SOFTWARE PROJECT-3

Academic Performance Evaluation System



MASTER'S DEGREE IN COMPUTER APPLICATIONS (M.C.A.) GUJARAT TECHNOLOGICAL UNIVERSITY

UNDER THE GUIDANCE OF Prof. Anjum Mansuri

DEVELOPED BY

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GROUP NO: - MCA_4_74

L. J. INSTITUTE OF COMPUTER APPLICATIONS

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Acknowledgement

It is our privilege to express our sincerest regards to our faculty and project guide, [Prof. / Dr.] Anjum Mansuri, for their valuable inputs, able guidance, encouragement, whole-hearted cooperation and constructive criticism throughout the duration of our project. We deeply express our sincere thanks to our Director Dr. Bhavin Shah for encouraging and allowing us to present the project on the topic "Academic Performance Evaluation System." at our department premises for the partial fulfilment of the requirements leading to the award of Masters of Computer Application (MCA) degree. We take this opportunity to thank all our lecturers who have directly or indirectly helped in our project. Last but not the least we express our thanks to our friends for their cooperation and support.

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CERTIFICATE

Enrollment No: 205170694116

This is to certify that Mr. / Ms. Mansuri Mohammed Sufyan Mohammed Taufiq studying in Master of Computer Applications, Semester IV, Roll No 32 has satisfactorily completed his/her Project Titled Academic Performance Evaluation System under the supervision of

Prof. Anjum Mansuri

Signature

Date of Submission:

Director

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CERTIFICATE

Enrollment No: 205170694014

This is to certify that Mr. / Ms. Roshan Rajendra Chachre studying in Master of Computer Applications, Semester IV, Roll No 10 has satisfactorily completed his/her Project Titled Academic Performance Evaluation System under the supervision of

Prof. Anjum Mansuri Signature

Date of Submission:

Director

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1. Introduction

Student Performance with Graph & Academic Project Work Reporting System is a web-based application developed using MERN Stack and PowerBI. This application provides an easy way to student and teacher in searching the details of their academic attendance, marks percentage and Academic Performance based on attendance, marks (grades) details with graph.

1.1. <u>Existing System</u>

- Student performance means their actions when the students are completing some tasks, roles or obligation. That is related to the word "students' performance" and now when it comes to the word "evaluation", it means the examination, judgment, appraisal and assignment a value of a particular performance.
- Currently all this is done using pen & paper. The student assignment submission, attendance and exam results are all stored on a sheet of paper. The teacher then evaluates the student based on these parameters and puts marks.

1.2. Need for The New System

- As we saw that the entire process is done using pen & paper which can be difficult to manage sometimes. Also, there's a chance of the paper sheet getting destroyed or lost.
- In the proposed system all this problem will be solved as there will be no paper involved in the new system and the data cannot be lost as it is stored in a secure remote database.

1.3. Scope and Objective

- The proposed system provides the faculty an easy and accurate data about attendance reports and Academic percentages reports and Students details reports.
- The proposed system provides the student an easy and accurate data about attendance and academic percentages. Students can view all the information in just one click which saves a lot of time and effort. The proposed system maintains a database to store all the information. In this system, there is no chance of losing data. Adding and searching the information is very easy which does not take much time and physical effort.

1.4. Problem Definition

- The goal of the project is to analyse and visualize student details, attendance, faculty details and student performance in a useful and meaningful way.
- This can be achieved by using PowerBI which is a business integration tool developed by Microsoft.
- Before the visualization of the data, it needs to be noise free that is dataset needs to be cleaned which can be done in PowerBI.

1.5. <u>Core Components</u>

Faculty Module

- o Authentication
- Manage Student Attendance
- o Manage Student Performance
- o Manage Profile
- View Reports

Student Module

- o Authentication
- View Attendance
- View Performance

Admin Module

- Authentication/Authorization
- Manage Users
- Manage Students
- o Manage Results Details
- o Manage Profile
- View Reports

1.6. Project Profile

- Name: Academic Performance Evaluation System
- Technologies
 - o Front-end (ReactJS)
 - HTML
 - CSS
 - JavaScript
 - o Back-end
 - NodeJS
 - PowerBI
 - MongoDB
 - Express
 - AdminJS

1.7. <u>Assumptions & Constraints</u>

1.7.1. <u>Assumptions</u>

- All group members have required skills.
- All of the PC/Laptops are in good conditions.
- All needed resources will be available.
- Active internet connection is available to all members.

