NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES

Object Oriented Analysis & Design (CL-309)

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Lab Session # 03

Objective: To understand USE CASE diagram and Hands on USE CASE diagram practice.

Introduction:

Use case analysis is one of the first and primary mean of gathering requirements of the system. Use case diagram captures the functional aspects of the system. it capture the business processes of the system.

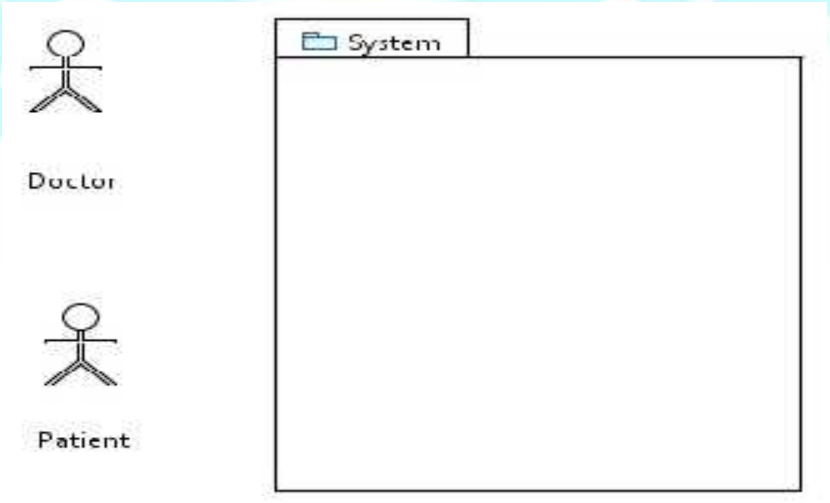
A use case is a narrative document that describes the sequence of events of an actor (an external agent) using a system to complete a process." [Jacobson]

"They are stories or cases of using a system. Use case are not exactly requirements or functional specifications, but they illustrate and imply requirements in the stories they tell." [Larman]

Elements of Use Case Diagram:

Actors:

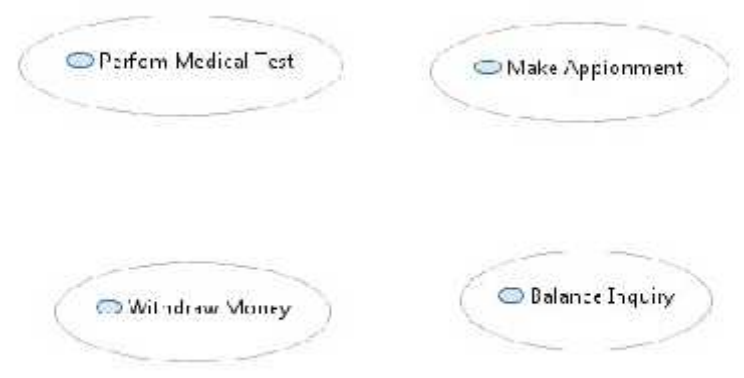
An actor is a role that a user plays with respect to the system. Actors carry out use cases. A single actor may perform many use cases; on the other hand, a use case may have several actors performing it. An actor is shown as stick figure in use case diagram depicted "outside" the system boundary as shown in figure.



Use Cases:

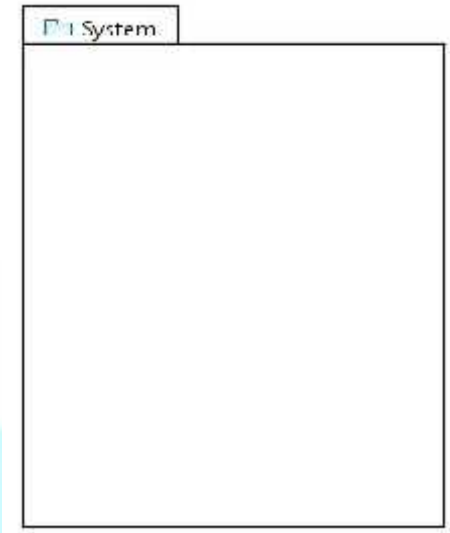
Use cases in use case diagram are shown as an eclipse. It defines the distinct functionality of the system. To choose a business process as a likely candidate for modeling as use case, ensure that the business process is discrete in nature. As the first step in identifying use case, list the discrete business functions in requirements document. Each of this business function can be classified as a potential use case. A use case can be connected to many actors at a time.

