

STIZK3993 ACADEMIC PROJECT 1

Project Design

EMPLOYEE AVAILABILITY DASHBOARD

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1.0 INTRODUCTION

This requirements specification document delineates the creation of the Employee Availability Dashboard (EAD) for the School of Computing (SOC). The EAD aims to tackle the difficulties of managing professor availability in a fluctuating academic setting. Conventional techniques, like manual tracking and static spreadsheets, are ineffective and susceptible to inaccuracies, resulting in schedule conflicts, resource mismanagement, and an absence of real-time updates.

The proposed system seeks to establish a centralized platform that offers real-time monitoring of lecturer availability, interacts with academic schedules, and utilizes predictive analytics for strategic planning. This dashboard will optimize scheduling, minimize manual duties, and enhance collaboration across SOC personnel, thereby improving the institution's operational efficiency and academic experience.

1.1 PURPOSE

The purpose of the Employee Availability Dashboard is to provide a modern, data-driven solution for managing lecturer availability at SOC. The dashboard, developed using Microsoft Power BI, aims to monitor lecturer attendance, availability, and leave in real time while simplifying the allocation of teaching, research, and administrative tasks. By enhancing coordination through centralized scheduling and enabling predictive planning for resource allocation using historical data trends, the system will help streamline operations. Additionally, it simplifies leave management and facilitates efficient student consultation scheduling, ensuring a more cohesive and efficient academic environment.

1.2 SCOPE

The scope of the Employee Availability Dashboard encompasses several critical inclusions aimed at addressing the needs of the School of Computing. It includes real-time tracking and visualization of lecturer schedules, attendance, and leave through interactive Power BI dashboards. The system integrates seamlessly with academic timetables to prevent scheduling conflicts and provides secure role-based access for department heads and lecturers.

Furthermore, the dashboard leverages data analytics and predictive forecasting to assist in resource planning and offers reporting features for insights into lecturer performance and availability patterns. However, certain areas are excluded from the scope, such as integration with non-academic systems outside the SOC and the management of student schedules beyond consultation appointments. Additionally, real-time tracking of non-academic activities is not covered. These inclusions and exclusions ensure a focused and efficient solution tailored to SOC's requirements.

1.3 DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

The document utilizes several specific terms and abbreviations to ensure clarity and precision in describing the Employee Availability Dashboard and its components. The following are key definitions and acronyms used:

- **EAD (Employee Availability Dashboard):** The centralized system being developed to manage lecturer availability, attendance, and scheduling within the School of Computing.
- **SOC (School of Computing):** The academic institution for which this dashboard is being developed, housing the lecturers and administrators who will use the system.
- **Microsoft Power BI:** A powerful business intelligence tool utilized for creating interactive dashboards and data-driven visualizations, forming the backbone of the EAD.
- **Time Tracking:** A feature allowing instantaneous updates on lecturer schedules, statuses, and availability, ensuring users have the most current information.
- **Predictive Analytics:** The application of historical data and advanced algorithms to forecast trends in lecturer availability, aiding strategic decision-making.
- **RBAC (Role-Based Access Control):** A security mechanism where system access is granted based on the user's role, such as lecturer, department head, or administrator, ensuring data integrity and confidentiality.

2.0 GENERAL DESCRIPTION

The Employee Availability Dashboard is built using Microsoft Power BI to provide a centralized platform for real-time updates on lecturer availability. It offers dynamic, interactive dashboards that enable SOC staff to efficiently manage teaching schedules, research activities, administrative duties, and leave requests. The system supports predictive analytics for strategic planning and simplifies collaboration across departments.

2.1 SYSTEM FUNCTIONS

The Employee Availability Dashboard offers a range of essential system functions designed to address the specific needs of the School of Computing. Key functionalities include:

- **Time Tracking:** The dashboard allows users to monitor lecturer attendance, leave status, and general availability in real time. This feature ensures that department heads and administrators always have the most up-to-date information to make informed decisions about scheduling and task allocation.
- **Task Allocation:** Administrators and department heads can efficiently monitor strategic teaching, research, and administrative tasks to lecturers based on their availability. This dashboard minimizes scheduling conflicts and ensures a balanced distribution of responsibilities.
- **Centralized Scheduling:** The dashboard provides a unified platform for viewing and coordinating schedules across departments. By integrating with academic timetables, the dashboard helps prevent overlapping commitments and streamlines departmental operations.
- **Predictive Analytics:** Leveraging historical data, the dashboard generates forecasts on lecturer availability trends. This feature supports strategic planning, allowing administrators to anticipate resource needs and allocate staff effectively.
- **Leave and Consultation Management:** The dashboard offers tools for viewing lecturer leave and consultation schedules, enabling department heads to monitor and manage these aspects efficiently. This feature ensures that leave and consultation statuses are clearly documented and accessible for administrative purposes.
- **Data Visualization:** The platform includes dynamic, visually intuitive dashboards that display insights such as lecturer demographics, availability rates, and activity history. These visualizations enhance data comprehension and support evidence-based decision-making.

