



BANNARI AMMAN INSTITUTE OF TECHNOLOGY
An Autonomous Institution Affiliated to Anna University - Chennai, Accredited by NAAC with A+ Grade
Sathyamangalam - 638401 Erode District, Tamil Nadu, India

SOFTWARE REQUIREMENTS DOCUMENTATION

1.PROJECT INFORMATION:

| | |
|-------------------|-------------------------|
| NAME | NIVETITHA R K |
| ROLL NO | 7376222CT138 |
| DEPARTMENT | COMPUTER TECHNOLOGY |
| PROJECT ID | 5 |
| PROBLEM STATEMENT | RESOURCE BOOKING SYSTEM |
| SEAT NO | 85 |

2.TECHNICAL COMPONENTS:

| COMPONENT | TECH STACK - MERN STACK |
|-----------|-------------------------|
| FRONT END | REACT |
| BACK END | NODE.JS WITH EXPRESS.JS |
| DATABASE | MongoDB |
| API | OpenAPI |

3.IMPLEMENTATION TIMELINE:

| PHASE | DEADLINE | STATUS | STAGES |
|---------|------------|---------------|------------------------------------|
| STAGE 1 | 03.04.2024 | In progress ▾ | Planning and Requirement Gathering |
| STAGE 2 | | Not started ▾ | Design and UI/UX Prototyping |
| STAGE 3 | | Not started ▾ | Database Design and Implementation |
| STAGE 4 | | Not started ▾ | Backend Development |
| STAGE 5 | | Not started ▾ | Integration and Testing |
| STAGE 6 | | Not started ▾ | Deployment |

4.PROBLEM STATEMENT:

Our organization currently lacks a centralized and efficient system for managing facility bookings for resources like classrooms, labs, auditoriums, and seminar halls. This leads to several problems:

- **Inefficient scheduling:**

Manual booking processes via emails, spreadsheets, or phone calls are time-consuming and prone to errors.

- **Difficulty checking availability:**

It's challenging to get a real-time view of which facilities are available at a given time, leading to scheduling conflicts.

- **Poor communication:**

The current system might not effectively notify users about booking confirmations or changes.

- **Limited booking management:**

Users may not have easy access to view, modify, or cancel their existing bookings.

5.PURPOSE:

This is a web app to streamline booking and manage reservations for classrooms, labs, seminar halls, auditoriums etc. It aims to optimize resource use, improve communication, and empower users with self-service booking functionalities. This will improve efficiency for users, facility managers, and the entire organization.

6.SCOPE:

- This software system will serve as a portal for facility reservation and management enabling faculties and student club leaders to book classrooms, labs, auditoriums, and seminar halls. From an administrative perspective, this system will provide a comprehensive **analytical dashboard for project oversight**.

- Administrators have the ability to approve or reject requests regarding the slots. Once a request is approved, faculties and student club leaders can use the allotted venue during the scheduled time. The system will automatically send notifications to the users mail regarding the confirmation or rejection of the booked slot. It also additionally displays any significant happenings in the seminar hall or auditorium. This increases user awareness of important events.

7.CONSIDERATION:

- All users possess active Google accounts for authentication.
- Users have regular access to internet-enabled devices.

8.DEPENDENCIES:

- Integration with Google OAuth for user authentication.
- Consistent performance and availability of the existing mail server.

9.USER PERSONAS:

1. Faculties: They have the ability to reserve a classroom ,computer lab, seminar hall, conference halls or auditorium for lectures, workshops, experiments, meetings and department events based on specific equipment needs (e.g., projectors, whiteboards, capacity).They also have the ability to cancel the particular bookings if not necessary.

2. Student club leaders: They have the ability to reserve a classroom ,computer lab, discussion rooms or seminar hall for group study sessions, project presentations and club events with the presence of an incharge faculty member.The system implements an approval workflow for specific facilities (e.g., faculty approval for student lab bookings). They can also cancel the particular bookings if not necessary.

