

TECHNISCHE UNIVERSITEIT EINDHOVEN

2IO23 DESIGN BASED LEARNING

Spec and Game

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1 Introduction

2 Use Cases

Create match

1. Pre-condition(s): None
2. Trigger: Presses the "Create match" button.
3. Guarantee: A lobby is created.
4. Scenarios:
 - (a) Main scenario
 - 1) The Player presses the "Play" button.
 - 2) The Client connects to the Server and retrieves the lobby data.
 - 3) Player presses the "Create match" button.
 - 4) The player is placed into a new lobby by the server.
 - 5) The player presses the "Ready" button and sends a message to the server.
 - 6) The server waits for all players to be ready and tells all players to start.
 - (b) Alternatives
 - 2.1** The client failed to connect. And hence the player is returned to the main menu.

Join match

1. Pre-condition(s): None
2. Trigger: Player clicks on a lobby to join.
3. Guarantee: A lobby is joined.
4. Scenarios:
 - (a) Main scenario
 - 1) The Player presses the "Play" button.
 - 2) The Client connects to the Server and retrieves the lobby data.
 - 3) Player clicks on a lobby to join.
 - 4) The player is placed into a lobby by the server.
 - 5) The player presses the "Ready" button and sends a message to the server.
 - 6) The server waits for all players to be ready and tells all players to start.
 - 7) The game starts.
 - (b) Alternatives
 - 2.1** The client failed to connect. And hence the player is returned to the main menu.
 - 4.1** The lobby was deleted before the player could join.

Edit options

1. Pre-condition: None
2. Trigger: The player presses the "Options" button.
3. Guarantee: The player's changed options are saved.
4. Scenarios:
 - (a) Main scenario
 - 1) The Player presses the "Options" button.
 - 2) The Player edits one or several options.
 - (b) Alternatives
 - 2.1** The player does not edit any options and hence no options are changed.

Check how to play

1. Pre-condition: None
2. Trigger: The player presses the "How to play" button.
3. Guarantee: The player is presented a how to play menu.
4. Scenarios:
 - (a) Main scenario
 - 1) The player presses the "How to play" button.
 - 2) The player is presented a how to play screen.

Check highscores

1. Pre-condition: None
2. Trigger: The player presses the "Highscores" button.
3. Guarantee: The player is presented the highscores.
4. Scenarios:
 - (a) Main scenario
 - 1) The player presses the "High scores" button.
 - 2) The client presents a high scores screen to the player.
 - (b) Alternatives
 - 2.1** The client failed to connect to the server and hence is presented an empty high scores screen.

Quit game

1. Pre-condition: None
2. Trigger: The player presses the "Quit" button.
3. Guarantee: The game is closed.
4. Scenarios:
 - (a) Main scenario
 - 1) The player presses the "Quit" button.

Move

1. Pre-condition: Player is allowed to move.
2. Trigger: Player presses one of the four move buttons.
3. Guarantee: Player has moved to another location.
4. Scenarios:
 - (a) Main scenario
 - 1) The player presses a move button.
 - 2) The player is moved to another location.
 - (b) Alternatives
 - 2.1** The player was unable to move to this side, and hence is not moved.

Pick up flag

1. Pre-condition: Player is not already carrying a flag.
2. Trigger: The player moved onto a flag.
3. Guarantee: The player is carrying a flag.
4. Scenarios:
 - (a) Main scenario
 - 1) The player moves on top of a flag.
 - 2) The player is now carrying a flag.

Activate block

1. Pre-condition: None
2. Trigger: The player moved on top of a block.
3. Guarantee: The player triggers a block effect.
4. Scenarios:

- (a) Main scenario
 - 1) The player moves on top of a block.
 - 2) A block effect is triggered.

