Software Requirements Specification

Version 1.0.1

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Inception of **Teacher's Dashboard**

Introduction

"Teacher's Dashboard", a comprehensive platform designed to streamline the daily tasks of educators. This innovative software aims to simplify essential activities such as managing class attendance, organizing class schedules, accessing bus schedules for institutions, and maintaining contact information. This solution empowers educators to focus more on teaching and less on administrative tasks. With its user-friendly interface and robust functionality, "Teacher's Dashboard" promises to enhance efficiency and productivity in educational settings.

Inception of a software of teacher's requirement

As educational institutions continue to embrace digital transformation, the need for efficient tools to support teachers' daily tasks becomes increasingly evident. Recognizing this necessity, we envision "Teacher's Dashboard," a comprehensive software solution tailored to the specific needs of educators. This app aims to streamline and simplify essential administrative tasks such as class attendance tracking, class schedule management, access to institution bus schedules, and maintaining contact information for students and colleagues.

1. It is needed to modernize educational administration, streamline teacher tasks.
2. It is needed because outdated methods lead to inefficiency, frustration for teachers.
3. We will make it through Iterative development, agile approach, teacher collaboration.
4. Limitation of making this: Technical constraints, resource limitations, data security concerns.
5. Our viewpoint of making this software: Enhance teacher productivity, improve educational outcomes, foster positive work environment.

Identifying the clients of our project

The primary clients for "Teacher's Dashboard" are teachers and institute authorities. Teachers, the end-users of the software, will benefit from its streamlined features for managing class attendance, schedules, and communication. Institute authorities, including administrators and management, are also essential clients as they oversee the implementation and adoption of the software within the institution. By addressing the needs of both teachers and institute authorities, "Teacher's Dashboard" aims to provide a comprehensive solution that enhances efficiency and productivity across all levels of educational administration.

Icebreaking

During our initial discussions with the targeted clients, including teachers and institute authorities, we gained valuable insights into their viewpoints and needs regarding educational administration. Teachers expressed frustration with manual administrative tasks such as class attendance tracking and schedule management, citing inefficiencies and time constraints. Institute authorities emphasized the importance of streamlining these processes to improve overall productivity and enhance the learning environment. By actively listening to their feedback and incorporating their suggestions into the development process, we are confident that "Teacher's Dashboard" will address their pain points and provide a user-friendly solution that meets their needs effectively.

Stake holders!

The stakeholders of this project:

- Teachers
- Students
- Educational institution authority
- Parents/Guardians

Viewpoints of Stake holders

1. **Teachers:**
   - Streamline administrative tasks to focus more on teaching.
   - Improve communication with students and colleagues.
   - Ensure accuracy and efficiency in class attendance tracking.

2. **Students:**
   - Benefit from improved organization and communication within classes.
   - Access up-to-date information on class schedules and activities.
   - Experience a more cohesive and well-managed learning environment.

3. **Institute Authorities:**
   - Enhance overall productivity and efficiency in educational administration.
   - Provide a centralized platform for managing schedules and resources.
   - Support data-driven decision-making for better resource allocation.

4. **Parents/Guardians:**
   - Engage more effectively with teachers and school administration.

"Teacher's Dashboard" caters to diverse stakeholder needs in educational administration. It streamlines tasks for teachers, enhances productivity for institute authorities, and fosters a cohesive learning environment for students. Parents/guardians stay informed about their child's progress, while administrators achieve regulatory compliance and operational efficiency. Overall, the software serves as a comprehensive solution, fostering efficiency and productivity across all levels of educational management.

Conclusion

In conclusion, "Teacher's Dashboard" is poised to revolutionize educational administration by addressing the needs of teachers, institute authorities, students, parents/guardians, and administrators alike. With its streamlined approach to tasks, enhanced productivity, and improved communication channels, the software promises to create a more cohesive and efficient learning environment. By actively engaging with stakeholders and incorporating their feedback, we are confident that "Teacher's Dashboard" will not only meet but exceed expectations, paving the way for a brighter future in educational management.

Elicitation of **Teacher's Dashboard**

Introduction

In the context of "Teacher's Dashboard," the stakeholders primarily consist of teachers and institute authorities. Elicitation with teachers involves understanding their preferences and challenges in administrative tasks, while engagement with institute authorities focuses on operational needs and goals. Through interviews, workshops, and observations, insights from both stakeholders are gathered to tailor the software's features and functionalities effectively.

Eliciting Requirements

We have finished the following tasks for eliciting requirements-

- **Streamlined Administrative Tasks:** The software will simplify tasks such as class attendance tracking, schedule management, and necessary information for teachers.

- **User-Friendly Interface:** The interface will be intuitive and easy to navigate, catering to users with varying levels of technical proficiency.

- **Real-Time Updates:** Teachers and institute authorities will have access to real-time updates on class schedules, assignments, and institutional announcements.

- **Customization Options:** The software will allow for customization to accommodate the unique needs and preferences of individual teachers and institutions.

- **Reporting and Analytics:** Comprehensive reporting and analytics capabilities will be included to enable data-driven decision-making and performance monitoring at the institutional level.

Quality Function Deployment

Normal Requirements

These are the normal requirements for this project –

- Streamlined Administrative Tasks.
- User-Friendly Interface.
- Data Security.
- Real-Time Updates.

Expected Requirements

These are the expected requirements for this project –

- Efficient tools for managing class attendance, schedules, and communication.
- An intuitive and easy-to-navigate interface for quick access to features.
- Robust security measures to protect sensitive student and institutional data.
- Real-time updates on class schedules, assignments, and announcements.
- Customization options to tailor the software to individual needs and preferences.

Usage scenario

Teacher's Dashboard is an automated system for the following purposes –

- Authentication
- Class attendance.
- Class and exam Schedules.
- Bus schedules for teachers.
- About department, university and important contacts.

Authentication

Teacher's Dashboard has only one type of user, teachers. So, Teachers will be able to create their own user account.

Creating account needs –

- Full Name
- Designation
- Username
- E-mail address
- Phone number
- Present address
- Permanent address
- NID
- Password
  - At least 8 words
  - Includes text, symbol and number

The user information will be saved and used for authentication and security purposes.

Class Attendance

After authentication, user will be able to use his dashboard and use all the functionalities. In the attendance section, there will be some options –

- Creating classes
    - Course name
    - Year
    - Semester
    - Session
    - Course code
    - Class theme (selecting from options)
- Adding Students, where some student info is required-
    - Student's full name
    - ID number
    - Registration Number
- Taking attendance of that day
    - Attendance will not be editable.
    - There will be two options to tick – **P** (for present) and **A** (for absent).
    - Attendance will not be taken twice or more.
- Generating reports based on attendance.
    - Report will be available on current day's page.
    - Report will contain overall calculated percentile of attendance of individual student.
    - Report will make a list of all students alongside their attendance.
    - Report will be printable and downloadable as Portable Document File (PDF) format.

Class and Exam Schedule

The software will offer real-time updates on class schedules, assignments, and institutional announcements to keep teachers and students informed and up to date.

