

Barcode based Student Record System

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Abstract—In the academic world, information is very important and essential. Students have to register for courses, take attendance, exam, and curricular activities and as well as check score. Unfortunately, there are no automated student records keeping application available in institutes. There is a need for a tool to systematically keep the students record due to increasing number of college students. The manual method of cumulating and storing student record is vulnerable due to human errors and is also unsecure. Barcode Based Student Record System (B.B.S.R.S) provides interfaces between student and institute. The project that we are going to make help teachers to track students' academic record.

Keywords—Barcode , Database , LoginId

I. INTRODUCTION

Barcode based student record system (B.B.S.R.S) is used for keep record of every student in a single system. In the project we are using barcodes. This barcodes is nothing but a machine-readable code in the form of patterns. At the time of admission each student is assign a unique barcode. This unique barcode is generated by student personal information and enrollment number and by using barcode scanner these barcodes is used to retrieve the student information from the database. The system keeps track of every single student record like attendance, midterm marks, semester marks, extracurricular activities, drop or KT, personal information etc. from first years to last years. The system also helps to generate the defaulter list based on the student attendance records. The reports are also generated as per required. The records are secured and easily accessible.

II. LITERATURE SURVEY

A Software which utilizes barcode scanner to record and maintain the attendance of the students is described in paper [1]. A Barcode is a machine readable representation of information in a visual format. A bar code consists of a series of parallel, adjacent bars and spaces which is read by a barcode scanner. Each student will be assigned a unique barcode ID which identifies the student and displays records of the students. Teachers and administrator will only have access to the system with their respective login ID's and passwords.

The paper [2] describes about the Intranet Based Content Management System. It is an application that is developed for the students or the department to access for monitoring the attendance of the student. This system can be accessed by students as well as the teachers to obtain the record for which each individual is assigned a login ID and a password. For this the student, must be registered with the system admin for access.

Paper [3] presents a Student Information Management System realization including establishment and maintenance of the database and front-end application development & describes the system functional and architecture design, and emphasizes the system's functionality, database design and functional modules, etc. Fully functional, flexible and convenient application and friendly interface provide a good guarantee for student information management.

A tracking system[5] which includes including all the data of the students for the whole academic year attendance, progress in the course, completed semesters, years, coming semester year curriculum details, exam details, project or any other assignment details, final exam result and all these will be available through a secure, online interface embedded in the college's website, also have faculty details, batch execution details, students' details in all aspects, the various academic notifications to the staff and students updated by the college administration

The paper[5] include the implementation of a library management system using RFID. RFID is used because it may allow a proper transaction flow for the issue and return of the books maintaining a proper record of the issuer. This system would be able to issue and return books via RFID tags and also calculates the corresponding fine associated with the time period of the absence of the book from the library database.

III. METHODOLOGY

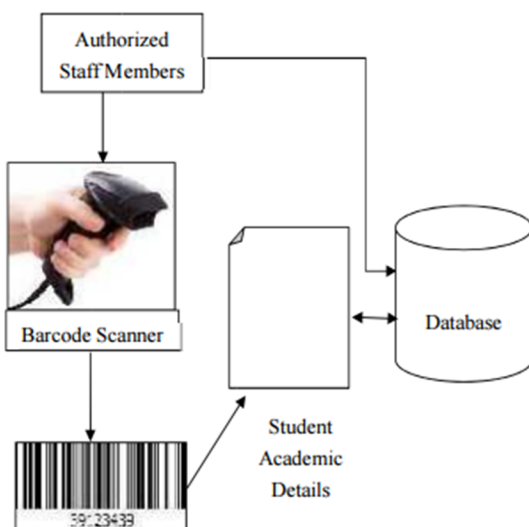
The attendance system was implemented using Microsoft Visual Basic and a barcode scanner device. It consists of two stages: the enrollment stage where each student details were taken and generate a barcode then stored in the database and the authentication stage where each student's barcode was scanned and compared with all

barcode templates in the database. The system was designed into two modules. The first module was designed mainly to manage all processes associated with students registering for courses and lectures recording and storing students' grade scores. The second module was primarily developed to generate student's cumulative assessment result and grade point. There are numerous benefits to using a Student Records System. One of the benefits is the use of a central database. This database is the core for all actions in the system and can be easily updated and used to ease all the system's processes. This storage method is more efficient than a paper based file system. Another factor which the system has taken into consideration is human error made in the recording and filing process which is avertable in a database system. It also makes provision of easy corrections of errors made.

