

# Session 2-2 Attribute

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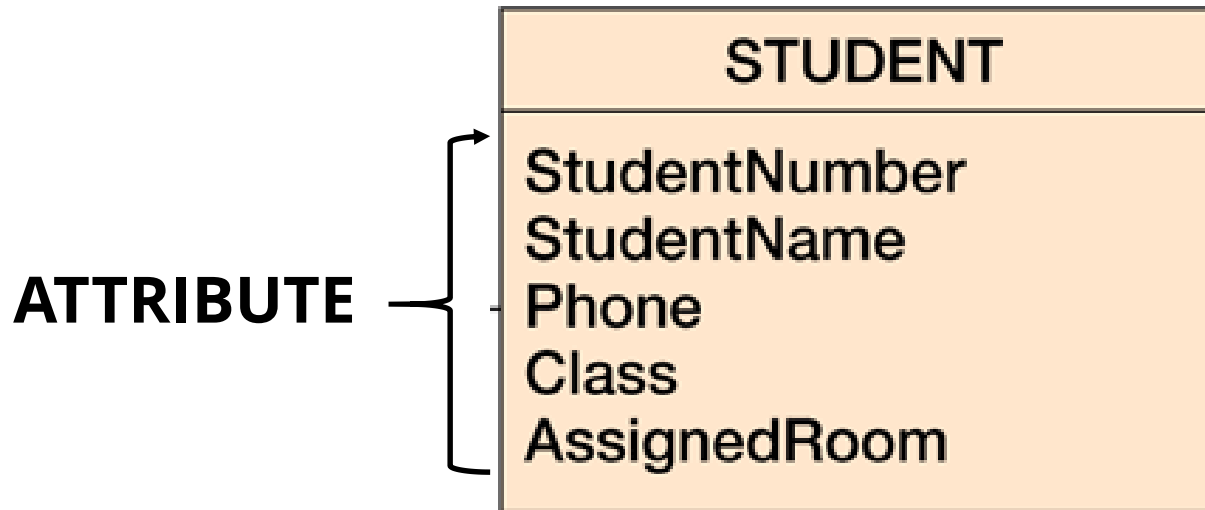
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# Attributes:

## Getting to Know Your Entity

- Attributes are **characteristics** or **properties** about an entity to gather and store



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# Classifications of Attributes

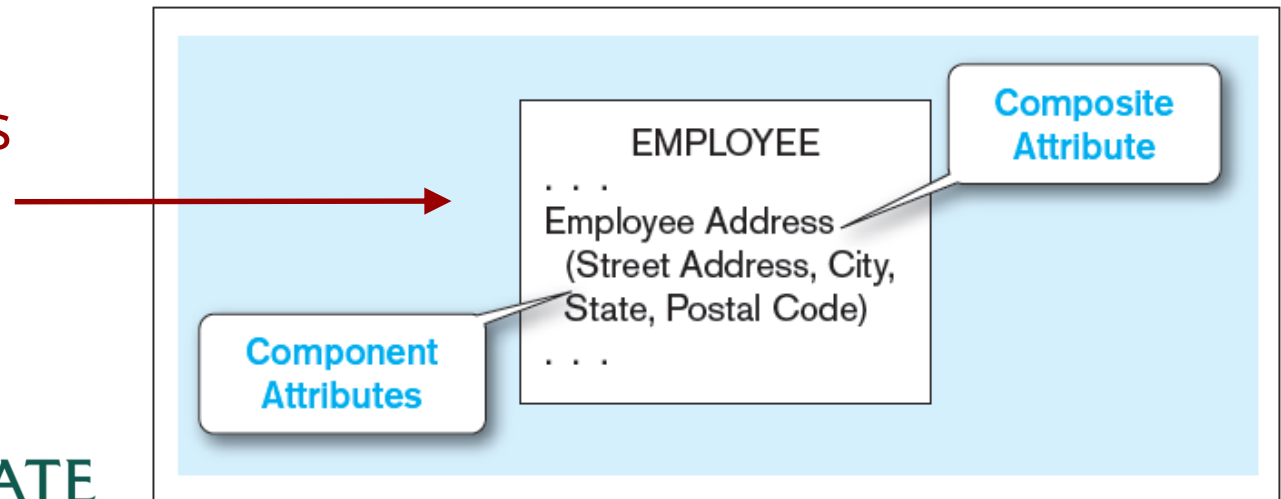
- Required versus Optional Attributes
- Simple versus Composite Attribute
- Single-Valued versus Multivalued Attribute
- Stored versus Derived Attributes
- Identifier Attributes