3. Admins: They are responsible for managing(approve, decline) the upkeep and scheduling of all reservable facilities.They can view real-time availability of all facilities.Generate reports on facility usage and identify booking trends.They manage user accounts and access permissions for different roles.They have the ability to resolve booking conflicts and adjust schedules as needed.

10.FEATURES:

1.Login : Faculties, Student Club leaders and Administrators can login using their BITSathy mail accounts or use Google SignIn option.It has role-based access control to differentiate between administrators, faculty and students.

2.Facility Reservation: It displays real-time updates on booked and available slots for each facility. Faculties and Student Club leaders can reserve classrooms, labs, auditoriums, conference hall, discussion rooms and seminar hall for a particular time slot based on their required capacity and equipment needs.They also have an option to specify purpose and recurring booking functionality for regular events.

3.Active Slots: Faculties and Student Club leaders can view their active slots and also cancel within a specified timeframe before the scheduled date if not required.They also have an option to export booking details to personal calendar applications.

4.Past Reservations: Faculties and Student Club leaders can view a list of their past bookings for all facilities.It allows users to download past booking details in a specific format (CSV, PDF).Each past reservation will display details like:

- Facility name and type
- Date and time of booking
- Duration
- Purpose
- Number of attendees (if provided)
- Status (e.g., Completed, Canceled)

5.Announcements: An announcement section will be displayed in a designated corner of the user interface.This section will showcase upcoming events or important information relevant to facility bookings.A designated role (e.g., administrator) can create, edit, and schedule announcements.The system allows setting the display duration for each announcement.Expired announcements will automatically disappear from the display.

6.Admin's Analytical Dashboard: They can view the number of bookings, booking details and approve or decline them.They can view real-time availability of all facilities.They have the ability to resolve booking conflicts and adjust schedules as needed.

7.Notifications: Upon successful booking, the system shall automatically send confirmation emails to the user and also notify users about booking cancellations (by user or system due to conflict).

11.FUNCTIONAL REQUIREMENTS:

1. User Management:

- Faculties, Student club leaders and Admins can login using their BITSathy mail id.
- Admins have access control with an analytical dashboard and dedicated features .

2.Facility Management:

- The system allows authorized users (e.g., administrators, facility managers) to add, edit, and delete facilities.
- The system captures and stores facility details like type (classroom, lab, etc.), capacity, location, and available equipment.
- The system allows setting availability hours and restrictions for each facility (e.g., weekends closed, specific time slots).

3.Booking System:

- The system allows users to submit booking requests for desired facilities, specifying date, time, duration, and purpose.
- The system offers a functionality for recurring bookings (e.g., weekly classes).
- The system implements an approval workflow for specific facilities or user roles (e.g., faculty approval for student lab bookings).

4.Active Slots:

- The system shall provide a dedicated section for users to view their existing bookings and be able to cancel their bookings within a certain timeframe.

5. Past Reservations:

- The system provides users with access to a list of their past bookings.
- The system allows users to download past booking details in a specific format (CSV, PDF).

9. Announcements:

- The system displays an announcement section in a designated user interface corner. This section showcases upcoming events.
- Announcements can be text-based, include visuals, and link to relevant resources. Authorized users can create, edit, and schedule announcements with defined display durations.

10. Reporting and Analytics:

- Admins can view a list of all booked slots. Slots can be filtered by category (faculty, student club leaders.).
- Admins can view details of each booked slot.
- Admins can approve or reject slots due to booking conflicts and adjust schedules as needed.

12. NON-FUNCTIONAL REQUIREMENTS:

1. Performance:

- The system responds to user actions (searches, bookings, etc.) within a timeframe of X seconds.
- The system displays search results and availability information quickly, even during peak usage periods.

2.Usability:

- The system has a user-friendly and intuitive interface that is easy for users of all technical abilities to navigate.

3.Reliability:

- The system is highly available and accessible to users during regular business hours with minimal downtime .
- The system implements backup and recovery procedures to ensure data integrity and minimize disruption in case of outages.

