iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** IV **Month of publication:** April 2023

DOI: https://doi.org/10.22214/ijraset.2023.50756

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue IV Apr 2023- Available at www.ijraset.com

REANALYSIS SYSTEM - An Exam's Result Analysis System

Vikram Rajendra Samak[1], Rushikesh Ashok Borate[2], Prof. Roshani Usman Atar[3]
[1, 2, 3]*Department of Computer Science, Yashavantrao Chavan Institute of Science, Satara (Autonomous)*

Abstract: ***The REANALYSIS SYSTEM is an innovative tool that addresses the challenges associated with manual analysis of exam results. This desktop-based application is designed to automate the analysis process, making it more efficient and less prone to errors. With a modern user interface and Telegram bot integration, the REANALYSIS SYSTEM is user-friendly and easy to use. One of the key advantages of the REANALYSIS SYSTEM is that it can complete the analysis process in just 20-30 seconds for a class of 100 students. This is a significant improvement over the 2-3 hours it would take to do the same task manually. This feature makes it a time-saving tool that allows teachers to focus on other important tasks. The REANALYSIS SYSTEM is also designed to reduce the occurrence of errors that commonly arise when performing mathematical calculations and statistical analysis manually. This is especially important in large classes, where the number of calculations involved can be overwhelming. The automation process of the system ensures that every calculation is accurate and error-free. Another notable feature of the REANALYSIS SYSTEM is its ability to generate password-protected reports. This is particularly useful when it comes to maintaining the confidentiality of exam result's report. Teachers can rest assured that only authorized individuals will have access to the reports. The REANALYSIS SYSTEM is an efficient and reliable tool that simplifies the analysis process of exam results. Its modern user interface, Telegram bot integration, and password-protected reports make it a user-friendly and secure tool. It saves time, reduces errors, and ensures accuracy, making it an essential tool for teachers and educators.***
Keywords: Result Analysis, Desktop Based Application, Automation, Password-protected Reports, Telegram Bot.

I. INTRODUCTION

In educational organizations, analysing exam results can be a challenging task for teachers as it involves a lot of calculations and statistical analysis. It is a time-consuming process and also prone to human errors. To address this problem, we developed the REANALYSIS SYSTEM, a software solution that automates the entire exam's result analysis process. This system consists a modern and responsive user interface, through which users can upload exam's results in Excel format with essential inputs like academic year, semester, exam type, and elective subject. The system uses that information to generate reports in PDF and Excel formats, which are easily downloadable and also sends the same report to the user via a telegram bot. The report generated by this system consists of subject-wise analysis, as well as analysis in RQMS, ISO, and College formats with its own bar graph. The generated report is also password-protected, as it contains confidential data. This software is specifically designed for teachers to make the result analysis process easy and less time-consuming. This software is built using technologies like HTML, CSS, and JS for the front-end and Python for the back-end, with libraries such as Chart.js for generating charts of analysed data and pandas for data analysis. The "REANALYSIS SYSTEM" is developed as desktop-based software with help of Flask and flaskwebgui library and also, we used Firebase services for user's authentication and Firebase's Cloud Firestore database to store user's information. The implementation of this software will significantly reduce the time requirement of the entire procedure of analysing exam's results and minimize the chances of human error while analysing exam results.

II. LITERATURE SURVEY

Over the course of time, numerous authors have conducted studies on the result analysis systems these studies have utilized a variety of techniques and algorithms to construct analysis systems. We have referred some research papers which we found similar to our project.

1) The web-based application "Student Result Analysis System" was proposed by Ashwin Mehta, Jugal Patel, and Aditya Mewada, and built using HTML, MySQL, and JavaScript. The system utilizes a MySQL database along with PHP Excel to parse data, with users required to upload an Excel file containing student marks for analysis. Additionally, the system was designed to support multiple formats of analysis.

©IJRASET: All Rights are Reserved

2) Nakul Sharma, Sonali Dake, Riddhi Panchale, and K.S. Charumathi proposed a web-based application called the "Student Result Analysis System", which was developed using HTML, CSS, JavaScript, and PHP. The system enables users to upload student results in Excel format and view the analysis in graphical format. Additionally, the system provides a feature that allows users to download the analysed data in PDF format.

