CSE 470 – Class Diagram Design

BRAC University

Guidelines for Analyzing Requirements / Use Cases

- A common or improper noun implies a class of objects
- A proper noun implies an instance of a class
- A collective noun implies a class of objects made up of groups of instances of another class

Guidelines for Analyzing Requirements / Use Cases (2)

- An adjective implies an attribute of an object
- A doing verb implies an operation
- A being verb implies a relationship between an object and its class
- A having verb implies an aggregation or association relationship

Guidelines for Analyzing Requirements / Use Cases (3)

- A transitive verb implies an operation
- An intransitive verb implies an exception
- A predicate or descriptive verb phrase implies an operation
- An adverb implies an attribute of a relationship or an operation

Class Diagram

- Ensure that the classes are both necessary and sufficient to solve the underlying problem
  - no missing attributes or methods in each class
  - no extra or unused attributes or methods in each class
  - no missing or extra classes

Discarding Unnecessary and Incorrect Classes

- Redundant Classes: Some potential classes differ only in name.
- Irrelevant Classes: Classes that have nothing to do with the system. Example: *computer connection*
- Vague Classes: Classes whose meaning is not clear at all. Examples: *system* and *software*

Discarding Unnecessary and Incorrect Classes

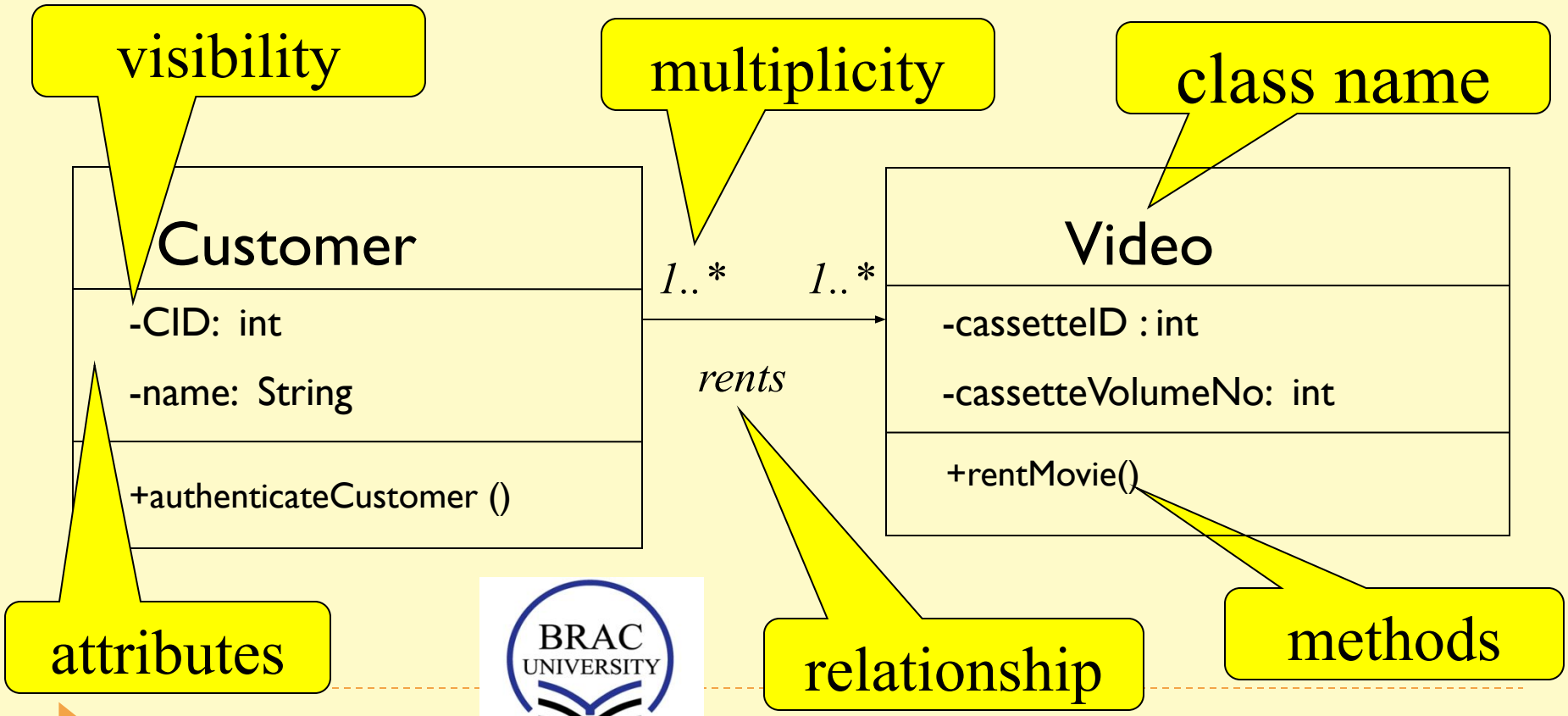
- Attributes: Some nouns in the list above are likely to be modeled as attributes rather as classes. Examples: *author*, *title*
- Operations: Some nouns are likely to be operations rather than classes. Example: *book search*.
- Roles: Some nouns are roles of objects involved in associations rather than classes.
- Implementation Constructs: Anything that is not part of the real-world problem.

