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Computerized ID Card Generation System for Students and Employees with Secure Digital Record Management

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ABSTRACT

The Student ID Card Generator System is a computerized solution designed to automate the process of creating and managing identification cards for students and employees in educational institutions and enterprises. Traditional manual methods of ID card creation are time-consuming, prone to human error, and vulnerable to forgery. This system replaces these manual processes with an efficient and reliable software-based approach, ensuring accurate data management, secure authentication, and quick generation of ID cards. By integrating a centralized database, the system provides a platform where administrators can generate cards in bulk, maintain records, and verify user information, significantly reducing administrative workload and operational inefficiencies.

The system also enhances user experience by allowing students and employees to register, log in, and view their ID cards online. Security features, such as unique identification numbers, database verification, and controlled administrative access, prevent duplication and unauthorized use. Additionally, the system supports flexibility for future improvements, such as real-time photo capture and QR code integration for instant verification. Overall, this project ensures a fast, secure, and error-free ID card management system that improves institutional record-keeping, data accuracy, and operational efficiency.

Moreover, the Student ID Card Generator System is scalable and flexible, allowing it to function at institutions of various sizes. Designed to allow for ease of use and interaction, the system can be used by administrators and students without the need for extensive training. The Student ID Card Generator System allows institutions to store all information securely in a centralized database, where all records are easily retrievable and modifiable while eliminating the chance of data loss. Whereas administrators would previously perform a lot of administrative tasks manually, by automating these activities, the Student ID Card Generator System demonstrates operational improvements in efficiency, and reliability, strengthens security

compliance, and helps lessen the number of human errors.

Keywords- ID Card Generator, Student Identification, Employee Management, Database Security, Automated Card Generation, User Authentication.

INTRODUCTION

In the current digital age, the handling of student and employee identifications has established itself an important need for educational institutions and organizations. The traditional manual process of creating identification cards can be slow, inefficient, and susceptible to human error. Many institutions use methods that involve some type of handwritten recordkeeping and designing each card as an individual project with fairly simple programs such as Photoshop or others, which complicates tracking, updating, and verifying individuals' information. As institutions expand, so does recordkeeping, making data management, security, and validating identification card authenticity more complex. Therefore, a computerized system that would automate the entire identification card production process while being reliable, accurate, and secure is urgently needed.

The Student ID Card Generator System was created as a solution to the stated challenges and provide an online central recordkeeping system for managing student and employee recordkeeping. The administrative users are able to enter records, manage the information, and then generate identification cards from a secure database dynamically. It replaces manual processes, facilitates processing time for identification cards, and verifies that each person's card is unique. This system will also have bulk card production, photograph recordkeeping, and some administrative features that enhance the system's utility, making the system beneficial for any institution size. In addition, the ID card will be managed through a centralized system.

PROBLEM STATEMENT

Identification cards are critical in educational institutions and organizations as identity proof, security, and access control. Even with this importance, not all institutions have automated systems to create and administer ID cards and still use some sort of manual or semi-manual method. This approach can be slow, and there are many challenges administered in such a fashion, including human error, mismanagement of data, and security errors. For example, entering student or employee information manually may describe a problem with a name, ID number, or contact information which may be related to misidentification or confusion in administration.

Another major problem with a system like this is duplication and forgery. In the absence of a centralized database, it can be difficult to determine if a person has been issued multiple ID cards which may give them unauthorized access. Furthermore, cards generated manually or with

basic software can be easily duplicated which poses a threat to institutional security. Maintaining a written record for hundreds to thousands of people places more gaps in communication and creates a lag in access to data retrieval and management during verification or card reissuance.

Administrators face problems producing ID cards in an accurate, secure, and timely fashion, especially in large quantities and due to these problems in the absence of an automated system - ultimately wastes time and resources.

OBJECTIVES

The primary objective of this project is to develop a computerized Student ID Card Generator System that automates the process of creating and managing identification cards for students and employees in educational institutions and organizations. The system aims to replace traditional manual methods, which are time-consuming, prone to errors, and vulnerable to forgery. By integrating a centralized database with an easy-to-use interface, the system ensures accurate data management, fast card generation, and enhanced administrative efficiency, thereby improving overall institutional operations.

A key goal of the system is to ensure uniqueness and security of ID cards. Each individual is assigned a single, unique ID card, preventing duplication and unauthorized issuance. The system includes verification mechanisms that validate user details against the database before generating a card, making it difficult to forge or duplicate identification cards. Additionally, the system allows administrators to maintain a secure record of all student and employee information, facilitating quick updates, retrieval, and tracking of ID cards, which enhances the reliability and integrity of the identification process.