3) Dhekane Rushikesh, Dhumal Mega P, and Jadhav Rutuja Yuvraj proposed a system titled "Student Result Analysis and Predicting Difficulty Level of Subject", which utilizes the Java programming language and a classification decision tree algorithm for subject difficulty prediction. The system generates reports using a PDF file of marks provided by the university. It also includes several modules such as Admin, Teacher, and Result Generator modules.

III. EXISTING SYSTEM

Currently, there is no completely automated system available for result analysis in the RQMS, ISO, and College formats. While users can use Excel for this purpose, but it is a time-consuming process, as users have to enter formulas manually and input the calculated values into a well-formatted table. Another method is to do all calculations manually, but this method also has a major drawback as there is a high possibility of human errors, which can affect the whole result analysis process and increase the likelihood of rework. Furthermore, users have to manually encrypt or password-protect their reports to protect the confidentiality of the data. To address these issues, a software solution has been developed that automates the entire exam result analysis process.

IV. PROPOSED SYSTEM

Our proposed system consists of several modules that have been developed to address the limitations of existing systems and provide a more efficient and accurate exam result analysis.

The main modules of our system contain:

- Sign Up (For new user registration)
- License Activation
- Sign In (For the registered users)
- Exam result uploading module (Home Page)
- Subject Wise Analysis Module
- Formats Module
- Report Module

Description of each module is as below:

1) Sign Up

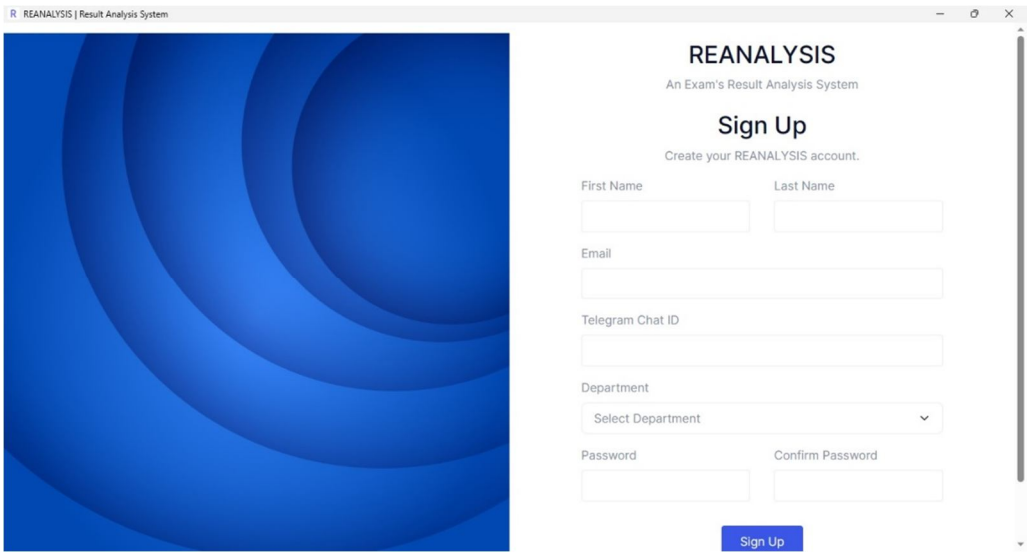


Fig. 1 Sign Up

This is the first and primary module of our proposed system. As you can see in the image (Fig. 1) above, there are input fields such as First Name, Last Name, Email, and Telegram Chat ID. This system utilizes these inputs to gather the user's information and store it securely in a cloud database after successful registration. The Telegram Chat ID is a unique number generated by Telegram for each of its users. It can be easily accessed by the Telegram bot that we have developed as part of our proposed system.
For security purposes, we have also added an email verification step in the sign-up process. After a user enters their email address during registration, a system-generated email containing a verification link is sent to their email account. To complete the signup process, users must verify their email ID by clicking on the verification link they receive in the verification email. Additionally, a unique license key is generated for each user during the signup process, and it is stored in the database along with the user's information.

