Planet Escape - Java Gaming Report

By In Ha Ryu and Jae Lee

Game Design

About

Planet Escape is a game which was initially targeted for a young daughter 12 years old daughter of a client but the game is not bound to the specific age, sexuallity or any other background of the player. It is a simple game that has similar mechanics with Pacman but has additional feature for more complexity and more choices which will make the game more enjoyable. The storyline of the game goes that the player 'Hero' from Magic Planet was on a journey to find the super star to save the world. While on a journey Hero meets the villain 'Ghosts' the space pirates and crash landed on a unknown planet. For Hero to escape the player needs to collect pellets which are 'Moondust' for big and 'Stardust' for small which are pellets from Pacman Games.
Our modification are the power upon the collection of big pellect by the player. While original Pacman could 'eat' the ghost, our game can defeat the ghost and absorb their powers as ability to use later.

Specifications And Design Features

From the client we were requested to make similar game with Pacman with modes, and had minimum specifications for them. Here is the list of specifications.

1. A welcome screen with game title, single and multiplayer options.
2. Stationary characters before 3 second countdown finishes when starting the game
3. Movement according to the relevant keyboard events
4. Window size between 1024x768 and 1440x990 unless the window is resizable
5. Consumption of the pellets and item to increase of score
6. Cannot go through the wall
7. Protagonist died (lose life) when it collide against ghost if protagonist does not have an item
8. Timer with 2 minutes PgDn to Skip
9. 'P' to Pause with and Exit with 'ESC'
10. Win and Lose screen are evaluated.
11. Appropriate sounds are played throughout the game

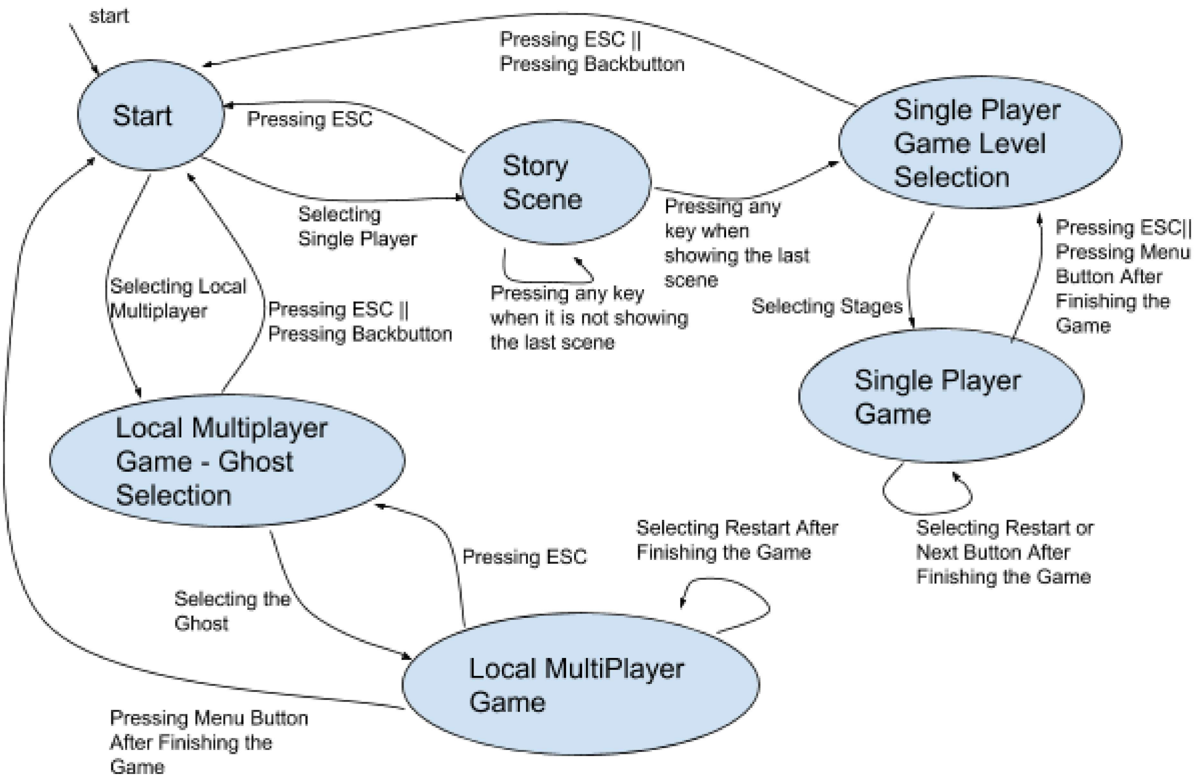
Here is the of improved functionality of the system to make game more attractive to client. (12 years old girls)

