

Lab report no: 02

Name of the lab report: Use Case diagram.

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Objectives:

- Learn basic about Use Case diagram
- Learn Use Case diagram notations
- Learn how to draw an Use case diagram.

Theory:

What is an Use Case diagram?

Use Case Diagram captures the system's functionality and requirements by using actors and use cases. Use Cases model the services, tasks, function that a system needs to perform. Use cases represent high-level functionalities and how a user will handle the system. Use-cases are the core concepts of Unified Modelling language modeling.

Use Case Diagram objects

Use case diagrams consist of 4 objects.

- ✓ Actor
- ✓ Use case
- ✓ System
- ✓ Package
- ✓ Extend
- ✓ include

Actor

Actor in a use case diagram is any entity that performs a role in one given system. This could be a person, organization or an external system and usually drawn like skeleton shown below



Use Case

A use case represents a function or an action within the system. It's drawn as an oval and named with the function.



System

The system is used to define the scope of the use case and drawn as a rectangle. This is an optional element but useful when you're visualizing large systems.



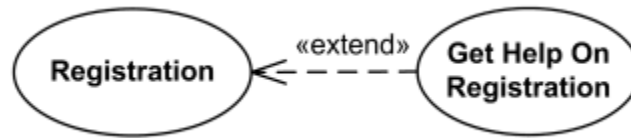
Package

The package is another optional element that is extremely useful in complex diagrams. Similar to class diagrams packages are used to group together use cases. They are drawn like the image shown below.



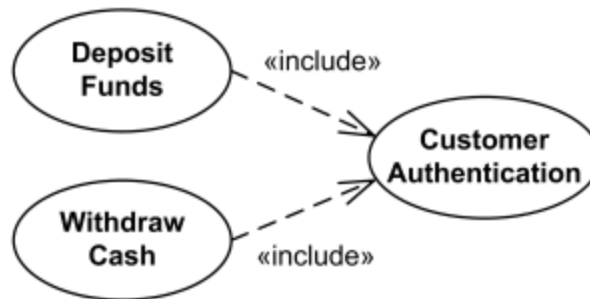
Extend:

Extend is a directed relationship that specifies how and when the behavior defined in usually supplementary (optional) **extending use case** can be inserted into the behavior defined in the **extended use case**.



Include:

Use case include is a directed relationship between two use cases which is used to show that behavior of the **included** use case (the addition) is inserted into the behavior of the **including** (the base) use case.



