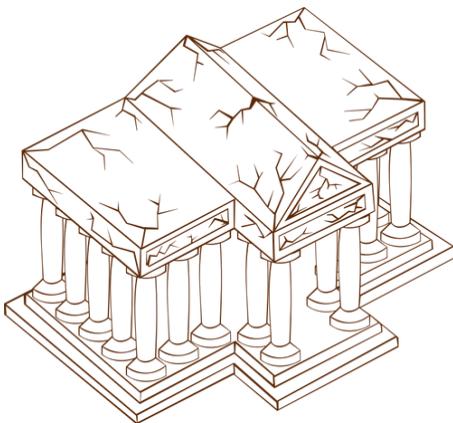


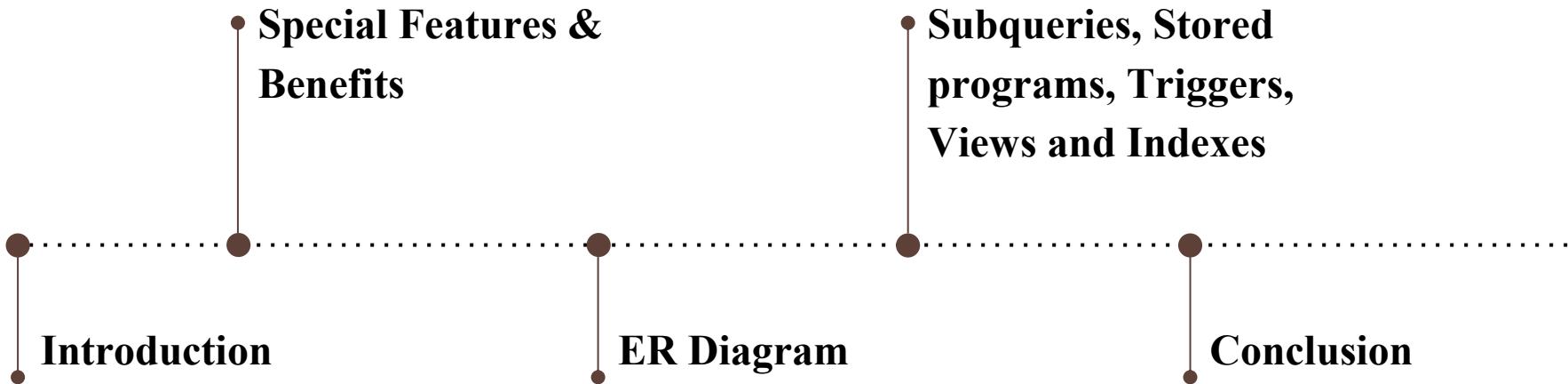


Centralized University Database

Gopi krishna



Contents



Introduction

- ❖ An university is required to maintain all sorts of data ranging from student information, student enrollment, student grades, courses offered, professor information records, immigration records, housing records and so much more.
 - ❖ An interactive database allows for easy, efficient retrieval of information while maintaining data integrity.
 - ❖ A centralized database makes data retrieval and manipulation much more simpler as the data is stored at a single location with concurrent access to multiple users.
-

Special Features

Access Control

In order to preserve database schema, users will be assigned read only access to the database. Only the database administrators will be able to make changes to database schema and records.

```
227 GRANT SELECT ON Students TO 'general'@'localhost'
228 Select * from Students
229 UPDATE Students SET StudFirstName = 'Sam' where StudId = 13544

100% 38:220 7 errors found

Action Output

Time Action Response
2 17:31:00 USE UniversityDB 0 row(s) affected
3 17:31:03 Select * from Stud... 101 row(s) returned
4 17:31:42 UPDATE Students... Error Code: 1142. UPDATE command denied to user 'general'@'localhost' for table 'students'
```

Control Triggers for error reduction

Any change to certain essential data will be monitored ensuring a reduction in the occurrence of errors. These changes will automatically be logged into a history table and old data will not be automatically modified or deleted.

Faster search capabilities

Indexing reduces the query execution time by creating pointers to where data is stored in the database. The number of pages that needs to read in order to find the records is decreased

Benefits

Reduced Complexity

Centralized databases are less complex when compared to distributed database systems. It is easy to retrieve and coordinate data. Data is also consistent as the data is stored in a single physical location.

