



UNLEASHING THE POTENTIAL OF OUR YOUTH: A STUDENT PERFORMANCE ANALYSIS



PROJECT REPORT

Submitted By

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At the outset, we express our heartfelt gratitude to **GOD**, who has been our strength to bring this project to light.

At this pleasing moment of having successfully completed our project, we wish to convey our sincere thanks and gratitude to our beloved president **Mr. C. Balakrishnan**, who has provided all the facilities to us.

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We would also like express our thanks to all the faculty members of our department, friends and students who helped us directly and indirectly in all aspects of the project work to get completed successfully.

BONAFIDE CERTIFICATE

Certified that this project report titled “**UNLEASHING THE POWER OF OUR YOUTH: A STUDENT PERFORMANCE ANALYSIS**” is the bonafide work of “**SATHIYA RUBHA M (611220104134), SURYAPRABA V (611220104159), TAMIZHARASAN K (611220104161), VENKATAGIRIRAJU U (611220104318),**” who carried out the project work under my supervision.

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CHAPTER-1

INTRODUCTION

1.1 PROJECT OVERVIEW

The "Student Performance Analysis and Improvement Recommendations" project aims to use IBM Cognos to collect and analyze data on the academic performance of students at individual, class, or school levels. The project uses various data sources, including grades, test scores, attendance records, and surveys, to identify areas of strength and weakness in academic performance and factors contributing to student success or challenges. By analyzing the data with IBM Cognos, the project provides tailored instruction and intervention recommendations to improve academic performance. The expected outcomes include insights into how students are performing academically, identification of areas of strength and weakness, and recommendations for improvement. Overall, the project emphasizes the importance of student performance analysis as a critical component of improving academic performance, using IBM Cognos as a powerful tool to achieve these goals. Over all, the project highlights the importance of data-driven analysis for improving academic performance.

1.2 PURPOSE

A country's growth is strongly measured by quality of its education system. Education sector, across the globe has witnessed sea change in its functioning. Today it is recognized as an industry and like any other industry it is facing challenges, the major challenges of higher education being decrease in students' success rate and their leaving a course without completion. Analyzing student work is an essential part of teaching. Teachers assign, collect and examine student work all the time to assess student learning and to revise and improve teaching. Ongoing assessment of student learning allows teachers to engage in continuous

quality improvement of their courses. Many factors can influence a student's performance, including the influence of the parents' educational background, test preparation and so on. The dataset contains the marks secured by 1000 students from a school. This project analyses and correlates student performance with different attributes. The analysis aims to understand the influence of important factors such as parental level of education, the status of test preparation course etc. on the performance of the students in the exam.

CHAPTER-2

LITERATURE SURVEY

2.1. STUDENT PERFORMANCE ANALYSIS SYSTEM

Authors: Somya Mishra, Mrunal Lokare, Aniket Patil, Prof. Chandrashekhar Badgujar

Year of Publication: 04 Apr 2021

This paper reviews online interface for students, faculty, etc. to increase efficiency of record management, reduce access and delivery time, enhance system security, and minimize non-value-added tasks. The web-based student performance analysis system offers benefits such as time and effort-saving, efficient analysis, accuracy, easy data management, customization, scalability, enhanced decision-making, and improved communication to educational institutes and coaching classes. Drawbacks of implementing a web-based student performance analysis system include dependence on technology, setup and maintenance efforts, learning curve, data security concerns, customization limitations, accessibility/ connectivity issues, and overreliance on automated analysis.

2.2. STUDENT PERFORMANCE ANALYSIS SYSTEM USING DATA MINING

Authors: Disha Kalambe, Anita Labade, Surabhi Khedekar, Komal Mahajan

Year of Publication: 24 Apr 2020

The proposed system uses data mining to analyze student performance in academic performance, extra-curricular activities, strengths, weaknesses, and hobbies. It generates a scorecard and provides guidance for improvement, contributing to overall growth. The proposed system has the potential to harness the power of data mining to analyze student performance from a holistic perspective and provide personalized guidance, leading to improved educational outcomes for students. The system has drawbacks such as data quality

and accuracy, lack of contextual understanding, algorithm bias, limited human interaction, implementation challenges, privacy and security risks.

2.3. STUDENTS' PERFORMANCE ANALYSIS USING MACHINE LEARNING ALGORITHMS

Authors: Rosemary Vargheese, Adlene Peraira, Aswathy Ashok and Bassant Johnson

Year of Publication: 29 June 2022

Universities and organizations struggle with analyzing diverse student performance data. SPAS, a proposed system, uses data mining to predict performance and aid lecturers in identifying struggling students. Universities and organizations struggle with analyzing diverse student performance data. SPAS, a proposed system, uses data mining to predict performance and aid lecturers in identifying struggling students. System limitations were identified considering the users' evaluations on the system, which are resources, time constraint, inflexible rules implemented in the system, the prediction is not updated dynamically within the system's source codes.

2.4. STUDENT PERFORMANCE ANALYSIS SYSTEM (SPAS)

Authors: Chew Li Sa, Dayang Hananibt. Abang Ibrahim, Emmy Dahliana Hossain, Mohammad bin Hossin

Year of Publication: Jan 2021

SPAS is a new system that tracks and analyzes student performance in a specific course at FCSIT, UNIMAS. It utilizes predictive system based on classification data mining to generate performance prediction rules, addressing restricted access to the existing student management system for Information System department lecturers. The proposed system has recognition of the need for a system to track students' performance, proposal of a predictive system, focus on a specific course and department, mention of data mining technique, emphasis on student

performance improvement. The system has drawbacks of lack of details on the student management system, limited explanation of privacy setting, limited scope of the proposed system, limited details on data mining technique, absence of potential challenges or limitations.

2.5. STUDENTS PERFORMANCE ANALYSIS SYSTEM

Authors: Vinay Devabhaktuni, Kancharla Sharath Reddy, V. Shiva Teja, G. Kavitha Reddy

Year of Publication: 06 June 2022

SPAS bridges gap between employers and future IT employees by analyzing college level student performance. It uses intelligent learning algorithm for prediction Traditional techniques inadequate, need tool for extracting useful information. Pros of SPAS and tool for extracting useful information from student performance data bridges gap between employers and students with insights on skills' readiness for job placement. Utilizes intelligent learning algorithm and rich database for accurate performance prediction. Employee cumulative predictor algorithm with random forest trees for robust and reliable model. Facilitates data-driven decisions for universities by extracting insights from various student performance data formats. Overcomes challenges of analyzing increasing student data, enabling informed decisions about performance and placement. Cons of this system is automation may lead to job displacement, causing concerns about unemployment and career prospects. 4 Difficulty in attaining necessary skills for desired IT jobs may indicate a gap in the education system, resulting in inequality and limited opportunities. Reliance on SPAS for performance evaluation may raise data privacy and security concerns. The cumulative predictor algorithm in SPAS may have limitations in accuracy and reliability. Extracting useful information from various formats of student data may pose challenges in data extraction, quality, and integration. Concerns may arise regarding the potential impact, reliability, and privacy of using SPAS for performance evaluation and prediction.

2.6. STUDENTS PERFORMANCE ANALYSIS SYSTEM USING

CUMULATIVE PREDICTOR ALGORITHM

Authors: Mr. K. Praveen Kumar, K. Sai Pranav, D Gowtham, S. Abhishek

Year of Publication: 22 May 2022

The project highlights the increasing automation of mundane tasks and rising expectations for students with programming skills, and the aim of the project to bridge the gap between employers and future employees using a college-level Student Performance Analysis System (SPAS). SPAS features an online web application system, intelligent learning algorithm, and cumulative predictor algorithm for performance evaluation. The objective is to provide an overview of the project's focus on using SPAS for analyzing student performance data and making job placement predictions. The implementation of SPAS at the college level can provide several benefits, including bridging the skills gap, automating mundane tasks, utilizing intelligent learning algorithms, data-driven decision making, improving employability, and enhancing student engagement. SPAS has potential benefits in bridging the employer-employee gap, but limitations such as limited data availability, biased data, reliance on historical data, lack of holistic evaluation overemphasis on placement outcomes, potential stress and pressure on students, and technical challenges must be carefully considered for effective and ethical use in the college setting.

2.7. STUDENT PERFORMANCE ANALYSIS SYSTEM

Authors: Devita Durge, Nikhil Bagul, Rushikesh Gadge, Siddhesh Bhavsar

Year of Publication: Sep 2020

The aims and objective of the project that is to allow users (faculty) to analyze progress of his subject, allow students to compare his performance in different tests. Provide convenience to faculty to guide and mentor students in their academic performance. To design a user-friendly graphical user interface. To conveniently maintain digital records of student, faculty and courses. This system has the benefits of User-friendly GUI for faculty to manage student data and for students to view academic records. 5 Academic records and

performance analysis stored in image format. Pie chart displays enrolments in each course. Machine learning regression algorithm predicts upcoming test marks. Easy data update and maintenance in digital format. No data loss threat with multiple data copies. The system has the drawbacks of Single student cannot enroll for multiple courses using same student id. Graphical user interface is user friendly but not fascinating. Student cannot analyze his grip over subtopics of same subject.

2.8. ACADEMIC PERFORMANCE ANALYSIS

Authors: Mr. M. Thirunavukkarasu, B.J.S.S Sriram, Javvaji Chandrasekhar Reddy

Year of Publication: Apr 2021

The main objective of this system is analyzing students' overall academic performance using data segregation and prediction techniques. System provides access for students to view results and professors to receive pass/fail prediction reports using machine learning (Linear Regression, SVM). Enhances academic performance evaluation and support by assisting students who may need additional help. Focuses on analyzing overall academic performance, not just external exams. Utilizes data segregation and prediction techniques to predict pass/fail for students. Provides a system for students to access their results and for professors to receive reports. Helps professors assist students who may need additional support. Enhances academic performance evaluation and support through machine learning algorithms. Improves student performance and increases chances of passing exams. Some potential cons in this system is data accuracy and reliability, overreliance on previous results, limited scope of prediction, ethical concerns, lack of personalized approach.

2.2 PROBLEM DEFINITION STATEMENT

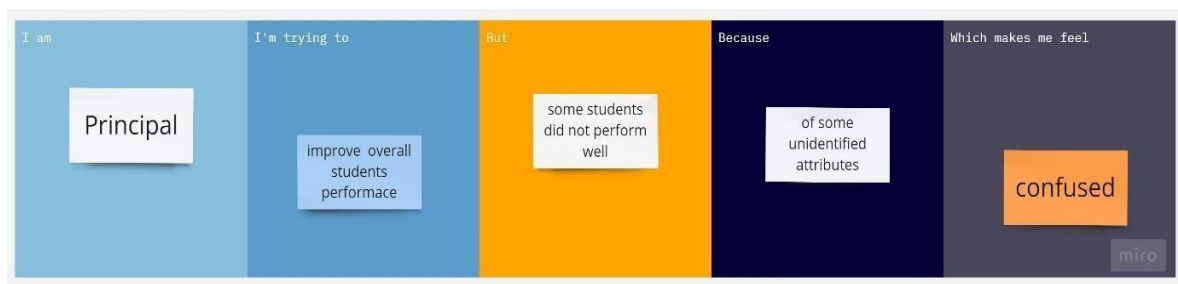
CUSTOMER PROBLEM STATEMENT:

I am	Principal	I am principal of xyz school
I am trying to	Overall students performance	I was trying to improve overall academic performance of student's
but	some students did not perform well	I cannot able to find out the source of reason to improve academic performace of students
because	Of some unidentified attributes	like their internal marks, parent's level of education, and their health issues
which makes me feel	Confused	Because of these unidentified factors I got confused

I am the principal of xyz school. I was trying to improve the overall academic performance of students. But some of the students did not perform well because of various factors like their internal marks, parent's level of education, and health problems because of their food habits which they intake. So, I got confused, so I need to analyze these attributes for each student and identify the source of problem and improve their performance.

