Software Requirements Specification

For

Basic Blind Chess

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1. **Introduction**

1.1 **Purpose**

This document includes software requirements for Basic Blind Chess Beta version. Basic Blind Chess is an Open Source Software distributed under the terms of Creative Commons Attribution Non-Commercial License V2.0. The system is very small so it can be easily transferred from one computer to another. In this form are analyzed the basic characteristics and the features of the program and other necessary information on how those are implemented.

1.2 **Intended Audience**

The document is intended for:
 Users: in order to get familiar and play Blind Chess.
 Developers: who want to improve the AI and expand the capabilities of the game with their own code.
 Testers: in order to have the exact list of the features and functions that have to respond.

1.3 **Project Scope and General Characteristics**

Blind Chess is a small open source program which can be downloaded free and it can be easily transferred from computer to computer by a simple USB stick. It can operate in any Windows Version (95/98/2000/XP/Vista/7) and in Linux . For Linux users it is required to install Python 2.x and Pygame before the installation of the game. Blind Chess is also known as "Banqi" or "Half Chess", is a two-player Chinese strategy and

luck board game played on a 4x8 grid or half of the Xiangqi(Chinese Chess) board. This application is using **Taiwan rules**.

1.4 References

More about Basic Blind Chess can be found:

- **http://sourceforge.net/projects/darkchess/**

In this website you can find out more about the project and discuss any questions in the forums. You can go back and look at previous releases, code and problems that have been solved. There you can also find information about the developers as well as the project's main characteristics such as programming language and algorithms

2. Overall Description

2.1 Product Respective

Since this is an open source program it is under the **Creative Commons Attribution ShareAlike License V2.0 or later**, so the source code is free to download. There are various reasons why should anyone use this program. First it is very easy to install, run and use. It is safe and reliable. And finally due to its open source nature anyone can modify it according to its needs.

The program contains one main component which consists from the board of the game and the pawns which are used through the game.

2.2 Product Features

The Basic Blind Chess provides the player with the following functions:

- **Start of the game:** When Basic Blind Chess is opened the pawns automatically are placed on the board so the game can start straight.

- **Playing the game, Rules:** Players are free to play with the game and experiment with it, following its rules.

- **Restart of the game:** Players have the choice to restart the game at any point and start playing again in a new board.

2.3 User Classes and Characteristics

Although the game uses Chinese symbols anyone that knows the rules of the game and can understand the symbols on the pawns can use it without any problem.

2.4 Operating Environment

The program will operate in the following operating environments:

- Windows (95/98/2000/XP/Vista/7)

- Linux, Python 2.x and Pygame must be installed for the use of the program

2.5 Design and Implementation Constrains

1. The program contains read me file only in Chinese and although it is pretty easy to install it, some non-Chinese users may have difficulties installing it.

2. The program does not contain a manual on how the game is played, so new players can not get familiar with it.

3. There is only one difficulty level so after you manage to win the program several times, it stops being interesting.

4. Users can not save their current game so if the game is closed it can not be continued and there for they have to start a new one.

5. There is no option menu where a player can make some usual changes.

2.6 User Documentation

Here is the official link of the project where you can retrieve more information about it and get the latest version:

http://sourceforge.net/projects/darkchess/

http://sourceforge.net/users/movep

3. System Features

In this chapter we make a detailed description of the features we mentioned in the previous chapter. We analyze the different possible choices the user has and the rules he/she has to follow. Also there are represented some interesting strategies for the new players.

3.1 Start of the Game

After the installation of the game the user must run the darkchess.exe file for the beginning of the game. When he/she does a window must appear with the board of the game and the 32 pieces placed on it up-side-down.

3.2 Symbols and Pieces

In Blind Chess there are total 32 pieces, 16 red and 16 black. Each of the 2 players has a color and the respective pieces. Those are the pieces:

General, Marshall, King	

Advisor, Guard, Minister	仕 士
Elephant	相 象
Chariot, Rook	車 車
Horse, Cavalry	馬 馬
Soldier, Private, Pawn	兵 卒
Cannon Catapult	炮 炮

3.3 Playing the Game, Rules

Getting Started:

When the game start all the pieces must be faced down and their backs must be identical so it can not been known their color or their type. The pieces are placed scrambled so every time they are in different positions.

In Basic Blind Chess when the game stars the program randomly chooses who will be the first player that plays.

The first player turns a piece face up. The color of that piece determines both players colors. If the first piece is red, the first player plays red. If it is black, the first player plays black.
After the first move, the second player must also turn up a piece. Turning up a piece is always legal unless there are no more face-down pieces on the board.

Rank:

Before moving and capturing pieces, it is important to understand the pawns rank. The pieces are ranked with each piece able to capture an equal or weaker piece. The rank form the strongest to the weakest is:

General > Advisor > Elephant > Chariot > Horse > Soldier

The Soldier and the Cannon has some special abilities:

The soldier can capture the General, but the General cannot capture Soldiers. This is significant, since are five Soldiers and only one General. The General can capture any piece but a pawn, and pawns can only capture the king and other pawns. This makes the General more vulnerable than the Advisor (the next lower pieces).

