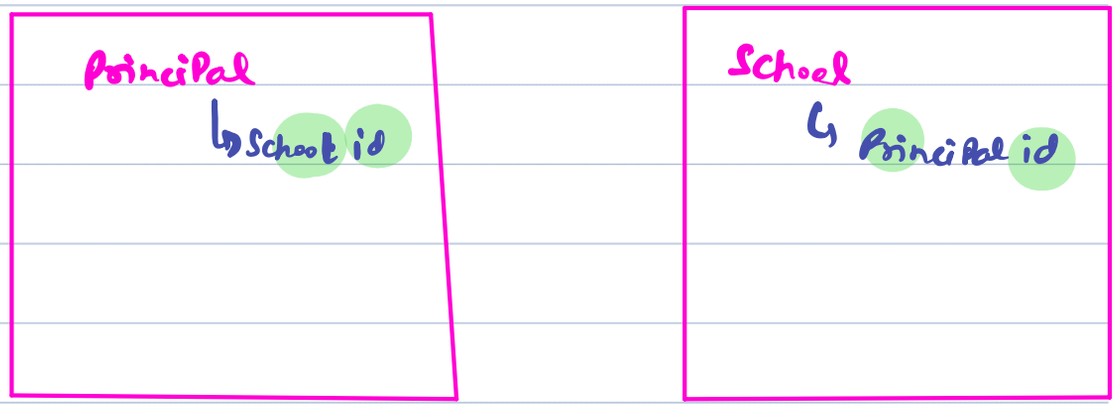
Today's agenda

- How to approach schema design
- How to code
- Tic-Tac-Toe requirements

→ How to approach Schema design?

↳ 1:1 → id of one side on other side



↳ 1:m
or → id of 1 side on m side
m:1

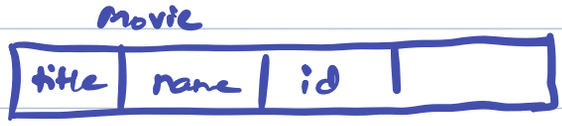
1:m mapping

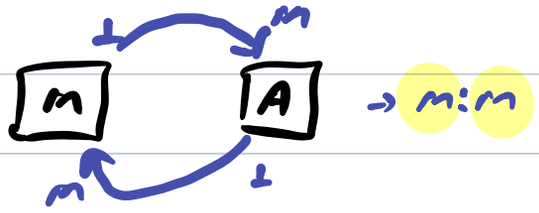
↳ m:m → mapping table

→ Steps to approach Schema design

(i) for each class, you will need a table.

```
class Movie {
    title
    name
    id
    List<Actor>
}
```





↳ for each of primitive attribute in class, put that as a column in the table. (non-objects?)

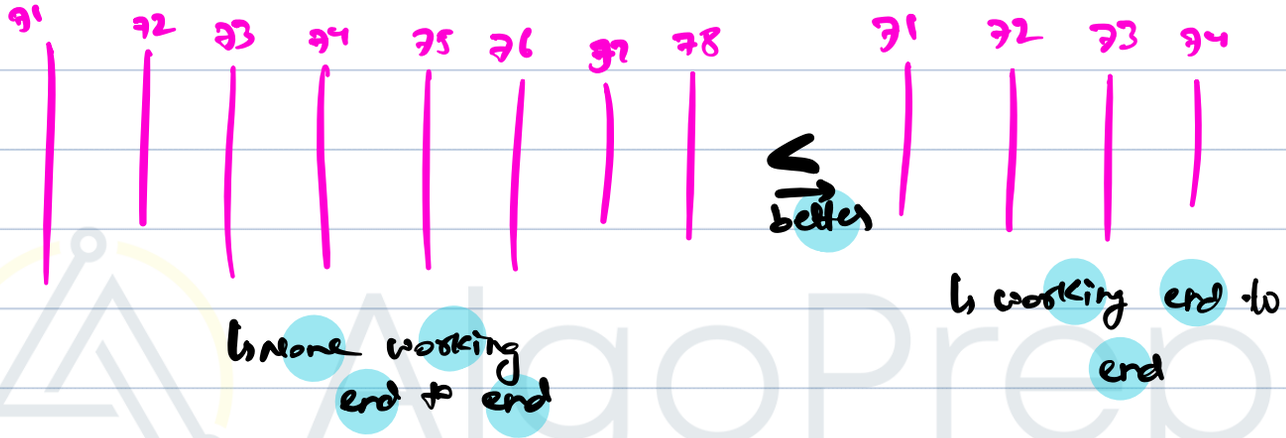
(ii) For every non-primitive, it will represent relation with another class.