Problem Statement (PS)	I am (principal)	I'm trying to	But	Because	Which makes me feel
PS-1	principal	Improve the wellness of the student	Some Students have health issues	Of the food they eat	sad
PS-2	principal	Improve performance on internal tests	They did not perform well in internal exams	They did not spend their own time to study at their home	angry

Solution Statement



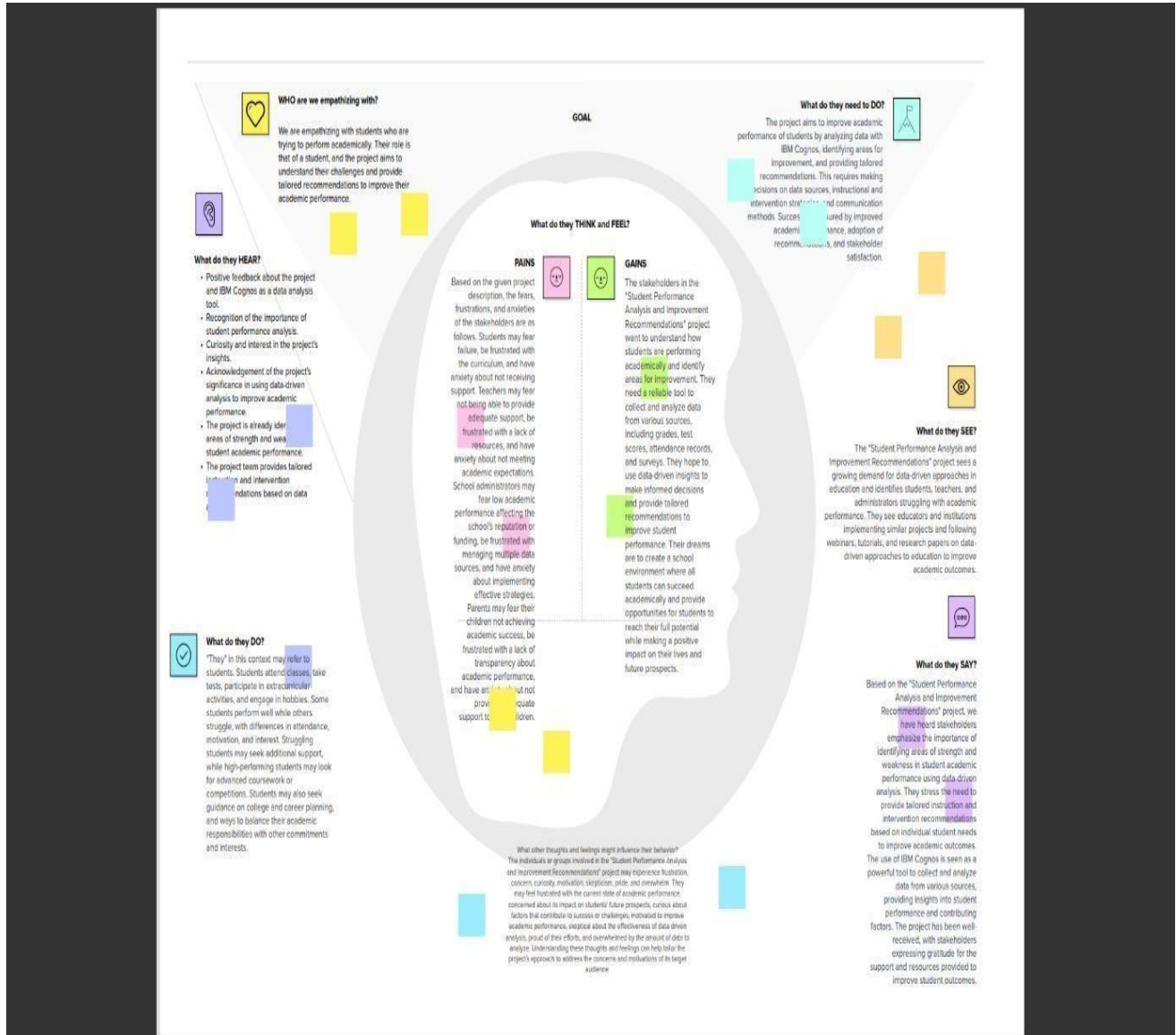
CHAPTER-3

IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS STEPS FOLLOWED

1. Start by creating a new mural and selecting the "Empathy Map" template from the template library.
2. Divide the map into four quadrants labeled "Say," "Do," "Think," and "Feel."
3. In the center of the map, write the name of the persona you are creating the empathy map For. This could be a student, teacher, or administrator involved in the project.
4. Begin by filling in the "Say" quadrant with statements or quotes that the person might say related to the project. This could include things like "I'm struggling with understanding the material" or "I need more individualized attention from my teacher."
5. Move on to the "Do" quadrant and fill it with actions or behaviors that the persona might engage in related to the project. This could include things like attending after-school tutoring sessions or completing extra practice exercises.
6. Fill in the "Think" quadrant with thoughts or beliefs that the persona might have related to the project. This could include things like "I don't think I'm smart enough to succeed" or "I believe that hard work pays off."
7. Finally, fill in the "Feel" quadrant with emotions or feelings that the person might have related to the project. This could include things like feeling frustrated or overwhelmed, or feeling proud and accomplished when they succeed.

Empathy Map of Students Performance Analysis



3.2 BRAIN STORMING AND IDEA PRIORITIZATION

Team Gathering, Collaboration and Select the Problem Statement

1

Define your problem statement

The problem statement of the "Student Performance Analysis and Improvement Recommendations" project is to improve academic performance by analyzing and identifying areas of strength and weakness for students, classes, and schools. The project aims to use IBM Cognos to collect and analyze various data sources such as grades, test scores, attendance records, and surveys to provide tailored instruction and intervention recommendations. The project emphasizes the importance of data-driven analysis to identify factors contributing to student success or challenges and to provide recommendations for improvement. The expected outcomes of the project are insights into how students are performing academically, identification of areas of strength and weakness, and recommendations for improvement.

5 minutes



Brainstorm, Ideas Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

TIP

You can't select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

Person 1

Collecting and analyzing data: Identify relevant data sources, such as student grades, test scores, attendance records, and surveys, and use IBM Cognos to collect and analyze this data. Look for patterns and trends in the data that can help identify areas of strength and weakness.

Person 2

Setting benchmarks: Use data to establish benchmarks for student performance, such as class averages, individual student performance, and overall school performance. Use these benchmarks to set performance goals and track progress over time.

Person 3

Identifying factors contributing to success or challenges: Analyze data to identify factors that contribute to student success or challenges, such as attendance, participation in extracurricular activities, and parental involvement. Use this information to inform recommendations for improving student performance.

Person 4

Use data analysis to provide tailored instruction and intervention recommendations to teachers, students, and parents. Monitor student progress and adjust strategies as necessary, while collaborating with stakeholders to ensure interventions are effective and well-supported. Emphasize the importance of data-driven analysis for improving academic performance and educate stakeholders on its benefits.

Group Ideas

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mind.

1. Collect and analyze relevant data sources using IBM Cognos to identify patterns and trends in academic performance.
2. Establish benchmarks for student performance and track progress over time.
3. Analyze data to identify factors contributing to success or challenges, and make recommendations for improvement.
4. Provide tailored instruction and intervention recommendations to improve student performance.
5. Monitor progress and adjust strategies as needed based on data analysis.
6. Collaborate with stakeholders to ensure effective interventions and strategies.
7. Emphasize the importance of data-driven analysis for improving academic performance and educate stakeholders on its benefits.

Prioritization

4

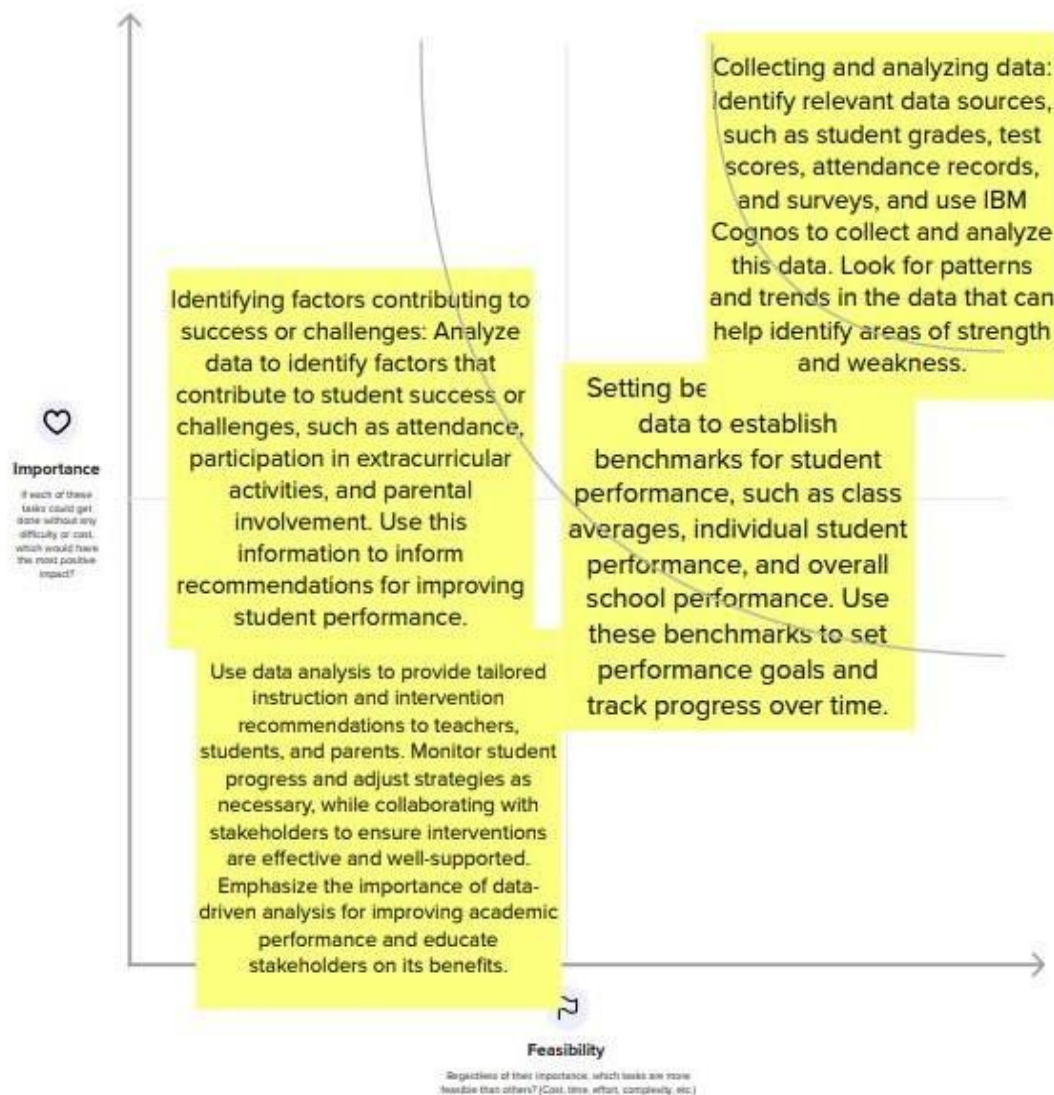
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes

TIP

Participants can use their cursor to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.



