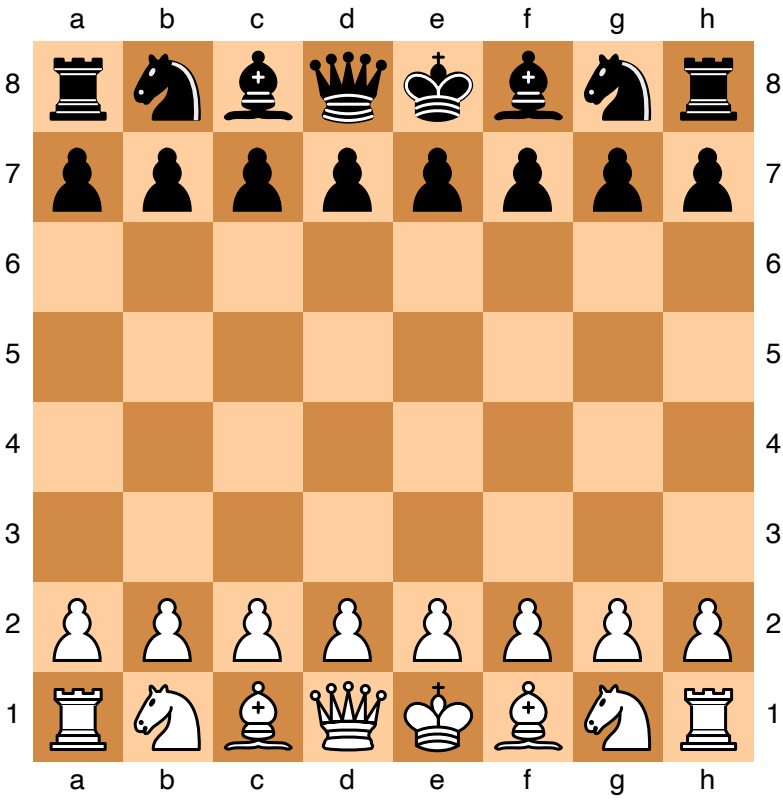


Appendix A

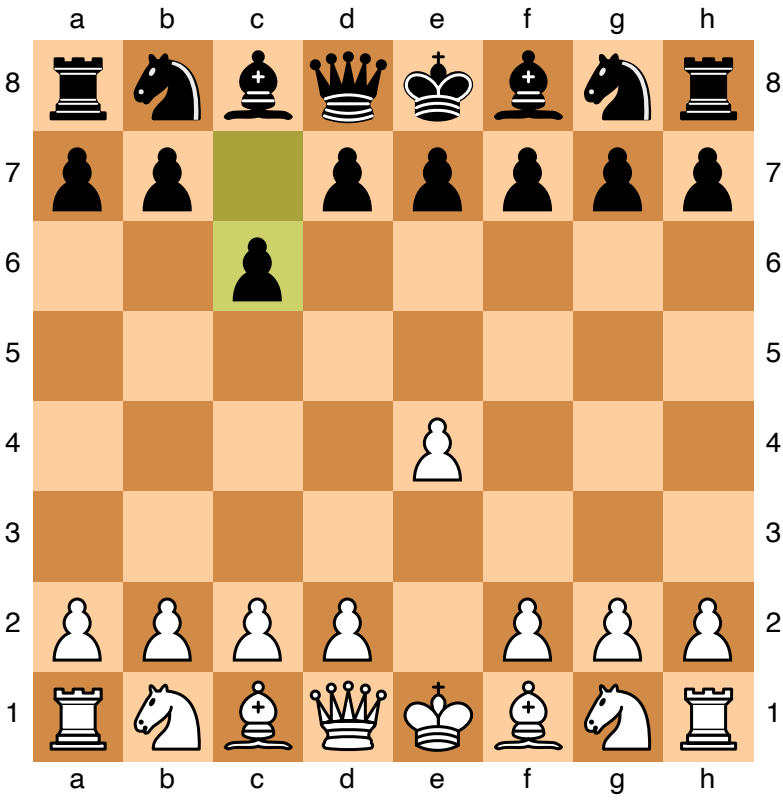
```
import chess
board = chess.Board()
board
```



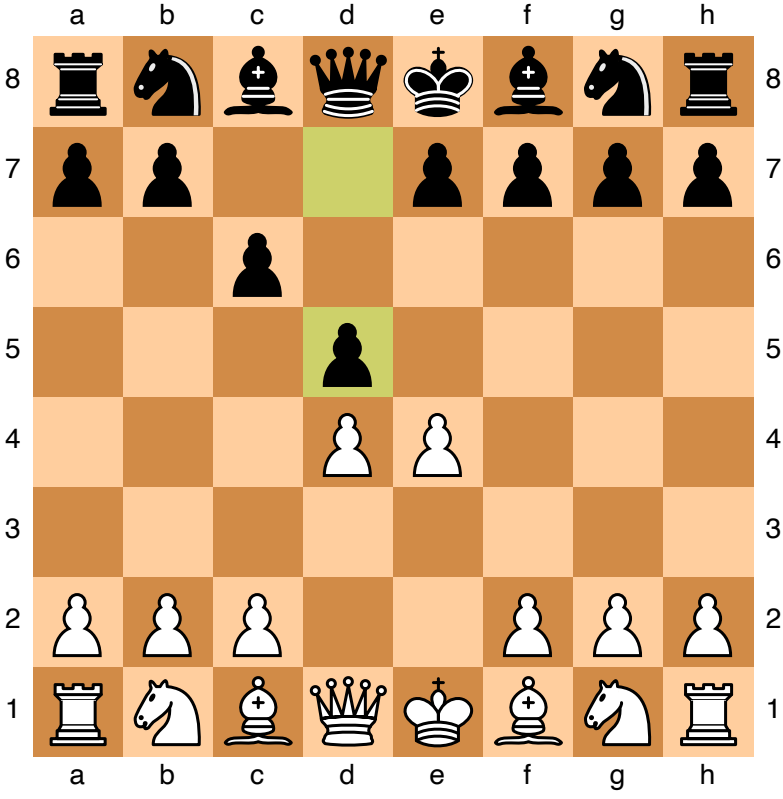
```
board.legal_moves #first possible moves for the white player

<LegalMoveGenerator at 0x7f155ef545f8 (Nh3, Nf3, Nc3, Na3, h3, g3, f3, e3, d3, c3, b3, a3, h4, g4, f4, e4, d4, c4, b4, a4)>
```

```
#1
board.push_san("e4") #Deep Blue
board.push_san("c6") #Kasparov
board
```

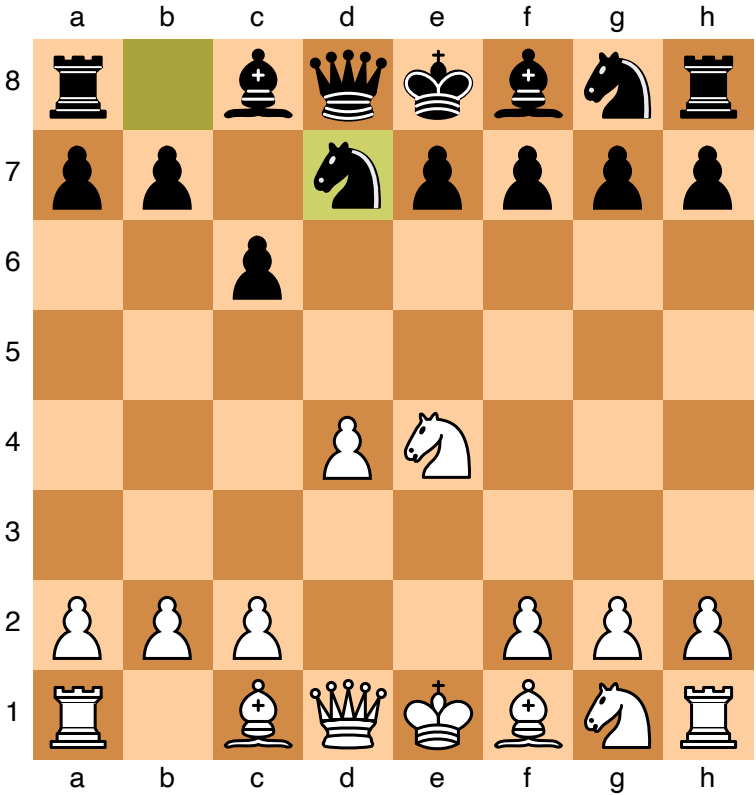


```
#2
board.push_san("d4") #Deep Blue
board.push_san("d5") #Kasparov
board
```

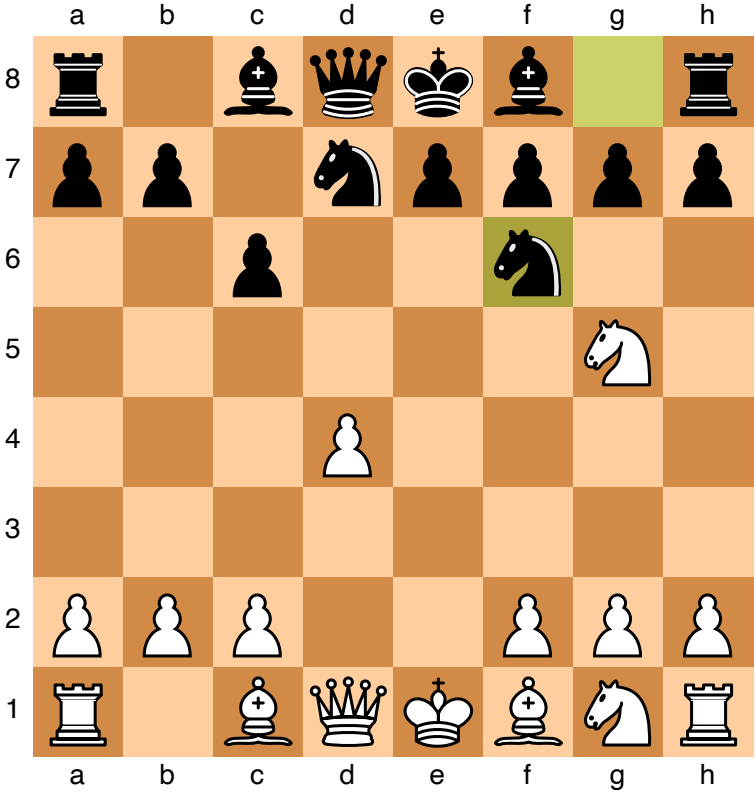


```
#3
board.push_san("Nc3") #Deep Blue
board.push_san("dxe4") #Kasparov
board
```

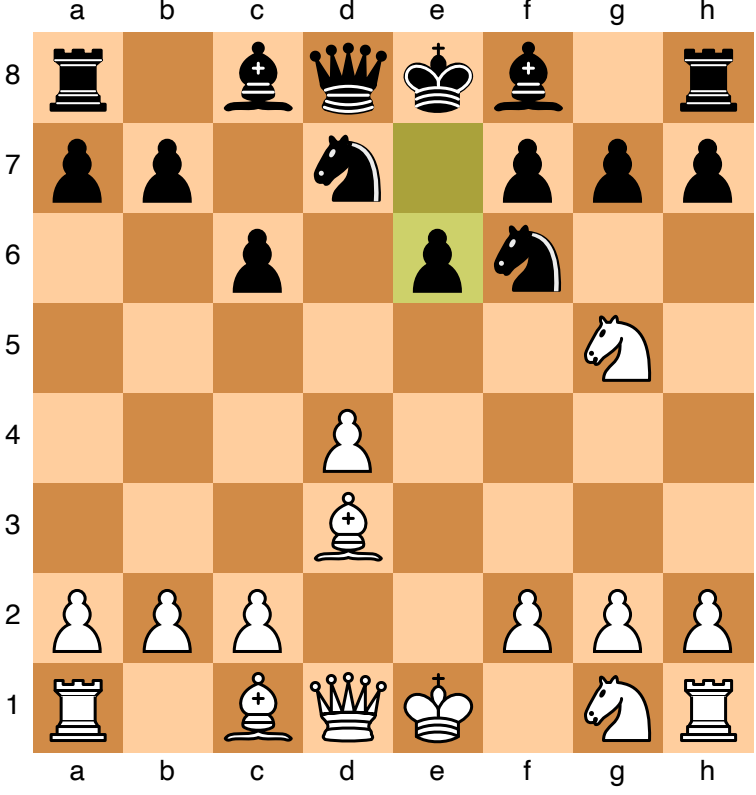
#4
board.push_san("Nxe4") #Deep Blue
board.push_san("Nd7") #Kasparov
board



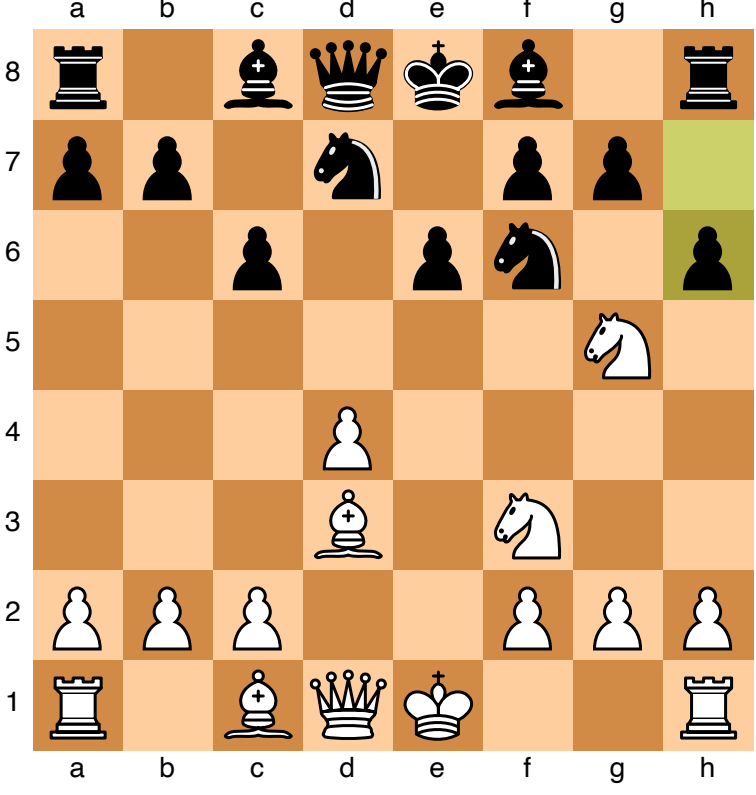
#5
board.push_san("Ng5") #Deep Blue
board.push_san("Ngf6") #Kasparov
board



