

Pac-man Final Game

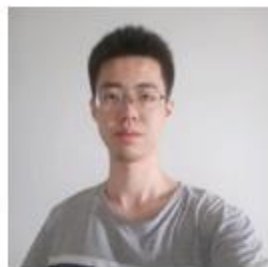
Team - Sleepy Day

Team Introduction



Bingnan

Team Leader



Qi-ao

Tech Leader



Qian

Doc Leader



Jianxu

Backend Dev



Yusen

Frontend Dev

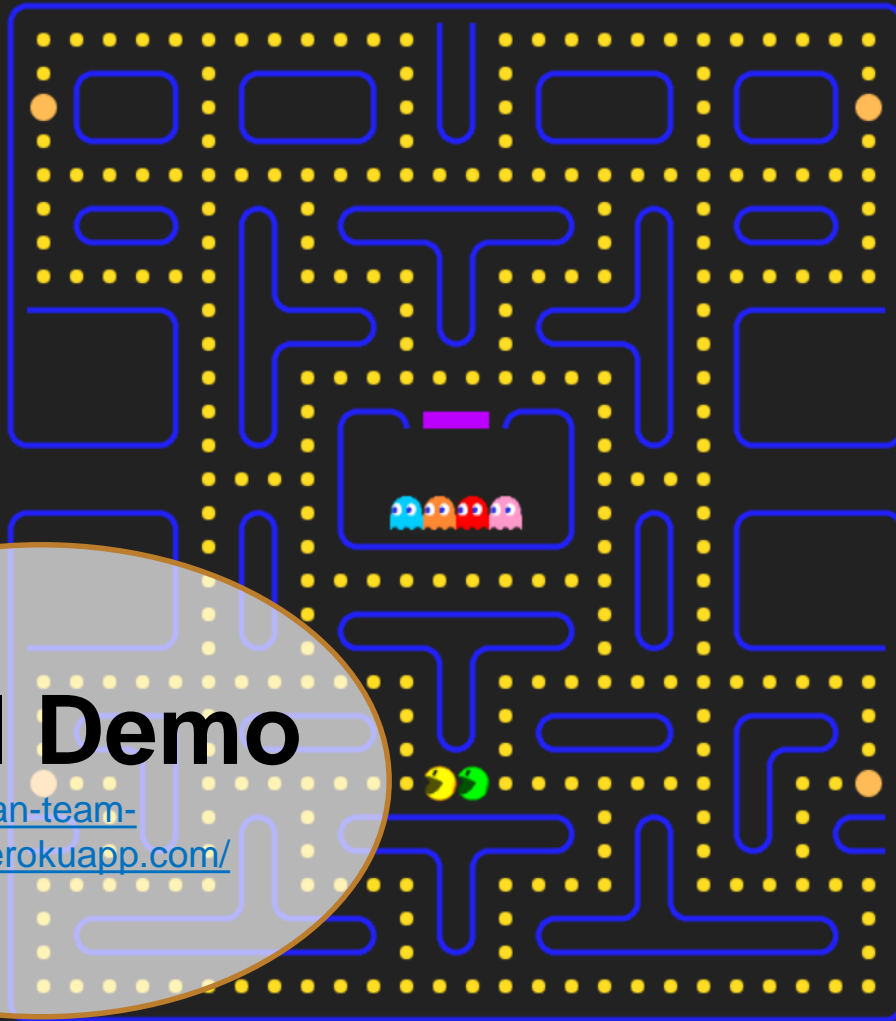


Jianjun

Frontend Dev

Final Demo

<https://pacman-team-sleepyday.herokuapp.com/>



SLEEPY DAY






LEVEL : 0

SCORE : 0




PLAYER # 1-(WASD)-(123)

LIFE :   

SKILL :   

PLAYER # 2-(↑↓←→)-(<=>?)

LIFE :   

SKILL :   

Requirement Specification

Basic Requirement

- One exit on each side
- Larger blinking dots
- If Pac-Man is caught
- If Pac-Man eats large dots
- Different ghost strategies
-

Extra Functions

- Different Map
- Skills of Pac-man
-

Our Game

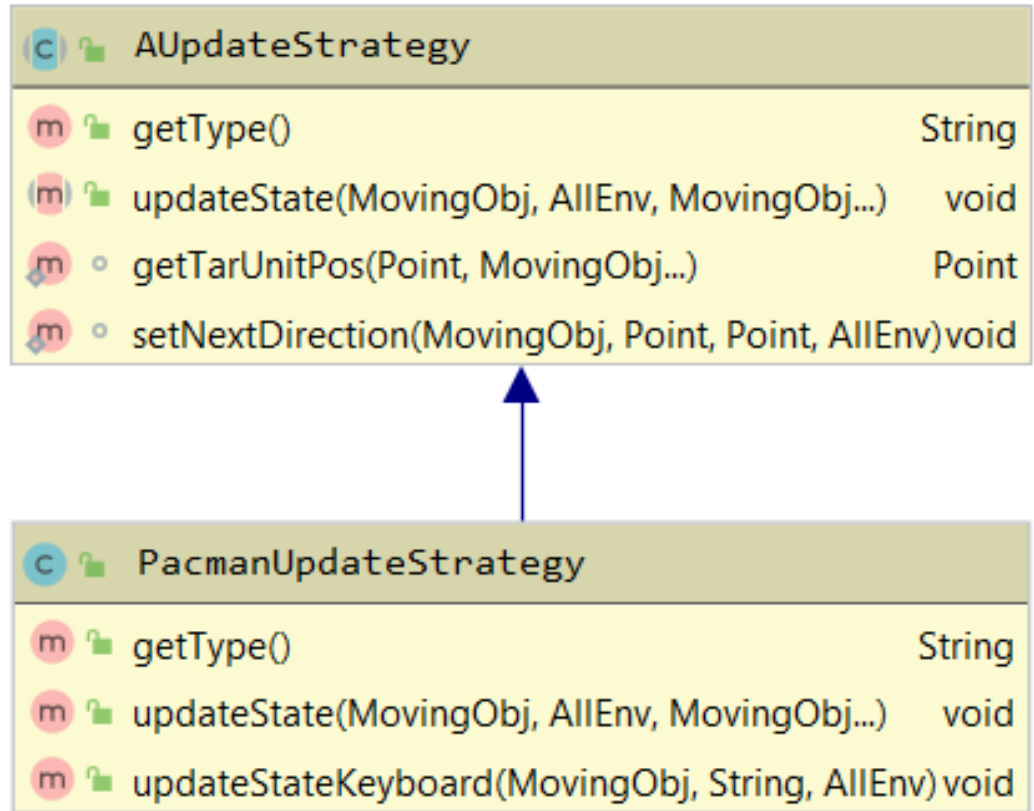
- Multiple exits based on different maps
- 4 energizer at corners
- One player loses all lives => Game Over
- turn dark blue and then start flashing
- Chase, Retreat, Wander, Revive
-

