

Object Oriented Decomposition

06 December 2021 16:18

- In this we view the world as a set of autonomous agents that collaborate to perform some higher-level behavior.

From this perspective, **an object is simply a tangible entity that exhibits some well-defined behavior.**

An object is an entity that has state, behavior, and identity.

The structure and behavior of similar objects are defined in their common class.

Objects may be defined as “entities that combine the properties of procedures and data since they perform computations and save local state”.

Advantages -

1. Object-oriented decomposition yields smaller systems through the reuse of common mechanisms, thus providing an important economy of expression.
2. Object-oriented systems are also more resilient to change and thus better able to evolve over time because their design is based on stable intermediate forms.
3. object-oriented decomposition greatly reduces the risk of building complex software systems because they are designed to evolve incrementally from smaller systems in which we already have confidence.
4. Object-oriented decomposition directly addresses the inherent complexity of software by helping us make intelligent decisions regarding the separation of concerns in a large state space.

So that whenever a object sends a message to another object, the sending object is typically called the client and the

receiving object is called the server

Structured on Client Server Model

Define - Object-oriented programming is a method of implementation in which programs are organized as cooperative collections of objects, each of which represents an instance of some class, and whose classes are all members of a hierarchy of classes united via inheritance relationships

Object Oriented Design - Object-oriented design is a method of design encompassing the process of object oriented decomposition and a notation for depicting both logical and physical as well as static and dynamic models of the system under design.

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An **abstraction** denotes the essential characteristics of an object that distinguish it from all other kinds of objects and thus provide crisply defined conceptual boundaries, relative to the perspective of the Viewer

Encapsulation is a basic process by which you put things together and give very selective usability, selective access to to different people who need to use that.

Abstraction focuses on the observable behavior of an object, whereas encapsulation focuses on the implementation that gives rise to this behavior.

Encapsulation is the process of compartmentalizing the elements of an abstraction that constitute its structure and behavior; encapsulation serves to separate the contractual interface of an abstraction and its implementation.

The **state** of an object is a combination of the values for its properties.

The state of an object encompasses all of the properties of the object plus the current values of each of the properties.

Behavior is services provided by an object. Behavior is how the object acts and reacts in terms of its state changes and message passing

Relationship

Links - A link is a physical or conceptual connection between objects

Aggregation denotes a whole/part hierarchy, with the ability to navigate from the whole (also called the aggregate) to its parts. In this sense, aggregation is a specialized kind of association.

Class

A class is a set of objects that share a common structure, common behavior, and common semantics.