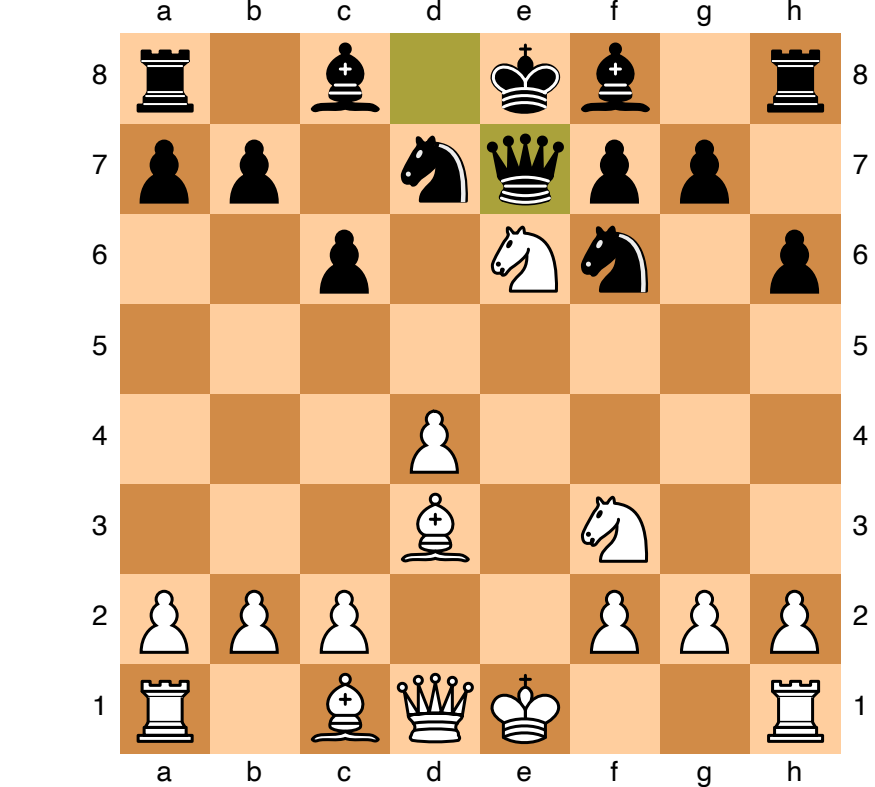
#6
board.push_san("Bd3") #Deep Blue
board.push_san("e6") #Kasparov
board



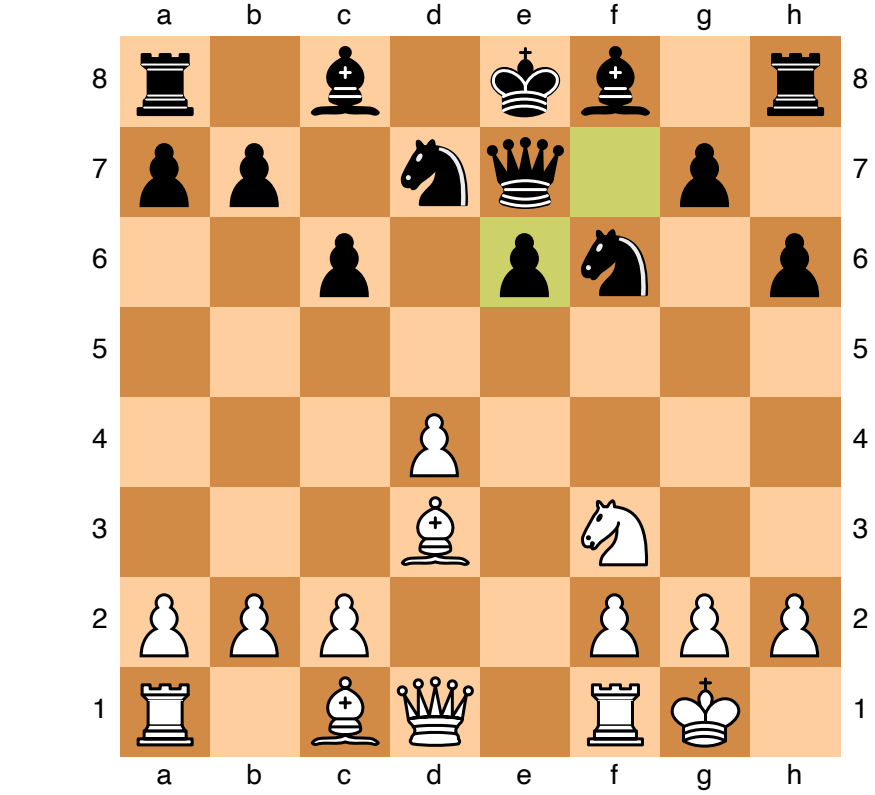
#7
board.push_san("N1f3") #Deep Blue
board.push_san("h6") #Kasparov
board



#8
board.push_san("Nxe6") #Deep Blue
board.push_san("Qe7") #Kasparov
board



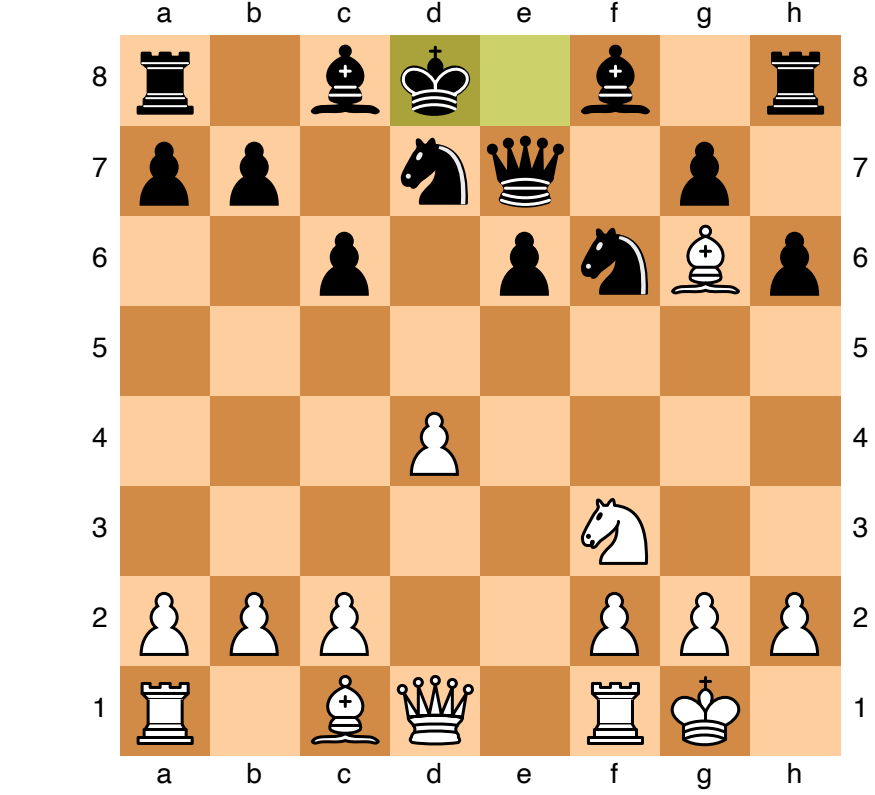
```
#9
board.push_san("Kh1") #Deep Blue - castling
board.push_san("fxe6") #Kasparov
board
```



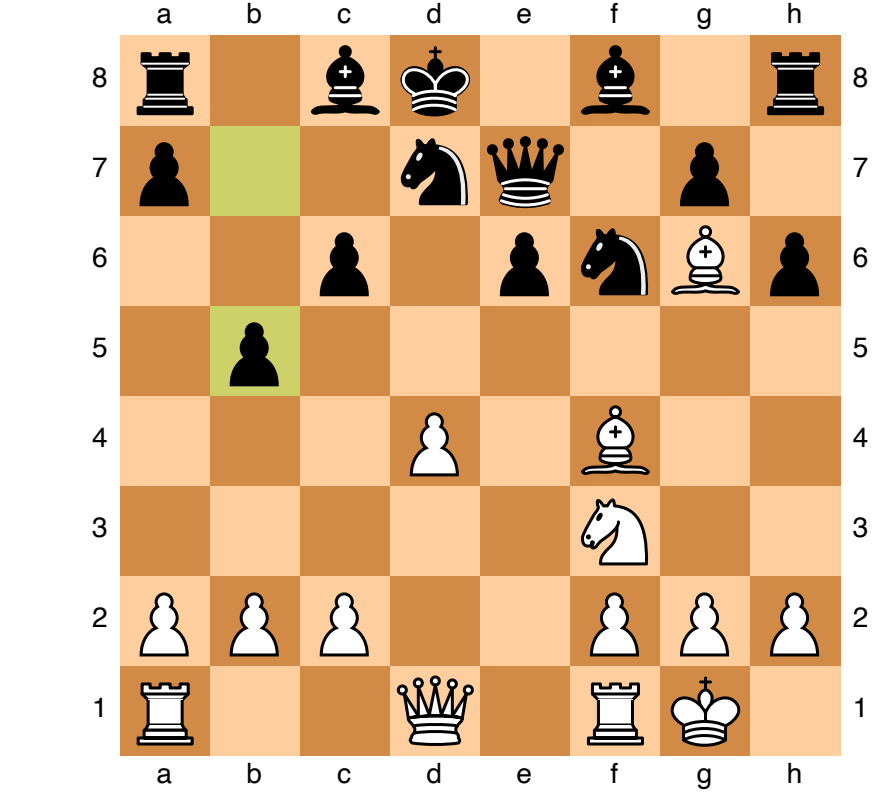
```
board.fen

<bound method Board.fen of Board('r1b1kb1r/pp1nq1p1/2p1pn1p/8/3P4/3B1N2/PPP2PPP/R1BQ1RK1 w kq - 0 10')>
```

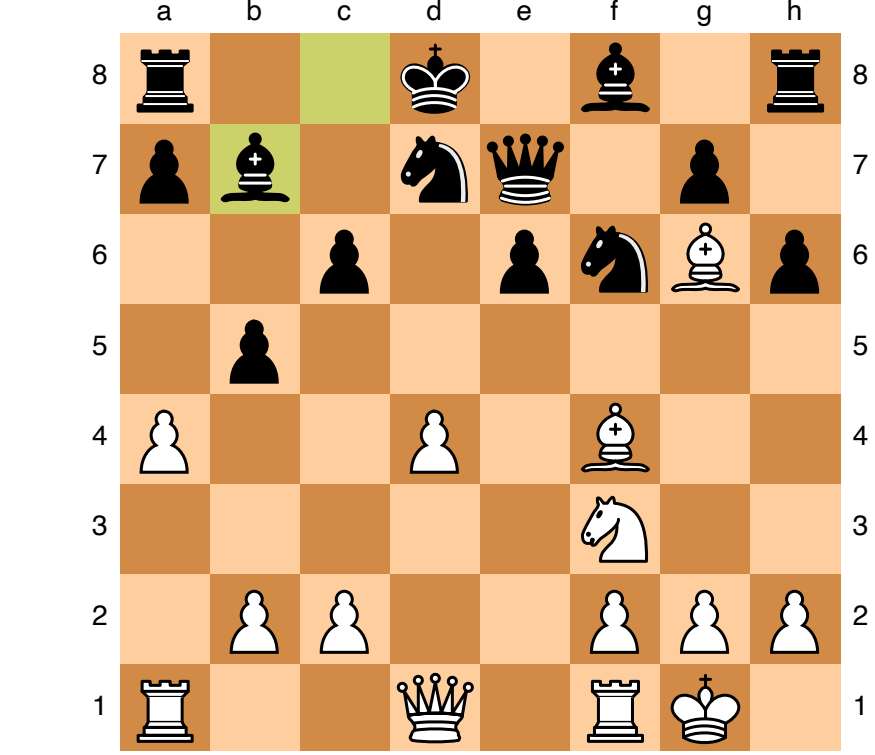
```
#10
board.push_san("Bg6+") #Deep Blue
board.push_san("Kd8") #Kasparov
board
```



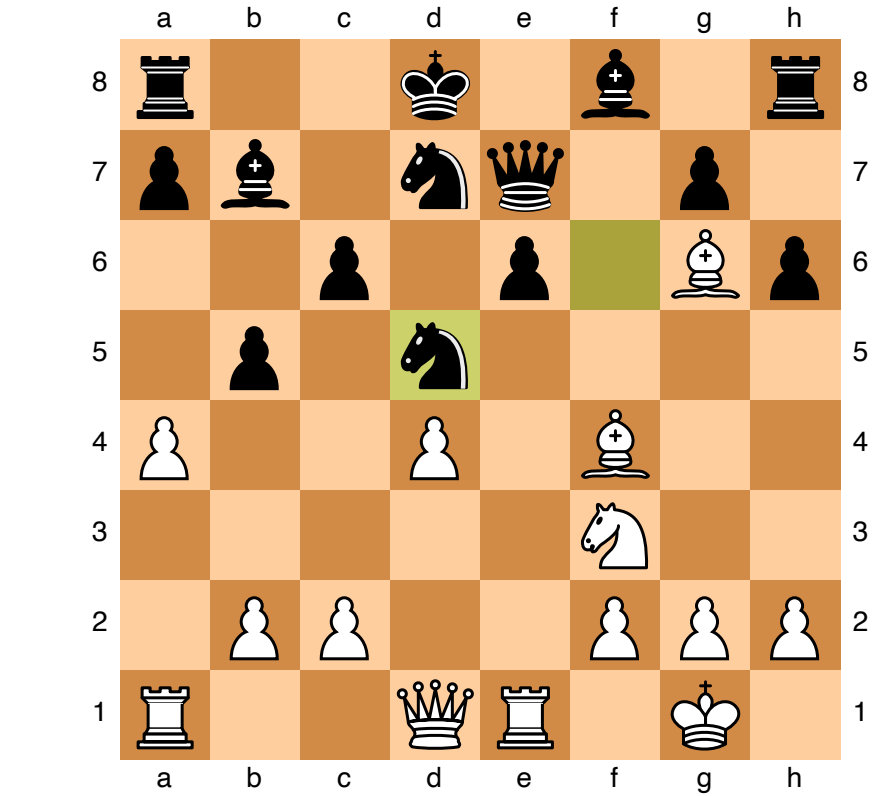
```
#11
board.push_san("Bf4") #Deep Blue
board.push_san("b5") #Kasparov
board
```



