LLD - Design TicTacToe

→ Tic Tac Toe

→ Overview

→ Clarifications

→ Requirements

→ Entities

→ Class Diagram

→ Implementation

$\left.\begin{array}{l}\text{Clarifications}\\\text{Requirements}\\\text{Entities}\\\text{Class Diagram}\end{array}\right\}$ Design

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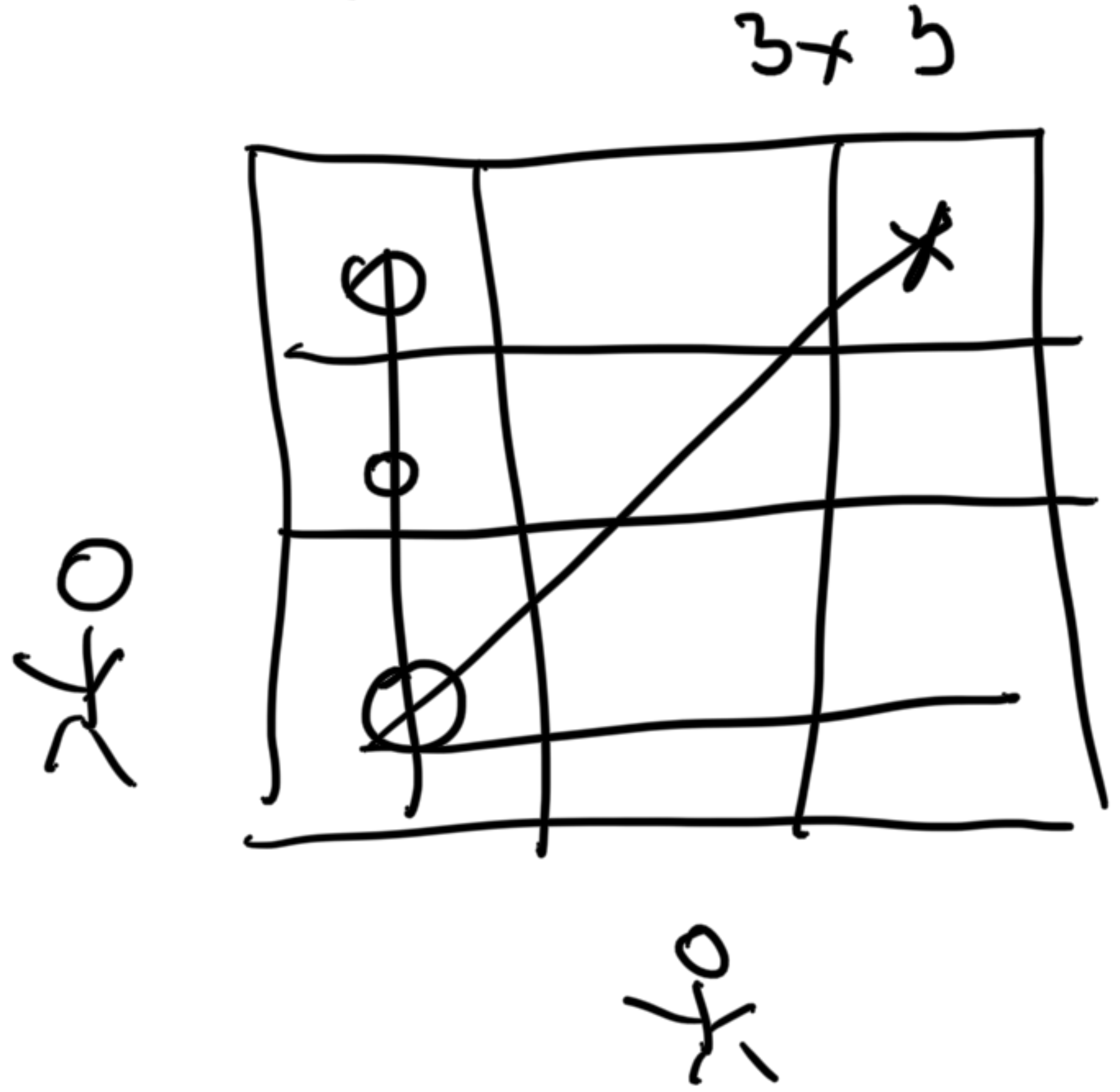
Problem Statement

→ Design tictactoe

If known,



If not known,

→ What is X?

→ Some overview

Requirements

→ Current scope

- Size of the board
- 2 players or more?
- Types of symbols

→ Future scope

→ Can there be multiple

ways to win a game

→ Behaviour

→ Can a player play with a bot?