1.7.2. Constraints

- Project needs to completed in the given timeline.
- Group members need to learn MERN (MongoDB, Express, ReactJS and NodeJS) stack as well as Power Bi (Data Cleaning & Visualization).
- Requirements for the installation of PowerBI
 - O Windows 8.1 or Later
 - o .NET 4.6.2 or later

1.8. Advantages & Limitations of the Proposed System

1.8.1. Advantages

- This evaluation system is more accurate than conventional methods.
- Student Information uploaded once should not be lost and errors can be corrected.
- This system is very beneficial for education institutes or universities for academic performance evaluation of student efficiently.

1.8.2. <u>Limitations</u>

 Wrong data entry for attendance or marks may causes problems in accuracy of academic performance.

2. Requirement Determination & Analysis

2.1. Requirement Determination

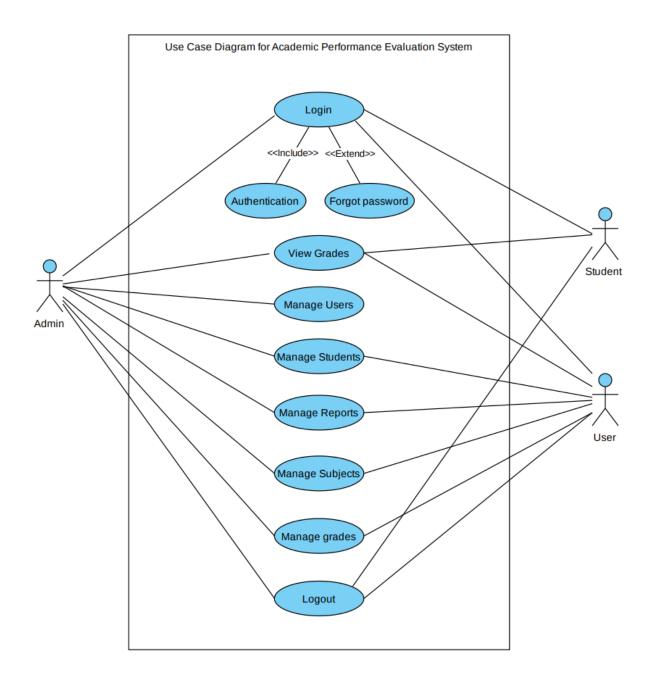
- To develop a web application with the tools to handle all the tasks that are needed for student's academic performance evaluation as well as visualize the data in a meaningful way so that the user can analyze it easily.
- The application should be very easy to use enabling even a novice person to use it.
- Our team determined that the application can be built using the combination MERN and PowerBI.

