Requirement and Analysis Document for RunningMan (RAD)

Contents

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This version overrides all previous versions.

1. Introduction

1.1 Purpose of application

The purpose of the application is purely to entertain. It will specifically be a fast paced single player platform game which might resemble Super Mario Bros to some extent. The game should be fairly intuitive for everyone above the age of 15 which also is our target audience.

1.2 General characteristics of application

The application will be a desktop, stand-alone, keyboard-controlled computer game.The application is compatible with Windows/Mac/Linux platforms. The user will control one character, and shall, via simple keyboard commands, advance through a level full of various obstacles and enemies. The different levels will be time based, and the user must complete a level in time in order to get a score registered. The application will keep track of the best scores for each level. The more time used, the lower the score, but killing enemies also gives extra points. At the end of each level, if reached in time, there will be a helicopter to pick the character up, and thus, ending that level.

1.3 Scope of application

The game is single player only. It will contain two levels, which the user may choose which level to start. The user can only choose one character. There will be two types of enemies, normal enemies which exists in both levels and a boss enemy which is located at the end of the second level. However if the player moves through the first level fast enough it is possible for the player to encounter the boss even in the first level. Enemies are able to move, and the player will die from having contact with them. The application does collect and save the top five scores of the player.

1.4 Objectives and success criteria of the project

The player should be able to move to the right and to jump. The player should also be able to move left to a certain extent. That is, only until the level’s map prevents the character to move any further left. The scope will change and follow the player as the player moves to the right or to the left.

1.5 Definitions, acronyms and abbreviations

GUI - Graphical User Interface
Level - A map/course which the player is supposed to finish
Java - Platform independent programming language
Map- Group of tiles put together in order to create a visual section
Score - Time based score
UML - Unified Modeling Language, a diagram showing relations between classes, packages and their properties
Use Case - List of steps to show how the application will interact with the user to achieve a specific goal
HP - Health Points, is the characters or enemies health measured in points. Zero health points leads to death.

2. Requirements

2.1 Functional requirements

The user should be able to:

1. Start a new game.
    a. Move the character.
    b. Shoot bullets.
    c. Kill enemies by shooting bullets at them.
    d. Pick up power ups.
    e. Move faster by picking up power ups.
    f. Get killed by enemies by collide into them.
    g. Die by falling down into a pit.
    h. Complete the level by moving to right to the end of the level.
    i. Enter the second level by finishing the first level. *Not implemented*
    j. Complete the game by completing the second level. *Not implemented*
2. Resume a previous game. *Not implemented*
3. View the high score.
4. Quit the game.
5. View the main menu.
6. View the ingame menu. *Not implemented*

2.2 Non-functional requirements

2.2.1 Usability

The game will be very easy to use, since the only actions a user can take is moving left and right, jumping, and shooting. The keys for these controls and some simple rules of the game will be in the README-file.

2.2.2 Reliability

Normal gameplay should run somewhat smoothly, but the user will be able to find some bugs if looked for.

2.2.3 Performance

RunningMan will be a simple 2D platform game, and won't require any powerful hardware to run smoothly.

2.2.4 Supportability

There will be unit-tests that cover a big part of the model-package, and the visual framework will be totally exchangeable.

2.2.5 Implementation

RunningMan will be written in Java.

2.2.6 Packaging and installation

The installation process will consist of cloning the codebase from a git repository and then building it with gradle. After the application has been built, it can be executed from the executable JAR-file.

2.2.7 Legal

There are some movies named Running Man, based on a book by Stephen King by the same name. Whether those are trademarked or not will not be further investigated.

2.3 Application models

2.3.1 Use case model

UML and a list of UC names (text for all in appendix)

2.3.2 Use cases priority

1. Move
2. Finish level
3. Fall down (die)
4. Collide with enemy (die)
5. Shoot
6. Menu
7. New Game
8. View high score
9. Quit
10. Power up
11. Resume game *Not implemented*

2.3.3 Domain model

See *Appendix*.

