Assignment No. 2

Title : Prepare use case model

Problem Statement :

- Prepare use case model
- Identify Major Use Cases, Identify actors.
- Draw detail Use Case Diagram using UML2.0 notations.

Objectives:

- To Identify Major Use Cases, Identify actors.
- To Write Use Case specification.
- To Draw detail Use Case Diagram.

Theory :

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally. Use-case diagrams illustrate and define the context and requirements of either an entire system or the important parts of the system. It can model a complex system with a single use-case diagram, or create many use-case diagrams to model the components of the system. It is typically developed in the early phases of a project and referred them throughout the development process such as :

- ➢ Determine the requirements of the system
- ➢ Describe what the system should do
- ➢ Provide a basis for testing to ensure that the system works as intended

The use case diagram is composed of following model elements :

➢ **Use cases**

A use case describes a function that a system performs to achieve the user's goal. A use case must yield an observable result that is of value to the user of the system.

➢ **Actors**

An actor represents a role of a user that interacts with the system that you are modeling. The user can be a human user, an organization, a machine, or another external system.

➢ **Sub systems**

In UML models, subsystems are a type of stereotyped component that represent independent, behavioral units in a system. Subsystems are used in class,

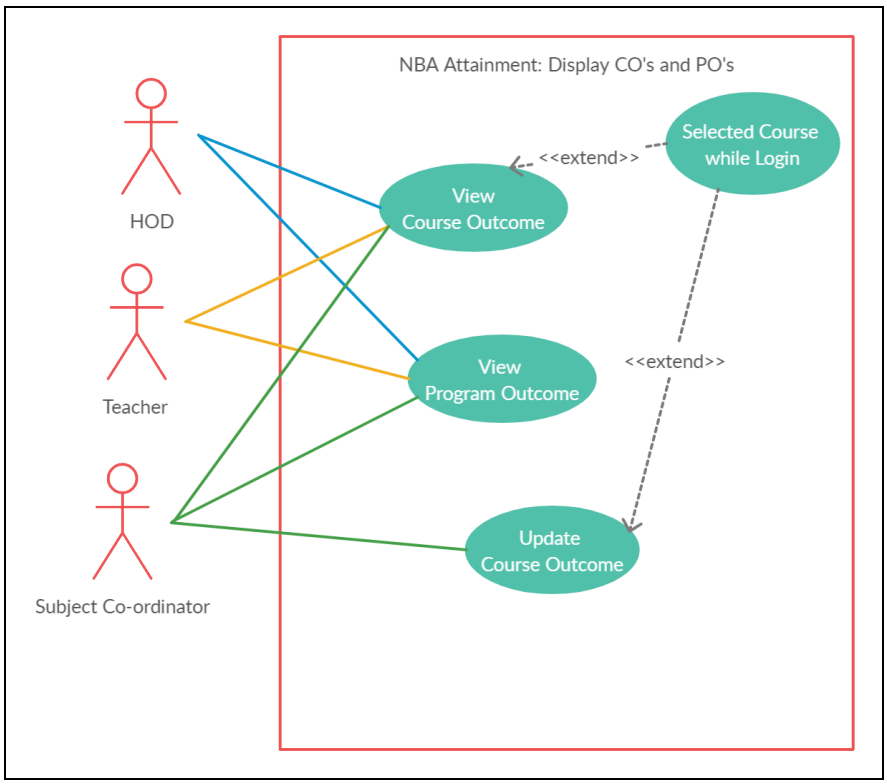
component, and use-case diagrams to represent large-scale components in the system that you are modeling.

➢ **Relationships in use-case diagrams**

In UML, a relationship is a connection between model elements. A UML relationship is a type of model element that adds semantics to a model by defining the structure and behavior between the model elements.

