# AUTOMATED ATTENDANCE MANAGEMENT SYSTEM

**Exercise No:3** Identify use cases and develop use case model

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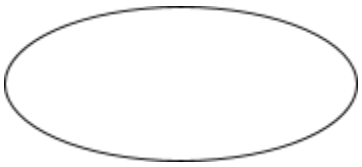
## Aim:

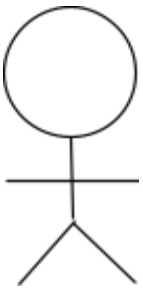
To identify the Use Cases and develop an UML Use case model and Fully Dressed Use case for Attendance Management System.

## Notations:

**Use cases:** Horizontally shaped ovals that represent the different uses that a user might have.



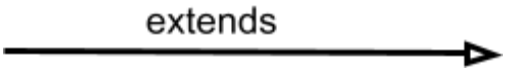
**Actors:** Stick figures that represent the people actually employing the use cases.



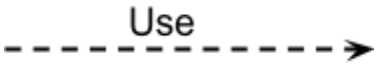
**Associations:** A line between actors and use cases. In complex diagrams, it is important to know which actors are associated with which use cases.



**Extends:** Used for defining inheritance relationships in UML diagrams.




**Use:** It is a relationship in which the **base use case** includes the functionality of **another use case.**




**Generalisation:** A generalization relationship is a relationship in which one model element (the child) is based on another model element (the parent).

## Identification of actors:

**User:** The user can either be a student/employee or teacher/manager.

- **Student/employee:** The student is able to give attendance and login to the portal to check their attendance records. They are able to compare attendance with the average class attendance and minimum requirements.
- **Manager/Teacher:** The teachers/managers are able to login to the portal to check the attendance records and run statistical inferences of the same. They are able to upload timetables as required and modify the same.

**Admin:** Admins are able to make modifications to database, timetables, etc. They are given special access along with inheriting the features of teachers/managers.

## Identification of scenarios:

1. **Logging attendance:**

   **Main success scenario:**
   The student/employee presses the button and image is captured. Image is matched with a record in the database. Attendance for this person is noted down in the database for that particular class/lecture. System goes back to the ready state to accept the next student/employee.

   **Alternate scenario:**
   The student/employee presses the button and image is captured. Image is not able to be matched with the record in the database. Attendance for this person is NOT awarded. System goes back to the ready state and the person must retry the same process.

2. **Logging into portal:**

   **Main success scenario:**
   The user tries to login using credentials given by admin in advance. The username and password are entered into the interface. The record is matched with the

database to identify the user and authenticate their login. They are now able to access the portal interface and use its functions.

**Alternate scenario:**
The user tries to login using credentials given by admin in advance. The username and password are entered into the interface. The record does not match with the database. They are shown that the credentials are incorrect and are told to retry login attempt.

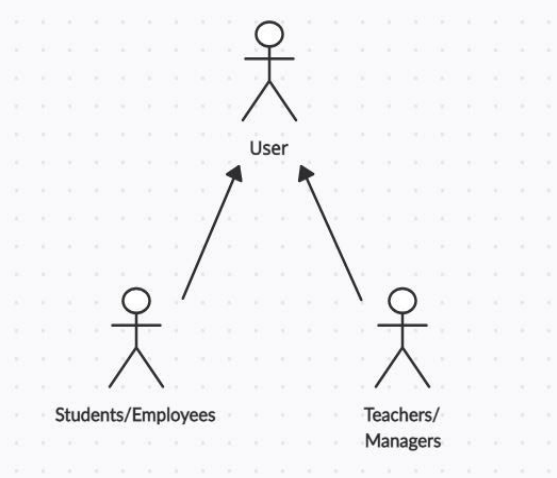
3. **Using features of portal:**

**Main success scenario:**
The user depending on whether they are teacher or student are able to access the specific features meant for them in the interface. They are able to view the appropriate features that are meant for them.

**Alternate scenario:**
The features do not work properly and an appropriate error message is displayed according to the error that has caused the issue.

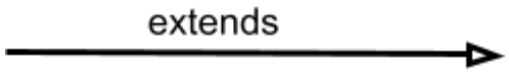
## Relating Use Cases:

**Generalization:**
The Students/Employees and the Teachers/Managers inherit all properties from the User(parent). The child nodes can have separate use cases too.