Implementatoin

- Six maps could be loaded
- Acceleration, Invincible, etc
-

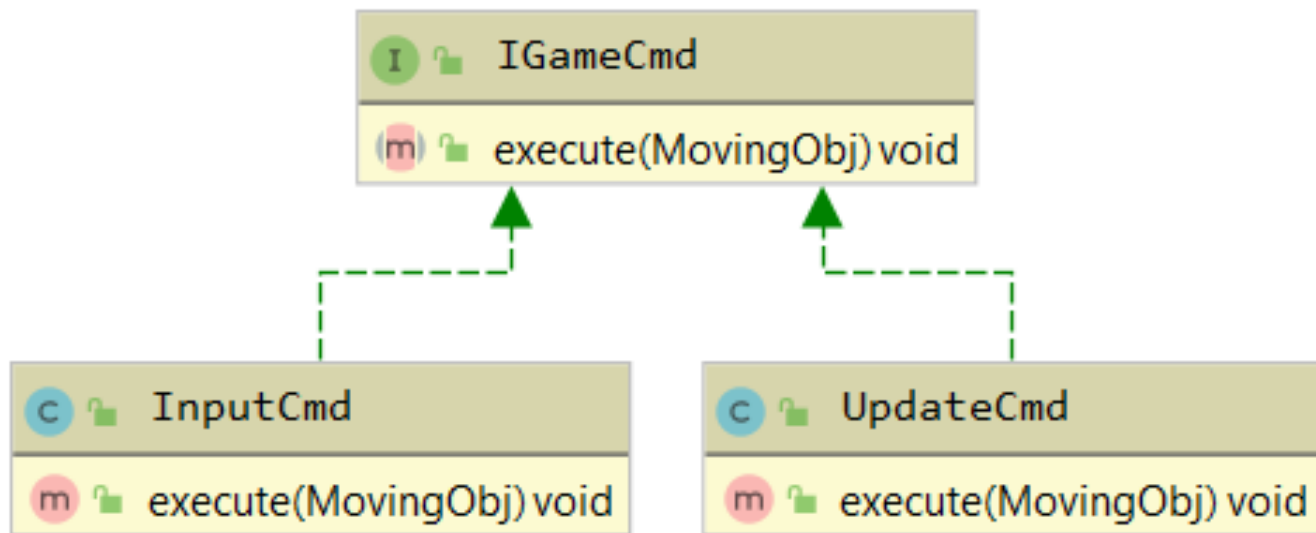
Pacman Design

Strategy design Pattern to update the moving object.



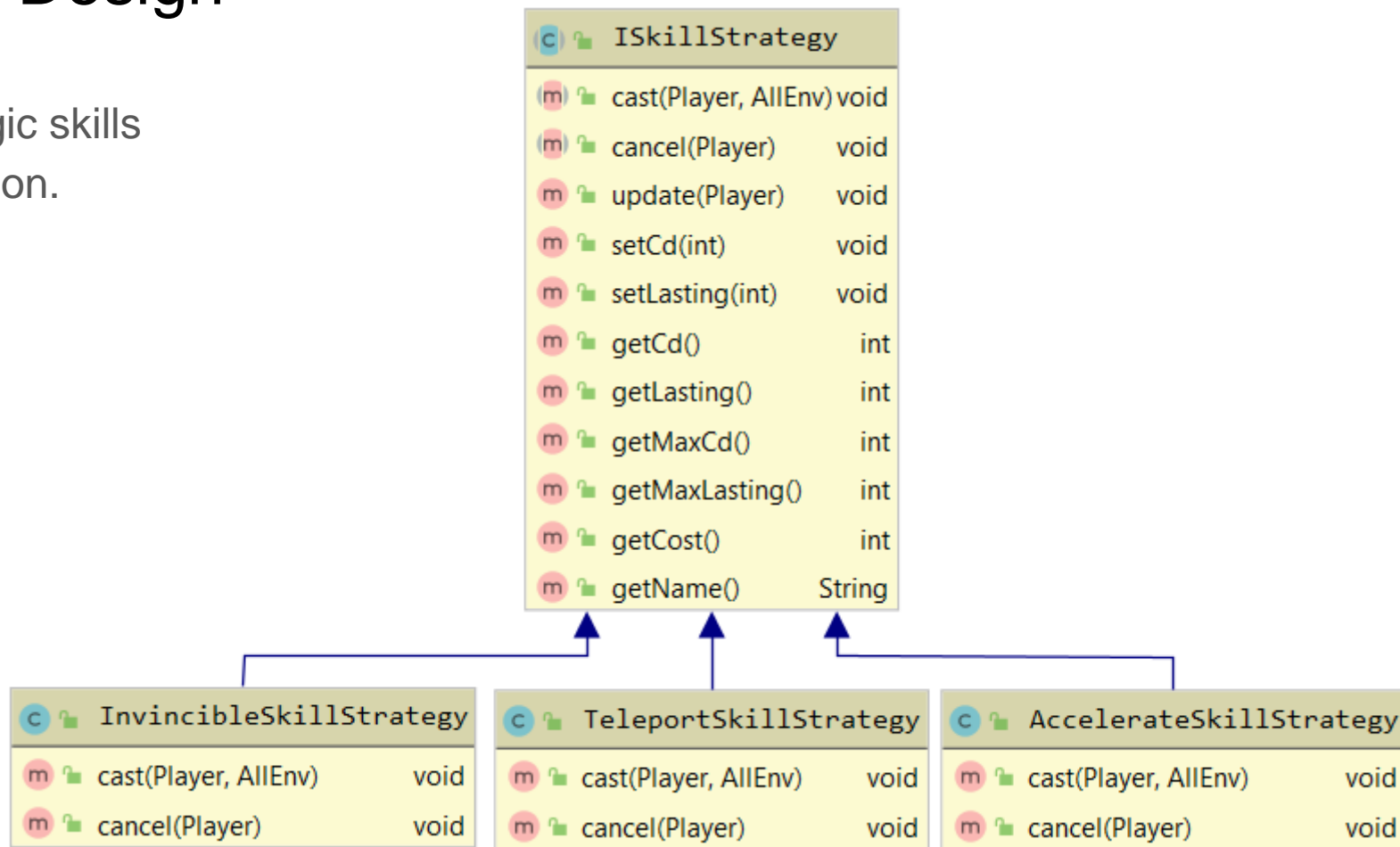
Pacman Design

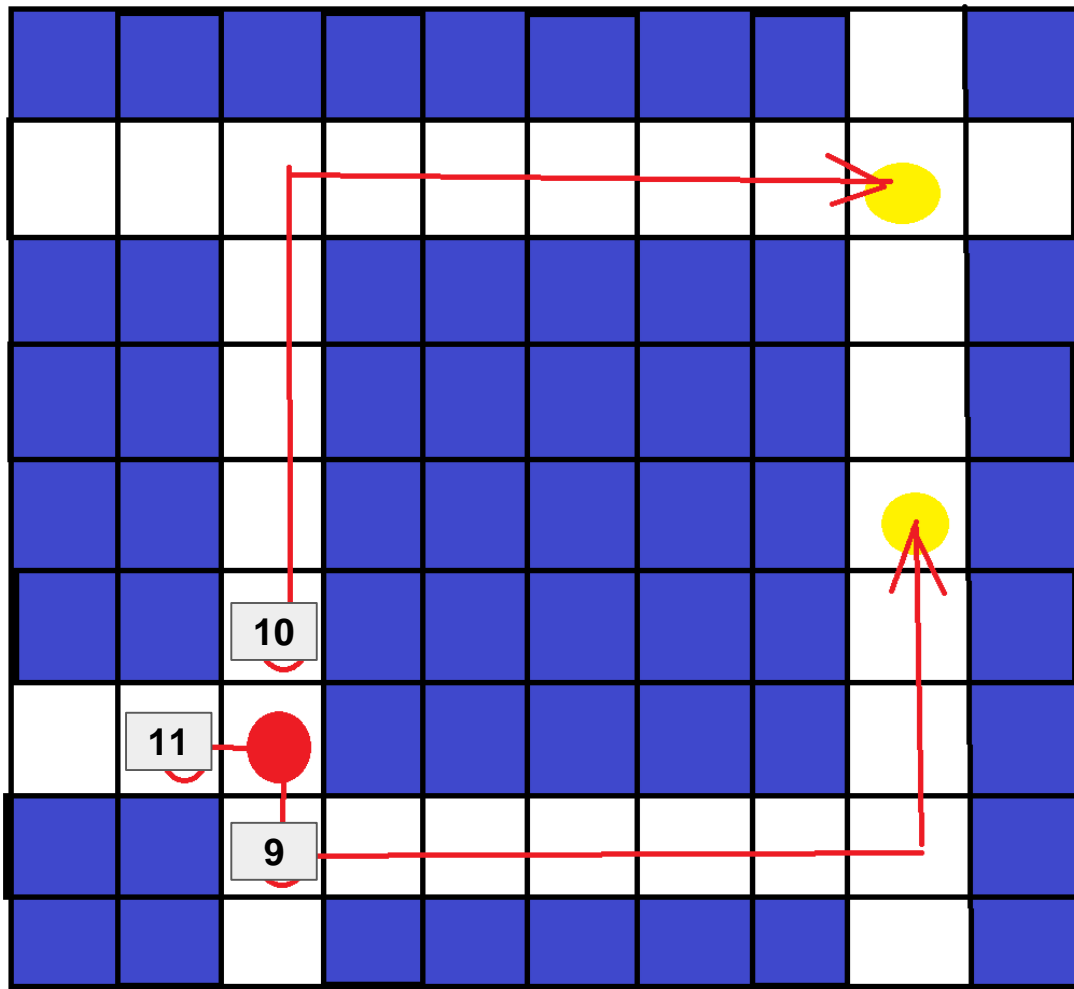
Command Design Pattern.