2.2. <u>Targeted Users</u>

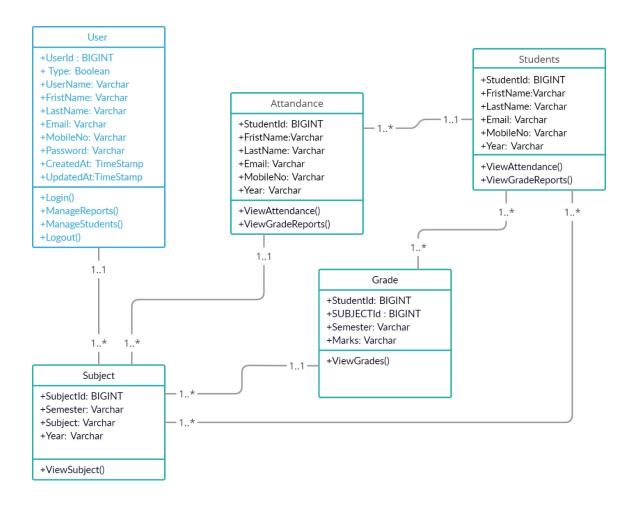
- Students
- Faculty
- Admin

3. System Design

3.1. <u>Use Case Diagram</u>

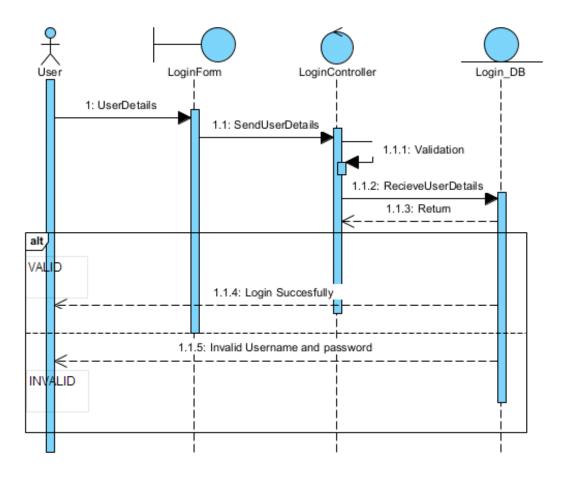


3.2. Class Diagram

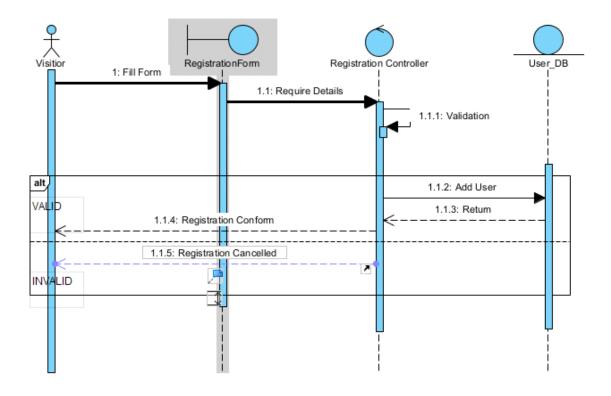


3.3. <u>Interaction Diagram</u>

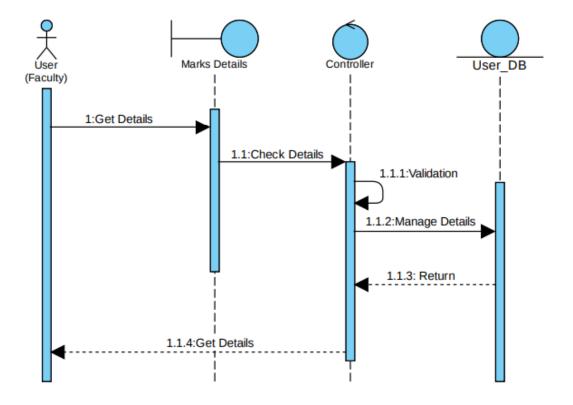
Login



Register

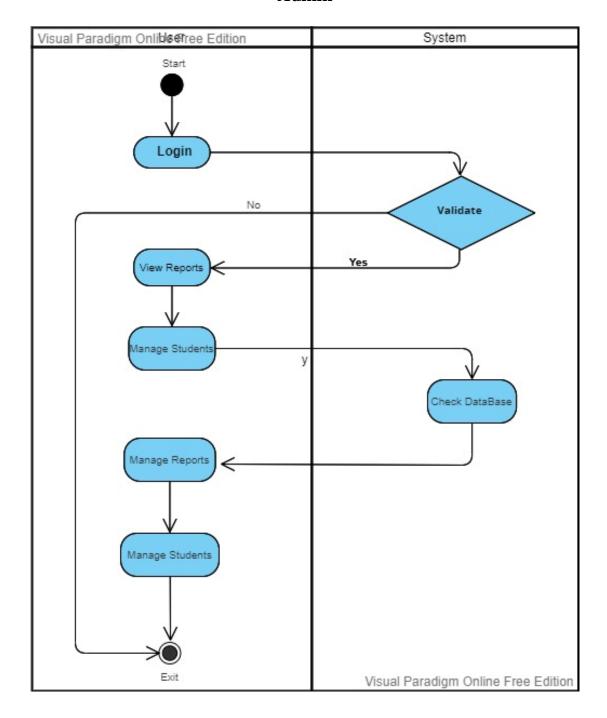


Manage Grades

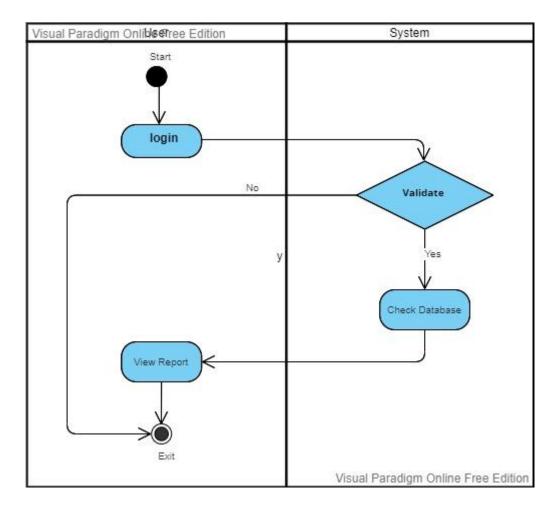


3.4. <u>Activity Diagram</u>

Admin



Student



3.5. Data Dictionary

Table: User

Description: Stores user & login details. Primary Key: **UserId**

Field	Туре	Constraints	Description	Sample Data
UserId	BIGINT (15)	PRIMARY KEY	Id of user	1
Type	BOOLEAN (1)	NOTNULL	1: user 0: admin	1
Username	VARCHAR	NOT	Website	SufyanMansuri
	(50)	NULL, UNIQUE	Name of User	
FirstName	VARCHAR (50)	-	Name of User	Sufyan
LastName	VARCHAR (50)	-	Last Name of User	Mansuri
Email	VARCHAR (320)	NOT NULL, UNIQUE	Email of User	sufi@gmail.com
MobileNo	VARCHAR (13)	UNIQUE	Mobile No of user	+919687557156
Password	VARCHAR (120)	NOTNULL	Password of User account	pbkdf2_sha256\$260000
CreatedAt	TIMESTAMP	NOTNULL	Date & Time of User Created	2022-03- 25T18:39:41.694+00:00
UpdatedAt	TIMESTAMP	NOTNULL	Date & Time of User Created	2022-03- 25T18:39:41.694+00:00

■ Table: **Student**

• Description: Stores student details.

• Primary Key: **StudentId**

Column	Type	Constraints	Description	Sample Data
StudentId	BIGINT (15)	PRIMARYKEY	Id of user	1