Example:

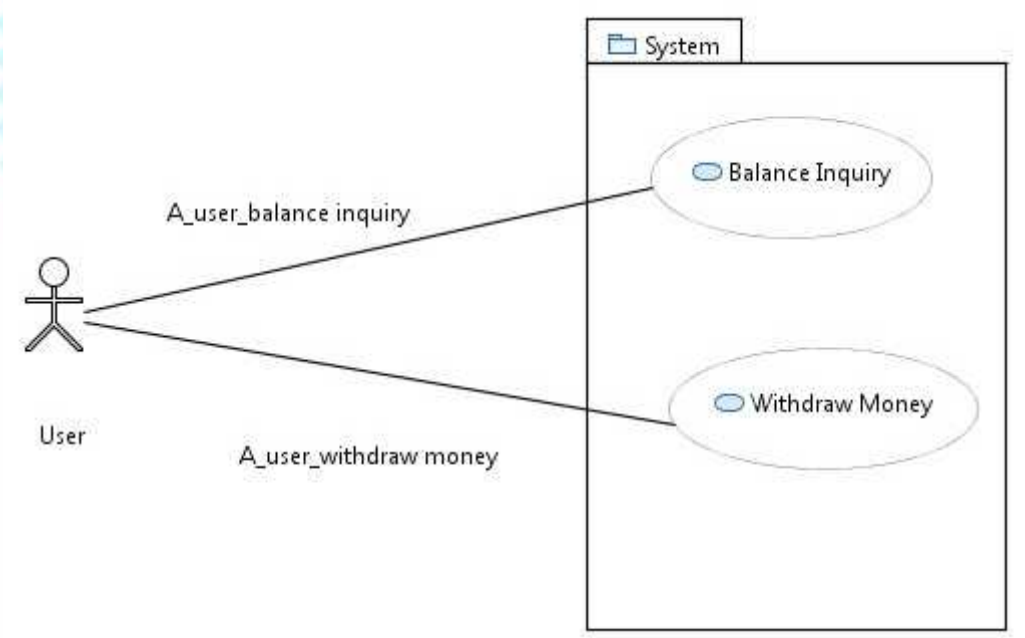


System Boundary:

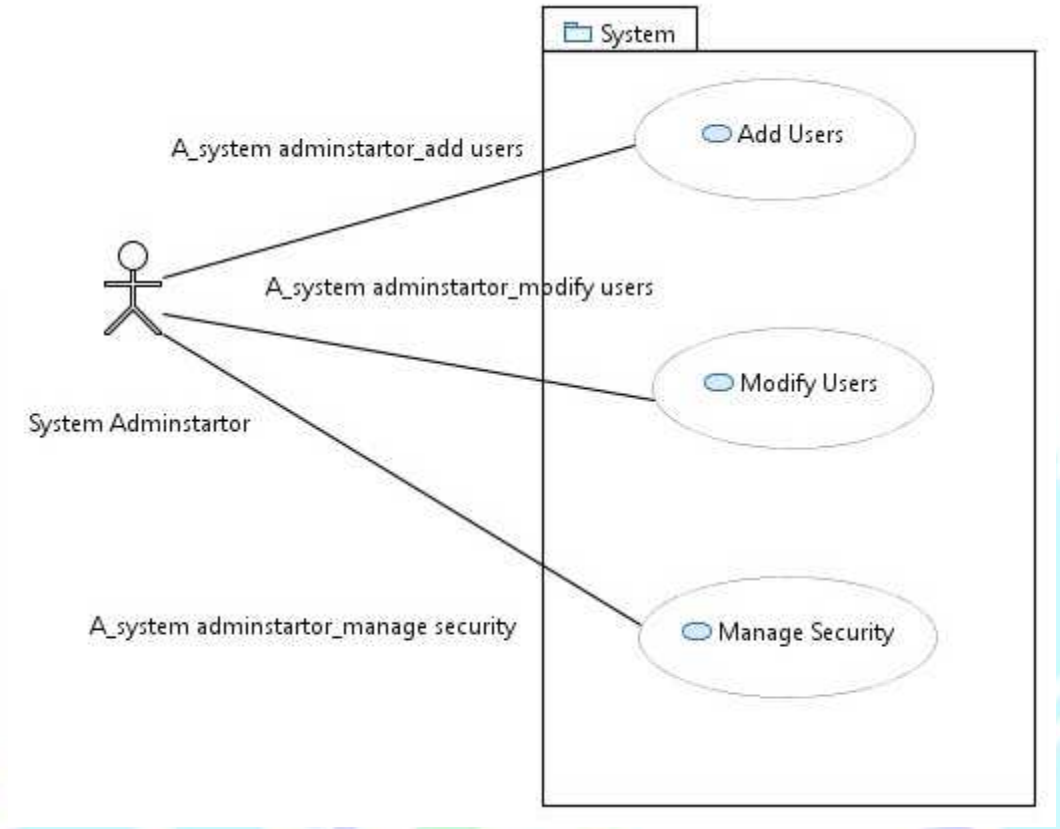
System boundary defines the scope of what a system will be. The system boundary in use case diagram defines the limits of a system. System boundary is shown as a rectangle spanning all the use cases in the system.