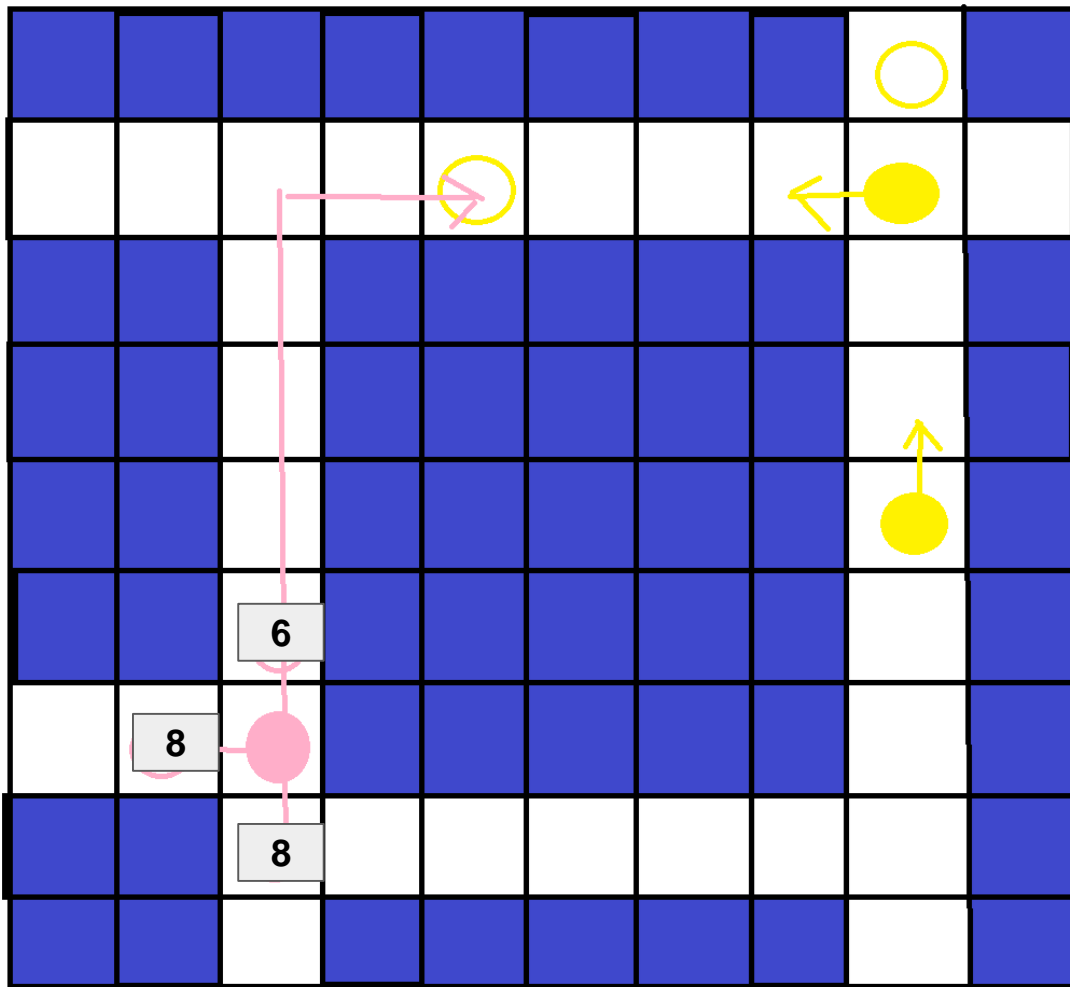
Pacman Design

Pacman magic skills
design decision.

