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STUDENT DATABASE AS "STUDENT HUB" THROUGH A CUSTOMIZED DATA ENTRY APPLICATION

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1. INTRODUCTION

The "StudentHub" project is a student database system created using Visual Studio Community 2022 and Visual Basic programming language, with SQL as the backend server. It's designed to simplify the management of student information for educational institutions.

With "StudentHub," administrators can easily add, edit, and delete student records. They can store essential details like NMIS number, bank information, Aadhar number, and academic data in one centralized location. This makes it convenient to access and update student information as needed.

One of the key features of "StudentHub" is its user-friendly interface. Administrators can quickly search for specific student details and filter results to find the information they need. This saves time and ensures that accurate student data is always available.

To protect sensitive student information, "StudentHub" incorporates security measures such as user authentication and authorization. This ensures that only authorized personnel can access the database, maintaining privacy and confidentiality.

Additionally, "StudentHub" includes backup and encryption features to prevent data loss and unauthorized access. Regular backups help safeguard student information, while encryption ensures that data is secure, even if accessed by unauthorized users.

Overall, "StudentHub" simplifies student data management for educational institutions, enhancing administrative efficiency and improving services for students. It provides a reliable and secure platform for storing, accessing, and managing student information, contributing to better decision-making and communication within the institution.

2. OBJECTIVE

The "StudentHub" project represents a pivotal endeavor aimed at streamlining and modernizing the management of student information within educational institutions. In today's dynamic educational landscape, the need for efficient and centralized systems for handling student data has become increasingly apparent. As educational institutions strive to deliver high-quality education and services to students, the effective management of student information plays a crucial role in achieving these objectives.At its core, StudentHub serves as a comprehensive student database system designed to store, organize, and manage a wide array of student-related information. From basic demographic details to academic records and beyond, StudentHub provides a centralized platform for accessing and updating vital student data. By leveraging advanced technologies and intuitive user interfaces, StudentHub aims to enhance the efficiency, accuracy, and security of student information management processes.

StudentHub addresses this need by offering a range of features and functionalities tailored to the specific requirements of educational institutions. Whether it's capturing student enrollment details, managing academic records, or facilitating communication between students and administrators, StudentHub provides a comprehensive suite of tools to streamline the entire student information management process.Moreover, StudentHub prioritizes data security and privacy, ensuring that sensitive student information is safeguarded against unauthorized access and misuse. By implementing robust access controls, encryption techniques, and data backup mechanisms,

StudentHub provides peace of mind to educational institutions and students alike, knowing that their data is protected at all times.

In addition to enhancing operational efficiency and data security, StudentHub also aims to improve the overall student experience. By providing students with easy access to their academic records, enabling seamless communication with faculty and administrators, and facilitating self-service options for updating personal information, StudentHub empowers students to take control of their educational journey.Mainly In conclusion, the StudentHub project represents a significant step forward in the modernization of student information management within educational institutions. By leveraging cutting-edge technologies, intuitive user interfaces, and robust security measures, StudentHub aims to revolutionize the way student data is managed, ultimately contributing to the delivery of high-quality education and services to students around the world.

3. SYSTEM SPECIFICATION

HARDWARE SPECIFICATION :

- System : HP PAVILION Gaming Laptop
- Processor : AMD RYZEN 5
- Processor Speed : 4.2GHZ
- Main Storage : 512 GB
- Graphics Card : NVIDIA GeForce GTX 1650 (4GB GDDR6 dedicated)
- Mouse : ZEBRONICS

SOFTWARE SPECIFICATION :

- Operating System : Windows 11
- Front End : Visual Basic.Net
- Back End : SQL Server 2019

4. Visual basic

Visual Basic (VB) is a versatile and user-friendly programming language developed by Microsoft. It provides a graphical interface that allows developers to create Windows-based applications with ease. Known for its simplicity and flexibility, VB is widely used for building a variety of software applications, ranging from simple utilities to complex enterprise solutions. With its drag-and-drop functionality, developers can quickly design user interfaces and write code using a straightforward syntax. VB supports object-oriented programming principles, making it suitable for building modular and scalable applications. Additionally, it integrates seamlessly with other Microsoft technologies, such as the .NET framework, enabling developers to leverage a vast ecosystem of tools and libraries. VB's rich set of features, including built-in controls, event handling, and data access capabilities, make it a popular choice among developers for rapid application development. Overall, Visual Basic empowers developers to create intuitive and functional applications with minimal effort, making it an essential tool in the software development landscape.

