# SYAD Week 6 Tutorial (Chapter 6)

**Chapter 6 – Object Modeling:** Chapter 6 discusses object modeling techniques that analysts use to create a logical model.

**Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Answer the following short questions:**

**Question 1**: Define an object and provide three examples.

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| An **object** is a fundamental component within an information system, representing a real-world item, concept, or event. Objects combine data (attributes) and behaviors (methods), and they are capable of sending and receiving messages to perform tasks. In visual modeling, objects are typically depicted as rectangles containing the object’s name, its attributes, and its methods.  **Examples of objects:**   1. **Parent** – Represents a parent entity with details such as name and contact information, and can perform actions such as contacting a school. 2. **Child** – Represents a child, including characteristics like name and age, and can perform methods such as registering for a class. 3. **Vehicle** – Represents any mode of transportation, with attributes like make, model, and year, and methods such as starting or stopping. |

**Question 2**: Define an attribute and provide three examples.

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| An **attribute** describes a specific characteristic or property of an object. Attributes are identified based on business and user requirements during system development, and together they define the state or status of the object at any given time.  **Examples of attributes:**   1. **Name** – A property of a person object that identifies the individual. 2. **Student ID** – A unique code assigned to each student in a school system. 3. **Account Balance** – The amount of money currently held in a bank account. |

**Question 3**: Define a method and provide three examples.

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| A **method** is a specific task or function that an object can execute. Methods define the behaviors of objects and are invoked when the object receives appropriate messages.  **Examples of methods:**   1. **More Fries** – A method executed by a server object that involves a sequence of steps to fulfill a customer's request. 2. **Enter Grade** – A function performed by a student record object in response to a message from an instructor. 3. **Withdraw Cash** – A method in an ATM system that enables the user to retrieve money from their account. |

**Question 4**: Define a class, subclass, and superclass, and provide three examples of each.

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| A **class** is a blueprint or template for a group of similar objects. Each object in a class shares common attributes and methods defined by the class.  A **subclass** is a more specialized category within a class. Subclasses inherit features from their parent class but may introduce additional attributes or behaviors.  A **superclass** is a broader category that encompasses more general attributes and methods, which can be inherited by one or more subclasses.  **Examples of classes:**   1. **Vehicle** – Defines core properties and methods common to all vehicles. 2. **Employee** – Represents staff members, including attributes like employee ID and salary. 3. **Person** – Defines characteristics and behaviors common to all individuals.   **Examples of subclasses:**   1. **Instructor** – A specialized type of employee with teaching-specific attributes and methods. 2. **Car** – A type of vehicle with car-specific properties. 3. **Truck** – Another vehicle type, with attributes unique to trucks.   **Examples of superclasses:**   1. **Person** – The general class from which Employee is derived. 2. **Employee** – A general class for all employees, from which Instructor is derived. 3. **Vehicle** – The overarching class for all forms of vehicles, including cars, trucks, minivans, and buses. |

**Question 5**: Create a Use Case Diagram Online Tutorial System where Student can login into the system, download Lectures, attend a quiz Faculty member can login, upload a lecture and grade the quiz. All the transactions need to be logged into a remote server.

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**Useful Resources:**

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| • https://www.youtube.com/watch?v=zid-MVo7M-E |