IZMIR UNIVERSITY OF ECONOMICS

FACULTY OF ENGINEERING

SOFTWARE ENGINEERING

FENG 497 PROJECT REPORT

2D DUNGEON CRAWLER CARD GAME

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Outlines

Dictionary

Dungeon Crawl: Dungeon crawl is a type of scenario in fantasy role-playing games in which heroes navigate a path environment battling various monsters, avoiding traps, and defeating bosses [1].

Frame Rate: Frame rate (expressed in frames per second or FPS) is the frequency (rate) at which consecutive images called frames appear on a display. The term applies equally to film and video cameras, computer graphics, and motion capture systems. Frame rate may also be called the frame frequency and be expressed in hertz [2].

Hyper-casual: A hyper-casual game is a mobile video game which is easy-to-play and usually free-to-play; they also feature very minimalistic user interfaces [3].

Third Person: Third person is a perspective in which the player can visibly see the body of the controlled character. This is seen in most third-person shooters and adventure games. It most commonly refers to a viewpoint behind the player character [4].

Abstract

Dungeon crawl [1] is a type of scenario in fantasy role-playing games. Heroes navigate a path environment battling various monsters, avoiding traps, and defeating bosses. Unfortunately, hyper-casual [3] versions of the dungeon crawler games are not getting the attention they deserve. These games are generally played for long hours as a 3D third person [4] on computers. The objective is to combine this 3D gameplay with the hyper-casual card game and bring the story to the same breath. The main purpose is to create a perfectly balanced 2D Dungeon Crawler Card Game in terms of story, content, gameplay, and strategy. The fall semester of 2020-2021 proceed with this objective and all the tasks are done to make this project ready to implement for the very next semester. To be able to success this, design of the gameplay must be done very carefully with a broad angle. This was mainly all the project members effort.

1. Introduction

Digital game industry is developing rapidly. Therefore, intention is to create a card game. The project aims that people gave fun in their spare time and wonder about the game's story. This game will be perfectly balanced 2D Dungeon Crawler Card Game. Unity and C# programming language will be used in next semester to implement the game. Aseprite tool is used to design models, cards, bosses, and enemies. The game will run on both Windows and Android 4.1 or newer updated platforms.

Unlike all other card games on the market, each card will have its own story and gameplay. Different from other relevant Dungeon Crawler games, this project aims perfectly balanced gameplay. Unnecessary complexity must be reduced to have this balance. Shortly, gameplay should be easier for all kind of ages and players. Researches are done as a group about all successful dungeon crawler games. Noted how and why they reached this success. Decisions about design of the gameplay are done according these researches to catch the perfectly balanced game. By reaching this balance, the community of this sector will be also reached.

1.1. Problem Statement

Dungeon crawler games are complicated games. There are few very successful games in this sector. Catching their success will not be easy. Considering the ripple effect in software industry, reducing this complexity to get the perfect balance requires very meticulous work. Specially for designing the gameplay. Gameplay design includes major work and decisions.

1.2. Motivation

The problem behind the balance is feasible to solve. With a great design of the gameplay, complexity can be reducible. By accomplishing the objectives of the project, a major profit or well qualified job offer from a game developing company is gainable.

2. Objectives

The objectives of our project:

- Making a perfectly balanced game.
- Making an original game in terms of story, content, gameplay, and strategy.
- To reach the dungeon crawler community.

3. Literature Review

Dungeon crawler games have the perfect balance of story, gameplay, and strategy [5]. In this type of dungeon games, each character, each card, each enemy, shortly each actor must be well considered about their stories, talents etc. There supposed to be balance of power, balance of impact. If not, challenges might be unfair.

According to project member's research, relevant Dungeon crawler games are not easy to win. Players should have an algorithm or pattern to win a challenge. The game must be well analysed by the player to win. It can be said that there are lots of complicated games with complex combination of cards and card values.

"Card Dungeon" attempt to be a dungeon crawler board game for mobiles, the gameplay is easier than other solid dungeon games they affect more people than solid ones do. However, the game did not stand on the all the characters. The game lost its story too so only strategy could not carry the game by itself. Relevant games did not get what the game's real potential cause could not set the balance [6].

"Epic Card Game" is another dungeon crawler card game like this project. It has an easy gameplay because of the expend the range of the game. However, it seems that Epic Card Game thought the story stage unlike Card Dungeon. Strategy parts of game are not bad either. One think prevented from being successful, instead of passing dungeon creatures, the game made other players to fight each other [7].

"Minecraft Dungeons" is 3D dungeon crawler game. Minecraft already have lots of players from its other games. That is the reason it is not difficult to reach a large audience. The released game did not satisfy the expectations. The balance could not set as it should be. Much work spent on display unnecessarily. However, display should not be major on dungeon crawler games [8].