↳ Find the cardinality

↳ How to code

(i) Project Structure → MVC Structure

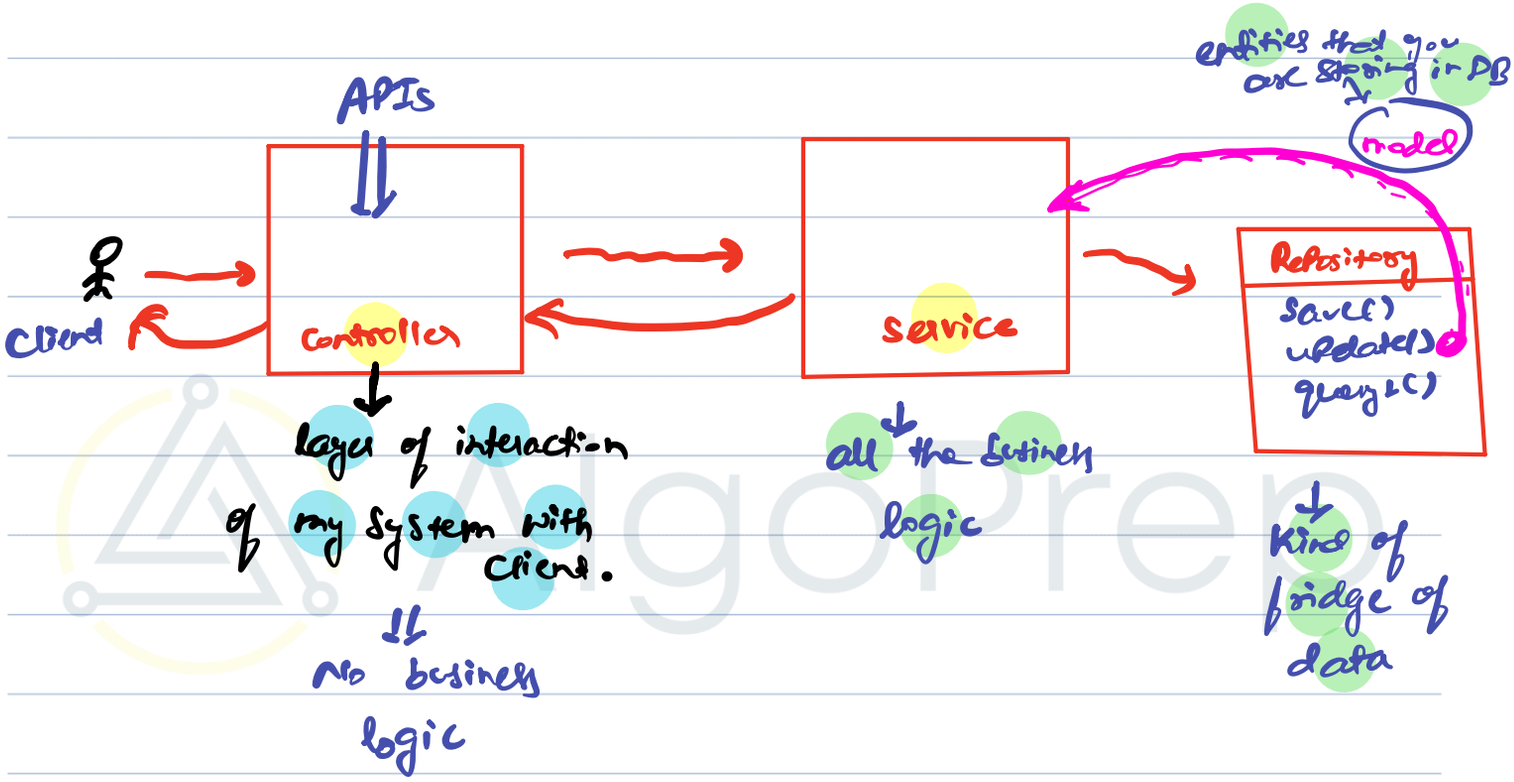
(ii) Atleast some of the features must be running end to end.



