

Assignment 1

Team number: 6

Team members:

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Introduction

Authors: All

The game that's going to be designed & implemented is a simpler variation of the Exploding Kittens application (see <https://explodingkittens.com/>). Our game has some commonalities and differences compared to the original game. We have decided to implement the following features that mimic the original game:

- # of players to play against
- A timer that displays how much time the player has left to react
- A display box that shows whose turn it is to play

On the other hand, our game differs from the original game in the following ways:

- We are implementing a single player game
- We decided to keep our game a single player game and we have chosen to implement fewer cards to keep the game relatively simple initially (see table of cards)

Aside from the differences in the implemented cards, the basic functionality of the game remains unchanged.

Below, a brief summary of how the game is played:

How to play summarized:

- 2 - 5 players
- There are 4 exploding kittens in the deck
- There are 6 defuse cards in the deck, each player gets one defuse card, the rest go back in the deck (exception: if there are two or three players playing, then only two defuse cards are put back into the deck)
- Each player gets an additional 7 cards from the shuffled deck
- $n-1$ exploding kitten cards are put back into the deck with n being the number of players
- The deck gets shuffled and a random player starts at the starting of the game

- Once a player has their turn, they can either play a card or draw a card from the deck and then their turn is over
- The last player who hasn't exploded wins

Cards:

Card	# of cards
Exploding Kittens	4
Defuse	6
Skip	4
Reverse	4
See the future 3x	5

Features

Authors: All

Functional features

The main line of reasoning we applied for defining the functional features derived from writing down user stories. User stories is an important modeling method that we used to map a game functionality into a feature. Below are the user stories:

User stories:

1. A player can play **single player** mode
 - a. The player can choose the number of (computer) players to play against (maximum of 4 bots and minimum of 1 bot) and start the game.
 - b. The player can see the cards they are holding.
 - c. The player can play a card (if they are holding the respective card) when it's their turn and the timer has not run out. If the timer has run out and the player has playable cards, a card is forcefully played at random.

Types of cards the player can play and their effects:

 - i. The player can play a reverse card at which point their turn gets skipped and the rotation of turns flips.
 - ii. The player can play a skip card which skips their turn.
 - iii. The player can play a see the future card. Upon playing this card the player can see the top 3 cards in the deck.
 - d. The player can draw a card and add it to the list of their card holdings. While drawing a card any of the two scenarios given below is possible:
 - i. The player can play a defuse card if the drawn card is an exploding kitten & they are holding a defuse card. After playing a defuse card, the player has to place the exploding kitten card back in the deck (arbitrary location).

- ii. If the drawn card is an exploding kitten and the player has no defuse cards, the player explodes. The player is then eliminated from the game.
- e. If the player is the last player remaining in the game, they win.

By summarizing the user stories, playing the game online and diving into the specifics of the rules, we finalized the following features:

ID	Short name	Description	Champion
F0	Start screen	The player is greeted with a start screen where they can select game options (F1) or start the game.	Saman
F1	Game mode	The player can choose the number of players to play against (4 other players MAX) via the GUI.	Sifra
F2	Deck extensions	The deck of cards can be extended by selecting an extension at the main menu. The setup will be changed accordingly.	Gal
F3	Setup	The starting cards are dealt according to the rules (n-1 defuse cards... etc). The deck is shuffled and the players get 8 starting cards in total.	Gal
F4	Game semantic	A player can make an action using the GUI. The available actions are the following: draw, play, pick / steal a card. The user can play a: <ul style="list-style-type: none"> 1. Defuse card 2. Skip card 3. Reverse 4. See the future 	Saman
F5	Timer	Each turn has a time limit. A clock displaying time left for the current turn.	Shahrin
F6	Turn display	There is a display box that shows whose turn it is	Saman
F7	Winning/losing	A player loses when drawing an exploding kitten card. A player wins when they are the last one standing.	Sifra
F8	Replayability	The player can restart the game after it has finished. This will reset the game state (and accompanying UI) to it's starting state.	Shahrin

Quality requirements

Authors: All

As a team, it was decided that the game needs to at least have the following qualities:

- The game should be securely designed to prevent any cheating (security)
- There should be no latency in the game (performance)
- The code should be structured / designed in such a way that future developers can extend the deck without any difficulty (maintainability/scalability)
- The GUI should be intuitive so that users naturally understand how to interact with the game

ID	Short name	Quality attribute	Description
QR1	Action checks	Reliability	When the player chooses an action (play card / draw card) the system decides whether this action is legal.
QR2	Extensible deck	Maintainability	The card game shall be easily extendable in terms of types of cards.
QR3	Instantaneous results	Performance	Once the player or computer makes a move/picks an action, the results are immediately visible in the GUI.
QR4	Modifiability	Modifiability	A player has the ability to modify the game, such as selecting the number of players, name, deck extensions.
QR5	Fair play	Security	A player can only play on their turn. The gameplay is fair. A player cannot cheat.
QR6	Graphical design	Appearance	The game has a pleasant and intuitive graphical design.

Java libraries

Authors: All

JavaFX

Used for styling the user interface of the system. We chose it among others because it is the most modern and up to date framework for frontend design.

JFoenix

Used for more modern material design.

[Fastjson](#)

We will use it for reading and writing JSON configuration files containing the description of the cards of the deck. We chose it because it is easy to configure and use from Java code and preliminary experiments makes us confident about its correct functioning.

Time logs

A	B	C	D
Team number			
Member	Activity	Week number	Hours
All of us	Define functional features	1 and 2	2
All of us	Search Java libraries	1	2
All of us	Quality requirements	1	2
All of us	Introduction	1	2
All of us	Time logs	1	2
All of us	Mentor meeting	1 and 2	0.5
		TOTAL	10.5