Table I

Differences of 2D Dungeon Games

	Story	Gameplay	Strategy	Balance
Card Dungeon			X	X
Epic Card Game	X		X	
Minecraft Dungeon		X	X	X
2D Dungeon Crawler Game	X	X	X	X

4. Methodology

First, literature review is crucial before starting a game project. All the similar, relevant games must be inspected. To make difference with this project, pros and cons of the relevant games must be well analysed. Same mistakes should not be done. After analysing the full releases and mobile versions relevant games, an algorithm or pattern must be selected. Project schedule must be done according to this algorithm or pattern.

In this project, group members thought every single detail of the gameplay. Gameplay notion includes lots of details like cards, enemies, story, appearance, consistence. After showing excessive progress on gameplay and design, implementation will be easier. Spring semester will consist of implementation mainly.

4.1. Requirements

4.1.1.Functional Requirements

- The system will allow a user to be a player.
- The system will allow a player to start a game.
- The system will allow a player to exit a game.
- The system will show the remaining game time to a player.
- The system will allow a player to play cards in player's hand and deck.
- The system will end the game when the time is over.
- The system will show monsters and bosses and their requirements on the screen.
- The system will allow a player to choose character before game starts.

4.1.2.Non-functional Requirements

- The game will operate in both updated Windows and Android platforms.
- The average frame rate must be greater than 30.
- The average response time between command and reaction must be less than 0.1 seconds.
- The code written for the game must be maintainable.
- The code written for the game will created in C# scripts.
- User must not encounter an in-game errors.
- The game must have minimalistic interface.

4.1.3.Software Requirements

- Unity: The program which is needed to integrate the game.
- Visual Studio: Implementation and compiling program.
- MySQL: Relational database management system to organize database.
- Aseprite: Program that allows to make 2D modelling.

4.2. Diagrams

4.2.1. UML Class Diagram

Fig. 1 represent the UML Class Diagram of the predicted game. This model contains 11 classes (9 base class, 2 derived class), 22 attributes, and 35 methods.

