Builder design pattern

1. Understand what is design patterns in Java
2. List out 5 design pattern in a document.
3. Learn builder design pattern.

→ Design patterns in Java refers to structured approaches involving objects and classes that aim to solve recurring design issues with specific contexts. These patterns offer reusable, general solutions to common problems encountered in Software development. By utilizing design patterns, developers can communicate more effectively about their approaches to problem-solving, fostering collaboration and consistency in their code.

→ Their are 5 types of pattern design :-

1) Singleton Pattern
2) Factory method Pattern
3) Abstract factory Pattern
4) Builder Pattern
5) Prototype Pattern.
6) observer pattern
7) Strategy pattern
8) Decorator pattern.

1. Singleton Pattern :-

A Singleton Pattern ensures that a class has only one instances and provides a global point access to it. This is useful when exactly one object is needed to coordinate actions across the system.

2. observer pattern :-

The observer pattern defines one-to-many dependencies between objects so that when one object changes state, all its dependencies are notified and updated automatically. This is often used in implementing distributed event-handling system.

3. Factory Pattern :-

It is consider as another layer of abstraction over factory pattern.

A Factory patterns work around a super-factory which creates other factories.

4) Prototype Design Pattern :-

Prototype allows us to hide the complexity of making new instances from the client.

The concept is to copy an existing object rather than creating a new instance from scratch, something that may include costly operations.

5) Builder Design Pattern :-

To Seperate the construction of a complex object from its representation so that the same construction process can create different representations.
It helps in constructing a complex object step by step and the final step will return the object.

Q Why Should We Use Builder Design Pattern ?

→ The Builder design pattern is used when we need to create complex objects with a large number of optional components or configuration parameters. This pattern is particullarly usefull when an object needs to be constructed step by step, some of the scenarios where Builder pattern is benificial are :-

i) Complex object construction
ii) Step - by - step construction
iii) Avoiding constructors with multiple parameters
iv) Configural object creation
v) Common interface for multiple Representations.