→ How does a player win?

→ who starts the game?

- $N \times N$

$M \times N$

1. Board — N x N

2. Players — 2 players
   - Human Player
   - Bot

3. Symbols — O , X

4. Future — Multiple ways to win a game

5. Consecutive symbols
   - Row
   - Column

- Diaghool

6. Game is stated randomly

7. Alternate – turn by turn

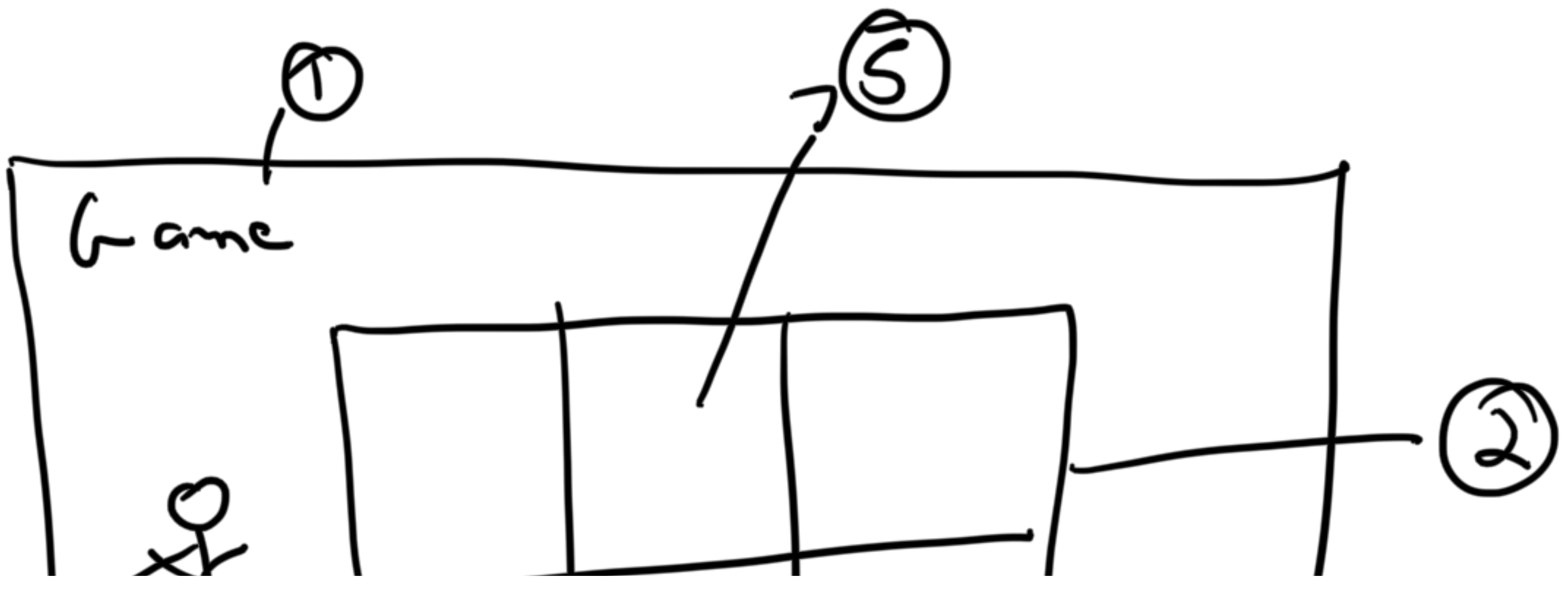
8. If all cells are complete & no one wins, then draw