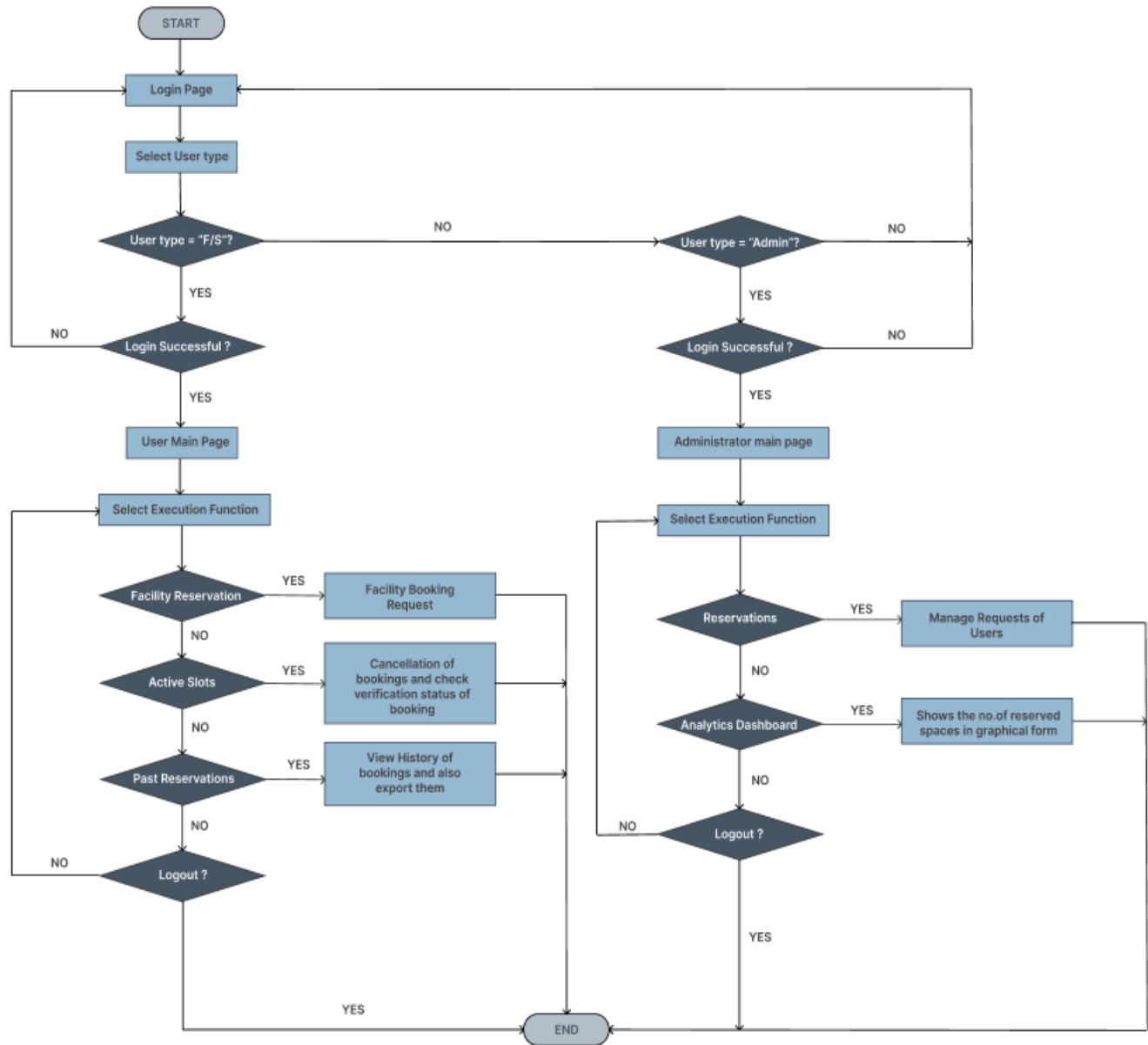
4.Security:

- The system employs robust security measures to protect user data (personal information, booking details) from unauthorized access, modification, or disclosure.
- User login credentials are securely stored using industry-standard encryption methods.
- The system enforces role-based access control (RBAC) to restrict functionalities based on user type.