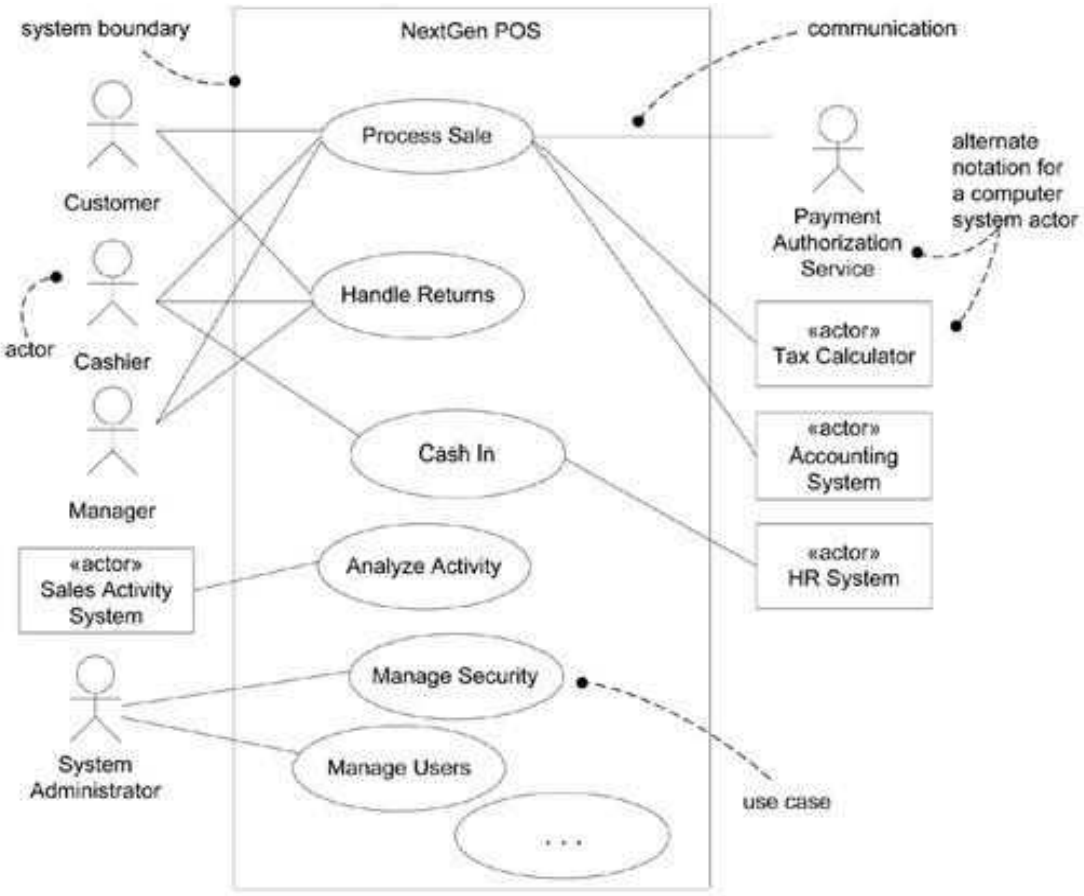
USE CASE Diagram Example 01



USE CASE Diagram Example 02

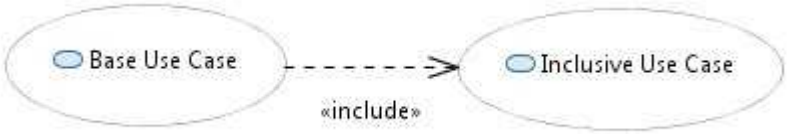


Example 03 Partial Use Case Context Diagram

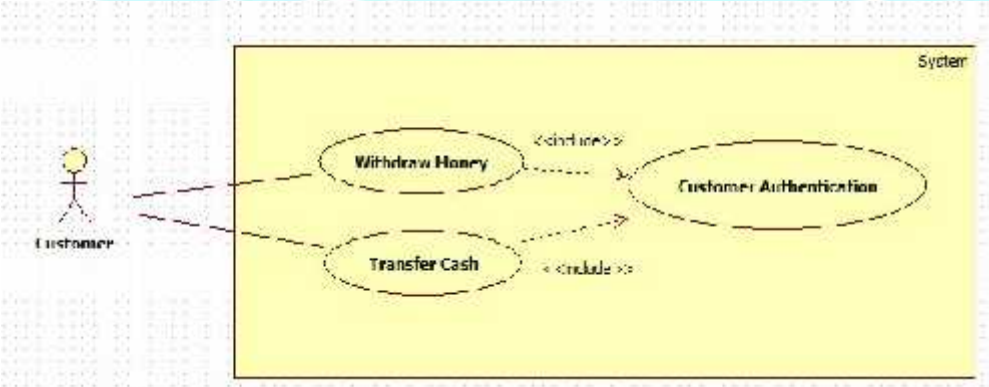


Relationship in Use Case Diagram:

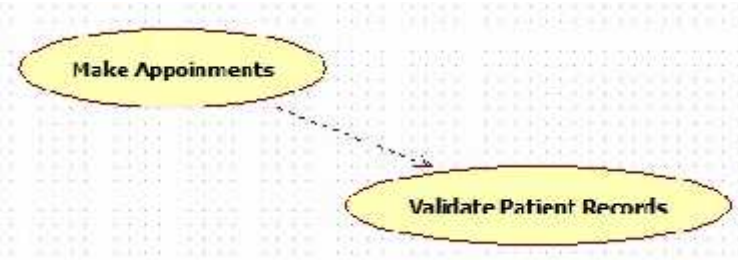
A relationship between two use cases is basically a dependency between two use cases. Use cases share different kind of relationship.