5. SQL server

SQL Server is a relational database management system (RDBMS) developed by Microsoft. It provides a robust and scalable platform for storing, retrieving, and managing structured data. SQL Server utilizes the SQL (Structured Query Language) language to perform various database operations, such as querying, updating, and manipulating data. With its client-server architecture, SQL Server allows multiple users to access and interact with databases simultaneously, ensuring data integrity and security. One of SQL Server's key features is its support for transaction processing, enabling users to execute atomic and consistent database operations. It also offers advanced data management capabilities, including support for stored procedures, triggers, and views, which enhance data organization and manipulation. SQL Server provides built-in tools for database administration,

monitoring, and performance tuning, simplifying the management of large-scale database systems. Furthermore, it offers integration with other Microsoft products and services, such as Visual Studio and Azure, facilitating seamless development and deployment of applications. Overall, SQL Server is a powerful and reliable database solution that empowers organizations to efficiently manage and leverage their data assets.

6. EXIXTING AND PROPOSED SYSTEM

Existing System :

In the current landscape, students face numerous challenges in managing their academic and personal information effectively. With the burden of memorizing crucial details such as registration numbers, academic records, and personal identification numbers like Aadhar and bank details, students often find themselves overwhelmed and prone to errors. Moreover, the reliance on physical documents exacerbates the problem, as students must carry these documents with them at all times, risking loss, damage, or theft. This fragmented approach to information management not only leads to inefficiencies but also raises concerns regarding data security and privacy. Students frequently encounter difficulties in accessing their information promptly, especially during critical moments such as examinations, interviews, or financial transactions. As a result, there is a pressing need for a comprehensive solution that centralizes and streamlines the management of student data, offering convenience, security, and accessibility.

✓ **Disadvantages of Existing System :**

- Memorization of Information.
- Reliance on Physical Documents.
- Inefficiencies in Accessing Information.
- Data Security and Privacy Concerns.

➢ **Proposed System :**

The StudentHub project revolutionize the Existing paradigm by introducing a centralized and digitized approach to student information and management and redefine the way students manage their information. By leveraging the power of Visual Basic programming and a robust SQL backend, StudentHub provides a unified platform where students can securely store and manage all their academic and personal details. Gone are the days of struggling to recall registration numbers or fretting over misplaced documents; with StudentHub, students can access their information swiftly and effortlessly. The intuitive user interface allows students to input their data with ease and retrieve it instantly by simply logging in with their email ID and registration number. Through this centralized hub, students can maintain a comprehensive record of their academic achievements, personal documents, and financial information, all in one secure location. Whether they need to verify their credentials for an interview, apply for scholarships, or complete banking transactions, StudentHub empowers students with the tools they need to navigate the academic and administrative landscape seamlessly. With StudentHub, students can bid farewell to the frustrations of the past and embrace a future where managing their information is as simple as a few clicks away.

✓ **Advantages of Proposed System :**

- Centralized Information Management
- Centralized Accessibility.
- Utilization of Technology:
- Instant Retrieval of Information:
- Real- Time Updates.
- User Friendly Interface.
- Comprehensive Record-Keeping

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7. FEATURES

In designing the input system for StudentHub, the primary focus is on creating a user-friendly interface that allows students to input their academic and personal information seamlessly. The design begins with a login screen where students enter their email ID as the username and registration number as the password, ensuring secure access to their data. Once logged in, students are presented with intuitive forms or fields where they can input various details such as their NMIS number, bank details, Aadhar number, and other relevant information. Each input field is labeled clearly and organized logically to facilitate easy navigation and data entry. Additionally, the input design may incorporate features such as dropdown menus, radio buttons, and checkboxes to streamline the input process and reduce the likelihood of errors. The design also accounts for validation checks to ensure the accuracy and completeness of the entered information, with prompts or alerts provided for any discrepancies or missing data. Overall, the input design of StudentHub aims to simplify the data input process for students, promoting efficiency, accuracy, and user satisfaction.

