the plans coming up right after our submission for the Assignment 3 due on September 19th, 2021. Absolutely, these plans are only approximate estimation for the future. As we go through each week activities, we will provide the tasks and goals we will aim for, as well as provide details explanation for those tasks and goals.

***Table 2. Schedule Plan***

| **Week** | **Task/Goal** | **Rationale** |
| --- | --- | --- |
| **Week 1** | 1. **Group Forming** 2. **Brain Storming** 3. **Create plans** 4. **Role and Task Distribution** | In this first week, we had come together as a group. We got to know each other’s project ideas and selectively review them. We talked and discussed together on the project’s ideas, future plans, tools and distributed tasks and works to group members, as well as deadlines for the works. |
| **Week 2** | 1. **Project Write-up** 2. **Group Writing** 3. **Collaboration** | Second week is when we started to write up the project’s initial drafts. We focused mainly on the Project Description as it required the most writing works. At the end of the week, we worked together to write up the remaining parts of the Assignment. |
| **Week 3** | 1. **Re-evaluate documentation** 2. **Prepare for group presentation** | In the third week, we were expected to be done with the documentation. We reviewed the written works and adjusted errors and mistakes. We also made changes because there were updates and changes from the initial plans.  We built up and recorded ourselves for the presentation, which was submitted along with the documentation in the fourth week. |
| **Week 4** | 1. **Submit Assignment** 2. **Presentation** | In the fourth week (final week of the semester), we submitted the Assignment files and the presentation videos. We completed our documentation for the project’s foundation. |
| **Week 5** | 1. **Conduct research** 2. **Relaxation** | In this week, we would like to conduct some research on the available open-source databases of chess games to learn the implementation and other aspects for references. |
| **Week 6** | 1. **Early Implementation** 2. **Game Engine** | In this week, we would like to build the early stage of the game.  Particularly, members will be doing:  **- Dinh Pham, Phat Bui:** Documentation  **- Minh Vu, Phat Bui:** Unity Learning - **Long:** Prepare testing methods for developing features |
| **Week 7** | 1. **Early Implementation** 2. **Game Engine** | In this week, we would still like to build the early stage of the game.  Particularly, members will be doing:  **- Dinh Pham, Phat Bui:** Documentation  **- Minh Vu, Phat Bui:** Unity Learning **- Long:** Prepare testing methods for developing features |
| **Week 8** | 1. **Early Mid Implementation** 2. **Game Engine** | In this week, we would already develop the simple chess board of the game. However, the pawns aren’t yet implemented with logic rules of the game. Game developers would still try to comprehend the Game Engine feature and functionalities.  Particularly, members will be doing:  **- Dinh Pham, Phat Bui:** Documentation  **- Minh Vu, Phat Bui:** Unity Learning, develop chess board **- Long:** Prepare testing methods for developing features |
| **Week 9** | 1. Early Mid Implementation 2. Game Engine | In this week, we would already develop the simple chess board of the game and the logic rules for the pawns on white side. However, the pawns aren’t yet implemented with logic rules of the game for black side. Game developers would still try to comprehend the Game Engine feature and functionalities.  Particularly, members will be doing:  - **Dinh Pham, Phat Bui:** Documentation  - **Minh Vu, Phat Bui:** Unity Learning, develop chess board and logic rules for white side - **Long:** Prepare testing methods for developing features |
| **Week 10** | 1. **Mid implementation** 2. **Mode selection** 3. **Research** | In this week, we would have fully developed the chess board and the logic rules for all aspects of the game. We would now do more research on algorithm to find the best application for game difficulty option for player. Game developers are now familiar with simple tasks and features of the Game Engine:  - **Dinh Pham, Phat Bui:** Documentation and research  - **Minh Vu, Phat Bui:** Unity Learning, full logic rules developed - **Long:** Apply test methods for developed features |
| **Week 11** | 1. **Mid Implementation** 2. **Mode Selection** 3. **Puzzle Design** 4. **Player versus Player Mode** | In this week, we would have finished the easy game-mode for the game. We will continue to work the mode selection feature, as well as starting to build the first simple puzzle and Player vs Player mode. Moreover, we will start sending out invitations to participants for testing game demo since its early stage is totally completed. Game developers are now efficient with simple tasks and features of the Game Engine:  **- Dinh Pham, Phat Bui:** Documentation, research, puzzle development  - **Minh Vu, Phat Bui:** Unity Developer, mode selection development, Player vs Player mode development  - **Long**: Send invitations, apply test methods for developed features with participants, prepare surveys |
| **Week 12** | 1. **Mid End Implementation** 2. **Complete Mode Selection** 3. **Game Adjustment** 4. **Timeclock** 5. **Puzzle Design** 6. **Player versus Player Mode** 7. **Publish product for trial** | In this week, we would have finished the mostly game mode feature for the game. We will now apply the clock-timing feature into the game and finish the Player versus Player mode. Since this is easy, we would finish it quickly. We will test and complete the first puzzle, as well as starting to build the other simple puzzles. Moreover, we will analyze the responds and suggestions from tested participants on the game demo and adjust the product if needed.  Moreover, we will start sending out game trial publicly for players to collect their input data coming in Week 13. The roles for each member in this week are:  **- Dinh Pham, Phat Bui**: Documentation, research, puzzle development  - **Minh Vu, Phat Bui:** Unity Developer, puzzle development, finish Player versus Player mode  - **Long:** Analyze data from participants, recommend changes to the team, prepare surveys |
| **Week 13** | 1. **End Implementation** 2. **Game demos** 3. **Player Vs Player Mode completion** 4. **Puzzle Complete** 5. **Survey** | In this week, we would have finished the game implementation with declared features and functionalities. However, we would like to spend this week for surveys and tests with participants and players for improvement to the game. Therefore, we will send out new demos of the game, and surveys to listen for players’ opinions.  The roles for each member in this week are:  - **Dinh Pham, Phat Bui:** Documentation  **- Minh Vu, Phat Bui:** Prepare and Complete new game demos  - **Long:** Send out surveys |
| **Week 14** | 1. **Analyze Surveys** 2. **Game Modification** 3. **Documentation Wrap-up** | In this week, we would be analyzing the final opinions from the players and participants, thus apply new changes and final touches to our game. We would also wrap-up our documentation ready for submission.  The roles for each member in this week are:  - **Dinh Pham, Phat Bui:** Documentation wrap-up  - **Minh Vu, Phat Bui:** Apply changes and modifications  **- Long:** Analyze surveys and participants’ suggestions |
| **Week 15** | 1. **Presentation Prepare** 2. **Product Complete** | In this week, all stages of the game are done. We would be preparing the presentation for our project demo. The role for all member is:   * Prepare for presentation |
| **Week 16** | 1. **Group’s Project submission and final note** | In this week, we would submit the final product and presentation. We have finished a successful project. |