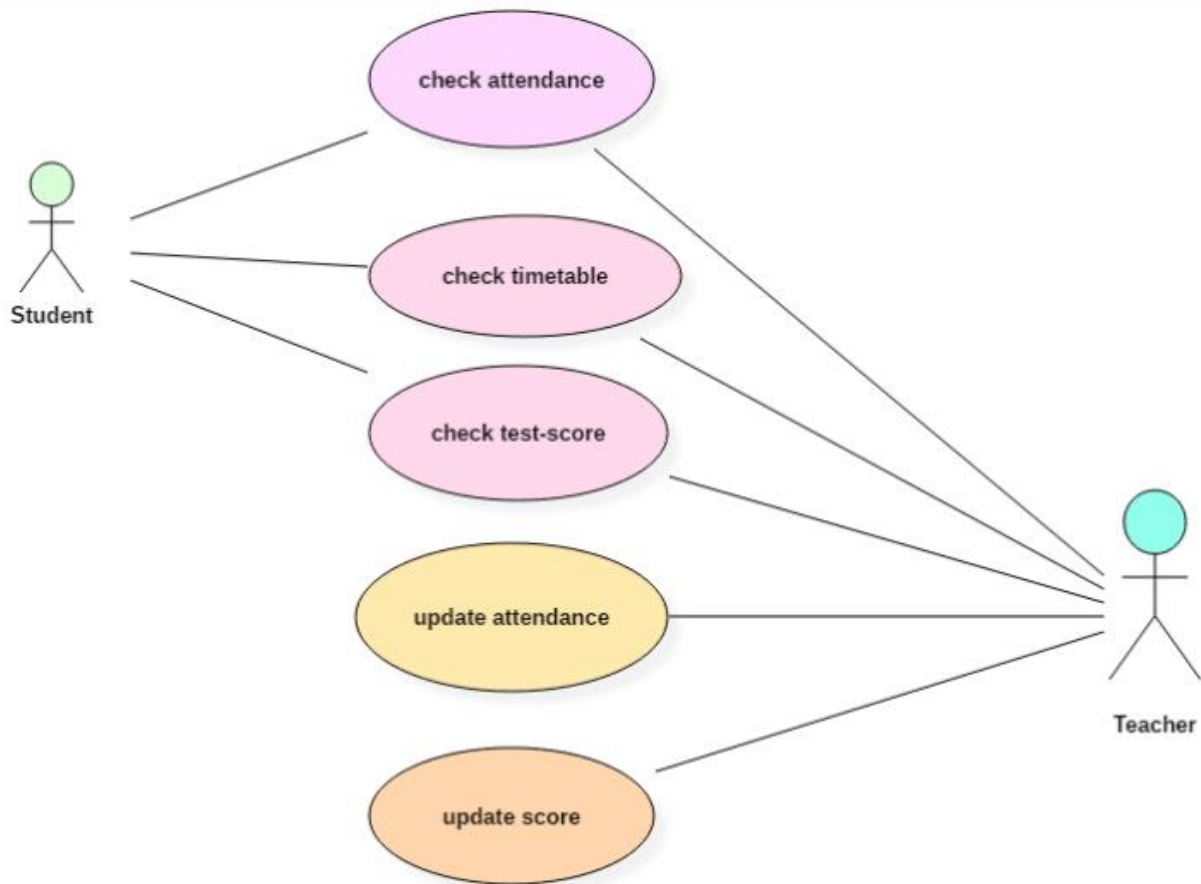
How to draw a Use Case diagram?

To draw a use case diagram in UML first one need to analyse the entire system carefully. You have to find out every single function that is provided by the system. After all the functionalities of a system are found out, then these functionalities are converted into various use cases which will be used in the use case diagram.

Following rules must be followed while developing a Use Case diagram,

- ✓ The name of an actor or a use case must be meaningful and relevant to the system.
- ✓ Interaction of an actor with the use case must be defined clearly and in an understandable way.
- ✓ Annotations must be used wherever they are required.
- ✓ If a use case or an actor has multiple relationships, then only significant interactions must be displayed.

Example of Use Case Diagram:



When use Use case Diagram?

A use case is a unique functionality of a system which is accomplished by a user. A purpose of use case diagram is to capture core functionalities of a system and visualize the interactions of various things called as actors with the use case. This is the general use of a use case diagram.

In general use case diagrams are used for:

- ✓ Analyzing the requirements of a system
- ✓ High-level visual software designing
- ✓ Capturing the functionalities of a system
- ✓ Modeling the basic idea behind the system
- ✓ Forward and reverse engineering of a system using various test cases.