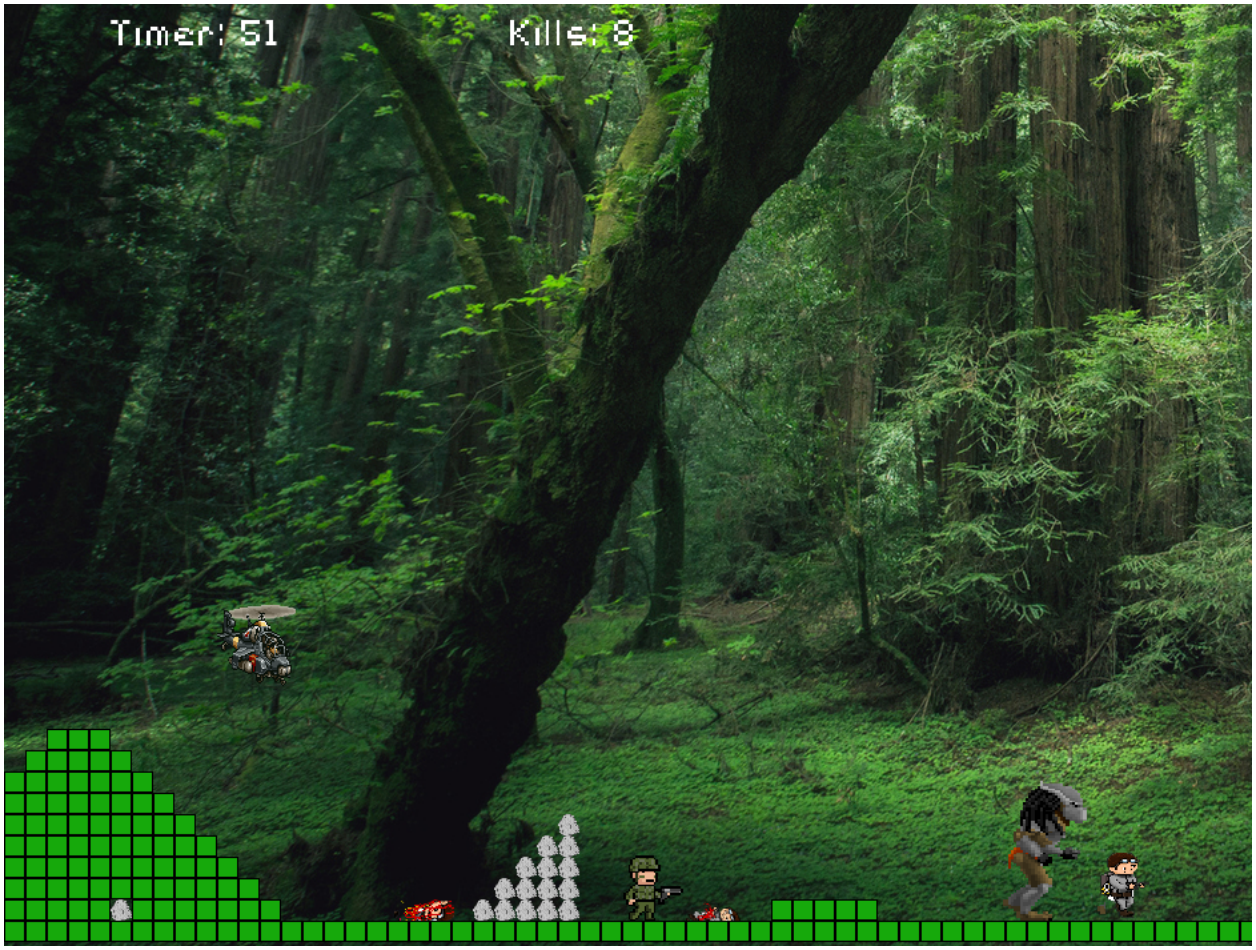
2.3.4 User interface

The game will focus on the player, with the GUI view locked and keeping the player in the middle of the screen.