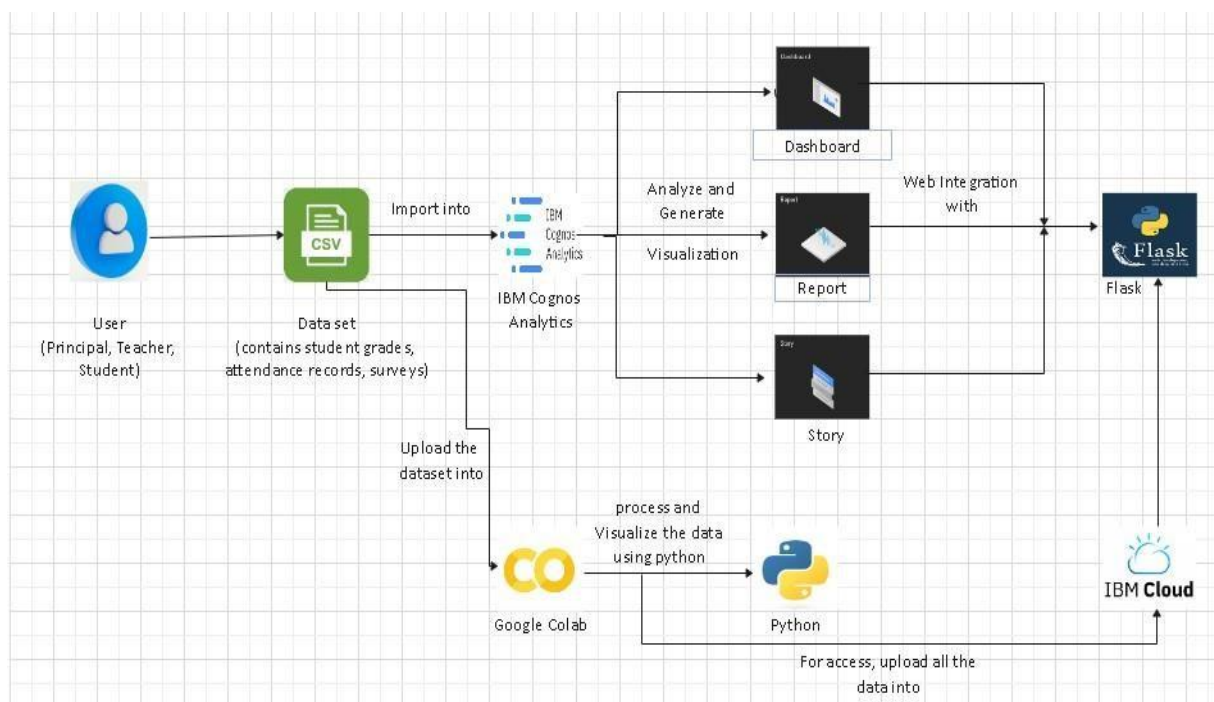
3.3 PROPOSED SOLUTION

S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	“Student performance analysis and improvement recommendations” project is to improve academic performance by analyzing and identifying areas of strength and weakness for student’s classes and schools, this project emphasizes the importance of data driven analysis to identify factors contributing to student success or challenges and to provide recommendations for improvement.
2.	Idea / Solution description	Collect and analyze relevant data sources using IBM Cognos to track the progress and identify factors contributing to success or challenges and visualize the student’s performance using dashboards, reports and story embed with UI with Flask.

3.	Novelty / Uniqueness	<p>This project sees a growing demand for data driven approaches educationand identifies students, teachers and administrators struggling with academic performance. They seeeducators and institutions implementing similar projects andfollowing webinars, tutorials and research papers on data driven approaches to educate and improve the academic outcomes.</p>
4.	Social Impact / Customer Satisfaction	<p>The educational institutions will be benefited by this project. They can easily able to identify their student'sperformance, goals, and track progress over time.</p>
5.	Business Model (RevenueModel)	<p>A student performance analysis model involves offering customizedreporting and analysis services to schools or colleges. This can include creating custom reports and data visualizations based on the specific needs of the institutions.</p>

6.	Scalability of the Solution	<p>Combining IBM Cognos with Flask can provide a powerful solution for tracking student progress and identifying factors contributing to success or challenges. The combination of these tools can help educational institutions to gain insights into student performance and take appropriate action to improve learning outcomes.</p>
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3.4 PROBLEM SOLUTION FIT



CHAPTER-4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through Linked-in
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Login	The user should login to the system by using valid user credentials
FR-4	Dataset	Upload dataset into the analytics tool.
FR-5	Analysis	It involves gathering all the information, processing it. exploring the data, and using it to find patterns and other insights.
FR-6	Create Dashboard	Create Charts, Graphs, Tables, etc.
FR-7	Reporting	The reporting function helps users have complete control over their business. The real-time reporting collects current information and displays.

4.2 NON-FUNCTIONAL REQUIREMENTS

Following are the non-functional requirements of the proposed solution.

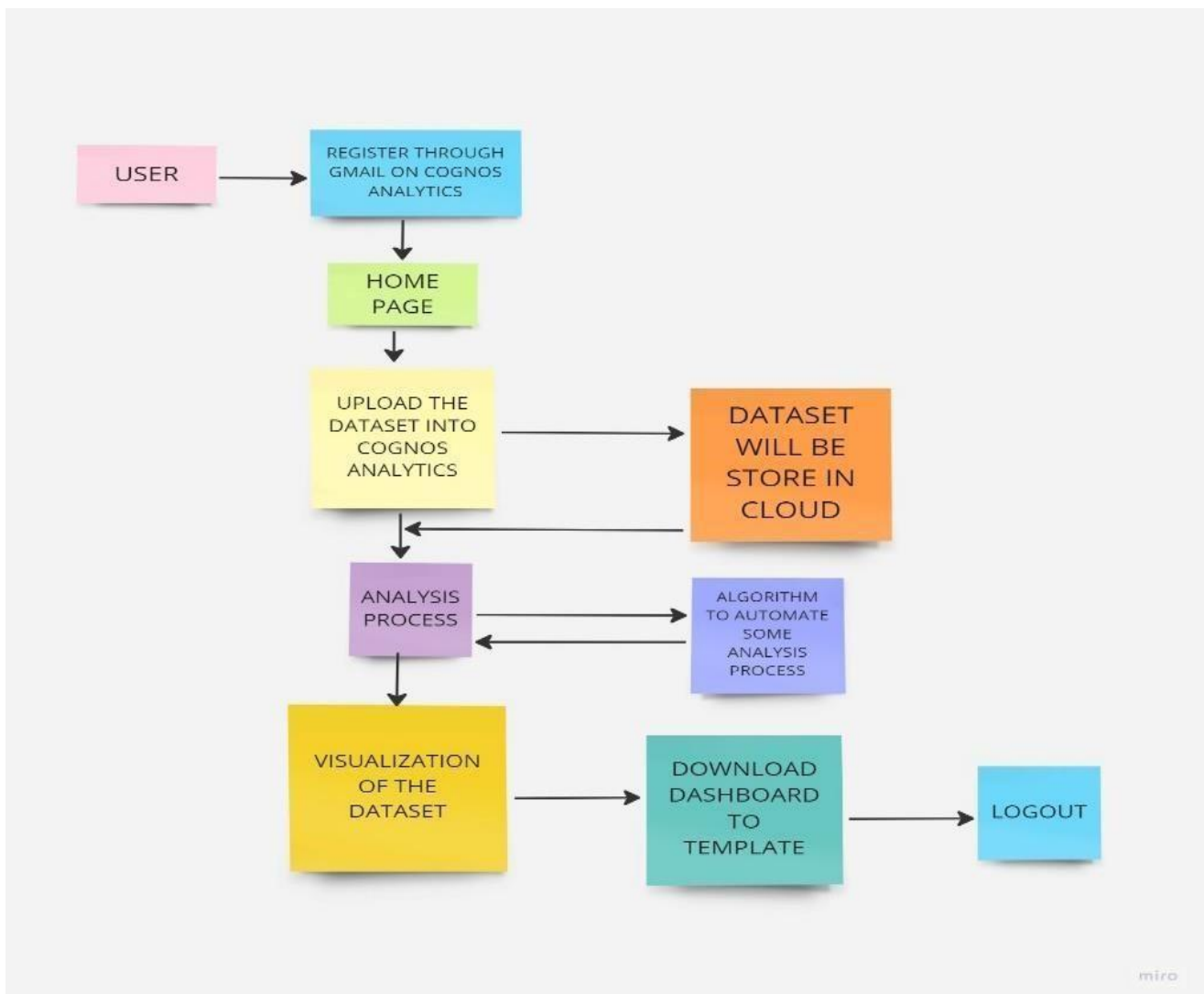
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Optimized resources and it can be used by everyone
NFR-2	Security	Anyone with correct Log in credentials can view the Dashboards/Templates
NFR-3	Reliability	Templates are reliable because we are uploading and accessing it through Cloud
NFR-4	Performance	It has high state of performance and efficiency
NFR-5	Availability	It is free of cost and available to everyone who wants to know about sales data
NFR-6	Scalability	Dashboards/Templates are very much Scalable, the user can modify the metrics whenever they want.

CHAPTER-5

PROJECT DESIGN

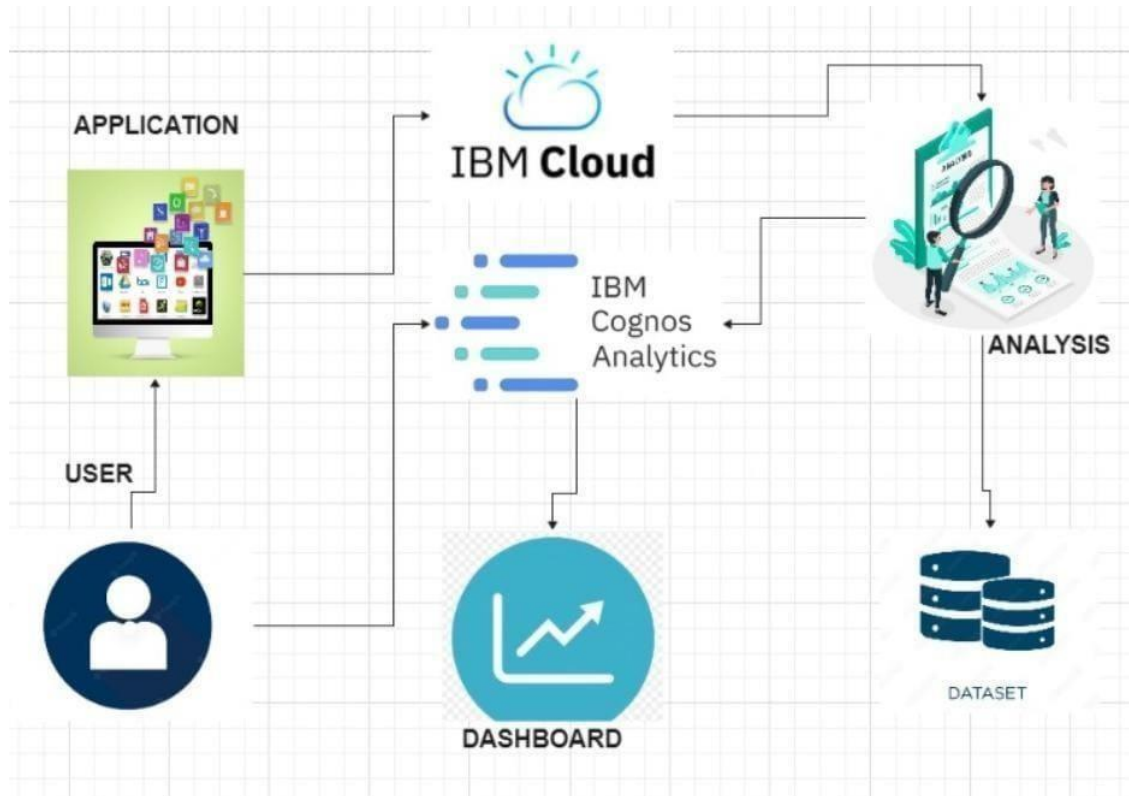
5.1 DATA FLOW DIAGRAMS

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



5.2 SOLUTION AND TECHNICAL ARCHITECTURE

Technical Architecture:



Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	How user interacts with application	IBM Cognos Analytics
2.	Working with the dataset	Cleaning, extracting process of dataset is done	IBM Cognos Analytics with Watson
3.	Data Exploration	Information in the dataset is identified	IBM Cognos Analytics with Watson
4.	Data Visualization	Data is represented in form of chart, table and graph in an interactive way	IBM Cognos Analytics with Watson
5.	Outcome of analysis process	The user will see the visualization through dashboards, report and story	IBM Cognos Analytics with Watson
6.	Cloud Database	Uploaded data are stored in the cloud database (Database Service on Cloud)	IBM DB2, IBM Cloud and etc.