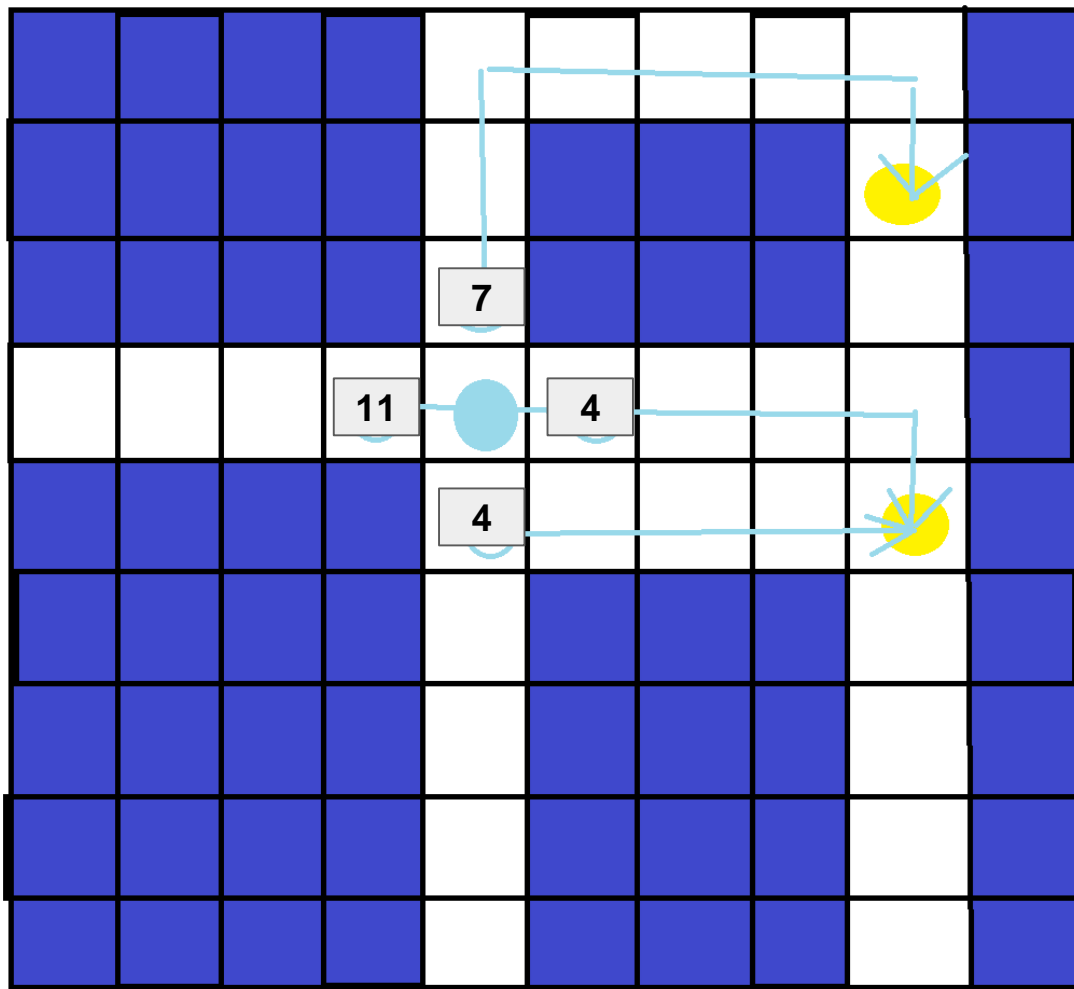




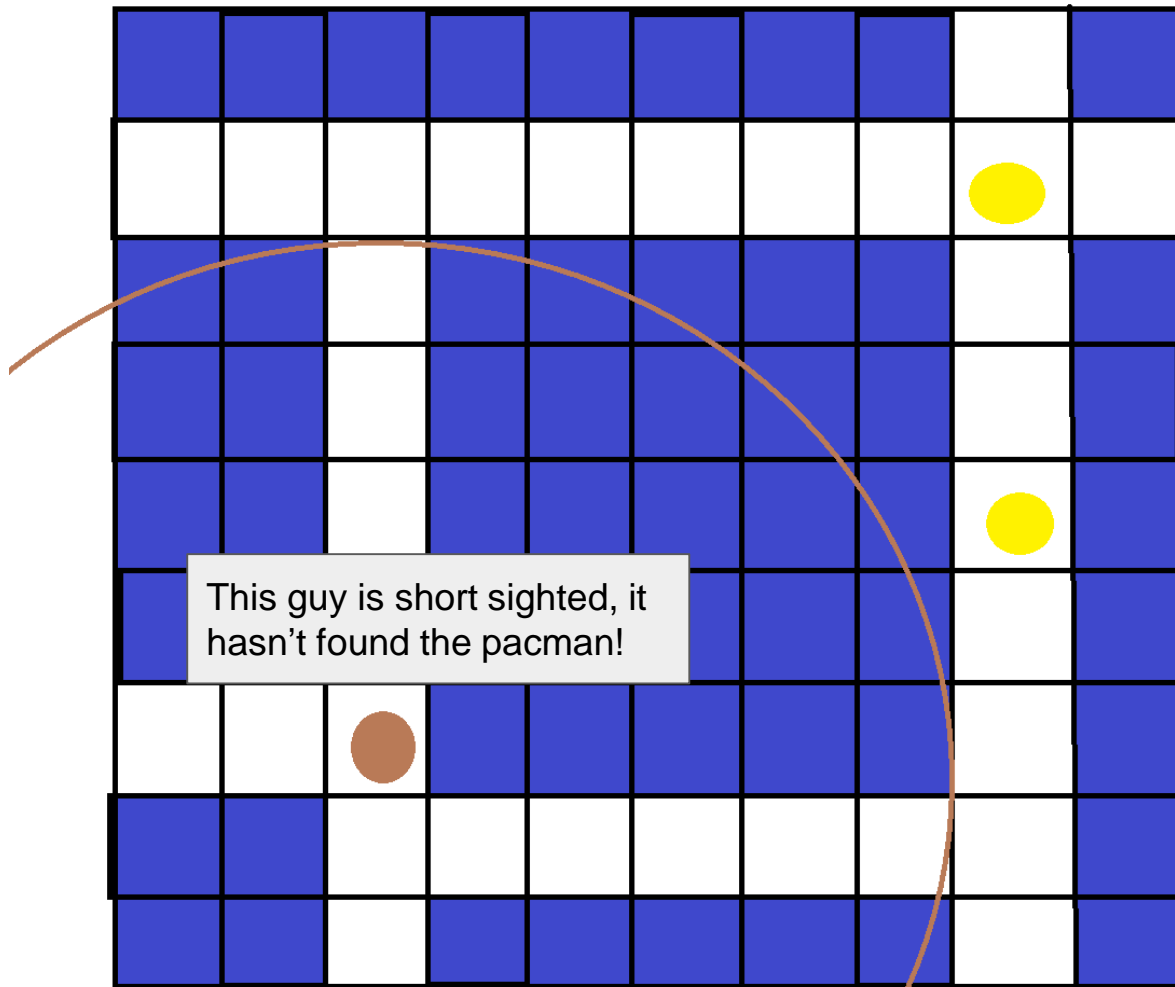
I will chase you,
like a shadow



I'm waiting on
your way

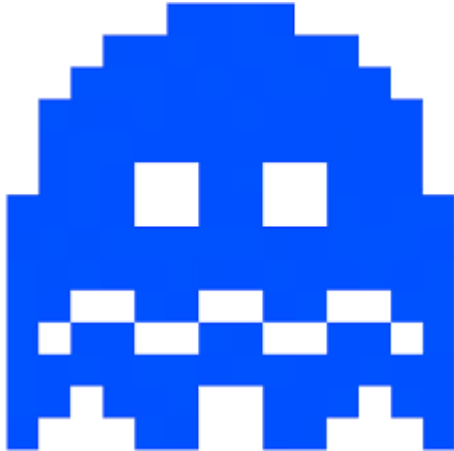


I lost my way when
I approached you



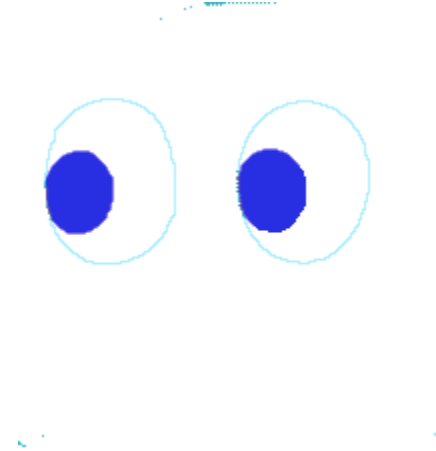
Sorry, but it is so hard to see you

Retreat



