Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	20 October 2023
Team ID	NM2023TMID02554
Project Name	Project - Unleashing the Potential of the Youth: A Student Performance Analysis.

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2
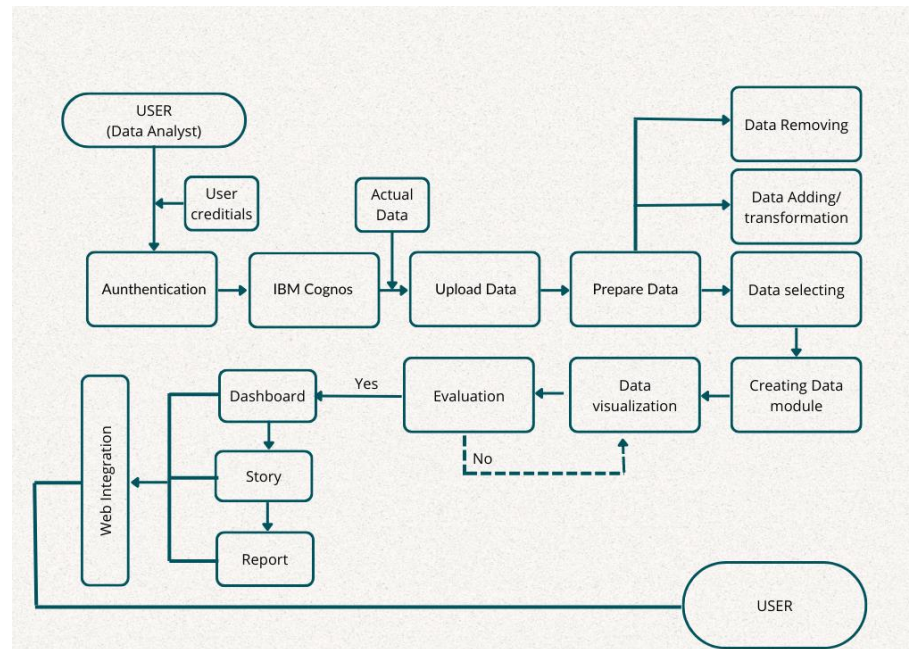
Table-1: Components & Technologies:

S. No	Component	Description	Technology
1.	Student Information System, Surveys, Observations, social media.	Collecting relevant data is the first step in a student analysis project. This data may include student demographics, attendance records, grades, test scores, course selection, extracurricular activities, and other related information.	Data Collection
2.	Tools like Excel or Google Sheets to clean and transform the data.	Once the data is collected, it must be cleaned and organized to remove any errors, duplicates, or inconsistencies.	Data Cleaning
3.	It can be analysed using various data analytics tools such as R, Python, or Excel.	Data analysis techniques may include descriptive statistics, regression analysis, clustering, or machine learning algorithms.	Data Analysis(software)
4.	Data visualization tools such as Tableau, Power BI, or Excel.	Used to create visualizations that help to communicate the insights gained from the data analysis. Visualizations may include graphs, charts, dashboards, or maps.	Data visualization
5.	Web-based collaboration tools like Slack, Microsoft Teams, or Google Meet can be used to communicate and share information in real-time, regardless of location.	This web integration is used in collaboration among team members working on the student analysis project.	Web integration

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Open source	Using open-source tools and technologies provides a cost-effective and flexible solution for student performance analysis projects, and they are often customizable to meet the specific needs of the project. Additionally, open-source tools have a large and active user community, which provides access to support, resources, and community-driven development.	R and Python
2.	Security Implementations	Encrypting, Authentication, Backup and recovery tools.	GnuPG and VeraCrypt, Bacula and Amanda
3.	Data collection	SIS platforms are commonly used by educational institutions to manage student data. SIS data can be used to track student demographics, enrolment, attendance, grades, and other academic records.	SIS
4.	Cloud computing platforms	Cloud computing platforms allow analysts to store and analyse large volumes of social media data, scalable storage and can be used to analyse data in real-time.	AWS, Azure, and Google Cloud
5.	Performance	The application should be designed to handle a high volume of requests from multiple users simultaneously. The front-end of the application should be optimized for fast rendering and efficient use of network resources.	Load balancers and horizontal scaling