1. Ghosts have unique ability and protagonist can steal and use it.
2. Ability has a timer that can be used
3. All images are drawn by us due to copyrights
4. Sound files are made and Arranged

5. There are several worlds and stages
6. There are Story Line suitable for 12 years old girl
7. After game finish, player could choose their next step
8. Timer and player information such as score, lives left and stored ability is showing on game screen
9. Player can select a ghost on multi-play mode
10. Quit confirmation before close the window
11. Protagonist and Ghosts have more than 1 images (dying image, being ice, being untouchables)
12. Stages are randomly generated on multi-play game mode
13. Ghosts' speed and numbers of ghost are increasing at higher level of stages.

Please see Appendix A. - Final Submission Table to see comments about the features

System Design



start
Start
Pressing ESC ||
Pressing Backbutton
Pressing ESC
Story Scene
Single Player Game Level Selection
Selecting Single Player
Pressing any key when showing the last scene
Pressing any key when it is not showing the last scene
Selecting Local Multiplayer
Pressing ESC ||
Pressing Backbutton
Selecting Stages
Pressing ESC||
Pressing Menu Button After Finishing the Game
Single Player Game
Local Multiplayer Game - Ghost Selection
Selecting Restart After Finishing the Game
Selecting Restart or Next Button After Finishing the Game
Pressing ESC
Selecting the Ghost
Local MultiPlayer Game
Pressing Menu Button After Finishing the Game

This is a simple FSM of the Game design
Start represent the first screen that the player will face.
Story represent the story when Single Player is selected.
In Single Player Game Level Selection we can select Level and which will run corresponding level Single Player Game.
Single Player Game lets the player to explore the Pacman Style game. Upon finishing the game the player will receive window with appropriate window. At this stage the player can repeat the level when defeated, next level when won, and or exit to the Single Player Game Level Selection state by pressing menu button.

Local Multiplayer Game - Ghost Selection is similar to the Single Player Game Level Selection except this chooses the ghost. Upon selecting the ghost, the game will play as Local MultiPlayer Game state.
In MultiPlayer, The Player Two can play using wasd buttons as a ghost that they have selected. At finishing, there are repeat button but no next button as the level is randomly selected and menu button goes to Start instead of MultiPlayer Selection.
Esc is the key to go back to the stage before except Single Player Game Level Selection where it goes to Start straight instead of Story.

Please see Appendix B. - Game Play Screenshots to see visuals of each state in game