2.4 References

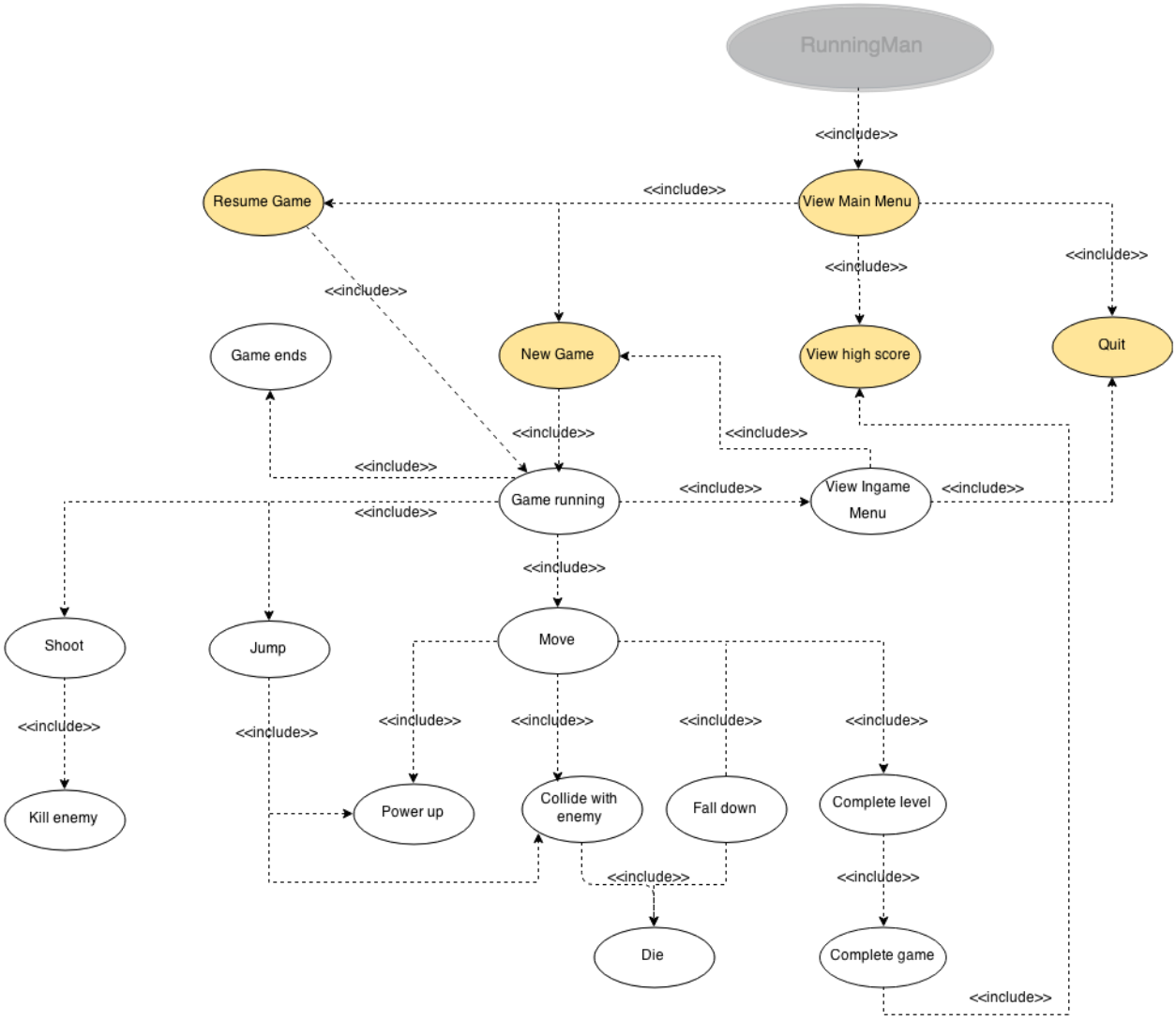
APPENDIX

GUI

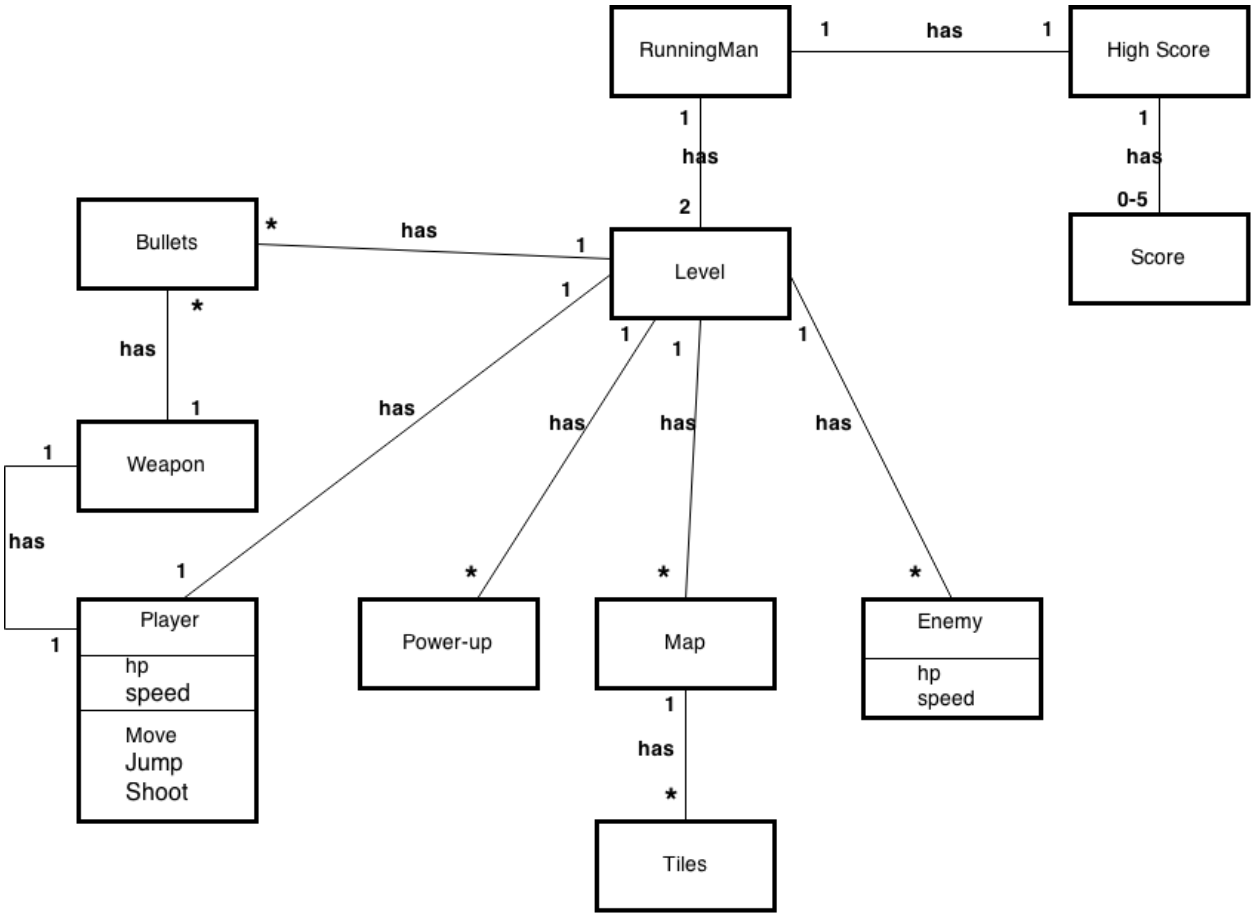


The figure shows the GUI. The current view represent the player which has killed two enemies and has two enemies in front of him, one boss and one normal enemy. Behind the player is the helicopter which is the goal to reach. On the top of the screen the user can see the number of kills and the time left.

Use Case diagram



Domain Model



Use Cases

User case: Move

Summary: How the player moves
Priority (high,mid,low): High
Extends:
Includes: Power up, Fall down, Collide with enemy

Normal flow:
The player moves around freely

	User	System
1	Press or holds left or right on the keyboard.	
2		The character moves in the given direction.

Alternate flow:
Flow 2.1: The character is next to a wall and tries to move in that direction

	User	System
2.1.1		The character will have a collision with the wall
2.1.2		The character won't move in that direction

Alternate flow:
Flow 2.2: The character steps on a power up

	User	System
2.2.1		The character picks up the power up
2.2.2		The character gains the given power

Alternate flow:
Flow 2.3: The character falls down

	User	System
2.3.1		The character moves to a point where there's no ground
2.3.2		The character falls down

Alternate flow:
Flow 2.4: The character collides with enemy

	User	System
2.4.1		The character will have a collision with an enemy
2.4.2		The character dies

User case: Jump

Summary: How the player jumps
Priority (high,mid,low): High
Extends:
Includes: Power up, Collide with enemy

Normal flow:
The player moves around freely

	User	System
1	Press space or up on the keyboard.	
2		The character jumps.

