Comet Pinball

Use Case Model

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https://github.com/boskoop/comet-pinball/

Contents

1 Actors

1.1 List of actors

Actor	Type	Description
Player	primary	*Player*s run the Comet Pinball on their computer.

1.2 Primary actor goals

Player:

A *Player* uses the Comet Pinball to pass his leisure time and enjoy himself. He is interested in a well designed play field with nice visual and acoustical effects.

2 Use cases (brief)

2.1 Player

Start simulation: The player wants to start a game so he enters the main screen of the system and selects the option for starting a new game. The system loads the play field, resets the score counter and sets the right amount of available balls for this game and loads one ball in the plunger.

Start game: The plunger has to be operated to forward the ball onto the play field. The force can be controlled by some matter.

Move flippers: The player can move the flippers to prevent the ball from leaving the play field. If the ball is hit by the flippers he follows approximately the movements of a collision.

Ball leaves play field: The ball is passing the flippers and leaves the play field via the drain. The system loads a new ball in the plunger and decreases the counter of available balls by one.

Extra ball: This use case will be declared in the elaboration phase of the project. See the notes section.

Extra game: This use case will be declared in the elaboration phase of the project. See the notes section.

Gameover: All balls have left the play field so the game is over. The score is presented to the user and the user has to start a new simulation to play further.

Hit obstacle: The system actualizes the score if a scoring obstacle was hit. The ball is following the movement of a collision.

Stuck ball: The ball is stuck somewhere on the play field, so the user has the possibility to tilt the table.

Tilt: If the play field was tilted too often or too hard, the game will stop and display the user the message "Tilt".

New Highscore: If a game is over and the score has exceeded the highscore, the system will produce visual and acoustic effects. The score will be set as new highscore and the new highscore sheet is presented to the player.

Watch Highscores: The player can watch the highscores.

Configure game properties: The properties of the game like the size of the bumpers, amount of available balls and other settings can be configured in a properties file.

3 Use cases (fully-dressed)

3.1 Use Case UC1: Start simulation

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: *Player* has started the system on his computer and has arrived on the main screen.

Postconditions: The name of the *Player* has been entered, the plunger is filled with a ball and all counters are reset.

Main success scenario:

1. *Player* initiates the start of the simulation.
2. System is starting the simulation with the *Player*'s nickname.
3. System sets the counter of the available balls to default value.
4. System sets the score to zero.
5. System activates the plunger and puts one ball in it.
6. System activates the flippers.

2a. *Player* has not yet entered his nickname.

   1. System prompts for the *Player*'s nickname.
   2. *Player* enters his nickname.
   3. System stores the nickname.

3.2 Use Case UC2: Start Game

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: *Player* has started a simulation.

Postconditions: The ball has entered the play field and the game has started.

Main success scenario:

1. *Player* is applying the plunger and adds some force to the ball.
2. System simulates the ball's movement.
3. The ball enters play field.

3a. Ball has not enough force to climb the ramp and rolls back into the plunger.

    1. Continue with 1.

3.3 Use Case UC3: Move flippers

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: *Player* has started a simulation.

Postconditions: The ball has entered the play field and the game has started.

Main success scenario:

1. *Player* initiates the movement of at least one flipper.
2. System simulates the upward movement of the flipper.
3. Player initiates the backward movement of the flippers.
4. System simulates the backward movement of the flipper.

2a. Ball hits the flipper during the upward movement

    1. System simulates the redirection of the ball.

3.4 Use Case UC4: Ball leaves play field

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: A game is simulated

Postconditions: Either the game is over or a new game is prepared.

Main success scenario:

1. Counter for available balls is decreased by one.

2. System puts a new ball in the plunger.
3. The system is ready to start a new game.
4. Continue with "UC2: Start game"

1a. Counter for available balls is zero.

    1. Continue with use case "UC7: Gameover"

3.5 Use Case UC5: Extra ball

This use case will be declared in the elaboration phase of the project. See the notes section.

3.6 Use Case UC6: Extra game

This use case will be declared in the elaboration phase of the project. See the notes section.

3.7 Use Case UC7: Gameover

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: UC4 has happened

Postconditions: The score was calculated and the system has stopped the simulation

Main success scenario:

1. System calculates the final score and shows it to the user
2. System deactivates the flippers and the plunger
3. System is ready to start a new simulation.

1a. The score of the current game was higher than the highscore

    1. Continue with "UC11: New highscore"
    2. Continue with step 2.

3.8 Use Case UC8: Hit obstacle

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: A game is simulated, ball has been brought into play

Postconditions: Score is updated, ball has new movement parameters set

Main success scenario:

1. Ball moves across the play field and hits an obstacle
2. System determines scoring value of the hit
3. System updates score
4. System calculates physical impact on ball
5. System sets resulting parameters on ball movement
6. Ball continues to move across the play field with new parameters

3.9 Use Case UC9: Stuck ball

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: A game is simulated and the ball gets stuck on an obstacle.

Postconditions: The ball is free to move.

Main success scenario:

1. *Player* is using the controls to move the play field.
2. System is simulating the movement of the play field
3. Ball is freed
4. System simulates the new direction of the ball

3a. The play field was moved to hard.

