Requirement and Analysis Document for 4Students

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1 Introduction

We are creating a single player 2D-sidescroller with the IT mascot as the protagonist. This application is intended as a stress relief for IT students at Chalmers. Currently they don't have a game made specifically for them. The application should be easily started from the computer between lectures or during a break.

In the game, you take on the role of the IT-smurf to complete the levels. The IT-smurf should be able to move horizontally, jump vertically and attack his enemies or the environment. The enemies will be AI controlled. The levels will be premade and consist of platforms, obstacles and a finish line.
The player will have a score which will be acquired by interaction with the game world.

1.2 Definitions, acronyms and abbreviations

IT-smurf: the protagonist of the story and the playable character.
Level: A single map with a start.
Enemy: A UI-controlled entity within the game
Power-up: A game changing effect.
Obstacle: An object interfering with the players ability to continue
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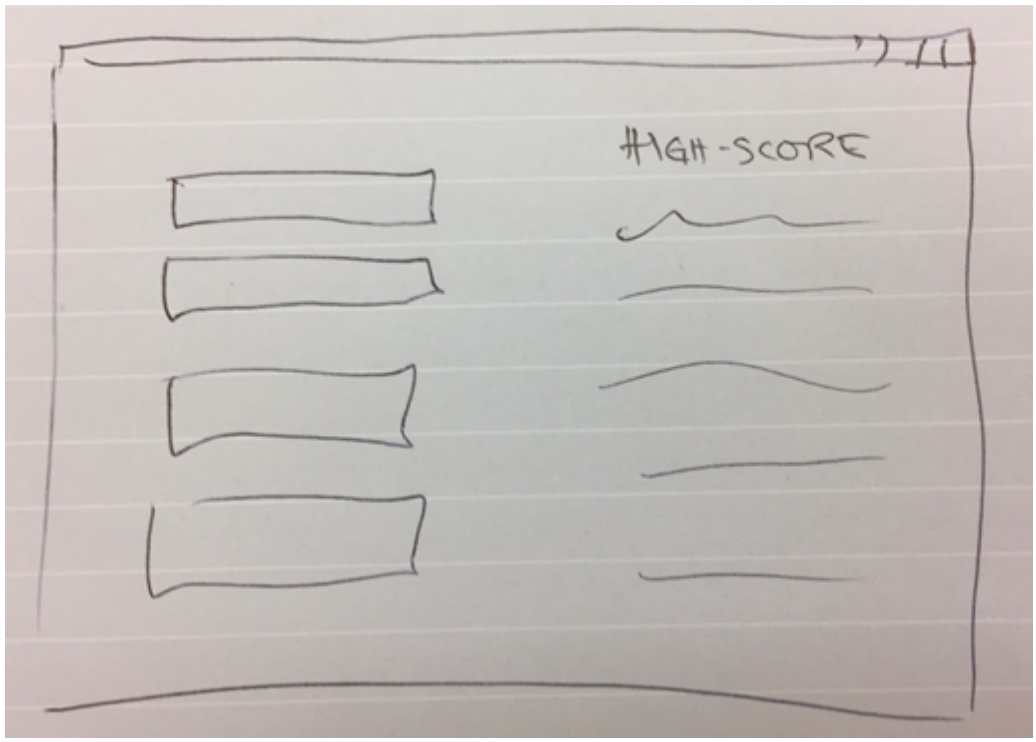
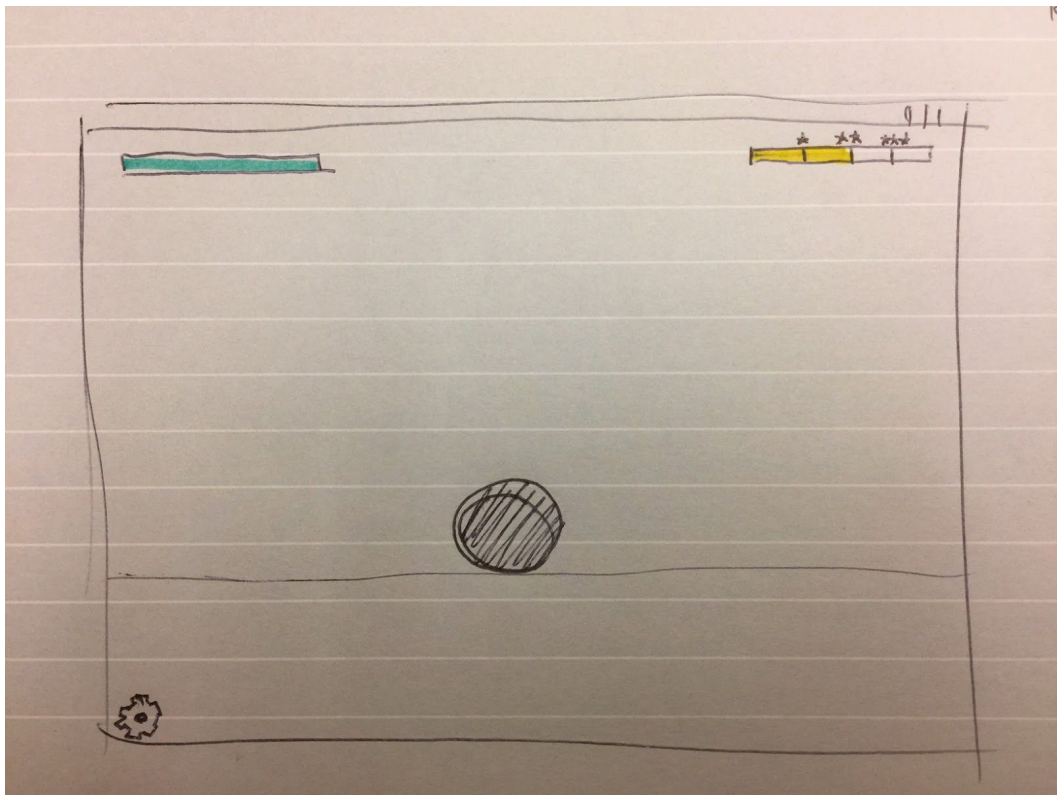
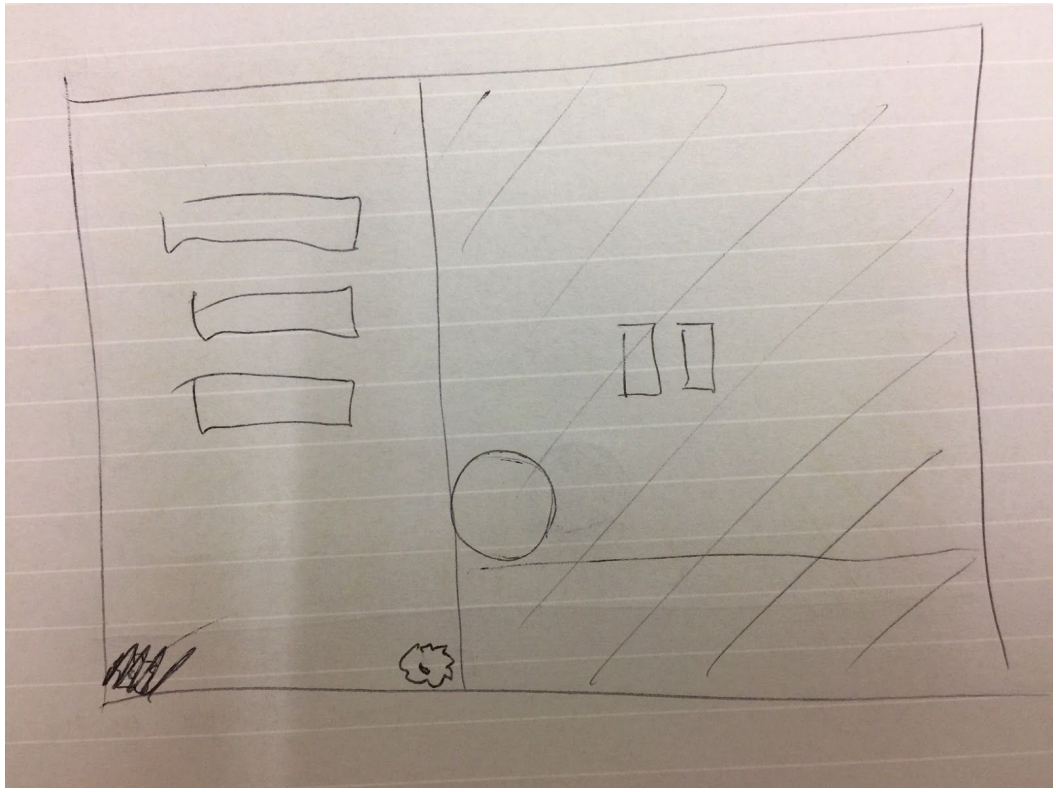
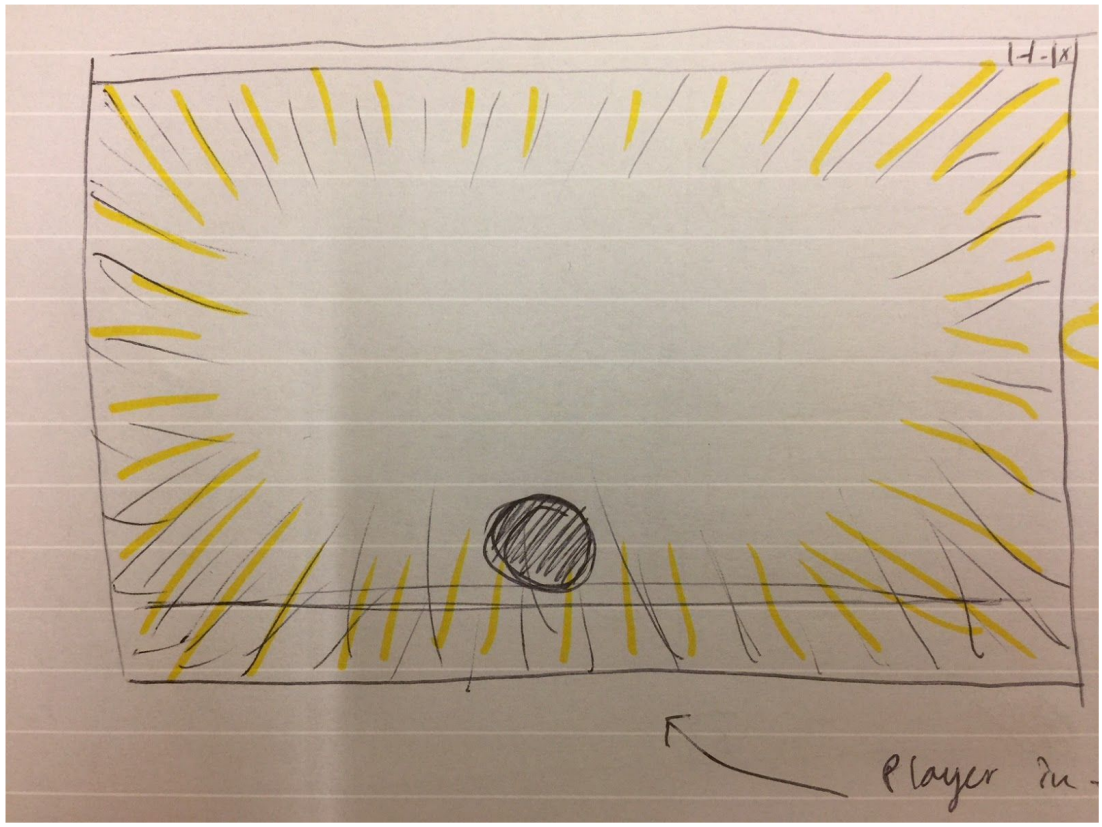
2 Requirements