Another objective of the project is to improve accessibility and user interaction**.** Students and employees can register their details, log in securely, and view their ID cards online, allowing them to verify information and request corrections when necessary. Administrators can generate ID cards in bulk, upload photographs, and manage data efficiently through the system. This combination of automation, security, and user-friendliness ensures that the ID Card Generator System is not only time-saving and error-free but also scalable, flexible, and adaptable for institutions of all sizes.

SYSTEM ANALYSIS

A. EXISTING SYSTEM

The procedure for producing ID cards in most educational institutions and organisations is typically manual. Information about the student and employee would have been kept in handwritten registers, thus making the system reliant on the accuracy and diligence of the person recording the information. ID cards could have been typically designed individually, using basic tools like

Photoshop or some other graphics software, thus requiring more manual effort and technical knowledge. This way of producing ID cards is significantly time-consuming, particularly with many students or employees, and becomes even more unreasonable for high-volume ID card production.

Manual processes are also prone to mistakes. For example, the misspelling of names, wrong ID numbers, incorrect department, or old contact information, require additional administrative time and effort to rectify. Furthermore, there is no real-time verification procedure for data provided on ID cards, which means incorrect or incomplete data is likely unnoticed at the time until mistakes are made.

Another significant limitation of the existing system is the lack of centralized location for storage and security. Since all data is kept in paper files or local computers, lost or damaged records cannot be recovered, and it can be tedious to re-issue ID cards. Various disputes can arise from manually produced ID cards, including questions of identity to access control.

B. PROPOSED SYSTEM

The proposed system, Computerized Student ID Card Generator**,** is designed to overcome the limitations of the existing manual approach by providing a secure, automated, and efficient solution for ID card generation. Unlike the traditional system, all student and employee data are stored in a centralized database, allowing for real-time validation and seamless management. This ensures that every individual is assigned a unique ID card**,** preventing duplication and reducing the possibility of errors during the registration or card issuance process.

A key feature of the system is automation of the entire ID card creation process. Administrators can generate ID cards individually or in bulk, significantly saving time and effort compared to manual methods. The system also supports instant issuance of visitor ID cards, making it suitable not only for students and employees but also for temporary personnel or guests. Every detail entered into the system is validated automatically, ensuring accuracy and consistency across all records. Additionally, the secure login mechanism for both admins and users guarantees that only authorized personnel can access or modify data, enhancing the overall security of the system.

The proposed system offers several advantages over manual methods. It reduces administrative workload, improves accuracy, prevents forgery, and provides a user-friendly interface for both administrators and students. The database backup feature ensures that lost or damaged ID cards can be regenerated without recreating designs from scratch. By integrating automation, security, and real-time validation, the proposed system enhances operational efficiency, reduces errors, and ensures reliable and scalable management of identity cards for institutions of all sizes.

SYSTEM DESIGN

A. MODULES

The ID Card Generator System has two main modules.

1. Admin Module: This module allows administrators to have full control of the ID card management process. Admins can log in to the system securely using their usernames and passwords, generate ID cards for individual users or batch, upload pictures of the students or employees, and log out securely once they have concluded their work. This module ensures that only individuals who are authorized to run records and carry out other essential actions are the ones doing so, thus strengthening security and minimizing unauthorized individuals.

2. Student Module: This Module allows students or employees to register their personal details including name, ID number, batch, program, blood group, and picture. After registering the details, users can log in securely and be able to view their generated ID cards. This module ensures that users can confirm that their details are correct and request other details to be changed. This module also improves efficiency and reduces unnecessary administrative action for routine tasks such as verifying student employees ID cards and retrieving ID cards. Furthermore, the module allows users to receive real time notifications and updates. Once an administrator approves a modification, updates information, or processes it for ID card generation, we will (for) instantly notify the user in the system. Furthermore, the module ensures and protects security and privacy, as each user only has access to their personal information, guarding against unauthorized access to sensitive data such as contact information, photographs, personal identifiers, and so on.

B. INPUT DESIGN

Input design is a vital step in system development that aims to change user-supplied information into data a computer is able to use. In the ID Card Generator System, input design is required to ensure that all data supplied by students, employees, or administrators is valid, complete, and consistent. Good input forms will decrease errors, improve time efficiency, and also lead to better reliability in the system.

The ID Card Generator System utilizes interactive forms that are cognitive, guiding the user through the process of data entry. The forms have dropdown menus, text boxes, radio buttons, and file input fields that ensure an input of the right data (type and format). For example, when users must select their batch (or department) they will choose from a dropdown. When a user is asked for their ID number, they can only enter numeric values. A placeholder file input field will let users upload images of themselves. The designed style and forms will course-correct and drastically reduce the possibility of mistakes that are easy to make when users enter data freely.

