Use Case Diagram in Software Engineering (SE)

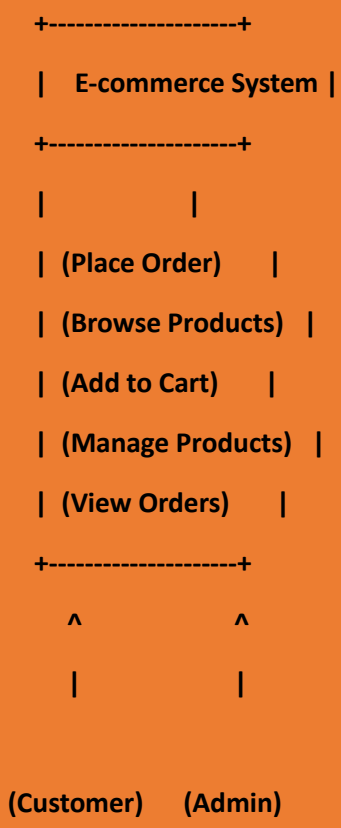
A use case diagram is a type of UML diagram that represents the functional behaviour of a system from the user's perspective. It describes how users (called "actors") interact with the system to achieve a goal through "use cases." These diagrams help to understand the system's functionality and its interactions with external entities.

Key Elements of a Use Case Diagram:

1. **Actors:**
   - **Represent the users or external systems that interact with the system.**
   - **Example: A "Customer" or "Admin" who interacts with an e-commerce website.**
2. **Use Cases:**
   - **Represent the actions or tasks that the actors perform within the system.**
   - **Example: "Place Order", "Login", "View Product".**
3. **System Boundary:**
   - **This is represented by a rectangle that encapsulates all use cases of the system, showing the scope of the system.**
4. **Relationships:**
   - **Association: A link between an actor and a use case, showing interaction.**
   - **Include: One use case includes the functionality of another.**
   - **Extend: A use case can extend the behavior of another use case.**
   - **Generalization: Represents an inheritance relationship between actors or use cases.**

Example of a Simple Use Case Diagram:

1. **Actors:**
   - **Customer**
   - **Admin**
2. **Use Cases:**
   - **Customer: "Browse Products", "Add to Cart", "Place Order"**
   - **Admin: "Manage Products", "View Orders"**



Benefits of a Use Case Diagram:

- **Visualizes user interactions: Shows how different users interact with the system.**
- **Simplifies requirements: Helps in gathering functional requirements and understanding system behaviour.**
- **Improves communication: Makes it easier to explain system functions to stakeholders or team members.**