FirstName	VARCHAR (50)	-	Frist Name of User	Roshan
LastName	VARCHAR (50)	-	Last Name of User	Rajendra
Email	VARCHAR (320)	NOT NULL, UNIQUE	Email of User	sufi@gmail.com
MobileNo	VARCHAR (13)	UNIQUE	Mobile No of user	+919687557156
Semester	VARCHAR (5)	-	Semester Details	Sem-1
Year	VARCHAR (10)	-	Enrolled Year	2022

■ Table: **Subject**

Description: Stores subject information and the term that they belong

Primary Key: SubjectId

Column	Туре	Constraints	Description	Sample Data
SubjectId	BIGINT (15)	NOTNULL	Id of Subjects	1
Semester	VARCHAR (5)	-	Semester	Sem-1
			Details	
Subject	VARCHAR (50)	-	Name of	Java
			Subject	
Year	VARCHRE (10)	-	Year details	2022

■ Table: **Grades**

• Description: Stores grades/marks of students in individual subjects.

■ Primary Key: **StudentId** + **SubjectId**

Column	Type	Constraints	Description	Sample Data
StudentId	BIGINT (15)	FOREIGNKEY	Id of student	1
SubjectId	BIGINT (15)	FOREIGNKEY	Id of Subjects	1
Semester	VARCHAR (5)	-	Semester	Sem-1
			Details	
Marks	VARCHAR (3)	-	Marks of	76
			Students	

■ Table: **Attendance**

• Description: Stores student's attendance details.

■ Primary Key: **StudentId** + **SubjectId**

Column	Type	Constraints	Description	Sample Data
StudentId	BIGINT (15)	FOREIGNKEY	Id of Student	1
SubjectId	BIGINT (15)	FOREIGNKEY	Id of Subjects	1
Semester	VARCHAR (5)	-	Semester	Sem-1
			Details	
Attendance	DECIMAL	NOTNULL,	Attendance	81.00
	(5,2)	MIN: 0, MAX:	Percent	
		100		

