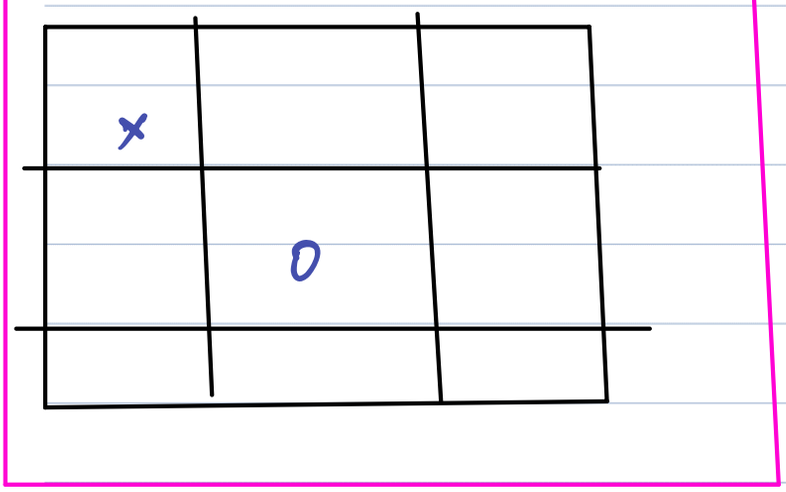
Today's agenda

- Class diagram of tic-tac-toe
- How to decide winner.

Class diagram → Nouns (logical reasoning)