2.1 User interface

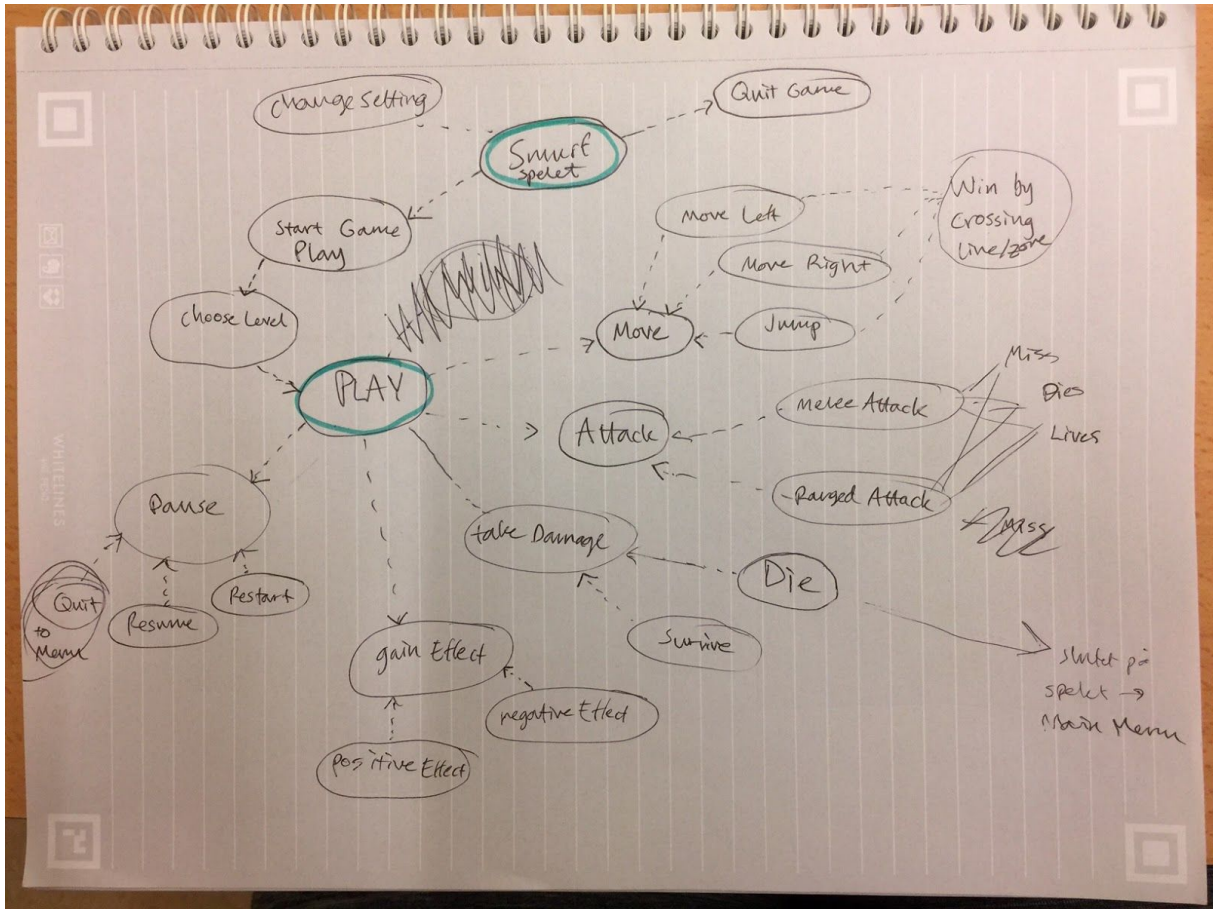







Player

2.2 Functional requirements



The user will be able to:

- Start game
- Quit the game
- Edit settings
- Move
    - Horizontally
    - Jump vertically
- Attack
    - Ranged Attack
    - Melee Attack
- Acquire powerups
- Acquire points
- Win the game
- Lose the game
- Pause game
- Take damage

2.3 Non-functional requirements

- The program should be able to perform with a framerate of at least 25 fps.
- The program should be testable.

- the level will randomly genereated

3 Use cases

3.1 Use case listing

Use case: meleeAttack
Summary: The user presses a button in order to perform an attack
Priority: Medium
Extends: Attack
Includes:
Participators: Player

Normal Flow of Events:

	Actor	System
1	Presses the button for melee attacks	
2.1 Player misses		Miss-melee-animation plays
2.2 Player hits an enemy who dies		Hit-animation plays Enemy-die animation plays Enemy disappear from the level
2.3 Player hits an enemy who lives on		Hit-animation plays Enemy-hit animation plays

Use case: rangedAttack

Summary: The user presses a button in order to perform an attack

Priority: Medium

Extends: Attack

Includes:

Participators: Player

Normal Flow of Events:

	Actor	System
1	Presses the button for ranged attacks	
2.1 Player misses		Miss-ranged-animation plays
2.2 Player hits an enemy who dies		Hit-animation plays Enemy-die animation plays Enemy disappear from the level
2.3 Player hits an enemy who lives on		Hit-animation plays Enemy-hit animation plays

Use case: GainEffect

Summary: The player gains an effect

Priority: Medium

Extends: Move

Includes: NegativeEffect, PositiveEffect

Participants: player

Normal Flow of Events:

the player moves over an EffectIcon

	Actor	System
1	the player moves over an EffectIcon	
2		the EffectIcon disappears
3		The Effect is gained by the player
		An EffectAnimation is displayed on the screen

Alternate Flow:

the player moves over a NegativeEffectIcon

	Actor	System
1	the player moves over a NegativeEffectIcon	
2		The EffectIcon disappears
3		The NegativeEffect is gained by the player
		A NegativeEffectAnimation is displayed on the screen

Alternate Flow:

the player moves over a PositiveEffectIcon

	Actor	System
1	the player moves over a PositiveEffectIcon	
2		The EffectIcon disappears
3		The PositiveEffect is gained by the player
		A PositiveEffectAnimation is displayed on the screen

Use case: Pause

Summary: The presses the pause button

Priority: Medium

Extends: Play

Includes: QuitToMenu, Resume, Restart (Only represented here)

Participants: player

Normal Flow of Events:

The player presses the “pause”-button and chooses to resume.

