Revision History

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 11/03/2014 | 1.0 | Initial version | A. Emre Ünal |
| 12/03/2014 | 1.1 | Add user requirement tests | Erdi Gültekin |
| 16/03/2014 | 1.2 | Add game and network req. tests | Erdi Gültekin |
| 16/03/2014 | 1.2.1 | Updated test codes | A. Emre Ünal |

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# Introduction

## Document overview

This document is the software test plan of the TicTacToe game software development project. It contains the description of tests.

## Abbreviations

The TicTacToe game software project: “the game” or “the software”

The TicTacToe game software project’s GitHub repository page: “the repo”

## References

| # | Document Identifier | Document Title |
| --- | --- | --- |
| [R1] | SRS | Software Requirements Specifications of the TicTacToe game. |

## Conventions

JUnit test code implementation will follow the standard Java Programming Language code conventions, found on <http://goo.gl/srJN2t>.

# Tests preparations

This section contains tasks and recommendations before executing tests.

## Hardware preparation

The game requires nothing more than a functional machine for the local multiplayer mode testing.

For remote multiplayer mode testing, it is required to have a basic TCP/IP stack (which would require a network card) for 2 localhost instances.

## Software preparation

The client must have Java Runtime Environment v1.7, JUnit v4 and Eclipse v4.2 installed to run the game. To run local multiplayer mode tests, that’s all that is required.

To run remote multiplayer mode tests, a basic TCP/IP stack that supports localhost loop-back is required.

## Other test preparation

None.

## Safety, security and privacy precautions

None.

# Test descriptions

## User Requirements Tests

* **T-SRS-REQ-101:** Verifies that the user can play a local game
* **T-SRS-REQ-102:** Verifies that the user can join a remote TicTacToe game
* **T-SRS-REQ-103:** Verifies that the TicTacToe game can host a network game

## Game Requirements Tests

* **T-SRS-REQ-001:** Verifies that the “Local Game” button creates a game for two players on the same computer
* **T-SRS-REQ-002:** Verifies that the game is checking if it is the player’s turn and the clicked button is not occupied
* **T-SRS-REQ-003:** Verifies that the local game can be ended successfully
* **T-SRS-REQ-004:** Verifies that the network game can be ended successfully

## Network Requirements Tests

* **T-SRS-REQ-005:** Verifies that the system can host a game
* **T-SRS-REQ-006:** Verifies that the system can join a remote game
* **T-SRS-REQ-007:** Verifies that the system can handle a wrong IP address
* **T-SRS-REQ-008:** Verifies that the system works properly on network
* **T-SRS-REQ-009:** Verifies that the system can handle network problems

# Tests

## User Requirements Tests

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| **Test ID** | **T-SRS-REQ-101** |  |
| Test desc. | Verifies that the user can play a local game |  |
| Verif. Req. | SRS-REQ-101 LOCAL [R1] | Demonstration |
| Init. Cond. | TicTacToe game is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | Game can be played in local machine with local players. | If the game is playable, then the test is successful. If not, the test has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator starts local game | Local game is started |
| 2 | Operator plays the local game | Game is playable |
| 3 | Operator finishes the game | Game finishes and result is shown in the game window |

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| **Test ID** | **T-SRS-REQ-102** |  |
| Test desc. | Verifies that the user can join a remote TicTacToe game |  |
| Verif. Req. | SRS-REQ-102 JOIN [R1] | Demonstration |
| Init. Cond. | TicTacToe game is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | The user can join a game through the network, to play with a remote opponent. | If the user can join a game through the network, play and finish the game, the test is successful. Otherwise the test has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator joins a remote game | Remote game is started |
| 2 | Operator plays the remote game | The game is playable |
| 3 | Operator finishes the game | Game finishes and result is shown in the game window |

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| **Test ID** | **T-SRS-REQ-103** |  |
| Test desc. | Verifies that the TicTacToe game can host a network game |  |
| Verif. Req. | SRS-REQ-103 HOST [R1] | Demonstration |
| Init. Cond. | TicTacToe game is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | User can host a network game and play with a remote opponent. | If user can host the game and play with an opponent, the test is successful. Otherwise, the test has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator creates a network game and an opponent connects from a remote computer | Network game is started and opponent is connected |
| 2 | Operator plays the game | The game is playable |
| 3 | Operator finishes the game | Game finishes and result is shown in the game windows. |