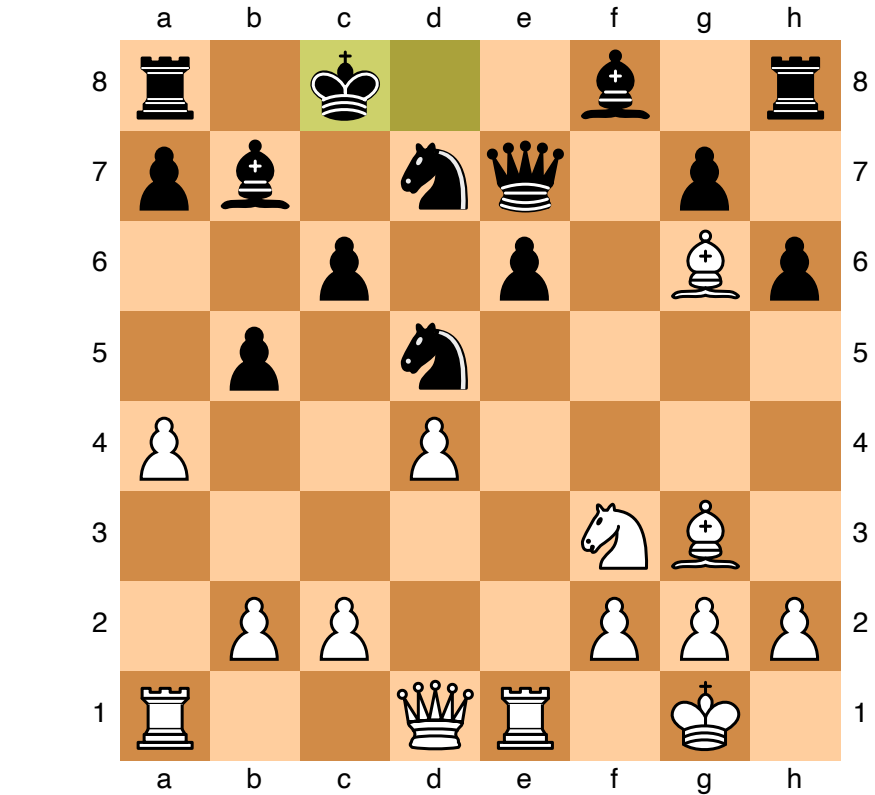
```
#12
board.push_san("a4") #Deep Blue
board.push_san("Bb7") #Kasparov
board
```



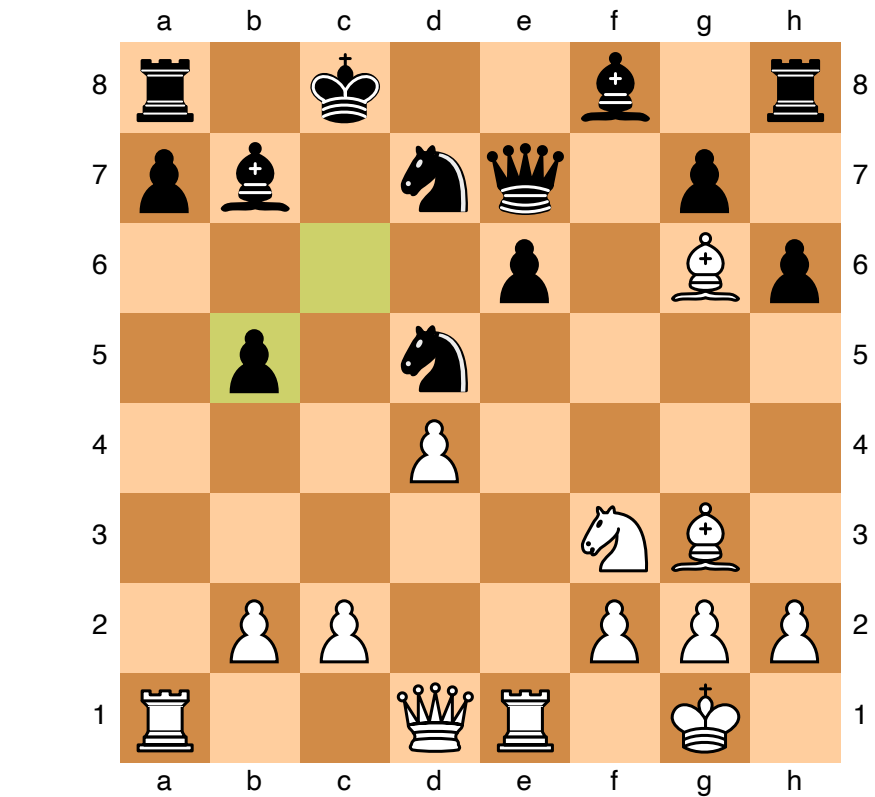
```
#13
board.push_san("Re1") #Deep Blue
board.push_san("Nd5") #Kasparov
board
```



```
#14
board.push_san("Bg3") #Deep Blue
board.push_san("Kc8") #Kasparov
board
```

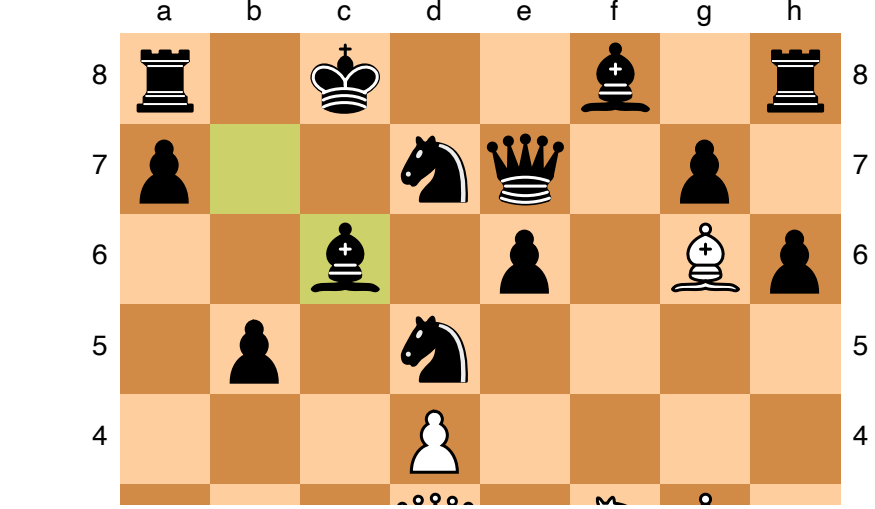


```
#15
board.push_san("axb5") #Deep Blue
board.push_san("cxb5") #Kasparov
board
```

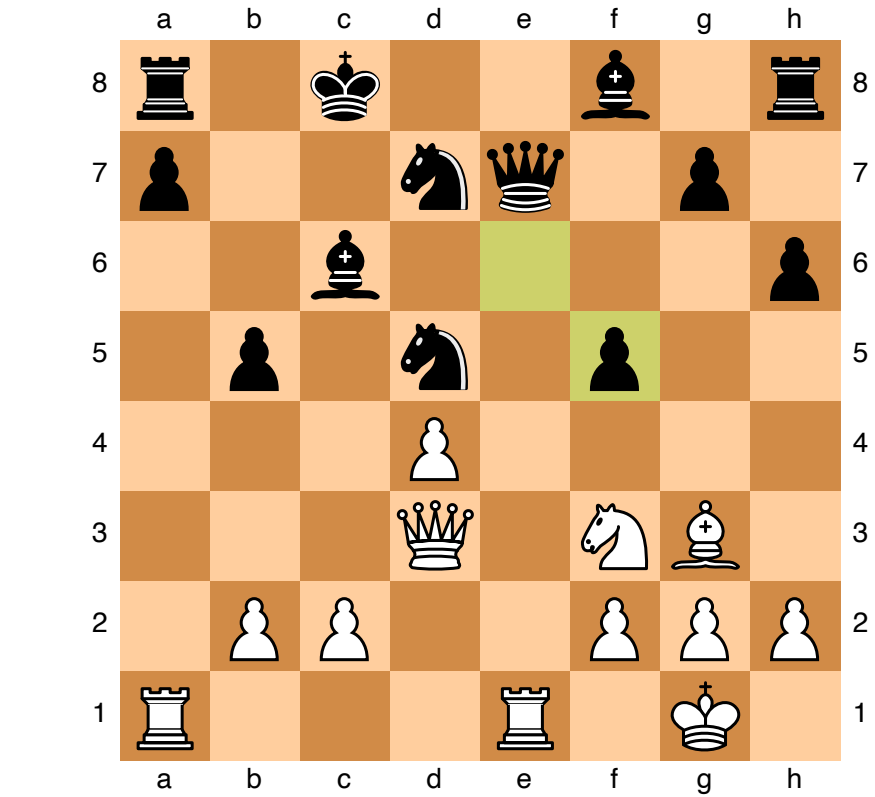


```
#16
board.push_san("Qd3") #Deep Blue
board.push_san("Bc6") #Kasparov
board
```

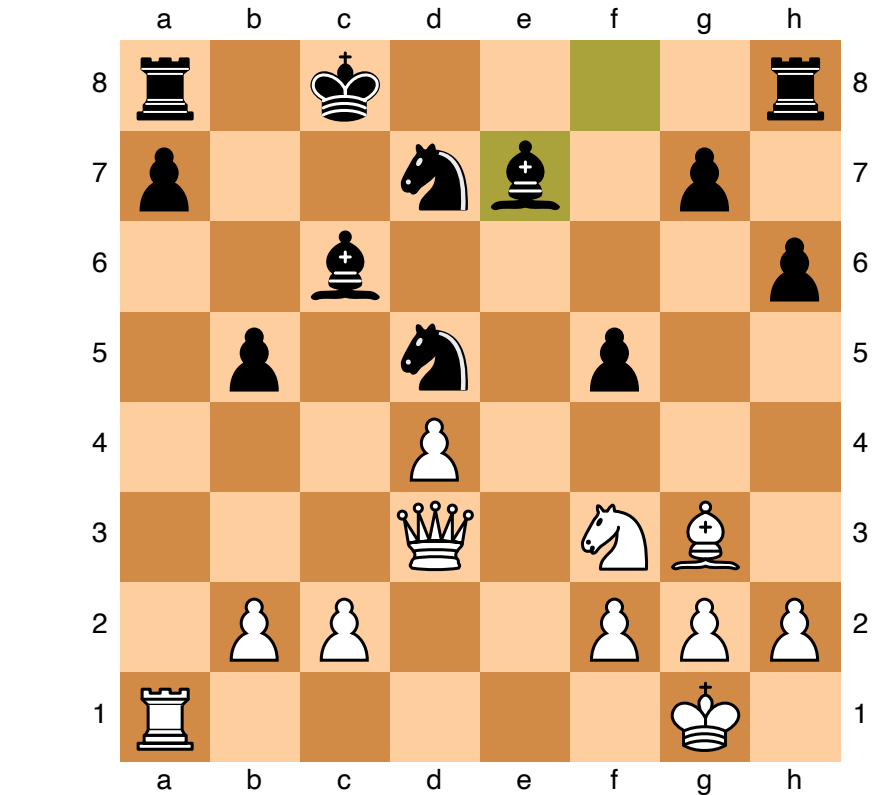




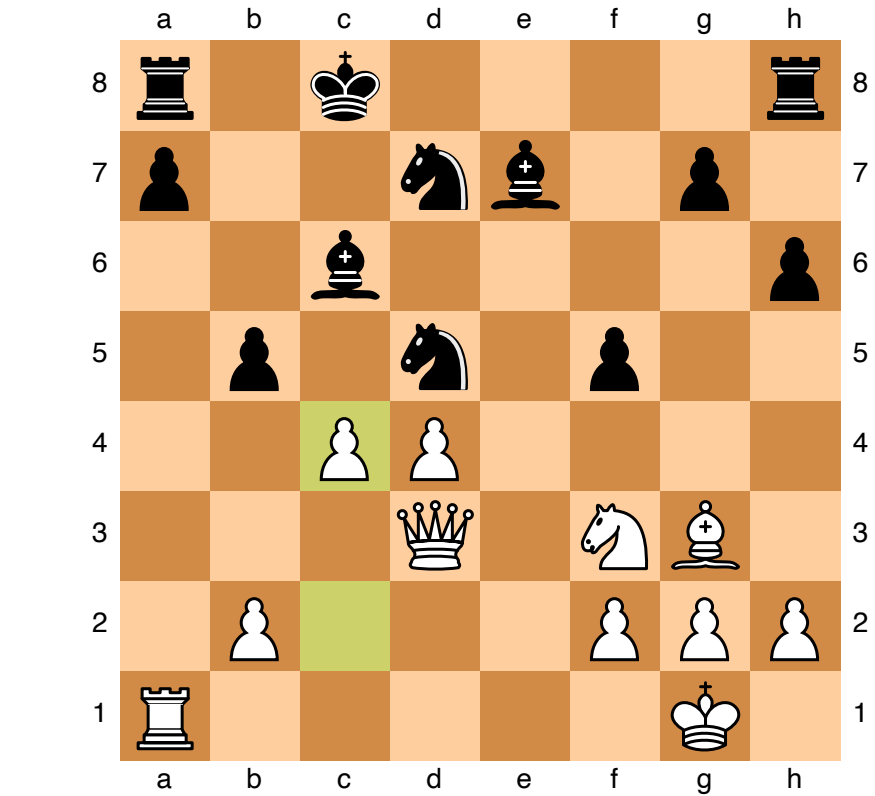
```
#17
board.push_san("Bf5") #Deep Blue
board.push_san("exf5") #Kasparov
board
```



```
#18
board.push_san("Rxe7") #Deep Blue
board.push_san("Bxe7") #Kasparov
board
```



```
#19
board.push_san("c4") #Deep Blue
board
```



```
board.legal_moves
```

```
<LegalMoveGenerator at 0x7f1567655198 (Rg8, Rf8, Re8, Rd8, Rh7, Kd8, Kb7, Rb8, Bf8, Bd8, Bf6, Bd6, Bg5, Bc5, Bh4, Bb4, Ba3, Nf8, Nb8, N7f6, N7b6, Ne5, Nc5, Bb7, Nc7, N5f6, N5b6, Nf4
```

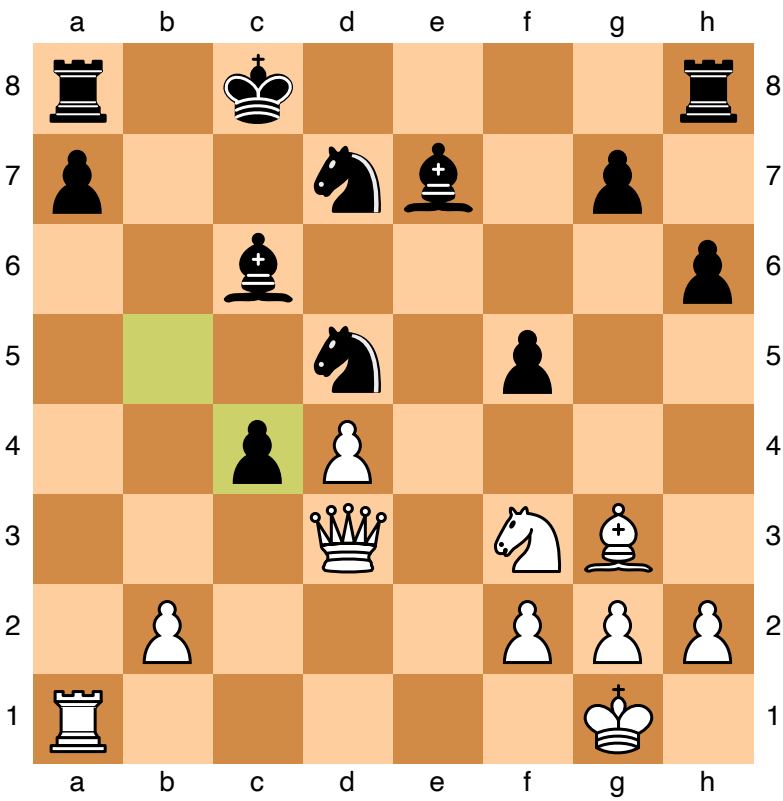
After 19th move, Kasparov resigned.