	Actor	System
1	The player presses “pause”-button	
2		Pause menu is drawn with the buttons “Resume”, “Restart” and “Quit to Menu”
3	Player presses the “Resume”-button	
4		The pause menu disappears, The game starts again.

Alternate Flow:

The player presses the “pause”-button and chooses to restart.

	Actor	System
1	The player presses “pause”-button	
2		Pause menu is drawn with the buttons “Resume”, “Restart” and “Quit to Menu”
3	Player presses the “Restart”-button	

4		The pause menu disappears, The map is drawn to starting point. The enemies respawns

Alternate Flow:

The player presses the “pause”-button and chooses to quit to menu.

	Actor	System
1	The player presses “pause”-button	
2		Pause menu is drawn with the buttons “Resume”, “Restart” and “Quit to Menu”
3	Player presses the “Quit to Menu”-button	
4		The pause menu disappears, The main menu is drawn

Use case: goToSettings
Summary: The user wants to change the settings of the game
Priority: Low
Extends: Game
Includes: goToSettings
Participators: Player
Normal Flow of Events:

	Actor	System
1	Presses button for settings	
2		Changes menu to settings-menu

Use case: changeASetting

Summary: The user wants to change the settings of the game, i.e difficulty

Priority: Low

Extends: goToSettings

Includes:

Participators: Player

Normal Flow of Events:

	Actor	System
1	Presses the button of the setting they want to change	
2.1 The user changes the difficulty		Changes the text of the button to represent the new choice Changes the game's' settings to reflect the new choice
2.2 The user changes a keybinding		The system shows a new dialog that prompts the user to choose a new key for the action chosen
2.2.1	The user presses the desired key	
2.2.1.1 The user pressed a "legal" key		Closes the dialog Changes the text of the button to represent the new choice Changes the game's' settings to reflect the new choice
2.2.1.2 The user pressed a forbidden key		Shows a warning text informing the user to pick a different key The user is back at 2.2
2.2.1.3 The user pressed ESC		Takes the user back to the settings menu

Use case: TakeDamage

Summary: The user takes damage

Priority: High

Extends: Play

Includes: Die, Survive

Participants: The player

Normal Flow of Events:

the player takes damage and survives

	Actor	System
1	The player takes damage	
2		DamageAnimation is played
3		Players stamina is reduced
4		StaminaReducedAnimation is played

Alternate Flow:

The player takes damage and dies

	Actor	System
1	The player takes fatal damage	
2		DeathAnimation is played
3		go to Die

Use case: Move

Summary: The user moves by pressing a “move” button

Priority: High

Extends: Play

Includes: Jump, Move right, Move left

Participators: Player

Normal Flow of Events:

The user moves with no restrictions

	Actor	System
1	The user presses on of the “movement-keys”	
2		Move the player in the designated direction

Alternate Flow:

The user moves to the right

	Actor	System
1	The user presses the “move right”-key	
2		Move the player to the right a set amount of pixels

Alternate Flow:
The user moves to the left

	Actor	System
1	The user presses the “move left”-key	
2		Move the player to the left a set amount of pixels

Alternate Flow: The user jumps

	Actor	System
1	The user presses the “jump”-key	
2		Move the player up a set amount of pixels. Move the player down the same amount of pixels.

Alternate Flow:
The user moves and takes damage

	Actor	System
1	The user presses one of the “movement-keys”	
2		Move the player a set amount of pixels in the designated direction. The player receives damage.
3	See Take damage	See Take damage

Alternate Flow:

The user moves and crosses the finish-line

	Actor	System
1	The user presses one of the “movement-keys”	
2		Move the player a set amount of pixels in the designated direction. The player crosses the finish-line.
3	See Win	See Win

Use case: Quit Game

Summary: The user quits the game from the title screen

Priority: Medium

Extends: Game

Includes:

Participators: Player

Normal Flow of Events:

The user presses the “quit game” button, the game shuts down.