2) License Activation

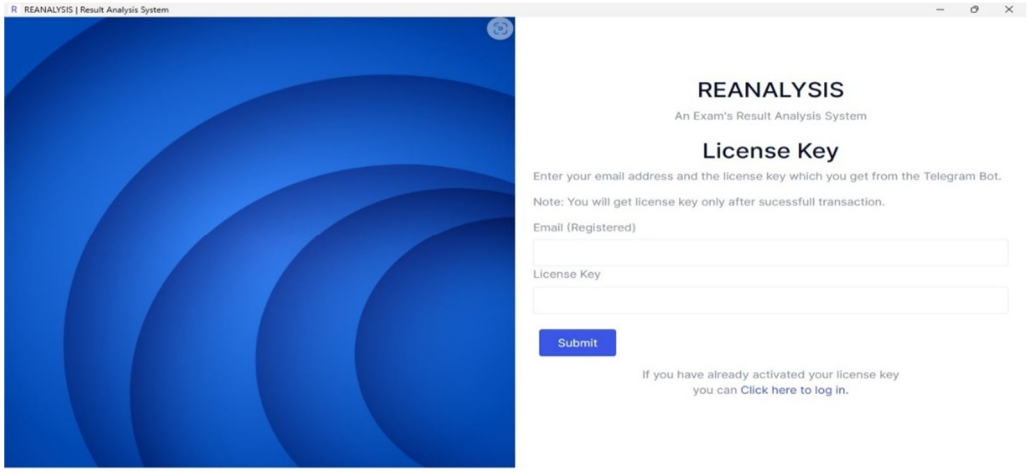


Fig. 2 Licence Activation

Since our proposed system is a paid software, we provide a license key to each user upon successful payment. Once the payment transaction is completed, the admin (in our case, the developer) of the system sends the license key to the user's Telegram account via the Telegram bot.
Next, the user is required to enter the license key received on Telegram into the specified input field (as shown in Fig. 2) to activate their license for the system. If the user enters an invalid license key, our software will notify them. License activation is mandatory for users to be able to use this software.

3) Sign In (For the registered users)

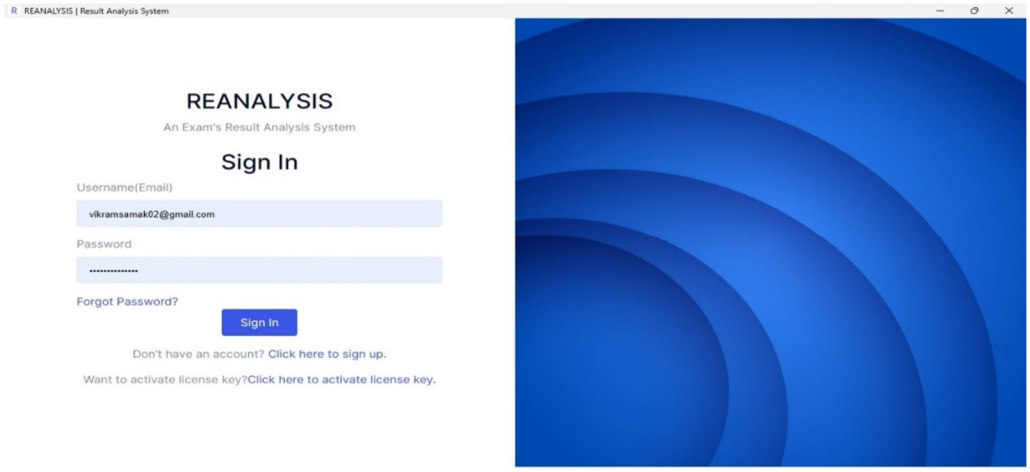


Fig. 3 Sign In (For the registered users)

This module allows registered users to log into the system. It contains two input fields: Username (Email) and Password. Users must enter their login credentials in order to access the system. In case a user tries to log in without verifying their email or enters an invalid password or invalid email, they will be notified by a system-generated notification.
During the login process, the system fetches the user's information from the database and checks the status of their license key (activated/not activated). Only if the license key is activated, the user can log in to the system. Otherwise, they must first activate their license for this software.