- {Rg8, Rf8, Re8, Rd8, Rh7} are all possible positions for the black rook in h8. {Rb8} is a potential move for the rook in a8. If the Black choses one of this moves, it will not effect the potential moves overall, since black rook will not threat any of the white pices. {Kb7,Kd8} are the potential moves for black king which does not effect the potential moves either. Hence this moves are not considered as "rational".
- Potential Moves for the black bishop in e7 are: Bf8, Bd8, Bf6, Bd6, Bg5, Bc5, Bh4, Bb4, Ba3
- Potential Moves for the black bishop in c6 ais: Bb7
- Potential Moves for the black knight in d7 are: Nf8, Nb8, N7f6, N7b6, Ne5, Nc5
- Potential Moves for the black knight in d5 are: Nc7, N5f6, N5b6, Nf4, Nb4, Ne3, Nc3
 - One of this moves of the black knight which is located in d5 is considered as the "best move" in this situation. (Nb4)

For Kasparov's move

- Stockfish 12 computed: b5c4
- GNU Chess 6 computed: b5c4
- LC0 0.26.3 computed: b5c4

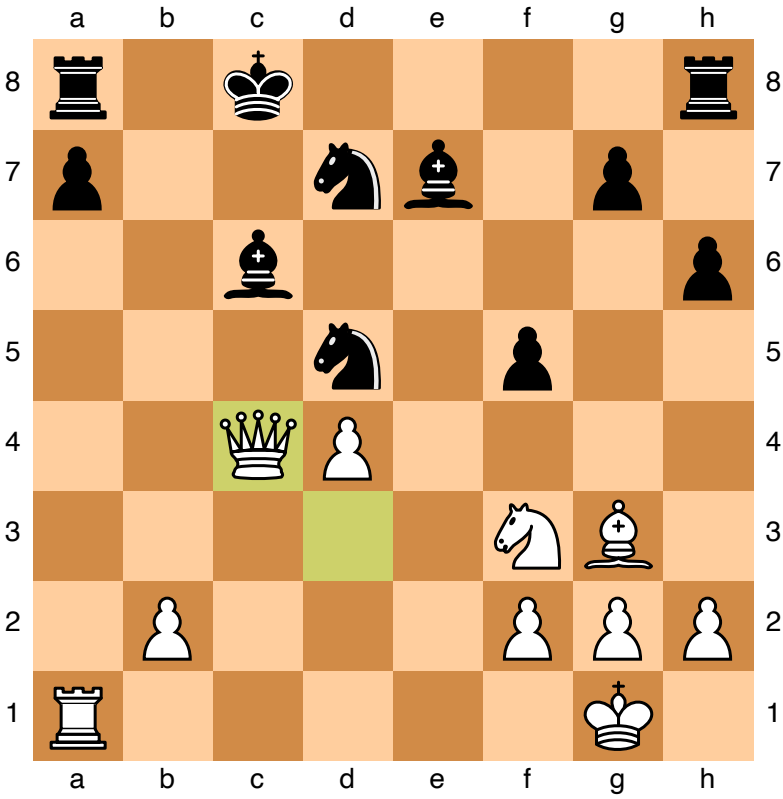
```
#20 - Assumption
board.push_san("b5c4") #Kasparov
board
```



For deep-blue's move

- Stockfish 12 computed: d3c4
- GNU Chess 6 computed: d3c4
- LC0 0.26.3 computed: d3f5 (another branch to be examine)

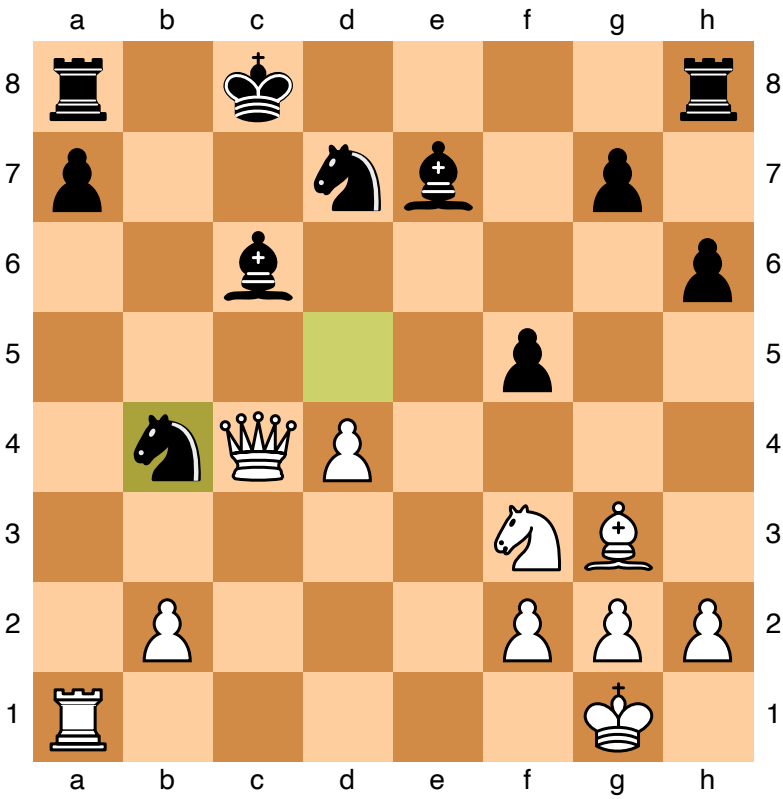
```
#20 - Assumption
board.push_san("Qc4") #Deep-Blue
board
```



For Kasparov's move

- Stockfish 12 computed: d5b4
- GNU Chess 6 computed: d5b4
- LC0 0.26.3 computed: d5b4

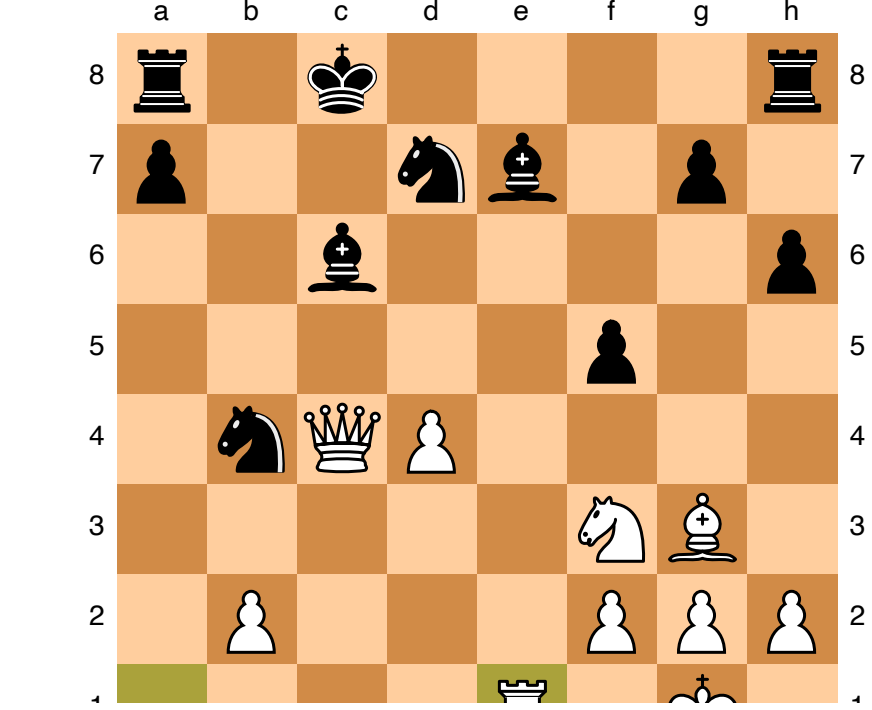
```
#21 - Assumption
board.push_san("Nb4") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: a1e1
- GNU Chess 6 computed: a1e1
- LC0 0.26.3 computed: f3e5 (another brach to compute)

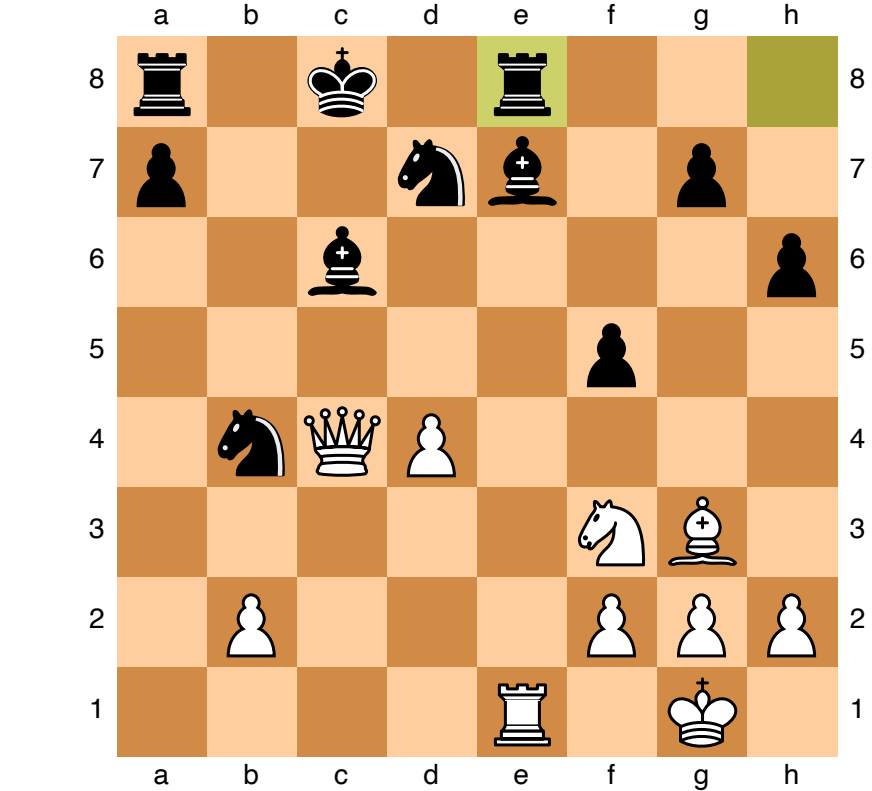
```
#21 - Assumption
board.push_san("Re1") #Deep-Blue
board
```



For Kasparov's move

- Stockfish 12 computed: h8e8
- GNU Chess 6 computed: h8e8
- LC0 0.26.3 computed: c8d8

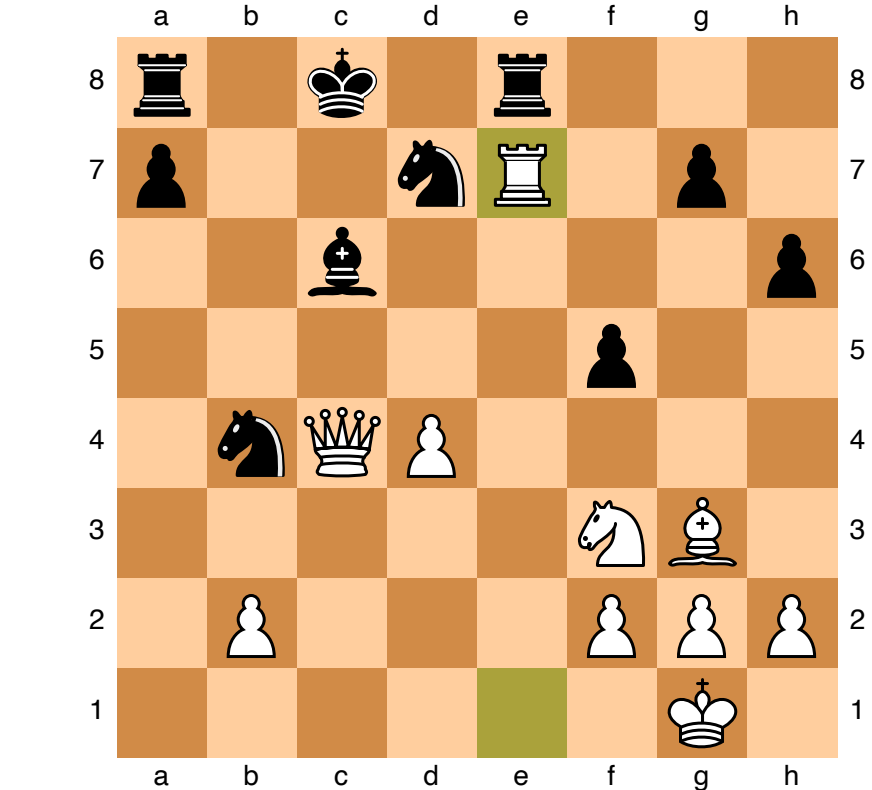
```
#22 - Assumption
board.push_san("Re8") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: e1e7
- GNU Chess 6 computed: f3h4
- LC0 0.26.3 computed: d4d5