From the dashboard, there will be an option to navigate to "Class and Exam Schedule" section. There will be a page which contains –

- List of created schedules. Which contains –
    - Task name
    - Remaining time for the task (Upcoming events).
- Button for creating a new schedule. Required information are –
    - Task name
    - Date and time (selecting via calendar).
- List of successfully completed tasks.
- List of incomplete tasks.
- ***Scheduled timer will notify user via a push notification.***

Bus Schedule for Teacher

Here, a map is integrated. Prerequisite is the buses and microbuses must be GPS enabled, so that location can be traced. This page will contain –

- A map indicating buses and microbus's location.
- Upcoming vehicles nearby.
- Upcoming vehicles estimated time to reach.

About department, university, and important contacts

This is “ABOUT” section. Here is three section –

- About Institution
    - Access link to the university’s website.
    - Emergency contacts.
    - Important contacts.
    - Short description of the university.
- About Department/ Class
    - Access link to the department’s web portal.
    - Emergency contacts.
    - Important contacts.
    - Short description of the university.
- About the developers
    - Information of the developer for –
        - Bug report and analysis.
        - Further improvement and suggestion.
        - Customization for

Scenario based modeling of **Teacher's Dashboard**

Introduction

"Teacher's dashboard" is a software solution designed to simplify the administrative tasks of teachers. Through scenario-based modeling, key scenarios have been identified and features developed to address them effectively. One scenario is managing class attendance, with the software allowing teachers to record student attendance and add notes. Another is managing class schedules, with a calendar view displaying all upcoming classes and events. The software also includes features for managing student data, such as detailed profiles and contact information. Additionally, it provides tools for managing bus schedules and faculty contact information. Overall, the software aims to streamline teacher tasks and improve classroom management.

Use Case

Primary actor

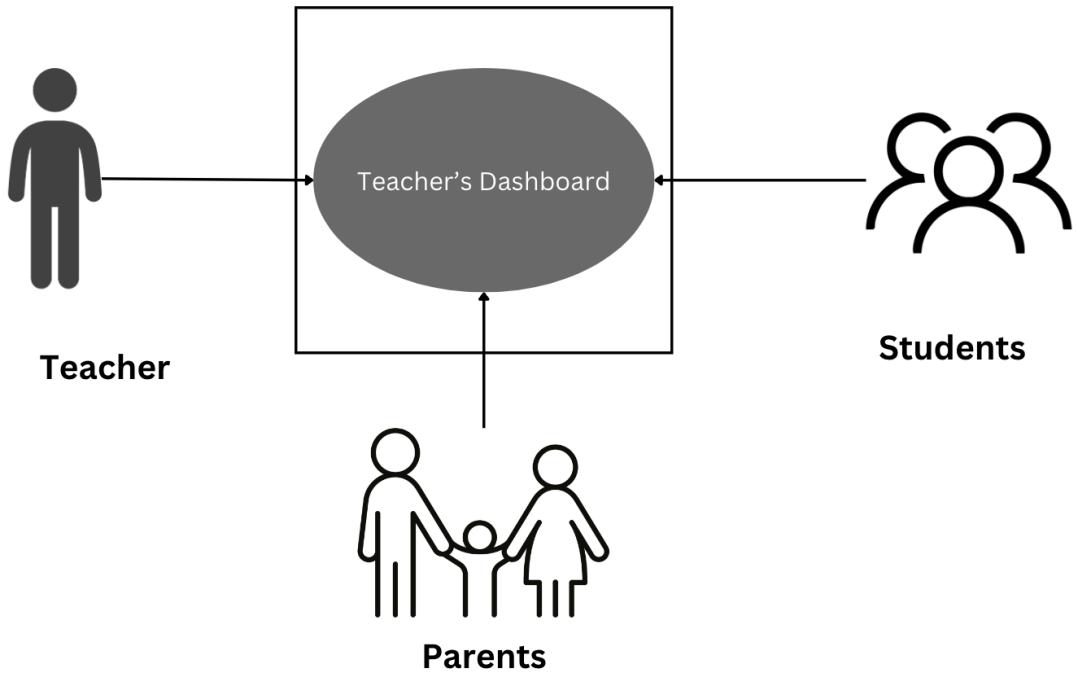
In "Teacher's dashboard," teachers are the primary actors, using the software to manage their classes, schedules, and student data. They can record attendance, update schedules, access student profiles, and communicate with students and parents. The software streamlines administrative tasks, allowing teachers to focus more on teaching and student engagement.

Secondary actor

Students and parents are secondary actors, benefiting from the improved communication and organization provided by the software. Students can view their schedules, attendance, and academic records, while parents can access their child's information and communicate with teachers. This enhances transparency and collaboration between teachers, students, and parents.

Use case diagrams

Level-0 *Use case diagram – Teacher's Dashboard*

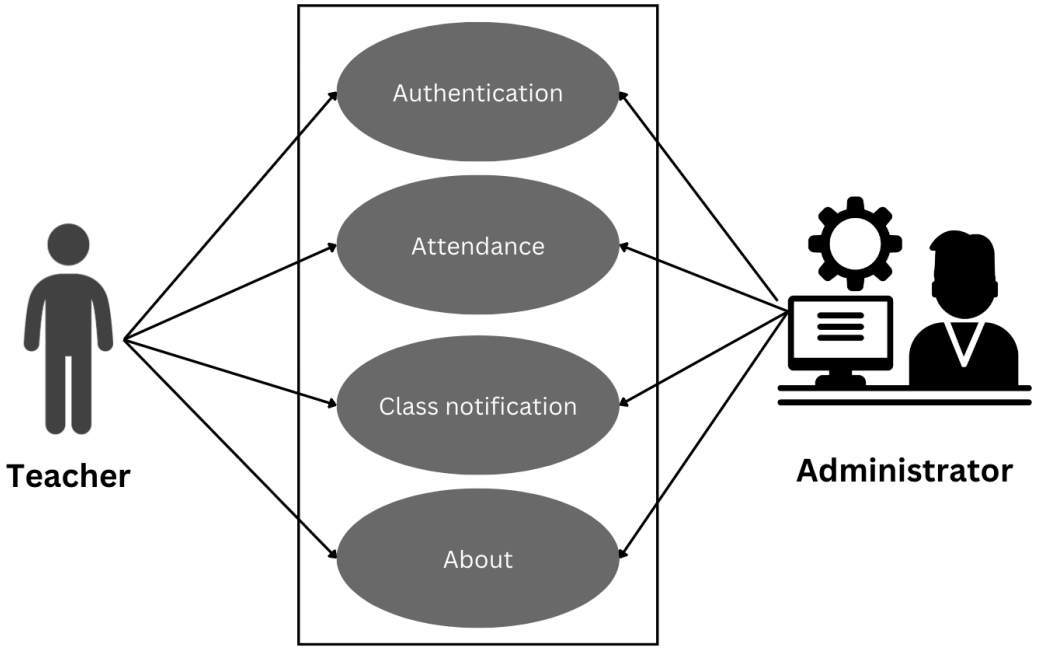


Description of Use case diagram level - 0

Here, we found 2 actors directly or indirectly interacts with the system. Primary actor will play the action and get reply from the system whereas secondary actors only produce or consume information. The actors are:

- Teacher
- Student
- Parents

Level-1 *Use case diagram – Teacher's Dashboard*



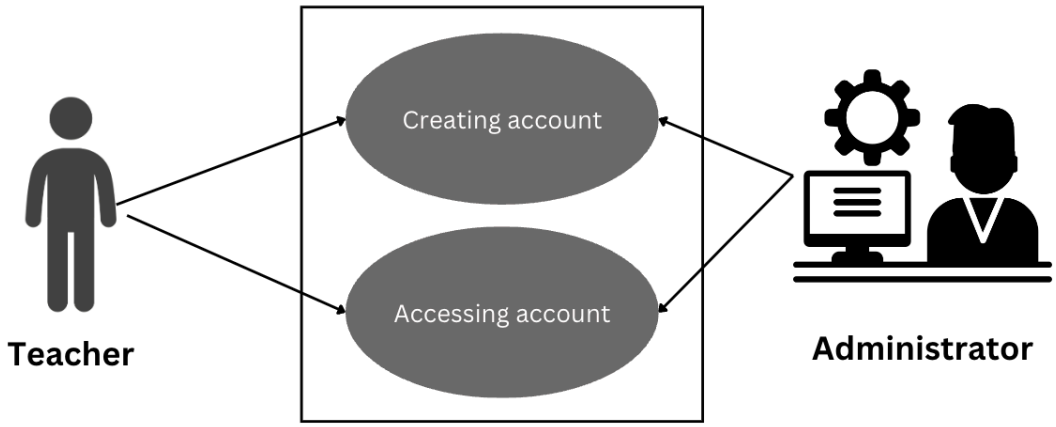
Description of Use case diagram level - 1

The Level 1 use case diagram for "Teacher's dashboard" depicts four subsystems. Each subsystem represents a key area of functionality within the software.

- Authentication
- Class Attendance
- Class notification (schedule)
- About section

First and second sections are further decomposed. Each of these are described in the next sections.

Level-1.1 *Use case diagram – Authentication*



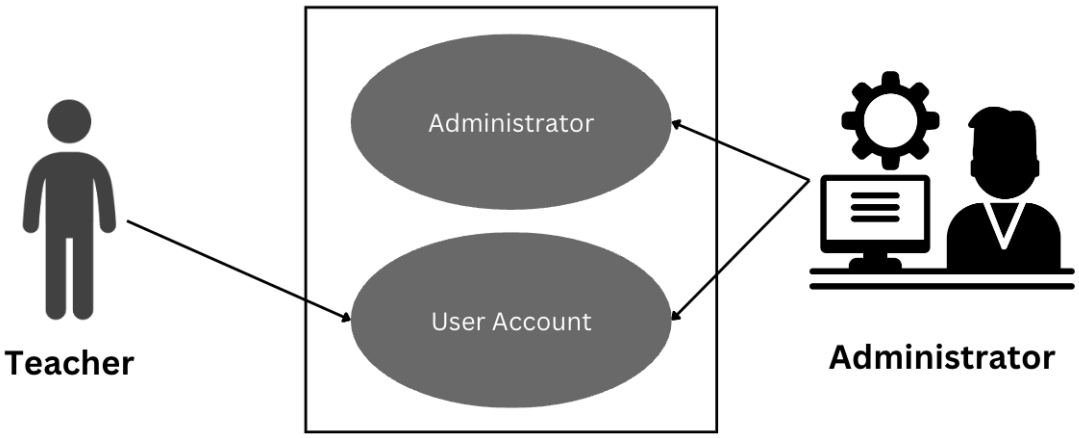
Description of Use case diagram level – 1.1

Authentication is a process in which credentials provided are compared to those on files in a database of authorized user's information. The authentication subsystem can be divided into two parts. They are as follows:

1. Creating Account
2. Accessing Account

In "Teacher's dashboard," creating an account involves providing basic information such as name, email, and password. Once the account is created, teachers can access their account by logging in with their credentials. This grants them access to their personalized dashboard, where they can manage classes, schedules, student data, and communication.

Level-1.1.1 *Use case diagram – Creating account*



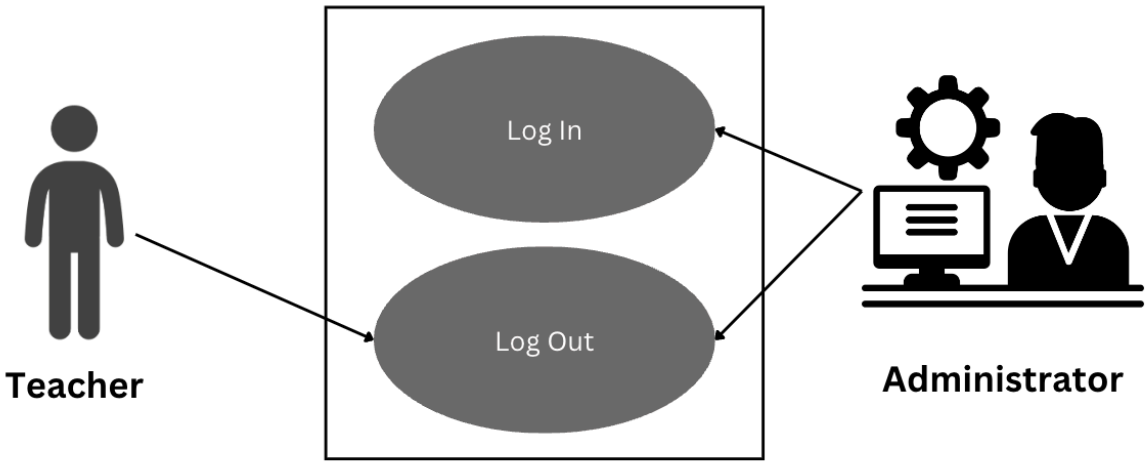
Description of Use case diagram level – 1.1.1

In "Teacher's dashboard," there are two types of accounts: user accounts and administrative accounts. User accounts are for teachers, providing access to class management, scheduling, student data, and communication features. Administrative accounts are for administrators, offering additional privileges such as user management, system configuration, and data analytics.

Creating user account needs –

- Full Name
- Designation
- Username
- E-mail address.
- Phone number.
- Present address
- Permanent address
- NID
- Password
    - At least 8 words
    - Includes text, symbol, and number.

Level-1.1.2 *Use case diagram – Accessing account*



Description of Use case diagram level – 1.1.2

Accessing account involves two tasks:

1. Log in
2. Log out

To log in to "Teacher's dashboard," users need to enter their email and password. Upon successful authentication, they gain access to their dashboard. Logging out requires users to click on the logout button, which securely terminates their session and returns them to the login page.

Action Reply

User (Teacher & Administrator)

- T: User provides username/mobile number & password.
  Ad: System will check validity and allow to log in and access.