Types of Classes

- Ones found during analysis:
  - people, places, events, and things about which the system will capture information
  - ones found in application domain
- Ones found during design
  - specific objects like windows and forms that are used to build the system

Example of a Class Diagram

Video Rental System



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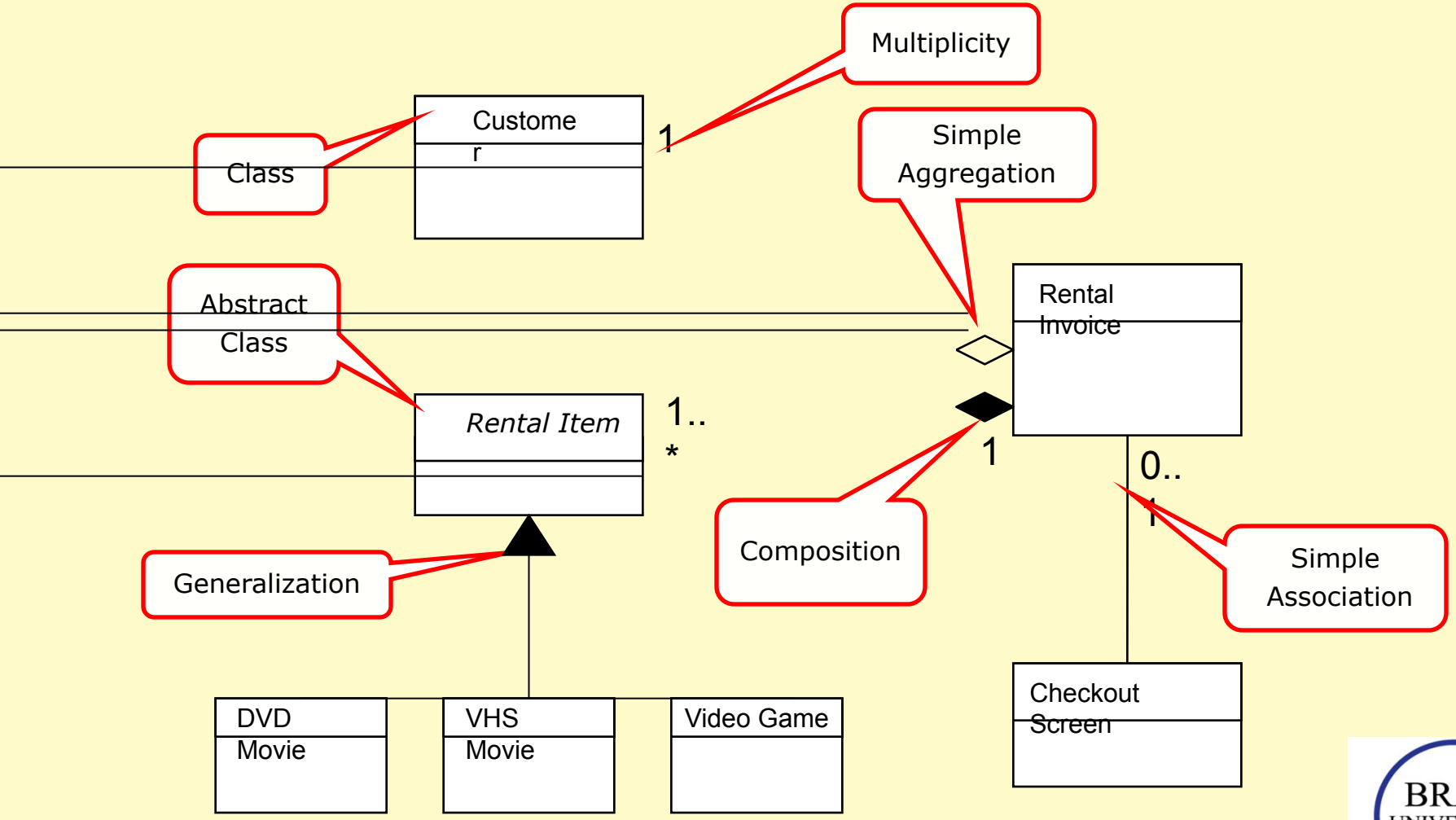
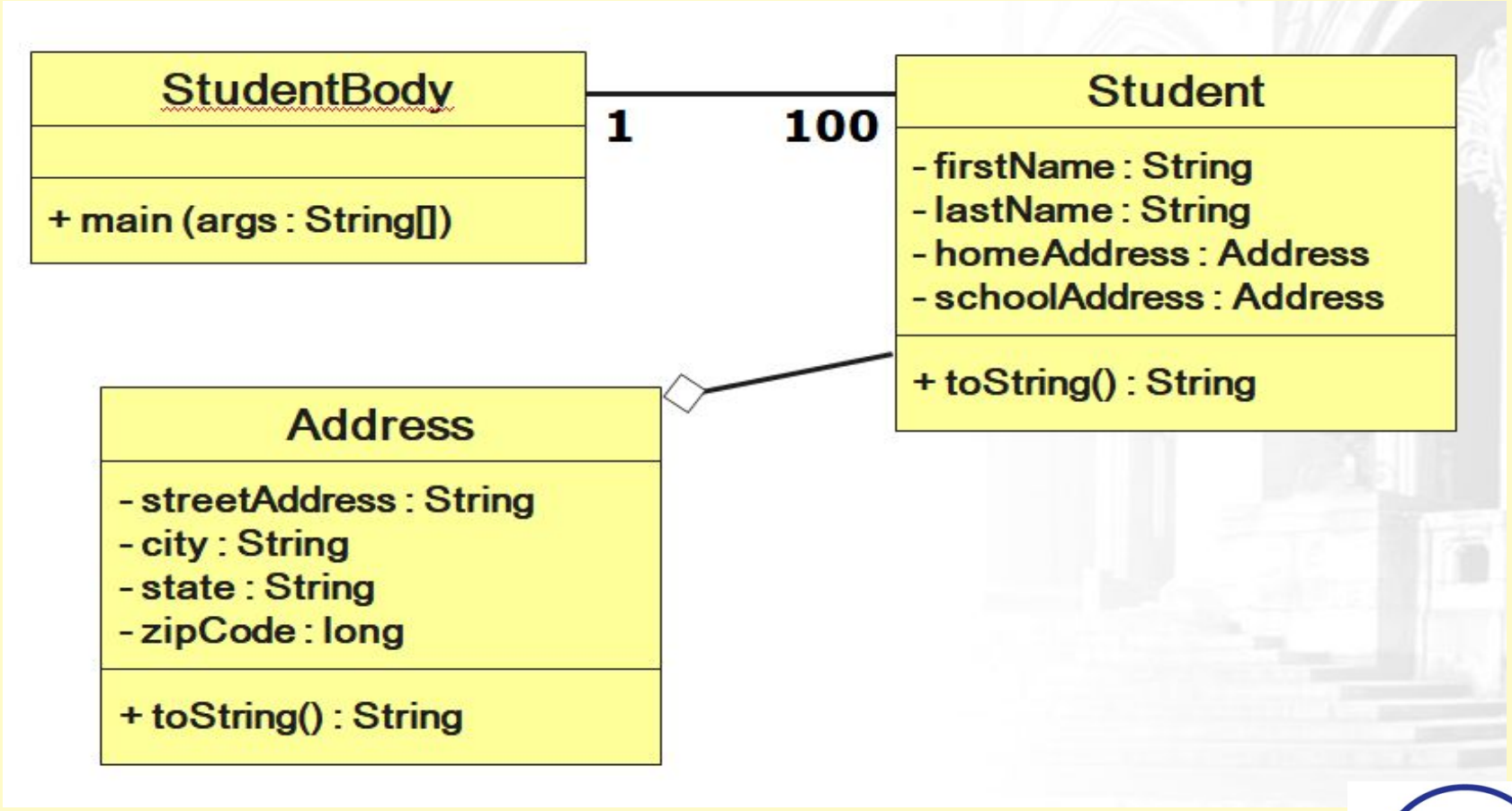
Class diagram example 1



Class diagram example 2



Class Diagram Example 3