# Simple vs. (Composite) Attribute

- Composite attribute – An attribute that has meaningful component parts of attributes
- Notation: the name in parentheses ()

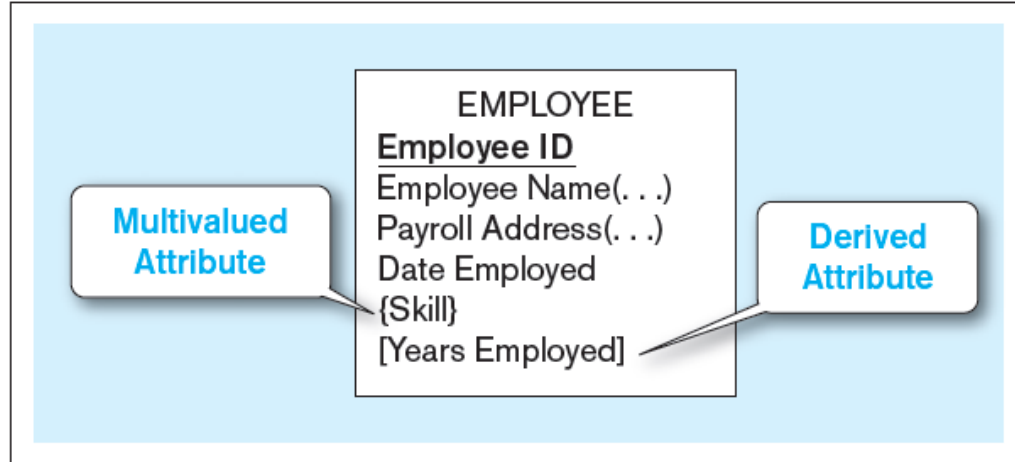
The address is  
broken into  
component  
parts



# Single-Valued vs. {Multi-valued}

- Multi-valued – an attribute that takes on more than one value
- Notation: the name in braces { }

**Multivalued**  
an employee can  
have more than  
one skill

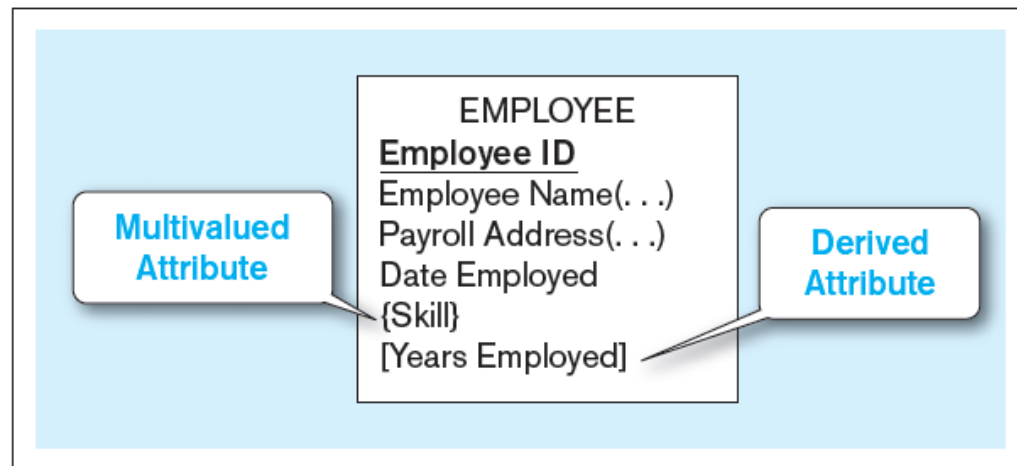


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# Stored vs. [Derived] Attributes