2.2 USER

The Employee Availability Dashboard is designed to cater to a range of users within the School of Computing, each having specific roles and responsibilities. These users include:

- Top management school of computing (data can be ask from lecturers)
- Administrators: Administrators are tasked with overseeing the overall functionality of the Employee Availability Dashboard. They manage data integrity, maintain the system, and ensure that all users have appropriate access based on their roles. Administrators also handle the integration of the dashboard with existing SOC systems, such as timetable management tools, ensuring seamless operations.

2.3 GENERAL CONSTRAINTS

Software Constraints:

(Desktop version is free version)

- The dashboard must be implemented using Microsoft Power BI.
- SOC staff must have access to Power BI Pro licenses for sharing and collaboration.
- Integration with SOC's academic systems (e.g., timetable management) must be ensured.
- Operating System: The software must run exclusively on Windows 10 or higher (or a compatible OS).
- Access Limitations: Power BI access will be subject to its inherent usage limitations.

Hardware Constraints:

Device Requirements:

Devices accessing Power BI must meet the following minimum system specifications:

RAM: 8GB or higher.

Processor: 2.4GHz or faster.

Monitor: High-end display for optimal visualization.

Connectivity: Stable internet connection is required.

2.4 ASSUMPTIONS AND DEPENDENCIES

Assumptions:

- All users have basic proficiency with Power BI dashboards.
- SOC provides necessary infrastructure for system deployment and maintenance.
- It is assumed that users have a clear understanding of SOC's operational ecosystem and workflows.

Dependencies:

- Integration with existing SOC academic systems (e.g., timetable and leave management tools).
- Stable and reliable historical data for predictive analytics.
- Microsoft Power BI service remains available and accessible for dashboard hosting and sharing.
- Reliable internet connectivity is required to ensure real-time updates

3.0 REQUIREMENT

This section contains the listing of all functional and non-functional requirements for [system name], the use case(s) model, analysis object model as well as dynamic model. An initial interface prototype is also included at the end of this section.

Both functional and non-functional requirements are as shown in Table 1 and 2 respectively. Each requirement is either a mandatory (**M**) or desirable (**D**) or an optional (**O**).

M – Requirement that the system must do

D – Requirement that the system preferably do

O – Requirement that the system may do

Functional Requirements

For overview page:

No	ID	Requirement Description	Priority
1	EAD01	Display Lecturer Overview Page	M
EAD01_1		The system must display the lecturer overview page with navigation options.	M
2	EAD02	View Attendance	M
EAD02_1		User can navigate to view attendance page.	M
EAD02_2		The system must display real-time attendance data.	M
EAD02_3		The system must display lecturer information under attendance.	M
EAD02_4		The system must show attendance status .	M
EAD02_5		The system must provide a real-time indicator for attendance.	M
EAD02_6		The system must display statistics and aggregates related to attendance.	M
3	EAD03	View Leave Status	M
EAD03_1		User can navigate to the view leave status page.	M
EAD03_2		The system must display detailed leave records .	M
EAD03_3		The system must display leave details .	M
EAD03_4		The system must show approval status of leave applications.	M
EAD03_5		The system must display historical records for leaves.	M
4	EAD04	View Availability Updates	M
EAD04_1		User can navigate to the view availability updates page.	M
EAD04_2		The system must display detailed availability updates .	M
EAD04_3		The system must provide an overview of status related to availability.	M
EAD04_4		The system must track lecturer activity .	M
EAD04_5		The system must display availability trends .	M
EAD04_6		The system should provide department-wise availability details.	D
5	EAD05	View Lecturer Summary Insight	M
EAD05_1		User can navigate to the lecturer summary insight page.	M
EAD05_2		The system must display detailed lecturer summary insights .	M

EAD05_3		The system must display demographic details for lecturers.	M
EAD05_4		The system must show availability rates .	M
EAD05_5		The system must display performance metrics for lecturers.	M
EAD05_6		The system should highlight key insights related to lecturers.	D
6	EAD06	System Continuation Option	O
EAD06_1		The system may allow the user to decide whether to continue or exit from the overview page.	O