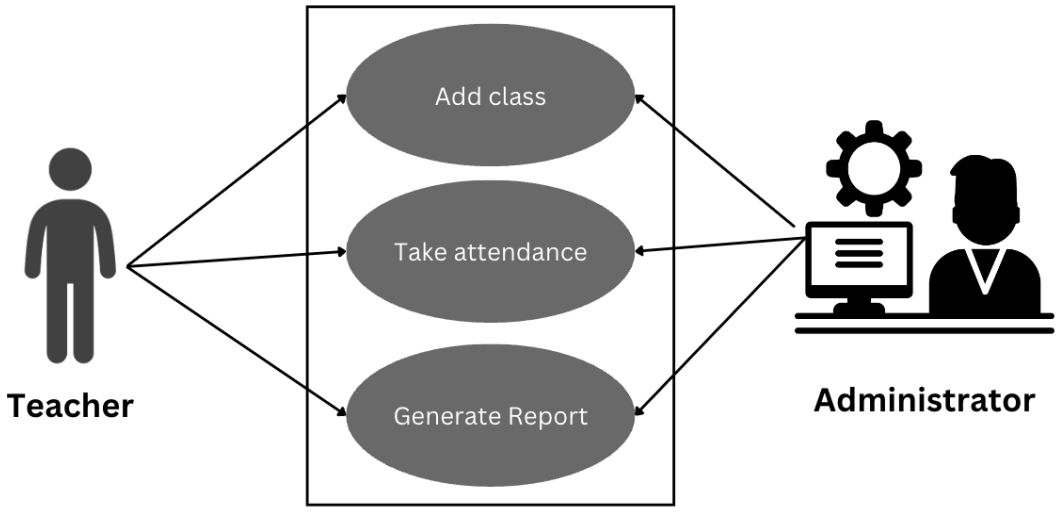
- T: User provides invalid information.
  Ad: System will deny accessing the account.

- T: User fails to log in for 5th time.
  Ad: System will block the account for 5 minutes/suggest contacting developer.

- T: User forgets credentials.
  Ad: System will send a link to user's mobile number or email address for resetting the credentials.

- T: User will command for log out.
  Ad: System will log out the user after saving unsaved data.

Level-1.2 *Use case diagram – Class Attendance*



Description of Use case diagram level – 1.2

The Attendance section of "Teacher's dashboard" facilitates efficient class management by providing four key subsystems. Teachers can add new classes, record student attendance, generate attendance reports, and manage attendance records. This comprehensive suite of features streamlines administrative tasks and enhances classroom management.

The subsystems are:

1. Add class.
2. Take attendance.
3. Generate report.

Action Reply

User (Teacher & Administrator)

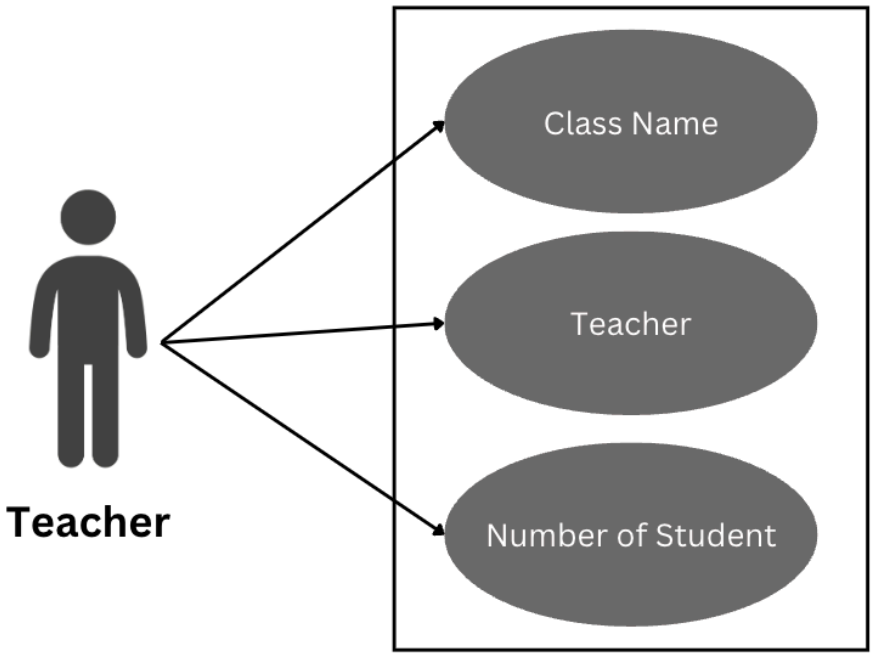
- T: User provides required information.
  Ad: System will check validity and allow create class.

- T: User provides invalid information.
  Ad: System will deny creating the class.

- T: User takes attendance by Present and Absent button.
  Ad: System will store the attendance data for report generation and anytime view.

- T: User requests for report generation.
  Ad: System will generate a report based on stored attendance data for the whole course time.

Level-1.2.1 *Use case diagram – Add class*



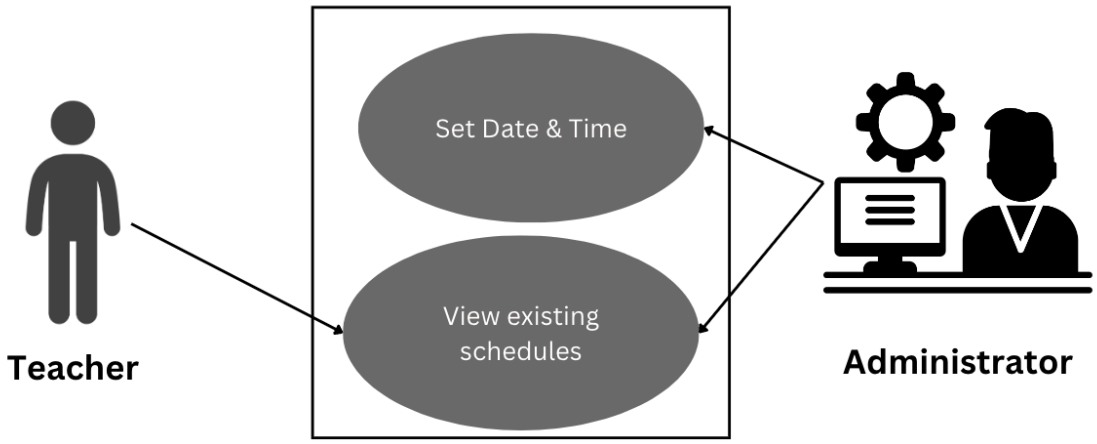
Description of Use case diagram level – 1.2.1

The "Add Class" section of "Teacher's dashboard" allows teachers to seamlessly incorporate new courses into their schedules. By providing essential details such as the course name, class period, and other relevant information, educators can efficiently manage their class roster. This feature streamlines the process of class creation, ensuring that teachers can focus more on teaching and less on administrative tasks.

