

Software Requirements Specification

for

NWTTT (Net Worked Tic-Tac-Toe)

Version <1.00.00>

Prepared by

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|  |  |
| Date: | 10/07/2016 |
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Revisions

| Version | Primary Author(s) | Description of Version | Date Completed |
| --- | --- | --- | --- |
| Draft Type and Number | Full Name | Information about the revision. This table does not need to be filled in whenever a document is touched, only when the version is being upgraded. | 00/00/00 |

# 

# Introduction

The final product shall be a game of tic-tac-toe that may be played by two players over a network, or against the computer in single player mode.

This section will provides the basic outlines of the project.

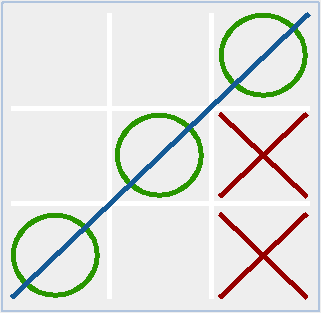
## Document Purpose

The purpose of this document is to describe the objective of the game, and the system requirements (functional/nonfunctional) of Net-Worked Tic-Tac-Toe, “NWTTT”. This document is describing version 1.00.00 of this game. The system is a game, and the actor(s) shall be human player(s). This program makes it possible to play tic-tac-toe against computer, or two players from separate machines, through Wi-Fi.

## Product Scope

This program shall be a smart tic-tac-toe game, with a Graphical User Interface. The game makes moves based on what is calculated as the best possible move. As figure 1.2.1 shows, Tic-tac-toe is a game comprised of a 3x3 board, with two players who are each assigned a different symbol. Each player takes turns placing their designated symbol in an empty square. The objective of the game is to have three symbols in a row, column, or diagonal. The program will contain the option to be networked between two players over two computers, or to a player against machine.

**Figure 1.2.1**



## Intended Audience and Document Overview

The readers of this document will be our professor, Dr. Zhao, and it describes product perspective, product functionality, users and characteristics, and all functional and non-functional requirements of the product. The document is organized into general functional requirements, specific functional requirements, and non-functional requirements.

## Definitions, Acronyms and Abbreviations

* NW shall represents Network.
* TTT shall be used in place of Tic-Tac-Toe

## Document Conventions

* Bullet point shall be used as a mechanism for displaying lists.
* Figure Numbers shall be in bold font

## References and Acknowledgments

# Overall Description

## Product Perspective

The product is a game, and it should be used as entertainment. This game shall be played with one or two human players. The user can play the game “TTT”, against another player through the network, or play against the machine.

Router

Client

Server

## Product Functionality

While in 2 player mode users shall have access to the following aspects of the software:

* Chat dialog box, allowing communication between the two players.
* Score Record of the previous games.
* Ability to change the background
* Ability to choose marker symbol
* Access to help document

Single player game aspects shall be as below:

* Score Record of the previous games.
* Ability to change the background
* Ability to choose marker symbol
* Ability to select the difficulty level of the game
* Access to help document

## Users and Characteristics

The potential user of this product is anyone who has access to a computer that can run a java application, and is interested in playing Tic-Tac-Toe. To play the game over the network, a game partner, and a established network shall be necessary.

## Operating Environment

Running this software shall be possible on any Operating System that can run executed java application. To play the game over the network, and a established network shall be necessary.

Running the application shall be possible on any home or business computer.

## Design and Implementation Constraints

This product is coded in Java platform, using the default java libraries. GUI should be developed using Window Builder (Swing). Java JRE shall be a requirement for developers to compile and run the code.

In order to test or develop changes in 2 player function, Stable Network connection is a requirement, and developer shall be able to give access to a communication port (prefrabily port 1204), over the potential firewall(s).

## User Documentation

There shall be a help page available for users, which will include the basics of game, and required descriptions of the game.

## Assumptions and Dependencies

A network is a requirement for two player function of the game, and not having access to an stable open port on the network will restrict the functionality of the software.

# Specific Requirements

## External Interface Requirements

### User Interfaces

The main window includes the items below:

* An option for of playing one or two player
* An option for changing the marker
* An option for changing the background
* Showing who’s turn it is.
* Showing the game results

Single player game functions:

* Changing the difficulty level

Network based game functions:

* A field to change the IP of the target Server (if client)
* A field to type and send a message to the other player
* A chat dialog box to display the communication with the other player

### Hardware Interfaces

Not Applicable

### Software Interfaces

The final product shall be able to run under Windows 7 and later version of Windows, and Linux mint.

### Communications Interfaces

A network is a requirement for two player function of the game, and it is necessary to have access to a stable open port on the network, and both computers need to be on the same network.

## Functional Requirements

While in 2 player mode users shall have access to the following aspects of the software:

* Chat dialog box, allowing communication between the two players.
  + Chat dialog box shall have a send button, or detect a character (for example ENTER), as a send command
  + Chat dialog box shall have display the previous conversation, in a way that players should be able to detect which comment belong to which player
* Score Record of the previous games.
  + Number of wins by player
  + Number of wins by opponent player
  + Number of ties
* Ability to change the background
* Ability to choose marker symbol
  + There shall be two options available to choose from
* Access to help document

Single player game aspects shall be as below:

* Score Record of the previous games.
  + Number of wins by player
  + Number of wins by opponent player
  + Number of ties
* Ability to change the background
* Ability to choose marker symbol
  + There shall be two options available to choose from
* Ability to select the difficulty level of the game
* Access to help document

## Behaviour Requirements

### Use Case View

|  |  |
| --- | --- |
| Single Player System  Submit a Move    Change Background  Receive a Message  Send a Message  Check Scores  Change Symbol      Player  Access to Help  Change Difficulty | Two Players System  Submit a Move  Change Background  Receive a Message  Send a Message  Check Scores  See IP (if Server)  Set Server’s IP (if Client)  Access to Help  Change Symbol  Other Player over the Network  Player |

# Other Non-functional Requirements

## Performance Requirements

* Setting network shall not be more than seeing IP-Address on Server side, and entering the same IP address on Client side. All other settings, including which port is being used, and what are the network settings shall be set in codes
* Submitting the move on GUI shall not take more than a second
* Product shall show a diagonal, vertical, or horizontal winning line, to make it easier for user to see how the winning happens
* Each symbol shall have a different color and shape

## Safety and Security Requirements

* Product shall close the network port, at the time of exiting program
* Product can only receive a single connection trough the port
* Product shall not make any edit on other software on the system Product shall not provide any data for other software on the system, unless required for product’s main functionality
* Product shall not provide any data for other software on the system, unless required for product’s main functionality
* Product shall not send any user data to any system other than the client side of the game
* Product shall not send any user data other than product’s functionality commands, and chat comments

## Software Quality Attributes

* Product shall have a re-sizable user interface, so that the symbols and the board re-size do not deform
* There should be buttons and/or shortcut keys, visible for player to start or quit the game with only one click or push of a button (or combination of at most two buttons), to start or quit the game

# Other Requirements

Appendix A – Data Dictionary

Appendix B - Group Log

