

Agenda

Start @ 9:05 pm

1) Builder Design Pattern

↳ Creational Design Pattern

Problem Statement

1) Class with lot of attributes

eg

```
class Student {  
    - Name  
    - Age  
    - Psp  
    - Batch  
    - id  
    - UnivName  
    - gradYear  
    - phoneNo.  
    - email  
}
```

```
Student st = new Student();  
st.setName(" ");  
st.setAge(18);  
st.setPsp(" ");
```

2) We want to validate the object before creation

Validation:

- { 1) grad year ≤ 2022
- { 2) Phone Number should be valid.

No object of student class should exist until all validation pass.

⇒ Validations should come inside constructor.

Student (String name, int age, double gpa,
String uniName, int gradYear) -->

d
↳

NIT Jaipur

Student st = new Student ("Kushal", 25, 95,
"Sept 22", -);

- 1) Difficult to understand
- 2) Prone to Errors

Method signature

Method Name

(datatype of params)

Student ⇒ N attrs

Student (String name, int age, String email)
Student (String name, int phoneNo, String email)

↳
↳
↳

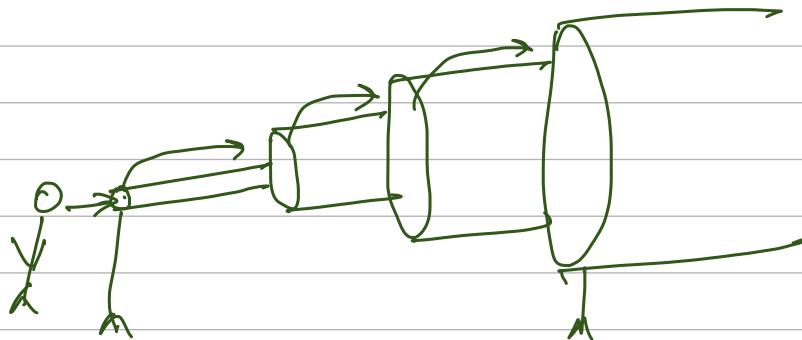
Compile time Error
(can't have 2 methods
same sign)

↳ Exponential Constructor

Problems with Multiple Constructors

- 1) Too many Constructors
- 2) Sometimes even it is NOT possible to create some Constructors
- 3) Prone to error

Telescopic Constructor



Student {

Student (String name)

{

 this.name = name;

}

Student (String name, int age) {

~~this.name = name;~~ this(name);

 this.age = age;

{

 Student (String name, int age, String email)

{

 this(name, age);

 this.email = email;

{

Telescopic Constructor Should be Avoided

Student {

Student (One param) {

} Some DS that allows
us to pass attributes
along with their values }

[UnivName: NITJaipur
Name: Shyam
- age: 30
- PSP: 80]

Student {

Student (HashMap<String, Object> map)

this.name = (String) map.get("Name")

this.age = (int) map.get("age");

}

Client

map.put("Name", "Parzai"); // Typo in key

[map.put("age", "abc"); // Runtime Exception]

⇒ Something which is similar to a Map (Allows us to have diff values for keys) & Should have compile time check for key.

Also it should have compile time check for values as well

\Rightarrow Object of a class

Class Helper {
 - Name -
 - age -
 - gradyear

}
Helper h = new Helper();
h.name = "Saket";
h.age = 12;

Helper class to get all the required details to create student object only after validation passes.

Class Student:

- name: string
- age: int
- Grad year: int

[Student (Helper Helper)

{ //Validation

this.name = helper.name;

this.age = helper.age;

Hyper. gravity;

```
- if (gradYear < 2021)  
    throw exception
```

eg

```

    } Helper h = new Helper(?);
    {   h.name = "Vedyan";
        h.age = 21;
    }
}
} Client

```

Student st = new Student(h);

→ Validation

```

    } Helper h1 = new Helper();
    {   h1.name = "Yash";
        h1.age = 20;
        h1.email = "abc@yz";
    }
}

```

Student st1 = new Student(h1);

Builder {

- name
- age
- psp
- granlyear

}

Builder builder = new Builder();

builder.setName("Nikhil");

builder.setAge(31);

4

Student st = new Student(b);

Pass → Validation → fail

☺ Obj created

☹ No Obj

Student (Builder b)

{

if (b.gradYear > 2022)

throw exception();

this.name = b.name;

this.age = b.age;

}