

# RealEstate Requirements Specification

## Traditional Requirements

**Version 1.2**  
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## **I. Introduction**

This system is a Monopoly-like computer game called RealEstate. RealEstate provides several features we can see in the Monopoly board game. This document describes the requirements of RealEstate.

## **II. Functional Requirements**

### **FR0. Game Initialization**

FR0 provides the initialization of the game.

#### FR0.1 Enter Player's Information

After the game has started, the system shall query the players for the total number of players. If the number of players is less than two or greater than 8, the system shall re-query the players. Otherwise, the system shall query each player for their name. After every player name is collected, the system shall load the game board and populate the player information area with player name and initial cash value of \$1500.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01).

Priority: 1

Implementation Completed Date: July 9, 2004

### **FR1. Player Movement**

FR1 describes the rules of the movement.

#### FR1.1. Roll Dice

There shall be two dice in the game. Each dice shall have six faces. The player's movement shall be based on the sum of the value of each die roll. If the dice roll is

two (each die has a value of one), the player shall move forward two cells; if the dice roll is three, the player shall move forward three cells; etc.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 9, 2004

#### FR1.2. Play in Turn

RealEstate is a turn-based game. The players shall play in turns in this game. Player sequence shall be determined by the order the names are entered before the game starts. A player's turn shall end when the player presses the End Turn button.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 9, 2004

### FR2. Cells

FR2 describes the rules of different types of cells that are used in the game.

#### FR2.1. Pass Go Cell

When the player passes or lands on the Go cell, the player shall get paid \$200.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 14, 2004

#### FR2.2. Jail Cell

A player shall be sent to jail by either landing on the Go to Jail cell or drawing a go to jail card. The player shall pay \$50 in bail money to get out of jail at their next turn. If a player lands on jail as the result of a dice roll, the player is just visiting and the player will not have to pay money to leave the jail cell on the next turn.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 14, 2004

#### FR2.3. Do Nothing on Free Parking

When the player lands on the Free Parking cell, nothing shall happen.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 14, 2004

#### FR2.4. Go to Jail

When the player lands on the Go to Jail cell, the player shall be sent to the Jail cell. The player shall not receive \$200 if she or he passes the Go cell on the way to the Jail cell.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 14, 2004

#### FR2.5. Tradable Cells

When the player lands on a tradable cell, including properties, railroads, and utilities, she or he shall have a chance to buy that cell given that the cell is available and the player has enough money. If the player clicks on the Buy button, the cell shall be sold to the player and the price of the cell will be deducted from the player's money. See FR3 for the price rules of the properties, railroads, and utilities.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 15, 2004

#### FR2.6. Draw Card

When the player lands on a card cell, including Community Chest and Chance, she or he shall click on the Draw Card button and draw a card from the Community Chest or Chance. The player shall perform the actions specified in the cards. See FR4 for the rules of the cards.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 16, 2004

### **FR3. Tradable Cells**

Tradable cells are properties, utilities, and rail roads. When a player lands on an available tradable cell, she or he shall have a chance to buy that cell. If player A lands on a tradable cell that is owned by player B, A shall pay rent to B based on the rent system of the cell type player A has landed on.

#### FR3.1. Buy Properties

When a player lands on an available property cell, the player shall have a chance to purchase it. The price shall be the land value of that property.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 15, 2004

#### FR3.2. Buy Utilities

When a player lands on an available utility cell, the player shall have a chance to purchase it. The price shall be \$150. The game board shall have no more than two utility cells.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 15, 2004

#### FR3.3. Buy Rail Roads

When a player lands on a rail road cell, the player shall have a chance to purchase it. The price shall be \$200. The game board shall have no more than four railroad cells.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 15, 2004

#### FR3.4. Pay Rent to Properties

When a player A lands on a property cell owned by another player B, A shall pay rent to B. If there is no house on the cell, A shall pay the base rent of the cell. If there are  $n$  houses on the cell, the rent shall be (base rent \* (number of houses + 1)).