1. Continue with "UC10: Tilt"

3.10 Use Case UC10: Tilt

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: A game is simulated, ball has been brought into play

Postconditions: Game has ended

Main success scenario:

1. *Player* tries to manipulate the game by using "raw force"
2. System detects manipulation
3. System enters tilt state by deactivating all controls and displaying it to the *Player*
4. System ends simulation

3.11 Use Case UC11: New highscore

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: UC4:Ball leaves play field, the score of this game is higher than the current highscore

Postconditions: The player is informed that he has set a new highscore and the new highscore is saved.

Main success scenario:

1. New highscore is saved.
2. System shows the user that he has set a new highscore.
3. *Player* acknowledges the highscore.
4. System continues with step 2 of UC7: Gameover

3.12 Use Case UC12: Watch highscores

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

Preconditions: No game is running. The *Player* is at the main screen of the system.

Postconditions: The system displayed the highscores to the *Player*.

Main success scenario:

1. *Player* enters the highscores view.
2. System loads the highscores and the names of the *Player*'s
3. System displays the highscores to the *Player*
4. *Player* quits the highscores view
5. System returns to main screen

3.13 Use Case UC13: Configure game properties

Scope: Comet Pinball

Level: user goal

Primary actor: *Player*

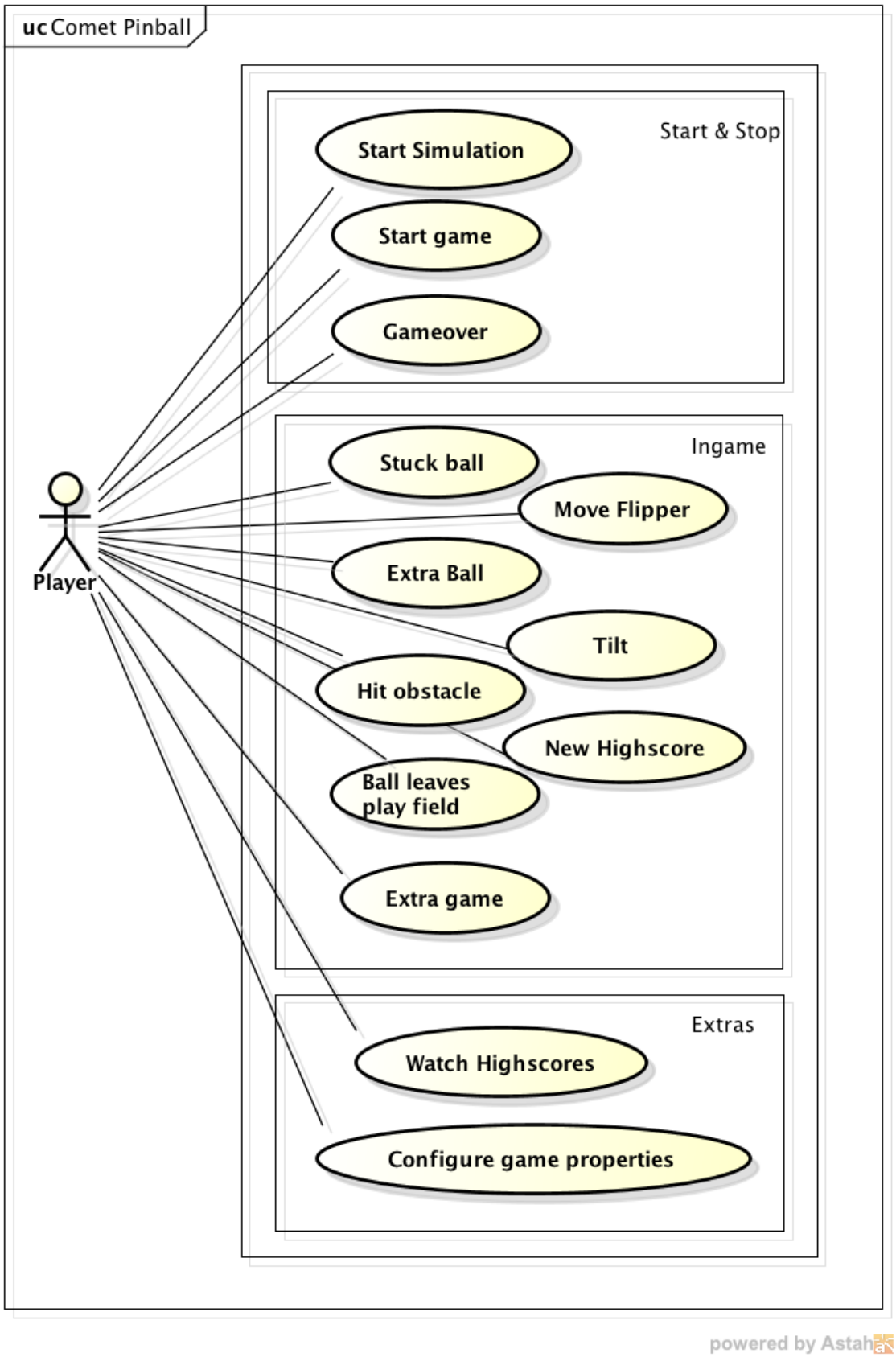
Preconditions: No game is started

Postconditions: The game properties are configured

Main success scenario:

1. The *Player* opens the configuration file.
2. The *Player* configures the game properties.
3. The *Player* saves the file.
4. The *Player* starts the application.
5. The system reads the configuration from the file.
6. The system applies the changed parameters.

4 Use case diagram



5 Notes

The use cases "Extra game" and "Extra ball" are not implemented in the current version of the program.