Real-time attendance shown functional requirements

No	ID	Requirement Description	Priority
1	EAD07	Display Real-Time Attendance	M
	EAD07_1	The system must display real-time attendance data with navigation options.	M
2	EAD08	Lecturer Information	M
	EAD08_1	User can navigate to view lecturer information.	M
	EAD08_2	The system must display a detailed view of lecturer information.	M
	EAD08_3	The system must display lecturer name, department or subject, and role.	M
3	EAD09	Attendance Status	M
	EAD09_1	User can navigate to view attendance status.	M
	EAD09_2	The system must display a detailed view of attendance status.	M
	EAD09_3	The system must show check-in time, check-out time, and duration logged for attendance.	M
	EAD09_4	The system must indicate attendance status (e.g., Present, Absent, Late).	M
4	EAD10	Real-Time Indicator	M
	EAD10_1	User can navigate to view the real-time indicator.	M
	EAD10_2	The system must display a detailed view of real-time indicator.	M
	EAD10_3	The system must provide live status updates (color-coded).	M
	EAD10_4	The system must show the lecturer's location or activity.	M
	EAD10_5	The system must display the last update timestamp for real-time indicators.	M
5	EAD11	Statistics and Aggregates	M
	EAD11_1	Users can navigate to view statistic and aggregate data.	M

	EAD11_2	The system must display a detailed view of statistics and aggregates.	M
	EAD11_3	The system must show daily attendance percentage.	M
	EAD11_4	The system must display historical comparisons of attendance.	M
	EAD11_5	The system must track and display the late check-ins count.	M
6	EAD12	System Continuation Option	O
	EAD12_1	The system may allow the user to continue or exit after viewing real-time attendance.	O

Leave status functional requirements

No	ID	Requirement Description	Priority
1	EAD13	Leave Status	M
EAD13_1		The system must allow the user to view leave status with navigation options.	M
2	EAD14	View Leaves	M
EAD14_1		User can navigate to view the detailed view of leaves.	M
EAD14_2		The system must display type of leaves, leave period, and reason for leave requests.	M
3	EAD15	View Approval Status	M
EAD15_1		User can navigate to view the detailed view of approval status.	M
EAD15_2		The system must display pending requests, approved requests, and rejected requests.	M
4	EAD16	View Leave Metric	M
EAD16_1		User can navigate to view the detailed leave metrics.	M
EAD16_2		The system must display leave balance, yearly leave usage, and average leave duration.	M
5	EAD17	Leave Trend	M
EAD17_1		User can navigate to view the detailed leave trends.	M
EAD17_2		The system must display department trend, monthly trend, and frequently leave takers.	M
6	EAD18	System Continuation Option	O
EAD18_1		The system may allow the user to continue or exit after viewing leave status data.	O

Lecturers Summary Insight Functional Requirements

No	ID	Requirement Description	Priority
1	EAD19	Lecturer Summary Insight Overview	M
	EAD19_1	The system must display an overview dashboard for lecturer summary insights.	M
2	EAD20	Demographic Navigation	M
	EAD20_1	User can navigate to view a detailed view of demographics.	M
	EAD20_2	The system must display the number of lectures, department-wise breakdown, and floor/room numbers.	M
3	EAD21	Availability Rates Navigation	M
	EAD21_1	User can navigate to view a detailed view of availability rates.	M
	EAD21_2	The system must display the current availability percentage and historical trends.	M
4	EAD22	Performance Metrics Navigation	M
	EAD22_1	User can navigate to view a detailed view of performance metrics.	M
	EAD22_2	The system must display attendance rates and task completion details.	M
5	EAD23	Highlights Navigation	M
	EAD23_1	User can navigate to view a detailed view of highlights.	M
	EAD23_2	The system must display top availability and most absences.	M
6	EAD24	System Continuation Option	O
	EAD24_1	The system may allow the user to continue or exit after navigating through summary insights.	O

Availability status Functional Requirements

No	ID	Requirement Description	Priority
1	EAD28	View Status Overview	M
	EAD28_1	The system must allow navigation to view a detailed overview of ongoing research.	M
	EAD28_2	The system must display the current status (in class, on leave, in meeting, available).	M
	EAD28_3	The system must display location office and a timestamp of the last update.	M
2	EAD29	Activity Tracking Navigation	M
	EAD29_1	The system must allow navigation to view a detailed overview of activity tracking.	M
	EAD29_2	The system must display `in-class status`, `in-meeting status`, or `on-break/unavailable`.	M
3	EAD30	Availability Trend Navigation	M
	EAD30_1	The system must allow navigation to view availability trends.	M
	EAD30_2	The system must display the hourly pattern of availability.	M
	EAD30_3	The system must display peak times when most lecturers are available.	M
	EAD30_4	The system must display absence trends with recurring patterns.	M
4	EAD31	Department Availability Navigation	M
	EAD31_1	The system must allow navigation to view a detailed view of department supervision.	M
	EAD31_2	The system must display the department summary availability percentage.	M
	EAD31_3	The system must display department comparisons (trends across departments).	M
	EAD31_4	The system must display focus areas for highest and lowest availability.	M
5	EAD32	System Continuation Option	O
	EAD32_1	The system may allow the user to continue or exit after reviewing the availability data.	O

Non-Functional Requirements

No.	Requirement	Priority
1	The system shall be accessible via web browsers and mobile devices for ease of use.	M
2	Real-time updates shall be processed and displayed within 5 seconds of any change.	M
3	Data visualization shall use intuitive dashboards for efficient monitoring and planning.	M
4	The system shall provide role-based access control to ensure data security.	M
5	The dashboard shall handle up to 500 concurrent users without performance degradation.	D
6	Historical data analytics shall be completed within 2 minutes for complex queries.	D
7	The system shall comply with institutional privacy policies and data protection regulations.	M
8	The user interface should be designed with accessibility in mind (e.g., WCAG 2.1 standards).	D
9	Backup mechanisms shall ensure data recovery in case of system failure within 1 hour.	M
10	System maintenance shall require minimal downtime, ideally less than 2 hours per month.	D

3.1 SYSTEM MODEL

Overview Page

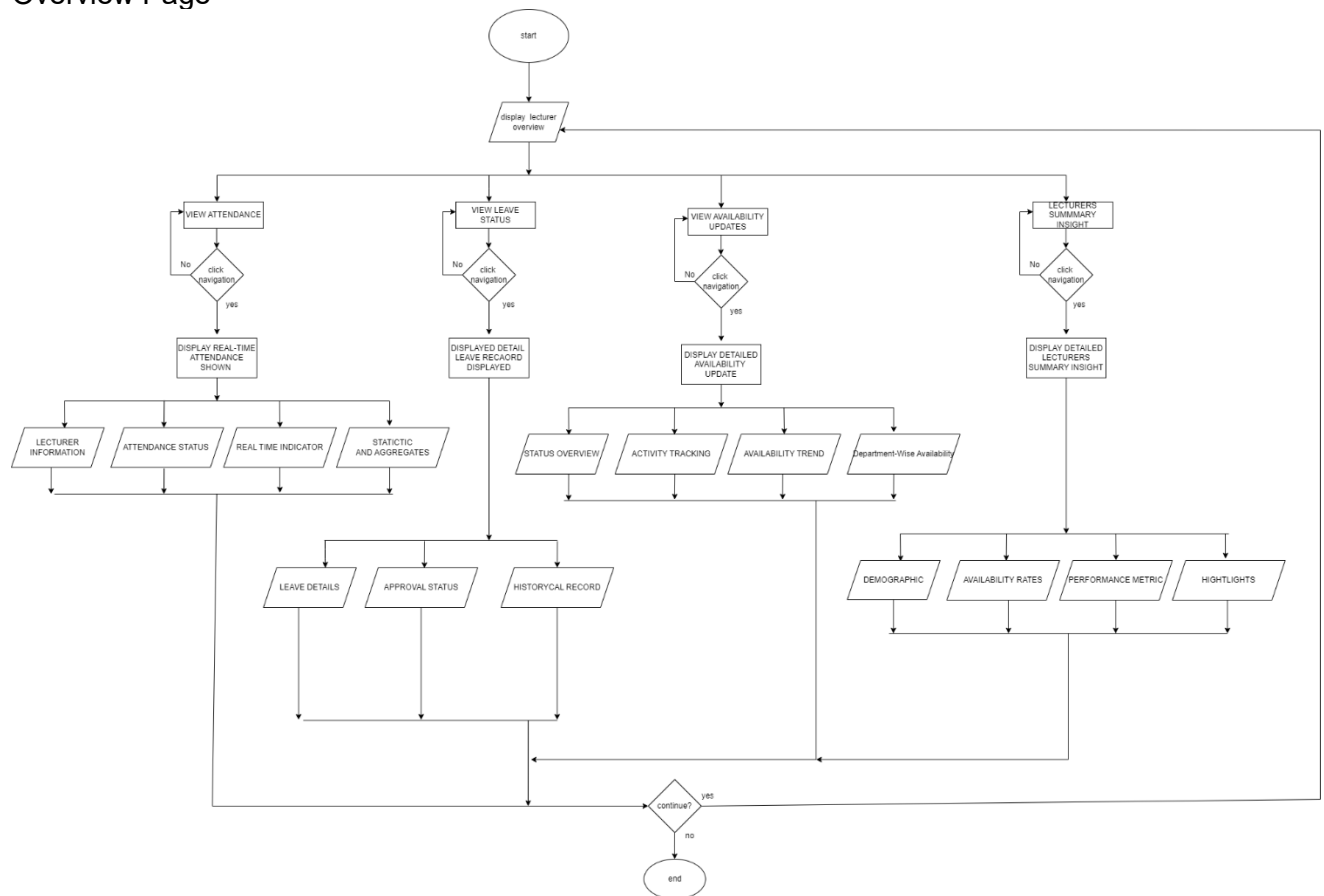


Figure 1 flowchart overview (main page)

