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| **COURSE NAME: DATA BASE MANAGEMENT SYSTEM**  **COURSE CODE: BCSE2073**  **SUBMITTED TO:**  **MS. SWATI SHARMA**  **SUBMITTED BY:**  **ABHINAV KUMAR CHOUDHARY**  **(21SCSE1011615)** | | |
| **“Write a report on the design and development of a database management system for a university”**  **“ABSTRACT”**  A University management system (UMS) is a digital solution that helps automate tasks. Ranging from registering students, admitting students, onboarding them, managing their fees, managing monthly payment for lecturers to helping students access online learning, classroom training etc. a university management system is a complete solution. Reducing manual labour, time and money, this system ensures accuracy, transparency, reliability, and integrity of records, information, intellectual property and data. A UMS is an education product that helps teachers, students, parents, external vendors, learning suppliers etc. come together via a platform and exchange information. The university administration can automate several of their processes such as attendance, announcements, results, campus updates, schedule changes etc. to all concerned persons. There is no limit on the number of features of the university management system, because every university will have its own set of processes that is different from another university. Therefore, a UMS should be able to help universities apply university-specific customizations as well as configure generalized workflows.  **“INTRODUCTION”**  UNIVERSITY MANAGEMENT SYSTEM (UMS) deals with the management of university, college, faculty, student information inside the university. UMS has a relational database, which is used to store the college, faculty, student, courses and information of a college\university. Starting from registration of a new student in the college, it maintains all the details regarding the attendance and marks and every details of the students. The project deals with retrieval of information through an intranet based campus wide portal. The university management system stores and retrieve the information through web based application. So it collects the information of individual and overall performance of students in various departments. UMS focuses on the basic need of accomplishing the task of maintaining the large stock of information in a university by creating a database. The interface is a very efficient application for the management of a university which not only benefits the user of the university but also plays a huge role in enabling the management of the university to work in a proficient manner. This system will be a platform where users will have access to the facilities of the university including blackboard from anywhere using the Internet. This project report will provide a detailed account of the functionalities of the user interface which is taken as a reference to manage a university. Each subsection of this phase report will feature the important functionalities of the database design. Development process of the system starts with System analysis. System analysis involves creating a formal model of the problem to be solved by understanding requirements.  **PURPOSE OF THE SYSTEM**  UNIVERSITY MANAGEMENT SYSTEM [UMS] deals with the maintenance of university, college, faculty, student information within the university. This project of UMS involved the automation of student information that can be implemented in different college managements. The project deals with retrieval of information through an interface or campus wide portal using database. It collects related information from all the departments of an organization and maintains files, which are used to generate reports in various forms to measure individual and overall performance of the students.  **PROBLEMS IN THE EXISTING SYSTEM**  Storing and accessing the data in the form of Excel sheets and account books is a tedious work. It requires a lot of laborious work. It may often yield undesired results. Maintaining these records as piles may turn out to be a costlier task than any other of the colleges and institutions.  **RISK INVOLVED IN THE EXISTING SYSTEM**  Present System is time-consuming and also results in lack of getting inefficient results. Some of the risks involved in the present system can be as follows: During the entrance of marks and attendance, if any mistake is done at a point, then this becomes cumulative and leads to adverse consequences. If there is any need to retrieve results it may seem to be difficult to search. **PROPOSED SYSTEM**  UMS (UNIVERSITY MANAGEMENT SYSTEM) makes management to get the most updated information always by avoiding manual accounting process. This system has the following functional divisions: Administrator User (Students / Faculties /Department Staff) University Administrator has the functionality of registering new colleges and courses. He has the rights of creating department, allocating courses to departments, creating faculties, students and allocating subjects to faculties and modifications in the data entered by the user can also be done by the college administrator. User of this may be faculty or students or department staff. Faculty has the facility of entering the marks and attendance of the students. Students can check their marks and attendance but there is no chance of modifications. Department staff can maintain records respective to their roles. Reports must be generated for the existing data i.e. for attendance and marks of the students, which are used to assess the performance of the students. These reports should be viewed by the faculty and user.  **ROLES AND RESPONSIBILITIES:**  There are various roles played by different people:-  **a) Student:** The person who uses the application to interact with university and associated employees, assess his/her career opportunities through application portal search & also get professional counseling from experienced advisors. It is instructed by instructors by taking section under various courses offered by the university. It maintains attendance, undertakes examination and pass courses while submitting assignment and minimum grades.  **b) Instructor**: The person who teaches students and is employed under a department, works under administration supervision and works for student welfare.  **c) Treasurer**: The person who supervises the fiscal matter of the university employees and student, responsible for generation of bills and remitting salary on monthly basis. It also keeps an eye on the dues of students  **d) Registrar**: The person who maintain student details be it demographic or academic details. It also keeps a record of employee and administration staff. It also maintains a backup of the data in case it is lost. It is also responsible for updating the grades and marks of students in accordance with his registered courses.  **e) Librarian**: The person who maintains the library, purchases books to serve as reference material for the students as well as instructors, maintains the quantity of books as per the need and demand. It maintains a record of people who issues books, and update the status of availability for the convenience of students which can be accessed through online portal.  **f) Administrator**: An employee at a senior level and position, experienced and responsible for running the department for which he is accounted for. He can view the employee details of his department working under him  **g) ISSI staff:** Maintains international status of students coming abroad for studies and record of their required documents.  **i) Advisor:** A person who provide guidance and monitors the student’s term at the university. |

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| **“ER-DIAGRAM”**    The above diagram shows an initial Entity-relationship diagram which was developed at the beginning of the project to initially understand the relationship between the entities which were initially created.  The following can be understood from ER Diagram   * The Student is the main actor in the database and most of the table are involved in relationships with the Entity student. * A student can either belong to a Major or Minor Department. Thus, there exists a one to many relationship between Department and student where a department can have many students whereas a student can belong to one Department. * There are employees in database, which are basically playing the roles of librarian, advisor, instructor, ISSI staff, Registrar Staff, Health advisory staff etc. * Both the employees and student have bills where finance staff has to maintain a record and details of both and generate a monthly salary of each employee and a bill semesterwise for students registering for courses. * A department can have multiple courses which can further have multiple sections taught by instructors. * A student has to submit assignment which is given by the instructor teaching a section. There exists a many-to-many relationship where a student has to submit multiple assignments and an instructor can give multiple assignments to the students. * Each student has a grade report which records the courses registered by the student in each semester and the grades obtained by the students in those semester. The students will also have their running GPA’s stored in the table. * A student can go on avail opportunities like part-time jobs and co-op wherein a record has to be maintained about the duration for the same and the respective salaries obtained by the student in the jobs. * A department can have advisors who can advise multiple students. There exists a manyto-many relationship between advisor and department and department and student. * A student and a faculty can avail the services offered by the library where they can issue multiple books. * A student has an attendance record which is maintained by the department he is enrolled into. * The sections are held in a building which has a one-to-many relationship with the classrooms. The sections are also held in a multiple day slots and have a class timing. * The courses registered by the students have certain pre-requisite courses which must be undertaken first in order to take courses which have a pre-requisite course. Thus, a mandatory-many cardinality exists between a course and its pre-requisites. * The student also have a record with ISSI where their International details, arrival and departure in country, passport and visa details are recorded. * The student also availing dining services have a record and a bill generated accordingly. * A student also has a health and insurance record with university of health and counsel services wherein insurance details of each student are recorded.   **SECURITY ISSUES:**  This section of the document deals with the security issues of the system. The system is made secure using all possible secure coding methods (SSL, Cache Clearance, Anti CSRF) to avoid breach of data integration. The system deals with the concept of views which are used to control the data that is accessed by the application user. There are two views in the procedure involving the admin view and student view. The application users have no access to the database directly, they can access the data only the web secure online enterprise application. Application Security The application is made secure by assigning unique usernames to all users and password is not made visible to any of the system users or administrators and is customer specific. The application makes use of https, ssl and verisign secure to make secure all kind of financial and business critical data transactions.  **PROCEDURES AND TRIGGERS:** |
| END //    REFERENCES:   * <https://www.researchgate.net/publication/322099765> * <https://www.academia.edu/5568260> * <https://www.scribd.com/document/153050325> * https://www.freeprojectz.com/project-report/21406 |