7.	Flask	Dashboard, report, story is embedded with Flask	Cloud Flask
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Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	IBM COGNOS With Watson, IBM CLOUD
2.	Security Implementations	Secure storage and access of information	LDAP or Active Directory
3.	Scalable Architecture	Supports data in different size	IBM Cloud
4.	Availability	Ability to create complex, multi-page layouts using different data sources. High performance data access across all sources. Complete connectivity regardless of environment.	WebSphere Application Server, Cognos® Business Intelligence server

5.	Performance	Large amount of information can be processed	31BM Cognos Performance Management Hub(PMHub)
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5.3 USER STORIES

User Type	Functional Requirement(Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Team Member
Customer (Web user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Venkatagiriraju U
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & clickconfirm	High	Suryaprabha V

		USN-3	As a user, I can registerfor the application through Face book	I can register &access the dashboard with Face book Login	Low	Tamizharas an K
		USN-4	As a user, I can register for the application through Gmail		Medium	Sathiya Rubha M
	Login	USN-5	As a user, I can log intothe application by entering email & password		High	Suryapraba V
	Dashboard	USN-6	User can able to see andupload dataset option in the browser	The user can upload data set in Cognos analytics	High	Venkatagiriraju U
	Dashboard	USN-7	If the user already used the Cognos analytics, wecan able to see the previously uploaded dataset		Low	Tamizharas an K

Admin	Login	USN-8	As an admin, I can loginto the application by entering username & password		High	Sathiya Rubha M
	Dashboard	USN-9	As an admin, I can view the dashboard and otheractivities of the application.	I can access the dashboards	High	Tamizharas an K

CHAPTER-6

CODING & SOLUTIONING

INDEX.HTML:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">
  <title>Welcome</title>
  <meta content="" name="description">
  <meta content="" name="keywords">
  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">
  <!-- Google Fonts -->
  <link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|R
aleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,60
0i,700,700i" rel="stylesheet">
  <!-- Vendor CSS Files -->
  <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
  <!-- Template Main CSS File -->
  <link href="assets/css/style.css" rel="stylesheet">
  <!-- =====
  * Template Name: Vesperr
  * Updated: Mar 10 2023 with Bootstrap v5.2.3
  * Template URL: https://bootstrapmade.com/vesperr-free-bootstrap-template/
  * Author: BootstrapMade.com
  * License: https://bootstrapmade.com/license/
  ===== -->
</head>
<body>
  <!-- ===== Header ===== -->
  <header id="header" class="fixed-top d-flex align-items-center">
    <div class="container d-flex align-items-center justify-content-between">
      <div class="logo">
```

```

<h1><a href="index.html">student analysis</a></h1>
<!-- Uncomment below if you prefer to use an image logo -->
<!-- <a href="index.html"></a>-->
</div>
<nav id="navbar" class="navbar">
  <ul>
    <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
    <li><a class="nav-link scrollto" href="#about">About</a></li>
    <li><a class="nav-link scrollto" href="#services">Dashboard</a></li>
    <li><a class="nav-link scrollto " href="#portfolio">Story</a></li>
    <li><a class="nav-link scrollto" href="#team">Report</a></li>
    <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
    <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
  </ul>
  <i class="bi bi-list mobile-nav-toggle"></i>
</nav><!-- .navbar -->
</div>
</header><!-- End Header -->
<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center">
  <div class="container">
    <div class="row">
      <div class="col-lg-6 pt-5 pt-lg-0 order-2 order-lg-1 d-flex flex-column justify-content-center">
        <h1 data-aos="fade-up">Student academic performance analysis</h1>
        <h2 data-aos="fade-up" data-aos-delay="400">Here we using IBM cognos tool for analysing student's performance</h2>
        <div data-aos="fade-up" data-aos-delay="800">
          <a href="#about" class="btn-get-started scrollto">Get Started</a>
        </div>
      </div>
      <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="fade-left" data-aos-delay="200">
        
      </div>
    </div>
  </div>
</section><!-- End Hero -->
<main id="main">
  <!-- ===== About Us Section ===== -->
  <section id="about" class="about">
    <div class="container">
      <div class="section-title" data-aos="fade-up">
        <h2>About Us</h2>
      </div>
      <div class="row content">

```

```

<div class="col-lg-6" data-aos="fade-up" data-aos-delay="150">
  <p>
    We are Computer Science Engineering pre-final year students studying at Knowledge
    Institute of Technology.
  </p>
  <p>
    We here working on a IBM and Naan Mudhalvan Project.
  </p>
  <ul>
    <li><i class="ri-check-double-line"></i> Venkatagiriraju Udayakumar</li>
    <li><i class="ri-check-double-line"></i> Suryapraba Venkatesan</li>
    <li><i class="ri-check-double-line"></i> Sathyaruba M</li>
    <li><i class="ri-check-double-line"></i> Tamizharasan Krishnan</li>
  </ul>
</div>
</div>
</div>
</section><!-- End About Us Section -->

```

```

<!-- ===== Services Section ===== -->
<section id="services" class="services">
  <div class="container">
    <div class="section-title" data-aos="fade-up">
      <h2>Dashboard</h2>
    </div>
    <div class="row">
      <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FStudentPerformance_Dashboard&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model00000188051605fc_000000000" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
      </div>
    </div>
  </section><!-- End Services Section -->
<!-- ===== Portfolio Section ===== -->
<section id="portfolio" class="portfolio">
  <div class="container">
    <div class="section-title" data-aos="fade-up">
      <h2>Story</h2>
    </div>
    <div>
      <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FStudent%2BPerformance%2BStory&closeWindowOnLastView=true&ui_appbar=false&

```

```

ui_navbar=false&amp;shareMode=embedded&amp;action=view&amp;sceneId=model000001880
85dad69_00000001&amp;sceneTime=5000" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
</div>
</div>
</section><!-- End Portfolio Section -->
<!-- ===== Team Section ===== -->
<section id="team" class="team section-bg">
<div class="container">
<div class="section-title" data-aos="fade-up">
<h2>Report</h2>
</div>
<div class="row">
<iframe
src="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FStudents%2BPerformance%2
BReport&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&am
p;shareMode=embedded&amp;action=edit" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
</div>
</div>
</section><!-- End Team Section -->
<!-- ===== Contact Section ===== -->
<section id="contact" class="contact">
<div class="container">
<div class="section-title" data-aos="fade-up">
<h2>Contact Us</h2>
</div>
<div class="row">
<div class="col-lg-4 col-md-6" data-aos="fade-up" data-aos-delay="100">
<div class="contact-about">
<h3>SAMOSA TEAM</h3>
<p>We here working on a data analytics project for analysing the student performance
based on their academics activities.</p>
<div class="social-links">
<a href="#" class="twitter"><i class="bi bi-twitter"></i></a>
<a href="#" class="facebook"><i class="bi bi-facebook"></i></a>
<a href="#" class="instagram"><i class="bi bi-instagram"></i></a>
<a href="#" class="linkedin"><i class="bi bi-linkedin"></i></a>
</div>
</div>
</div>
<div class="col-lg-3 col-md-6 mt-4 mt-md-0" data-aos="fade-up" data-aos-delay="200">
<div class="info">
<div>
<i class="ri-map-pin-line"></i>
<p>Knowledge Institute Of Technology<br>Salem, TN-637504</p>

```

```

</div>
<div>
  <i class="ri-mail-send-line"></i>
  <p>2k20cse191@kiot.ac.in</p>
</div>
<div>
  <i class="ri-phone-line"></i>
  <p>+91 9344907558</p>
</div>
</div>
</div>
<div class="col-lg-5 col-md-12" data-aos="fade-up" data-aos-delay="300">
  <form action="forms/contact.php" method="post" role="form" class="php-email-form">
    <div class="form-group">
      <input type="text" name="name" class="form-control" id="name" placeholder="Your
Name" required>
    </div>
    <div class="form-group">
      <input type="email" class="form-control" name="email" id="email" placeholder="Your
Email" required>
    </div>
    <div class="form-group">
      <input type="text" class="form-control" name="subject" id="subject"
placeholder="Subject" required>
    </div>
    <div class="form-group">
      <textarea class="form-control" name="message" rows="5" placeholder="Message"
required></textarea>
    </div>
    <div class="my-3">
      <div class="loading">Loading</div>
      <div class="error-message"></div>
      <div class="sent-message">Your message has been sent. Thank you!</div>
    </div>
    <div class="text-center"><button type="submit">Send Message</button></div>
  </form>
</div>
</div>
</div>
</section><!-- End Contact Section -->
</main><!-- End #main -->
<!-- ===== Footer ===== -->
<footer id="footer">
  <div class="container">
    <div class="row d-flex align-items-center">
      <div class="col-lg-6 text-left text-center">

```

```

<div class="copyright">
  &copy; Copyright <strong>SAMOSA TEAM</strong>. All Rights Reserved
</div>
<div class="col-lg-6">
  <nav class="footer-links text-lg-right text-center pt-2 pt-lg-0">
    <a href="#intro" class="scrollto">Home</a>
    <a href="#about" class="scrollto">About</a>
    <a href="#">Privacy Policy</a>
    <a href="#">Terms of Use</a>
  </nav>
</div>
</div>
</div>
</footer><!-- End Footer -->
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-
arrow-up-short"></i></a>
<!-- Vendor JS Files -->
<script src="assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>
<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>
</body>
</html>

```

CHAPTER-7

RESULTS

7.1 PERFORMANCE METRICS

```
from flask import Flask, render_template

app = Flask(__name__, static_url_path='/static')

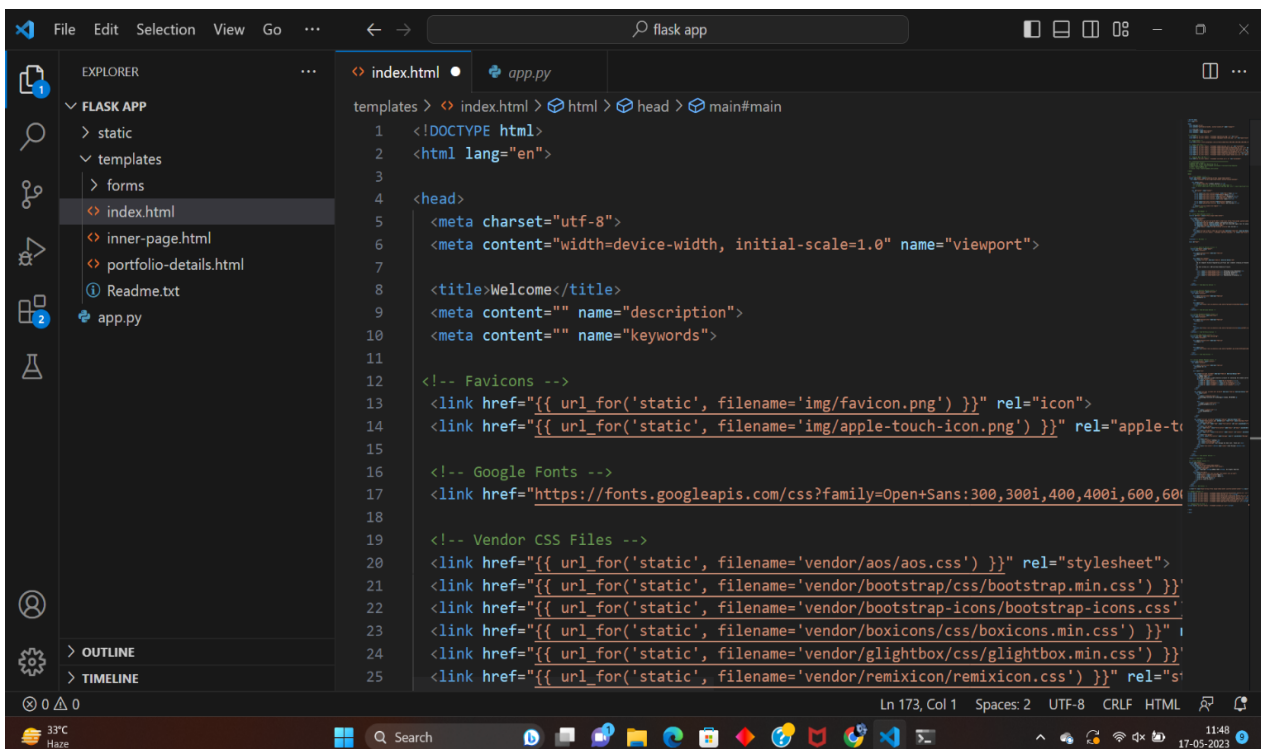
@app.route("/")