Use case scenarios :

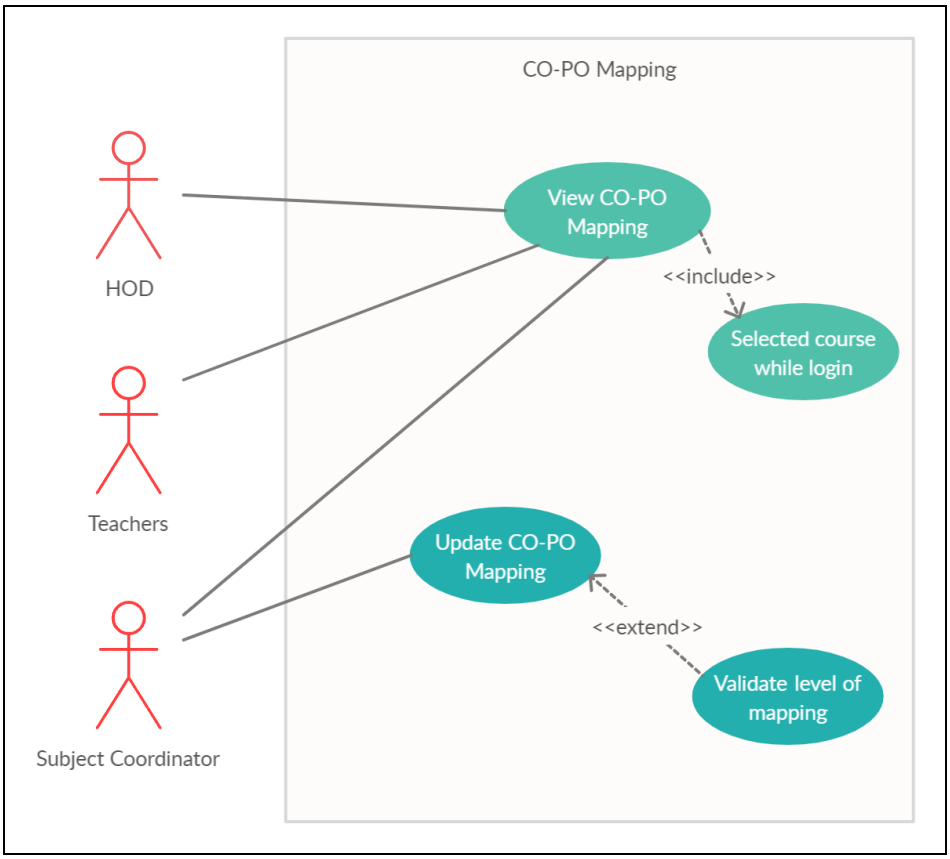
Use Case 1 :



Use case name	Display CO's and PO's
Actors	Teachers, Subject Coordinator , HoD
Description	1. The course outcomes and program outcomes will be displayed for the reference of authority.
Precondition	The user should be logged in , in the system as a teacher subject coordinator or HoD.
Flow	<u>Teacher</u> 1. The subject is recorded when the teacher logs in. 2. The teacher can refer the CO's (for the particular subject) and PO's through the dashboard.

	<u>Subject Coordinator</u> 1. The subject is recorded when the coordinator logs in. 2. The coordinator can refer the list of CO's and PO's. He can also update the CO's. <u>HoD</u> 1. Selects the subject to refer the CO's. 2. Views the CO's for selected subject.
Exception	If HoD is logged in as a teacher for a particular subject, then the flow of teacher is maintained.

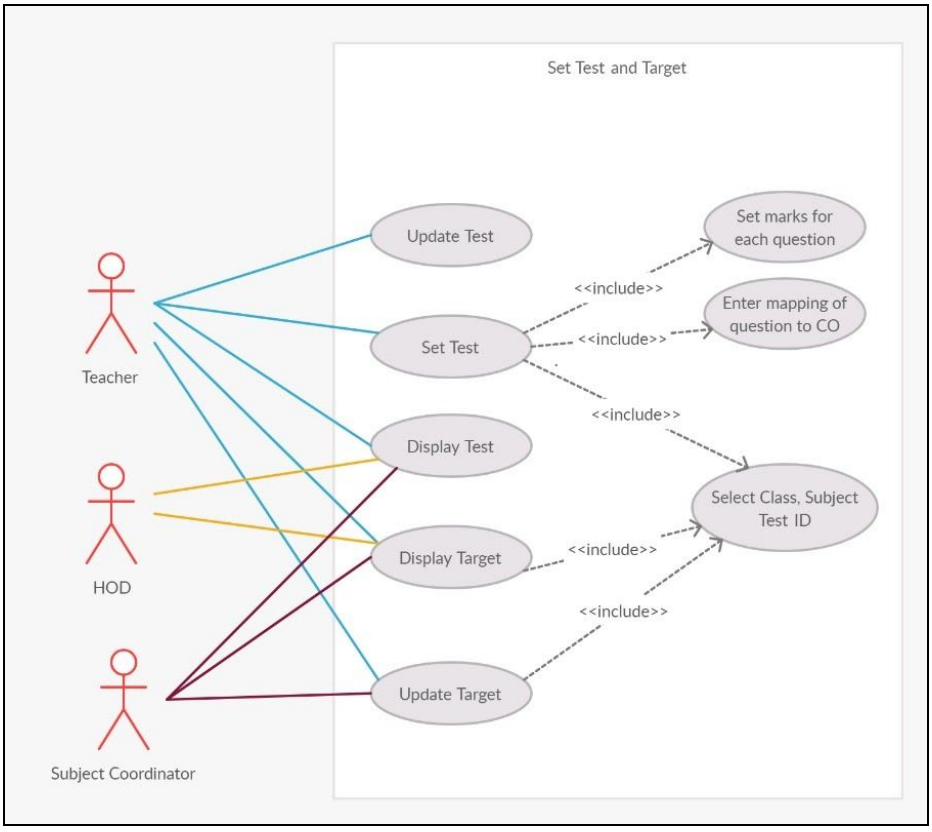
Use Case 2 :