Alternate flow:
Flow 2.1: The character tries to jump but is totally blocked from above

	User	System
2.1.1		There is an object blocking directly from above

2.1.2		The character won’t jump

Alternate flow:
Flow 2.2: The character tries to jump but is partly blocked

	User	System
2.2.1		There is an object blocking from above
2.2.2		The character jumps and hits the object

Alternate flow:
Flow 2.3: The character jumps and hits a power up

	User	System
2.3.1		The character jumps and picks up the power up
2.3.2		The character gains the given power

Alternate flow:
Flow 2.4: The character jumps and collides with an enemy

	User	System
2.4.1		The character jumps and hits an enemy
2.4.2		The character dies

User case: Complete level

Summary: The user completes the level and moves on to the next one
Priority (high,mid,low): high
Extends: Move
Includes:

Normal flow:
The user reaches the end of a level

	User	System
1	User moves to the right and reaches the final point of the level	
2		A message tells the user that the level is finished
3		Saves the score of the level
4		Shows the score of the level
5	The user clicks on the arrow	
6		The message disappears
7		The next level starts

User case: Complete game

Not implemented

Summary: The user completes the game(the last level)
Priority (high,mid,low): high
Extends: Move
Includes:

Normal flow:
The user reaches the end of the last level

	User	System
1	User moves to the right and reaches the final point of the last level	
2		A message tells the user that the level is finished
3		Saves the score of the level
4		Shows the score of the current level
5		Gets the total score of all of the cleared levels
6		Shows the total score
7		The list of the high score list is displayed with a replay button and menu button
8	The user press replay button	
9		A new game starts

Alternate flow:
Flow 6.1: The user gets a new high score

	User	System
6.1.1		A message displaying the users score and a place to enter the users initials appears.
6.1.2	User enter initials and press enter	
6.1.3		Saves the High score and initials

Alternate flow:
Flow 8.1: The user press menu button button

	User	System
8.1.1	User presses menu button	
8.1.2		The menu appears

User case: Shoot

Summary: The character fires a shot
Priority (high,mid,low): mid
Extends:
Includes: Kill enemy

Normal flow:
The user fires a shot

	User	System
1	Press or hold the X button	
2		Shows the character firing a shot

Alternate flow:
Flow 2.1: The shot hits an enemy whom dies

	User	System
2.1.1		An enemy is hit by the shot
2.1.2		The enemy dies and can no longer harm the user

Alternate flow:
Flow 2.1.1: The shot hits an enemy whom doesn't die

	User	System
2.1.1.1		The enemy takes damage
2.1.1.2		Calculate new health of enemy

User case: New Game

Summary: Starts a new game at the first level
Priority (high,mid,low): low
Extends:
Includes:

Normal flow:
The game starts from the beginning

	User	System
1	At the main menu or in-game menu, the user selects option “New Game”	
2		Starts a new game from the first level

User case: View High Score

Not implemented
Summary: The user views the high score
Priority (high,mid,low): low
Extends:
Includes:

Normal flow:
The user views all high scores for all levels

	User	System
1	At the main menu, the user selects the option “View High Score”	
2		System displays high score list
3	Press back button	
4		System shows user the menu

User case: Quit

Summary: The user may quit
Priority (high,mid,low): low
Extends:
Includes:

Normal flow: The user quits the game

	User	System
1	At the main menu or the in-game menu the user selects the option“Quit” (or in game quit, close window)	
2		If user is in game, system show confirm dialog
3	User selects “Yes” option	
4		System saves the current state
5		System exits the application

Alternate flow

Flow 3.1: The user selects “No” option and thus not quitting the game

	User	System
3.1.1	The user selects the “No” option	
3.1.2		Resumes the game

User case: View In-game Menu

Not implemented

Summary: During a game the user may look at the menu
Priority (high,mid,low): low
Extends:
Includes:

Normal flow:

	User	System
1	The user presses ESC-button in game	
2		The menu is displayed

User case: Resume game

Not implemented

Summary: If the user has exited in the middle of a game, he should be able to resume from the same place.
Priority (high,mid,low): low
Extends:
Includes:

Normal flow:

	User	System
1	The user presses “Resume Game” from the main menu	
2		The systems restore the state from when the game was last played