8. MODULE DESCRIPITION :

This module have the details about the students name, class, university registration number, course, department, specialisation, NMIS number, year of study, date of birth, mobile number, gender, blood group, age, current location, 10^{th} mark and registration number, 11^{th} mark and registration number, 12^{th} mark and registration number, current CGPA, Aadhar card number, pan card number, IFSC number, bank branch name, number of job offers theses details are stored in the database

9. TESTING AND IMPLEMENTATION

9.1 UNIT TEST :

The first test in the development process is the unit test. The source code is normally divided into modules, which in turn are divided into smaller units called units. These units have specific behavior. The test done on these units of code is called unit test. Unit test depends upon the language on which the project is developed. Unit tests ensure that each unique path of the project performs accurately to the documented specifications and contains clearly defined inputs and expected results. System testing is the state of implementation, which is aimed at ensuring that the system works accurately and efficiently as expect before live operation, commences. It certifies that the whole set of programs hang together System testing requires a test plans, that consists of several key activities and steps for run program, string, system and user acceptance testing. The implementation of newly design package is important in adopting a successful new system Testing is important stage in software development. System test is implementation should be a confirmation that all is correct and an opportunity to show the users that the system works as they expected it accounts the largest percentage of technical effort in software development process. Testing phase is the development phase that validates the code against the functional specifications. Testing is a vital to the achievement of the system goals. The objective of testing is to discover errors. To fulfill this objective a series of test step such as the unit test, integration test, validation and system test where planned and executed

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9.3 INTEGRATED TESTING :

Integration Testing addresses the issues associated with the dual problems of verification and program construction. After the software has been integrated a set of High-order tests are conducted. The main objective in this testing process is to take unit-tested modules and build a program structure that has been dictated by design.

The following are the types of Integration Testing:

i) Top-Down Integration

This method is an incremental approach to the construction of program structure. Modules are integrated by moving downward through the control hierarchy, beginning with the main program module. The module subordinates to the main program module are incorporated into the structure in either a depth first of breadth-first manner.

ii) Bottom-Up Integration

This method begins the construction and testing with the modules at the lowest level in the program structure. Since the modules are integrated from the bottom up, processing required for modules subordinate to a given level is always available and the need fro stubs is eliminated. The bottom-up integration strategy may be implemented with the following steps:

- The low-level modules are combined into clusters that perform a specific software sub- function.
- A driver (i.e.), the control program for testing is written to co-ordinate test case input and output.
- The cluster is tested.
- Drivers are removed and clusters are combined moving upward in the program structure.

10. IMPLEMENTATION :

The Purpose of System Implementation can be summarized as follow :

The implementation process of a new student database system using Visual Basic (VB) and SQL Server involves several key steps. Firstly, thorough analysis and design are crucial to understand the requirements and structure of the database. This includes identifying entities, attributes, and relationships, and designing a suitable schema. Once the design phase is complete, the next step is coding the application in VB, incorporating user interface elements and functionality to interact with the database. Integration with SQL Server involves creating tables, defining constraints, and writing stored procedures for data manipulation and retrieval. Testing is essential at every stage to ensure the system functions as expected and meets user needs. Finally, deployment involves installing the application and configuring the database on the target environment, followed by user training and ongoing support. This iterative process ensures a smooth and successful implementation of the new student database system.

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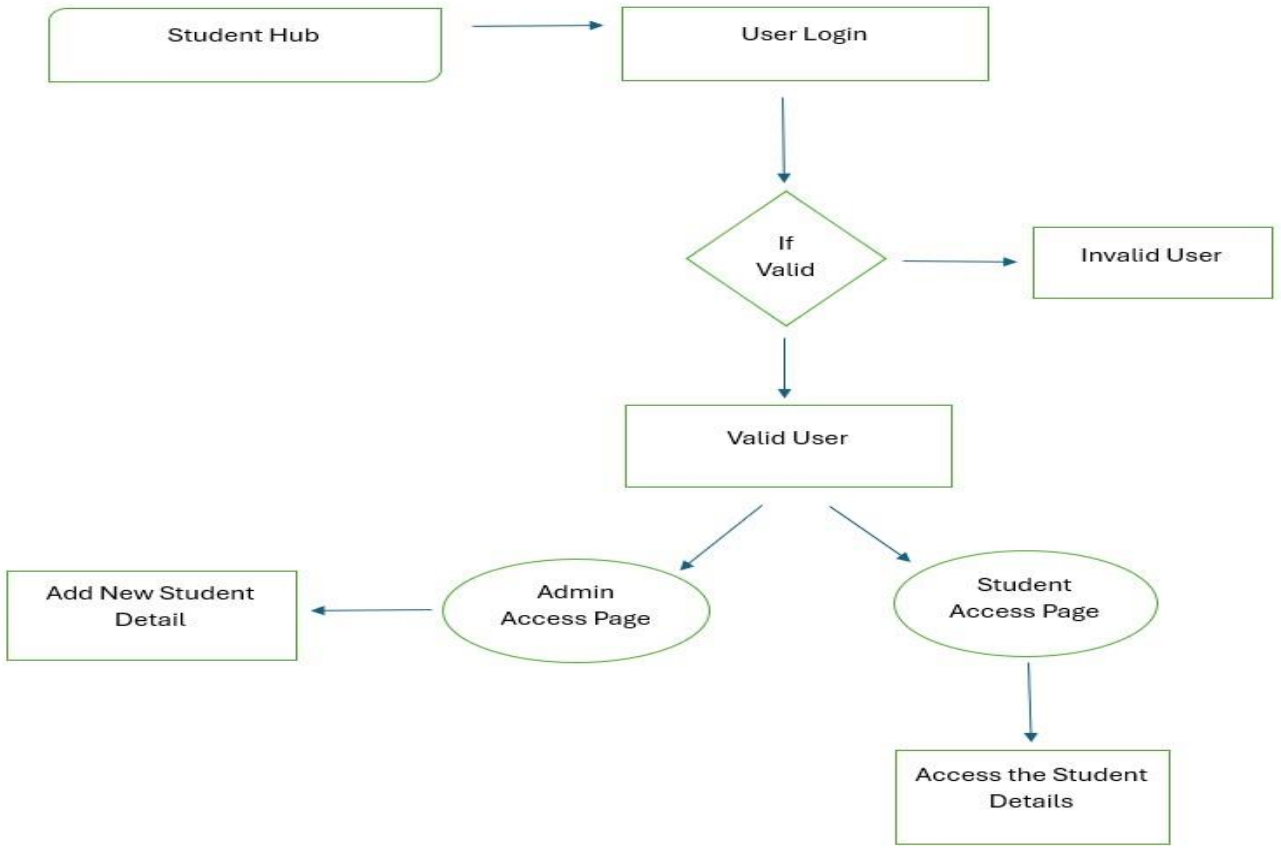