(iii) Code req to req
↳ implement features with no dependency and go from there.

→ MVC Structure → Codebase structuring

model view controller



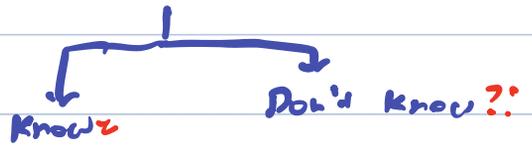
→ In LLD/mc, do we necessarily need to connect to a real DB or can I store data in memory.

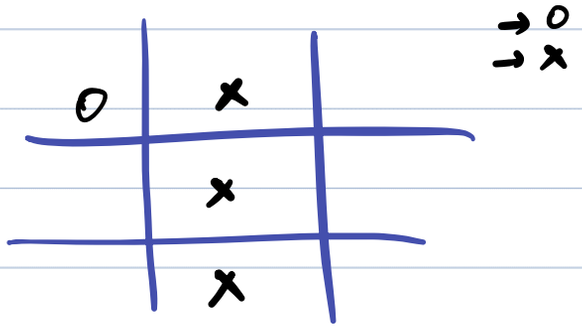
↳ Ans: depends

↳ Clarify this with the interviewer.

Design Tic-Tac-Toe

↳ overview





- → Persist the data XX
- → Command line ✓

→ Requirement Gathering {10 mins}

↳ Ask about features / ideas or corner cases.

Note: features / questions that you are going to ask should be valid for other games eg: chess, Snake & ladder etc.

(i) Size of board can be any?? → n×n

(ii) # of Players ?? → n-1

(iii) Symbol Selection ?? → every Player can select or it is going to be assigned. {Should we allow 2 Players same Symbol?}

(iv) who will make the first move??

↳

① ② ③ ④ → randomise → ③ → ② → ④ → ①

(v) Will there be bots? → yes (Computer Players)

↳ What can be the max no. bots in 1 game?

↳ bots can have diff. difficulty?

(vi) How is winner decided?

↳ Condition should extensible, Player should be able to decide the winning Cond^{n} at the start of game.

a) All the col^{n} of 1 row having same symbol
b) All corners have same symbol
c) All the rows of 1 col having same symbol

↳ Strategy design pattern

(vii) Can we Pause & resume the game later?

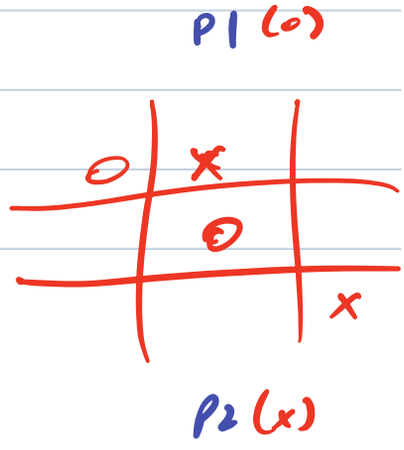
↳ No.

(viii) restart option?

↳ yes

(ix) Can we undo a move?

↳ Global undo button



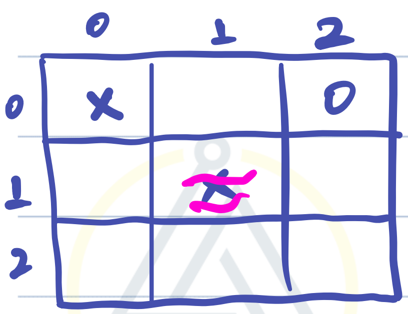
(x) cells are already blocked?

→ H.W: Try Class diagram

→ How we can do undo operation.

