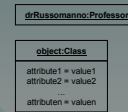


## Object

- Concept, abstraction, or thing
- Must have identity
- A token not a type
- An object is an instance of a class

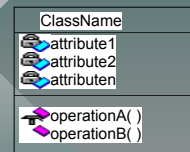
## Instance Diagram (Objects)



## Class

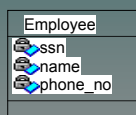
- A description of a group of objects with similar properties (similar to a set but has additional implications)
- Group includes common behavior and similar relationships to other objects and common semantics

## Class Diagrams



- Describes a group of objects
- Describes a group of instance diagrams

## Attribute

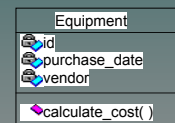


An attribute A of class E whose value set is V can be defined as a function from E to the power set of V.

$A: E \rightarrow P(V)$   
 $A(\text{Object}) = \text{value}$   
 $\text{SSN}(\text{tom}) = 777-23-2222$

Avoid composite and multi-value attributes in modeling

## Operation



- An operation is a function or procedure that may be applied to or by objects in a class
- Polymorphic operations are applicable to many classes
- A method is the implementation of an operation for a class
- No operations are captured in a classical ER diagram