## Risks

Risk management is often defined as the methods of planning for unexpected events and controlling the risks to minimize the probability of failures and prevent the threats from expanding. As projects always carry risk, the most essential thing to look out for when managing the risks is identifying the key risk areas and analyzing the possible outcomes that might come out of those risks. With that being said, we have defined the potential risks and the solutions to them in the following table:

***Table 3. Risk Management***

| **Risks** | **Reasons** | **Solutions** |
| --- | --- | --- |
| **Limitation on User Accessibility** | User has no access to tablets/desktops/PCs or old versions on software and electronic gadgets | Try to implement compatible versions for various devices |
| **Operation System** | User has computers that use different operation systems, such as MacOS, Linux, Windows… | Try to implement compatible versions for various operation systems |
| **Time Management** | Plans are not followed strictly, or unexpected events that caused severe delays on certain feature development and final delivery of the product | Update schedules and tasks daily to confirm the state of the project |
| **Task Management** | Group is not able to define and prioritize tasks, thus hindering the results and goals of the project | Define the scope of the project well in the beginning of design phase, and properly define goals and aims for the project |
| **Group Collaboration** | Group is not able to collaborate  Group has fierce conflicts  Group members don’t communicate | - Define overall marks based on individual’s contribution  - Make negotiation for a promising project’s result  - Request help from instructor  - |
| **Scope Limitation** | The scope was over-defined. Thus, group couldn’t bring out all declared features or final product | Study time management and task management carefully, to bring out a well-built plan for the project |
| **Product Performance** | The final product may be underwhelming compares to the declared features and functionalities of the final product | Conducting tests regularly will help to record the status of the product, as well as checking its performance periodically and other aspects. |

## Group Processes and communications

As technological advancements of modern communication systems get better day by day, with innovations such as mobile phones and email systems, it allows us to stay connected with friend/family conveniently during this pandemic period. For our group, we decided that we would be communicating with each other through text format via Messenger (a chatting application of Facebook). Furthermore, we will be hosting weekly meetings with an online communication platform called Discord.   
  