↳ 3 ways

① Breakup method

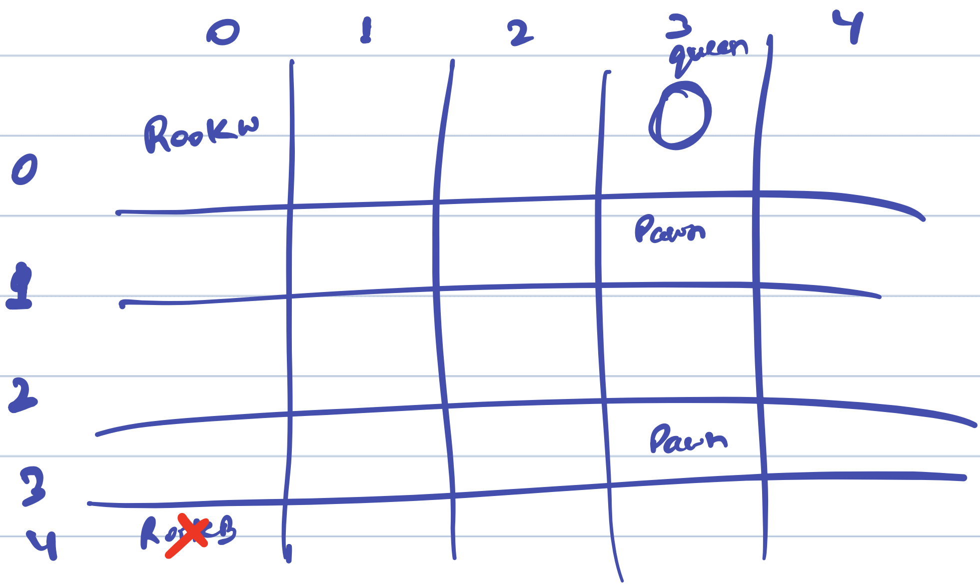


↳ (i) Store moves in Stack/List.

(ii) Remove last move from l.

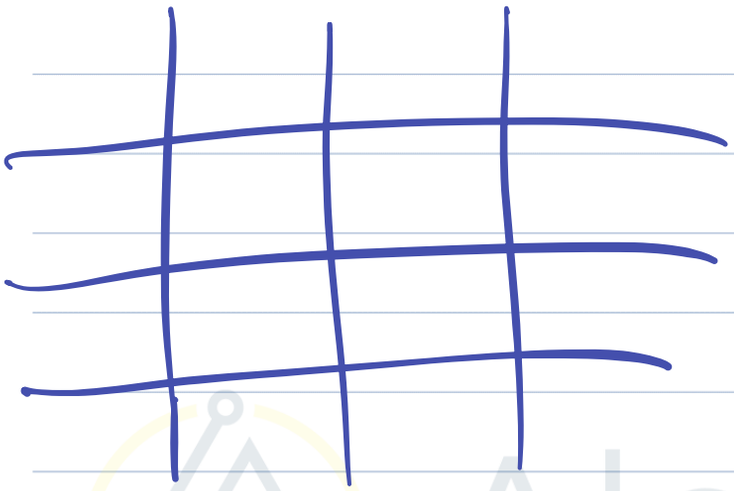
(iii) empty the cell in that move.

Cons:



(ii) Rebirth method.

(0,0) (1,1)	(1,2) (3,3)	. . .	(3,)



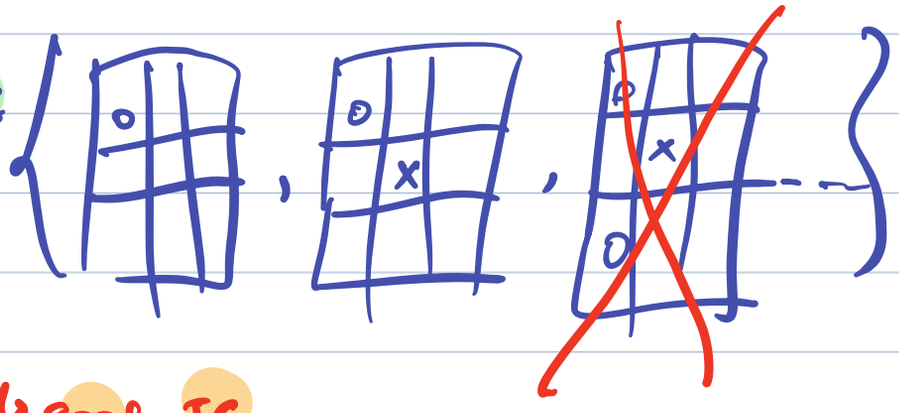
(i) you remove the last move.
(ii) Clear the board.
(iii) Apply moves from start.

↳ T.C is bad.

(3) back to the future

↳ Store the list of state of board after each move.

List <board> l:



↳ good TC
↳ easy to implement.
↳ bad SC