Game



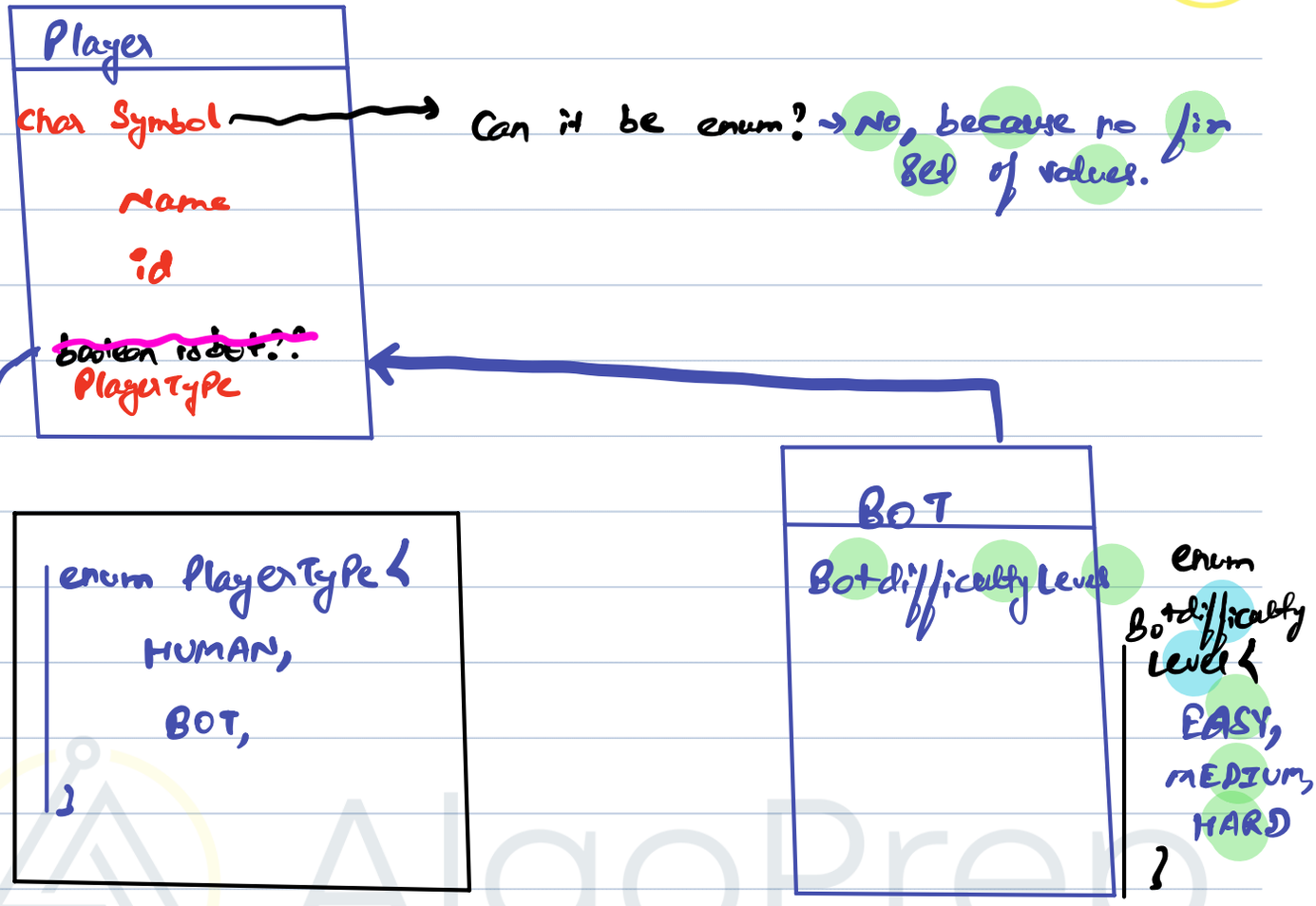
Game

List<Player>
Board
List<move>
GameState
Player winner
int nextPlayerMoveIdx

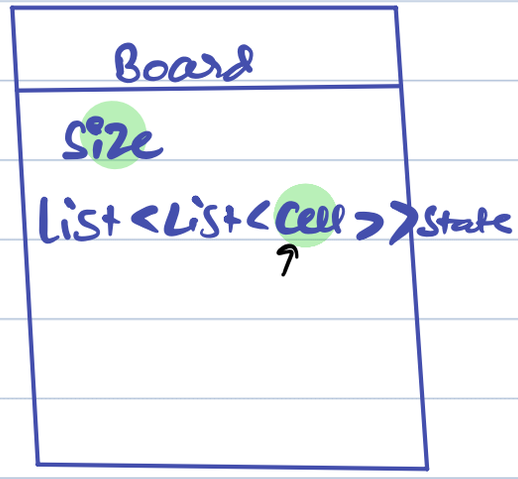
enum GameState

IN_PROGRESS,
PAUSED,
COMPLETE

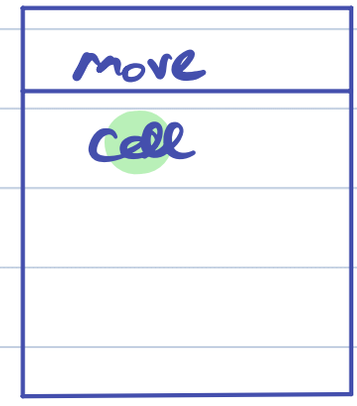
Player



Board

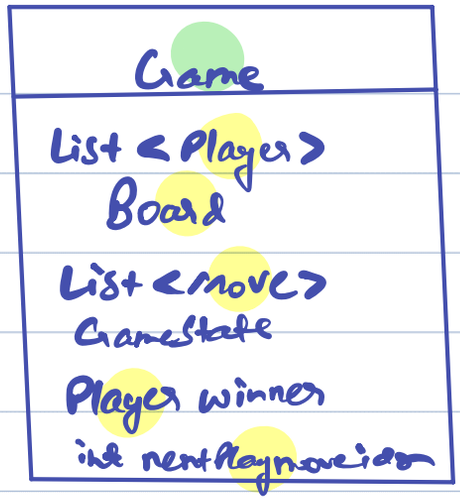


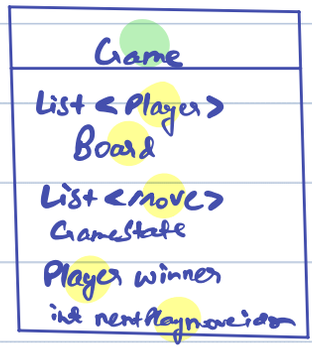
move

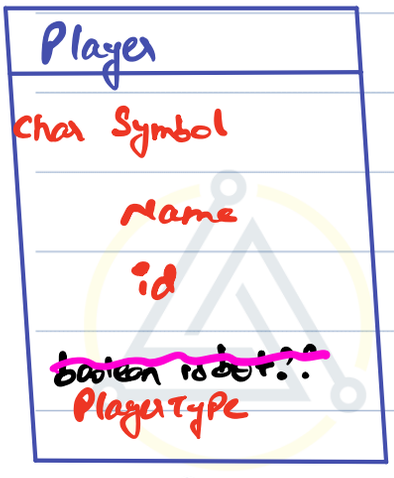


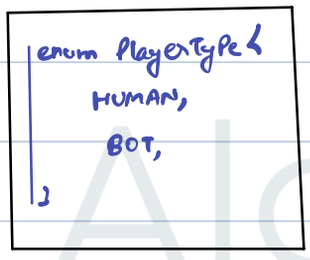
enum CellState
EMPTY,
FILLED,
BLOCKED,

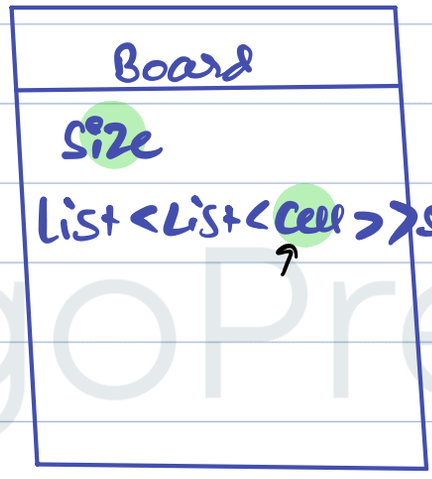
All the classes

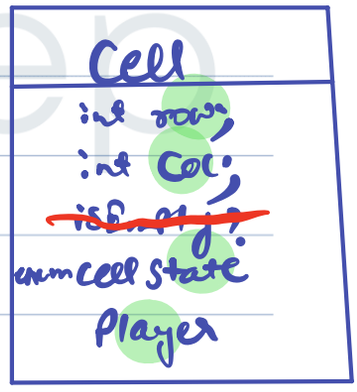


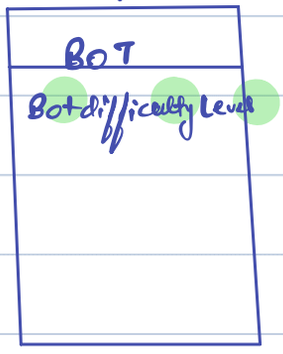


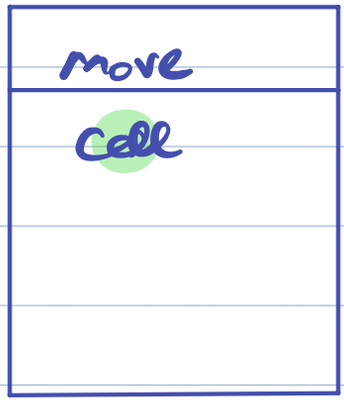




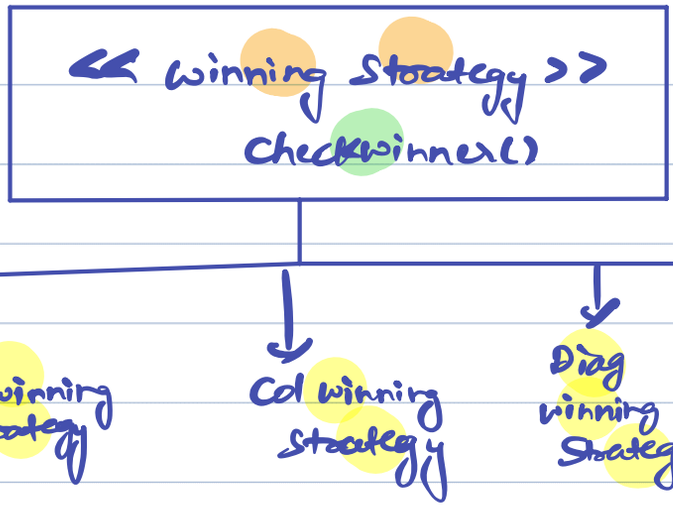




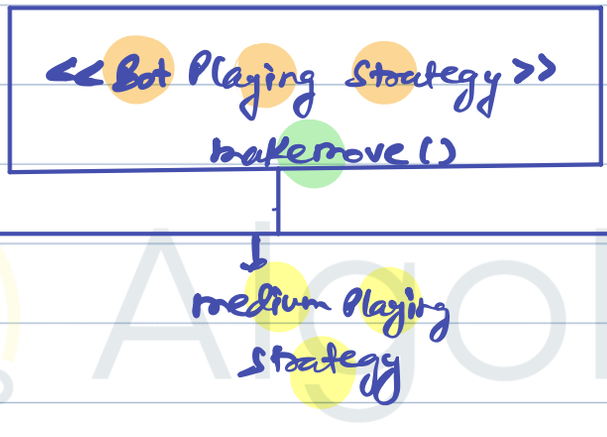




enum
difficulty