Choose the next step that is farthest from pacman

Revive



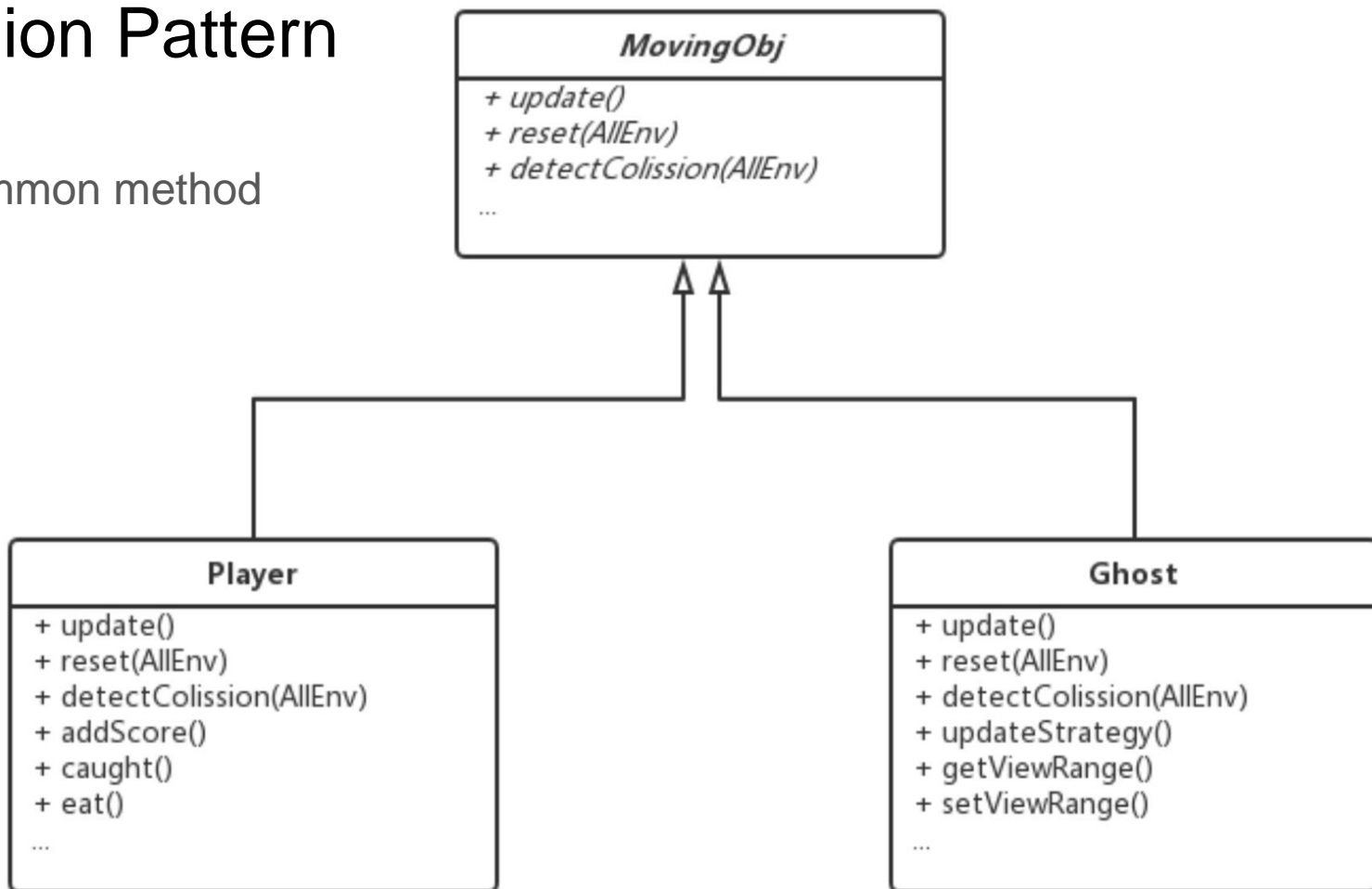
Go home, along the shortest path

Design Pattern

1. Moving Objects (Players and Ghosts): Union Design Pattern.
2. Moving Strategies: Strategy Design Pattern
3. Ghost Update Commands: Command Design Pattern