Team Management

Issues

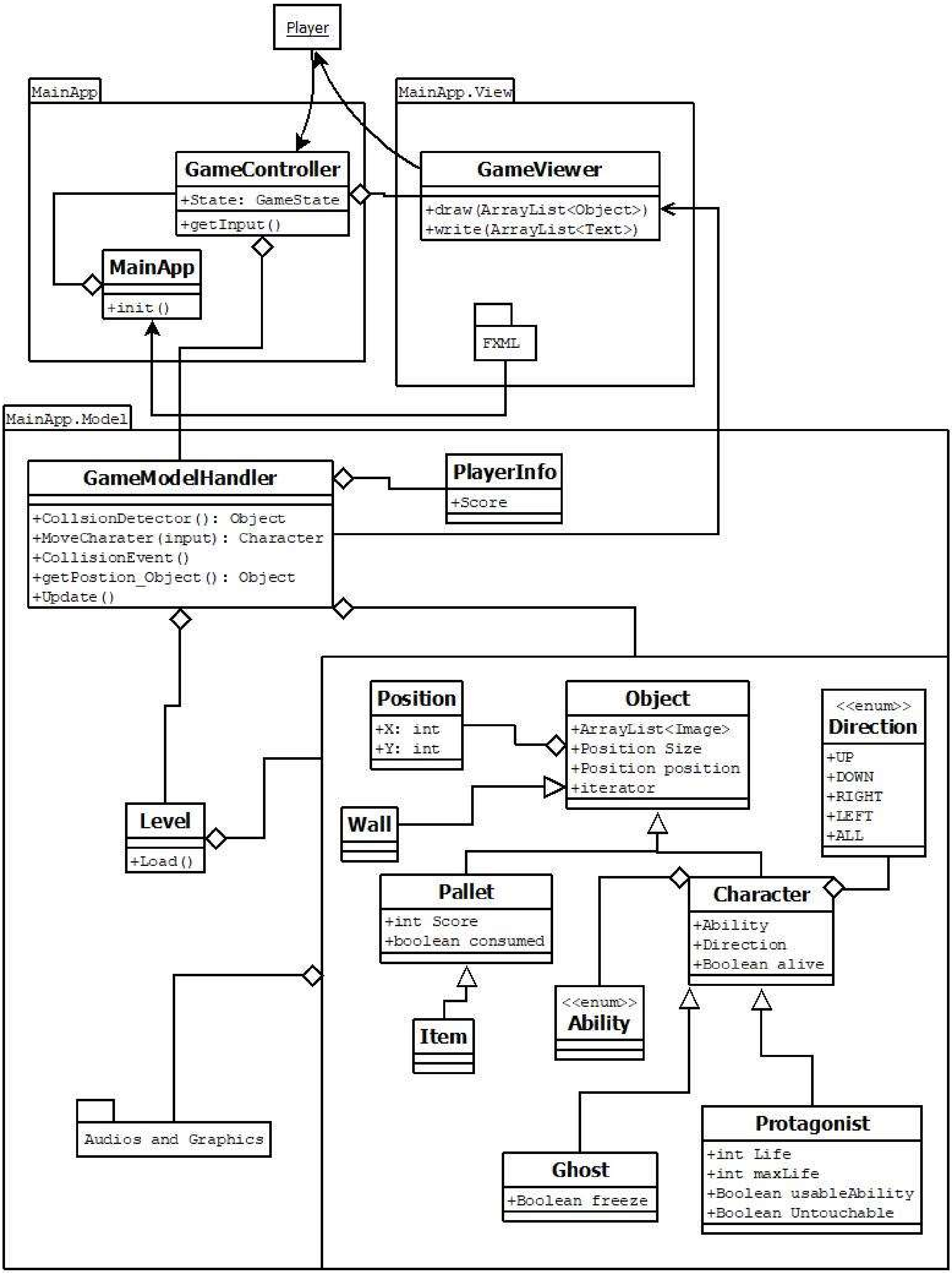
• We do not have enough time to do meeting and communicates as one of team member is at Botany and takes more than one and half hour and the other member does part time job everyday on the early morning so that could not stay at school till late. Therefore, both of us come to school everyday on holidays to do project at least few hours and coming school early on morning to increase time for meeting and doing project.
• We have different style on coding so that we divide project in two parts, Game Model and Game Design. Then, we manage and handle each of them and merge them at the last and fix the errors.

Git

• Java language is used for making this project as it is the language that are studying in Compsys 302 so that both of us could practice and improve this language.
• Communicates and share project using git as it is the easiest control system for tracking changes in each computer files and coordinating work on these files among group members. Although we are changing and working on same file, git automatically merge them to suitable codes.