4) Exam result uploading module (Home Page)

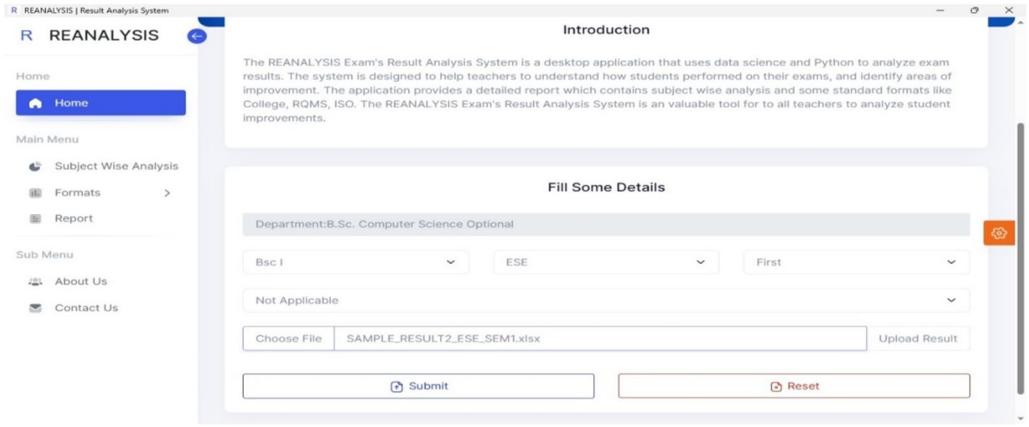


Fig. 4 Exam result uploading module (Home Page)

This module serves as the main function of the system, and users will be redirected to it after successfully logging in. Here, they are required to provide essential inputs such as Semester, Academic Year, Exam type, and Elective Subject of the result (Excel file) they intend to upload.
All of these inputs will be used during the analysis of results. If a user enters invalid data or forgets to enter any input, they will be notified by the system. Once all inputs have been uploaded, the system will take approximately 20-30 seconds to generate a well-formatted report and send it to the user's Telegram account via the Telegram bot. A notification will also be generated for the user with the message "Report Generated Successfully." To view the analysed and calculated data from the uploaded result file, the user can access other pages/modules such as Subject-wise Analysis, Formats, and Reports.

5) Subject Wise Analysis Module

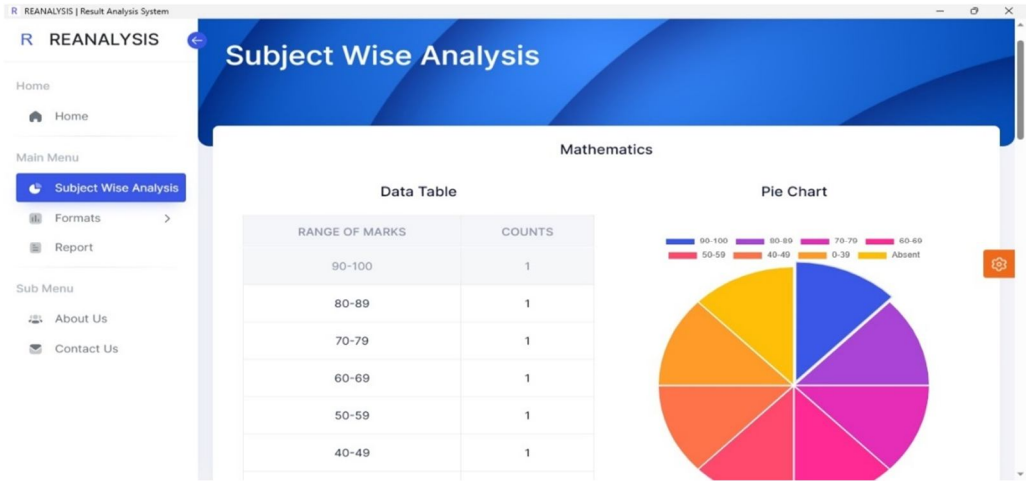


Fig. 5 Subject Wise Analysis Module

This module analyses the data of all subjects (based on the chosen year and semester) while uploading the result file, using statistical methods. To achieve this, we have utilized the Python programming language with the pandas library at the backend. The analysed data from this module includes the "Range of marks" and the "Count of students in each range of marks", as well as the count of absent, pass, failed, and total students in each subject.