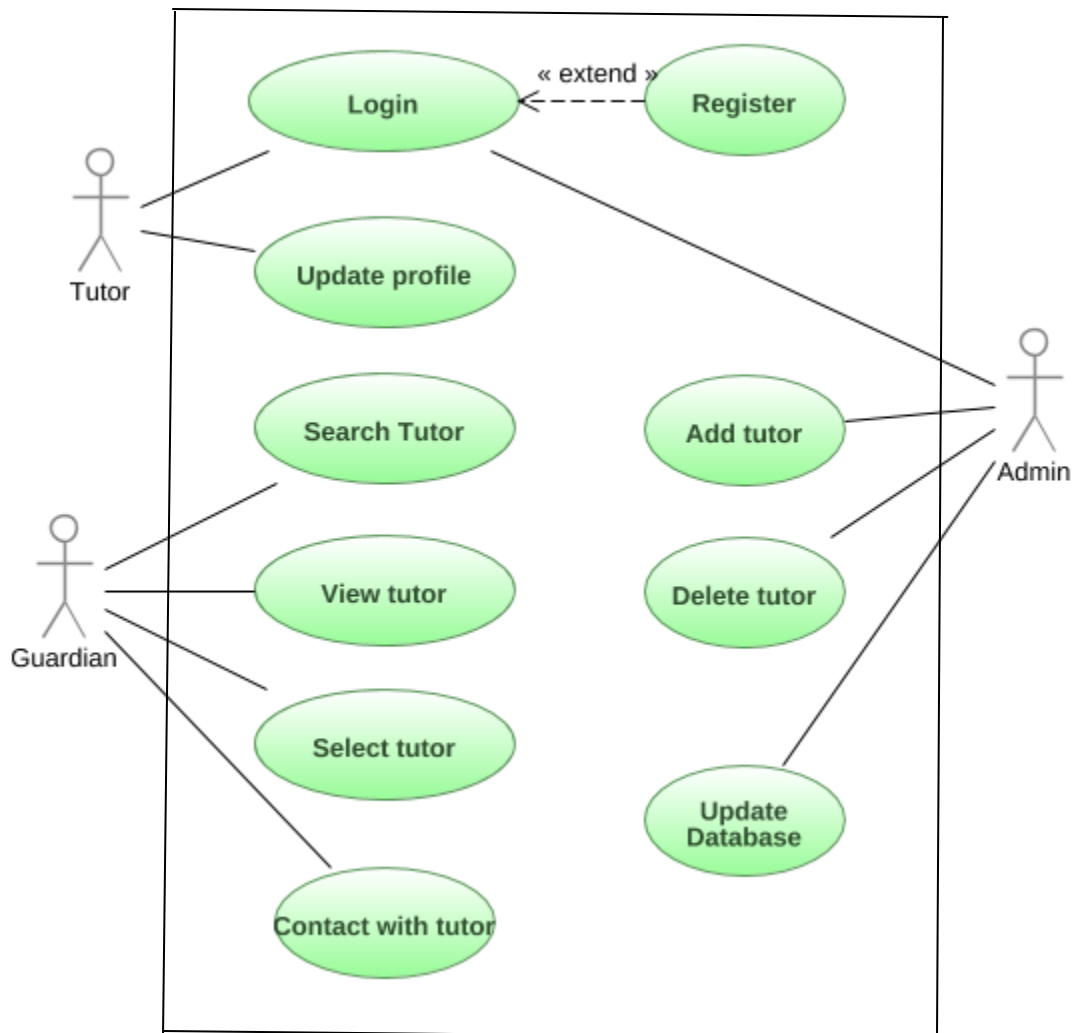
Our group story:

X is a student of Y university. He belongs to a middle class family. When he at first came to university, he faces a lot of trouble specifically financial problems. So he collects tuition from his varsity's senior brother. After getting the tuition somehow he maintains his cost. But he thinks that the problem doesn't over. He notices that when students at first came to university they are also facing the same problems who are also belonging to middle class family, they are also facing a lot of financial problems. So try to do something about this problem. At third year second semester his teacher teaches them a course about software engineering. In this course he learns laraval software development framework and decides to develop a software on tuition management system using laravel framework. To develop such a system he first want to draw the following diagram of the system.

- Activity diagram.
- Use Case diagram.
- Sequence diagram.
- Class diagram.

In this lab we will draw a Use Case diagram based on that story.

Use Case diagram of our group story:



Conclusion:

This was an interesting lab. I learned many things from this lab. I don't know nothing about a use case diagram before this lab work but now I know about Use Case diagram, the main components of Use Case diagram and finally how to draw Use Case diagram.