Use case name	View / Update CO-PO mapping
Actors	Teachers, Subject Coordinator , HoD
Description	Facility of referring CO-PO mapping and also update it for some authorities.
Precondition	The user should be logged in , in the system as a teacher subject coordinator or HoD.
Flow	<u>Teacher</u>

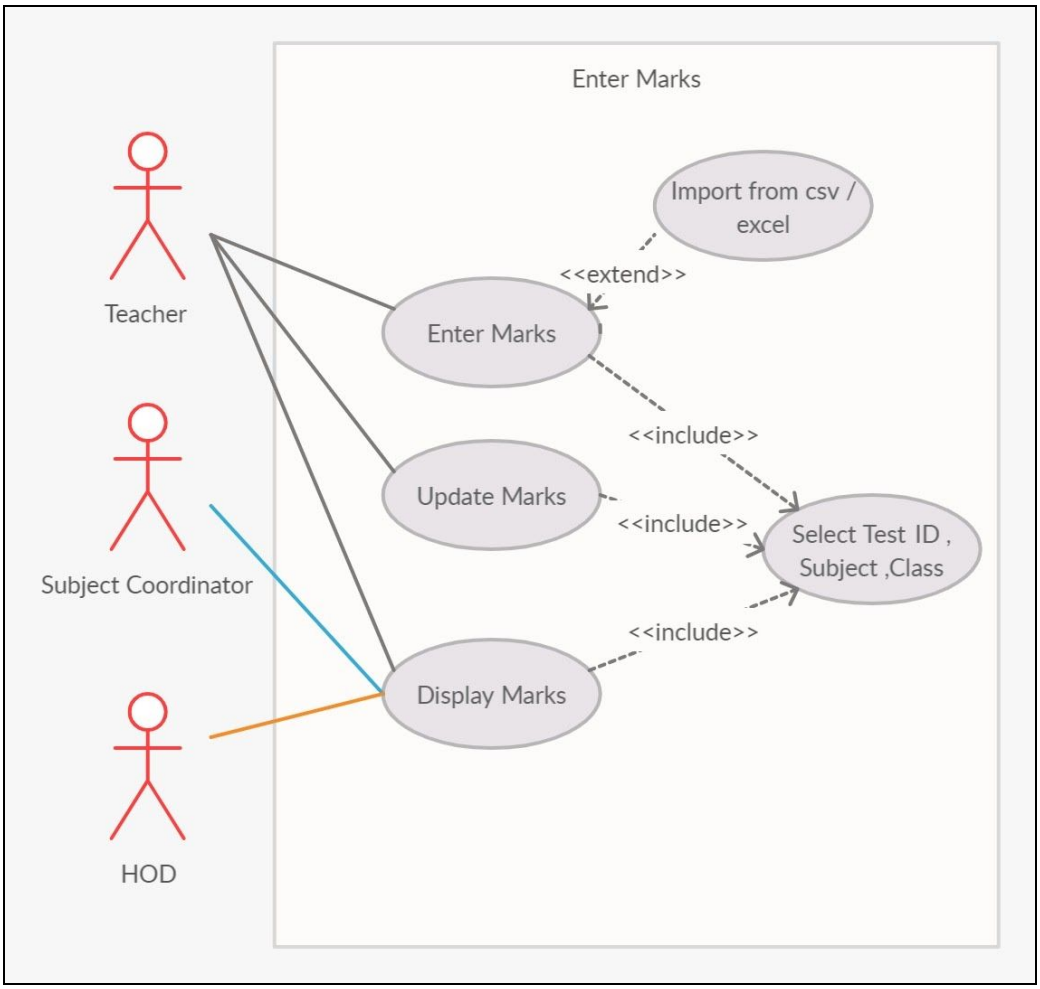
	1. Teacher logs in with the respective subject. The subject is recorded by the system. 2. CO-PO mapping is displayed for assigned subject. Teacher cannot update the mapping. <u>Subject Coordinator</u> 1. Coordinator logs in with the respective subject. The subject is recorded by the system. 2. Can view or update CO-PO mapping for respective subject. <u>HoD</u> 1. Selects the subject and then view the CO-PO mapping for selected subject. HoD cannot update the mapping.
Exceptions	If Subject Coordinator is logged in as teacher, then they can't update CO-PO mapping.
Validations	The CO-PO mapping is represented in levels of 1 , 2 , 3 or no mapping at all. So the user must either any one of the set { 1 , 2 , 3 , '-' } If anything other than this is entered, the system will raise error.