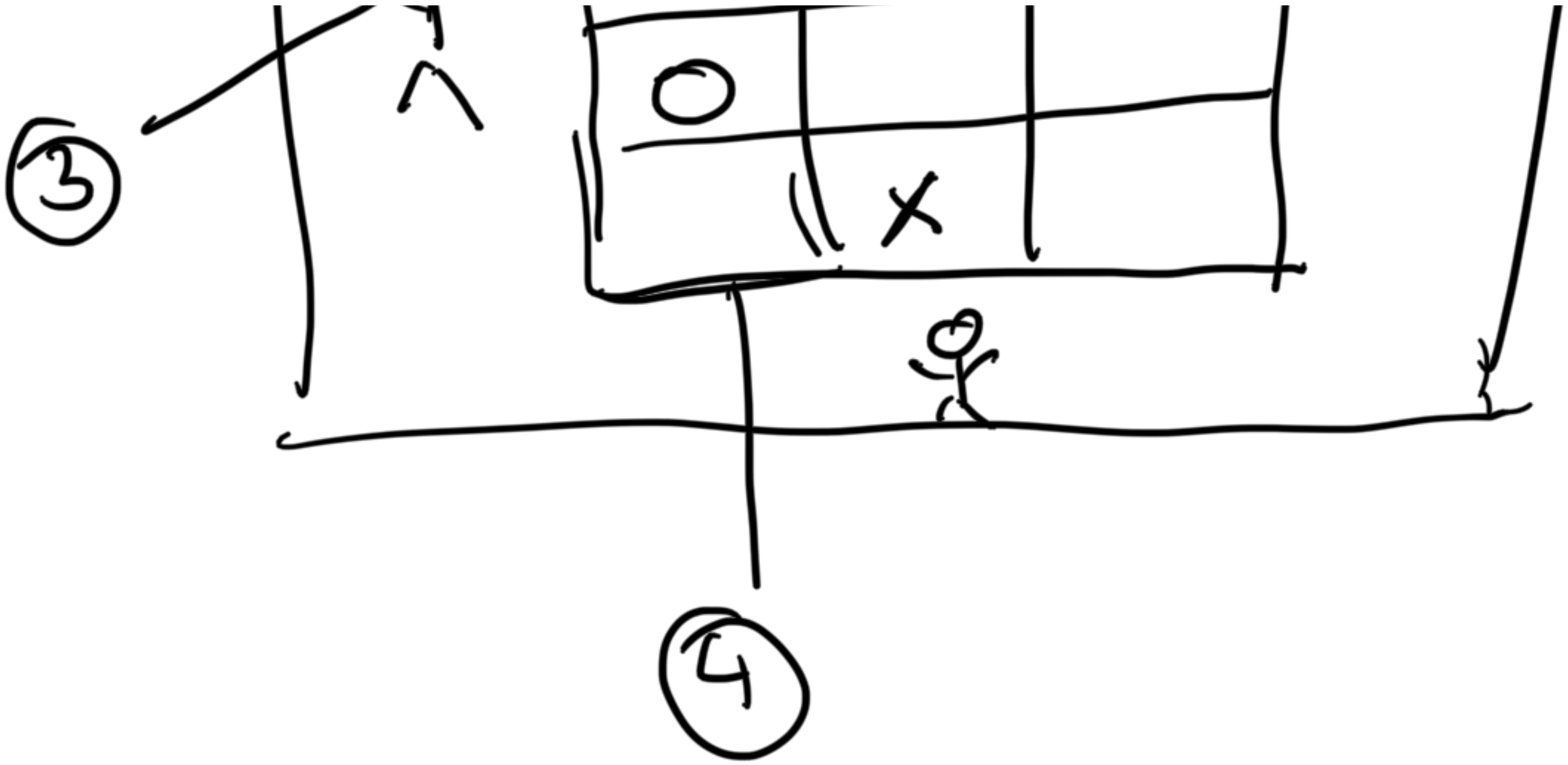
9. Human – name
   - email
   - photo

10 Bot — Difficulty level

Visualisation

- Draw a sample system
- Dataflow diagram



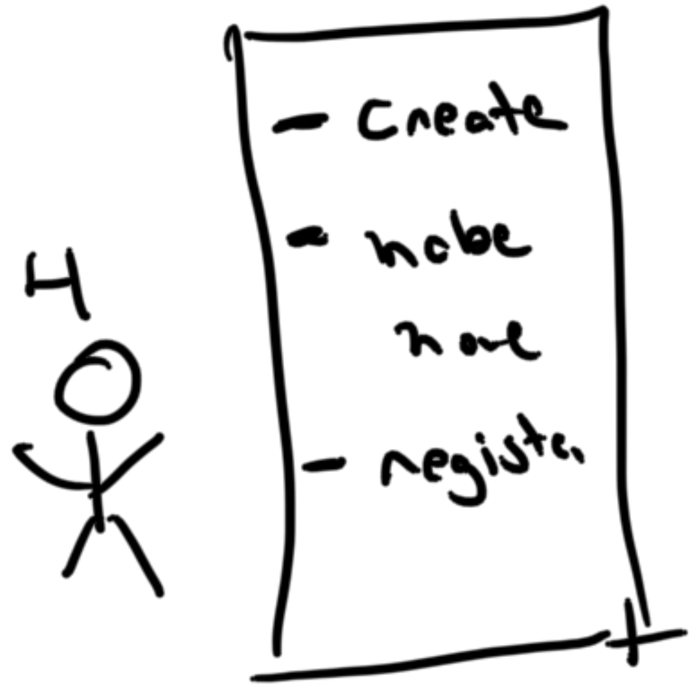