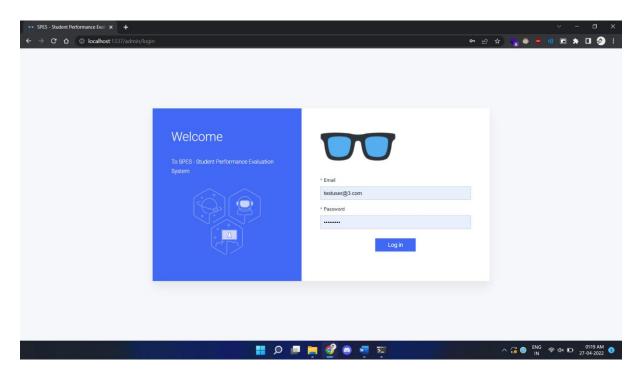
4. Development

4.1. <u>Coding Standards</u>

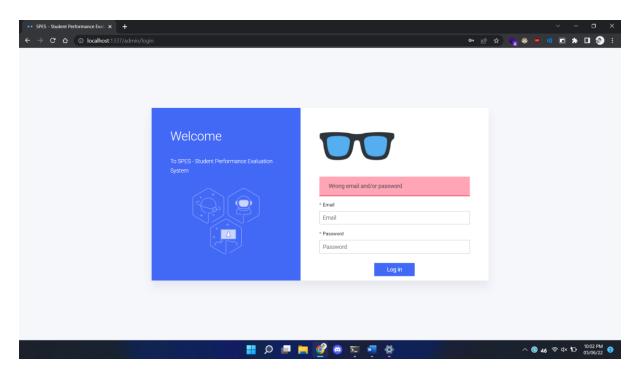
- Coding standard of this projects were
 - o At Least one blank line between functions.
 - o At least two blank lines between classes.
 - o Proper Indentation in every type of file.
 - o Single space before and after operators, except in parameters.
 - o Every item on new line.
 - Every word should be case sensitive in variable and function names.