Here, the subsystems are:

- Class name
- Teacher
- Number of Student

Level-1.3 *Use case diagram – Notification*



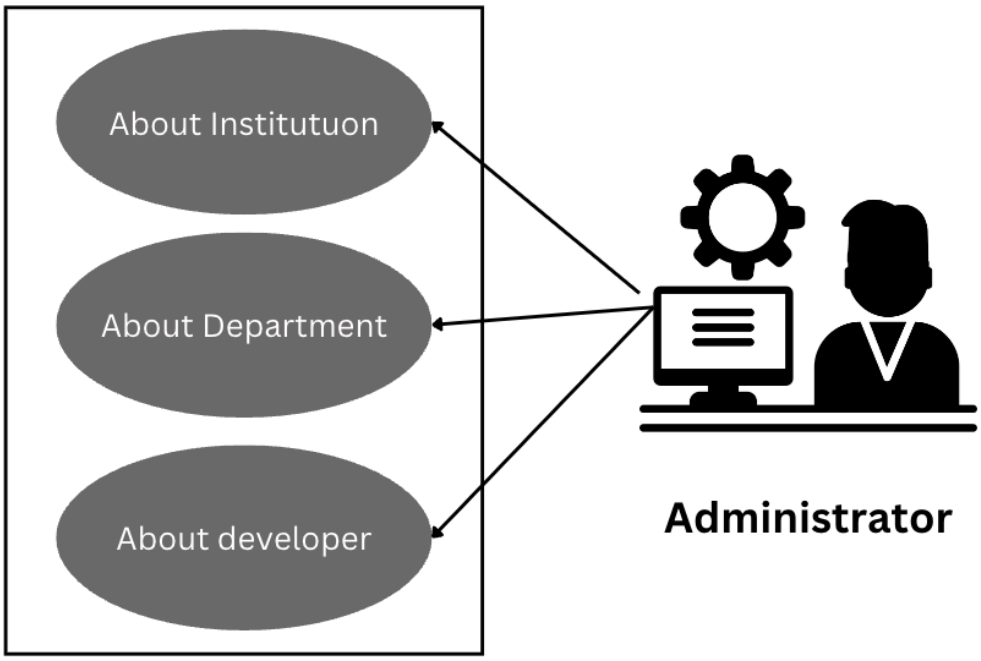
Description of Use case diagram level – 1.3

The "Notification" section of "Teacher's dashboard" empowers educators to manage their schedules effectively. Through this feature, teachers can set reminders for important events, such as class sessions, meetings, or deadlines. Additionally, they can view their schedule immediately, ensuring they stay organized and on track with their commitments.

Here, the subsystems are:

- Set Schedule by date and time.
- View existing schedules and marks.

Level-1.4 *Use case diagram – About*



Description of Use case diagram level – 1.4

The "About" section of "Teacher's dashboard" provides valuable insights into three distinct areas: the institution, the department/subject, and the developers. Teachers can access information about their institution, including its mission, values, and history. Additionally, they can learn about the department or subject they teach, including course offerings and curriculum details. Finally, the section provides information about the developers behind the software, fostering transparency and trust.

Here, the subsystems are:

- About Institution
- About Department / Subject
- About the app developer and his contacts.

Activity diagram of **Teacher's Dashboard**

1.5 *Teacher's Dashboard activity overview:*

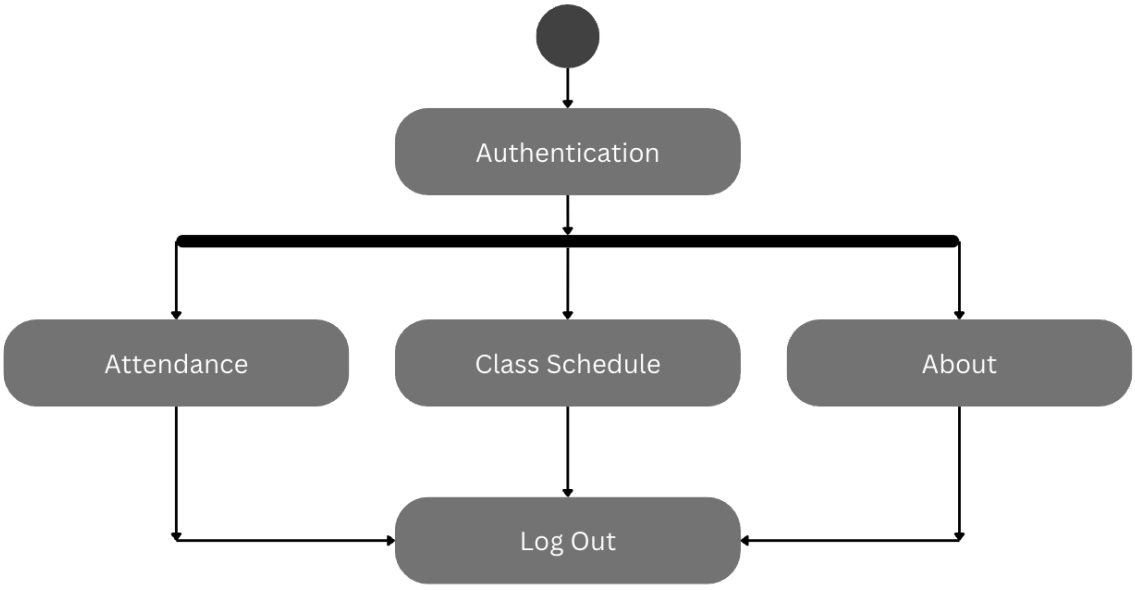


Figure: Activity overview

The "Activity Overview" diagram in "Teacher's dashboard" provides a comprehensive visual representation of a teacher's daily activities. It offers a detailed breakdown of tasks, including class management, schedule updates, student data management, and communication. This diagram serves as a valuable tool for teachers to plan and prioritize their tasks effectively.

1.5.1- *Sign Up*

Here's the activity diagram for sign up process:

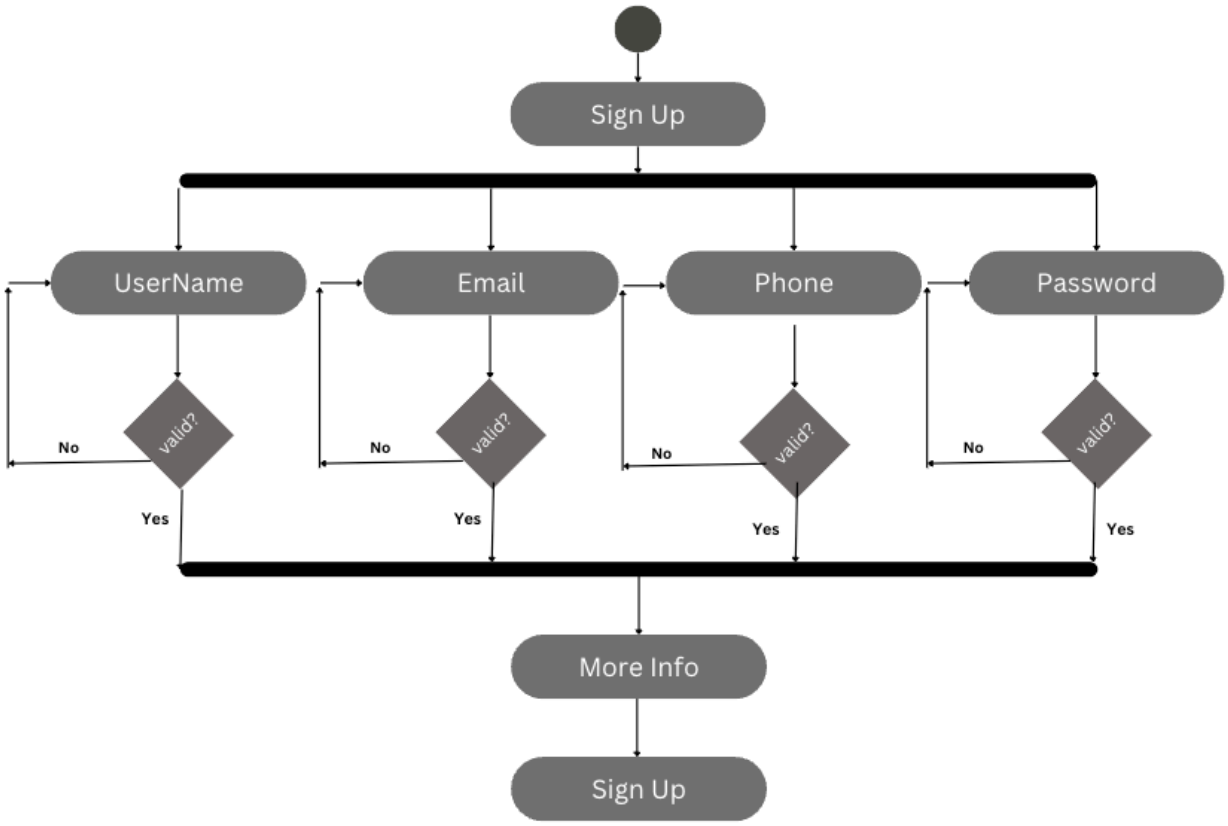


Figure: Sign up activity

The sign-up process for "Teacher's dashboard" is straightforward and secure. Teachers provide basic information such as name, email, and password. The system validates the email for uniqueness and sends a verification link. Upon clicking the link, the account is activated, granting access to the dashboard.

1.5.2- *Log In*

Here’s the activity diagram for Log In process:

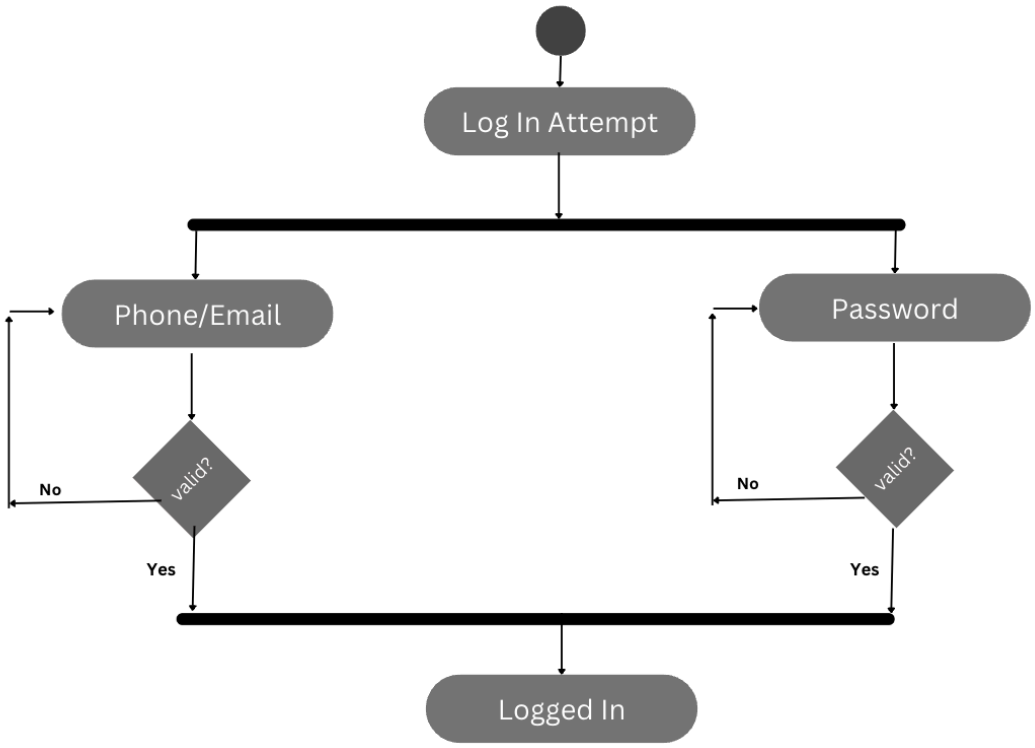


Figure: Log In activity

The login process for "Teacher's dashboard" is user-friendly and secure. Teachers enter their registered email or phone number and password. The system validates the credentials and grants access to the dashboard. In case of forgotten password, a password reset link is sent to the registered email for account recovery.

1.5.3- *Attendance*

Here’s the activity diagram for Attendance process:

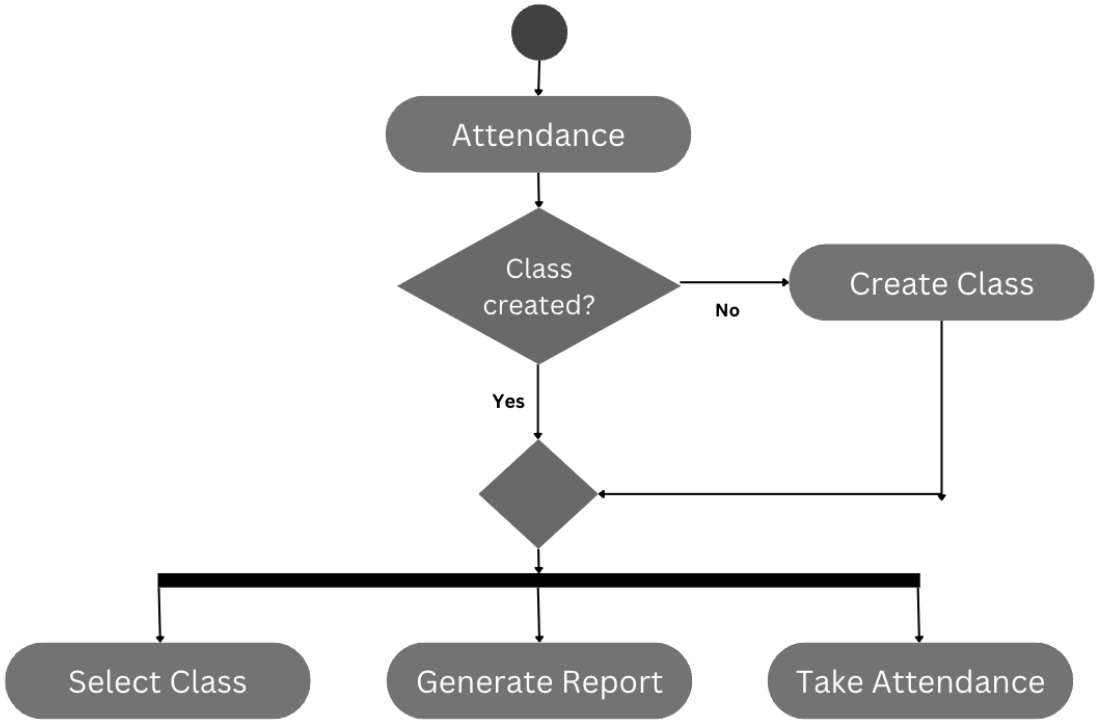


Figure: Attendance activity

The Attendance section of "Teacher's dashboard" simplifies the task of recording and managing student attendance. Teachers can easily mark students as present or absent for each class session, and the system automatically updates the attendance records. Additionally, teachers can generate attendance reports to monitor student attendance patterns and trends.