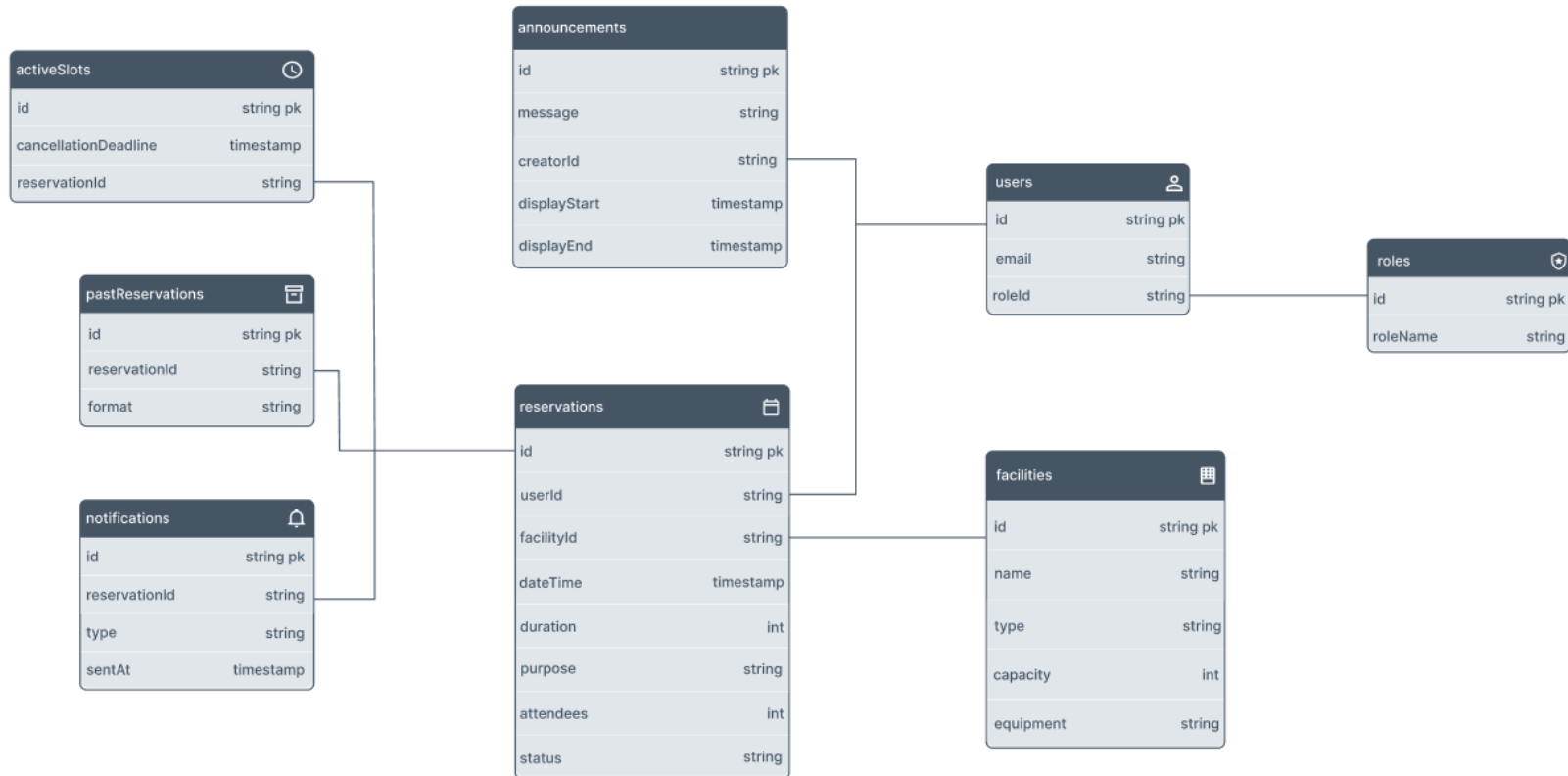
5.Scalability:

- The system is scalable to accommodate a growing user base and increased booking volume.