CLI

command

- git status

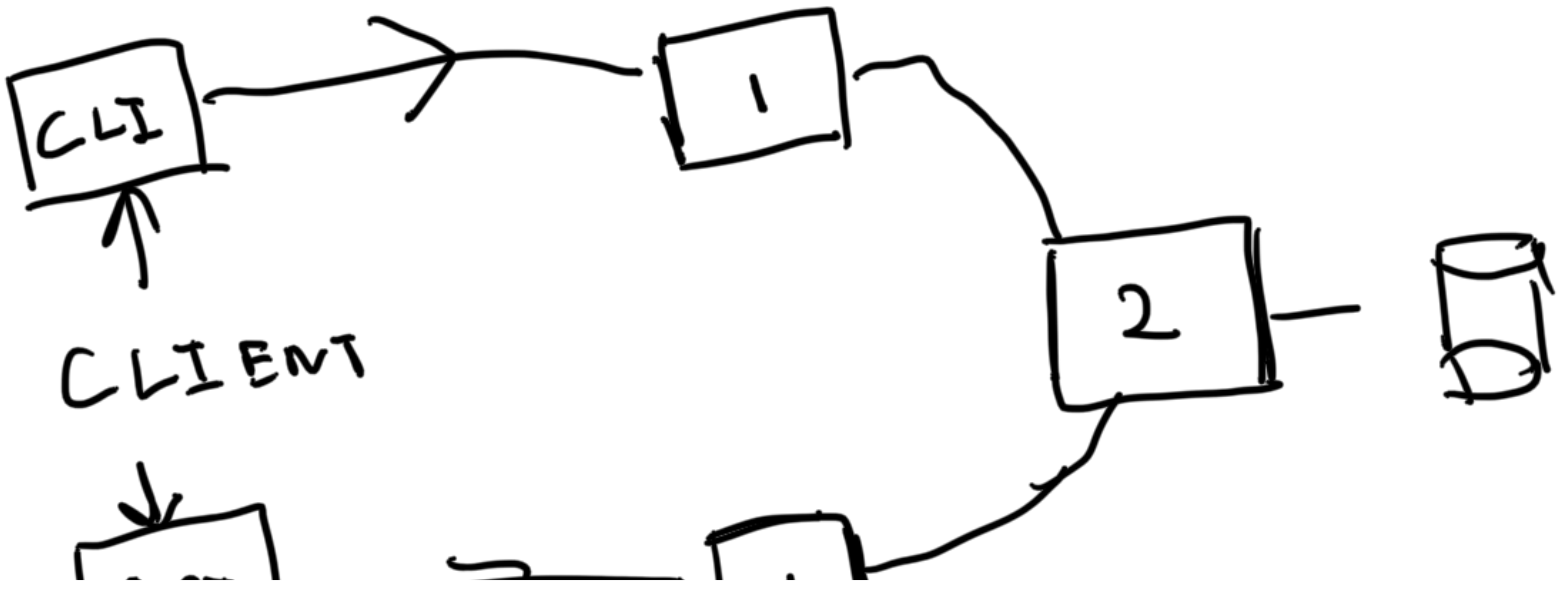
- +++ registu



$\boxed{\text{API}}$

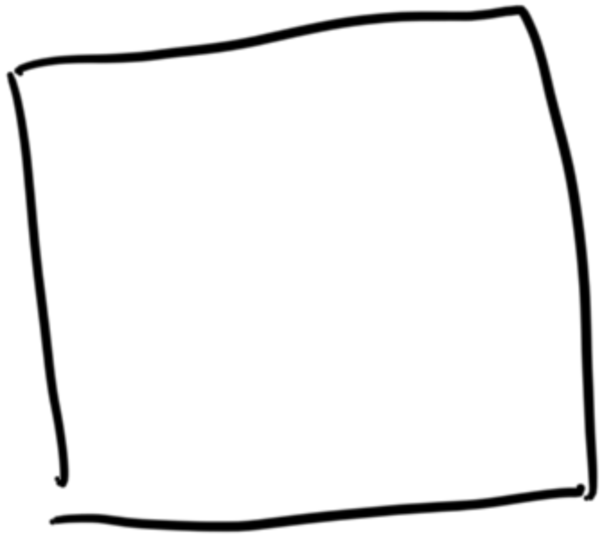
— /check-status

— /register