Use Case 3 :



Use case name	Set test for particular subject
Actors	Teacher , Subject Coordinator
Description	A test is set referring to the CO's of the respective subject. Test can be set flexibly such that each sub question shouldn't necessarily be mapped to CO of the question. The marks obtained for a particular test can be given to the system through an interface for further processing.
Precondition	The user should be logged in , in the system as a teacher or subject coordinator.
Flow	<u>Teacher</u> 1. The teacher selects the option of set test. The subject will be automatically chosen from the login information of the teacher. The teacher will then choose the skeleton of the test which includes information such as total number of questions , no of sub questions in each question and the CO upon which the question is based. 2. After the test is created , similar page for entering marks achieved is created dynamically. The teacher enters the marks as per respective question and sub question. The marks can be imported from excel sheets or csv file. <u>Subject Coordinator</u> 1. The coordinator selects the option of set test. The subject will be automatically chosen from the login information of the coordinator. The coordinator will then choose the skeleton of the test which includes information such as total number of questions , no of sub questions in each question and the CO upon which the question is based. 2. After the test is created , similar page for entering marks achieved is created dynamically. The coordinator enters the marks as per respective question and sub question. The marks can be imported from excel sheets or csv file.
Assumptions	The marks of students are properly entered or imported.
Validations	If a student is absent for the test , no record of his marks would be present. This is because we need to find out how many students were absent and how many of them scored 0. The marks entry for each question and subquestion is checked to ensure they lie between appropriate range. If not , system raises error