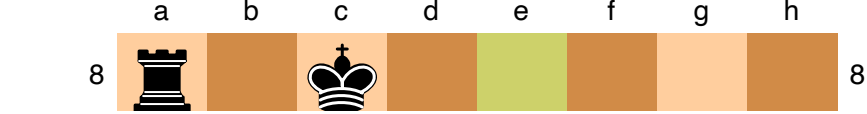
```
#22 - Assumption - Stockfish
board.push_san("Re7") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: e8e7
- GNU Chess 6 computed: e8e7
- LC0 0.26.3 computed: e8e7

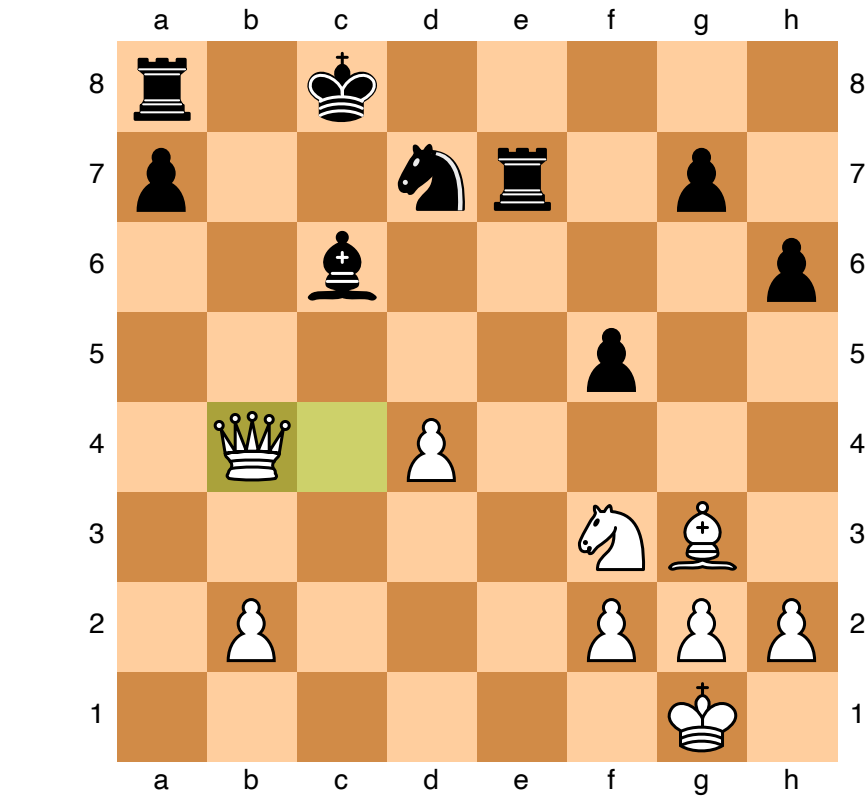
```
#23 - Assumption
board.push_san("Re7") #Kasparov
board
```

For Deep-Blue's move

- Stockfish 12 computed: c4b4
 - GNU Chess 6 computed: c4b4
 - LC0 0.26.3 computed: c4b4
- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|--|
| | a | b | c | d | e | f | g | h | |
| 8 | | | | | | | | | |

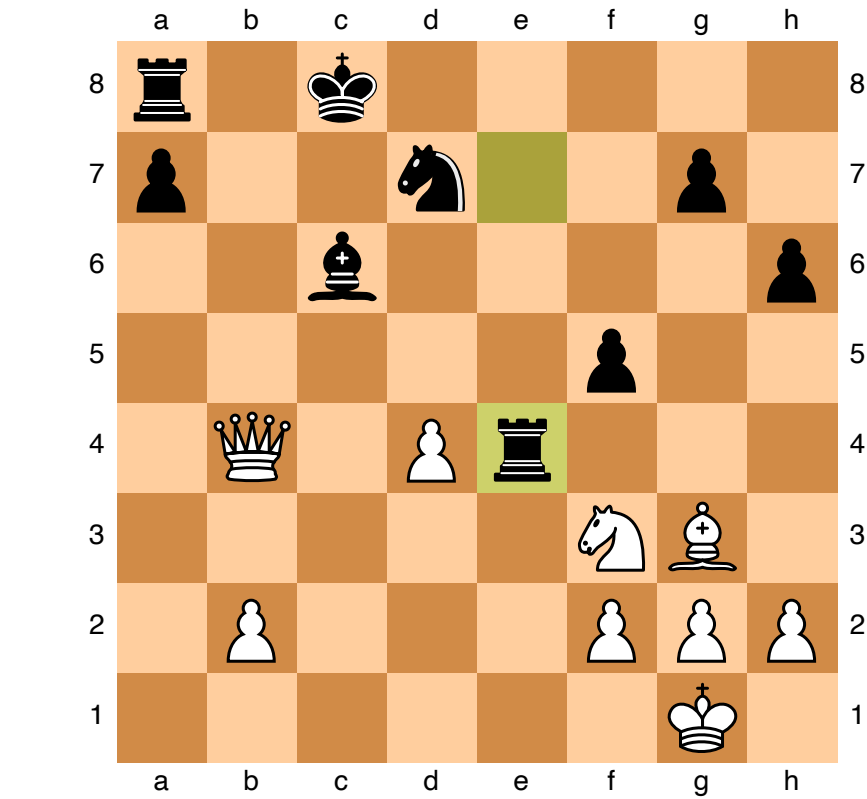
#23 - Assumption
board.push_san("Qb4") #Deep-Blue
board



For Kasparov's move

- Stockfish 12 computed: e7e4
- GNU Chess 6 computed: c8d8
- LC0 0.26.3 computed: c8d8

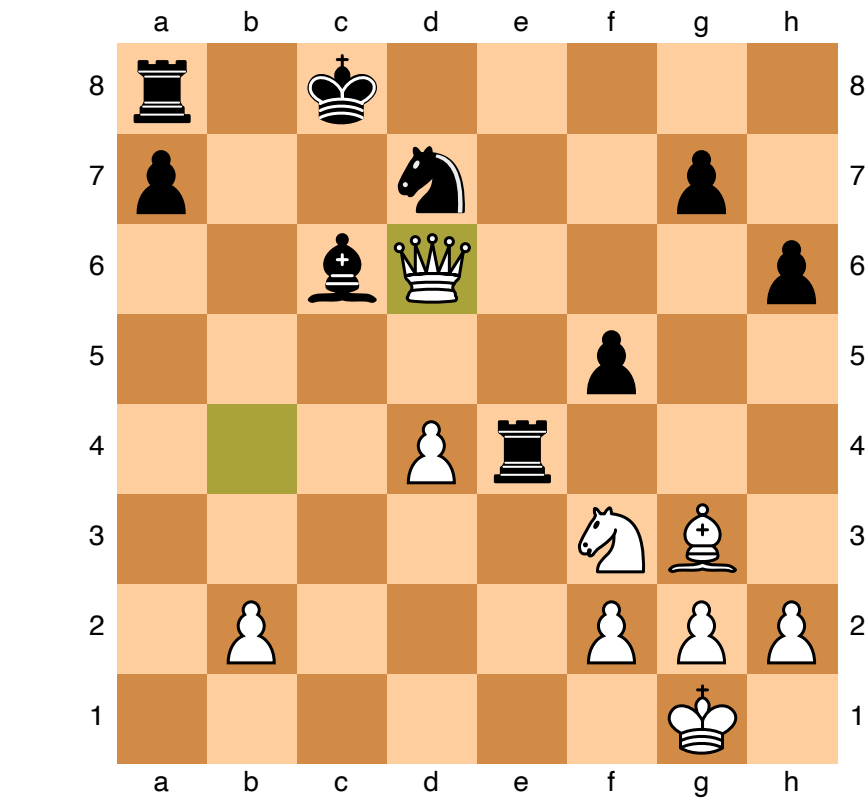
#24 - Assumption - Stockfish
board.push_san("Re4") #Kasparov
board



For Deep-Blue's move

- Stockfish 12 computed: b4d6
- GNU Chess 6 computed: b4d6
- LC0 0.26.3 computed: f3e5

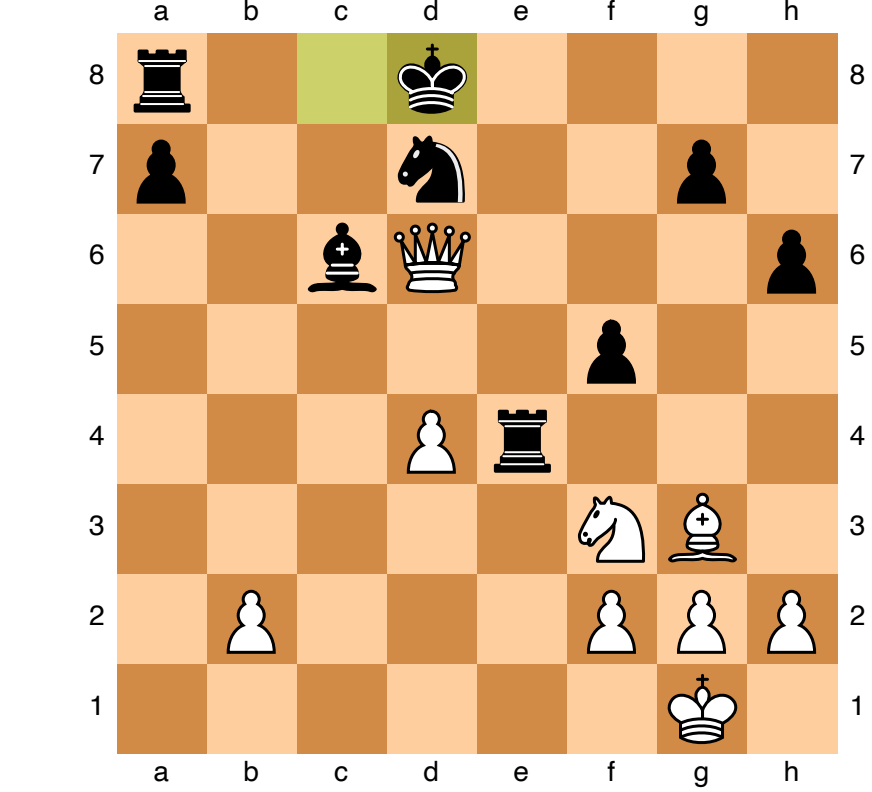
#24 - Assumption - Stockfish
board.push_san("Qd6") #Deep Blue
board



For Kasparov's move

- Stockfish 12 computed: c8d8
- GNU Chess 6 computed: c8b7
- LC0 0.26.3 computed: c8d8

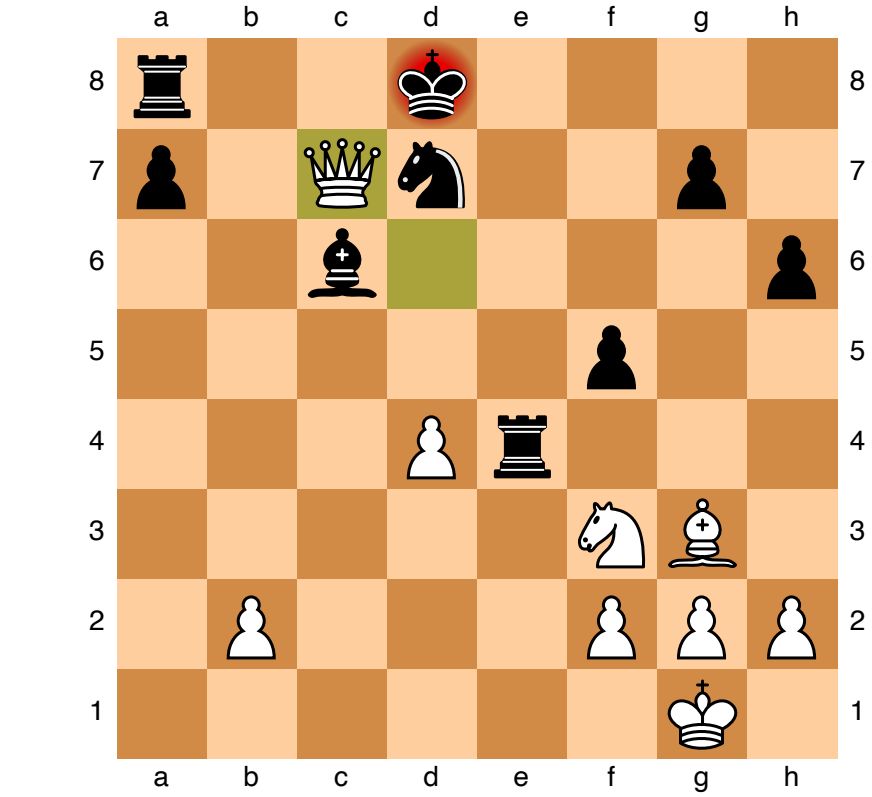
#25 - Assumption - Stockfish
board.push_san("Kd8") #Kasparov
board



For Deep-Blue's move

- Stockfish 12 computed: d6c7
- GNU Chess 6 computed: d6c7
- LC0 0.26.3 computed: d6c7

```
#25 - Assumption - Stockfish
board.push_san("Qc7") #Deep-Blue
board
```



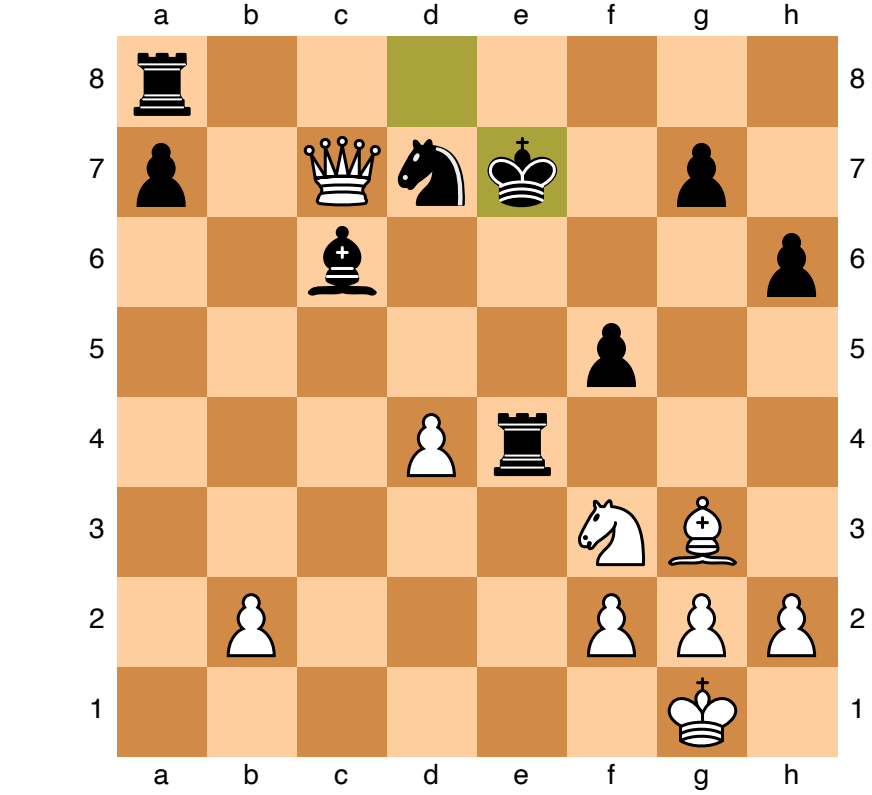
```
board.legal_moves

<LegalMoveGenerator at 0x7f1567655198 (Ke8, Ke7)>
```

For Kasparov's move

- Stockfish 12 computed: d8e7
- GNU Chess 6 computed: d8e7
- LC0 0.26.3 computed: d8e7

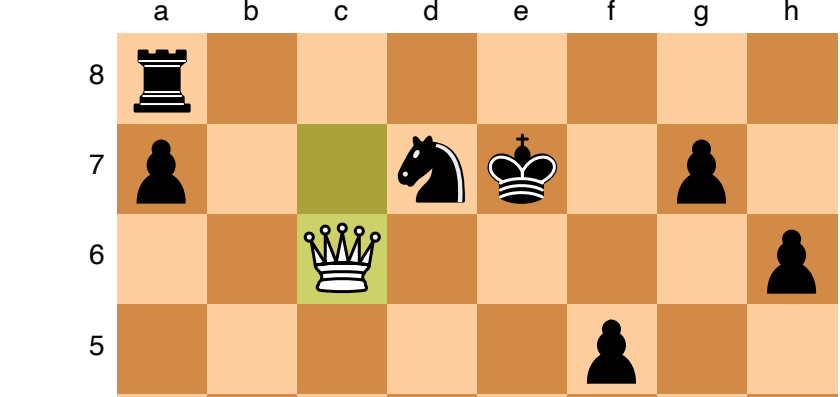
```
#26 - Assumption
board.push_san("Ke7") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: c7c6
- GNU Chess 6 computed: c7c6
- LC0 0.26.3 computed: c7c6