As shown in the image (Fig. 5) above, the analysed data is presented in a data table and pie chart. The unique feature of this user interface is that when the user hovers the mouse over any table row of the data table, the corresponding section of the pie chart will stand out for a better understanding of the analysed data.

6) Formats Module

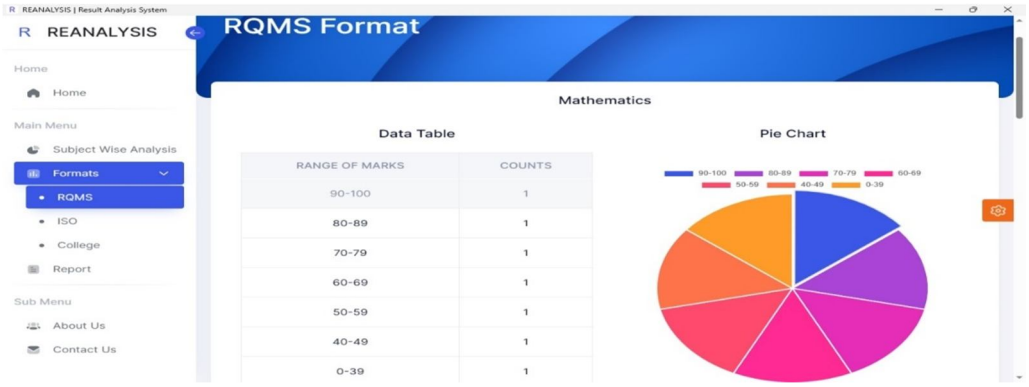


Fig. 6.1 RQMS Format

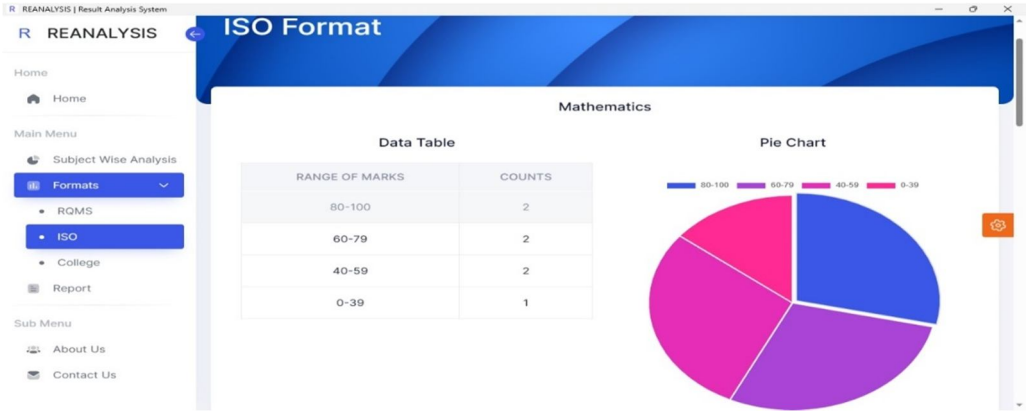


Fig. 6.2 ISO Format

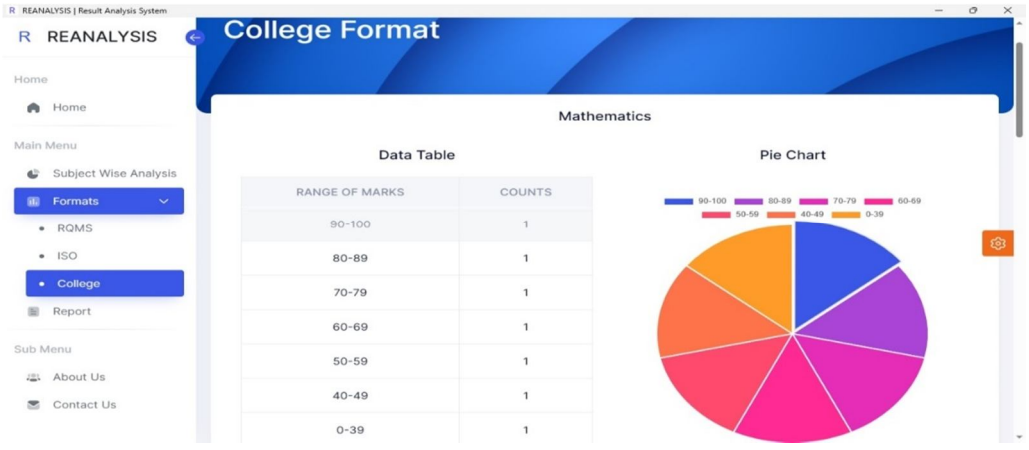


Fig. 6.3 College Format