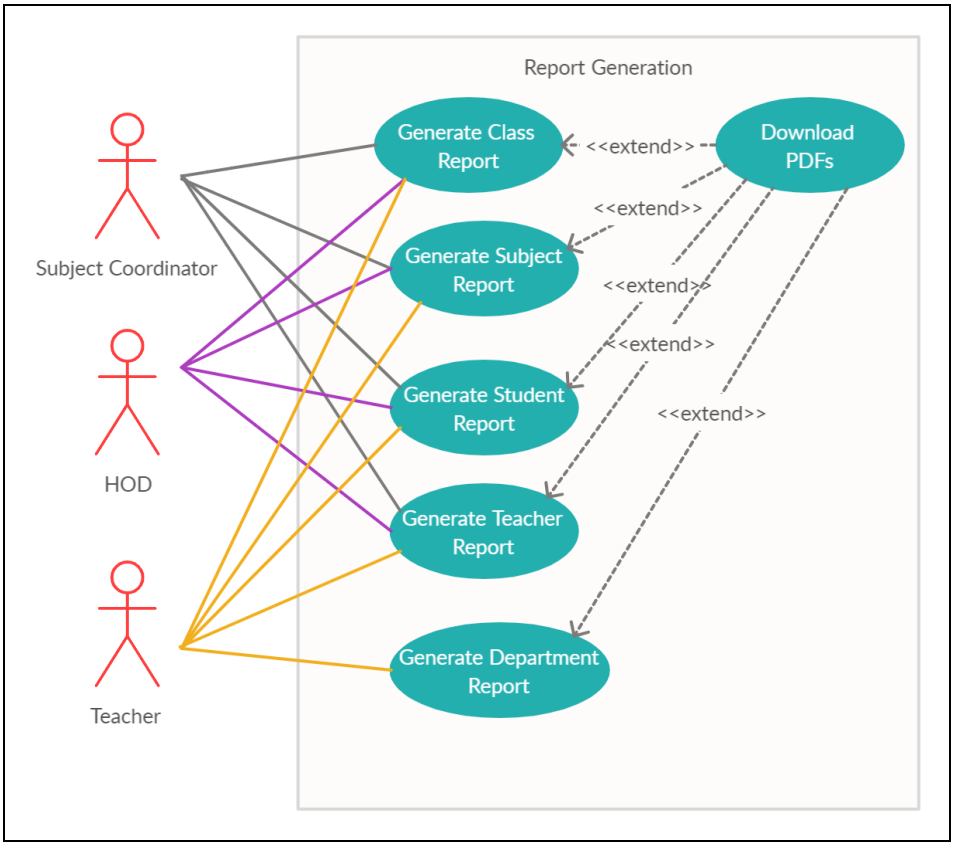
Use Case 4 :



Use case name	Enter marks obtained by each student for the test.
Actors	Teacher , Subject Coordinator
Description	A test is set referring to the CO's of the respective subject. Test can be set flexibly such that each sub question shouldn't necessarily be mapped to CO of the question. The marks obtained for a particular test can be given to the system through an interface for further processing.
Precondition	The user should be logged in , in the system as a teacher or subject coordinator.
Flow	<u>Teacher</u> 3. The teacher selects the option of set test. The subject will be automatically chosen from the login information of the teacher. The teacher will then choose the skeleton of the test which includes information such as total number of questions , no of sub questions in each question and the CO upon which the question is based. 4. After the test is created , similar page for entering marks achieved is created dynamically. The teacher enters the marks as per respective question and sub question. The marks can be imported from excel

	sheets or csv file. <u>Subject Coordinator</u> 3. The coordinator selects the option of set test. The subject will be automatically chosen from the login information of the coordinator. The coordinator will then choose the skeleton of the test which includes information such as total number of questions , no of sub questions in each question and the CO upon which the question is based. 4. After the test is created , similar page for entering marks achieved is created dynamically. The coordinator enters the marks as per respective question and sub question. The marks can be imported from excel sheets or csv file.
Assumptions	The marks of students are properly entered or imported.
Validations	If a student is absent for the test , no record of his marks would be present. This is because we need to find out how many students were absent and how many of them scored 0. The marks entry for each question and subquestion is checked to ensure they lie between appropriate range. If not , system raises error

Use Case 5 :



Use case name	Generate Reports
Actors	Teachers, Subject Coordinator , HoD
Description	The main focus is the calculation of attainment. It can be better displayed in the form of reports. Subject Report : Attainment for the subject for all classes. Class report : Attainment report for each class and each subject. Teacher : Reports of a particular teacher based on target and achieved attainment for all assigned subjects and classes.
Precondition	The user should be logged in , in the system as a teacher subject coordinator or HoD.
Flow	Teacher 1. The teacher can generate and download reports for assigned subjects and class. The report will contain all the target and achieved levelwise values. Subject Coordinator 1. The coordinator can generate and download reports for assigned subjects and for all classes. The report will contain all the target and achieved levelwise values for ~ each class separately for assigned subject ~ all classes together HoD 1. The HoD can view and download report for all subjects and for all classes. The report will contain all the target and achieved levelwise values for : ~ a particular subject and particular class. ~ a particular subject and all classes ~ a particular class and all subjects.
Exceptions	The attainment calculation involves the actual number of present students. Hence , marks od absent students are indicated by '-' Marks of present students scoring 0 are filled in as 0.

Conclusion : Thus, we studied the use case diagram along with identifying actors, use cases, relationships and implemented use case for NBA Attainment system. Also , use case specifications for each use case are included.