Example 01

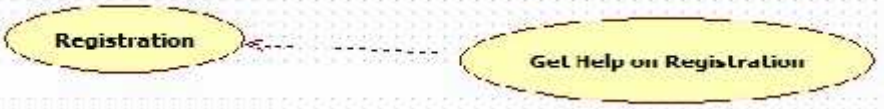


Example 02



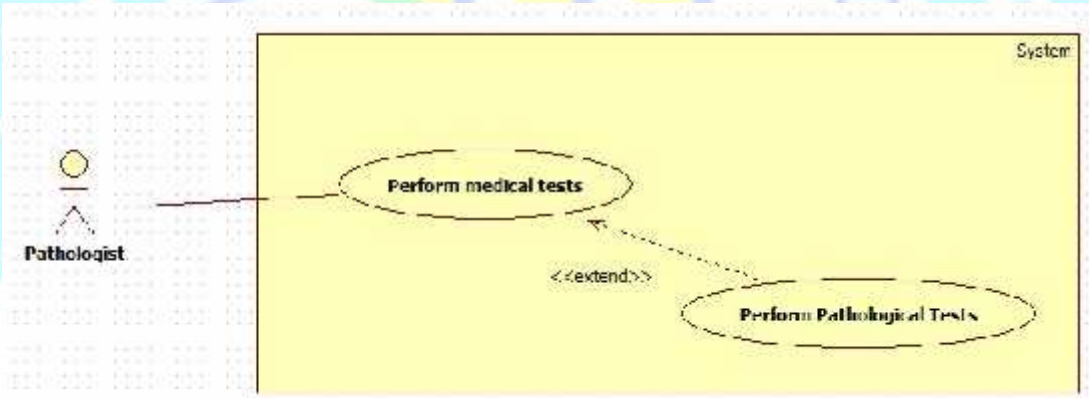
Extends:

Example 01

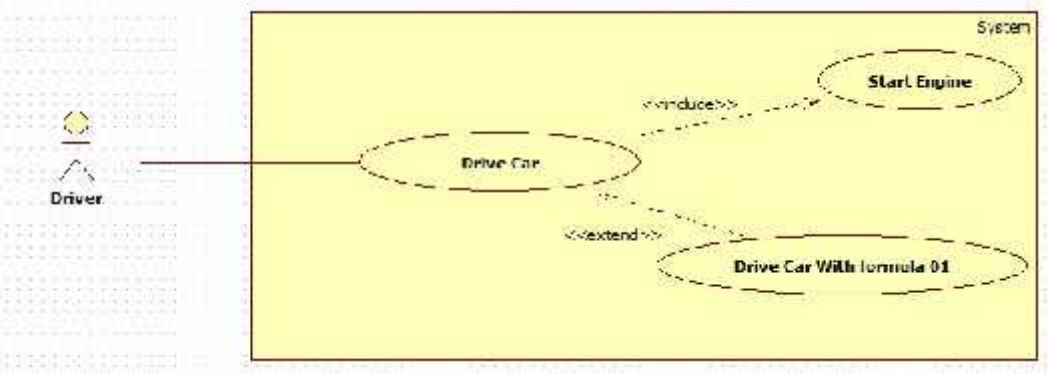


***Registration** use case is complete and meaningful on its own.*
*It could be extended with optional **Get Help On Registration** use case.*

Example 02

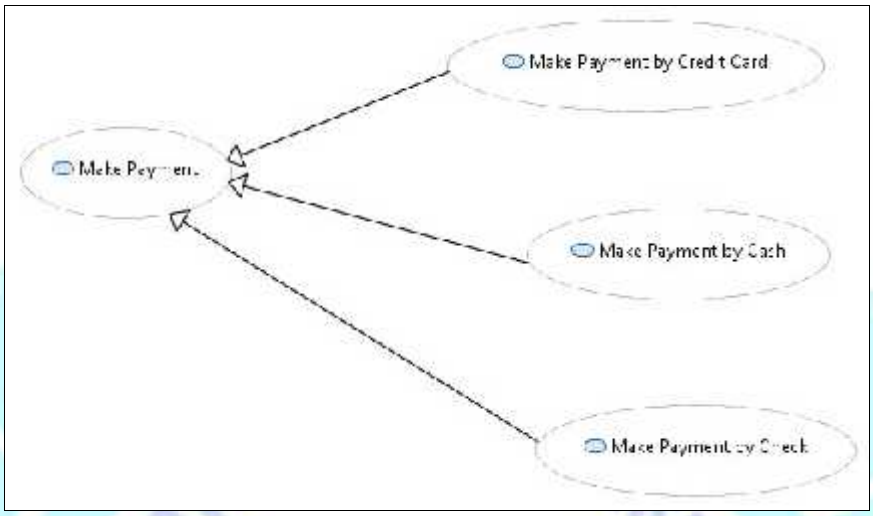


Example 03 Translated to a real world situation



Generalization:

Example 01

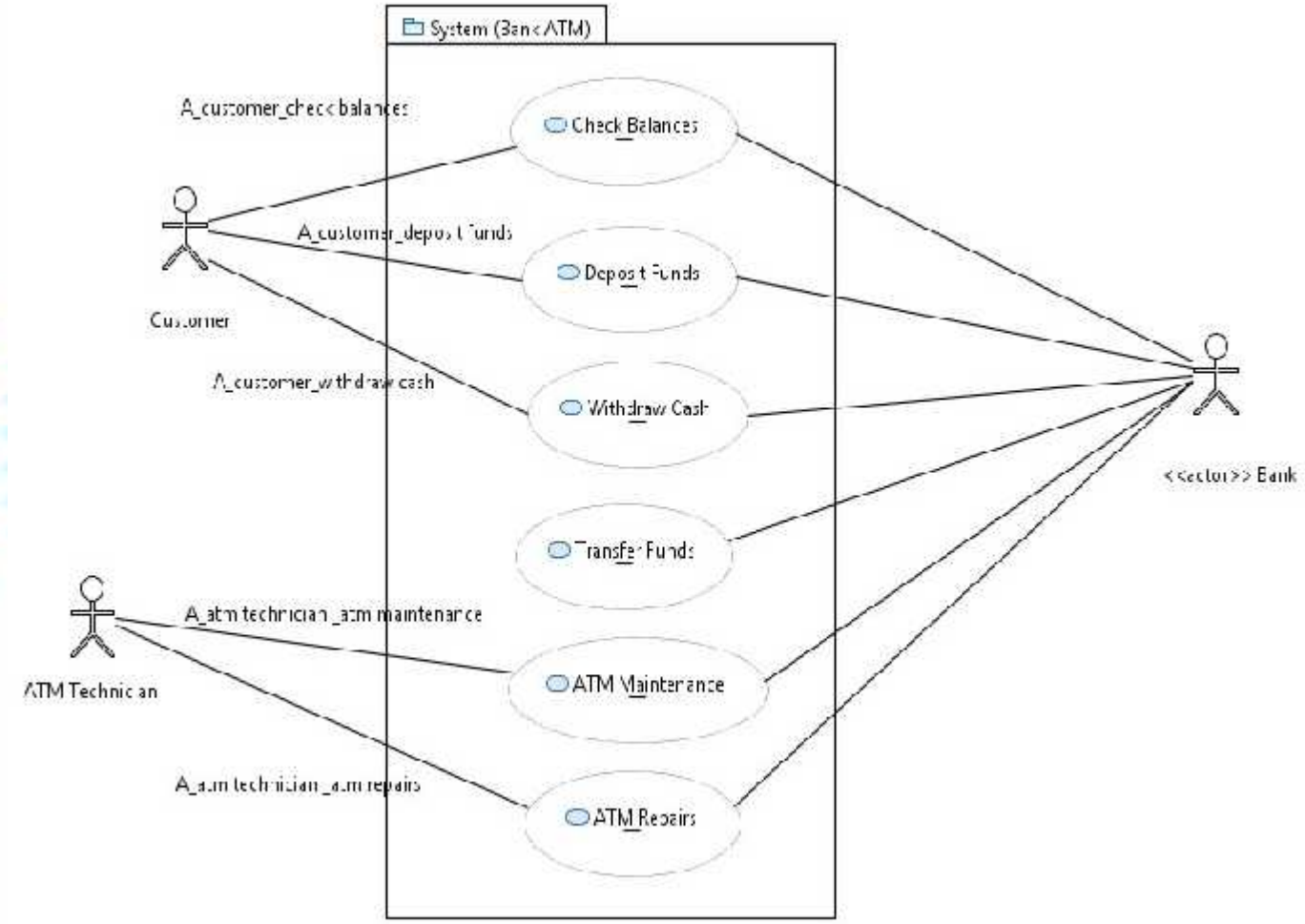


How to design UML Use Case Diagram Example (Bank ATM)