The Formats module of this system consists of three different formats (based on user requirements) in which uploaded results will be analysed. These formats include RQMS (Fig 6.1), ISO (Fig 6.2), and College (Fig 6.3). Each format has its own specific range of marks and count of the students in each range. The three formats included in the Formats module play an important role in understanding the overall growth of the entire class.

7) Report

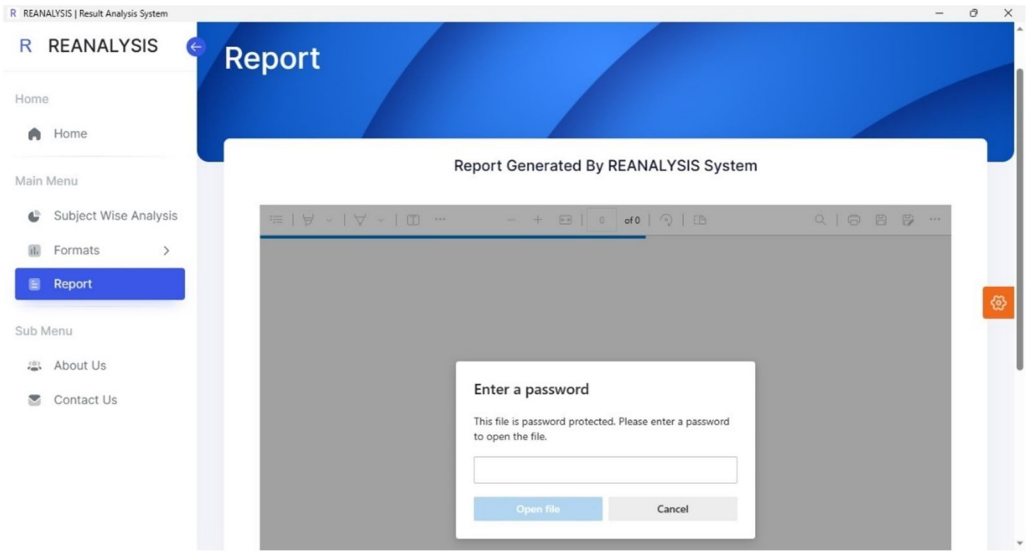


Fig. 7.1 Report (Before entering password)

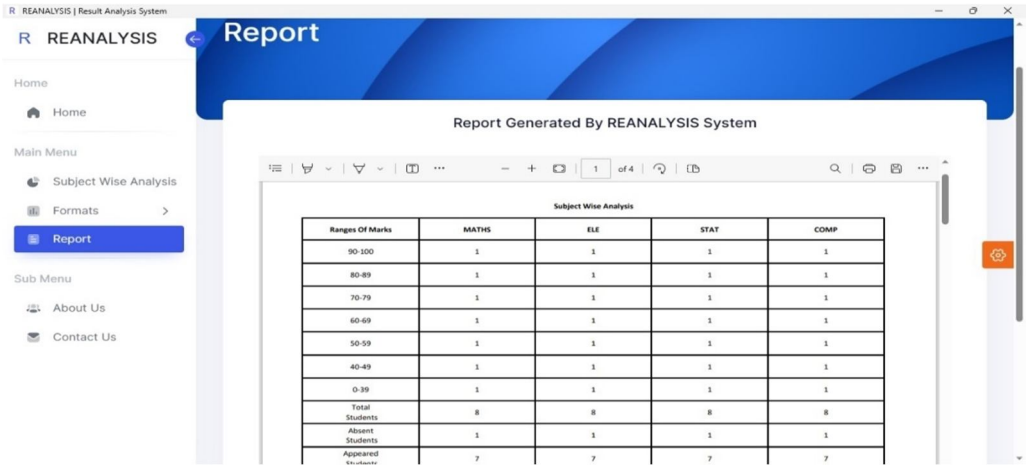


Fig. 7.2 Report (After entering password)