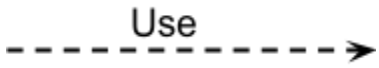


**Associations:**

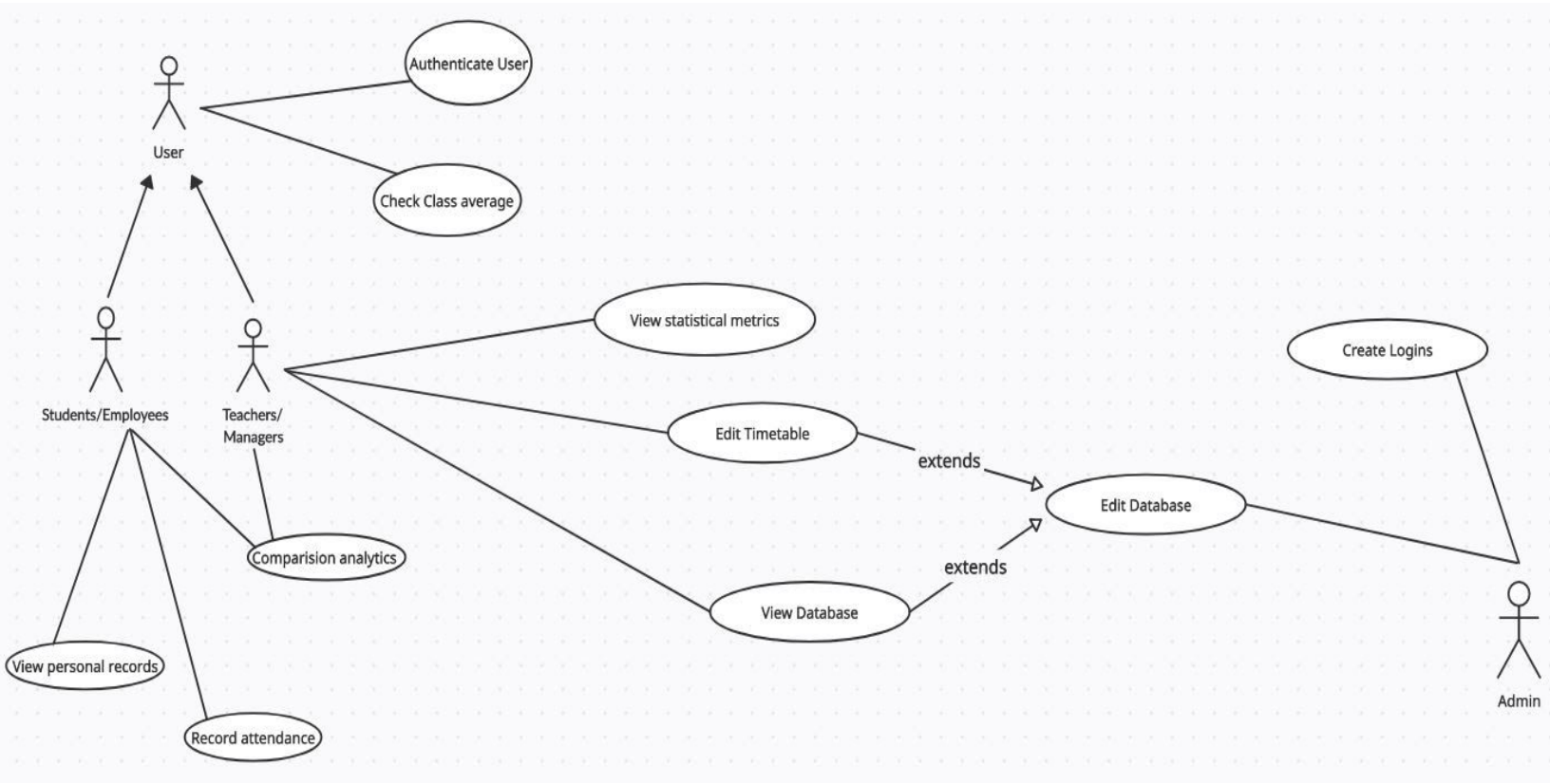
1. **Extends:** The extended use case is to add steps to the base use case (optional). The **Edit Timetable** use case is extended from **Edit Database** as it adds additional steps.