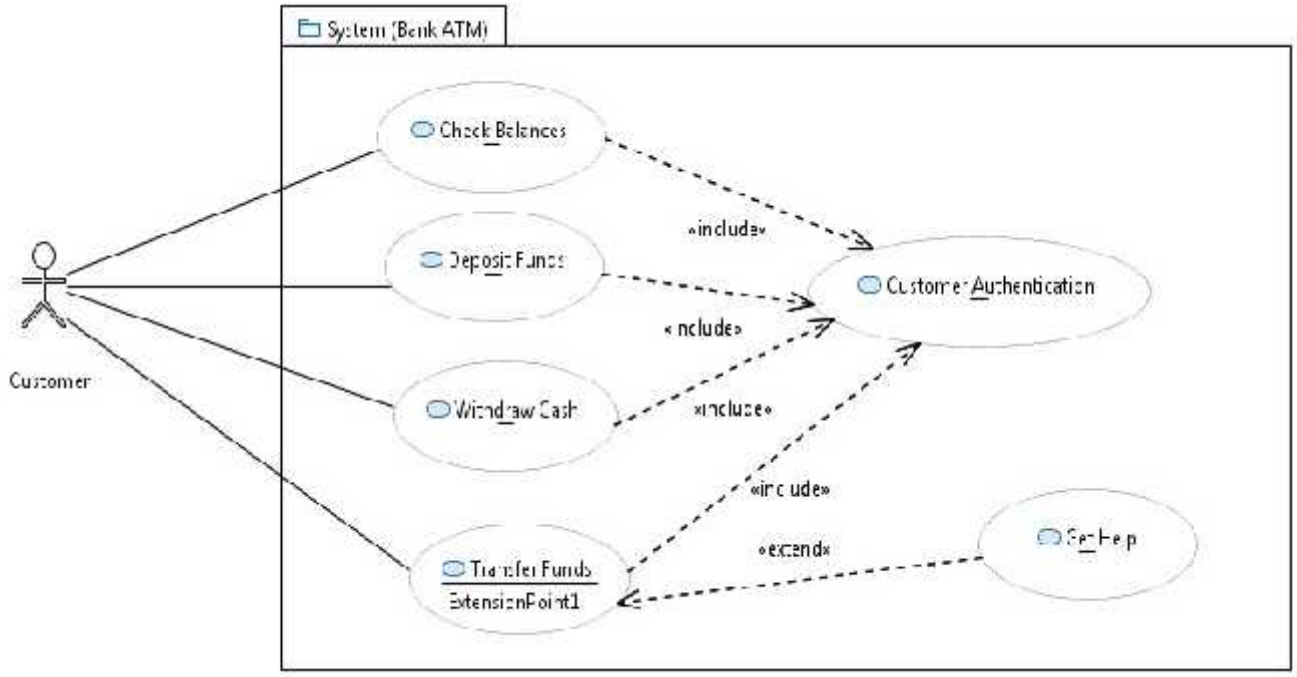
An automated teller machine (ATM) or the automatic banking machine (ABM) is a banking subsystem (subject) that provides bank customers with access to financial transactions in a public space without the need for a cashier, clerk, or bank teller.

Customer (actor) uses bank ATM to Check Balances of his/her bank accounts, Deposit Funds, Withdraw Cash and/or Transfer Funds (use cases).

ATM Technician provides Maintenance and Repairs. All these use cases also involve Bank actor whether it is related to customer transactions or to the ATM servicing.



On most bank ATMs, the customer is authenticated by inserting a plastic ATM card and entering a personal identification number (PIN). Customer Authentication use case is required for every ATM transaction so we show it as include relationship.



Customer may need some help from the ATM. ATM Transaction use case is extended via extension point called menu by the ATM Help use case whenever ATM Transaction is at the location specified by the menu and the bank customer requests help, e.g. by selecting Help menu item.

QUOTE OF THE WEEK

DON'T LIMIT YOUR CHALLENGES.
CHALLENGE YOUR LIMITS.