Graded Assignment 1: Chessminal

Due date: March 29, 2018 at 20:00

> *This is an individual assignment. You may discuss it with others, but your formulations, your code, and all the required material must be written on your own. In any case, you must acknowledge the sources used and clearly mention any help received from colleagues.*

Write a program called *chessminal* that implements the chess game. Chess is a very well known game, played for nearly 1500 years. Two players play alternately, according to the rules defined in the *Basic Rules of Play* of the World's Chess Federation (FIDE).[1]

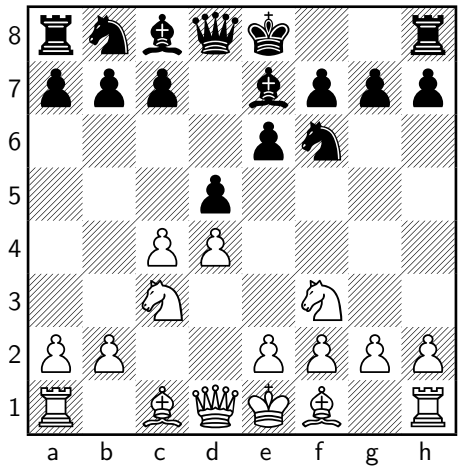
Each player must input her or his move by indicating the initial position of the piece that is going to be moved, followed by the destination position. Invalid moves should be ignored. The game is played by w, the player playing the white pieces, and b, the player playing the black pieces. The game always start with w playing the first move.

The game may end in three ways:

- One player *checkmates* the opponent's king, and therefore wins.
- Both players agree to a draw, in this case they should both input *draw* as their move.
- One player resigns by entering *resign*.

Input is to be read from the *standard input*, one move per line.

For example, suppose we have the chessboard in this configuration:



If the white player wants to capture the pawn in d5 with the pawn in d4 she or he should input:

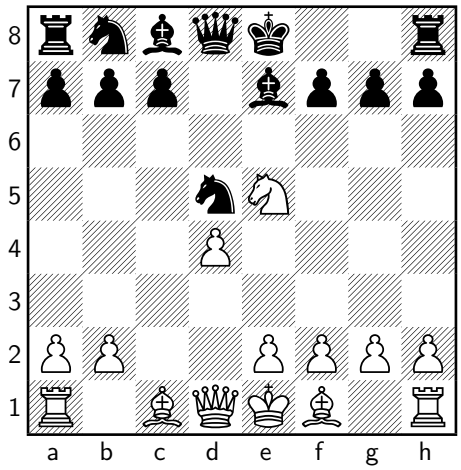
```
c4 d5
```

Suppose that after this input the game proceeds with:

```
e6 d5
c3 d5
f6 d5
f3 e5
```

[1] FIDE Laws of Chess: `https://www.fide.com/FIDE/handbook/LawsOfChess.pdf`

Then the board configuration after these moves should be:



The last line of the output of a finished game must contain the winner of the game denoted by `w` if white won, `b` if black won, or `d` if the game ended in a draw.

Implementation details

You must implement the following functions declared in the header file `chessboard.h` (provided online):

```
void init_chessboard(struct chessboard *cb);
void print_chessboard(struct chessboard *cb);
enum mstatus move(struct chessboard *cb, enum player p, const char *from, const char *to);
```

The first two functions initialize the chessboard and print the current chessboard after each player's move, respectively. The `move` function should receive a move from a player, check if it is valid, and update the chessboard accordingly and return a `mstatus` value, which indicates if the move is valid, invalid, if the move resulted in a *check* or *checkmate*. The header file `chessboard.h` provides all the necessary type definitions.

The `main` function must initialize the board and process the players' moves. After each move, the board should be printed again along with a corresponding message whenever the `move` function returns a status other than `VALID`.

Your system (terminal and file system) must be configured with the UTF-8 encoding, and must support a font that contains the chess symbols from the Unicode character map.

Submit your solution in a single source file named `chessboard.c`.