	Actor	System
1	The user presses the “quit game”-button	
2		Save progress. Shut down the game.

Use case: Start Game
Summary: The user starts the game from the title screen
Priority: High
Extends: Game
Includes:
Participators: Player

Normal Flow of Events: The user presses the start game button and the game starts.

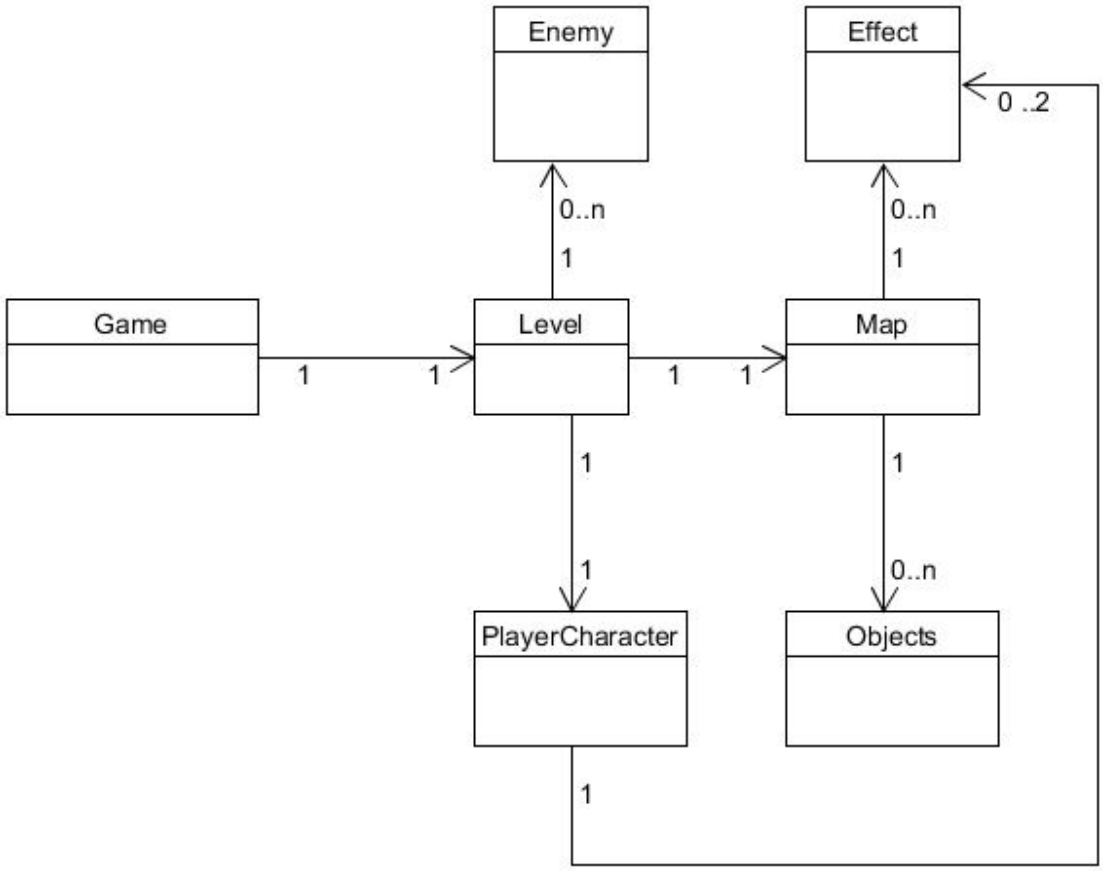
	Actor	System
1	The user presses the “start game”-button	
2		Display the level select screen.
3	See choose level	See choose level

Use case: Win
Summary: When the user completes a level successfully.
Priority: Medium
Extends: Move
Includes:
Participators: Player

Normal Flow of Events:
The user crosses the finish-line and wins the game.

	Actor	System
1		Show “win-screen”
2	The user presses the “OK”-button.	
3		Return to title screen

4 Domain Model



4.1 Class responsibilities

Game: The overall representation of the game.

Level: Holds information about the player, enemy and any other parts that move.

Map: Holds information about the obstacles, power-ups and any other parts that does not move.

Player: The player, holds information of active effects.

Enemy: Enemies placed on the level.

Effect: This is something the player can acquire to gain either a positive or negative bonus.