Battleship

Problem Statement

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TABLE OF CONTENTS

1 INTRODUCTION

Battleship is a classic board game that is based on trying to guess the locations of ships on a 10x10 grid. At the beginning of the game each player places their 7 ships of varying sizes on the grid. Players then take alternating turns to guess where the other players' ships are. Once a ship has been hit the necessary number of times, it is sunk. The game continues until all of one player's ships are sunk.

2 HIGH LEVEL PROBLEM SUMMARY

2.1 ELEVATOR STATEMENT

We are going to create a Java-based application that allows a player to play battleship against an AI opponent.

2.2 SCOPE

Our project includes a java application that allows for a player to easily interact with it to play battleship. The player will alternate making moves with the AI opponent. There will also be support for two languages.

3 DETAILED PROBLEM STATEMENT

3.1 FUNCTION

Our project will have the basic functionality of the regular battleship board game as well as a few expansions on the original rules. The opponent will be a computer AI and there will be help menus available that support multiple languages.

3.1.1 GAME SETUP
The user can make a few different choices on game setup before starting a game of battleship.
- Size of the board
- Number of ships
- Size of each ship
- Number of shots per turn

3.1.2 GRAPHICAL USER INTERFACE (GUI)
Once the game has been setup, the user will begin to play.
- The user will see two different boards
  - Board 1 is used to place the user's ships and track the opponents shots
  - Board 2 is used to track the user's shots on the opponent's board

3.1.3 AI OPPONENT

The user will have an AI opponent for the game. The AI will shoot randomly until it makes a hit. After the AI has made a hit, it will aim for the spots above, to the right, below, and to the left of the hit until it determines which direction the ship is facing. When the direction has been determined, the AI will follow that course until the ship has been sunk. Once the AI has sunk the ship, it will resume shooting randomly and repeat the described process.

3.2 FORM

3.2.1 AVAILABILITY
- Desktop application for quick and easy access

3.2.2 USABILITY
- Easy to understand and use
    - Well laid out user interface
    - Useful help menus
- Compatible with at least two languages
- Compatible with Windows machines (XP and greater)

3.2.3 PERFORMANCE
- Support for one user at a time
- Uptime should exceed 95%

3.2.4 MAINTAINABILITY
- Software should be self sufficient
- Users will be responsible for updating the application

3.3 ECONOMY

We predict no monetary cost to be associated with the development of our Battleship board game. The major cost associated with this project will be the person-hours it will take to implement it, and of course the 'opportunity costs' for those involved such as forgone profits, better grades, or more sleep.

Due to our low development costs, we currently have no purchase price attached to the Battleship game. In the event that the game does go public, and the product is optimized to the point that it is worthy of a market price, this stance may change. The draw of our product is purely in its entertainment value. As such, our market will be the general public, specifically those interested in virtual board games. As mentioned above, we plan to include support for 2 languages, opening the market to more than just English speaking users.

3.4 TIME

Battleship, like many board games, is a timeless product. The market for such a game is rather unchanging. This installment of the game is not meant to necessarily replace any existing product, but is

simply an adaptation of the classic game to convenient digital form. There is a possibility that an untapped market exists for this product should we choose to extend the networking capability of this product. With the recent popularity of handheld board games such as "Words with Friends", "Hanging with Friends", and other such games, the casual gaming public may be interested in a simple battleship game. Compared to most technology, games like battleship and the like are rather long-lived because, rather than relying on satisfying needs for efficiency or convenience, they are simply a diversion. As the lazy people we are, our diversions need not always be cutting-edge.