Cannons are the other exception to the rank rule: they can capture any piece including the General , and can be taken by any piece except the Soldier.

The hierarchy can also be shown by this diagram:

Banqi Capture Rules

A cannon can capture any piece.

Each piece can capture the opposing equivalent piece.

Anything except a pawn can capture a cannon.

A pawn can take a king, but a king cannot take a pawn.

A pawn can be captured by any piece except a king.

Among the pieces inside the pink box, higher ranking pieces can capture lower ranking pieces.
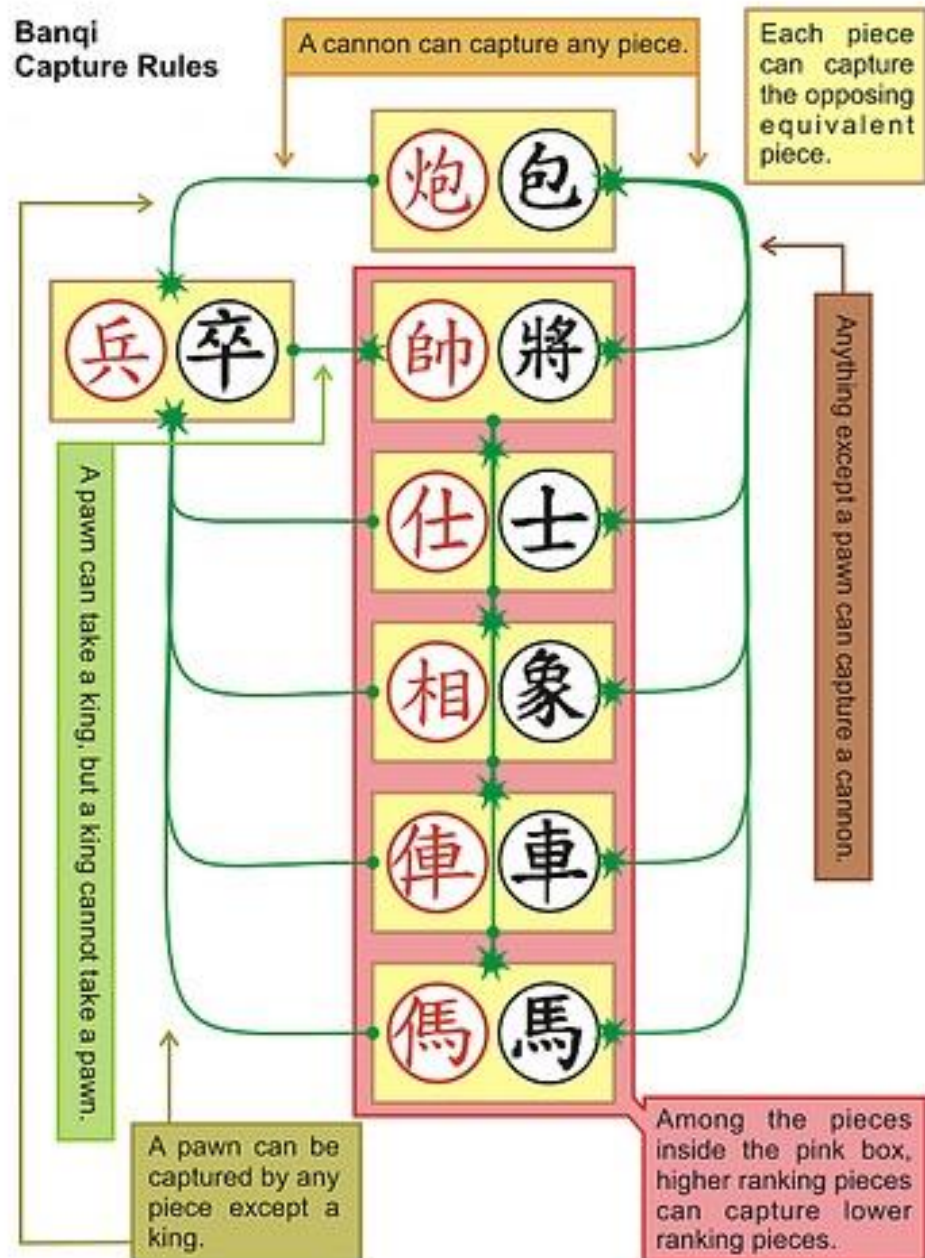
Moving:

Any piece can move up, down, left or right if there is no other piece in that place and as long as it stays in the board.

Capturing, Attacking:

With the exception of the cannon, a piece captures by moning onto a piece it can capture. The captured piece is then removed from the board and replaced by the capturing piece. You may only capture pour opponent's face-up pieces.

The cannon Although it moves normally (orthogonally one space at a time), it captures by jumping over a single piece (of either color, or even face down) and landing on its victim. The jumped piece may be surrounded on either or both sides by empty squares. This is the only way canons can capture.