4.2. <u>Screenshots</u>

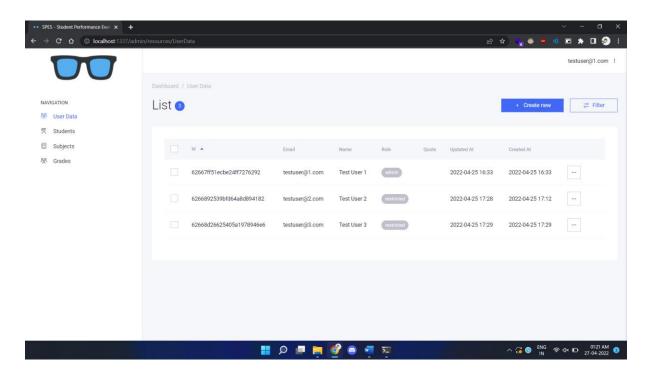
Login Page



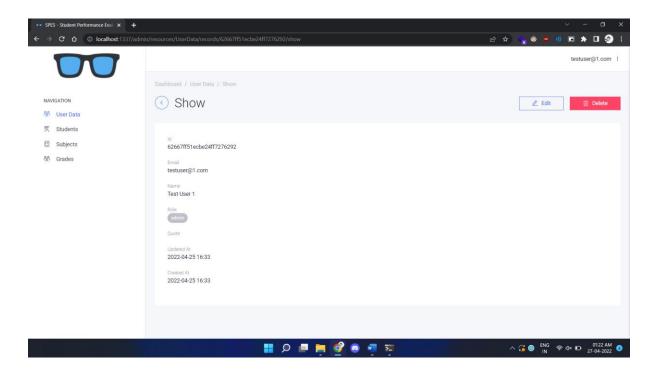
Login Page → **Validations**



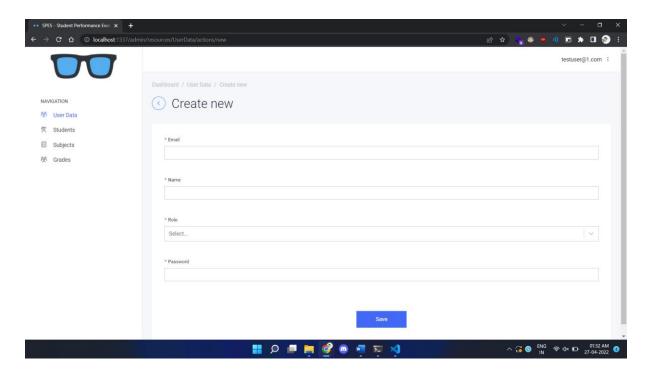
Admin Panel → **Users**



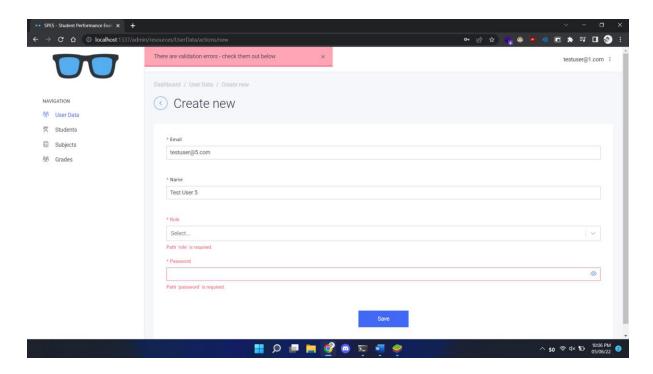
Show User Details



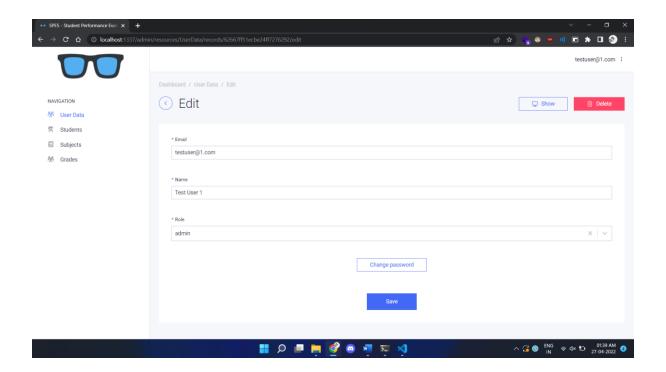
Add New User



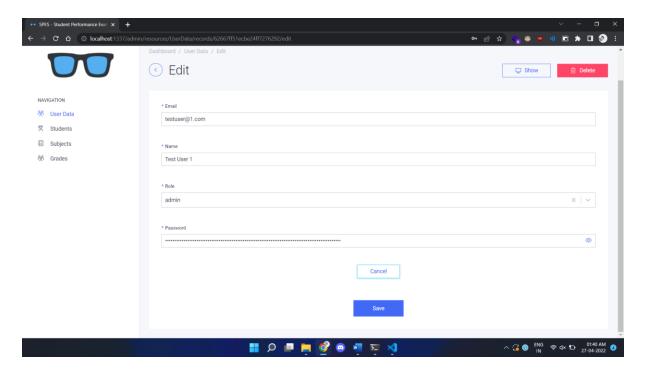
Add New User → **Validations**



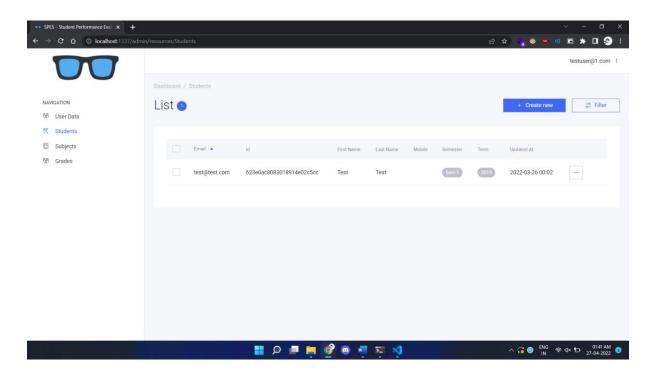
Edit a user



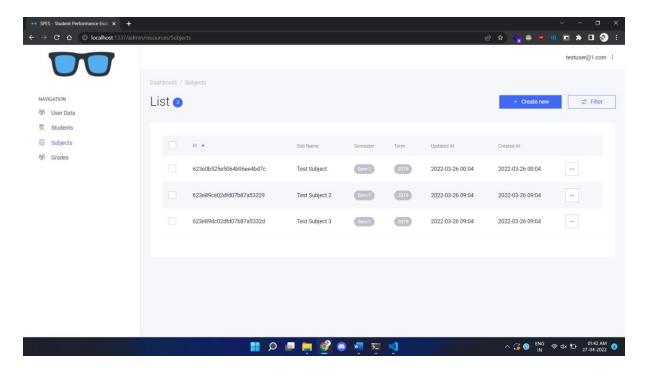
Change password



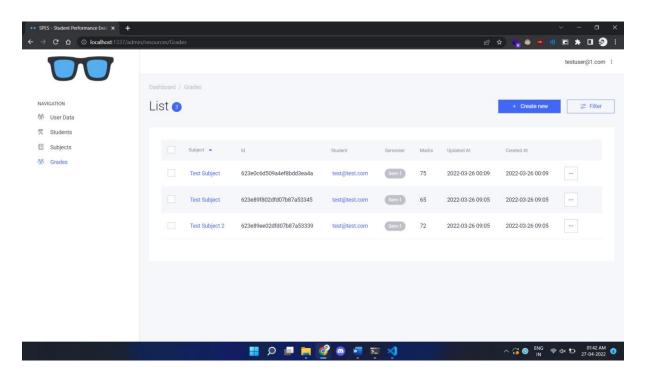
Admin Panel → **Student**



Admin Panel \rightarrow Subject



Admin Panel → **Grades**

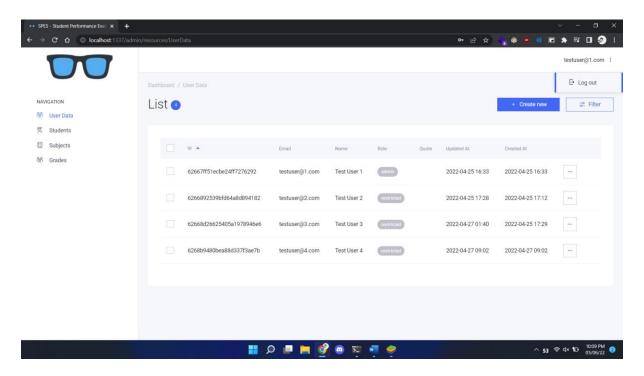


Admin Panel → **Report**



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Logout



5. Agile Documentation

5.1. Agile Project Charter

General Project Info	rmation				
Project Name	Academic Performance Evaluation System				
Project Champion	Sufyan Mansuri, Roshan Chachre				
Project Sponsor	Prof. Anjum Mansuri				
Project Manager					
Stakeholders	Prof. Jinal				
Expected Start Date	27 th Nav 2022				
Expected Completion Date	10 th May 2022				
Project Details	Project Details				
Mission	In the proposed system all this problem will be solved as there will be no paper involved in the new system and the data cannot be lost as it is stored in a secure remote database.				
Vision	The goal of the project is to analyze and visualize student details, attendance, faculty details and student performance in a useful and meaningful way.				
Scope	The proposed system provides the faculty an easy and accurate data about attendance reports and Academic percentages reports and Students details reports.				
Success metrics	We found that the application should be very easy to use enabling even for everyone to use it. We built this webapplication in MERN STACK as well as POWER BI and we will try to make it easy.				

5.2. Agile Project Plan

Project Name	Academic Performance Evaluation System	Browser:	Chrome
Test Case ID	FIRST_108	Version:	100.0.4896.127
Written By:	Roshan Chachre	Description:	Test case written by Sufyan & Roshan
Tested By:	Sufyan Mansuri	Tested On:	17/04/2022

Start Date	Start Date			17-Nov			
End Date	nd Date			10-May			