Diagram: Class Model

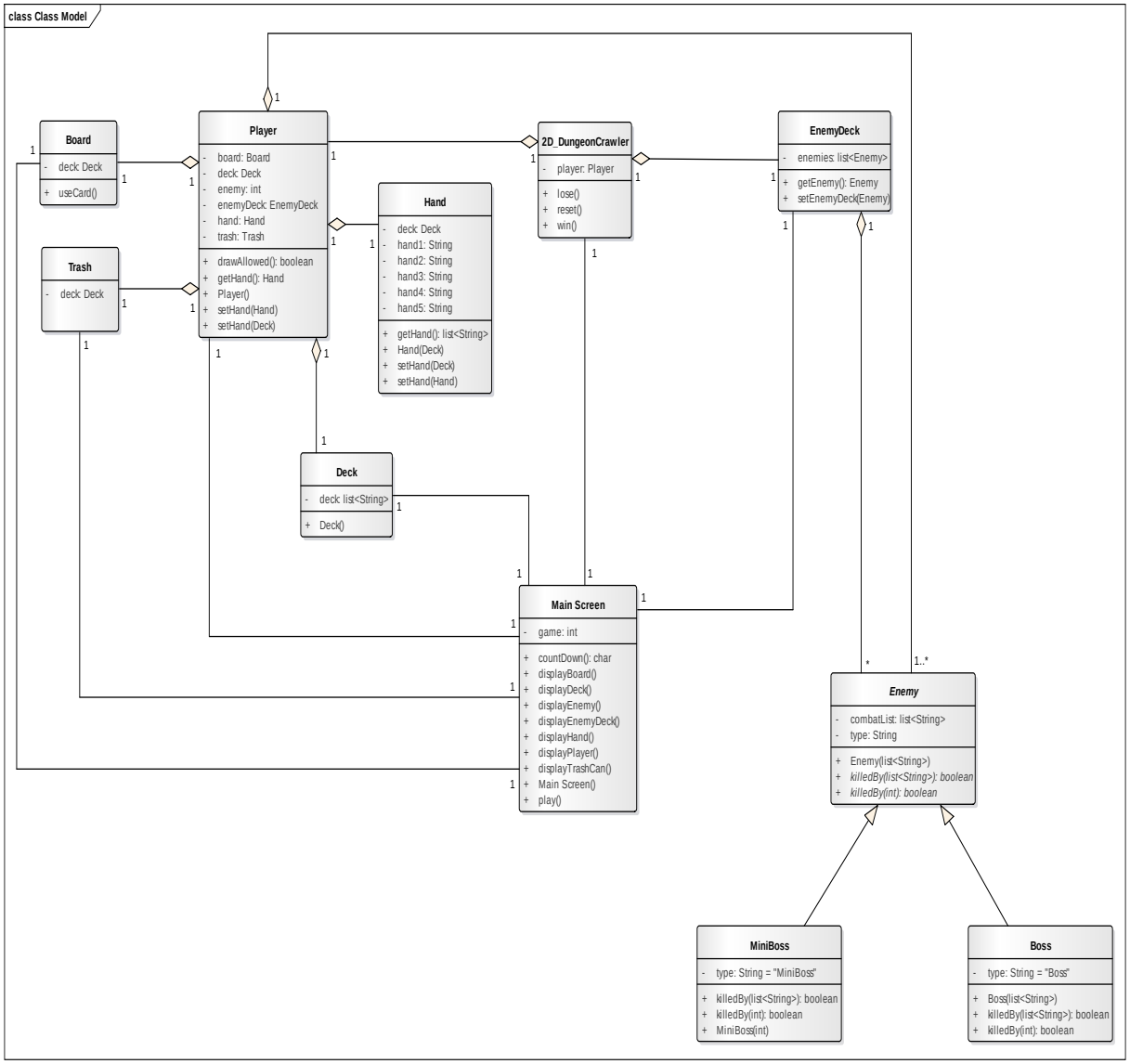


Fig. 1 UML Class Diagram

4.2.2. Entity Relationship Diagram

Fig. 2 represent the Entity Relationship Diagram of the predicted game. This system contains 11 entities, 15 relationships and 21 attributes.