13.FLOW CHART:




14.ER - DIAGRAM:




15.PROTOTYPE:

15.1. LOGIN PAGE:

**FACILITY RESERVATION**


[Forgot Password?](#)


OR



Sign In with your BITSathy Account


15.2. MAIN PAGE FOR USERS:

**FACILITY RESERVATION**




NAME
name@bitsathy.ac.in


Welcome Name...



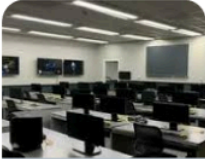
CLASS ROOM




SEMINAR HALL




CONFERENCE HALL



LAB



AUDITORIUM



DISCUSSION ROOM

15.3.FACILITY RESERVATION:



CLASS ROOMS



Facility Reservation



EW - 101



EW - 102



EW - 103




WW - 203




WW - 204




WW - 205




SEMINAR HALL




Facility Reservation




SF - 1



SF - 2





TEXTITLE




ECE

ANNOUNCEMENTS


15.4. BOOKING PAGE FOR STUDENTS:



EW - 101

Capacity : 40

Equipments : • Projector
• Black Board

**Facility Reservation**

Name *

Roll No *


Department *

Data and Time *

Purpose *

Incharge Faculty Name * No file chosen


15.5. BOOKING PAGE FOR FACULTIES:



EW - 101

Capacity : 40

Equipments : • Projector
• Black Board

**Facility Reservation**

Name *

Faculty ID *

Department *


No.of Attendees *


Data and Time *

S M T W T F S

Purpose *

15.6. ACTIVE SLOTS FOR STUDENTS:

**FACILITY RESERVATION**




NAME
name@bitsathy.ac.in


FACILITY RESERVATION

ACTIVE SLOTS


PAST RESERVATIONS

LOG OUT 

Active Slots


Search 


Your Activity

Export as PDF/CSV 

| S.no | Roll.no | Name | Facility | Purpose | Date and Time | Status |
|------|--------------|---------------|--------------------|--------------------|--------------------------|--------------|
| 1. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - TT | GDSC CLUB MEETING | 29-04-2024 9AM - 10AM | Confirmed |
| 2. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - SF1 | GDSC CLUB EVENT | 20-04-2024 9AM - 11AM | Rejected |
| 3. | 7376222CT138 | NIVETITHA.R.K | Discussion Room | GDSC SPRINT | 10-04-2024 3PM - 4PM | Confirmed |
| 4. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - ECE | GDSC CLUB ACTIVITY | 25-03-2024 2PM - 4PM | Waiting List |
| 5. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - SF3 | GDSC CLUB MEETING | 29-04-2024 9AM - 10AM | Rejected |

15.7. ACTIVE SLOTS FOR FACULTIES:

**FACILITY RESERVATION**




NAME
name@bitsathy.ac.in


FACILITY RESERVATION

ACTIVE SLOTS


PAST RESERVATIONS

LOG OUT 

Active Slots


Search 


Your Activity

Export as PDF/CSV 

| S.no | Faculty ID | Name | Facility | Purpose | Date and Time | Status |
|------|------------|------|--------------------|-------------------|--------------------------|--------------|
| 1. | XXXXXXX | Name | Auditorium - BIT | INAUGURATION | 29-04-2024 9AM - 10AM | Confirmed |
| 2. | XXXXXXXX | Name | Conference Hall | FACULTY MEETING | 20-04-2024 9AM - 11AM | Rejected |
| 3. | XXXXXXXXXX | Name | Discussion Room | TAC REVIEW | 10-04-2024 3PM - 4PM | Waiting List |
| 4. | XXXXXXXX | Name | Lab - VLSI | DBMS - EXPERIMENT | 25-03-2024 2PM - 4PM | Confirmed |
| 5. | XXXXXXXXXX | Name | Classroom - EW 101 | WEB-TECH LECTURE | 29-04-2024 9AM - 10AM | Waiting List |