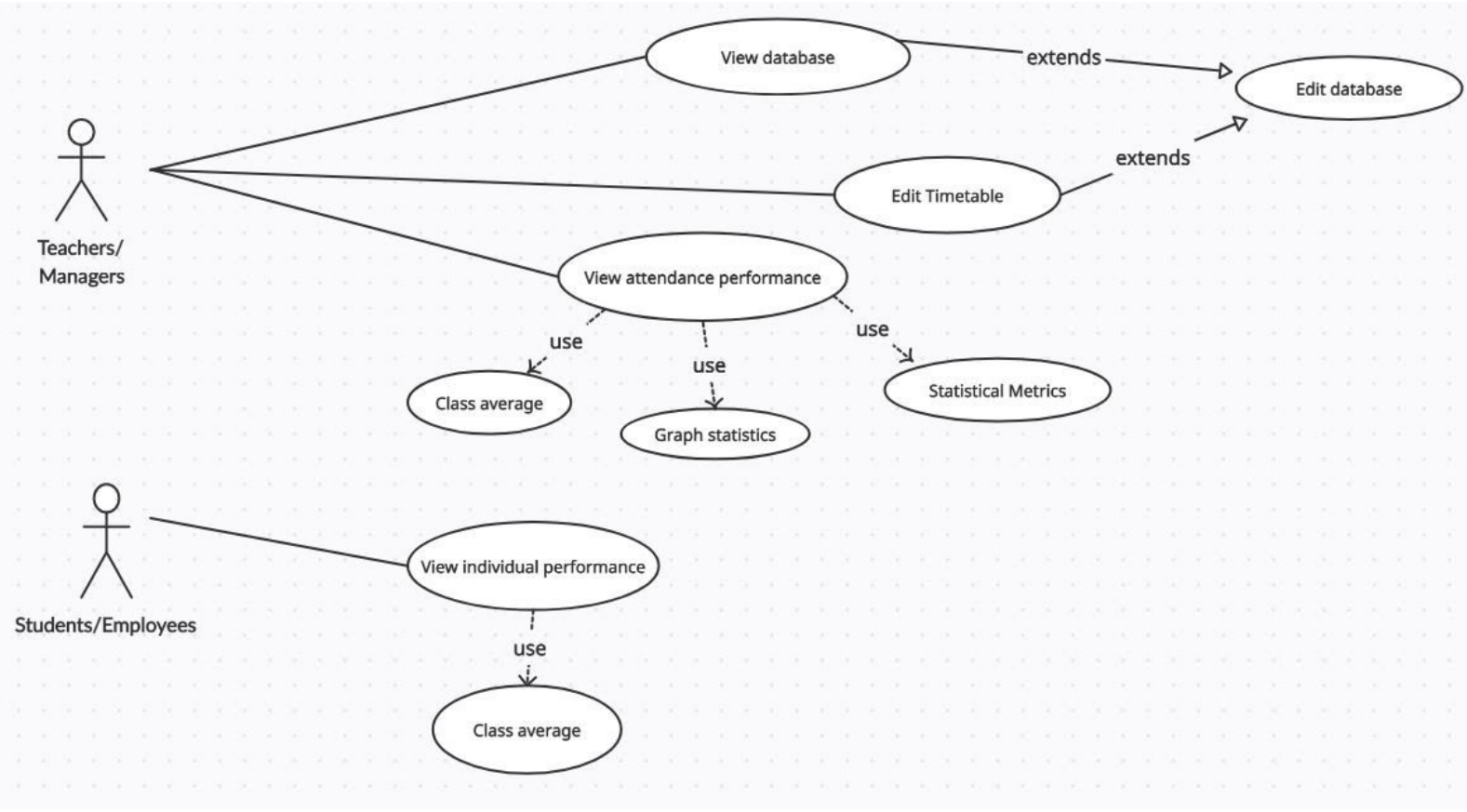

2. **Use:** The base use case uses the functionality of the other use cases. For instance, the **View attendance performance** use case uses the **Class average, Graph statistics** and other use cases.



## Use Case Diagrams:




**Attendance Management System-main use case diagram**




**Portal features-use case diagram**

## Fully Dressed Use Case Description:

**Use case:** Attendance Management

**Scope:** AAMS

**Level:** User goal

**Primary Actor:** User( Students/Employees or Teachers/Managers)

**Stakeholders and interests:**

- **Teachers/Managers:** Want to view the main database and edit the same, whenever required. They can also edit the timetable, check various attendance performances for various **Students/Employees** and compute statistics and metrics.
- **Students/Employees:** Want to view individual attendance performances and compare it with the class average to get a better idea.

**Preconditions:** Both sets of users are identified and authenticated.

**Success guarantee (Post condition):** The user is authenticated and is able to login successfully when credentials are supplied (after matching with the records in the database). After logging in, the user depending on whether they are a teacher or student are able to access the specific features meant for them in the interface.

**Main Success Scenario:**

1. User logs into the system and is authenticated successfully.
2. Teachers and managers are able to access each of their students/ employees' performance. Students and employees are able to see their personal attendance record.
3. Students are able to compare their attendance with the entire class average. Managers and teachers are able to see each individual student's performance.
4. Teachers/managers are able to run statistical inferences and graphs from the data that has been collected by the system.
5. Teachers/managers are also able to edit/upload the timetable that corresponds to their class.

**Extensions:**

1. The user logs into the system:
    a. Invalid username or password: User is shown that either username or password is invalid and are asked to re-enter them.
2. Students/employees are able to view individual attendance performance and class average.
3. Teachers/managers are able to view the individual performance of each student/employee as well as class average.

4. Teachers/Employees are given access to various statistical inferences and graphs about the class' attendance record.
    a. If the data is not enough/problematic appropriate error message is shown next to the particular calculation that has resulted in an error.
5. Teachers/Employees are able to upload/edit timetable of the class that they are given access to.
    a. If the hours clash when a teacher uploads their timetable for the classroom an error message is shown and they are made to re-enter the value.

**Sub function- Uploading/Editing timetable:**

- Teachers/managers are able to upload the timetable/schedule for the classroom that the device is fitted on
- They upload/edit the timetable of the classroom
- The new timetable is checked for clashes with other hours
- If there is a clash, an error message is displayed and the clash is notified
- The user is now asked to re upload timetable without clashes
- The process is repeated until an acceptable timetable is uploaded by the user

## Documentation:

The main purpose of this document is to demonstrate the functionalities of the system.The use cases elaborate the various functions and their sub functions involved. The use cases give a better understanding on how the use cases are related. The main success scenarios and alternate scenarios explain how the system works under various circumstances.