Diagram: ER Diagram

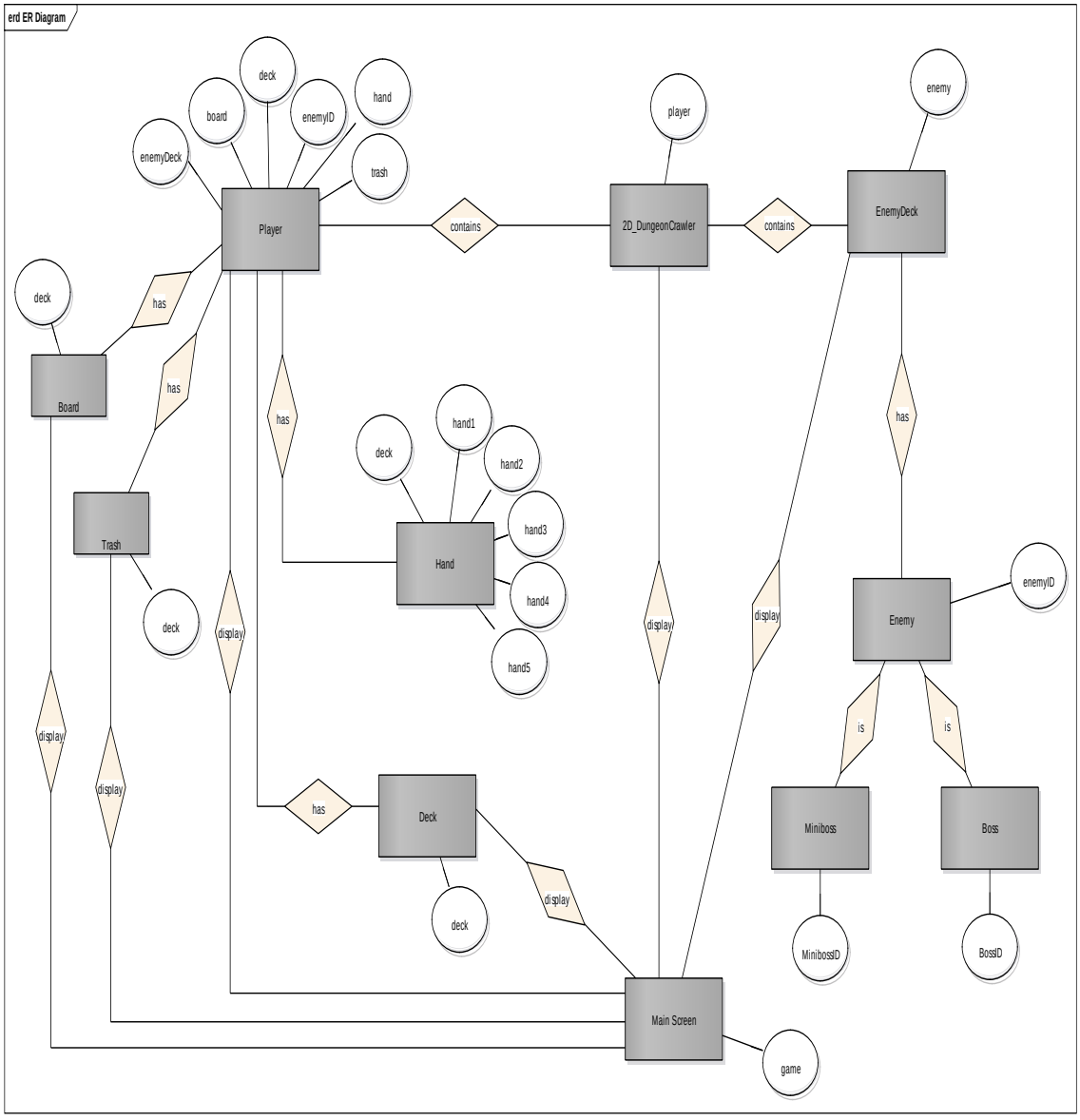


Fig. 2 Entity Relationship Diagram

4.3. Mock-ups

4.3.1. Card Designs

Some of the cards designed to be used in the story prepared within the ideas for the implementation to be made in the second semester.

Fig. 3 represents the cards will be used in the game.

Fig. 3 Card designs

5. Stakeholders

The game can be played by any person.

Table II

Stakeholders of 2D Dungeon Games Table

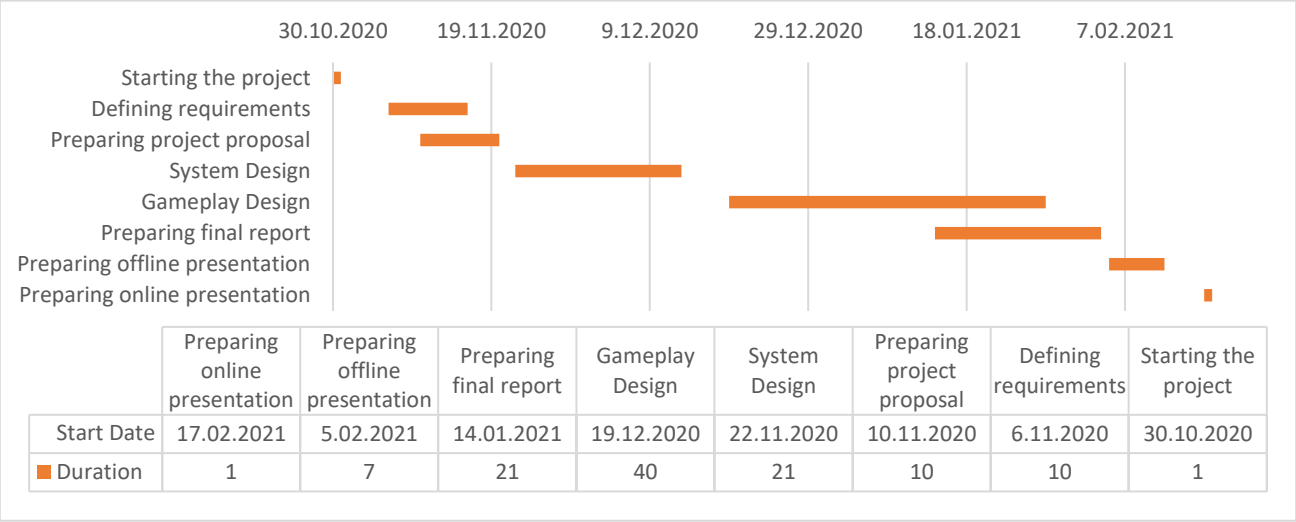
Stakeholder	Description
Gamer	Anyone who plays game.
Developer	Developers may be inspired by playing the game.
Geek	Anyone who is interested in this special topic.

6. Project Plan and Schedule

Task Names

a) Starting the project (1 day)
b) Defining the requirements (8 days)
c) Preparing project proposal (10 days)
d) System design (25 days)
e) Gameplay design (40 days)
f) Preparing final report (21 days)
g) Preparing for offline presentation (7 days)
h) Preparing for online presentation (1 day)

Table III
Project Gantt Chart



	Preparing online presentation	Preparing offline presentation	Preparing final report	Gameplay Design	System Design	Preparing project proposal	Defining requirements	Starting the project
Start Date	17.02.2021	5.02.2021	14.01.2021	19.12.2020	22.11.2020	10.11.2020	6.11.2020	30.10.2020
Duration	1	7	21	40	21	10	10	1

7. Conclusion

After a long and busy period, the first phase of the project has been completed. For now, “2D Dungeon Card Game” is ready to implement. In the second phase of the project, the full game and mobile version will be released. From the project introduction to the final presentation phase which is the last stage of the project schedule has progressed in a harmonious and balanced manner. The next stage will continue by adding on the continuation of the project.

References

[1] “Definition of Dungeon Crawl”, as appears on https://en.wikipedia.org/wiki/Dungeon_crawl accessed on, November 13th, 2020.

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[8] “Review of Minecraft Dungeons” as appears on https://www.theverge.com/2020/5/26/21270311/minecraft-dungeons-reviews-xbox-pc-switch-ps4 accessed on, November 20th, 2020.