Overall Progres	Overall Progress						
Task Name	Responsible	Start	End	Days	Status		
Sprint 1	Roshan, Sufyan	01/24	04/08	34	Complete		
Introduction	Roshan	01/24	01/26	2	Complete		
Project Profile	Sufyan	02/01	02/10	10	Complete		
Development	Roshan	02/11	02/12	2	Complete		
System Diagram	Sufyan	02/14	02/20	6	Complete		
Coding Standards	Roshan	02/21	02/22	2	Complete		
Agile	Roshan	03/02	03/14	12	Complete		
Sprint 2	Roshan	02/22	03/10	18	Complete		
PowerBI Details	Roshan	02/23	03/05	12	Complete		
Students Data	Roshan	03/02	03/04	2	Complete		
Reports	Roshan	03/06	03/10	4	Complete		
Sprint 3	Sufyan	02/02	04/22	28	Complete		
Front End	Roshan	02/03	02/15	12	Complete		

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Login	Sufyan	02/22	02/28	6	Complete
Reports (Embedded)	Sufyan	03/02	03/07	5	Complete
Edit Details	Sufyan	03/15	03/16	1	Complete
Validation	Sufyan	03/18	03/22	4	Complete

5.3. Agile User Story

User Story ID	As a <type of="" user=""></type>	I want to <perform some task></perform 	so that I can <achieve some<br="">goal></achieve>	Pass?
1	Admin	Sign In	Access Admin Dashboard	True
2	Admin	Manage Users	Manage User Details	True
3	Faculty	Sign in	Access Faculty Dashboard	True
4	Admin	Manage Students	Manage Student Details	True
5	Admin	Manage Subjects	Manage Student Details	True
6	Faculty	Manage Grades	Manage Student Grades	True
7	Student	View Grades	View Grades	True

5.4. Agile Release Plan

Sprin	Tas k	Start	End	Duratio	Status	Release Date	Goal
t	K	Start	Ellu	n	Status	Date	Guai
							Gather requirement refer previous
1	Task 1	27/01/202	29/01/202	2	Release d	28/01/202	interact system
1	Task 2	29/01/202	04/02/202	6	Release d	03/02/202	Understand Whole Project
1	Task 3	04/02/202	09/02/202	5	Release d	08/02/202	make one user can Create Reports
1	Task 4	09/02/202	16/02/202	2	Release d	15/02/202	Make common login page
2	Task 1	26/02/202 2	01/03/202	2	Release d	28/02/202 2	make dashboard in PowerBI (For Reports)
2	Task 2	01/03/202	07/03/202	1	Release d	05/03/202	Authenticati on and Learn About the Embedded Project
2	Task 3	07/03/202	11/03/202	8	Release d	10/03/202	decide operation which perform on this system
2	Task 4	12/03/202	18/03/202	2	Release d	17/03/202	list operation
2	Task 5	18/03/202	25/03/202 2	2	Release d	24/03/202	User can add details of Students