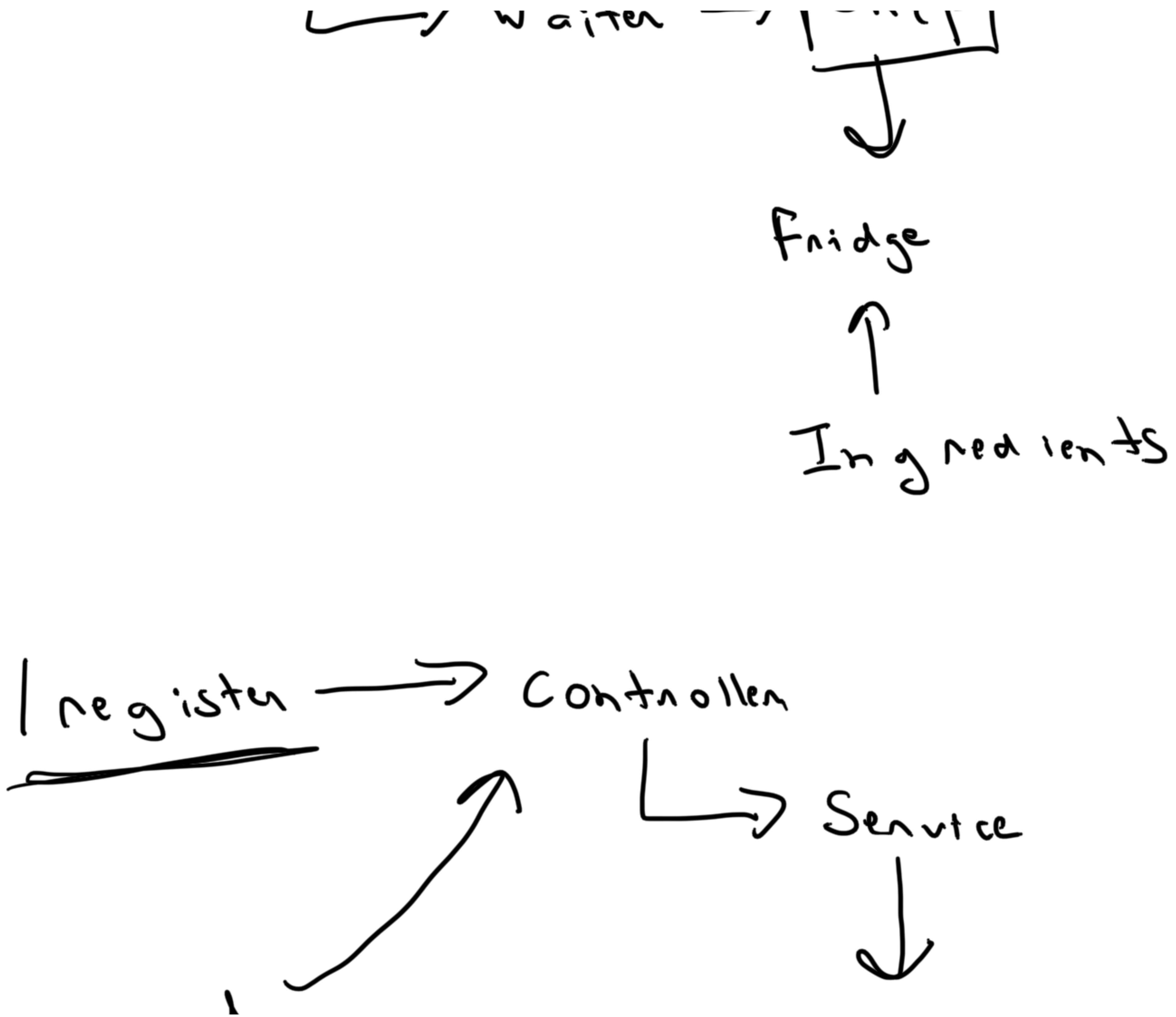


3 - tiered architecture

layered



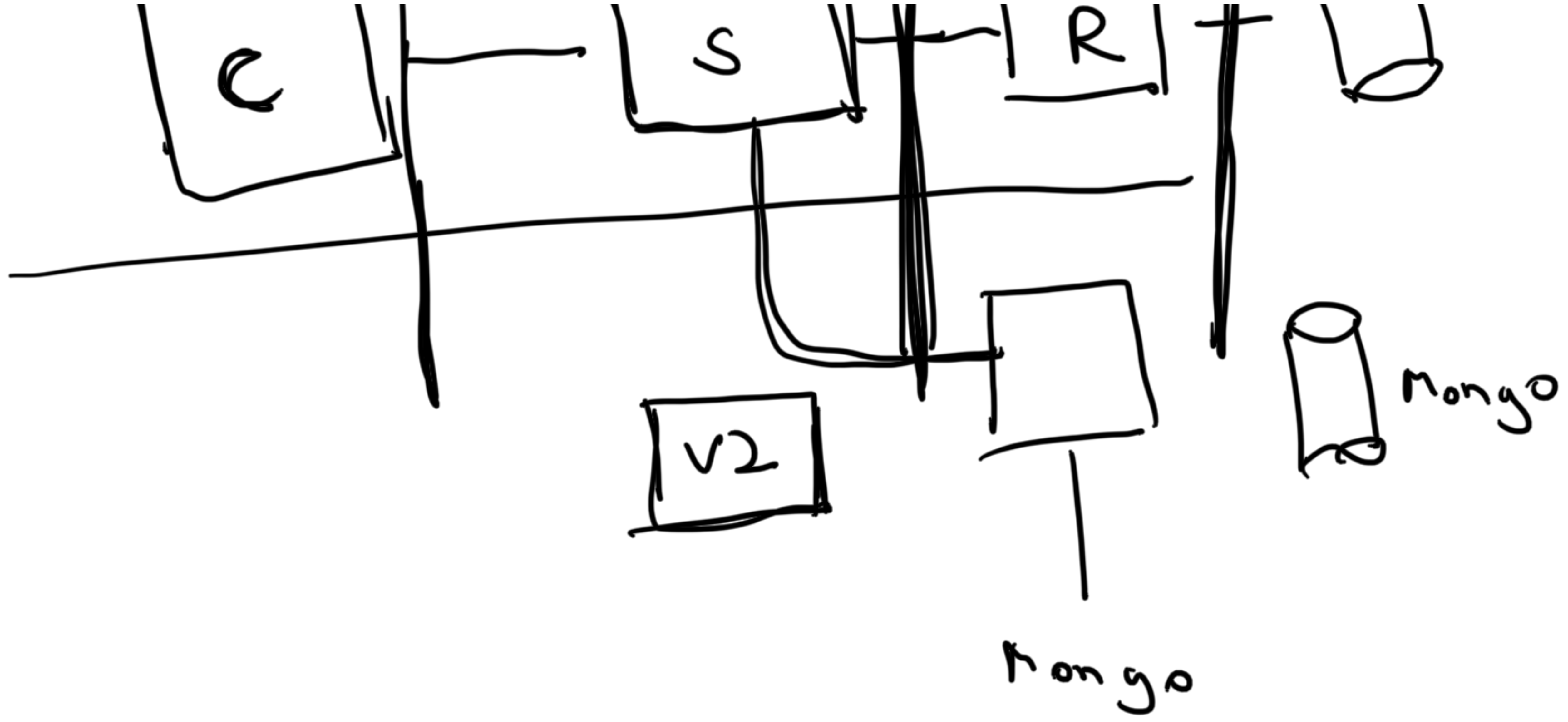
Order Food


Waiter
Fridge
Ingredients
register
Controller
Service

command

Repository
DAO

- Extensibility
- Maintainability
- ReuSability



→ Game

→ Board

→ [illegible]

→ Start

(H)

→ [illegible]

→ Human Player | → checkWinner

→ Bot Player | → makeMove

| → register

→ Board

→ Cell[ ][ ]

