

### Test Your Knowledge of the UML Class Model - Basic

The following questions can help you assess your understanding of the UML for data modeling. This is the first of two tests. Please work each question before looking at the answer. You should strive to get at least four answers correct.

Q: Does *class* correspond to *entity type* or *entity*?

A: *Class* corresponds to *entity type*.

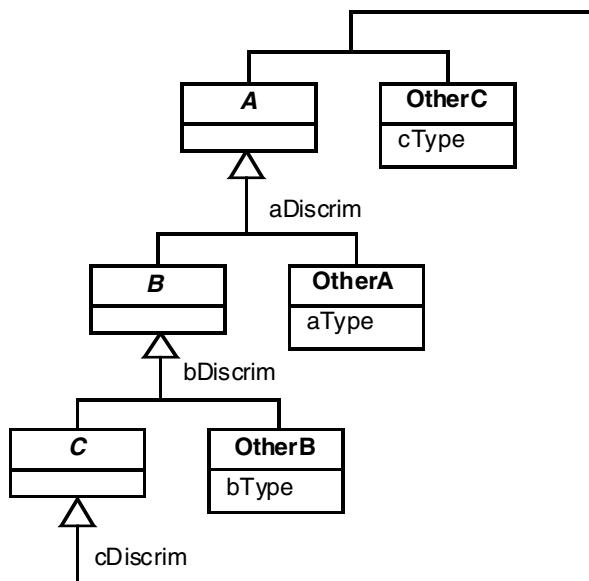
- *Object* corresponds to *Entity*. *Object* and *entity* are occurrences. An *object* is a concept, abstraction, or thing that has identity and meaning for an application.
- *Class* corresponds to *Entity Type*. *Class* and *entity type* are descriptors. A *class* describes a group of objects with similar properties (attributes), behavior, relationships to other objects, and semantic intent.
- *Class* is to *object* as *entity type* is to *entity*.

Q: Why might a data model include UML operations?

A: There are several reasons for adding operations to data models:

- **Illustrate major business functionality.** Operations put functionality in context with data. This is also helpful to OO programmers as they need to assign operations to classes.
- **Summarize stored procedures.** Stored procedures can be used to implement operations.
- **Specify SOA services.** We use data models to design XSD files. XSD files are often used as interfaces for SOA (Service-Oriented Architecture) services.

Q: Is this a valid UML model?

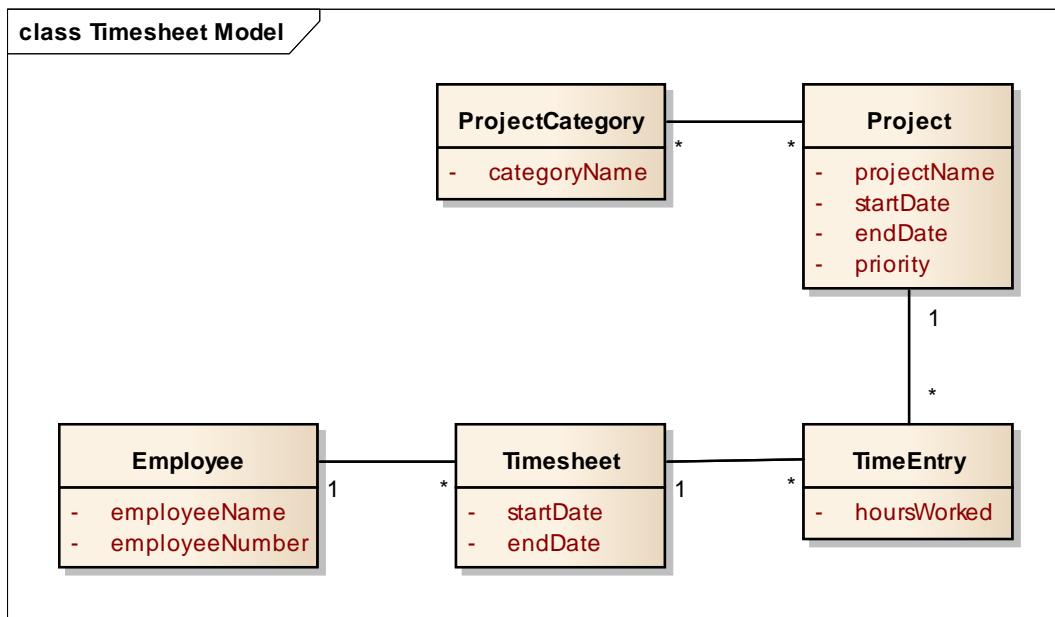


A: Many UML tools can draw this diagram, but it makes no sense for generalization to have a cycle. ERwin (correctly) will not let you draw this diagram.

Q: Restate the following model and eliminate all IDs.

ProjectCategory	Project	Timesheet	TimeEntry
projectCategoryID projectCategoryName	projectId projectName category1ID category2ID category3ID startDate endDate priority	timesheetID startDate endDate employeeID	timeEntryID timesheetID projectId hoursWorked
Employee	employeeID employeeName employeeNumber		

A: Here is an improved UML model.



Q: Discuss merits of the following identity schemes.

- Identify a motor vehicle by its owner.
- Use attributes such as manufacturer, model, and year.
- Use the VIN assigned to the car by its manufacturer.
- Use generated IDs.

A: Here are the merits of each scheme.

- The owner does not uniquely identify a motor vehicle, because someone may own several cars.
- Does not work. A manufacturer makes many cars with the same model and year.
- This works. The vehicle identification number (VIN) uniquely identifies each car. Anyone can inspect a car and read the VIN.
- Will uniquely identify each car, but has no meaning to a person.