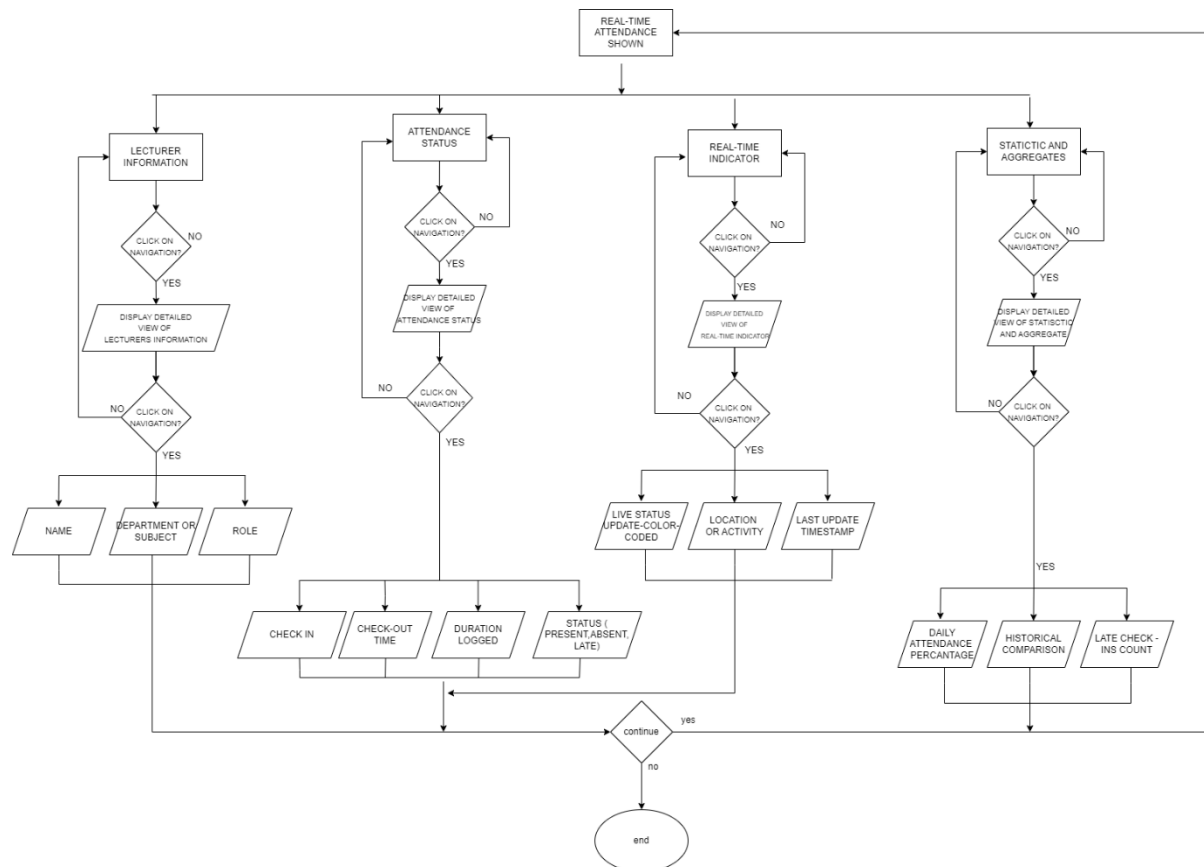


Figure 2 flowchart of Realtime attendance shown

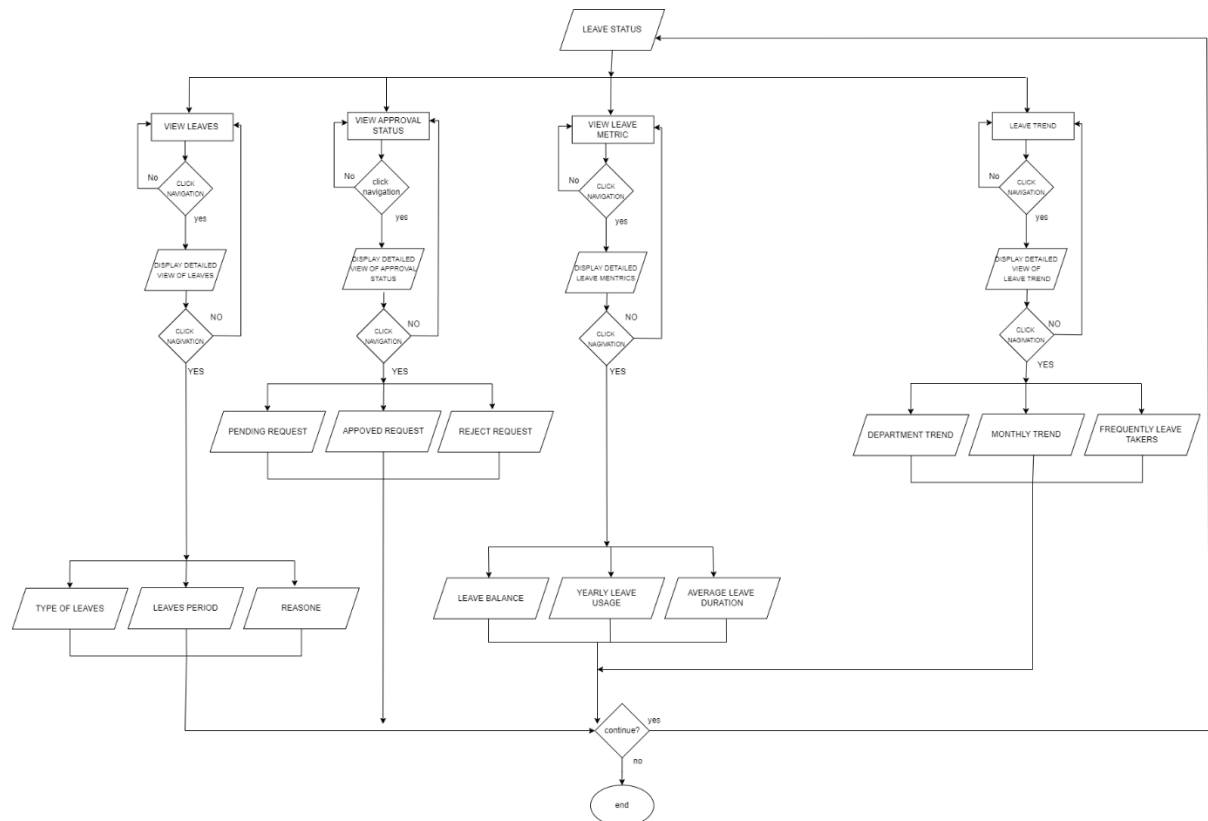


Figure 3 flowchart of leave status

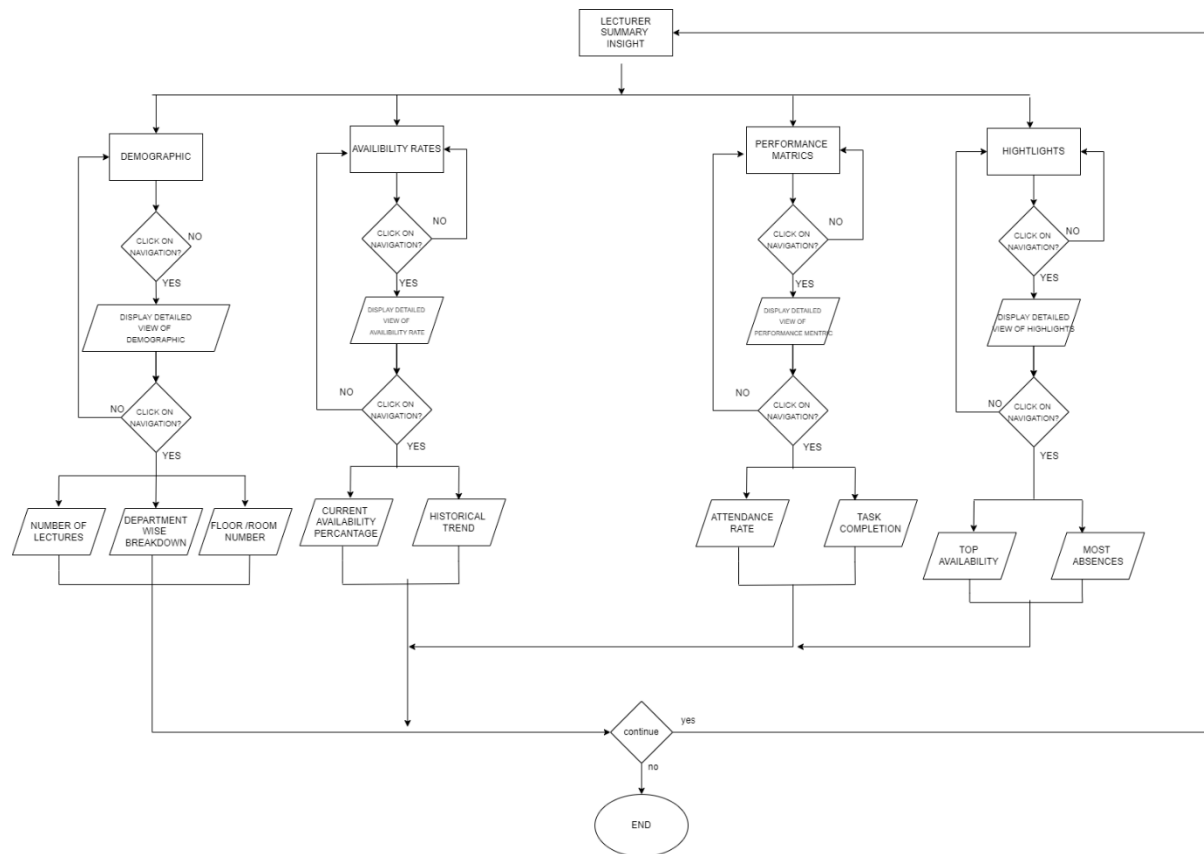


Figure 4 flowchart of lecturer's summary insight

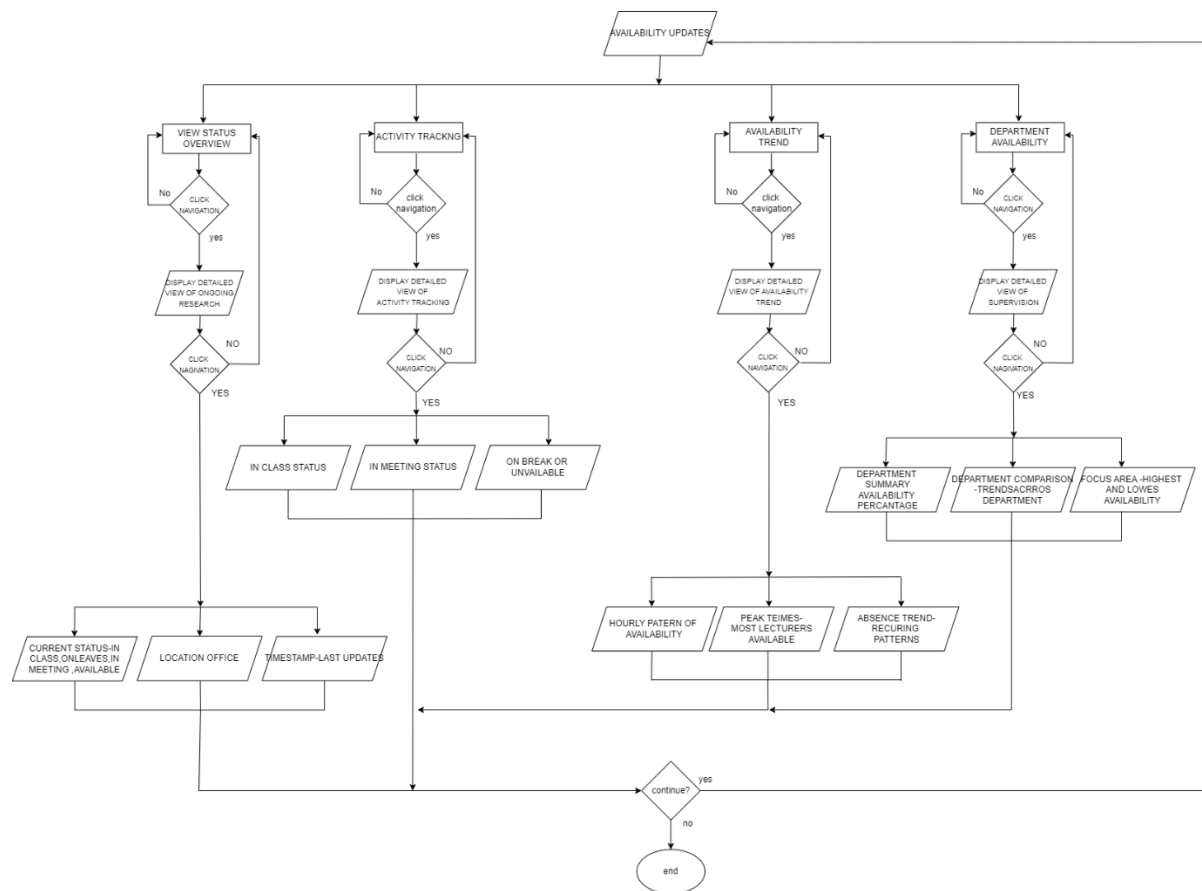


Figure 5 flowchart of availability status

3.2 Use Case diagram

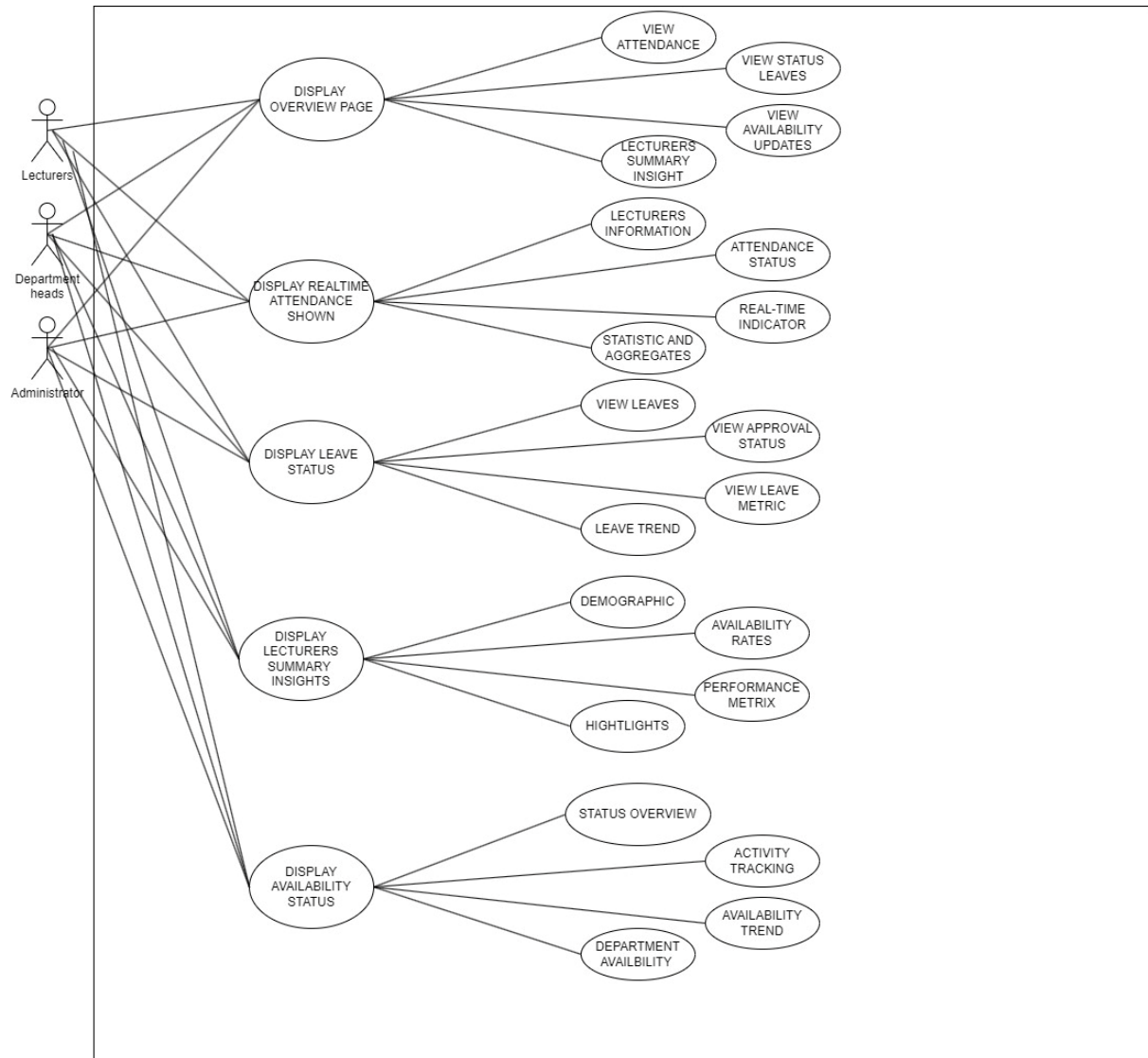


Figure 6 use case diagram of **EMPLOYEE AVAILABILITY DASHBOARD**

Declaration

I hereby declare that this submission is **my own work** and to the best of my knowledge it contains no materials previously published or written by another.



Student's Signature

18/12/2024

Date

Supervisor's Approval

<input type="checkbox"/>	Approve without modification
<input type="checkbox"/>	Approve with modification
<input type="checkbox"/>	Reject

Remark:

Lecturer's Signature & Stamp

Date