→ Cell

→ x , y

→ Symbol — O , X

→ Human Player

→ name

→ email

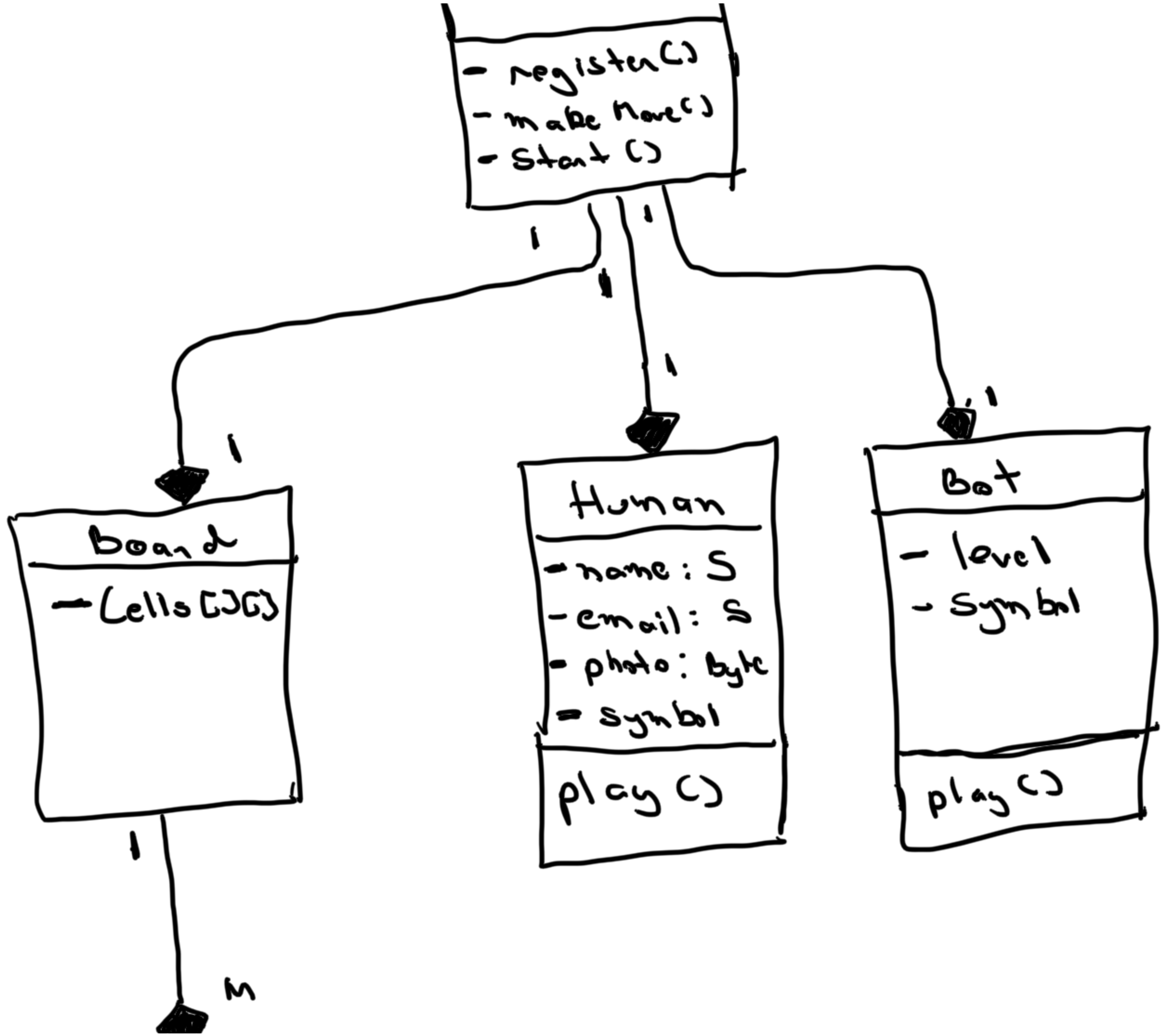
→ photo

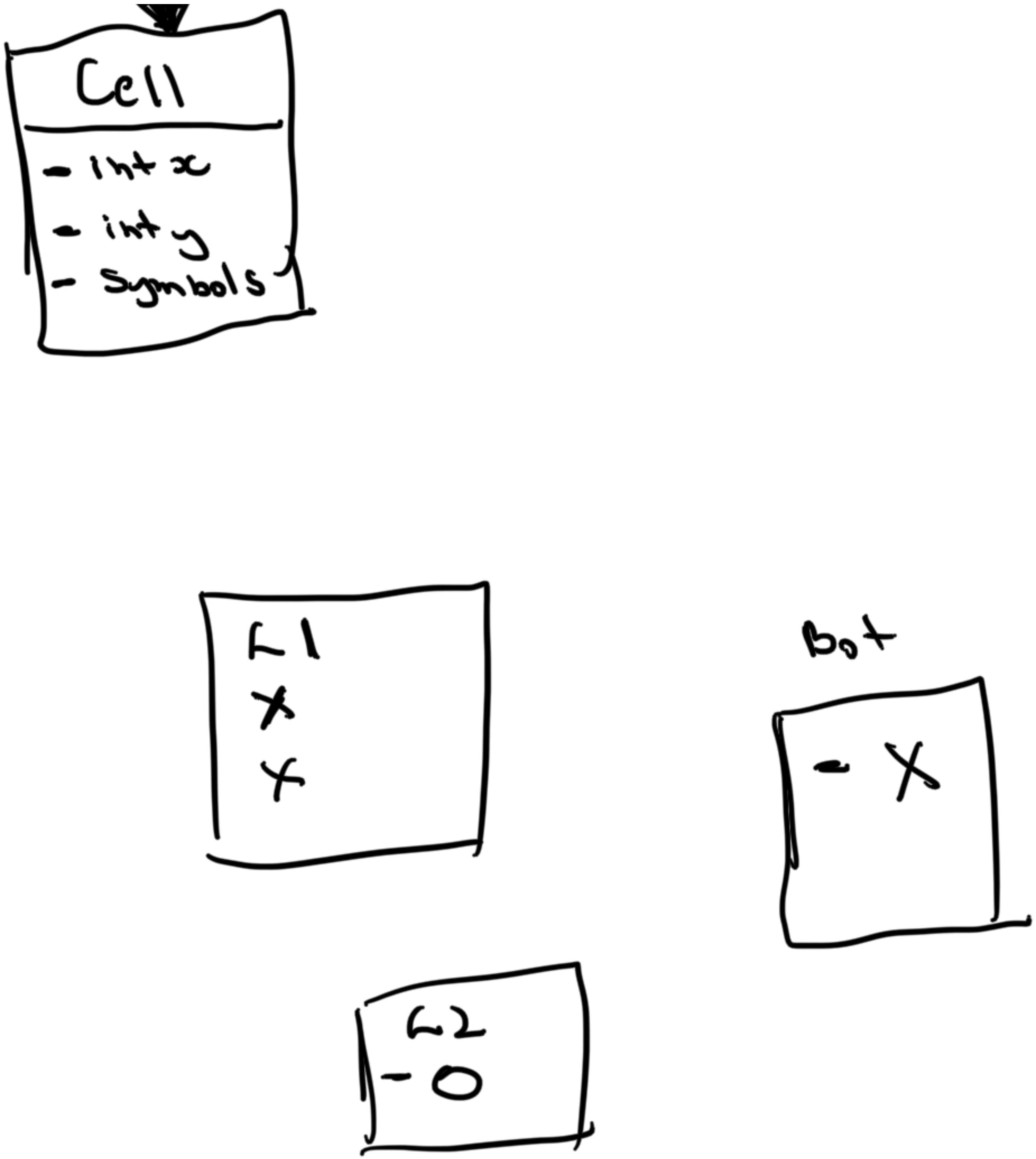
→ Bot

  → level

Game

- board: B
- human
- bot


- register()
- make Move()
- Start ()
1
1
1
1
1
1
Board
- Cells[][]
Human
- name : S
- email : S
- photo : byte