Game Over:

The game is over when a player cannot make a legal move (cannot move, capture or turn up a piece). In that instance. The other player wins. A player may also choose to resign, or both players may mutually agree to draw.

3.4 Strategy

- **Early Action** - Under Taiwanese rules, playing first is a slight disadvantage. If you turn up a cannon, the opponent can turn up next to it with a high likelihood of capturing the cannon and *no* risk of losing his piece to the cannon. If you turn up anything else, the opponent can turn over a piece one hop away. If he finds a cannon, it can take your piece, but no matter what it is, your piece can't immediately take his. By convention, the new challenger plays first to give the previous game's loser a slight advantage.

- **Chance** - It is difficult to form strategy early on, since all pieces are hidden. This is a disadvantage to experienced players, who cannot follow a formulaic win strategy.

- **Royalty** - Incidentally, the life of the general is not the point of this game; the game does not end because of the general's death. In fact, both generals usually die long before the end of the game. The game ends only when one player has no legal move. Blind Chess is often a game of attrition.

- **Soldiers** - Since there are five opposing soldiers, the mighty general is perversely vulnerable, and frequently the general turns out to be worthless in the face of a soldier front. This vulnerability makes the second-highest rank, chariots in Hong Kong or advisors in Taiwan, the most powerful pieces in many games.
  - It is often advantageous to search out and destroy the enemy soldiers, which the opponent may overlook as less valuable pieces. Once the enemy soldiers are eliminated, the general can roam free across the field in relative safety, vulnerable only to attacks by cannons and the opposing general.

- **Cannons** - Under Taiwanese rules, the cannon has devastating potential if it is well placed behind a shield of strong allied pieces. Given such position, a cannon can be stronger than either general or advisor, especially if the opposing general and/or advisors have limited lateral mobility—that is, if they can't sidestep a cannon attack. On the other hand, the opponent has plenty of pieces that can capture the cannon if only they can get next to it, so a poorly placed Cannon is usually short-lived. Most players will readily sacrifice a horse, chariot, or elephant to capture a cannon.

- **Hidden Pieces** - Play is often directed by the face-down pieces. Pieces are vulnerable in a dead-end "tunnel" (a sequence of empty squares one square wide, surrounded by face-down pieces), in which there is no escape from a pursuing enemy piece.
  - If there is enough space between you and the attacker, you will have time to turn up some face-down pieces before the attacker closes on you. If you get to an open area at least 2 x 2 in size, you can use that "rotation space" to dodge a single enemy piece by sidestepping. You can sometimes create a rotation space by turning up a smaller enemy piece on the inside corner of a bend in the tunnel, or

you might be able to punch through a wall of the tunnel to reach an open area on the other side.

- It is often important to keep track of what pieces are still face-down. Usually this is done by checking both the "graveyard" for dead pieces and the playing field for live pieces; by the process of elimination you can figure out what must still remain.

- **Resignation** - A player may simply resign if the game seems lopsided.

- **Attrition** - Exchanging equal pieces is usually to the advantage of the player who is ahead. When winning by a sufficient margin, even disadvantageous trades can accelerate victory if chosen carefully.

- **Objective** - Often, the move that will win most quickly (or break an impending stalemate) gives away the most valuable piece. Such moves are often overlooked.

- **Evasion** - Some players derive pleasure from making it as difficult as possible for the opponent to actually coerce the win. Others make a game of seeing how many opposing pieces they can capture before their demise. Some just resign when defeat becomes evident, and start a new game.

- **Parity** - Parity is important, especially in the end game. In situations where only an opposing King and pawn are left with one space between, turn order invariably determines the winner. The pawn's move will produce a stalemate, while the King's move will result in his inevitable capture.

- **Pinning** - It is fairly easy to pin a piece against the edge of the board. Frequently, being pinned or not is the difference between defeat and stalemate.

3.5 Restarting the game

At any point of the game the user can press this button:

Which re-places the board so a new game can be played.

4. External Interface Requirements

4.1 User Interfaces

User interface includes one window which consists from the board game and the Restart Button. Generally the use of the program is pretty simple for a common user who wants to learn and exercise in Blind Chess.

4.2 Communication Interfaces

Basic Blind Chess does no need a connection to Internet to be used. So any updates and new versions should be manually downloaded. Also there is not supported multiplayer gaming.

5. Other Nonfunctional Requirements

5.1 Performance and Safety Requirements

Generally there are no safety or performance requirements for the system. Because of its low system requirements it can be used almost at any computer if it uses the required Software. And because it is open source any user can see its code and realize that there is nothing dangerous for his operating system.

5.2 Software Quality Attributes

- Basic Blind Chess is a small and light project that after it is installed it can be easily used from any user.

- Basic Blind Chess is a project that once it is uninstalled from a computer, leaves no trace. So there is no way any data can be found later.

- Basic Blind Chess is developed under **Creative Commons Attribution ShareAlike License V2.0** or later and can be distributed under those terms.

- Basic Blind Chess can be found and downloaded from http://sourceforge.net/ .