

Object oriented concepts

Contents

1. Limitations of procedural approach.
2. Object and its characteristics.
3. Object oriented approach.
 - a. Abstraction
 - b. Encapsulation.
 - c. Inheritance.
 - d. Polymorphism.
4. Containment and aggregation.

Limitations of procedural approach.

Problems of procedure oriented language.

1. Communication gap.
2. Changing requirements.
3. Development process(CPMCD)
4. User Interface

How to overcome problems by object oriented approach???

How to reduce complexity.

1. Reduce communication gap.
2. Binding of data and sub programs.
3. Hide or unhide part of data.
4. Give more importance to your data.
5. Extend the functionality.
6. Robust error handling.

Abstraction

- What is abstraction
- Select related and data to domain and ignore rest.
- Abstraction Employee object.
 1. For company
 2. For medical insurance
 3. For PF.

Encapsulation

1. Mechanism to hide the data and internal structure or implementation details of an object.
2. Interface.
3. User Knows only about interface and any changes to its implementation does not affect the application.

Object

What is object?

Object represent well defined structure and behavior.

Characteristics of object

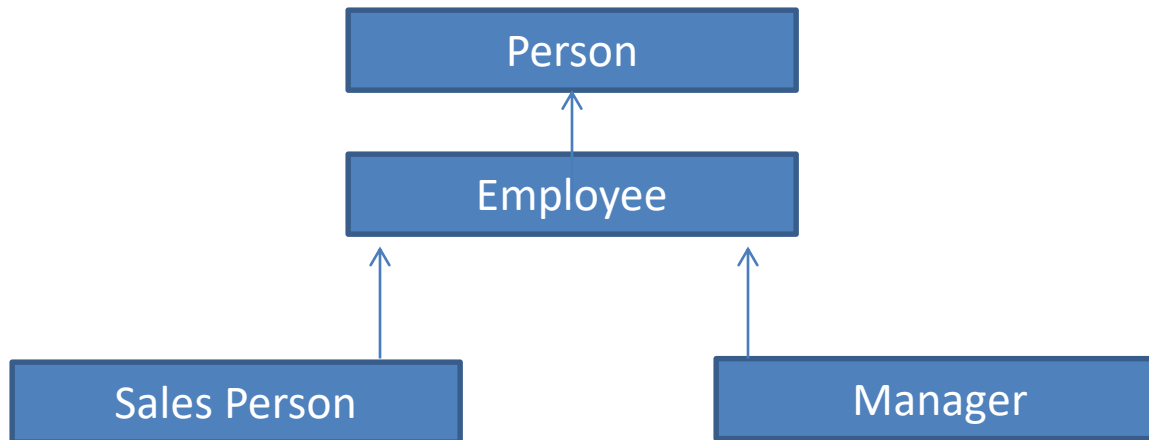
1. State- Current values of attributes.
2. Behavior- How object act or react on state change.
3. Identity- how object is identified.
4. Responsibility- Role within system.

Characteristics of object example

Attributes	State	Identity	Behavior	Responsibility
empid	empid=10	empid=10	Swipe card	To be present in office time.
name	Name="dhruv"		Fill timesheet	Do allocated work.
gender	Gender="male"		Wear id card	
age	age-=27		Print details	
address	Address="pune"			
phone	Phone=984554545			
basic salary	Basic salary=10000			
education	Education="BE"			

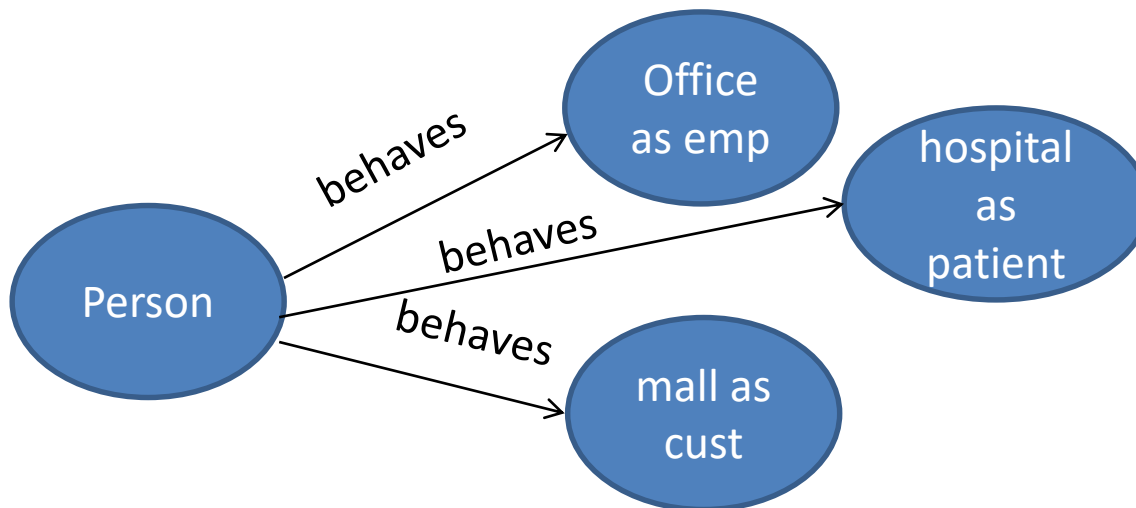
Inheritance

- Process of extending one object from another object or acquiring properties.
- “Is – a” kind of relationship
- Classification



Polymorphism

- The ability of different types of related objects to respond the same message in their own ways is called polymorphism.
- It helps to design extensible software.
- If new object are added then it will not affect your application.



Containment

- One object may contain as part of another object.
- Represents “has a” or “is a part” relationship.
- For e.g.
 - Class has PC ,Tables , Chair or we can say that PC is a part of class.
- Represent difference between inheritance and containment.

Lab Assignment

- Find out the abstraction for following domain.

Take the STUDENT object and find out abstraction for following domains.

1. Student data for School
2. Student data for Health care system
3. Student data for Sport
4. Student data for Scholarship.