## Game Requirements Tests

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| **Test ID** | **T-SRS-REQ-001** |  |
| Test desc. | Verifies that the “Local Game” button creates a game for two players on the same computer |  |
| Verif. Req. | SRS-REQ-001 [R1] | Demonstration |
| Init. Cond. | TicTacToe is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | The game is playable by two players on the same computer | If game is playable by two players, then test is successful. Otherwise it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator click on the “Local Game” button | Local game is started |
| 2 | Operator can play the game | The game is playable |

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| **Test ID** | **T-SRS-REQ-002** |  |
| Test desc. | Verifies that the game is checking if it is the player’s turn and clicked button is not occupied |  |
| Verif. Req. | SRS-REQ-002 [R1] | Demonstration |
| Init. Cond. | Local game is opened and it is not finished |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | The system is changing the turn between users and checking if the button is not occupied | If system is changing the user turn accordingly and checks the button if it is not occupied, then test is successful, otherwise it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator makes several moves | System changes the user’s turn in each move |
| 2 | Operator tries to click on an occupied button | Button is unclickable, system is unaffected |

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| **Test ID** | **T-SRS-REQ-003** |  |
| Test desc. | Verifies that the local game can be ended successfully |  |
| Verif. Req. | SRS-REQ-003 [R1] | Demonstration |
| Init. Cond. | Local game is set a move before finish |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | Game is finished and gave a message indicating the winner | If the game is finished and the winner is stated, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator makes the finishing move | System ends the game, gives a pop-up message indicating the winner and redirects the user to the main screen |

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| **Test ID** | **T-SRS-REQ-004** |  |
| Test desc. | Verifies that the network game can be ended successfully |  |
| Verif. Req. | SRS-REQ-003 [R1] | Demonstration |
| Init. Cond. | Network game is set a move before finish |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | Game is finished and gave a message to both players indicating the winner | If the game is finished and the winner is stated, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator makes the finishing move | System ends the game, gives a pop-up message indicating the winner and redirects the users to the main screen |

## Network Requirements Tests

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| **Test ID** | **T-SRS-REQ-005** |  |
| Test desc. | Verifies that the system can host a game |  |
| Verif. Req. | SRS-REQ-004 [R1] | Demonstration |
| Init. Cond. | TicTacToe is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | System can host a game, and game can be played with a remote opponent. | If system can host a game, test is successful. Otherwise, the test has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator clicks “Host a Game” button | System hosts a game and awaits for an opponent |
| 2 | Operator joins the game from a remote computer | System accepts the remote computer and starts the game |

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| **Test ID** | **T-SRS-REQ-006** |  |
| Test desc. | Verifies that the system can join a remote game |  |
| Verif. Req. | SRS-REQ-005 [R1] | Demonstration |
| Init. Cond. | TicTacToe is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | System can join a remote game | If system joins a remote game, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator clicks “Join a Game” button | System asks the IP address of the remote game |
| 2 | Operator enters the IP address of the remote game | System connects to the remote system and game starts |

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| **Test ID** | **T-SRS-REQ-007** |  |
| Test desc. | Verifies that the system can handle a wrong IP address |  |
| Verif. Req. | SRS-REQ-005 [R1] | Demonstration |
| Init. Cond. | TicTacToe is started and idle |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | System can join a remote game | If system joins a remote game, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator clicks “Join a Game” button | System asks the IP address of the remote game |
| 2 | Operator enters a wrong IP address | After 5 seconds system gives an error message to user |

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| **Test ID** | **T-SRS-REQ-008** |  |
| Test desc. | Verifies that the system works properly on network |  |
| Verif. Req. | SRS-REQ-006 [R1] | Demonstration |
| Init. Cond. | Network game is set up |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | Both players can play the game over the network | If system is working on the network, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator makes moves on the host computer | System reflects changes to remote computer |
| 2 | Operator makes moves on the remote computer | System reflects changes to host computer |

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| **Test ID** | **T-SRS-REQ-009** |  |
| Test desc. | Verifies that the system can handle network problems |  |
| Verif. Req. | SRS-REQ-007 [R1] | Demonstration |
| Init. Cond. | Network game is set up |  |
| Tests inputs | N/A |  |
| Data collection | N/A |  |
| Tests outputs | N/A |  |
| Assum & constr | N/A |  |
| Expected results and criteria | System is handling possible network problems | If system is giving a pop-up message indicating the problem, test is successful. Otherwise, it has failed. |
| **Test procedure** |  |  |
| **Step number** | **Operator actions** | **Expected result and evaluation criteria** |
| 1 | Operator cuts the internet connection of one of the machines | System will give a message indicating that there is no connection after 5 second |