- symbol
play ()
Bot
- level
- Symbol
play ()
1
M


Cell
- int x
- int y
- Symbols
C1
X
Y
Bot
- X
C2
- O

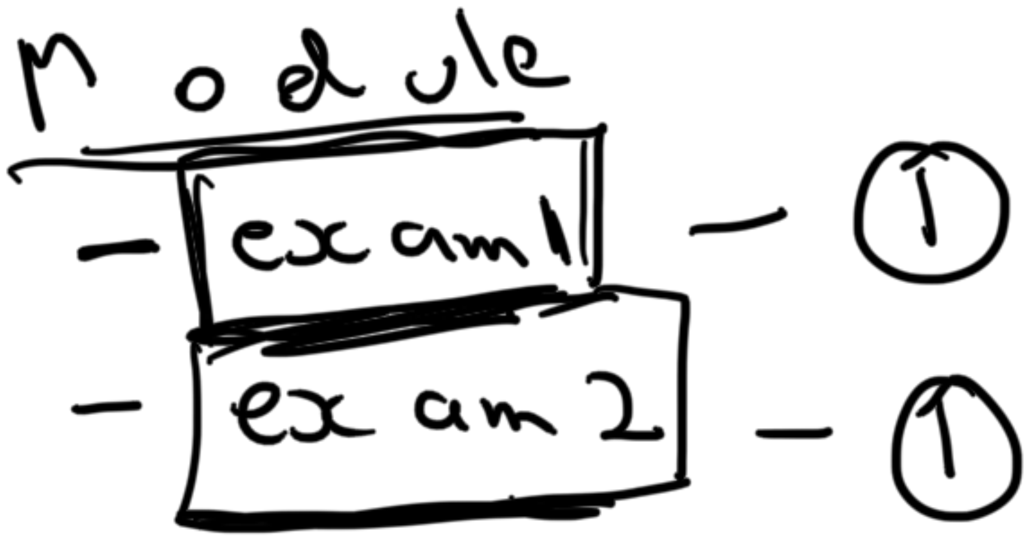
Game — Human

- player 1
- player 2

1

6 : 21 — 6:24

$\boxed{-10:54}$



Exam

Module

Exam [ ] - $\textcircled{m}$

1

Game

Player [ ]

1

m

Player

1

$\boxed{1 : M}$