# Project Summary

Laser chess is a game like chess. It is a game with two sides where both teams have a laser, triangular pieces that have one mirrored side and a king piece with no mirrors. The aim of the game is to use the mirrored pieces on the board to bounce the laser off the mirrors so to laser can reach the king and hit him. Once a team hits the opponents king with their laser they win. During your move you can either move a piece or you king one position in any directions or rotate a piece 90 degrees. The laser always starts at the same position. At the end of your turn, you use your laser and see where it ends. If it goes off the map nothing happens and it is your opponent’s turn, if it hits the non-mirrored side of a piece no matter what team that piece is on that piece is removed from the board and if it hits a king the game is over and the team with the king left standing wins. For our modeling projecting we will be checking if it is possible for the laser to reach the king with our laser in one move on a 5x4 board. 4 mirrored pieces that will all be on our team will be randomly placed on the board to help direct the laser to the king.

# Propositions

P(x,y),(o) , every piece has an (x, y) position, (o) orientation.

* Ex: P(1,1) (NW) would be True for a piece in the position (1,1) with an orientation of NW
* o can be northwest (NW), southwest (SW), southeast (SE) and northeast (NE), which describes the side with the mirror

L(x,y), (d), laser has an (x, y) position and (d) for the direction of the laser.

* Ex: L(2,3) (N) would be True if the laser is at the position (2,3) going towards N.
* d direction can be north (N), south (S), east (E), west (W)

K(x,y)  opponents king that has a position (x, y).

G is the proposition for game over.

* Ex: G is True if the opponent's king is hit by the laser

# Constraints

G only holds when the laser and the king have the same position.

* G (K2,2 ∧ L2,2, N)

A piece can’t move to a position where there is another piece.

The laser always starts at the same position with the same orientation.

* L(0,0) (E)

The king always starts on the same x coordinate.

* K(4, y)

The laser keeps going in the same direction until it hits a mirror side of piece, goes out of bounds, hits the king, or hits a non-mirror side.

* Ex: L(2,3) (E) ∧ P(2,3)(NW)  L(2,3)(N)

A piece can only move to one adjacent square or rotate 90 degrees.

The 4 pieces must be on the board

Only one piece can be at a certain position at a time

# Requested Feedback

1. *Does the code seem to be going in the right direction?*
2. *Does implementing classes the way we did work even though the piece object won’t evaluate to a Boolean, but the components of the object will evaluate to Boolean?*
3. *Did you find any syntax errors?*