System Flow Diagram

11. FUTURE ENHANCEMENT :

Looking ahead, there are several avenues for future enhancements that could elevate the "Student Hub" project to new heights. Exploring mobile accessibility would enable students to access their academic information seamlessly on various devices, fostering flexibility and convenience. Incorporating data analytics tools could provide valuable insights for academic planning and personalized learning strategies. The introduction of collaborative features, integration with Learning Management Systems, and enhanced security measures would further enrich the user experience and ensure the system's adaptability to emerging technological trends. Real-time updates on academic progress, customization options for users, and the integration of artificial intelligence-driven features could collectively transform the "Student Hub" into a dynamic and adaptive educational platform, fostering a more engaged and empowered student community while offering valuable insights for continuous improvement in the academic landscape.

12. CONCLUSION :

The "Student Hub" project represents a comprehensive and user-centric solution tailored for 3rd B.Com CA (B) class students, aiming to simplify access to vital academic information. Leveraging Visual Studio Community 2022 and SQL Server, the system adeptly processes user inputs, ensuring secure authentication and retrieval of student details. The modular design, encompassing key functionalities such as user authentication, database interaction, and output presentation, contributes to a robust and reliable system. Emphasis on a user-friendly interface and stringent security measures enhances the overall user experience. The implementation procedures, from coding to data migration, form a well-orchestrated process ensuring the successful realization and deployment of the envisioned system