- Derived – an attribute whose values can be calculated from related attribute values
- Notation: the name in square brackets []



**Derived**  
Calculated  
from date  
employed  
and current  
date



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# Identifier Attributes (Keys)

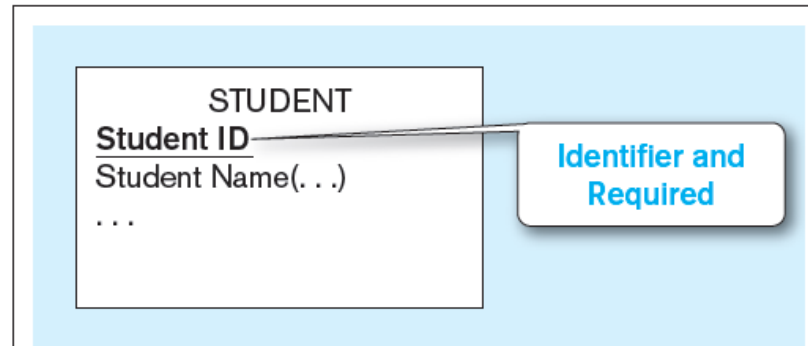
- An attribute (or a set of attributes) that uniquely identifies each occurrence of an entity type
  - Must be unique across all instances
  - Must not change over life of instance
  - Must always have a valid value, not “null”
- Often called Key
- Notation: **boldfaced** and underlined



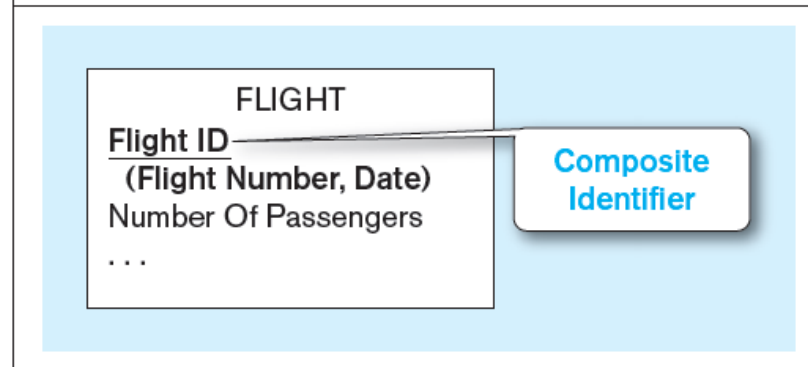
# Composite Identifiers

- Identifier attribute that consists of two or more attributes

(a) Simple identifier attribute



(b) Composite identifier attribute



The identifier is **boldfaced** and underlined





# Primary Identifier

- Primary Identifier or Primary Key (PK)
- Choose one among candidate identifiers
- Identifiers NOT suitable for PK
  - Identifiers that could change in future (e.g., the name of locations or people)
  - Long, composite identifiers
    - Surrogate key to simplify



# Attribute Domain

- Set of allowable values for one or more attributes
- Different attributes can share a same domain
  - “Address” domain can be used for “Faculty Address” as well as “Student Address”
- A domain can be composed of multiple domains
  - Address is composed of street, zipcode, and city

Attribute	Domain Name	Meaning	Domain Definition
branchNo	BranchNumbers	The set of all possible branch numbers	character: size 4, range B001–B999
street	StreetNames	The set of all street names in Britain	character: size 25
city	CityNames	The set of all city names in Britain	character: size 15
postcode	Postcodes	The set of all postcodes in Britain	character: size 8
sex	Sex	The sex of a person	character: size 1, value M or F
DOB	DatesOfBirth	Possible values of staff birth dates	date, range from 1-Jan-20, format dd-mmm-yy
salary	Salaries	Possible values of staff salaries	monetary: 7 digits, range 6000.00–40000.00



# Guidelines for Naming Attributes

- Name should be a singular noun or noun phrase
- Start with capital letter (e.g., Faculty Address)
- Name should be unique



# Wrap-Up

- Attribute
- The classifications of attributes
- Attribute domain