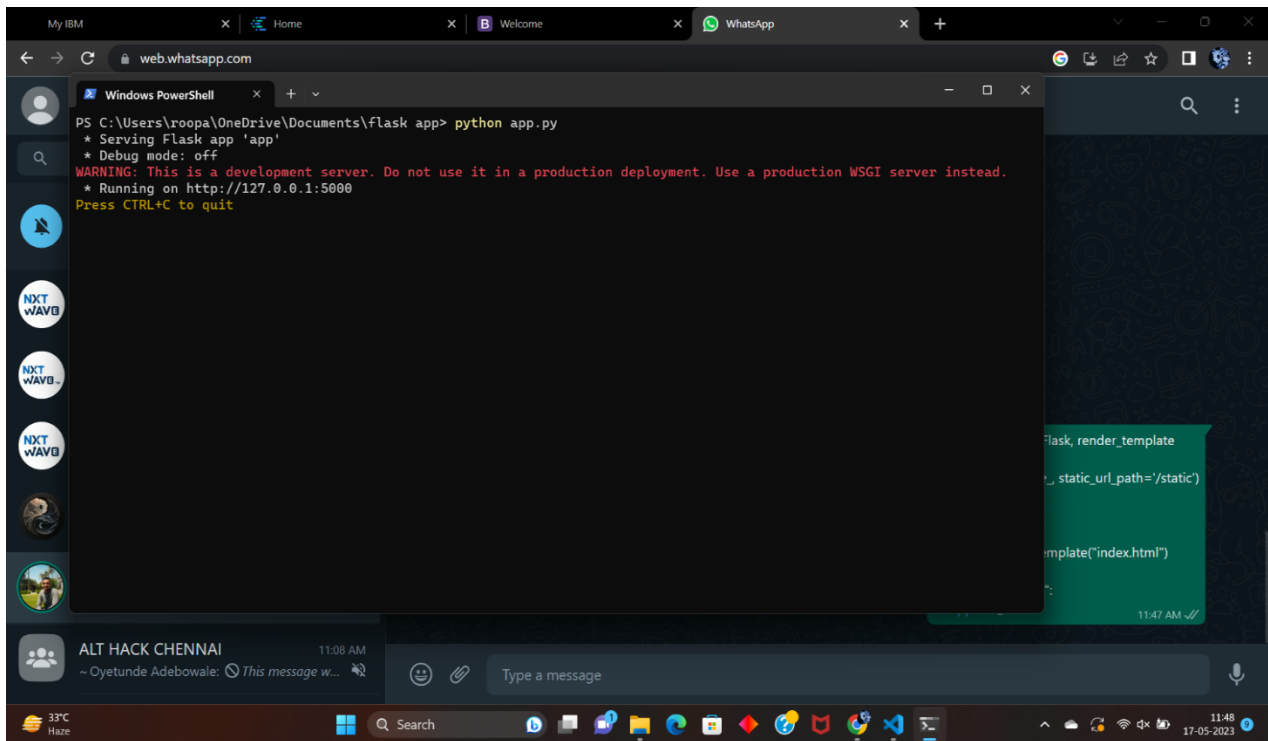
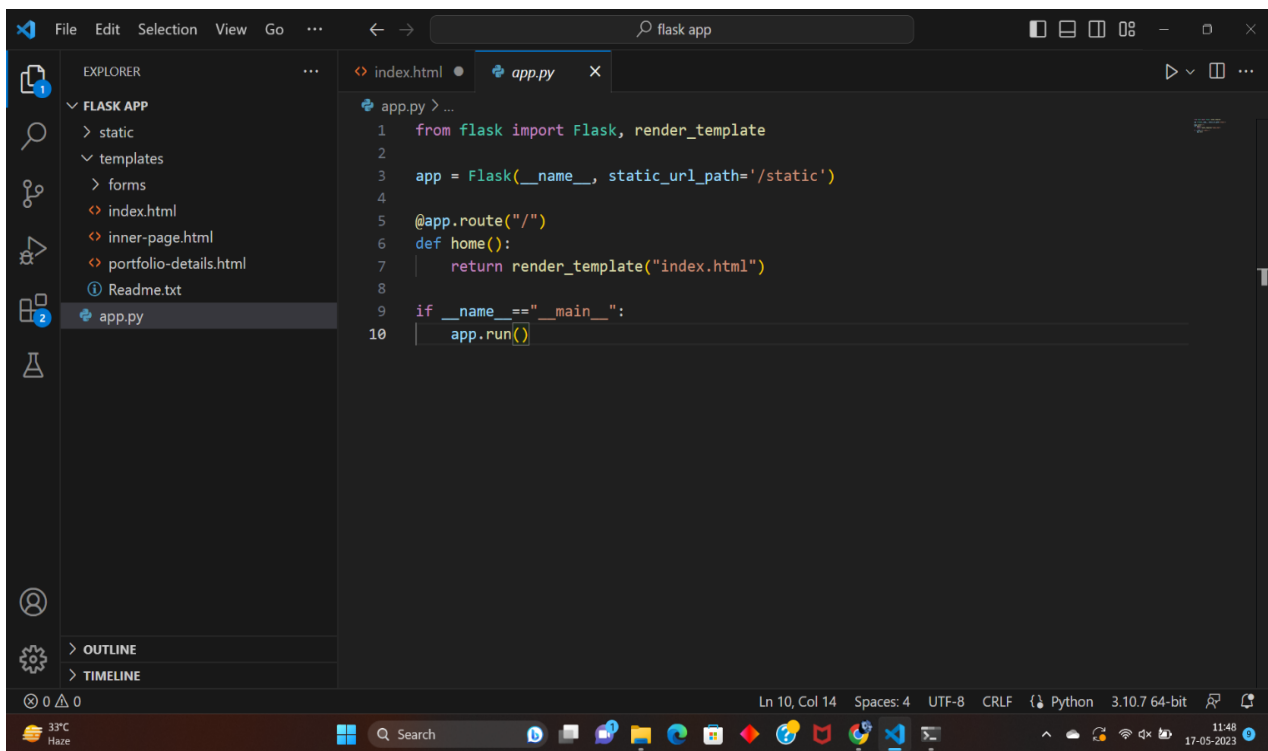
def home():

    return render_template("index.html")

if __name__=="__main__":

    app.run()
```





CHAPTER-8

ADVANTAGES & DISADVANTAGES

Advantages:

- Comprehensive data analysis from multiple sources (grades, test scores, attendance, surveys).
- Tailored instruction and intervention recommendations based on individual student analysis.
- Data-driven decision-making for curriculum design, instructional strategies, and resource allocation.
- Early identification of struggling students for timely intervention.
- Efficient resource allocation by targeting areas or students in need of support.

Disadvantages:

- Dependence on data quality and accuracy.
- Privacy and security concerns with student data.
- Potential overemphasis on quantitative data, overlooking qualitative factors.
- Resource and infrastructure requirements for implementation.
- Challenges in adoption and training for educators and administrators.

CHAPTER-9

CONCLUSION

In conclusion, the "Student Performance Analysis and Improvement Recommendations" project is a data-driven approach to improving academic performance that uses IBM Cognos to collect and analyze data from various sources, including grades, test scores attendance records, and surveys. The project provides tailored instruction and intervention recommendations to improve student performance by identifying areas of strength and weakness and factors contributing to success or challenges.

The expected outcomes include insights into student performance, identification of areas for improvement, and recommendations for enhancing academic performance. The project underscores the importance of student performance analysis as a critical component of improving academic outcomes, and IBM Cognos as a powerful tool to achieve these goals. Ultimately, this project demonstrates the power of data-driven analysis to drive improvements in academic performance.

CHAPTER-10

FUTURE SCOPE

Future enhancements to student performance analysis could include:

- **Personalized Learning:** Tailoring recommendations and interventions based on individual needs and learning styles.
- **Predictive Analytics:** Identifying early indicators of academic challenges or success to provide proactive support.
- **Emotional Intelligence Monitoring:** Assessing emotional states, stress levels, and engagement during learning activities to optimize motivation and engagement.
- **Integration of Multiple Data Sources:** Combining diverse data sets, such as academic records, test scores, attendance, and extracurricular activities, for a comprehensive understanding of student progress.

These enhancements leverage advanced algorithms, big data, and emerging technologies to provide more accurate and insightful assessments of student performance.

CHAPTER-11

APPENDIX

11.1 SOURCE CODE

Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">
  <title>Welcome</title>
  <meta content="" name="description">
  <meta content="" name="keywords">
  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">
  <!-- Google Fonts -->
  <link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Raleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">
  <!-- Vendor CSS Files -->
  <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
  <!-- Template Main CSS File -->
  <link href="assets/css/style.css" rel="stylesheet">
  <!-- =====
  * Template Name: Vesperr
  * Updated: Mar 10 2023 with Bootstrap v5.2.3
  * Template URL: https://bootstrapmade.com/vesperr-free-bootstrap-template/
  * Author: BootstrapMade.com
  * License: https://bootstrapmade.com/license/
  ===== -->
</head>
<body>
```

```

<!-- ===== Header ===== -->
<header id="header" class="fixed-top d-flex align-items-center">
  <div class="container d-flex align-items-center justify-content-between">
    <div class="logo">
      <h1><a href="index.html">student analysis</a></h1>
      <!-- Uncomment below if you prefer to use an image logo -->
      <!-- <a href="index.html"></a>-->
    </div>
    <nav id="navbar" class="navbar">
      <ul>
        <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
        <li><a class="nav-link scrollto" href="#about">About</a></li>
        <li><a class="nav-link scrollto" href="#services">Dashboard</a></li>
        <li><a class="nav-link scrollto " href="#portfolio">Story</a></li>
        <li><a class="nav-link scrollto" href="#team">Report</a></li>
        <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
        <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
      </ul>
      <i class="bi bi-list mobile-nav-toggle"></i>
    </nav><!-- .navbar -->
  </div>
</header><!-- End Header -->
<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center">
  <div class="container">
    <div class="row">
      <div class="col-lg-6 pt-5 pt-lg-0 order-2 order-lg-1 d-flex flex-column justify-content-center">
        <h1 data-aos="fade-up">Student academic performance analysis</h1>
        <h2 data-aos="fade-up" data-aos-delay="400">Here we using IBM cognos tool for analysing
student's performance</h2>
        <div data-aos="fade-up" data-aos-delay="800">
          <a href="#about" class="btn-get-started scrollto">Get Started</a>
        </div>
      </div>
      <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="fade-left" data-aos-delay="200">
        
      </div>
    </div>
  </div>
</section><!-- End Hero -->
<main id="main">
  <!-- ===== About Us Section ===== -->
  <section id="about" class="about">
    <div class="container">
      <div class="section-title" data-aos="fade-up">
        <h2>About Us</h2>

```

```

</div>
<div class="row content">
  <div class="col-lg-6" data-aos="fade-up" data-aos-delay="150">
    <p>
      We are Computer Science Engineering pre-final year students studying at Knowledge
      Institute of Technology.
    </p>
    <p>
      We here working on a IBM and Naan Mudhalvan Project.
    </p>
    <ul>
      <li><i class="ri-check-double-line"></i> Venkatagiriraju Udayakumar</li>
      <li><i class="ri-check-double-line"></i> Suryapraba Venkatesan</li>
      <li><i class="ri-check-double-line"></i> Sathyaruba M</li>
      <li><i class="ri-check-double-line"></i> Tamizharasan Krishnan</li>
    </ul>
  </div>
</div>
</div>
</section><!-- End About Us Section -->
<!-- ===== Services Section ===== -->
<section id="services" class="services">
  <div class="container">
    <div class="section-title" data-aos="fade-up">
      <h2>Dashboard</h2>
    </div>
    <div class="row">
      <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FStudentPerformance_Dashboard&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model00000188051605fc_00000000" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
    </div>
  </div>
</section><!-- End Services Section -->
<!-- ===== Portfolio Section ===== -->
<section id="portfolio" class="portfolio">
  <div class="container">
    <div class="section-title" data-aos="fade-up">
      <h2>Story</h2>
    </div>
    <div >
      <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FStudent%2BPerformance%2BStory&closeWindowOnLastView=true&ui_appbar=false&ui_

