# Questions and Answers

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## Questions and answers.

1. What are Design Patterns?

   Design patterns represent the best practices used by experienced object-oriented software developers. Design patterns are solutions to general problems that software developers faced during software development. These solutions were obtained by trial and error by numerous software developers over quite a substantial period of time.

2. Name types of Design Patterns?

   Creational Patterns, Structural Patterns, Behavioral Patterns

3. What is Singleton patterns?

   Ensure a class has only one instance, and provide a global point of access to it.

4. What is Abstract factory patterns?

   Provide an interface for creating families of related or dependent objects without specifying their concrete classes.

5. What is Builder patterns?

   Separate the construction of a complex object from its representation, allowing the same construction process to create various representations.

6. What is Adapter patterns?

   Convert the interface of a class into another interface clients expect. An adapter lets classes work together that could not otherwise because of incompatible interfaces.

7. Difference between the Adapter pattern and the Proxy pattern?

   Adapter provides a different interface to its subject. Proxy is an object of the same interface, and possibly the same base class (or a subclass). It only "pretends" to be (and behaves like) the actual object, but instead forwards the actual behavior (calculations, processing, data access, etc.) to an underlying, referenced object.

8. What is Decorator patterns?

Attach additional responsibilities to an object dynamically keeping the same interface. Decorators provide a flexible alternative to subclassing for extending functionality.

9. What is Façade patterns?

   Provide a unified interface to a set of interfaces in a subsystem. Facade defines a higher-level interface that makes the subsystem easier to use.

10. What is Strategy patterns?

    Define a family of algorithms, encapsulate each one, and make them interchangeable. Strategy lets the algorithm vary independently from clients that use it.

11. What is Mediator patterns?

    Define an object that encapsulates how a set of objects interact. Mediator promotes loose coupling by keeping objects from referring to each other explicitly, and it allows their interaction to vary independently.

12. What is Observer patterns?

    Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.