Our Git repository link: https://iryu815@bitbucket.org/injae26302/uoa-cs302-2018-p1-26.git

Software Design



Here is the class diagram which show how the overall design is OOP design. By having viewer system, automatically drawing game objects and text, it was easier to resolve the coupling and cohesion issues as we didn't had to worry about the system of JavaFX. Also having Game Controller with FSM model helps us to keep in same page and same work as the Game States tells what we need to have and what we can use.

Software Development Methodology

• Discussion of the software development methodology (e.g. IID)
Principles of iteration in game design are ideas are cheap, stop brainstorming and start prototyping, embrace failure, be critical, more experimental needs more iteration, and keep it ugly.

Ideals are cheap

Ideas and minor concept of game design are changed because project does not satisfy expectation of group members. For this reason, ideas are changed during the project as we keep the overall project concept.

Stop brainstorming and start prototyping

We have not think about much at the beginning of the project as minor concepts are going to be changed as we are working on this project. We just communicates and brainstorm briefly to make game design documents which is only contains important and critical concepts. Then, during the project, we changes minor concepts to improve our game project and fix minor errors.

Embrace failure

We are never being afraid of failure during this project as we can fix and improve it later on. Just think ideas and write them out as codes and seeing what is working or not. From these failure, we could see and know what is not working and what we misunderstood.

Be critical

During the project, there are lots of errors and almost of them are minor errors that can be fixed easily but few of them are critical. For example, at the beginning of project, it is really hard to move protagonist between the walls as it is exactly same size as space. Then, one of member just decrease size of protagonist but it seems not correct so the other member is questioning about it and could not accept and agree with it. So, all group members tried to fix this problem and we fix it at the last.

More experimental needs more iteration

Project is iterated lots of times during the project for checking codes and ideas. After each function, codes were checked and if it seems wrong or not good enough, ideas and concepts were changed and improved. To get better outcome, more experimental and iteration are needed.

Keep it ugly

During this project, game is kept ugly for a while. Project kept going without any graphics and sounds as they can be added at the last. Very simple image such as black square was used for images to check code is working. At the last of the project, after almost codes are finished, graphics and sounds are added.