Fire weapon

1. Pre-condition: The player is allowed to fire.
2. Trigger: The player presses the "fire" key.
3. Guarantee: A shot is fired.
4. Scenarios:
 - (a) Main scenario
 - 1) The player presses the "fire" key.
 - 2) The player fires his weapon.
 - 3) The player hits an enemy player.
 - 4) The enemy players health is decreased.
 - (b) Alternatives
 - 3.1** The player misses.
 - 4.1** The enemy players health is negative. Which results in the enemy player dying.

Deliver flag

1. Pre-condition: The player is carrying a flag. The player is in a valid flag drop zone.
2. Trigger: The player enters a base's flag drop zone.
3. Guarantee: The flag is delivered.
4. Scenarios:
 - (a) Main scenario
 - 1) The player moves into his own base's flag drop zone.
 - 2) The player delivers the flag.
 - 3) The player is given his points.
 - (b) Alternatives
 - 1.1** The player enters a neutral base's flag drop zone, and did not claim a base yet. This neutral base becomes his own.

3 Class diagram

4 Message Sequence Charts

4.1 Connect

The following MSC describes the connecting of a client with a server.

4.2 SendReceiveServer

The following MSC describes the sending of data from a client to a server, where the server then processes the data and sends a reply.

4.3 SendReceivePeers

The following MSC describes the sending of data from one client to another client.

4.4 GetHighScoreData

The following MSC describes the retrieval of retrieving the high score data which is stored on the server.

4.5 Create match

The following MSC describes the creation of a match.
The creation of the match follows several steps:

1. Connecting to the server (2-5).
2. Loading the lobby list (6-7).
3. Lobby creation (8-10).
4. Having enough players that are ready (11-12).
5. Starting the game (13).

4.6 Join match

The following MSC describes the creation of a match.
The joining of the match follows several steps:

1. Connecting to the server (2-5).
2. Loading the lobby list (6-7).
3. Joining a lobby (8-10).
4. Having enough players that are ready (11-12).
5. Starting the game (13).

4.7 Edit options

The following MSC describes the editing of the options relating to the game.
The editing of the options has two steps:

1. Getting the options (1-3).
2. While the play did not press close, the play can edit any amount of options (which are instantly saved when edited).

4.8 Check how to play

The following MSC describes the checking of the how to play of the game.

4.9 Check highscores

The following MSC describes the checking of the highscores of the game.

The checking of the highscores has two steps:

1. Getting the highscore data (ref GetHighScoreData, section TODO.4)
2. Display the highscore data.

4.10 Quit game

The following MSC describes the quitting of the game.

4.11 Move

The following MSC describes the move action in the game.

Movement in the game is described in two steps:

1. Notifying other peers in the game of the move (1-3).
2. All peers update their respective players (4-5).

4.12 Pick up flag

The following MSC describes the pick up flag action in the game.

The picking up of a flag can be divided in two steps:

1. Picking up the flag, and notifying other peers of it (1-3)
2. Showing the fact that the player has picked up flag to all other players (4).

4.13 Activate block

The following MSC describes the activate block action in the game.

The activation of a block can be divided in two steps:

1. Colliding with the block (1)
2. Stating the fact that there has been a collision with a block to other peers (2-3).
3. Updating the effect of the player activating the block on all peers (4).

4.14 Fire weapon

The following MSC describes firing in the game.

The firing divided in two steps:

1. The player firing (1)
2. Notifying all other peers of the fact that player fired (2-3).
3. Update player health in response to the firing (4-5).

4.15 Deliver flag

The following MSC describes delivering a flag in the game.

Delivering a flag can be divided in several steps:

1. The player moves (ref Move, section TODO.11).
2. The player is in the drop zone (1).
3. Notify all other peers that the player moved into the drop zone (2-3).
4. Open the doors of the base in which drop zone the player is (4-5).
5. The flag is delivered (6).
6. Notifying all the other peers of the player delivering a flag (7-8).
7. Either the flag is delivered and points are given to the player (9-10) or the base is claimed, and a point given to the player (11-12).

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