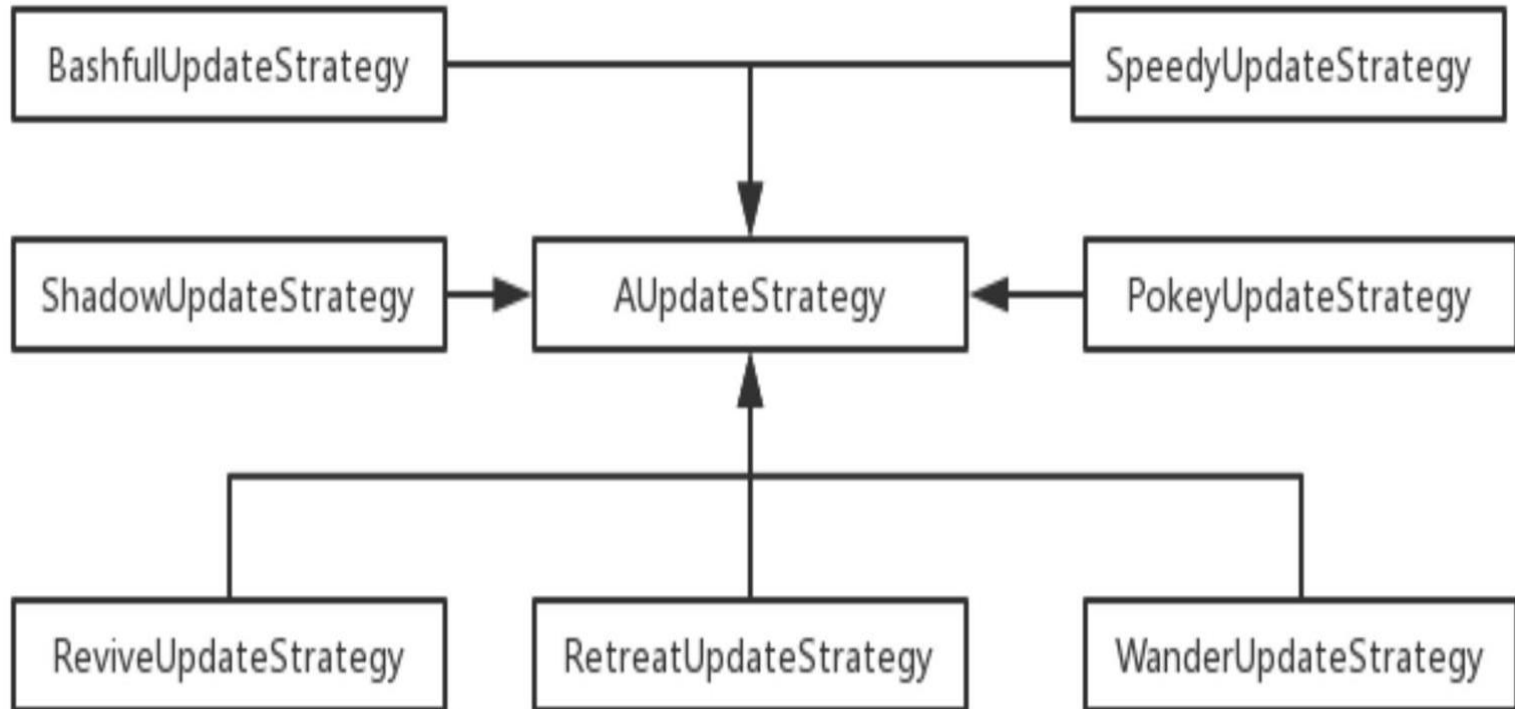
UML – Union Pattern

- Extract common method

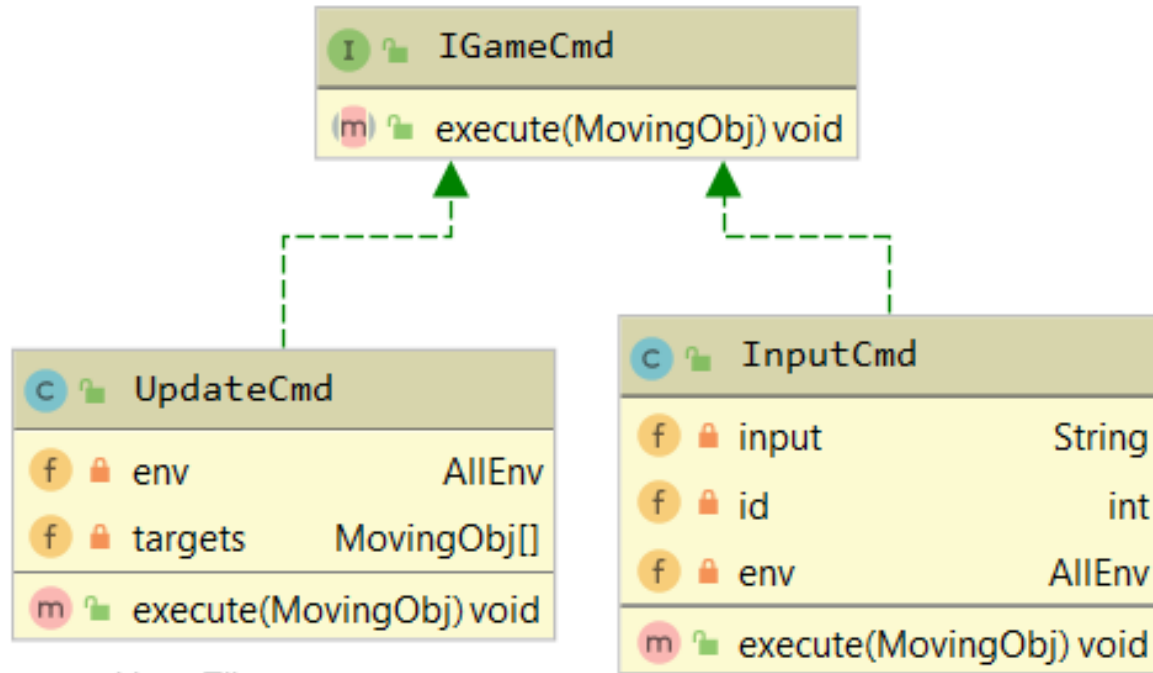


UML - Strategy Pattern

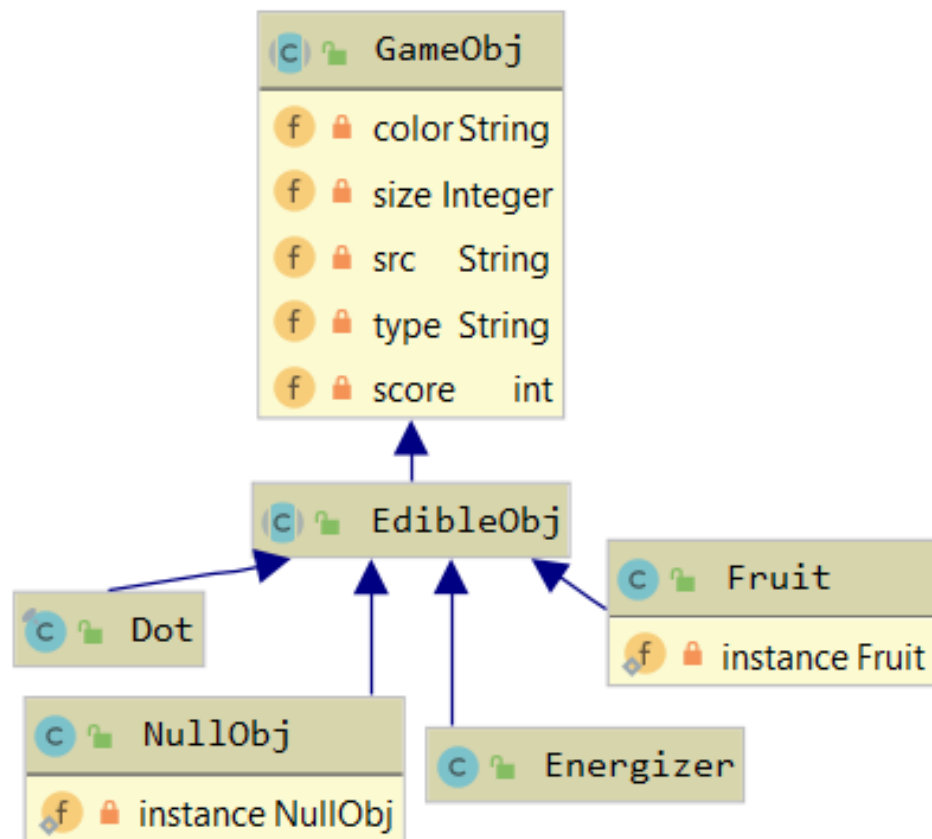
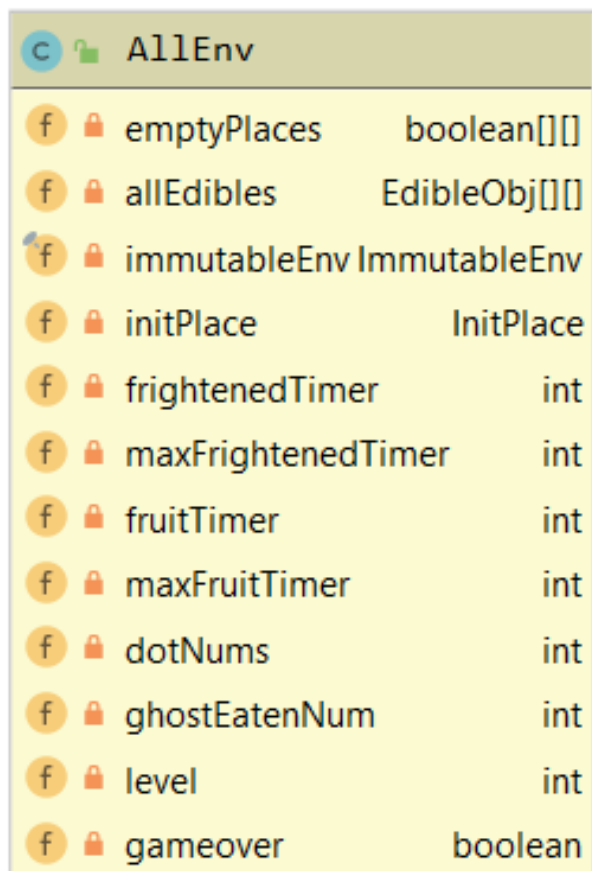
- Run-time instructions



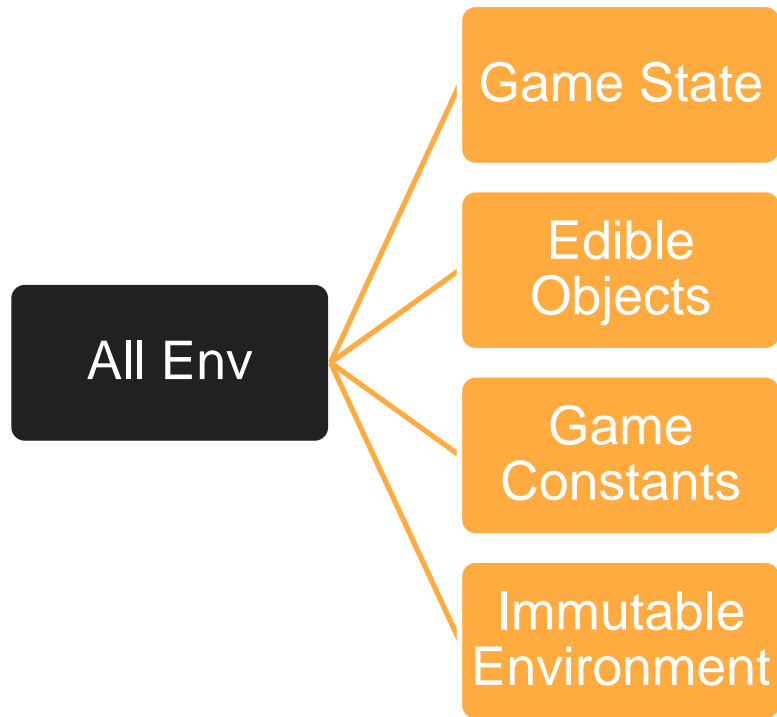
UML: Ghost – Command Pattern



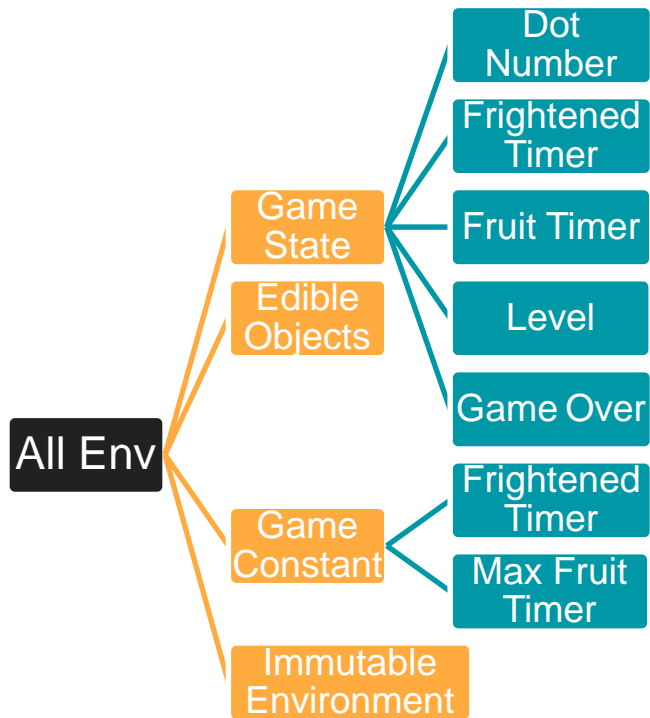
UML



All Env



All Env



int: current dot number

int: remaining time for ghosts to be frightened

int: remaining time to randomly produce fruit

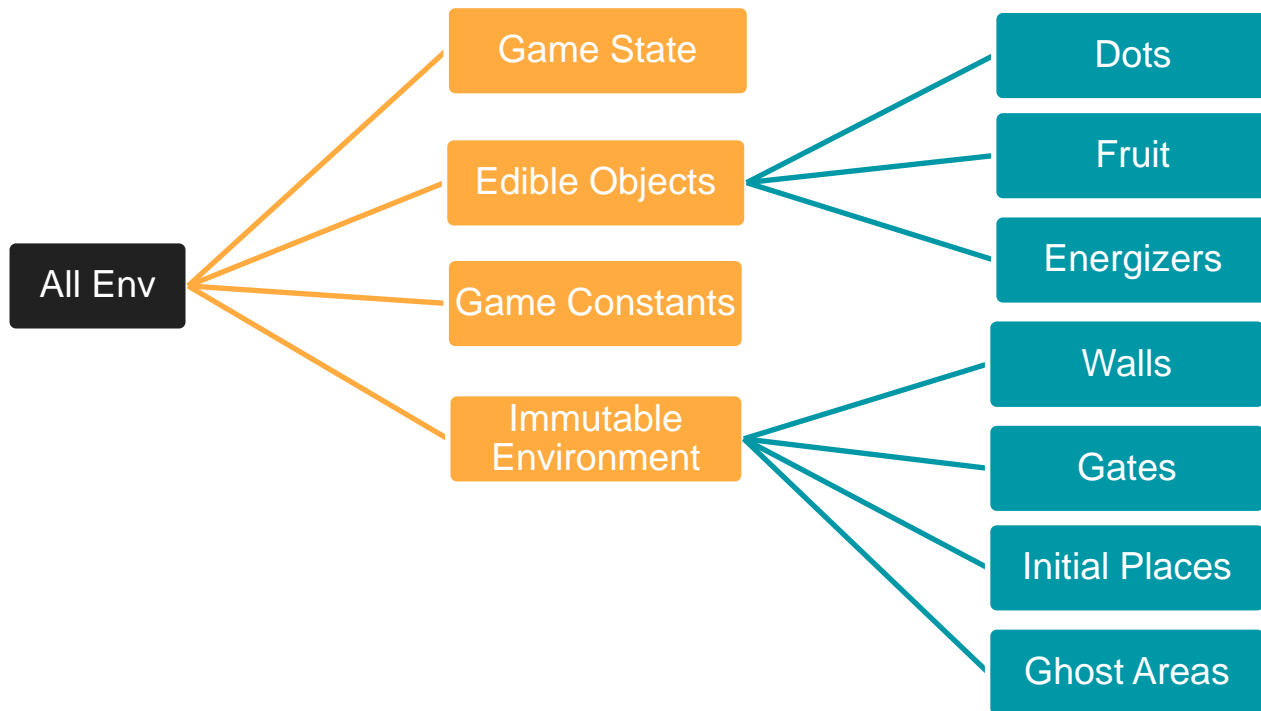
int: current level

boolean: indicates whether the game is over

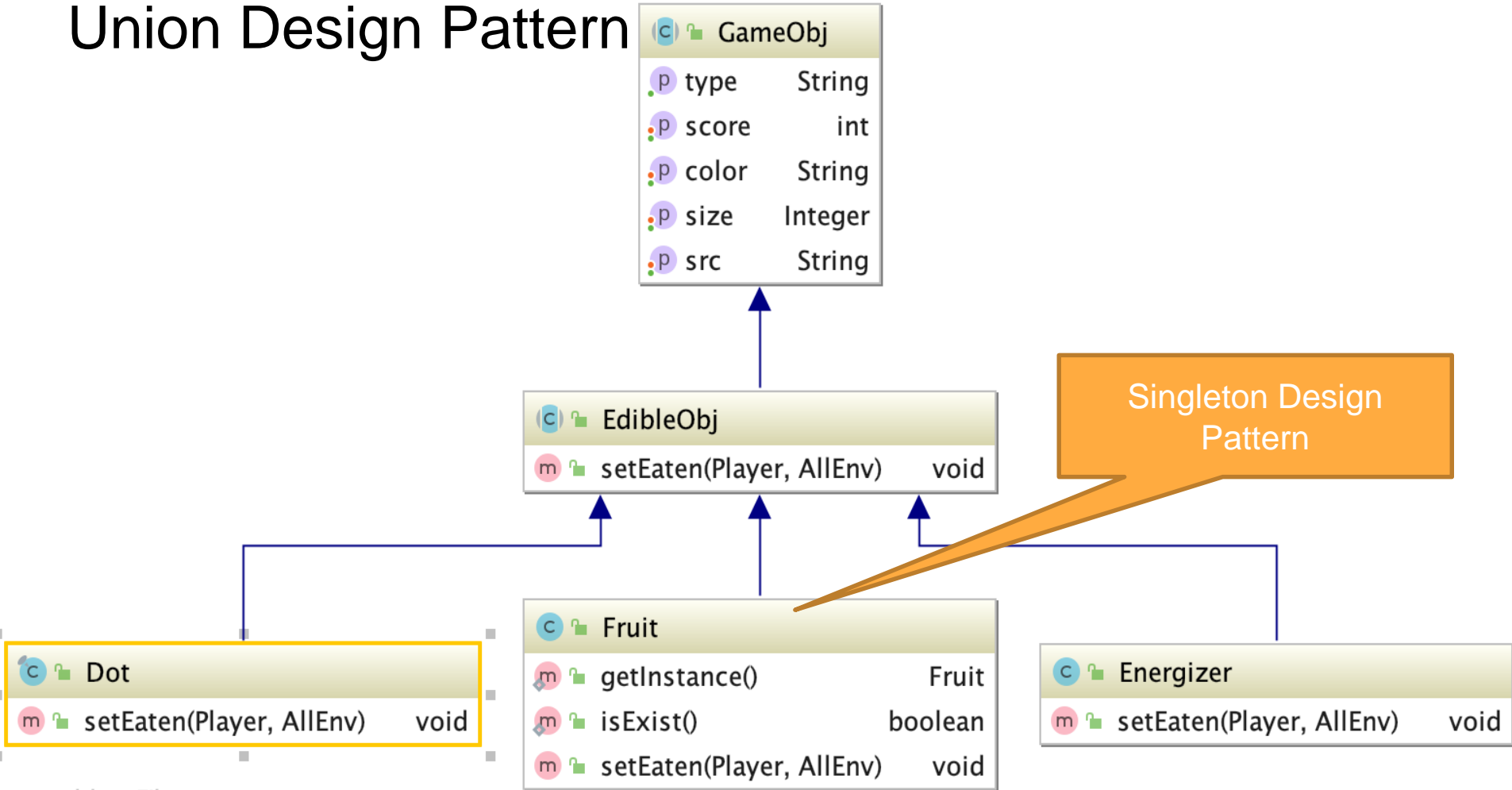
int: maximum time for ghosts to be frightened

int: maximum time to randomly produce fruit

All Env












Union Design Pattern



Frontend – Backend Communication

```
▼ Object ⓘ  
  frightenedTimer: 0  
  gameover: false  
  ▼ ghosts: Array(4)  
    ► 0: {duration: 0, isEaten: false, isHome: false, v...  
    ► 1: {duration: 0, isEaten: false, isHome: false, v...  
    ► 2: {duration: 0, isEaten: false, isHome: false, v...  
    ► 3: {duration: 0, isEaten: false, isHome: false, v...  
      length: 4  
    ► __proto__: Array(0)  
  level: 0  
  ▼ players: Array(1)  
    ► 0: {id: 0, life: 3, ghostEatenNum: 0, skillStrate...  
      length: 1  
    ► __proto__: Array(0)  
  ► staticMatrix: (28) [Array(31), Array(31), Array(31)...
```

Static Matrix (28 × 31 int[][])

No.	Icon	Name	Description
0		Empty Place	Anyone can pass through it.
1		Dot	It can be eaten by Pacman
2		Gate	Only ghosts can pass through it.
3		Energizer	It can turn ghosts into retreat mode.
4		Ghost Init Place	It is used to set the ghost birthplace.
5		Pacman 1 Init Place	Player 1 will be set to this birthplace.
6		Ghost Area	Only ghosts can get into this area.
7		Pacman 2 Init Place	Player 2 will be set to this birthplace.
9		Wall	Nobody can pass through it.

User Extensible

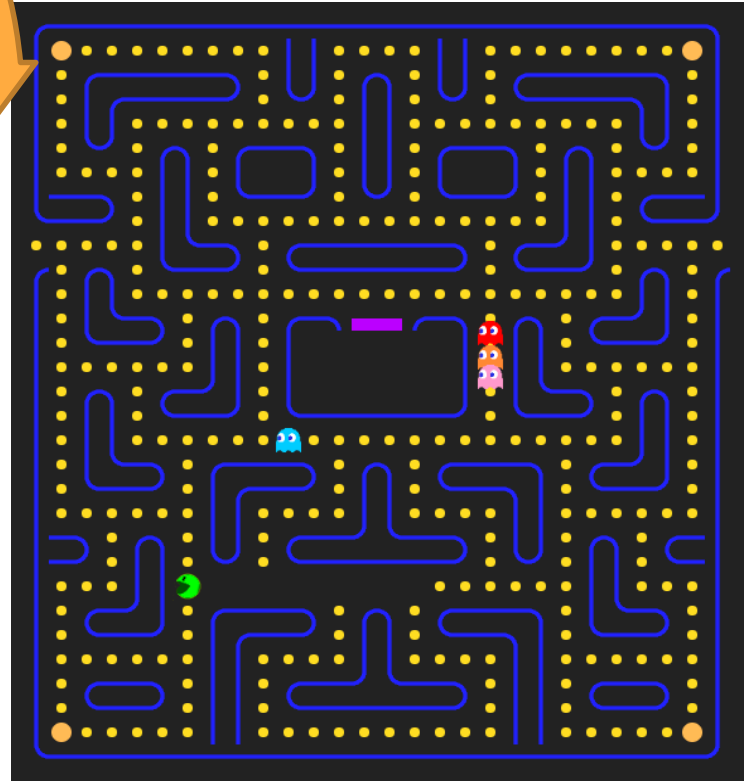
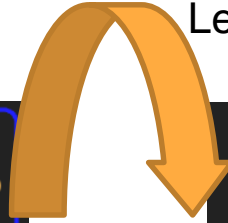
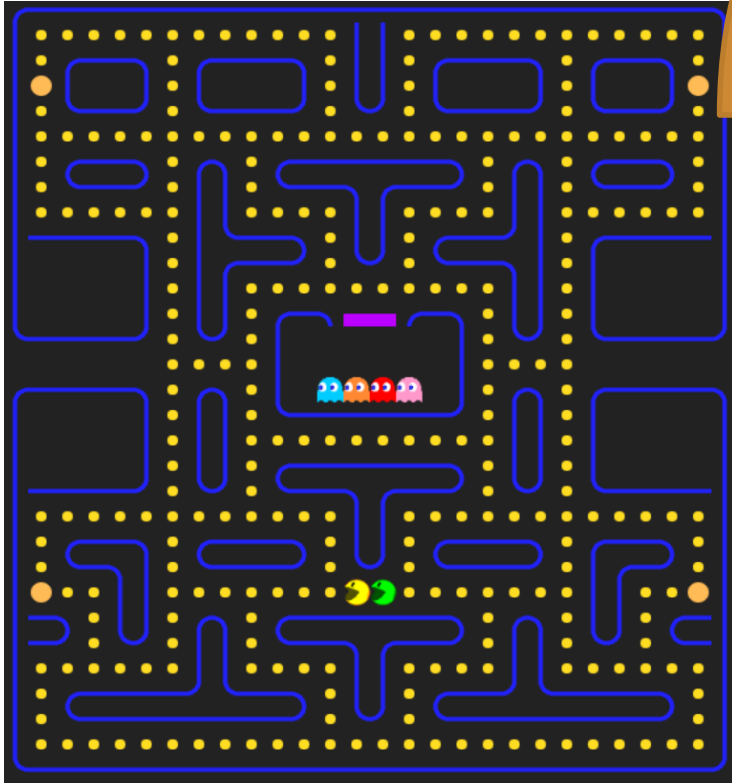
- Press space to choose different map and different mode.
- Double player mode, maintain two players in DispatcherAdapter



```
private void addListener(String type, PropertyChangeListener pcl) {  
    pcs.addPropertyChangeListener( propertyName: type, listener: pcl);  
}
```

```
for (int i = 0; i < mode; i++) {    // mode is either 1 or 2  
    addListener( type: "player", pcl: new Player  
}
```

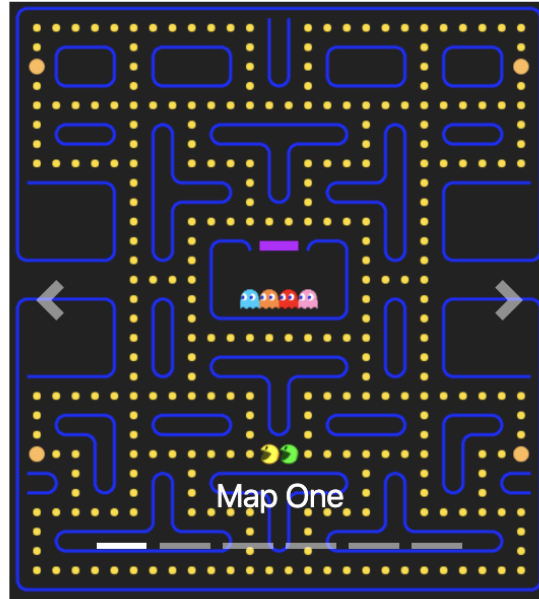

Upgrade
Level



Game Configuration

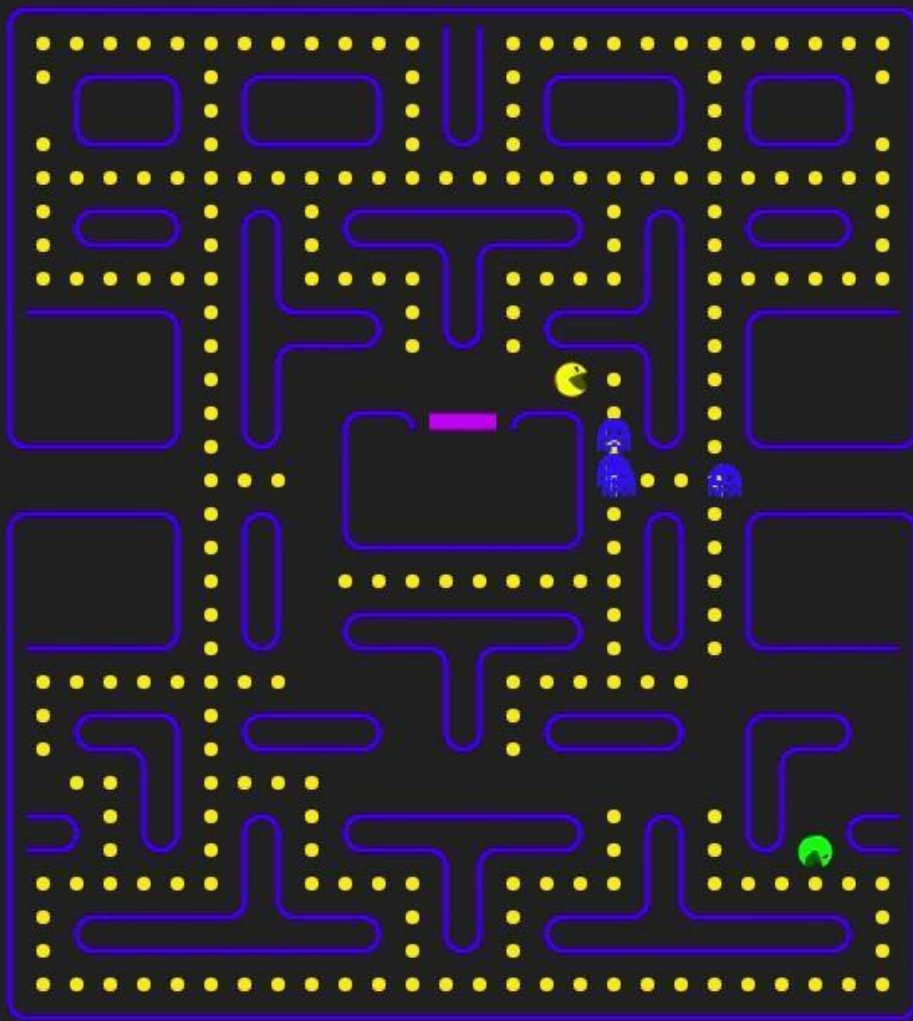


Mode : ☒ Single-Player ☐ Double-Player



Close

Start Game



PAC-MAN

SLEEPY DAY



LEVEL : 0

SCORE : 520

PLAYER # 1-(WASD)-(123)

LIFE :   

SKILL :   

PLAYER # 2-(↑↓←→)-(<>?)

LIFE :   

SKILL :   