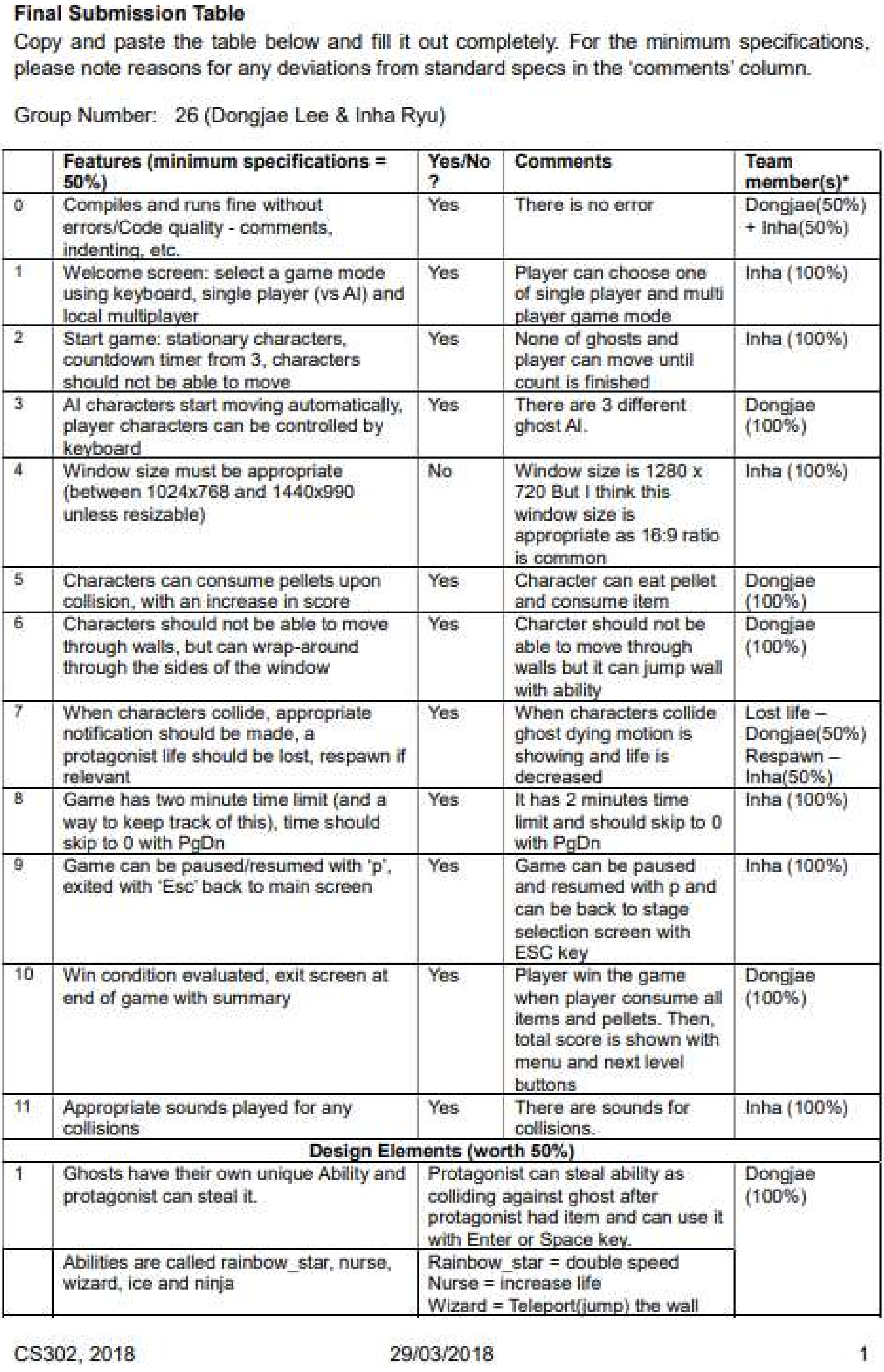
Improvements

For future development, text files for player information will be generated to show high score system and unlock game system. Players should create their game id and password before game starts. High score system contains total high score of each stages and sum of high score of all stages. Players can click high score button on start screen to check their ranks and top 10 rankers. Unlock game system is that players could not skip any of stages before they win the game. They have to unlock the next stage as winning previous stage to play next level and all the information are saved on player information text files and it could be loaded through their id and password.

Sound and graphics are going to be improved as well. Game only has an unique sound for each action but more sounds will be added for future development. For example, suitable background music will be played for each world. More images such as dying animation and winning animation will be added on game.

For multi-play mode, ghost player can use their passive ability for future game as ghost player seems too boring now.

Appendix A. Final Submission Table



Final Submission Table

Copy and paste the table below and fill it out completely. For the minimum specifications, please note reasons for any deviations from standard specs in the 'comments' column.

Group Number: 26 (Dongjae Lee & Inha Ryu)