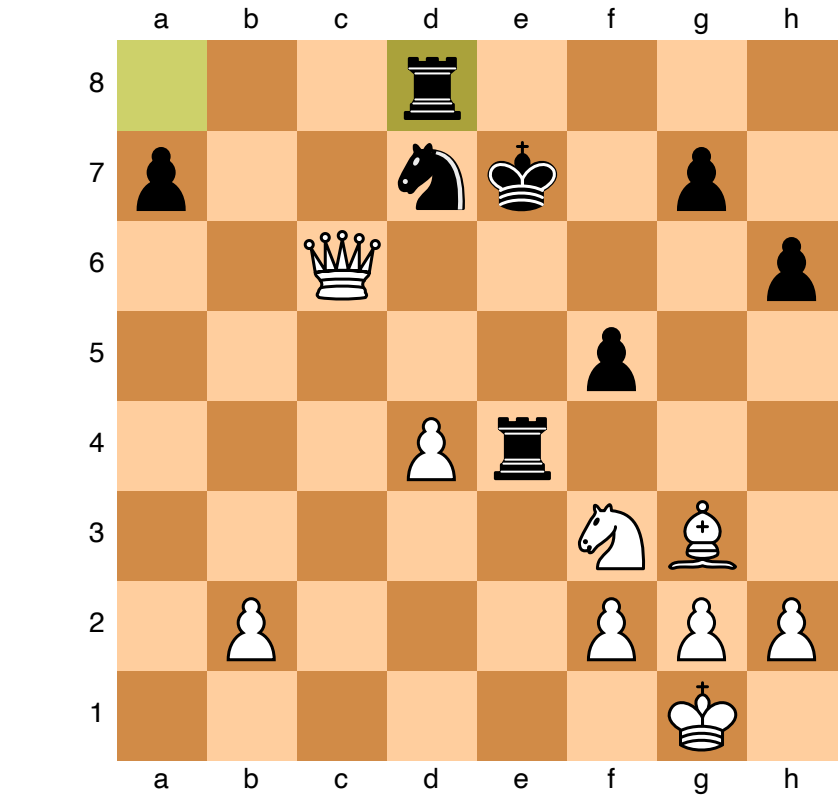
```
#26 - Assumption
board.push_san("Qc6") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: a8d8
- GNU Chess 6 computed: d7b6
- LC0 0.26.3 computed: a8f8

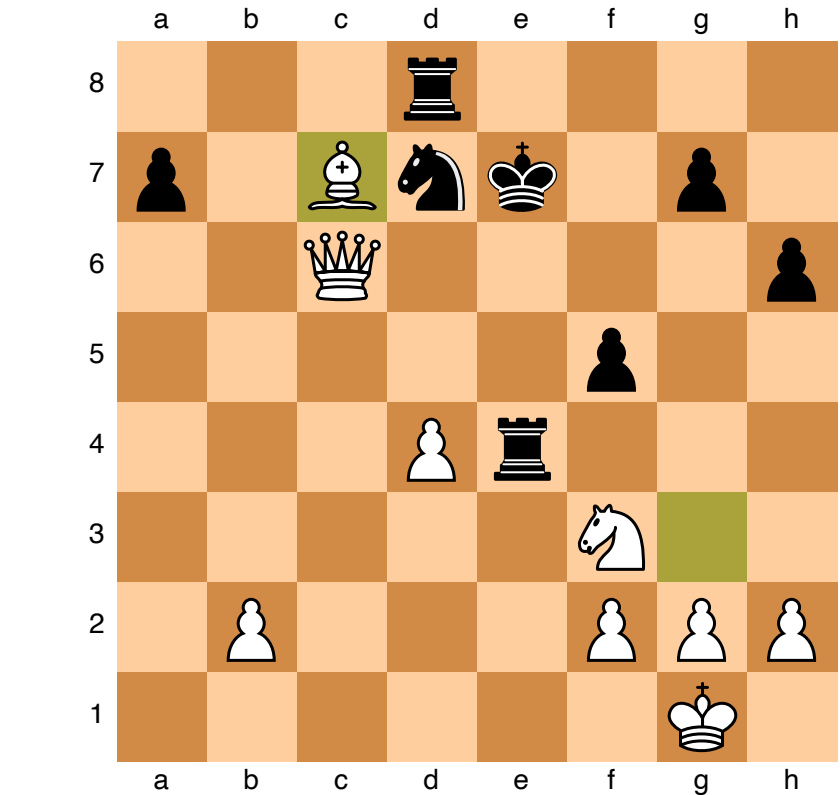
```
#27 - Assumption - Stockfish
board.push_san("Rd8") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: g3c7
- GNU Chess 6 computed: g3c7
- LC0 0.26.3 computed: h2h3

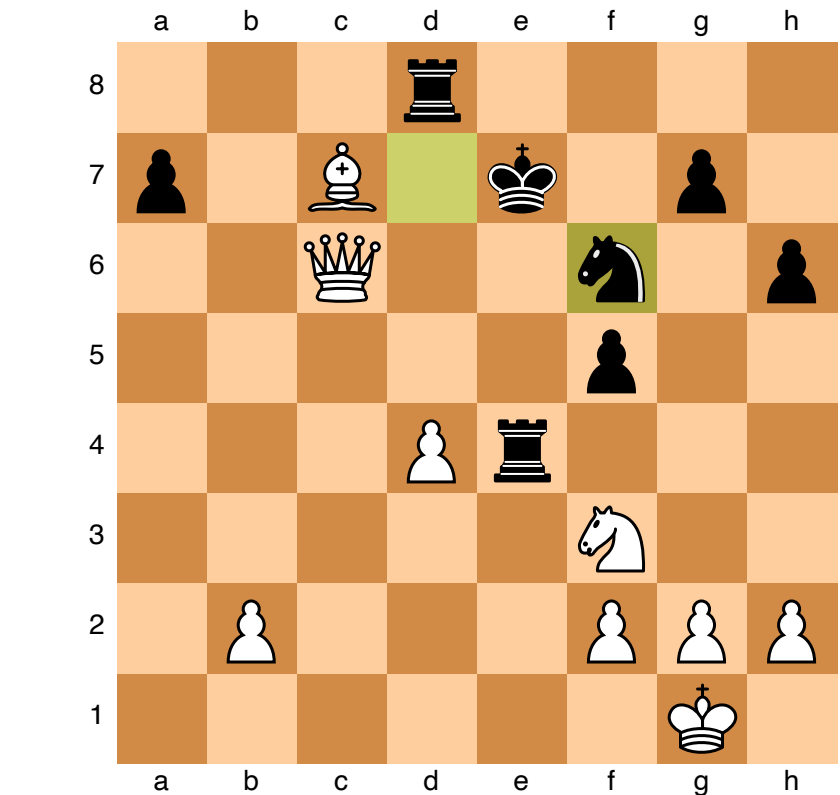
```
#27 - Assumption - Stockfish
board.push_san("Bc7") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: d7f6
- GNU Chess 6 computed: d7f6
- LC0 0.26.3 computed: e4e1

```
#28 - Assumption - Stockfish
board.push_san("Nf6") #Kasparov
board
```

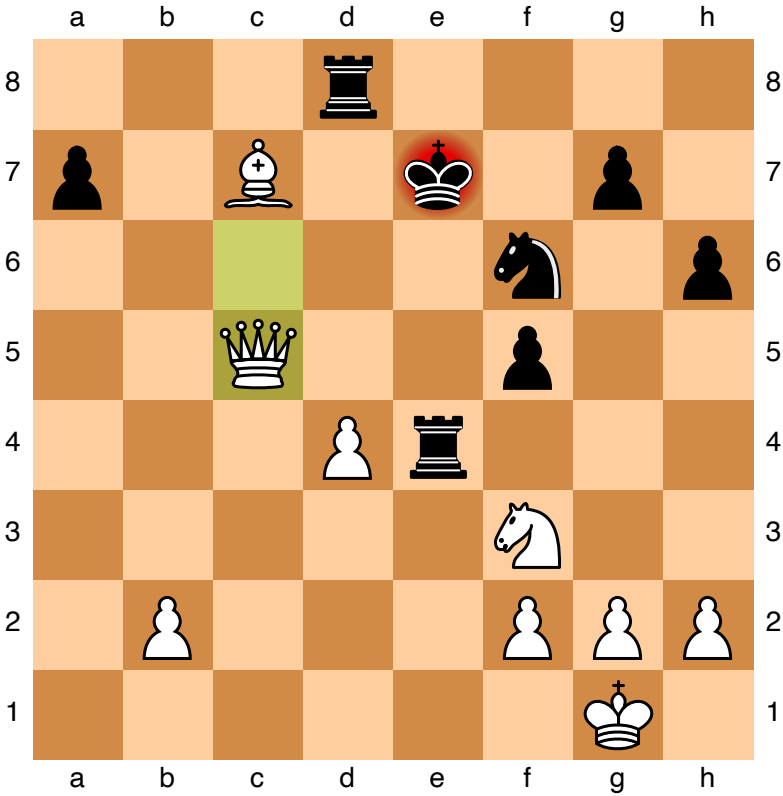


For Deep-Blue's move

- Stockfish 12 computed: c6c5

- GNU Chess 6 computed: c6c5
- LC0 0.26.3 computed: c7d8

#28 - Assumption - Stockfish
board.push_san("Qc5") #Deep Blue
board



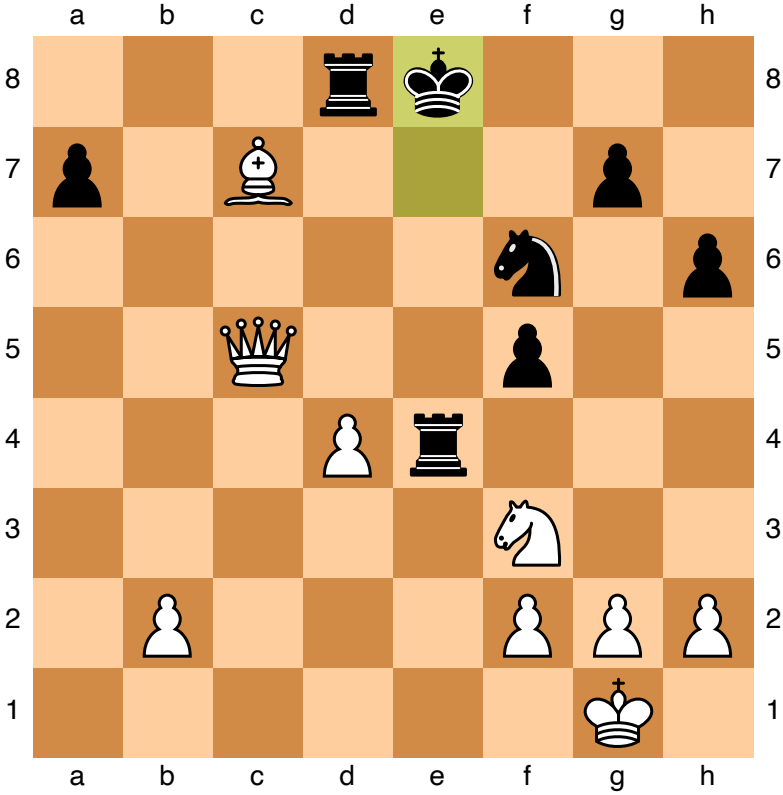
board.legal_moves

<LegalMoveGenerator at 0x7f1567655198 (Ke8, Kf7, Kd7, Ke6, Rd6)>

For Kasparov's move

- Stockfish 12 computed: e7e8
- GNU Chess 6 computed: e7e8
- LC0 0.26.3 computed: e7d7

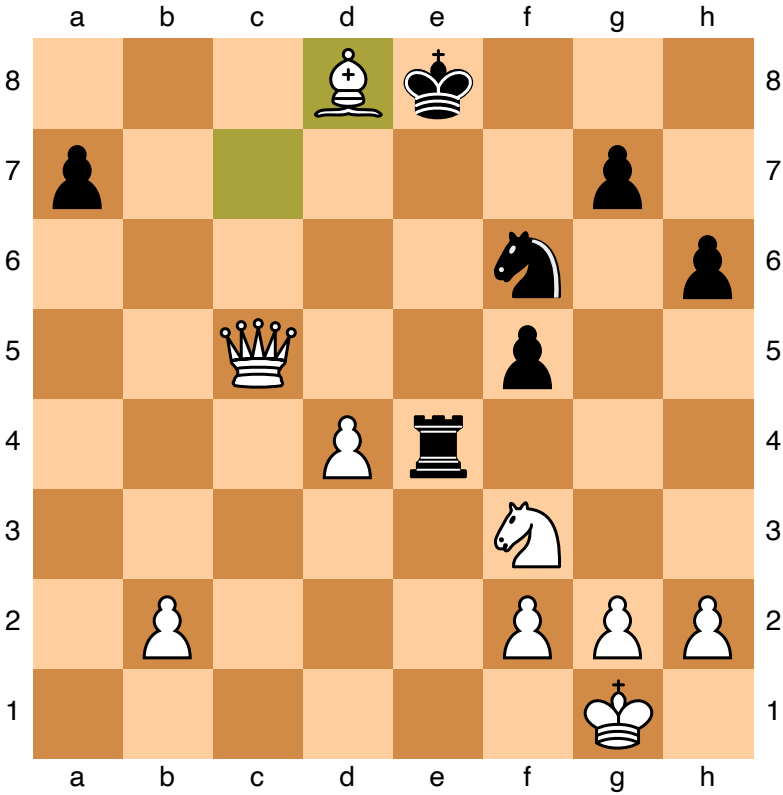
#29 - Assumption - Stockfish
board.push_san("Ke8") #Kasparov
board



For Deep-Blue's move

- Stockfish 12 computed: c7d8
- GNU Chess 6 computed: c7d8
- LC0 0.26.3 computed: h2h3

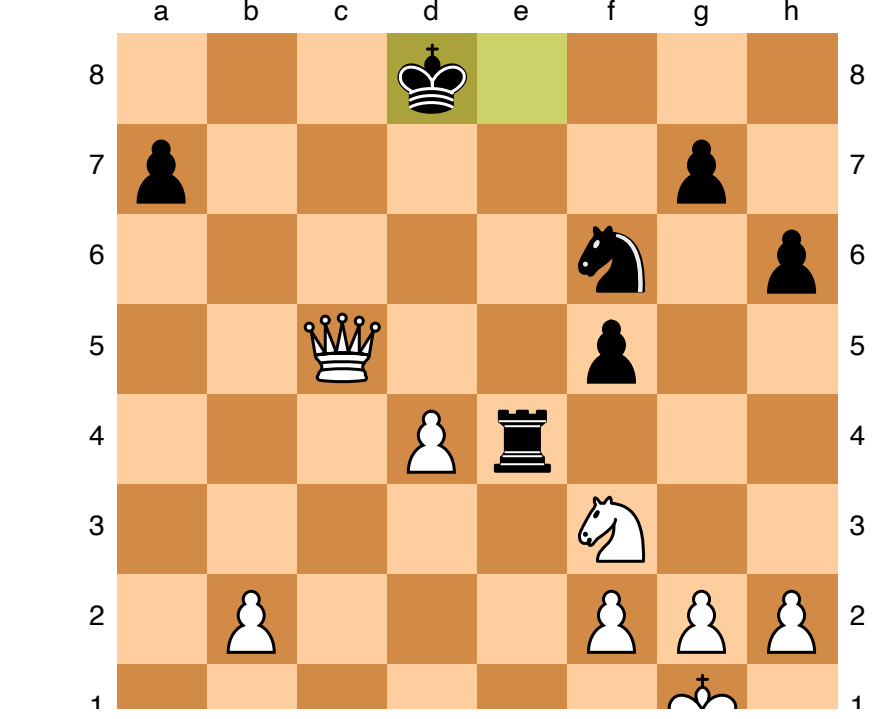
#29 - Assumption - Stockfish
board.push_san("Bd8") #Deep Blue
board



For Kasparov's move

- Stockfish 12 computed: e8d8
- GNU Chess 6 computed: e8d8
- LC0 0.26.3 computed: e8d8

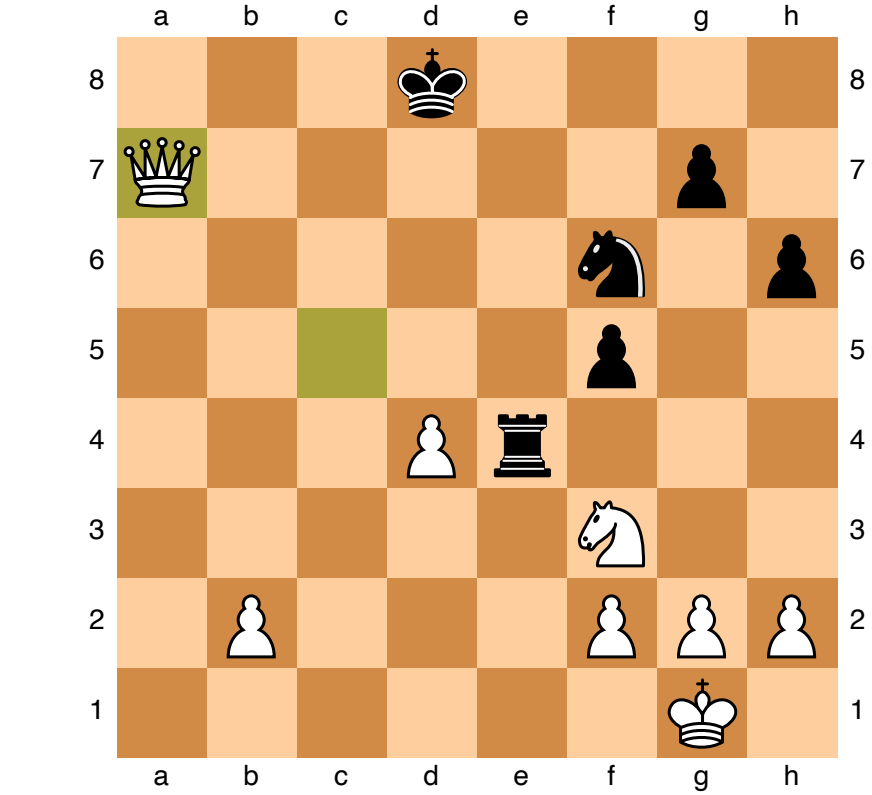
#30 - Assumption
board.push_san("Kd8") #Kasparov
board



For Deep-Blue's move

- Stockfish 12 computed: c5a7
- GNU Chess 6 computed: c5a7
- LC0 0.26.3 computed: h2h3

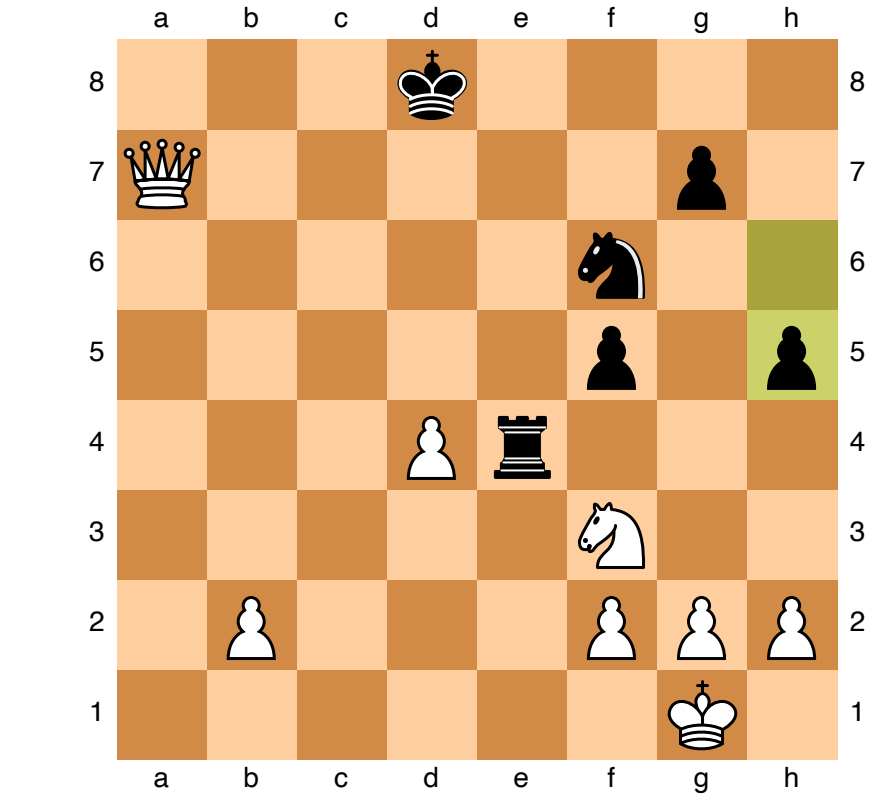
```
#30 - Assumption - Stockfish
board.push_san("Qa7") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: h6h5
- GNU Chess 6 computed: f6d7
- LC0 0.26.3 computed: e4e1