```

```

navbar=false&amp;shareMode=embedded&amp;action=view&amp;sceneId=model000000188085da
d69_00000001&amp;sceneTime=5000" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
    </div>
</div>
</section><!-- End Portfolio Section -->
<!-- ===== Team Section ===== -->
<section id="team" class="team section-bg">
    <div class="container">
        <div class="section-title" data-aos="fade-up">
            <h2>Report</h2>
        </div>
        <div class="row">
            <iframe
src="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FStudents%2BPerformance%2B
Report&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;s
hareMode=embedded&amp;action=edit" width="1200" height="800" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
            </div>
        </div>
</section><!-- End Team Section -->
<!-- ===== Contact Section ===== -->
<section id="contact" class="contact">
    <div class="container">
        <div class="section-title" data-aos="fade-up">
            <h2>Contact Us</h2>
        </div>
        <div class="row">
            <div class="col-lg-4 col-md-6" data-aos="fade-up" data-aos-delay="100">
                <div class="contact-about">
                    <h3>SAMOSA TEAM</h3>
                    <p>We here working on a data analytics project for analysing the student performance
based on their academics activities.</p>
                <div class="social-links">
                    <a href="#" class="twitter"><i class="bi bi-twitter"></i></a>
                    <a href="#" class="facebook"><i class="bi bi-facebook"></i></a>
                    <a href="#" class="instagram"><i class="bi bi-instagram"></i></a>
                    <a href="#" class="linkedin"><i class="bi bi-linkedin"></i></a>
                </div>
            </div>
            </div>
        </div>
        <div class="col-lg-3 col-md-6 mt-4 mt-md-0" data-aos="fade-up" data-aos-delay="200">
            <div class="info">
                <div>
                    <i class="ri-map-pin-line"></i>
                    <p>Knowledge Institute Of Technology<br>Salem, TN-637504</p>

```

```

</div>
<div>
  <i class="ri-mail-send-line"></i>
  <p>2k20cse191@kiot.ac.in</p>
</div>
<div>
  <i class="ri-phone-line"></i>
  <p>+91 9344907558</p>
</div>
</div>
</div>
<div class="col-lg-5 col-md-12" data-aos="fade-up" data-aos-delay="300">
  <form action="forms/contact.php" method="post" role="form" class="php-email-form">
    <div class="form-group">
      <input type="text" name="name" class="form-control" id="name" placeholder="Your
Name" required>
    </div>
    <div class="form-group">
      <input type="email" class="form-control" name="email" id="email" placeholder="Your
Email" required>
    </div>
    <div class="form-group">
      <input type="text" class="form-control" name="subject" id="subject"
placeholder="Subject" required>
    </div>
    <div class="form-group">
      <textarea class="form-control" name="message" rows="5" placeholder="Message"
required></textarea>
    </div>
    <div class="my-3">
      <div class="loading">Loading</div>
      <div class="error-message"></div>
      <div class="sent-message">Your message has been sent. Thank you!</div>
    </div>
    <div class="text-center"><button type="submit">Send Message</button></div>
  </form>
</div>
</div>
</div>
</section><!-- End Contact Section -->
</main><!-- End #main -->
<!-- ===== Footer ===== -->
<footer id="footer">
  <div class="container">
    <div class="row d-flex align-items-center">
      <div class="col-lg-6 text-lg-left text-center">

```



```

<div class="copyright">
  &copy; Copyright <strong>SAMOSA TEAM</strong>. All Rights Reserved
</div>
<div class="col-lg-6">
  <nav class="footer-links text-lg-right text-center pt-2 pt-lg-0">
    <a href="#intro" class="scrollto">Home</a>
    <a href="#about" class="scrollto">About</a>
    <a href="#">Privacy Policy</a>
    <a href="#">Terms of Use</a>
  </nav>
</div>
</div>
</div>
</footer><!-- End Footer -->
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-
arrow-up-short"></i></a>
<!-- Vendor JS Files -->
<script src="assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>
<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>
</body>
</html>

```

App.py

```

from flask import Flask, render_template
app = Flask(__name__, static_url_path='/static')
@app.route("/")
def home():
    return render_template("index.html")
if __name__=="main_":
    app.run()

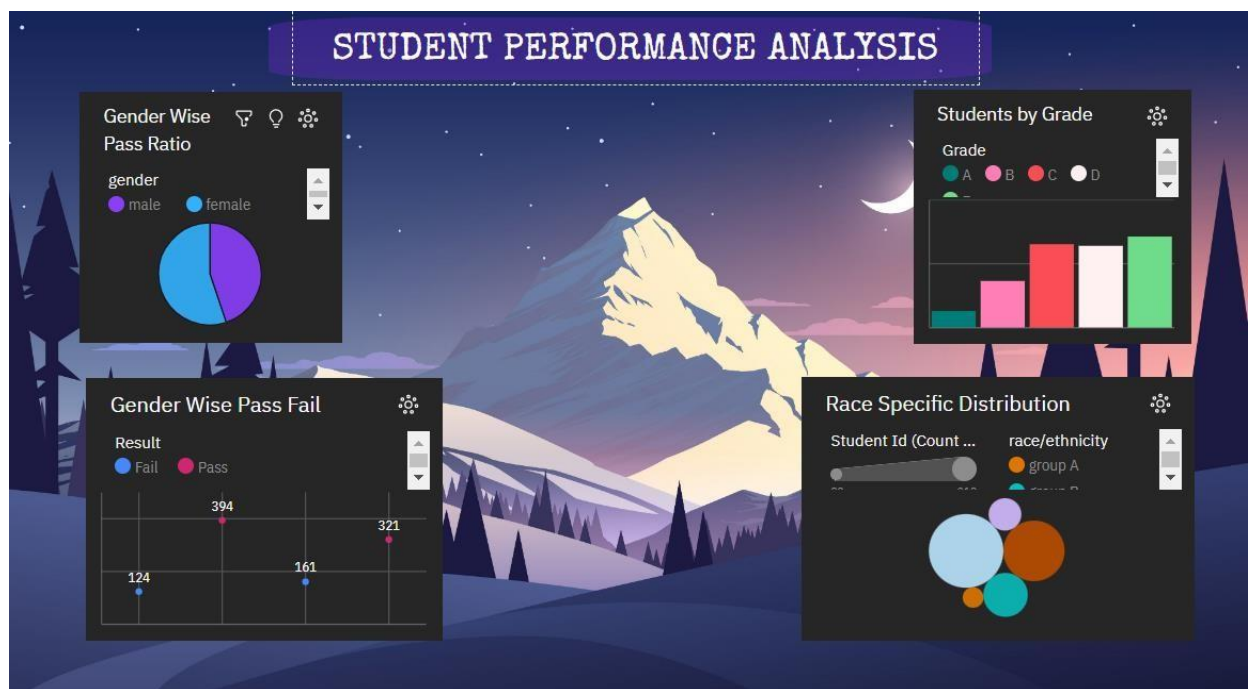
```

11.2 SCREEN SHOTS:

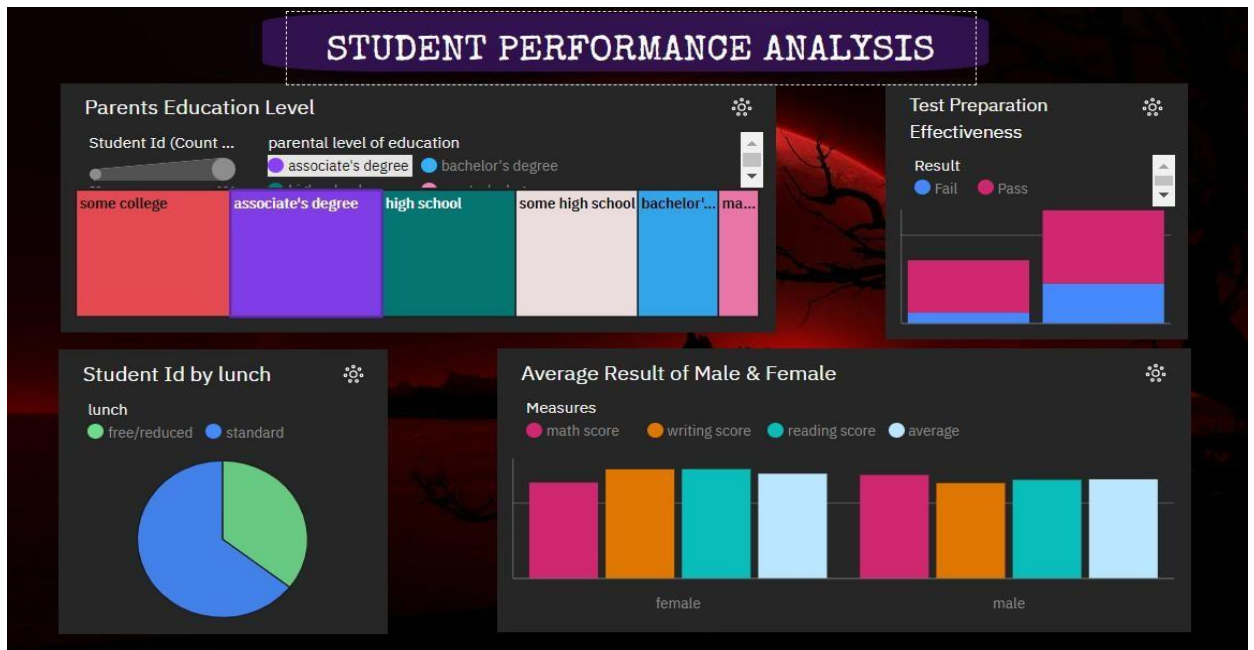
Dashboard:

Dashboards are useful across different industries and verticals because they're highly customizable. They can include data of all sorts with varying date ranges to help you understand: what happened, why it happened, what may happen, and what action you should take. And since dashboards use visualizations like tables, graphs, and charts, others who aren't as close to the data can quickly and easily understand the story it tells or the insights it reveals.