This is the most important module of our proposed system. It generates a report in PDF format that contains well-formatted tables of each format, along with visual representations through pie charts and bar graphs of analysed data.

The report generated by this system is password-protected (Fig. 7.1) as it contains confidential data. Therefore, the user needs to enter the password (which he/she entered during the sign-up process) to access the generated reports. Additionally, the user can download these reports in Excel and PDF formats by clicking on the download buttons provided for each format.

This system also includes an "About Us" module, where our team member's personal information, such as their names and links to their LinkedIn and GitHub profiles, are displayed along with their photos. We have also included a "Contact Us" module within the system to gather feedback from our users. Additionally, there is a user profile module where users can view their personal information that they have entered during the signup process.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

V. SYSTEM DESIGN

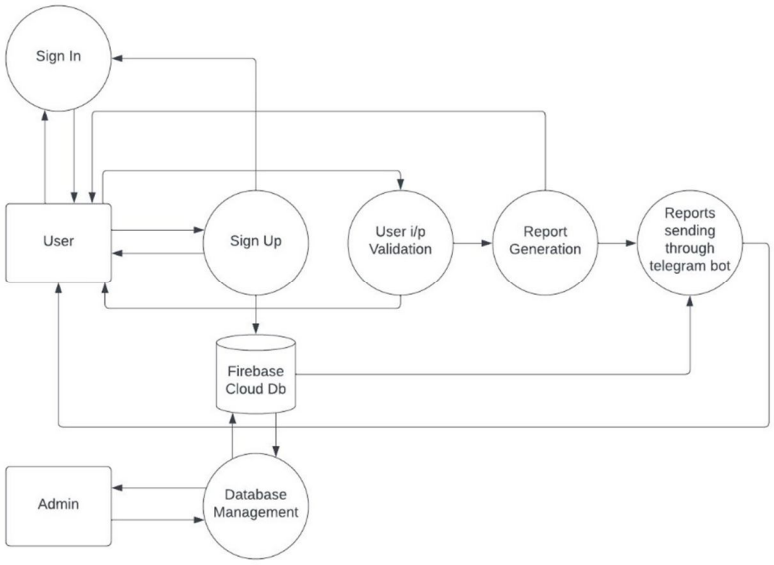


Fig. 8 Data Flow Diagram

VI. FUTURE SCOPE

In accordance with the user's needs, we have developed this system as a Desktop-Based application that can be easily transformed into a web-based application with slight modifications. Additionally, we can consider creating an Android app for the same purpose. To enhance the user interface and user experience, we can also integrate frameworks such as React or Angular, allowing for the creation of Single Page Applications. These points may be regarded as future possibilities of this system.

VII. CONCLUSION

The primary objective of the system has been attained, which is to decrease the likelihood of human errors and automate the entire process of analysing exam results. This system is suitable for use at the college level across various departments for exam result analysis. By utilizing the proposed system, the time required to analyse exam results can be significantly reduced.