This platform helpes our group to exchange information about ideas, questions, and research in a much more efficient way. We also wish to improve our productivity with shared schedules and weekly activity plans via an online cloud-based storage (Google Drive). Additionally, we are using GitHub along with Google Drive for real-time collaboration. They are strong tool for storing the documentary and code base of our project and keeping track with the changes of the project.

Group members are expected to join all weekly meetings. Weekly meetings will be hosted once per week. Group members are in the same lecture and tutorial sessions so more than one meeting is not necessary. However, daily communication is conducted via Messenger every day, therefore members are expected to respond when they are tagged by other members within that day. Our group uses tagging for importance notice only. In special circumstances where they are unable to participate in the meetup, they should let all members know in advance, at least 3 days prior to the meetings. Missed information and tasks will be noted and relayed to the absent member.   
  
However, members who was absent would be demanded to attend the next meetings. Considering there are 16 weeks to develop the product, each member in the group is expected to join the group meeting weekly and respond to the group communication on the online platforms when there is notification about new updates and changes. They are not requested to respond immediately, but it’s a must to reply within that specific day. People who don’t respond over three times in a group meeting and miss over three meetings, will receive a lower distribution mark compares to other active members.

# Skills and Jobs

In this section, we would like to provide information on potential employees or new colleagues for our project if we are sponsored. The following table will present the detail information about these potential people:

***Table 4. Skill Sets***

| **Position** | **Skill Description** |
| --- | --- |
| **Technical Leader** | **Communication:** This person has to have a strong communication skill  **Trust-Worthy:** This person must be entrusted by all team members, building strong relationships with people  **Team Building:** Must establish and maintain efficient collaboration between colleagues, resolve conflicts and arguments, build a strong bond in the team  **Time Management:** Being able to prioritize tasks and distribute tasks to group members |
| **Business Analyst** | **Commercial Recognition:** Constantly update news and information about  **Communication:** Being able to relay information and analyst results to other departments  **Problem Solving:** Being able to come up with solutions to business problems |
| **Senior Developer** | **Teamwork:** Being able to collaborate and guide junior and fresh developers in the team  **Analytical Thinking:** Being able to work independently and come up with solutions to hard problems  Trouble Shooting: Being able to solve hard problems and technical issues |
| **Graphical Design** | **Innovation:** Being able to photoshop, learn new ideas and apply for team’s product  **Time Management:** Being able to finish works before deadlines.  **Accuracy:** Being able to pay attention to details, especially all pixels |

Although we are confident in completing the project before deadline (16 weeks), we would like to invite these positions to our team if we are sponsored. They offer huge product’s expansions and high opportunity for commercial market in the future. Furthermore, we can learn so much from professionals in the fields. We can observe what it feels like to be working as a true team. We can learn new things such as:

* How people communicate
* How people do troubleshoot
* How people plan up schedules and tasks
* How people resolve conflicts
* What technologies work best
* Coding standard

There are so much more things we can learn from the best. It will be such a huge opportunity for us to invite them to our team.

# Feedback

In this section, we will provide feedbacks of members on other members and themselves using a constructive table. These feedbacks will reflect the contribution and performance of those members. Members can recognize these as constructive criticisms for future self-development.