Priority: 2

Implementation Completed Date: July 15, 2004

#### FR3.5. Pay Rent to Utilities

If player A lands on player B's utility, player A shall pay rent to player B based on a dice roll and the number of utilities player B owns. If player B owns one utility the system shall charge player A rent of 4 times the dice roll. If player B owns two utilities the system shall charge player A rent of 10 times the dice roll.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 15, 2004

#### FR3.6. Pay Rent to Rail Roads

If player A lands on player B's rail road, A shall pay rent to B based on the number of railroads B owns. The base rent of railroads shall be \$50. If the number of the railroads B owns is  $N$ , the amount of rent A shall pay B is  $\$50 * 2^{N-1}$ .

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 15, 2004

#### FR3.7. Build Houses

A player has a series of a color group if she or he owns all the property cells in the color group. During a player's turn, before she or he rolls the dice, the player shall have a chance to buy houses for the series she or he owns. A player shall not build more than five houses on one cell.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 15, 2004

### FR4. Cards

There shall be two decks of cards in the game: Community Chest and Chance. When a player lands on a Community Chest cell or a Chance cell, the player shall draw a card from the top of the Community Chest cards or Chance cards, respectively. There are four types of cards in the

RealEstate game. Both the Community Chest and Chance decks may contain any of the four types of cards defined below.

#### FR4.1. Draw jail card

If the player draws a jail card, the system shall move the player to jail. If this move causes the player to pass the Go cell, the player shall not receive the \$200 salary from the system.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 16, 2004

#### FR4.2. Draw lose money card

If the player draws a lose money card, the system shall decrease the player's money by the amount specified on the card.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 16, 2004.

#### FR4.3. Draw gain money card

If the player draws a gain money card, the system shall increase the player's money by the amount specified on the card.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 16, 2004.

#### FR4.4. Draw move player card

If the player draws a move player card, the system shall move the player to the specified cell. If this move causes the player to pass the Go cell, the player shall receive \$200 salary from the system.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 2

Implementation Completed Date: July 16, 2004

### FR5. Trading

#### FR5.0. Trading Owned Properties

A player (A) shall have the chance to buy properties from another player (B) during A's turn, before A rolls the dice. The trading shall begin when A clicks the Trade button. A shall select which player to trade with, and which tradable cell to buy. A dialog shall pop up to ask B whether he or she agrees with the price. If B clicks the Yes button in the dialog, the amount of money they agreed upon shall be transferred from A to B, and the selected tradable cell shall belong to A. If B clicks No, nothing shall happen.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 16, 2004

### **III. Nonfunctional Requirements**

#### **NR1. Performance**

The system shall wait for all user inputs, and execute only the necessary functions given a user input to the system. All functions shall be completed quickly.

##### NR1.1. User response

The system shall respond to any user input within 0.01 seconds.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 9, 2004.

##### NR1.2. Update user data

The system shall update user data within 0.01 seconds.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 9, 2004.

#### **NR2. Usability**

A user shall be able to determine quickly what player options they have to perform.

##### NR2.1. Player options

A user shall only have access to functionality that is allowed to them at a given time.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 3

Implementation Completed Date: July 17, 2004.

##### NR2.2. User Interface

The system shall allow a user to interface with it through mouse events on buttons and drop down boxes and keyboard events on text fields. The amount of user keyboard input shall be minimized by the system to include only entering the number of players, player names, and a trade price.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 29, 2004.

##### NR2.3. User Errors

The system shall catch improper input from all text fields in the system.

Origin: Interview with Mr. Gegick on May 1, 2004 (Interview #I03SC01)

Priority: 1

Implementation Completed Date: July 21, 2004.

#### **IV. Constraints**

All code development shall be done with the Java programming language.

All testing shall be done using JUnit and FIT.





## VI. Development and Target Platforms

1. Windows XP Operating System
2. Intel Pentium IV processors
3. Eclipse IDE

## VII. Project Glossary

**cell:** a box on the game board on which the players land. Cells can be houses, utilities, rail roads, jail, or “pick a card” slots.

## VIII. Document Revision History

Version	1.2
Name(s)	Sarah Smith
Date	April 18, 2006
Change Description	Updated requirements with minor clarifications and name changes.

Version	1.1
Name(s)	Laurie Williams
Date	July 22, 2004
Change Description	Updated priorities and dependency chart

Version	1.0
Name(s)	Dright Ho and Sarah Smith
Date	July 19, 2004.
Change Description	Original creation of the SRS.