

# Project Proposal: Java Chess

Tutorial 10, Group 01

## Overview

This project will design and implement a computer-based chess game using the Java programming language and object-oriented programming. The program will start with a text-based version that will be updated to include a graphical user interface and will have both two player (both human) or one player (vs computer) modes. This proposal is structured with base goals for the game and then stretch goals which will be completed the goals are reached.

## Goals

1. Build a working chess program in Java
2. Achieve an overall grade of A on this project for all team members
3. Make sure that no individual team member gets an F in CPSC 233

## Specifications

### 1. Overall Design

The overall goal of this project is to design and implement chess using the Java programming language and will be based on an object-oriented programming architecture. At its core, the game must have a graphical interface, completely follow **all** rules of chess including en passant, castling, promotions, threefold repetition, fifty-move rule, and be playable as either human vs. computer or human vs. human. This means the game must also be able to recognize valid moves, determine when a game is won (or finishes in a draw), and switch between turns.

### 2. Computer Player

The implementation of a computer player means that there must be some kind of “AI” implemented. The requirements of this project are that computer’s move must be “smarter” than random, but the goals of the AI in this project will be to reach a 1500 Elo rating when playing against other computers and people. The AI player will be part of the core game, and thus *must* be included in the final build. This will be one of the most challenging pieces of the project, as no team member has experience with building something of this nature.

### 3. Extra Features

If time permits once the core game is functional and operating, extra features will be programmed and implemented into the game. These features will be listed and ranked below, but include: a chess clock based on the Fischer design, an option to display legal moves for selected pieces, a notation system which is able to document the moves in games and save them for later review or possibly replay.

## Timeline

February 13<sup>th</sup>

- Architecture and design complete
- Classes decided upon and assigned to team members to code

February 20<sup>th</sup>

- Classes all coded
- Overall code combined into working framework
- Testing commences

February 25<sup>th</sup>

- Class diagram for version 1 complete
- Rough draft of presentation complete
- first draft of readme complete

February 27<sup>th</sup>

- Text based base implementation complete and presented to tutorial
- Updated team contract and project proposal
- Class diagram
- README file

March 13<sup>th</sup>

- First GUI version implemented, base game functioning
- First computer opponent functioning
- Tutorial presentation
- Updated team contract, proposal, class diagram, and README

March 18<sup>th</sup>

- Final piece moves implemented (en passant, castling)
- Draft junit file complete
- Point and click GUI in progress
- AI's improving
- All code documented
- Fischer Clock built and implemented

March 25<sup>th</sup>

- Presentation prepared for final demo
- jUnit tests complete
- ReadMe file complete
- GUI with menus complete

March 27<sup>th</sup>

- Fully functioning GUI version of chess
- Automated tests for logic cases ready
- Updated team contract, proposal, class diagram, and README

### Priority Based Features List

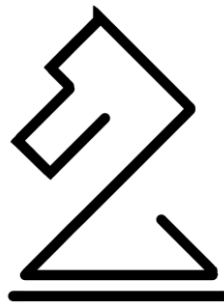
1. Core chess game with all rules, victory check, for two players
2. Computer player that can maintain a 1500 Elo rating
3. Fischer clock
4. Option to display legal moves for each piece
5. Elo rating system
6. Player profiles able to track player's games and Elo rating
7. Notation system able to track games, load game states, and replay games

## Bibliography

Glickman, Mark and Jones, Albyn. "Rating the Chess Rating System." *Chance*, no 12 (1999): 21-28.

Stockfish – Open Source Chess Engine. "About." Accessed February 3, 2019.  
<http://stockfishchess.org/about/>

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