Activity diagram of **Teacher's Dashboard**

2.1 Data Objects

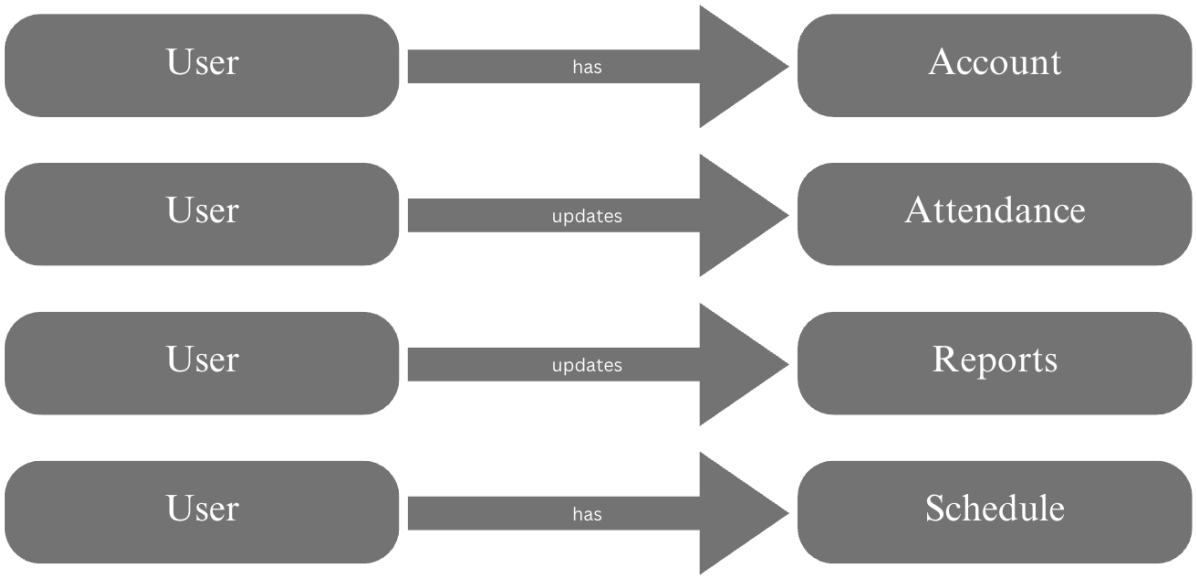
We identified all the nouns whether they are in problem space or solution space from our software. These are:

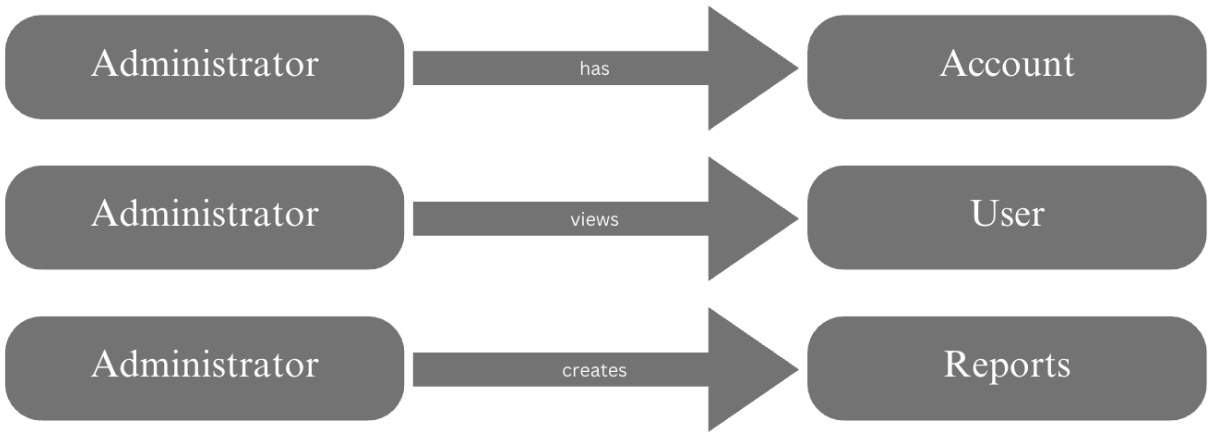
Serial No.	Noun	Problem/Solution space
1	Authentication	p
2	System	p
3	User	s
4	Administrator	s
5	Name	s
6	E-mail	s
7	Phone	s
8	Address	s
9	Class	p
10	Attendance	p
11	NID	s
12	Password	s
13	Schedule	p
14	Notification	p
15	About	p
16	Validation	p

2.1 Final Data Objects

1	User: Name, Phone, E-mail, address, designation, NID
2	Administrator: Admin id, User id Address, Designation, NID Full Name

2.2 Data object Relationships





2.3 Entity Relationship Diagram

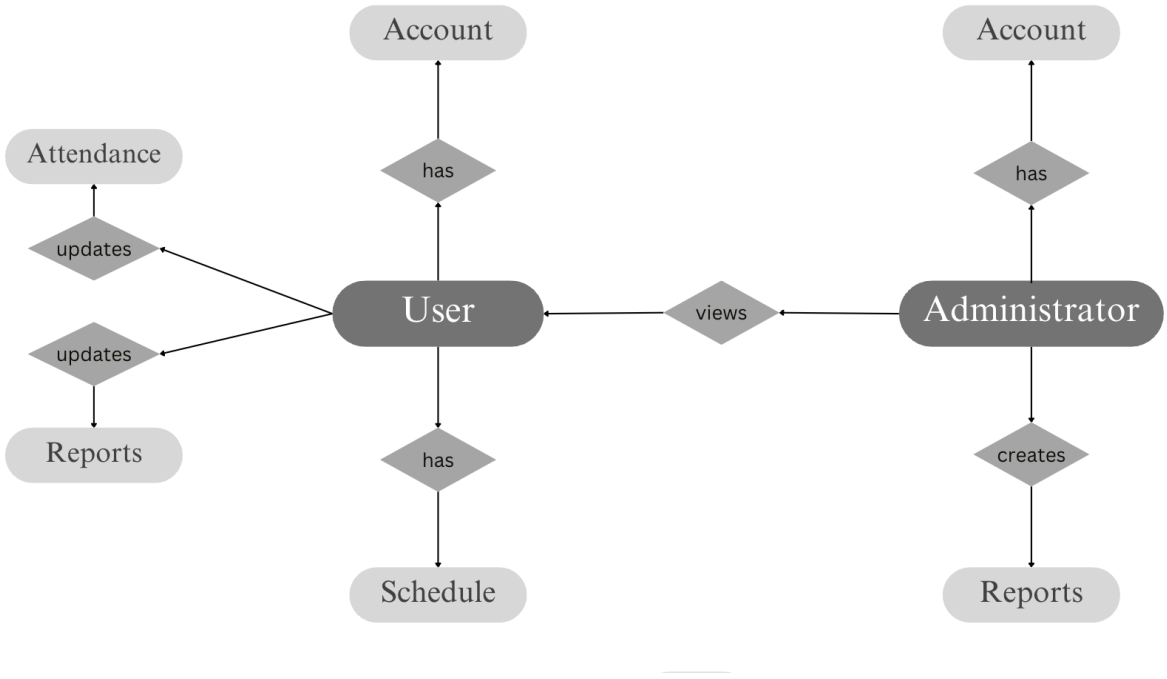


Figure: ERD (Entity relationship diagram)