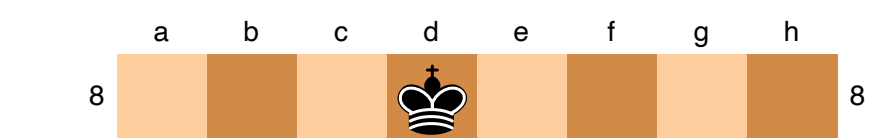
```
#31 - Assumption - Stockfish
board.push_san("h5") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: a7g7
- GNU Chess 6 computed: a7g7
- LC0 0.26.3 computed: a7g8

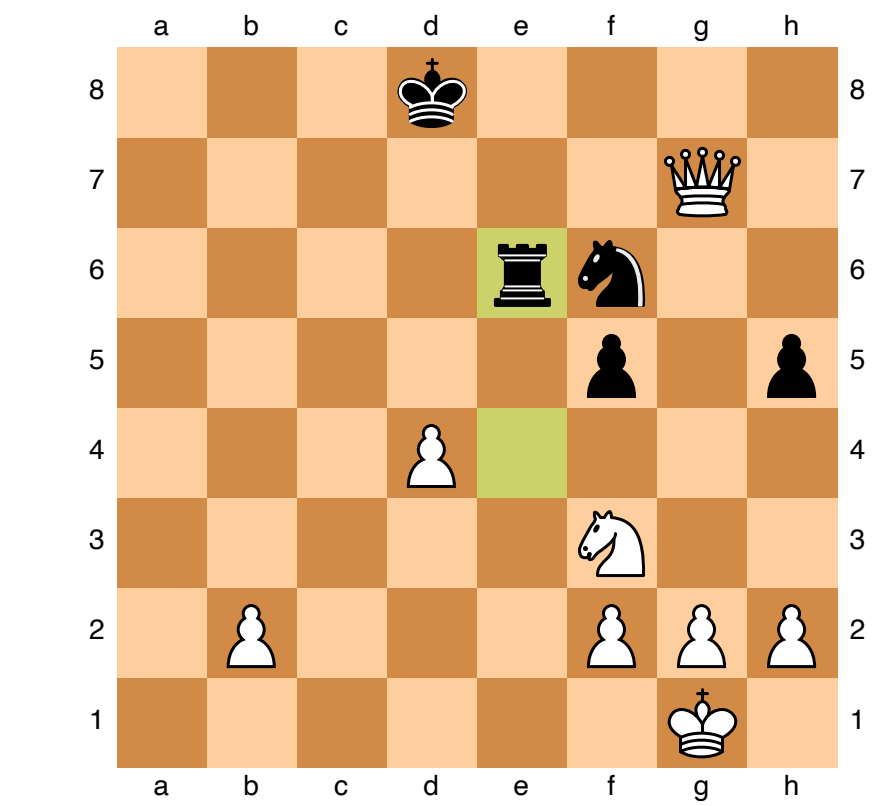
```
#31 - Assumption - Stockfish
board.push_san("Qg7") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: e4e6
 - GNU Chess 6 computed: e4e6
 - LC0 0.26.3 computed: f6e8
- | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

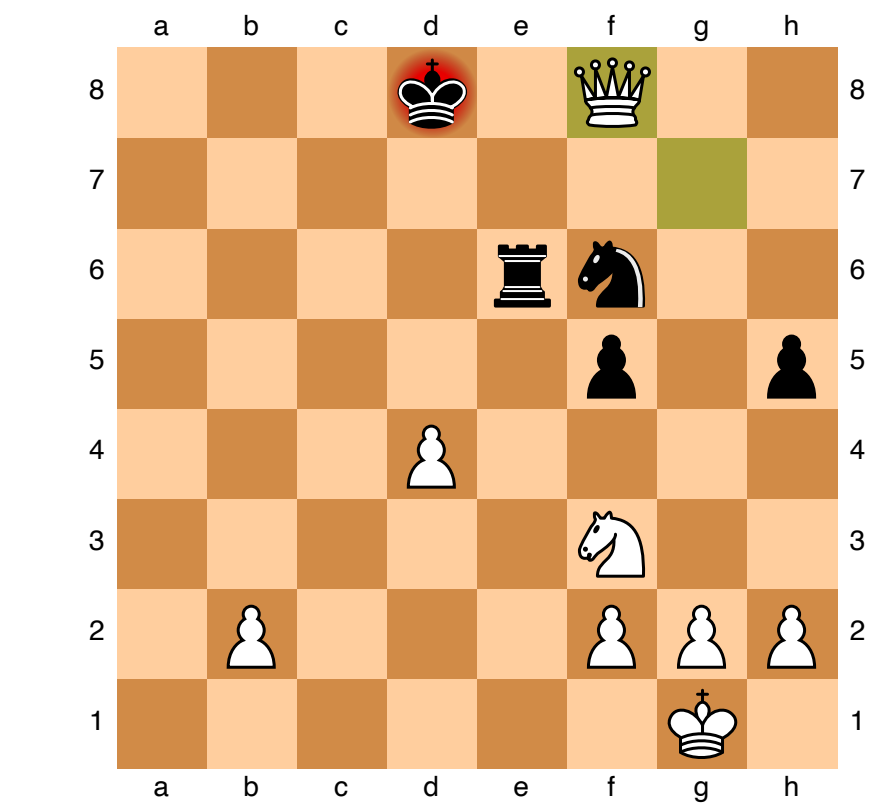
```
#32 - Assumption - Stockfish
board.push_san("Re6") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: g7f8
- GNU Chess 6 computed: g7f8
- LC0 0.26.3 computed: g7f8

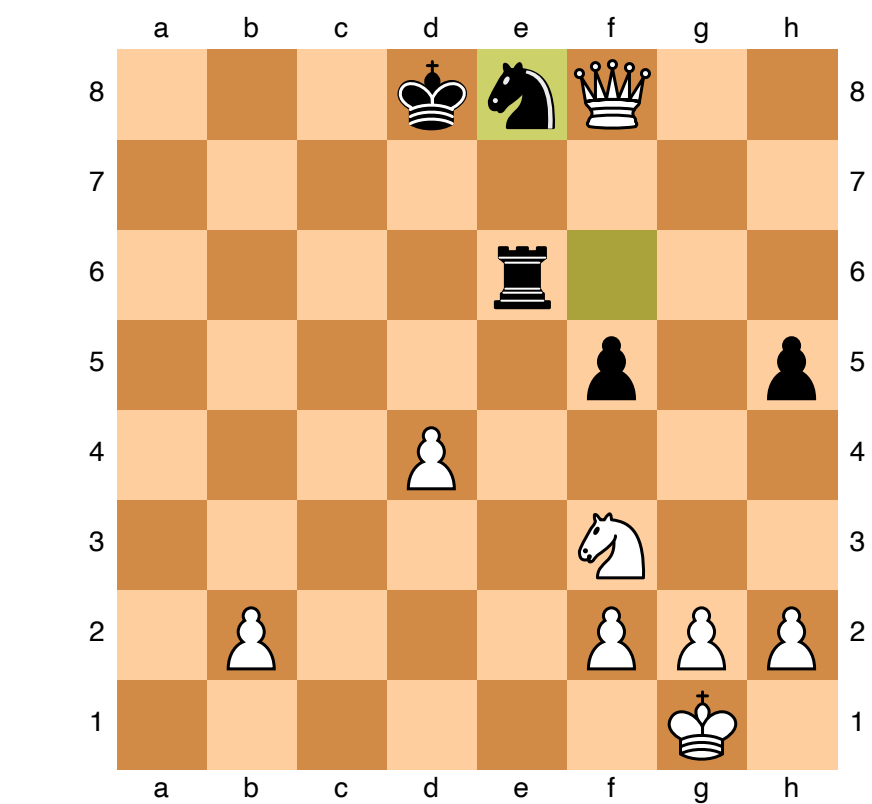
```
#32 - Assumption
board.push_san("Qf8") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: f6e8
- GNU Chess 6 computed: f6e8
- LC0 0.26.3 computed: f6e8