Academic Performance Evaluation System

3	Task 1	05/04/202	05/04/202	2	Release d	07/04/202	User can edit their Reports and Subjects details
							manage Reports and Students as well as
3	Task 2	05/04/202	08/04/202	2	Release d	12/04/202	Subject report
3	Task 3	09/04/202	13/04/202	1	Release d	15/04/202	manage User profile by Admin
3	Task 4	13/04/202	16/04/202 2	5	Release d	21/04/202	Admin can manage user
3	Task 5	17/04/202	22/04/202	2	Release d	19/04/202	Admin can manage Reports as well as Students
4	Task 1	23/04/202	30/04/202	2	Release d	27/04/202	admin can view entire reports

5.5. Agile Test Plan

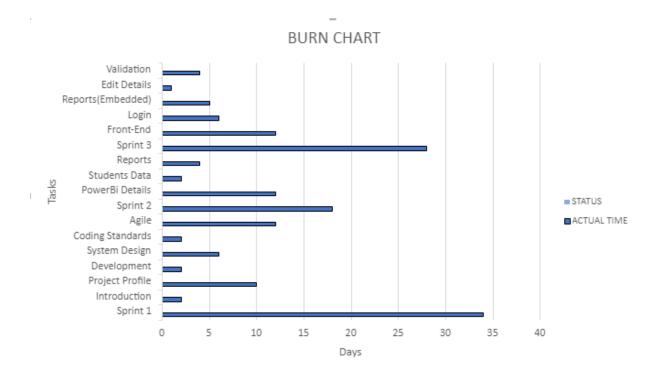
D : /	Academic		
Project	Performance		
Name	Evaluation System	Browser:	Chrome
Test			
Case			
ID	Frist_108	Version	101.0.4951.41
Written			
By:	Roshan Chachre	Description:	test case written by Roshan
Tested			
By:	Sufyan Mansuri	Tested On:	17/04/2022
	•		

Test #	Date	Action	Expected Results	Actual Results	Pass?
1	29-Jan	Logging in	Should get to home screen	User directed to different page	\
2	03-Feb	Create Reports (PoweBI)	Visualization Data And create BICharts	Adding Report Canvas	>
3	07-Feb	functions in admin penal	create reports	created reports	>
4	10-Feb	Manage user	Manage user Details	Manage Successfully	>
5	manage H Report(Ma a		manage Report by admin as well as User	Manage Marks Report Details Successfully	>
6	22-Feb	manage Students By admin	Manage Students Details	Manage Details	V

Academic Performance Evaluation System

		as well as Faculty			
7	10-Mar	user Login	Should get to home screen	User directed to different page	>
8	20-Mar	manage Students Details	Manage Students details by User	manage successfully	>
9	28-Mar	manager edit User details	manage User Details by admin	manage successfully	>
10	10-Apr	generate report of Marks	generate report of Marks	getting error	
11	20-Apr	Dashboard Reports (PowerBI)	home page Dashboard Report Embedded from PowerBI	home page Embedded Report from PowerBI Dashboard Load Successfully	

5.6. Burn Chart



6. Proposed Enhancements

- Functionality to chat with admins
- Daily Attendance
- Automatically calculate Attendance and Assignments Grades
- Grades Reassessment Request
- Generate Better Reports

7. Conclusion

• We developed a web application that replaces old evaluation system that uses papers to store data & generate results with a modern easy to use web application system that not only generate reports but also utilises the data by visualizing it in different charts to make decisions.

8. Bibliography

During the development of project, we have used following resources:

- Software Engineering A Practitioner's Approach, 7th Edition Roger S. Pressman McGraw Hill Publications
- Beginning JavaScript
 Jeremy McPeak, Paul Wilton
 Wrox Publications
- https://stackoverflow.com
- https://reactjs.org/docs/hello-world.html
- https://expressjs.com/en/starter/installing.html
- https://www.youtube.com/codedamn/
- https://online.visual-paradigm.com/
- https://creately.com
- https://app.powerbi.com/home