15.8. PAST RESERVATIONS FOR STUDENTS:

 **FACILITY RESERVATION**



NAME
name@bitsathy.ac.in

FACILITY RESERVATION

ACTIVE SLOTS

PAST RESERVATIONS

LOG OUT

Past Reservations


Search


Your Activity

Export as PDF/CSV

| S.no | Roll.no | Name | Facility | Purpose | Date and Time | Status |
|------|--------------|---------------|--------------------|--------------------|--------------------------|-----------|
| 1. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - TT | GDSC CLUB MEETING | 29-04-2024 9AM - 10AM | Completed |
| 2. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - SF1 | GDSC CLUB EVENT | 20-04-2024 9AM - 11AM | Cancelled |
| 3. | 7376222CT138 | NIVETITHA.R.K | Discussion Room | GDSC SPRINT | 10-04-2024 3PM - 4PM | Completed |
| 4. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - ECE | GDSC CLUB ACTIVITY | 25-03-2024 2PM - 4PM | Completed |
| 5. | 7376222CT138 | NIVETITHA.R.K | Seminar Hall - SF3 | GDSC CLUB MEETING | 29-04-2024 9AM - 10AM | Cancelled |

15.9. PAST RESERVATIONS FOR FACULTIES:

 **FACILITY RESERVATION**



NAME
name@bitsathy.ac.in

FACILITY RESERVATION

ACTIVE SLOTS

PAST RESERVATIONS

LOG OUT

Past Reservations


Search


Your Activity

Export as PDF/CSV

| S.no | Faculty ID | Name | Facility | Purpose | Date and Time | Status |
|------|------------|------|--------------------|-------------------|--------------------------|-----------|
| 1. | XXXXXXX | Name | Auditorium - BIT | INAUGURATION | 29-04-2024 9AM - 10AM | Completed |
| 2. | XXXXXXX | Name | Conference Hall | FACULTY MEETING | 20-04-2024 9AM - 11AM | Cancelled |
| 3. | XXXXXXXXX | Name | Discussion Room | TAC REVIEW | 10-04-2024 3PM - 4PM | Completed |
| 4. | XXXXXXXXX | Name | Lab - VLSI | DBMS - EXPERIMENT | 25-03-2024 2PM - 4PM | Completed |
| 5. | XXXXXXXXX | Name | Classroom - EW 101 | WEB-TECH LECTURE | 29-04-2024 9AM - 10AM | Cancelled |

15.10. ADMIN’S VIEW:


**FACILITY RESERVATION**




NAME
name@bitsathy.ac.in

RESERVATIONS CONSOLE


ANALYTICS DASHBOARD

LOG OUT 


Welcome Name...



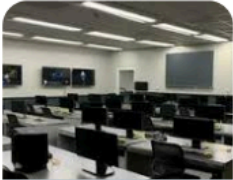
CLASS ROOM




SEMINAR HALL




CONFERENCE HALL




LAB



AUDITORIUM



DISCUSSION ROOM




EW - 101
Capacity : 40
Equipments :

- Projector
- Black Board

Reservations

All Reservations

Export as PDF/CSV 

| S.no | Role | Name | ID / ROLL NO | DEPARTMENT | Purpose | Date and Time | |
|------|---------|---------------|--------------|------------|-------------------|--------------------------|---|
| 1. | FACULTY | NAME | XXXXXXXX | ECE | CHEM - LECTURE | 29-04-2024 9AM - 10AM | <div>Approve</div> / <div>Decline</div> |
| 2. | STUDENT | NIVETITHA.R.K | 7376222CT138 | CT | GDSC CLUB MEETING | 20-04-2024 9AM - 11AM | <div>Approve</div> / <div>Decline</div> |
| 3. | FACULTY | NAME | XXXXXXXX | TT | MATH - LECTURE | 10-04-2024 3PM - 4PM | <div>Approve</div> / <div>Decline</div> |
| 4. | FACULTY | NAME | XXXXXXXX | EEE | DS - LECTURE | 25-03-2024 2PM - 4PM | <div>Approve</div> / <div>Decline</div> |
| 5. | STUDENT | NIVETITHA.R.K | 7376222CT138 | MECH | CLUB ACTIVITY | 29-04-2024 9AM - 10AM | <div>Approve</div> / <div>Decline</div> |

15.11. ANALYTICS DASHBOARD:

