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| Trine University |
| Space Invaders |
| CS 3933 System Analysis & Design |

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# Abstract

Space Invaders TODO

# Use Cases

Overall, there are very few use cases for *The Snake Game* project. The two actors across the set of our use cases are either The Player, or The Game. Whereas the Player refers to the human who is the physical user providing inputs to the software, and whereas the Game abstractly refers to the software itself and its members.

List of Use Cases by Actor:

|  |  |
| --- | --- |
| Player | Game |
| Start Game | Move Entities (Bullets/Invaders) |
| View About | Check for Collisions |
| View Scores | Update GUI |
| Quit | Calculate Score |
| Move Player |  |
| Fire Bullet |  |

## Use Case Diagram

TODO

## Start Game

Summary: A player performs this task to create a playable instance of *Space Invaders Game* in hopes of enjoying themselves and having their score be recorded as a historical score.

Steps:

1. Player provides stimulus to menu UI, in the form of a start game command.

Notes: None

Extensions: None

## View About

Summary: A player performs this task to view game controls use to play *Space Invaders Game*.

Steps:

1. Player provides stimulus to menu UI, in the form of a display about command.

Notes: None

Extensions: None

## View Scores

Summary: A player performs this task to view the top scores stored in *Space Invaders Game’s* history.

Steps:

1. Player provides stimulus to menu UI, in the form of a display score command.

Notes: None

Extensions: None

## Quit

Summary: A player performs this task to exit the menu interface, to close *Space Invaders Game* software.

Steps:

1. Player provides stimulus to menu UI, in the form of a quit command.
2. Game software exits

Notes: None

Extensions: None

## Play Game

Summary: A player performs this task in order continue playing *Space Invaders Game* with the hopes of attaining the highest recorded score.

Steps:

1. Player provides stimulus to game, in the form of a direction command.
2. Game moves snake along specified direction
3. Game performs check for collision
4. Game will update GUI

Notes:

1. User can perform STEP:1 by pressing a key (which corresponds to a direction), or by choosing to not press a key and thereby instructing the software to continue in the current direction.

Extensions:

3: Collision results may vary

.1: Collision is not detected, no extra steps performed

.2: Collision with food detected, increase score and snake length

.3: Collision with illegal collision detected (snake body or boundary), ensure update GUI is aware game must end and thereby calculate score

4: Depending on whether the player has lost or not, GUI update can vary

.1: If player has not caused illegal collision, no extra steps performed

.2: If player has caused illegal collision, display “END GAME” message and show score

## Move Snake

Summary: The Game performs this task to move the snake game piece in the appropriate direction.

Steps:

1. Game determines current direction of travel, and moves game piece the proper distance in said direction.

Notes: None

Extensions: None

## Check for Collision

Summary: The Game checks if a collision has occurred between the snake game piece and a game object.

Steps:

1. Game evaluates if a collision has occurred between the snake game piece and a game object.

Notes: None

Extensions:

1: Collision results may vary

.1: Collision is not detected, no extra steps performed

.2: Collision with food detected, increase score and snake length

.3: Collision with illegal collision detected (snake body or boundary), ensure update GUI is aware game must end

## Update GUI

Summary: The Game performs this task to update the Game GUI.

Steps:

1. Game updates all GUI components.

Notes: None

Extensions:

1: Update events may vary dependent on results of check for collision

.1: If check for collision determined the game must end, display “END GAME” message and calculate score

.2: If check for collision determined the game may continue, simply update all GUI components and no extra steps are performed

## Calculate Score

Summary: The Game performs this task to determine the score of the current session and determine if necessary for storage in historical scores.

Steps:

1. Game software determines Player score
2. Game software exits

Notes: None

Extensions: None

# 

# Class Diagram

TODO

# Sequence Diagrams

## General Sequence

TODO