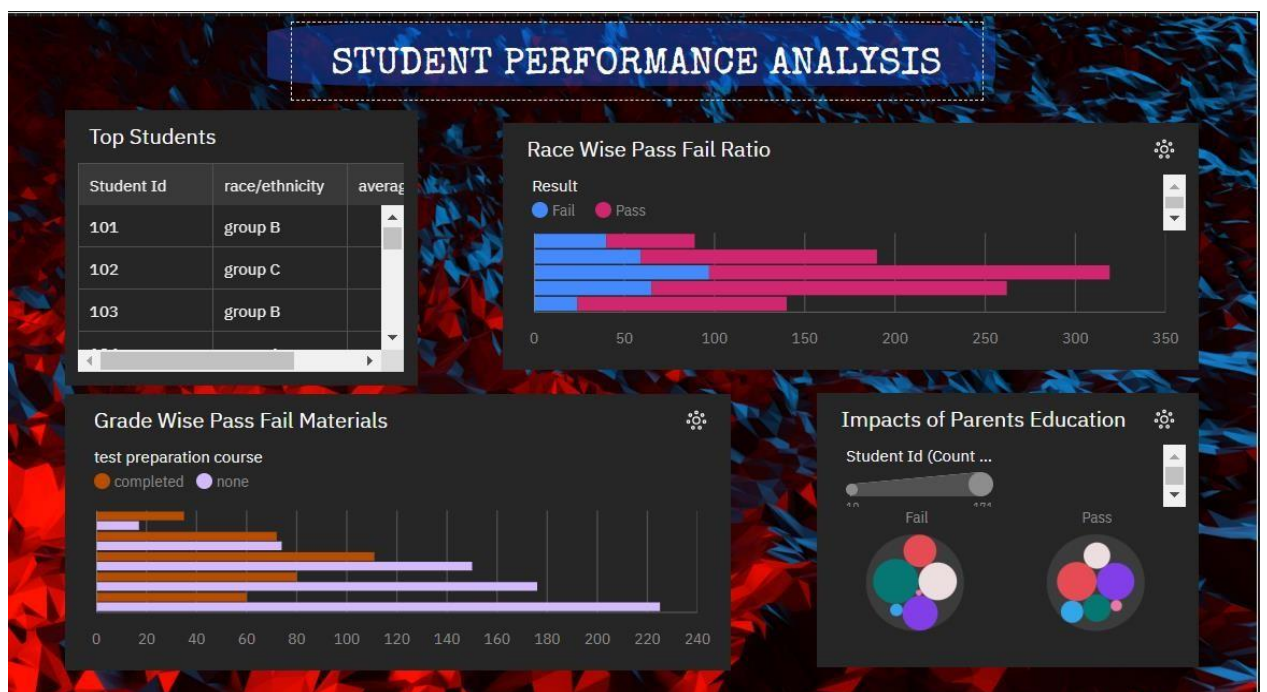
Tab 1:



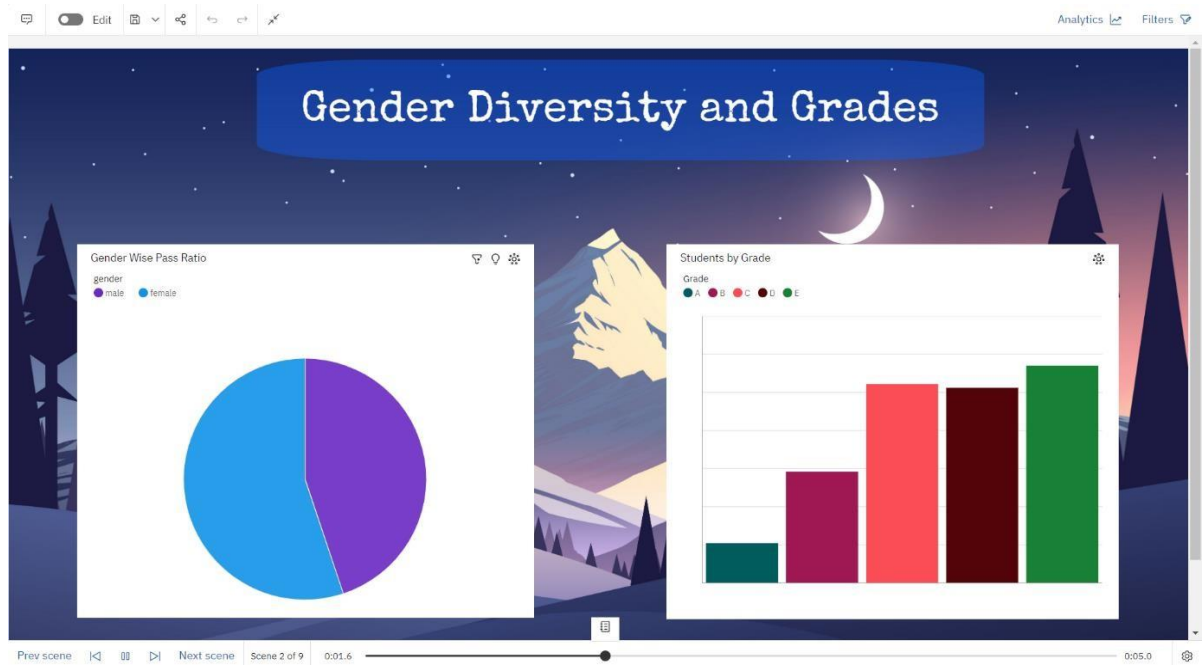
Tab 2:

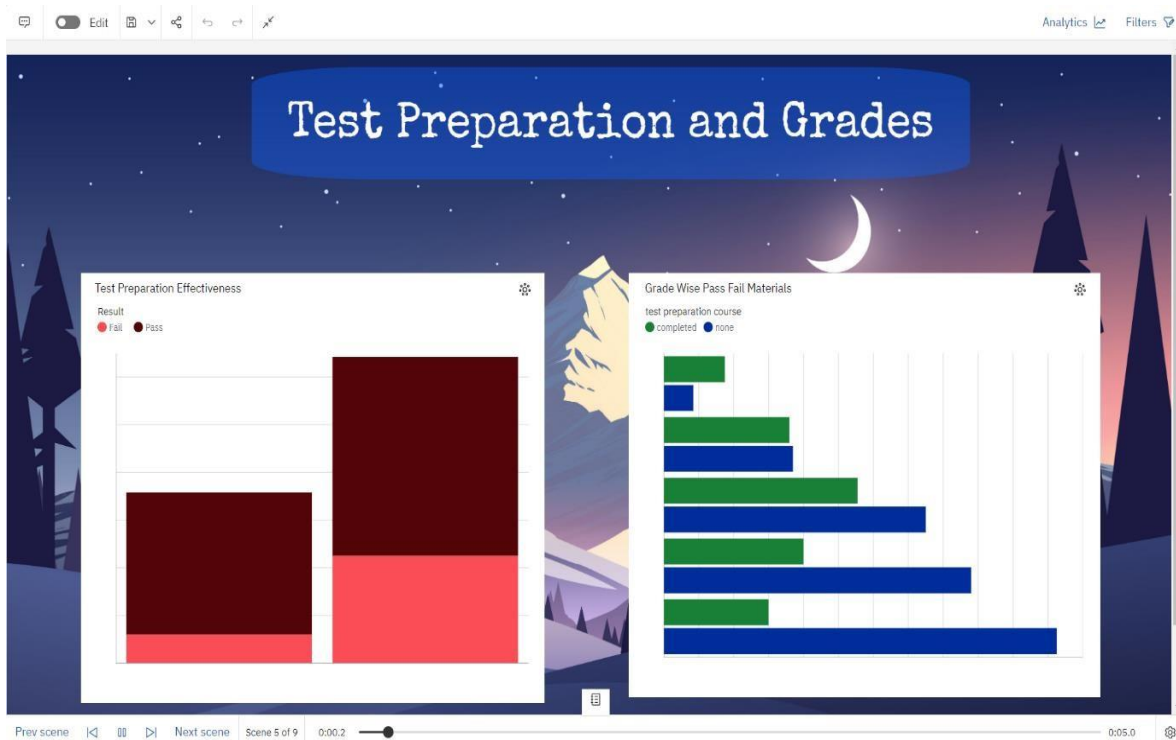
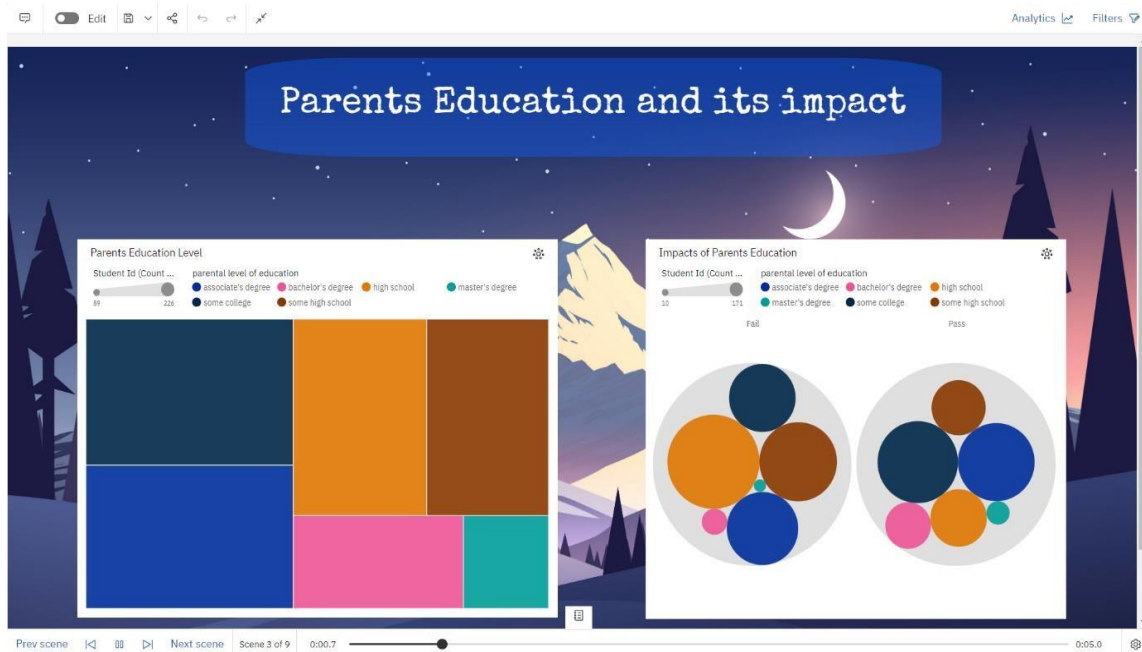


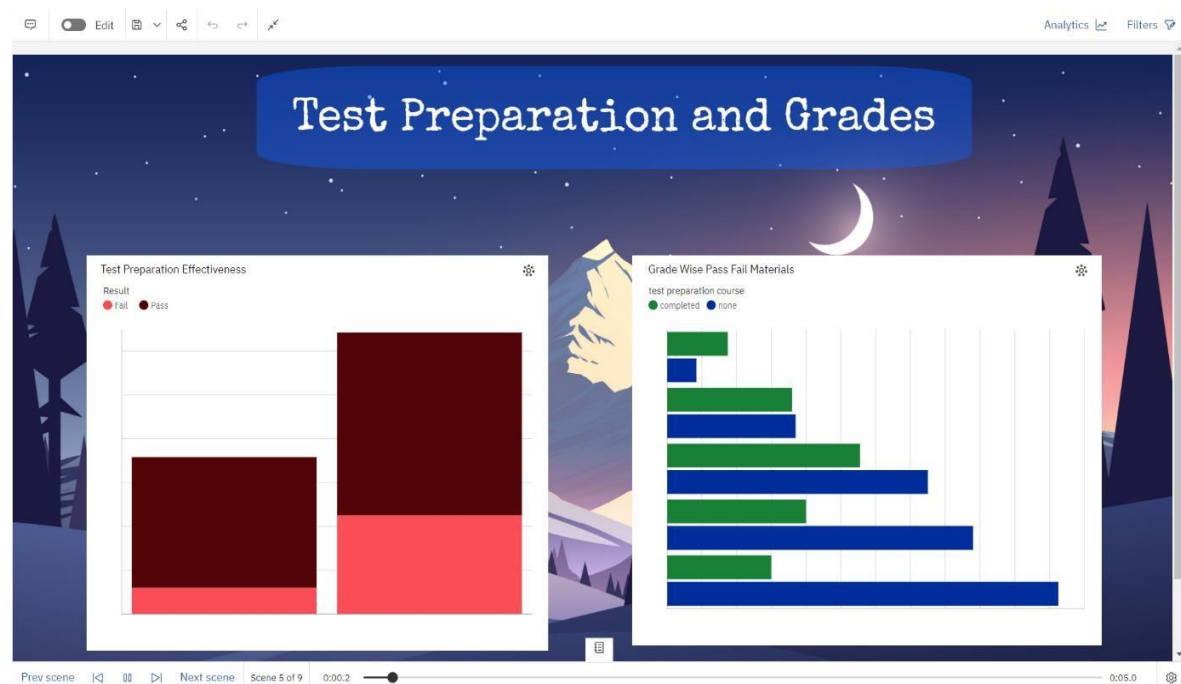
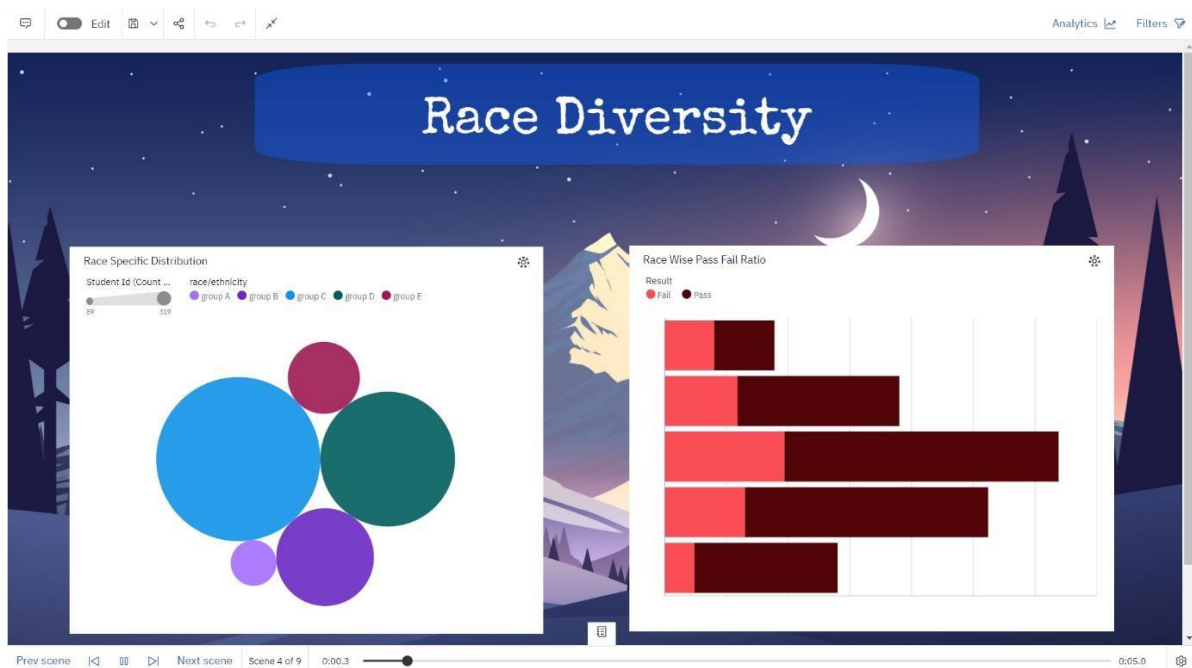
Tab 3:

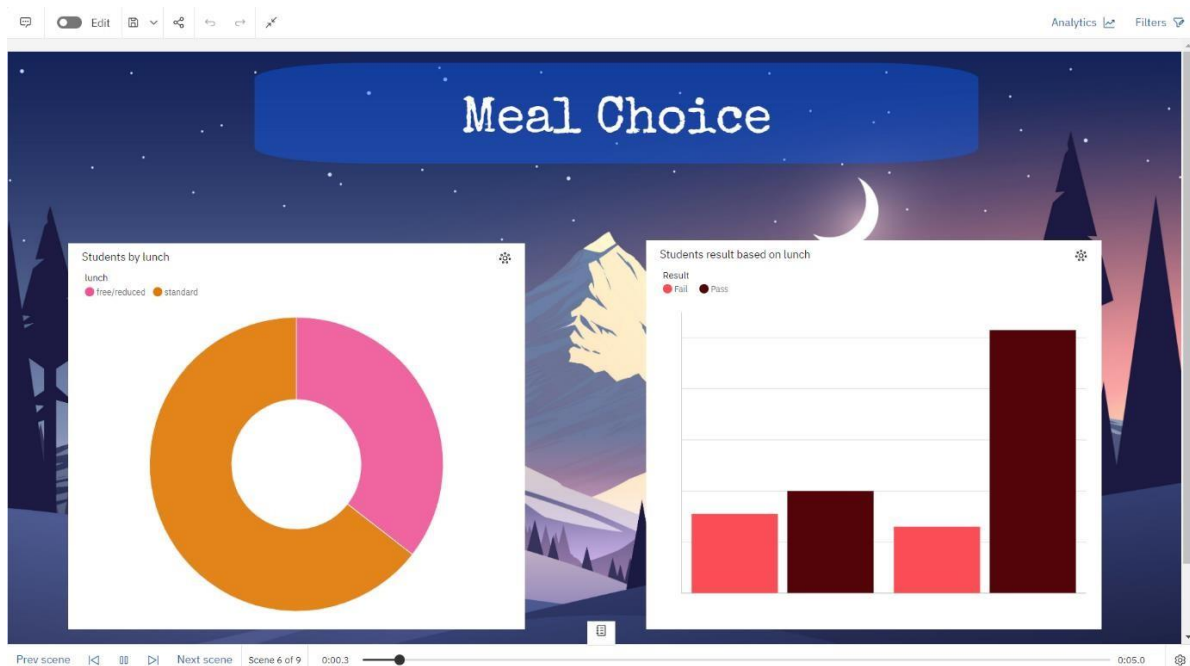


Story:







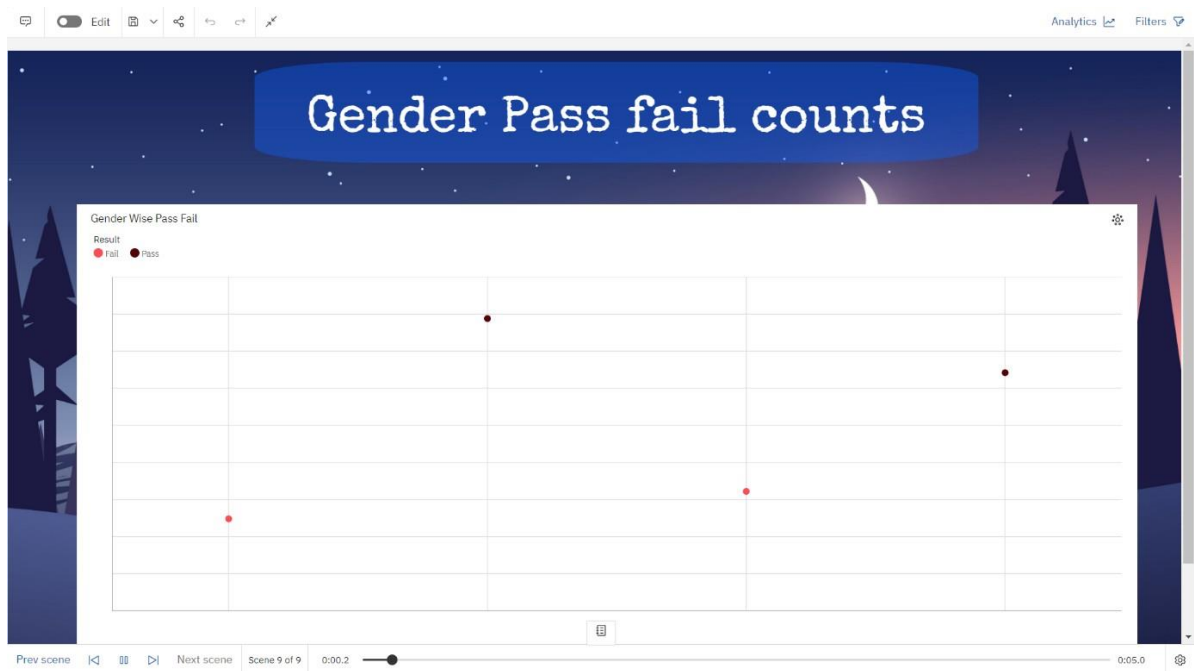
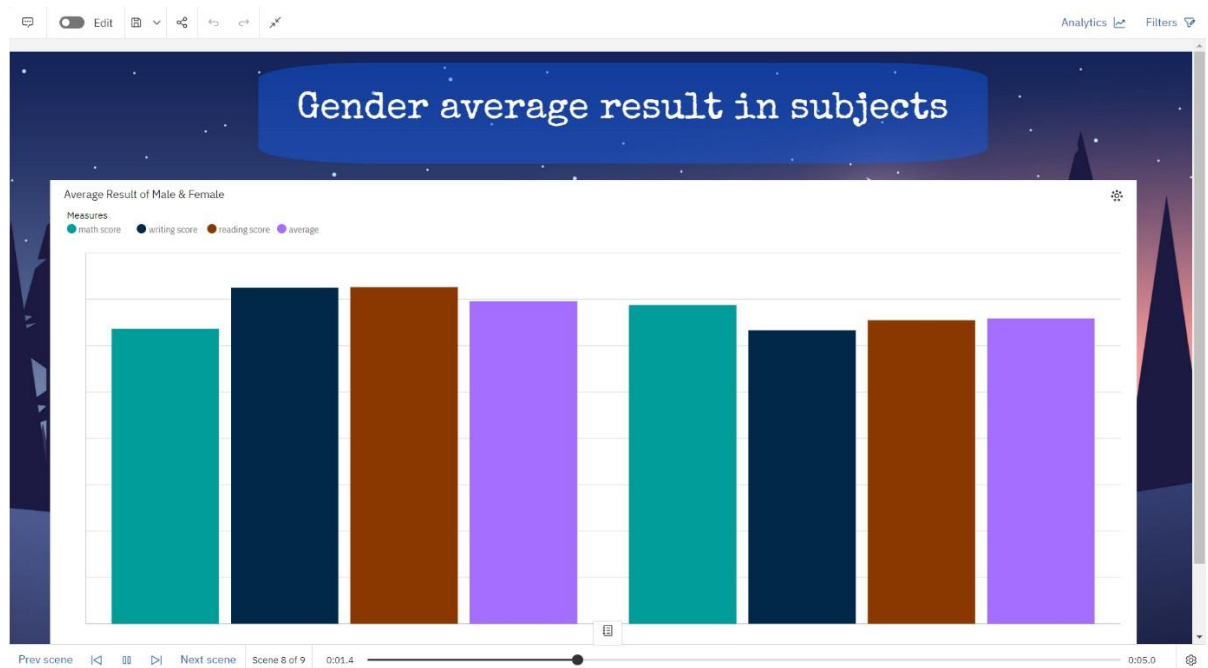


Top Students and Ranks

Top Students

Student Id	race/ethnicity	average
101	group B	1.00
102	group C	1.00
103	group B	1.00
104	group A	1.00
105	group C	1.00
106	group B	1.00
107	group B	1.00
108	group B	1.00
109	group D	1.00
110	group B	1.00
111	group C	1.00
112	group D	1.00
113	group B	1.00
114	group A	1.00
115	group A	1.00
116	group C	1.00

Prev scene | Scene 7 of 9 | 0:00.3 | 0:05.0



Report:

Gender Distribution	Gender Wise Result
Average score of female and male is 51.4 % and 48.6 % respectively. Literally, female students has more average percentage than male students.	Equally male and female students has approximately same pass and fail ratio. Female and male has 60% passing percentage combined together.
Students By Grade	Race wise result
average is unusually high when Grade is A. The female has average percentage of 94.65 for grade A & male has average percentage of 93.81 for grade A. Grade strongly affects average (88%).	group C (31.9 %) and group D (26.2 %) are the most frequently occurring categories of race/ethnicity with a combined count of 581 items with Student Id values (58.1 % of the total). Race/ethnicity group E has highest average percentage of 100.
Impact of Parents Education	Effect of test preparation
female gender has the highest Students at 518, out of which Pass contributed the most at 394. Parents who are completed Bachelor's degree, associate degree and some college degree has the highest pass ratio of their children.	none is the most frequently occurring category of test preparation course with a count of 642 items with Student Id values (64.2 % of the total). They have the less passing ratio.
Result based on meal choice	Gender Performance in subjects
standard is the most frequently occurring category of lunch with a count of 645 items with Student Id values (64.5 % of the total). Literally standard meal having students has shown twice passing result, as as the free and reduced meal.	male has the highest average math score due to group E race/ethnicity. female is the most frequently occurring category of gender with a count of 518 items with average values (51.8 % of the total).

All the performance testing are carried for the student performance analytics.

GITHUB & PROJECT VIDEO DEMO LINK

GitHub - <https://github.com/naanmudhalvan-SI/PBL-NT-GP--2845-1680631303/tree/main>

Demo link - <https://drive.google.com/file/d/1B1MMKipWv59KT0fQZeYQ1C1XPv2uZeX5/view?usp=sharing>

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