

Agenda

Decorator

Flyweight

Decorator : Wrapper

```
class A {  
  class B temp;  
        
        
        
}
```

int
↓
Integer ,

Starbuzz

- Build the beverage
- get description of beverage
- get cost .

Beverage

```
desc = "___"  
getDesc () {  
  =  
}
```

```
getCost () {  
  =  
}
```

new Beverage ();

HouseBlend

decaf

DarkRoast

Espresso

Abstract/Interface

<< Beverage >>

getCost(), getDesc(),

list<Addons>

HouseBlend

decaf

DarkRoast

Espresso

Beverage b = new decaf();

HouseBlend

HouseBlend Milk

decaf

decaf Milk

⋮
!

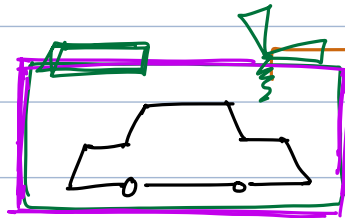
Addons

Milk — desc
cost
Soy
Whip
Mocha

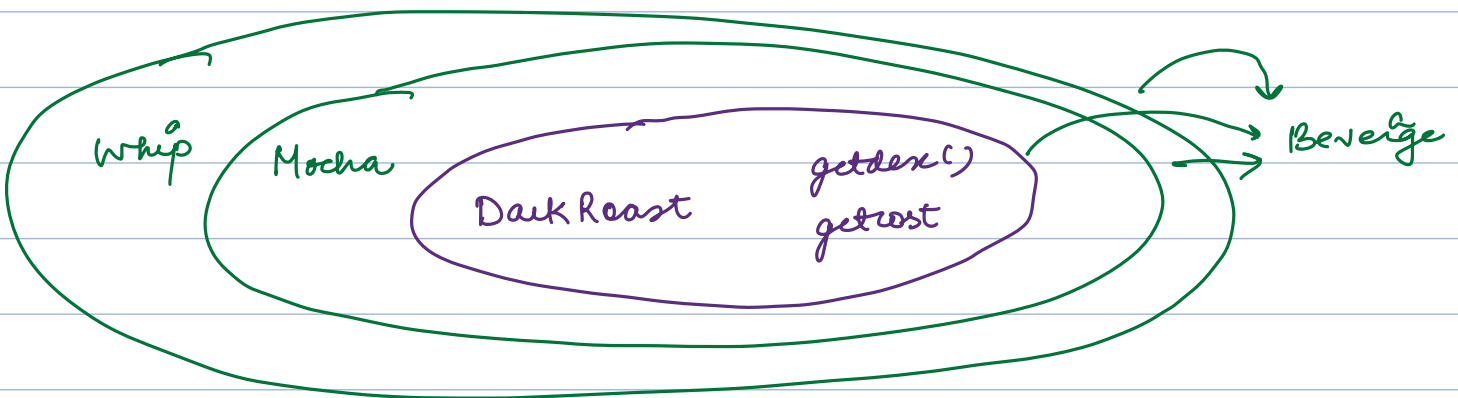
Double Mocha

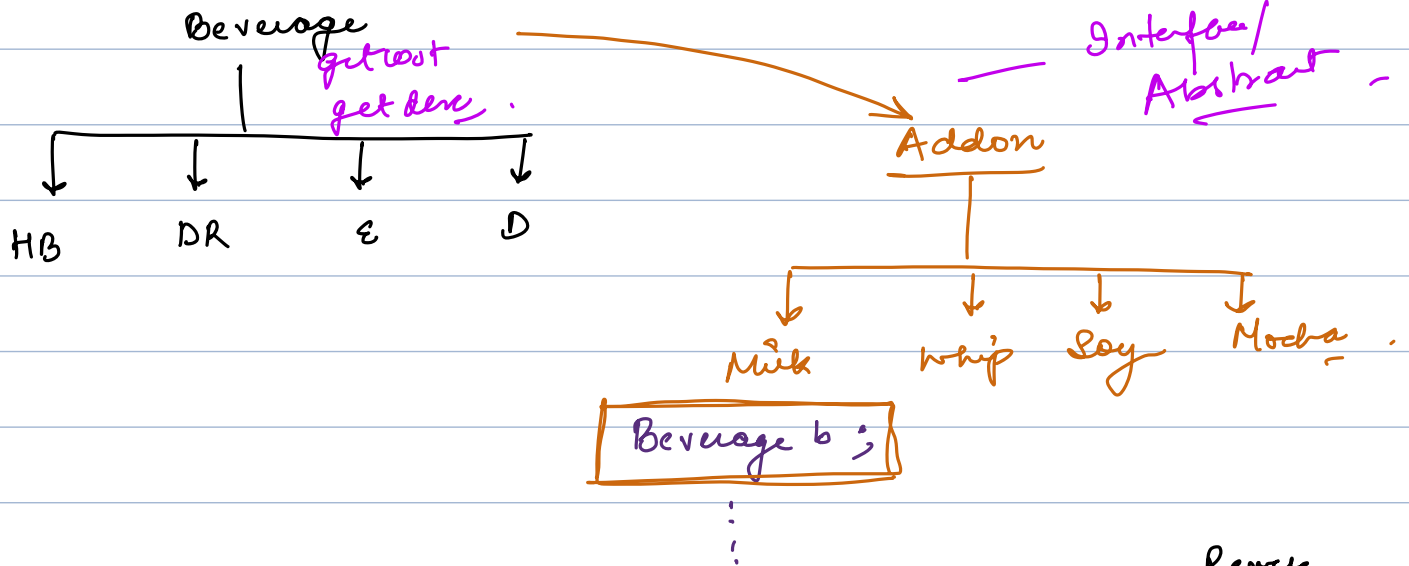
DarkRoast

Dark Roast with Mocha & whip

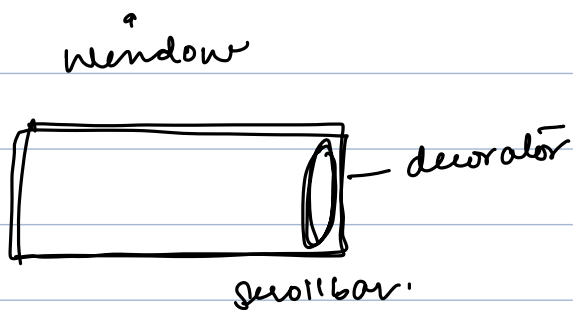
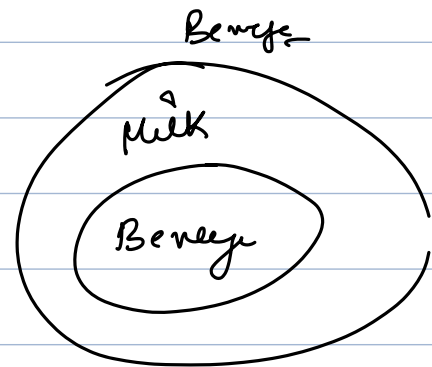


gift



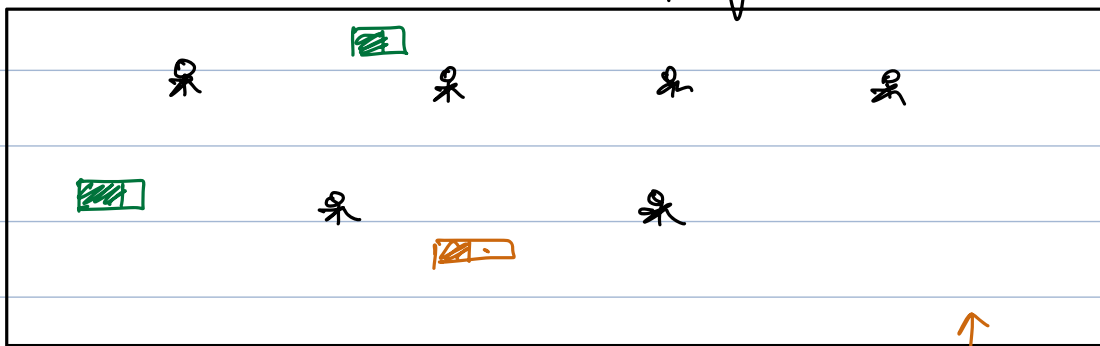


`Beverage b = new DarkRoast();`
`Beverage b1 = new Milk(b);`
`new Whip(b1);`



Flyweight

100 players \rightarrow 2 guns \rightarrow 150 bullets
 \approx 300 bullets



$\sim 1,00,000$

Bullet	
8B	- radius
8B	- damage
8B	- color
8B	- Fired By -
8B	- weight
8B	- range
24B	- <u>dirⁿ</u>
24B	- cur ⁿ loc ⁿ
24B	- target loc ⁿ
1KB	- image

5.56 m

7.72

9mm
;

\times
8
2

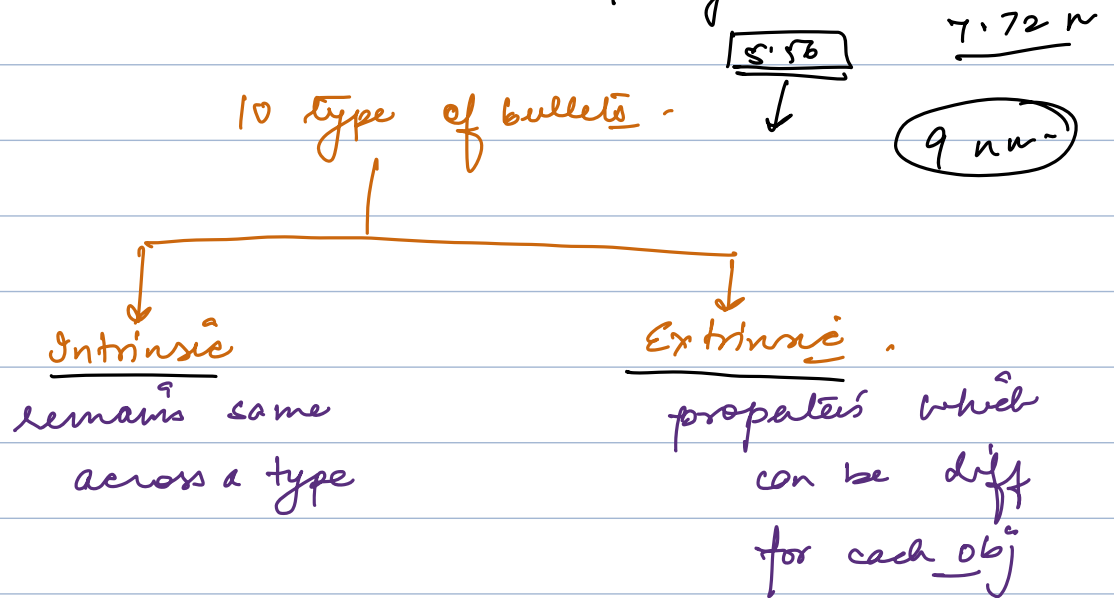
$10^3 \text{ KB} \approx 1 \text{ MB}$

$$1 \text{ KB} + 120 \text{ B} = 1.1 \text{ KB} , \times 1,00,000$$

$$= 1.1 \times 10^2 \times 10^3$$

$$\approx \boxed{110 \text{ MB}}$$

Are all the bullets completely distinct?



Bullet

- 8B radius
- 8B color
- 8B damage
- 8B range
- 1KB image

1.1 KB $\times 10$

11KB

Flying Bullet

8B Bullet to -

- 24B dirⁿ
- 24B cur corⁿ
- 24B target corⁿ

80B $\times 100000$

$= 80 \times 10^3 \times 10^2$

$= 80 \text{ KB} \times 10^2$

$= \underline{\underline{8 \text{ MB}}}$

Adapter
Facade —
Decorator
Flyweight .

→ { Observer + Strategy
UML diagrams

Mock: LCD ±
LCD ↗