CMPE 250 Project #1 – Simplified Turkish Checkers Game (DAMA)

Due 8.4.2005 Friday at 13:00

1 Introduction

In this project you are going to implement a java application that simulates simplified Turkish checkers game. Turkish checkers is a 2-person board game played on a 8x8 board like chess. Initially, each player (black and white) has 16 identical pieces and they are placed as shown in Figure 1.

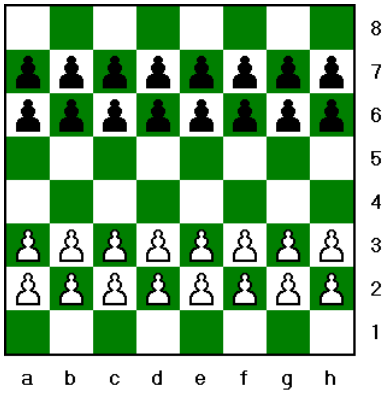

Figure 1: Initial layout of pieces in Turkish checkers

1.1 Rules of Simplified Turkish Checkers

First Move: Initially white player makes a move and players alternate turns.

Winning Condition: First player whose piece reaches to far row of the board wins the game. To be clear, white player wins when a white piece reaches to 8^{th} row and black player wins when a black piece reaches to 1^{st} row. Also if a player cannot move in his turn (either he has no pieces left of all pieces are blocked), he loses the game.

Moving: A piece may move one block forward,left or right if that block is empty. A piece cannot move backward.

Capturing: A piece may capture opponent's piece by jumping over an opponent's piece in the direction of forward, left or right to an empty block adjacent to opponent's piece. When a piece is captured, it is removed from the board. A series of captures can be made with the same piece in a turn.

Greediness: It is *forbidden* to make move if there is an alternative sequence of moves that causes *more* pieces to be captured.

2 Project Details

You are going to implement this simulator as a JAVA application. Example game session will be as follows:

```
>Welcome to CMPE 250 Checkers
00000000 8
BBBBBBBB 7
BBBBBBBB 6
00000000 5
00000000 4
WWWWWWWW 3
WWWWWWWW 2
00000000 1
abcdefgh
White>a3-a4
00000000 8
BBBBBBBB 7
BBBBBBBB 6
00000000 5
W0000000 4
0WWWWWWW 3
WWWWWWWW 2
00000000 1
abcdefgh
Black>a7-a8
Illegal Move
Black>save(game.sav)
Game saved!
Black>e6-e5
00000000 8
BBBBBBBB 7
BBBB0BBB 6
0000B000 5
W0000000 4
```

```
0WWWWWWW 3
WWWWWWWW 2
00000000 1
abcdefgh
White>f3-f4
00000000 8
BBBBBBBB 7
BBBB0BBB 6
0000B000 5
W0000W00 4
0WWWW0WW 3
WWWWWWWW 2
00000000 1
abcdefgh
Black>b5-b4
00000000 8
BBBBBBBB 7
BBBB0BBB 6
00000000 5
W000BW00 4
0WWWW0WW 3
WWWWWWWW 2
00000000 1
abcdefgh
White>f4-g4
According to greediness rule allowed move list:
1.f4-d4
2.e3-e5
White>load(game.sav)
Game loaded!  Black's Turn.
00000000 8
BBBBBBBB 7
BBBBBBBB 6
00000000 5
W0000000 4
0WWWWWWW 3
WWWWWWWW 2
00000000 1
abcdefgh
Black>a6-a5
00000000 8
BBBBBBBB 7
0BBBBBBB 6
B0000000 5
W0000000 4
0WWWWWWW 3
```

```
WWWWWWWW 2
00000000 1
abcdefgh
White>h4-h5
Illegal Move
White>h3-h4
According to greediness rule allowed move list:
1.  a4-a6-a8
White>a4-a6-a8
00000000 8
BBBBBBBB 7
0BBBBBBB 6
B0000000 5
W0000000 4
0WWWWWWW 3
WWWWWWWW 2
00000000 1
abcdefgh
Game Over - White Player Wins!!!
>Would you like to play another game (Y/N)?
```

2.1 Save Game File

Save game file is a simple text file. In the first line there will be one character (B or W) indicating the side of the next turn. The rest of 8 lines is the snapshot of the board.

The content of save game file in the above session is:

```
B
00000000
BBBBBBBB
BBBBBBBB
00000000
W0000000
0WWWWWWW
WWWWWWWW
00000000
```

3 Notes

- For input and output you may use TextIO.java. A sample program that demonstrates the usage is available on the web page. To use this class in your program, simply include the file in the same directory with your main program and compile the source file with "-deprecation" switch ("javac -deprecation TextIO.java").

- The objective of this homework is to familiarize you to object oriented paradigm. Therefore you must first make an object oriented design for the problem and then implement.
- BONUS (10 Pts): Implement the program using GUI.
- Source code should be cleverly commented (Do not abuse!).
- Prepare a well-explanatory (as informative as possible) design and implementation document for your project.
- You are required to submit the source code and the document both in electronic form (by e-mail) and hard copy (with a diskette attached). You should compress your .java files and document in a zip file and name it pr_#_StudentID (e.g. pr_1_2000700803.zip) and email to ozer@cmpe.boun.edu.tr with subject CMPE250_pr_#_StudentID _Your-Name (e.g. CMPE250_pr_1_2000700803_Mert Caliskan). You should also include a batch file in your zip file in order to compile and run the program. Name of the batch file will be runme.bat.

  Example runme.bat file:

  javac deprecation .java (omit -deprecation if textio.java is not used)

  java MyClassWithMainFunction
- You can leave hard copy documents to box in front of my office (ETA 202).
- Late giving policy may be too strict, so try to finish on time.
- You may use course mailing list for discussion.
- Do not cheat of fail from the course! (Do not submit source codes found in Internet, too)