	Features (minimum specifications = 50%)	**Yes/No ?**	**Comments**	**Team member(s)***
0	Compiles and runs fine without errors/Code quality - comments, indenting, etc.	Yes	There is no error	Dongjae(50%) + Inha(50%)
1	Welcome screen: select a game mode using keyboard, single player (vs AI) and local multiplayer	Yes	Player can choose one of single player and multi player game mode	Inha (100%)
2	Start game: stationary characters, countdown timer from 3, characters should not be able to move	Yes	None of ghosts and player can move until count is finished	Inha (100%)
3	AI characters start moving automatically, player characters can be controlled by keyboard	Yes	There are 3 different ghost AI.	Dongjae (100%)
4	Window size must be appropriate (between 1024x768 and 1440x990 unless resizable)	No	Window size is 1280 x 720 But I think this window size is appropriate as 16:9 ratio is common	Inha (100%)
5	Characters can consume pellets upon collision, with an increase in score	Yes	Character can eat pellet and consume item	Dongjae (100%)
6	Characters should not be able to move through walls, but can wrap-around through the sides of the window	Yes	Charcter should not be able to move through walls but it can jump wall with ability	Dongjae (100%)
7	When characters collide, appropriate notification should be made, a protagonist life should be lost, respawn if relevant	Yes	When characters collide ghost dying motion is showing and life is decreased	Lost life – Dongjae(50%) Respawn – Inha(50%)
8	Game has two minute time limit (and a way to keep track of this), time should skip to 0 with PgDn	Yes	It has 2 minutes time limit and should skip to 0 with PgDn	Inha (100%)
9	Game can be paused/resumed with 'p', exited with 'Esc' back to main screen	Yes	Game can be paused and resumed with p and can be back to stage selection screen with ESC key	Inha (100%)
10	Win condition evaluated, exit screen at end of game with summary	Yes	Player win the game when player consume all items and pellets. Then, total score is shown with menu and next level buttons	Dongjae (100%)
11	Appropriate sounds played for any collisions	Yes	There are sounds for collisions.	Inha (100%)
		Design Elements (worth 50%)		
1	Ghosts have their own unique Ability and protagonist can steal it.	Protagonist can steal ability as colliding against ghost after protagonist had item and can use it with Enter or Space key.		Dongjae (100%)

	Abilities are called rainbow_star, nurse, wizard, ice and ninja	Rainbow_star = double speed
		Nurse = increase life
		Wizard = Teleport(jump) the wall		

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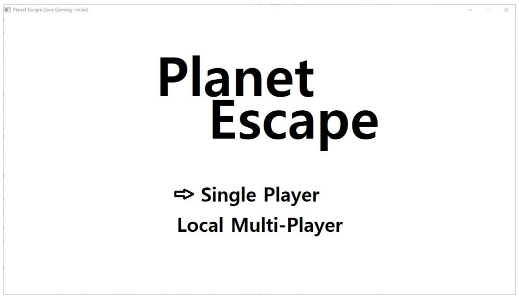
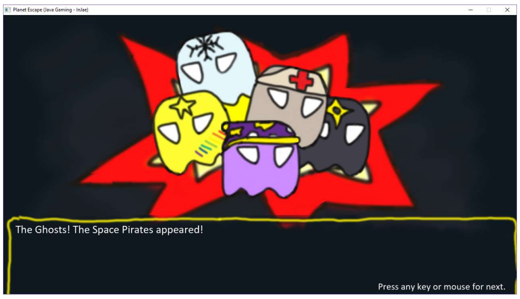
		Ice = freeze ghosts
		Ninja = Be untouchable	

2	Ability has a timer	Player cannot use ability more than once, and it will be disappeared in certain time.	Inha (100%)
3	All images are drawn	All images are drawn by Dongjae and they are created by Inha using Photoshop	Inha (75%) + Dongjae(25%)
4	Sound files are made and arranged	Sound files are made using FLStudio	Inha (100%)
5	There are several levels	There are 4 world concepts and each world has 5 stages. These levels are made using txt files.	Inha(50%) + Dongjae(50%)
6	Story Line	There are 5 scenes that telling story of protagonist	Inha (100%)
7	After game finish, player could choose their next step on single play mode.	If player lose a game, he/she can go back to main menu or try same stage again. If player win a game, he/she can go next stage or go back to main menu.	Dongjae (100%)
8	Player information on game screen.	There are world and stage level on top of game screen and player informations such as lives, total score and stored ability is shown on right side of screen. Also, timer is shown on right side of screen.	Inha(25%) + Dongjae(75%)
9	Player can select a ghost on multi play mode	Second player can select the ghost on multi player mode.	Dongjae (100%)
10	Quit confirmation	Before close the window, game ask once more.	Inha (100%)
11	Protagonists and Ghosts have more than 1 images	Protagonist and ghosts facing to their their directions and both have dying image.	Inha (100%)
12	Stages are randomly selected on multi player game mode	Stages are randomly selected on multi player game mode. Always the last stages of world are selected.	Dongjae (100%)
13	Ghosts' speeds are numbers are diffent in different world	Ghosts are being faster and number of ghosts are increased at higher world.	Dongjae (100%)