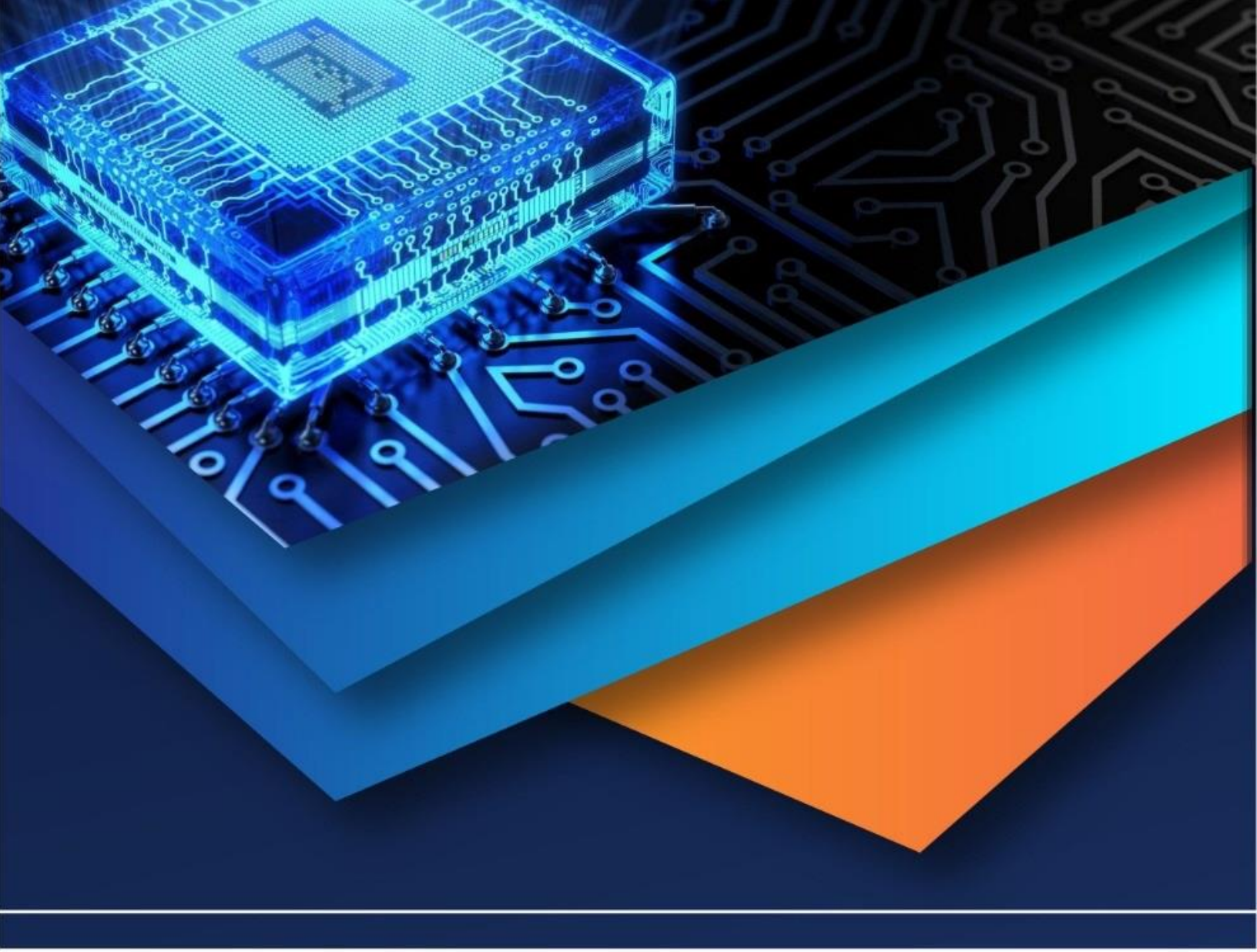
VIII. ACKNOWLEDGEMENT

Our project team would like to express our deepest gratitude to our project guide, Prof. Ms. Roshani Usman Atar, for her invaluable guidance and unwavering support throughout the course of our project.

REFERENCES

[1] Ashwin Mehta, Jugal Patel, Aditya Mewada "*STUDENT RESULT ANALYSIS SYSTEM*", International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 04, Apr-2018
[2] Nakul Sharma, Sonali Dake, Riddhi Panchale, K.S. Charumathi "*Student Result Analysis System.*", International Research Journal of Engineering and Technology (IRJET) Volume: 09 Issue 04, Apr. 2022
[3] Dhekane Rushikesh, Dhumal Megha, Jadhav Rutuja Yuvraj "*Student Result Analysis System and Predicting Difficulty Level of Subject*", International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 04, Apr-2018
[4] [Online] Available: flaskwebgui: https://github.com/ClimenteA/flaskwebgui

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)