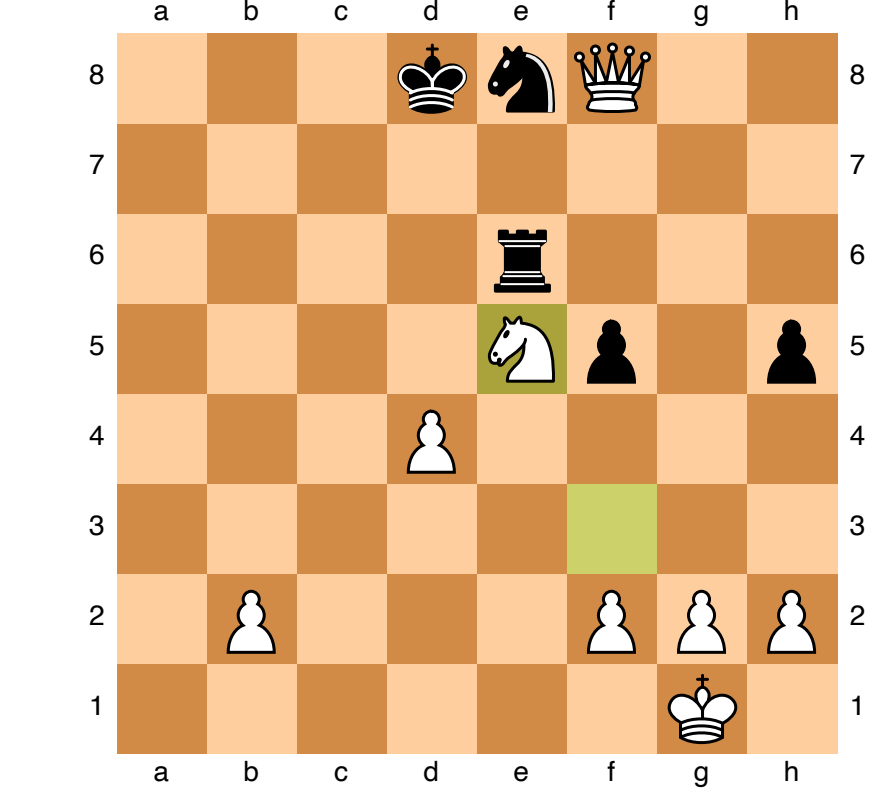
```
#33 - Assumption
board.push_san("Ne8") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: f3e5
- GNU Chess 6 computed: f8e5
- LC0 0.26.3 computed: f8e5

```
#33 - Assumption
board.push_san("Ne5") #Deep Blue
board
```

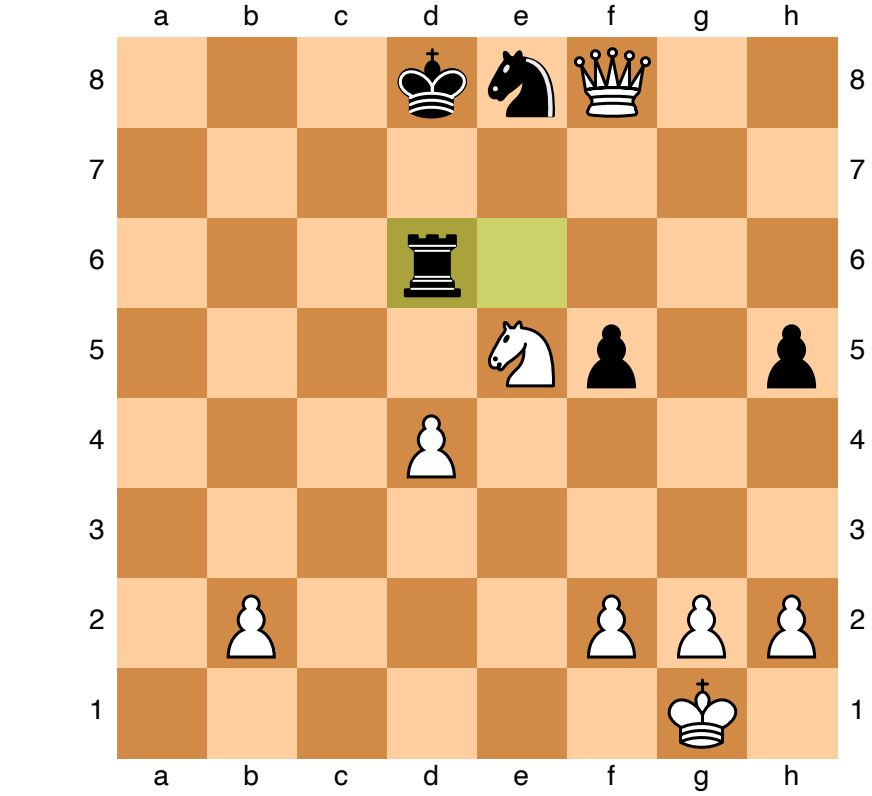


For Kasparov's move

- Stockfish 12 computed: e6d6
- GNU Chess 6 computed: e6a6
- LC0 0.26.3 computed: e6f6

My note: LC0 may be the best choice but will move with stockfish for now

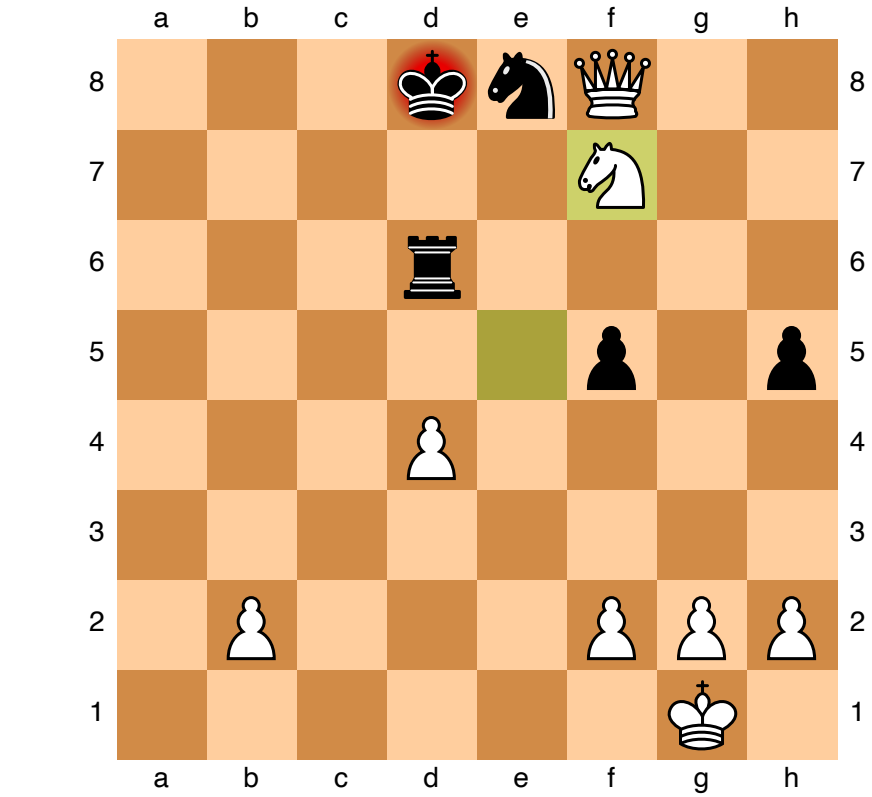
```
#34 - Assumption - Stockfish
board.push_san("Rd6") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: e5f7
- GNU Chess 6 computed: f8f5
- LC0 0.26.3 computed: e5f7

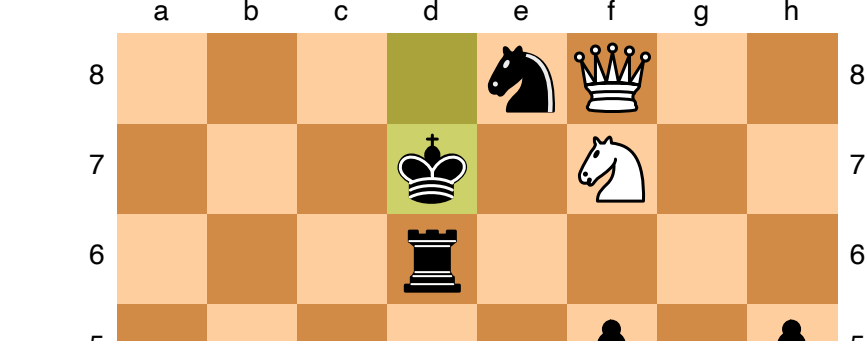
```
#34 - Assumption
board.push_san("Nf7") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: d8d7
- GNU Chess 6 computed: d8d7
- LC0 0.26.3 computed: d8c7

```
#35 - Assumption - Stockfish
board.push_san("Kd7") #Kasparov
board
```

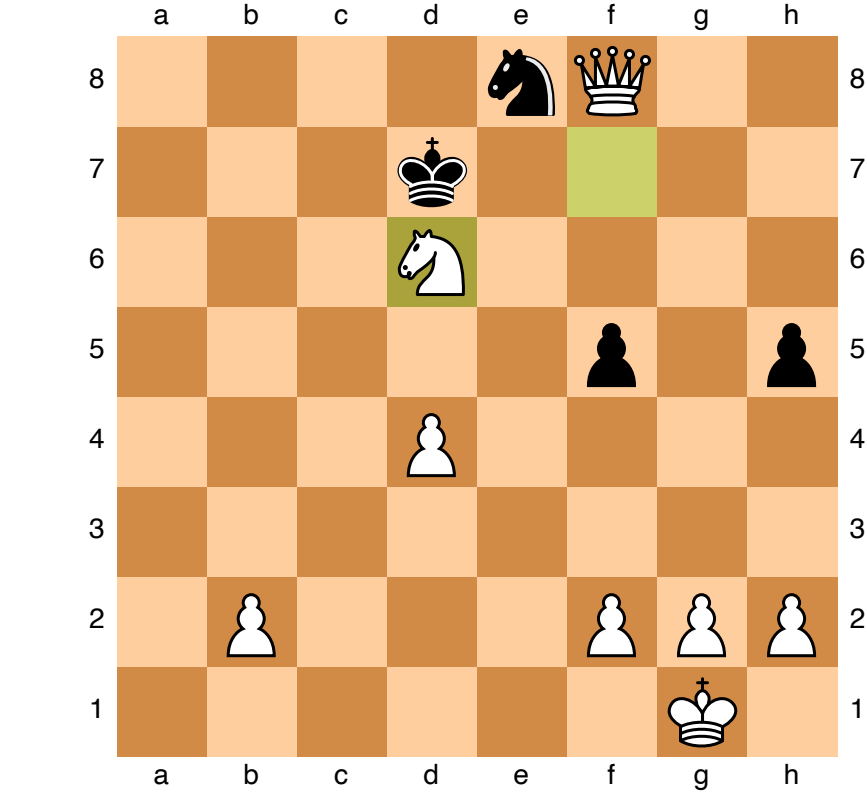


For Deep-Blue's move

- Stockfish 12 computed: f7d6
- GNU Chess 6 computed: f7d6
- LC0 0.26.3 computed: h2h3



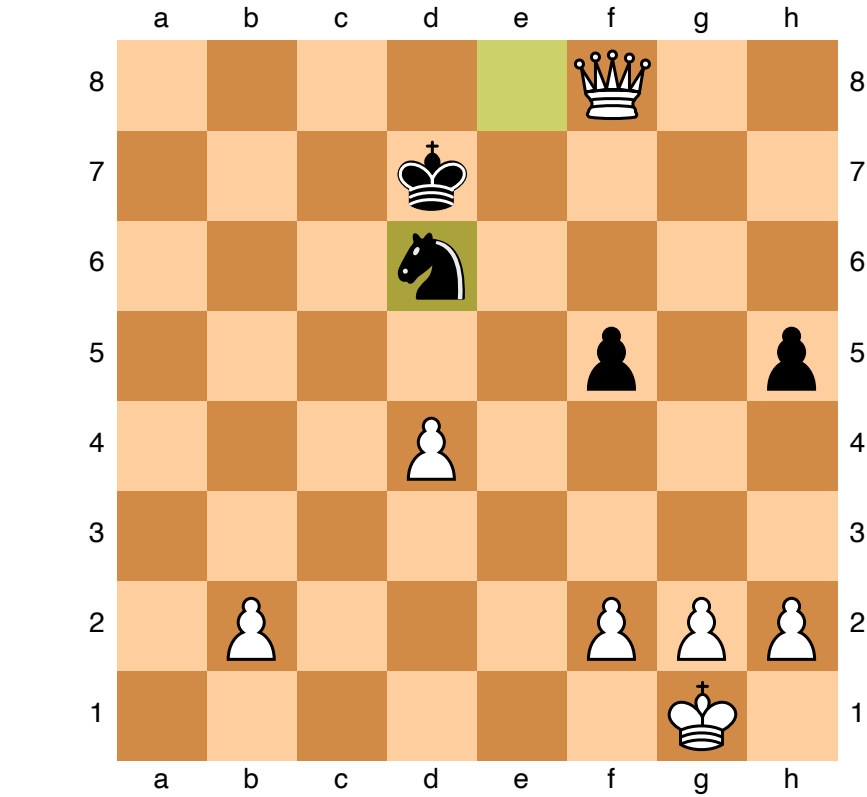
```
#35 - Assumption
board.push_san("Nd6") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: e8d6
- GNU Chess 6 computed: e8d6
- LC0 0.26.3 computed: e8d6

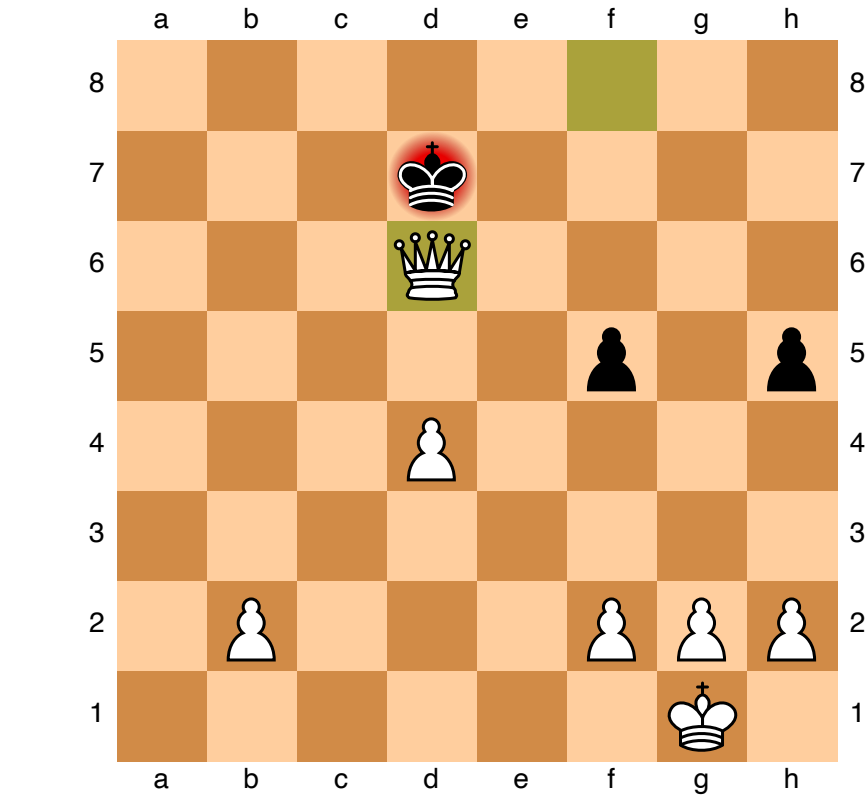
```
#36 - Assumption - Stockfish
board.push_san("Nd6") #Kasparov
board
```



For Deep-Blue's move

- Stockfish 12 computed: f8d6
- GNU Chess 6 computed: d4d5
- LC0 0.26.3 computed: f8g8

```
#36 - Assumption
board.push_san("Qd6") #Deep Blue
board
```



For Kasparov's move

- Stockfish 12 computed: d7d6
- GNU Chess 6 computed: d7d6

• LC0 0.26.3 computed: d7d6

#37 - Assumption

board.push_san("Kd6") #Kasparov

board