Moreover, the input design prevents bad data from being submitted to the database via extensive validation rules (data field rules) and error handling. The system will check that the data is complete, valid, and adheres to the data criteria, such as the format of an email address, before allowing data to be submitted to the database. If bad data is detected, such as an invalid email address or a

C. OUTPUT DESIGN

The output design of the Student ID Card Generator System is intended to allow all data stored and processed in the system to be displayed clearly, accurately, and in a usable format. Because this is a web-based application, the primary output is dynamic web pages, in which students and employees can log in to view ID cards, and administrators can create ID's, view records, and perform bulk actions. The web pages are all designed so that all information is easy to navigate and access with minimal effort while promoting efficient time management to verify and search records.

In addition to presenting plastic personalized ID cards on-screen, the system will allow ID cards to be printed immediately and in a standardized format with all necessary information, such as name, ID number, program, batch, blood group, and photograph, displayed. If an ID card becomes lost, damaged, or needs to be updated, the system will provide immediate reprinting using the information stored in the centralized database to avoid interruptions or administrative holdups.

The output design is focused on accuracy, security, and usability. Each output is derived from the direct database, validating that what is displayed or printed is the most accurate and up-to-date output at the time.

D. DATABASE DESIGN

The framework of the Student ID Card Generator System is built off an organized and secure database to store and manage relevant information. The database takes the form of a normalized relational database, which minimizes data duplication, preserves data consistency, and facilitates the integration of data in different modules. Each table in the database represents a distinct type of entity, whether that be a student, employee, administrative user, or ID card record. Each row in the table represents a single instance of an entity (the table record) while the columns serve as fields for data such as name, ID number, batch, program, blood group, email address, phone number, and photo for example, student records will link to their relevant ID cards, allowing the administrative user to generate, update, or reprint an ID card without duplicating student information. Administrator credential information will also exist in a separate record, but link to the relevant operation for secure access to information as well as for audit purposes. This relational type of structure will allow modifications to one of the

tables to be automatically reflected in the other tables to minimize errors and improve efficiency.

Security and databases are both always a priority; therefore, the database is designed with access rights limiting data modification and viewing to appropriately authorized users to protect personal sensitive information. Databases standards for backup mechanisms are also in place to mitigate data loss, ensuring that data is as secure as possible.

SYSTEM IMPLEMENTATION

System implementation is the phase when the theoretical design of the Student ID Card Generator System is converted into a fully functional system and working system. This phase is important as it is an intermediary between planning and its actual operations, and tests whether the software will work as planned in the real-world. A successful implementation establishes if a system meets users' requirements, performs efficiently, and integrates within current operating procedures in an institution or industry business.

Implementation includes a number of activities. The developed program is first tested with sample data to establish its accuracy and functionality. Once again, any glitches or bugs observed in this phase are identified and corrected to assure its performance. Next, the system is assessed to ensure all users' requirements and specifications were satisfied, including student registration, ID card generation, and administrative control procedures, are working. This allows the developer to determine if the system works as intended, as outlined in the design and analysis phase objectives.

Another implementation aspect is preparing users for the system. Training for administrators and students is provided using user manuals, a help screens component, and live demonstrations. Users will use the manuals to assist them in exploring the interface, completing routine operations, and performing troubleshooting procedures.

USER TRAINING

User training is a vital part of the implementation phase of the Student ID Card Generator System. The main purpose of user training is to provide support to both administrator and student/employee users as to how to interact with the system, understand the features available, and carry out tasks without mistakes. Proper training can minimize mistakes, improve productivity, and help realize the full usefulness of the new system. Users will be trained to complete tasks that may include registering, entering and updating data, viewing id cards, verifying identity, and printing the ID cards by following the standard operating procedures of the system.

Multiple approaches will be used to conduct training and accommodate different learning styles. User manuals will be generated to provide comprehensive, step-by-step instruction for every function of the system. User manuals will include

step-by-step access instructions for logging in the system, instructions for entering or updating personal information, generating ID cards and assistance troubleshooting common issues with the system. Manuals will serve as a permanent reference for users to refer to as often as necessary. Help screens will be integrated throughout the application to provide real-time context-sensitive assistance when needed so that users are a click away from understanding the purpose of every field, dropdown, button, or menu item. This will help decrease reliance upon human support and increase efficiency of the system's use.

In addition to the user manuals and help screens, live training demonstrations will be an important training tool. Live demonstrations allow a user train a user in real time so that the user can see the functionality of the system in person.