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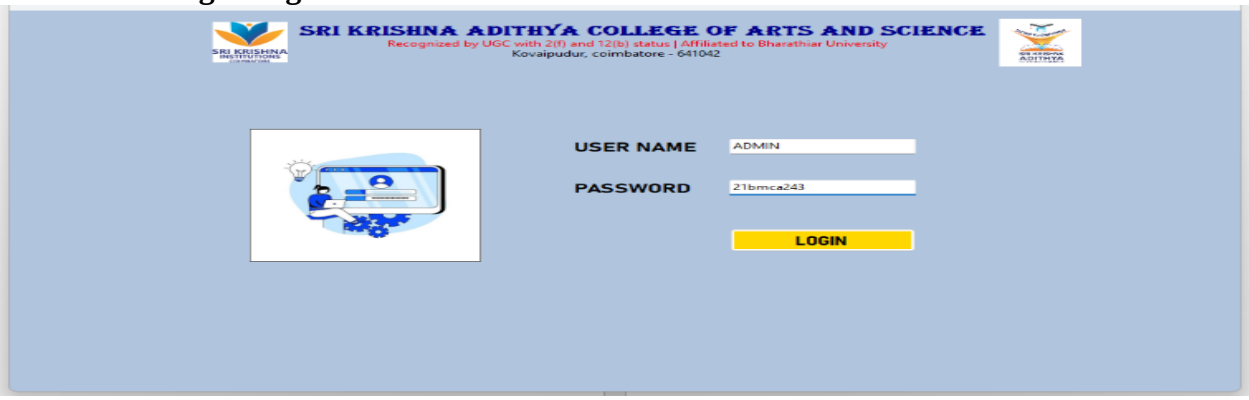
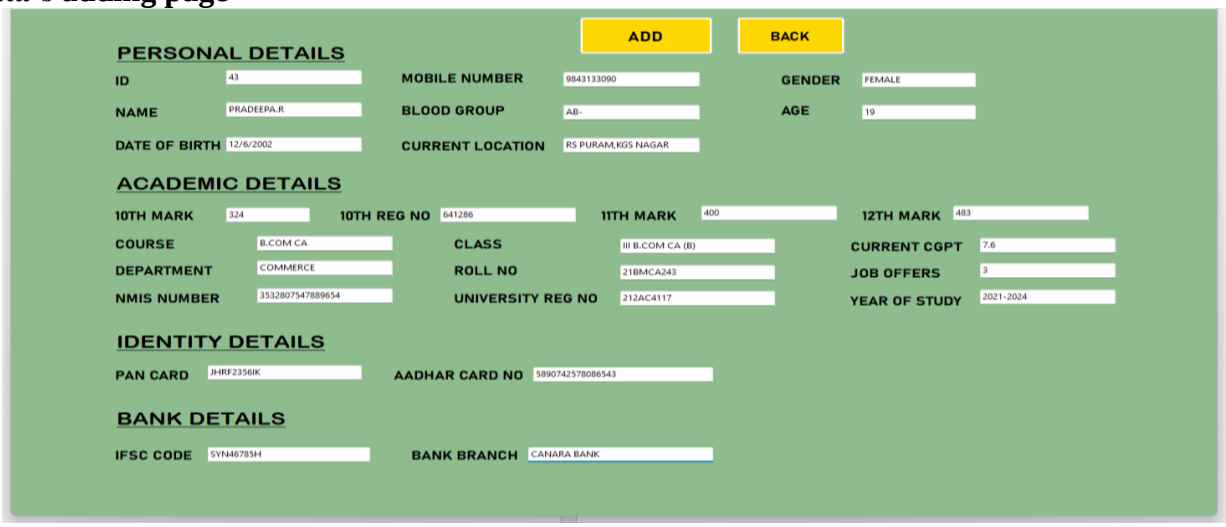
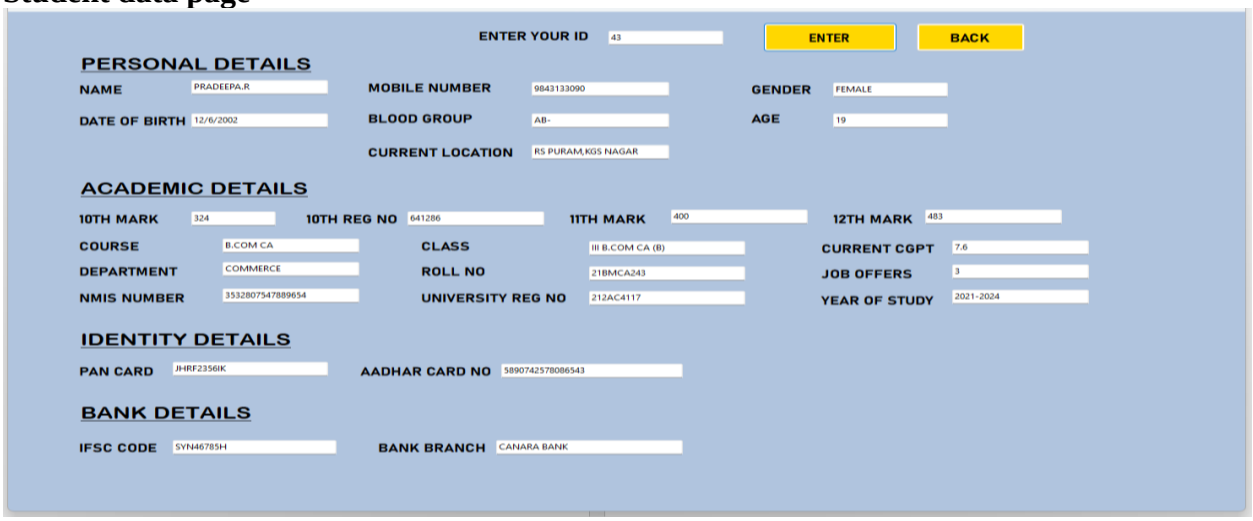
Student User Login Page



Data's adding page



Student data page



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