Appendix B. Game Play Screenshots



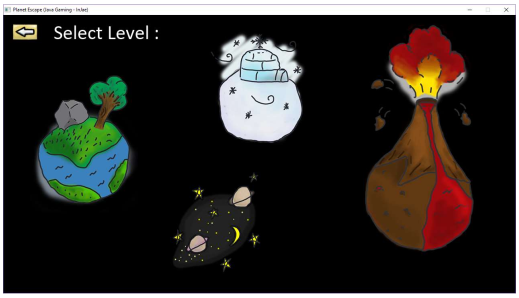
Start state: the main menu that the player sees



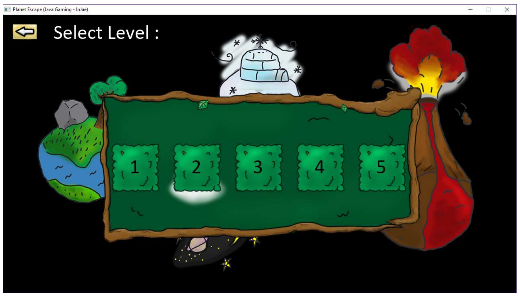
The Ghosts! The Space Pirates appeared!

Press any key or mouse for next.

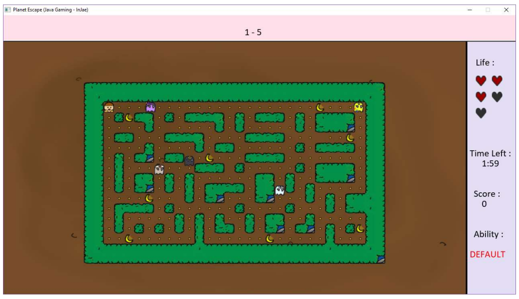
Story Scene



Single Stage Level Selection: world selection



Single Stage Level Selection :stage Selection



1 - 5

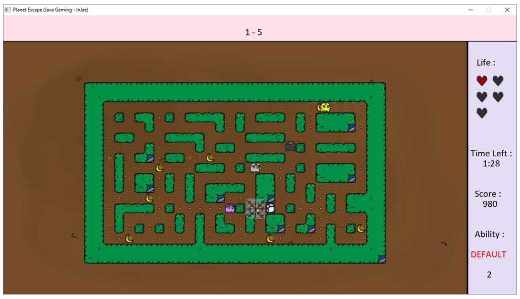
Life :

Time Left : 1:59

Score : 0

Ability : DEFAULT

Single Player In Game



1 - 5

Life :

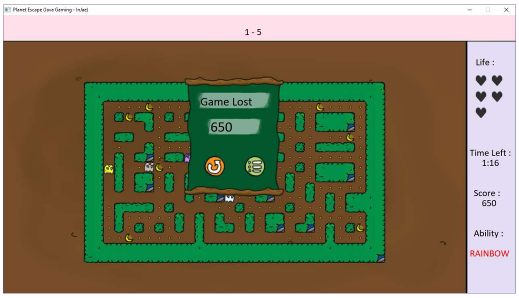
Time Left : 1:28

Score : 980

Ability : DEFAULT

2

Single Player In Game



1 - 5

Game Lost

650

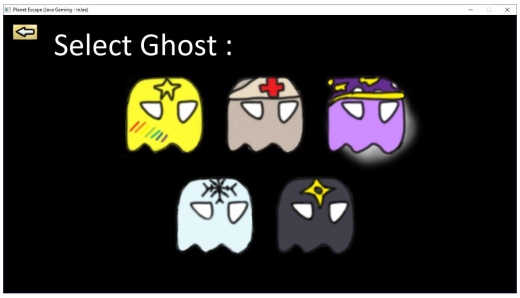
Life :

Time Left : 1:16

Score : 650

Ability : RAINBOW

Single Player In Game Finishing



MultiPlayer Ghost Selection.