***Table 5. Feedbacks***

|  | **Dinh Pham** | **Phat Bui** | **Minh Vu** | **Long** |
| --- | --- | --- | --- | --- |
| **Dinh Pham** | Work hard and complete tasks on time, initiate conversations and perform regular checks on group works | Need to have higher standard for documentation, but he still got works done so it’s not the worst | Work well for tasks assigned, communicate well with team members | Work well for tasks assigned, communicate well with team members, not so talkative in the group |
| **Phat Bui** | He works hard and I admit that he is somewhat a better leader than most others and he did more work compared to other members. However, I wish he would just communicate a bit more with the team rather than just giving orders and deadlines. | I believe the work that I put in the documentation parts was good enough as it did fulfill the requirements for the part I was assigned (before it was changed). I wish I could communicate more when we were working but half of the members already are friends, so I ended up trying to not get alienated and not really speaking my mind. | I don’t know much about him since we didn’t really converse with each other aside from some questions and me agreeing with one of his ideas. Other than that, he did his fair share of work, and he also works on the website. | He did the part he was assigned to, and he also did it on time but he didn’t really talk much to the team. |
| **Minh Vu** | Performed superbly, provided the team with a great framework for the project | Works may not be up to the overall standard but not too bad for someone in their first semester | Did his part for the group in a timely and adequate manner. Communicated his ideas well | Performed his task well. Sometimes needs to speak up more |
| **Long** | Work incredibly hard, dedicate all of his time in finishing all of the tasks, very talkative (which is nice as it helps the flow of the work to be more comfortable) | Upload his work to the group folder on time, doesn’t talk much but still try to communicate with everyone to an extent | Collaborate well with the group, engage in multiple conversion to boost the group communication, always on the lookout to fixed mistakes and errors | Act as a support role, a bit shy so don’t talk much beside from the occasion responds to work related topic, did work on time |

# Group Reflection

Overall, the project went well for the documentation and presentation. All members were easy-going with the choices and decisions making. Communicating and collaborating were good and effective regarding the current pandemic’s situation. Everyone was respectful to others. Group’s members are expressing eagerness to the project’s idea.

Although communicating and collaborating were good, however, they could have been improved a lot. Internet services have been in delayed due to another cable issue. The network was slow, thus, affecting negatively to the collaboration of students. In the next semesters, we would love the pandemic to be over, so we can collaborate in person, which yields higher efficiency and effectiveness.

On the other hand, social distancing and online communication methods have affect negatively on people’s productivity. Our group took each task and work slowly, and we didn’t concentrate on completing it as fast as we could. The procrastination for our group was huge.   
  
 Nevertheless, our group has worked hard for the last 2 weeks, making sure everything was ready.

In the following section, each member will be given their feedbacks regarding the group work:

* **Dinh Pham:** The group was collaborating well. However, the working standard was low for the works in the group. I had to make a lot of adjustment for the documentation. Therefore, I had to do more works than others. I was surprised by how the documentation was longer than I expected. I have also learnt that there will always be negotiation and arguments. I just must work with the members to resolve them. However, everyone has done their tasks and met deadlines in such a short time. I admire their efforts for trying to complete the works with their best try. It could have been such a bad team where people drop the course or don’t respond to the group or don’t finish the assigned tasks. I am thankful for having such a hard-working team.
* **Phat Bui**: The group did work well with each other despite some small conflicts about the standard of the work, but it was already resolved so everything was good. I believe the communication between team members could have been better since most of the team chat logs are nothing but orders and deadlines. I believe if the members talk to each other and get to know each other more than the conflicts wouldn’t have happened. I was surprised by the fact that we finished this on time since we did start working on this project quite late but I’m glad that everything went well. This project helped me realize that despite having a plan something will always go wrong. I believe if anyone has any problems, they must talk about it to either the whole group or the leader sooner rather than later.
* **Long Nguyen:** During my short time working with the group, I have learned a lot of good things about team cooperation and gained insight in a variety of new experiences about the IT world. With Dinh taking the initiative in being the leader of the group, I found out that everyone in the group can collaborate very well and communicate with each other effectively as everyone is responsible for an assigned role with different activities needed to be done and expect to put great efforts in all of the work. Despite several conflicts between members arguing about the project’s idea, everyone was still respectful toward each other as we solved the conflicts by having each member convey their own opinions, providing feedback from other members and deciding which to pick based on the majority of the member’s votes. If there were something to be improved on, then it would be the management and organization of documentations. Instead of cramming every single documentation into a single folder, then I would create multiple sub-folders with notes to keep track of any new changes along with storing old documentations to prevent the new one from being lost or deleted by accident. One thing that I found very surprising when in the group is how incredibly fast Dinh can be when it comes to dividing the work for each member and uploading his findings as well as his writings to the group Google Drive’s folder. Moreover, I also learned that while most of the group members have graduated from high school, Dinh has already graduated from a college in Canada with a diploma which is very amazing.
* **Minh Vu**: I think overall, the outcome of the project was good and met my expectations. We could work on collaborating more as there are problems in our collaboration process though part of this is due to the move to online classes made it that we could not find out more about each other before working on this project. I was surprised by how fast we got this project from inception to the final product. One thing I learned about groups through this project is that sometimes working with unfamiliar people can have unexpectedly pleasant results.

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