Level {
EASY,
MEDIUM,
HARD
}



Adapter, **
Factory,
Strategy,
Singleton, **
Builder



Game Builder

→ to validate if one Symbol is assigned to exactly 1 Player.

→ to validate 1 bot?

→ How to check if someone has won ??

↳ winning Cond^n:

→ Same symbol over complete row.

→ " " " complete col.

→ " " " complete diag.

idea 1

↳ for every player → N

↳ iterate on board and check if the cond is satisfied. → {O(N²)}

↳ O(N³)

idea 2

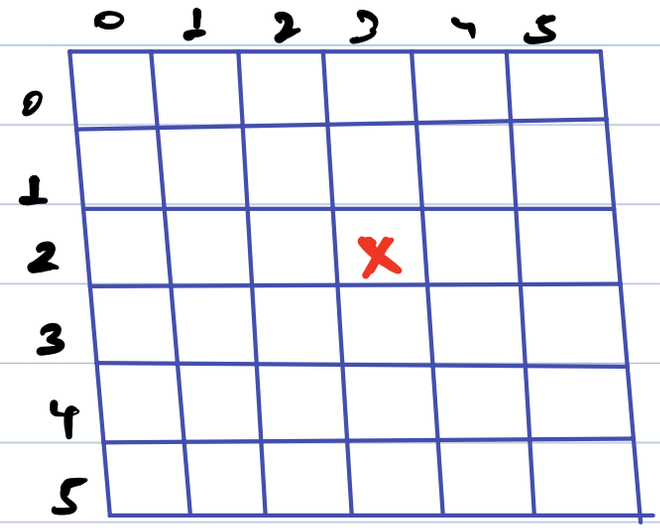
```
checkWinner (Board, lastmovePlayer) {
```

↳ iterate on board and check if the cond is satisfied. → {O(N²)}

}

↳ O(N²)

Idea 3



↳ After A move check for rowno, colno & 2 diagonals the last player placed the symbol on.

↳ $4n \approx O(n)$

↳ try to come up with O(1) soln.

→ H.W: leetcode 1001