IV. IMPLEMENTATION

The implementation below is designed in a way considering the flaws in the current system and in place introducing a new system which will not completely affect the current system but increase its efficiency overall. The figure represents the Block diagram for the "Barcode Based Student Record System". In this system, each student is issued unique barcode. System use Barcode scanner, Barcode and a computer with the software which stores the database about the entire details of the student's. A barcode scanner is composed of three parts: the illuminator, the decoder, and the sensor/convertor. The barcode scanner illuminates the barcode with red light using the illuminator system.

The sensor/convertor part of the scanner then detects the reflected light. Once the light is detected, an analog signal is generated. This signal contains varying voltage based on the intensities of the light reflection. The analog signal is converted by the sensor into a digital signal. The digital signal is then interpreted by the decoder. The decoder then sends the information to the computer attached to the scanner.



Barcode

Firstly, the staff users need to login to system by using appropriate login ID and password. After that user scans barcode of particular student using barcode scanner to retrieve his/her details like personal information, exam details, attendance, curricular activities details etc. Each student details are stored in database which can be retrieve/modify/delete by the user. Finally, user generates reports according to requirement and gets the print.

The implementation also deals with the security aspects of the system as it provides the user and staff authentication. If the student misplaces any of its older barcode then he/she is issued a new barcode number and the previous number is blocked as there would be no more further use of the barcode.

V. SYSTEM DESCRIPTION

To resolve the problems on existing Student Record System we propose a new system known as **Barcode Based Student Record System**. The proposed work will solve the problems related to traditional student record system. This system comprises of Barcode scanner, Barcodes, Authorized staff members and Database. This approach is to be built keeping the current system as it is and including as less modification as possible to the current system. This system will basically work on the following components:

- Barcode Scanner use to scan the barcode of the students.
- Barcodes are generated for every student using their unique id number.
- Authorized members can scan the barcode to get the record of particular student.
- Database stores the overall all record of students..

1) Barcode Scanner

It is the hardware which will be used for scanning the generated barcode of the student to retrieve the barcode number. There are different types of barcode scanner can be wired, wireless, laser, 2D Area Imager ...etc. Any of the following can be used depending upon the requirement.

2) Barcode

It is the entity which uniquely identifies a set of object. In our project the barcode is used to uniquely identify the student and used to retrieve the corresponding information of that student. The unique barcode is generated by the administrator using the enrollment no. provided to the student at the time of the admission. Staff Members can scan the barcode to retrieve the student's information. There are two types of barcode

1. 1D barcode
2. 2D barcode

Any one of the above can be used depending upon the requirement. Since our data is limited we are implementing using 1D barcode.

3) *Student Academic Details*

It is the record of the student that is to be retrieved. The student academic details include the student's academic year, term test marks, semester marks, attendance records, No.of Kt's,Extra & Co-curricular activities etc. All the details of the student starting from the admission year till the completion year can be displayed.

4) *Authorized Members*

It comprises of different entities like the staff members, the administrator, student, HOD etc. Each entity is provided with a login ID and a password for granting access. Each entity is assigned with an access control rule to either view, edit, print or delete the student's data. For e.g. Teachers can view, edit, print as well as delete data while student has only view permission.

5) *Database*

A system required to store, manage and retrieve the data. All student records are stored in database which authorized user can access by scanning barcode provided to students.

VI. CONCLUSION

The Proposed Barcode Based Student Record System that is implemented by scanning barcode of individuals where the unique barcode number is generated from the given student's ENROLLMENT NO. And where the admin will provide appropriate access to the

individual's data for each login will ensure an efficient and an secured way of accessing, maintaining, and updating the data for the overall academic career of an individual student. By scanning the barcode of particular student the user can get the personal information, attendance, marks details, curricular activities description.

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