MAINTENANCE OF THE SYSTEM

Maintaining the system is crucial in the lifecycle of the Student ID Card Generator System. Once the system has been implemented into a production environment, it is necessary to ensure the system's continued efficient, secure, and reliable functionality and performance throughout its lifecycle. Maintenance involves periodic monitoring, adding necessary updates, and resolving issues as they arrive to guarantee consistent system performance and user satisfaction. Maintaining the system is important for its longevity, user satisfaction, and to avoid potential interruptions for the institution in managing ID cards. Maintenance can involve several types of activities:

Perfective Maintenance - This describes improving the system, which involves improvements to functionality, usability and/or performance. For example, the system may be improved with new add features, such as reporting enhancements, notifications on what to do next, or some other type of alterations in a user-friendly interface. These types of maintenance activities are designed to guarantee the system continues to meet the institution's needs as those needs develop, and to ensure the implementation of any new updates as technology advances.

Preventive Maintenance - Preventive maintenance focuses on anticipating before an issue arises. Activities such as periodically backing up the database, optimizing code, performing security updates, and system performance are examples of each type of preventative maintenance. Proactive maintenance activities provide an added level of risk management by reducing the likelihood of failure, data loss and/or security breaches, and allow the organization to maintain a stable and secure system, while also becoming flexible as future changes arise, including upgrading systems to better server technology.

RESULTS AND DISCUSSIONS

The Student ID Card Generator System's implementation has shown advantages over traditional manual ID card creation processes. The

system provides a fully automated system from student or employee registration to ID card generation and verification, providing a much quicker and efficient workflow. The use of a centralized database provides security in storing all data/information that can be quickly and easily retrieved by authorized users, without losing important data or duplication.

In the system testing and initial usage, the system provided a high level of accuracy and consistency while managing multiple records. Bulk ID card creation occurred without errors, which reduced the time significantly versus the traditional manual process. After functional testing, each of the system modules (registration, login, ID card generation, and administrative controls) were determined to operate and communicate effectively with the database. Users reported ease of use, while administrators recorded the system was efficient in managing large amounts of data and making record updates.

Additionally, the system has strong security features. Each ID card is uniquely generated with a verification in the system to decrease potential forgery or duplication without permission. Students or employees can verify their ID card, limiting administrative involvement. The card storage is a digital storage with dynamic card generation and security to ensure it can be reconstructed if it becomes lost.

CONCLUSION

The Student ID Card Generator System has demonstrated to be an effective, cost efficient, and user-friendly approach for educational institutions and organizations. By automating the manual process of ID card creation, the system has reduced errors, saving both time and operational efficiencies. The use of a centralized database allows all of the student and or employee records to be kept securely, easily accessible, and precise. Thus, eliminating the errors of duplication and loss of data often inherent in manual systems.

The interactive interface allows for administrators and users to perform their respective responsibilities/positions with ease. Administrators interface to create a bulk of ID cards, upload photos, and manage records. Students and employees can register, log in, and verify ID card information with ease. The system ensures heightened security through unique ID management and verification for even less likelihood of forgery and duplicity of any kind.

In conclusion, the Student ID Card Generator System meets its intent of a rapid, secured, and cost-effective approach to ID management. It improves administrative processes, increases accuracy, and enhances user experience, demonstrating computerized ID management is better than traditional manual ID management.

FUTURE ENHANCEMENT

The Student ID Card Generator System has a solid essence to support ID card administration automation, but there is even greater opportunity for enhancing its future through further development, usability, and security. A primary improvement could include adding a webcam to allow a real-time photo of the ID card holder. This would enable the institution to capture a journal or employee photo at the exact time of registration, eliminating the need for the institution to have previously stored a photo and allowing the ID card to be generated immediately after with current images captured through the webcam. This functionality could improve accuracy, reduce error, and allow users to improve usability during the registration process.

Another improvement could include adding QR codes or RFID chips to the institution's ID cards. More specifically, QR codes would be embedded that would retain the student's or employee's complete data, which could be quickly recognized when scanned by a mobile device or a device to read the QR code. RFID chips could enhance automated access control and attendance taking, thus adding functionality for an ID card that do not involve identification alone, but improves security and could minimize unwanted access, safety issues, or other daily business processes within an institution.

Finally, the system could be modified to include an option for administration function to include flexibility for editing or reporting functions, allowing the institution to assist in student and employee information updating or, provide more detailed reported information on registrations, cards issued**.**

REFERENCES

1. Steves, R., & Kopec, A. (2009). PHP Bible (2nd Edition). Wiley Publishing.
2. Welling, L., & Thomson, L. (2016). PHP and MySQL Web Development (4th Edition). Addison-Wesley Professional.
3. Sklar, D. (2010). PHP 6 and MySQL 5 for Dynamic Web Sites: Visual QuickPro Guide. Peachpit Press.
4. Ullman, L. (2008). Beginning PHP and MySQL: From Novice to Professional (3rd Edition). Apress.
5. Sklar, D. (2009). Practical Web 2.0 Applications with PHP. Peachpit Press.