The Entity Relationship Diagram (ERD) for "Teacher's dashboard" illustrates the relationships between two key actors: users and administrators. Teacher, represented by the " User" entity, have access to features such as class management, scheduling, student data management, and communication. Administrators, represented by the "Administrator" entity, have additional privileges, including user management, system configuration, and data analytics. The ERD highlights the interactions and dependencies between these actors and their respective entities, providing a comprehensive view of the software's functionality.

2.4 Schema Diagram

USER (Attributes, Type, Size)		
UserName	**Varchar2**	**80**
Full Name	**Varchar2**	**80**
Phone	**Varchar2**	**80**
Address	**Varchar2**	**80**
NID	**Varchar2**	**80**
Password	**Varchar2**	**80**

Figure: User Schema Diagram

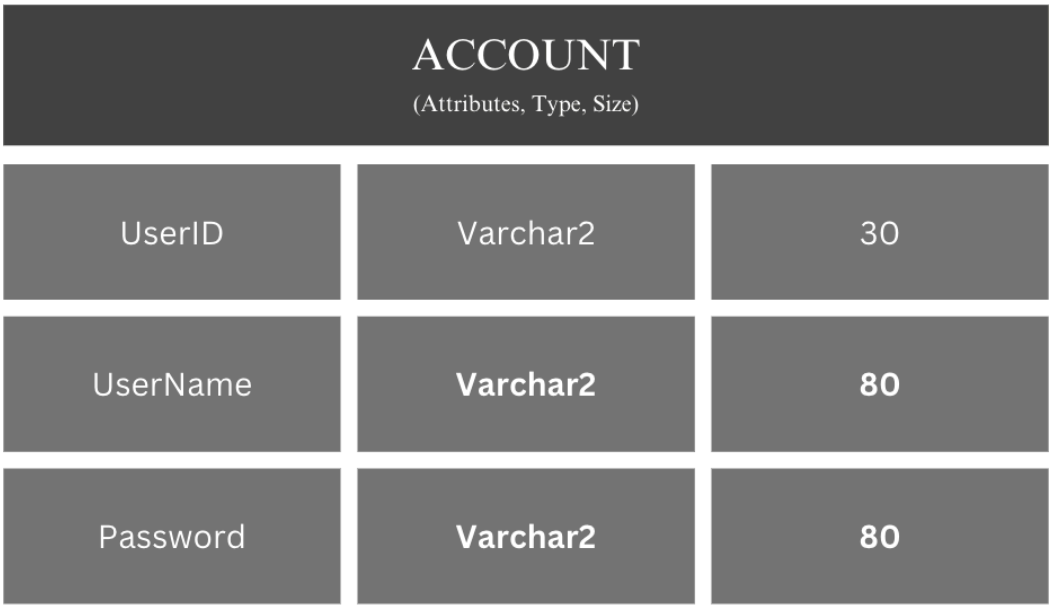


Figure: Account Schema Diagram

Figure: Administrator Schema Diagram

Class based modeling for **Teacher's Dashboard**

Class-based modeling represents the objects that the system will manipulate, the operations that will be applied to the objects, relationships between the objects and the collaborations that occur between the classes that are defined.

3.1 General classification

To identify the potential classes, we have first selected the nouns from the solution space of the story. These were then characterized in seven general classifications. The seven general characteristics are as follows:

Schemes:

1. External entities
2. Their roles

Nouns:

1	User
2	Administrator
3	Name
4	E-mail
5	Phone
6	Address
7	NID
8	Password

3.2 Associate Noun & Verb Identification

1	User	User contains all the operational Entities of Teacher
2	Administrator	User contains all the operational Entities of Administrator
3	System	Manages system operations

3.2 Method Identification

1	User	fullName ( ) userId ( ) address ( ) designation ( ) nid ( ) phone ( ) email ( )
2	User-Account	userName ( ) password ( )
3	Administrator	connectDatabase( ) checkEvents( ) authenticate( ) saveFiles( ) deleteData( ) showClassReport( ) createNotification( )

4	Authenticate	setUser( ) validateInput( ) login( ) signUp( ) getUser( ) recoverAccount( )
5	Interface	showMenu( ) getInput( ) getAction( ) authenticate( )
6	User	setAddress( ) setName( ) setPhone( ) setNid( ) setTimer( ) viewSchedules( ) viewAbouts( ) setClassName( ) setStudent( )

Behavioral modeling of **Teacher's Dashboard**

State diagram represents active states for each class the events (triggers). For this we identified all the events, their initiators, and collaborators.

4.1 State Transition Diagram

Serial No.	Noun	Primary object	Invoked method
1	Setting up user id	User	userId ( )
2	Setting up user address	User	address ( )
3	Setting up user designation	User	designation ( )
4	Setting up user NID	User	nid ( )
5	Setting up user phone number	User	phone ( )
6	Setting up user email	User	email ( )
7	Setting up username	User	userName ( )
8	Setting up user password	User	password ( )
9	Accessing database	Administrator	connectDatabase( )
10	Checking happened events	Administrator	checkEvents( )
11	Varify info	Administrator	authenticate( )
12	Saving report files	Administrator	saveFiles( )
13	Delete actions	User	deleteData( )
14	Showing generated reports	Administrator	showClassReport( )

15	Creating notifications	Administrator	createNotification( )
16	Setting valid username	User	setUser( )
17	Setting up user id	User	setUser( )
18	Validate user input	Administrator	validateInput( )
19	Validate log in	Administrator	login( )
20	Signing up	Administrator	signUp( )
21	Validating user	Administrator	getUser( )
22	Setting account recover request	Administrator	recoverAccount( )
23	Show main or sub menu	Administrator	showMenu( )
24	Getting input from user	Administrator	getInput( )
25	Dealing with user interaction	Administrator	getAction( )
26	Setting user address	User	setAddress( )
27	Selecting student count	User	setStudent( )
28	Setting class name	User	setClassName( )
29	Viewing about section	User	viewAbouts( )
30	Set timer of notification	User	setTimer( )
31	View existing schedules	User	viewSchedules( )
32	Setting phone number	User	setPhone( )