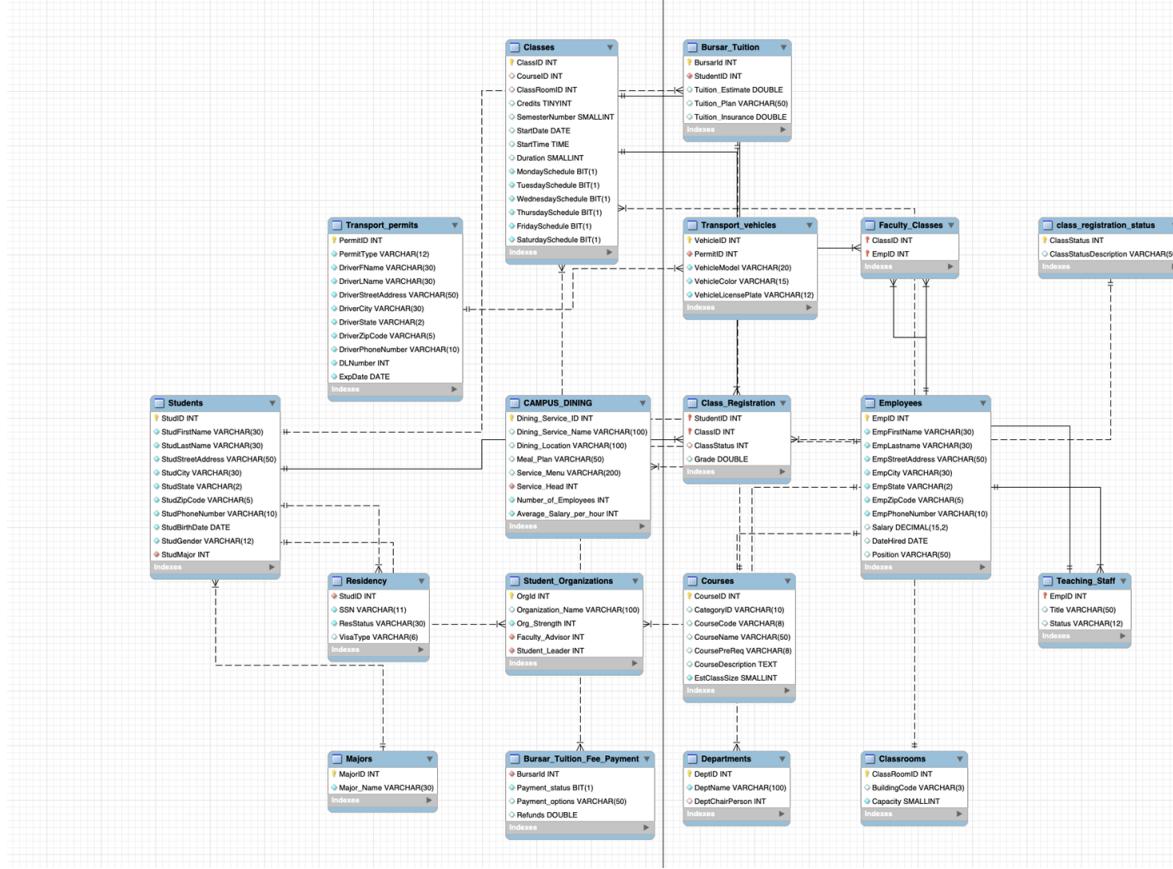
Data Security & Integrity

As data is confined to a single location, network attacks no longer come into picture. Data is more secured and stronger. As the data is consolidated into a single centralized location, multiple changes need not be done for updating a record in the database.

Cost Effective

Centralized database is cheaper when compared to distributed database systems as it requires low maintenance and power. It does not require complex software.

Table Creation and ER Diagram



Complex Reports

- Report of students and staff details living in a particular state
- Display students enrolled in a class on friday
- Display student leader details of all the organizations at the university
- Display a list of each staff member and a count of classes each staff member is scheduled to teach
- For completed classes, list by category and student the category ID, the student name, and the student's average grade of all classes taken in that category
- Report of students and their courses
- Display the list of classes along with the associated faculty for courses
- List the last name and first name of each staff member who has been with the university for more than 10 years
- Display the number of Classes each student is enrolled in
- Display the class details of classes held in a specific building or classroom

- Display the students tuition rate for students who have taken a valid parking permit with the university

	StudID	Student_Name	StudPhoneNumber	Tuition_Estimate
▶	96905	Oaklee Jurecki	3043155411	19072
	89017	Cassandra Glover	5101604542	10418
	79433	Talon Govindappa	1859529285	19072
	98274	Serena Torres	2129220787	19072
	70635	Brantley McCartt	8542963174	10418
	34611	Leonard Shaw	9598177753	11082
	51363	Shruti Swaim	6551850401	10418
	70751	Paris Tao	5642563091	10418

- Display student leader details of all the organizations at the university

	Organization_Name	Student_leader	StudName
▶	Accessible Prosthetics Initiative UT Dallas Chapter	12981	Charli Baqatyan
	Accounting Leadership Association	13119	Ahmed Yao
	Active Minds at UT Dallas	13544	Jon Goodwin
	Actuarial Student Association	14323	Mohamed Krueger
	Advancements in Modern Medicine	14342	Aditi Danalian
	Advancements of Indian Opportunity	15597	Edison Canessa
	AdventHope at UTD	16462	Reign Aird

Complex Reports Continued...



For completed classes, list by category and student the category ID, the student name, and the student's average grade of all classes taken in that category.

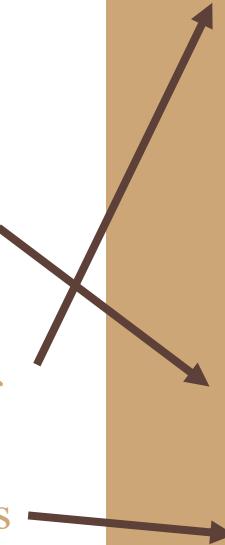
The tables we have used to extract this report are Courses, Classes, Class_Registration, Class_Registration_Status, and Students.

Result Grid | Filter Rows: Export:

	CategoryID	StudFirstName	StudLastName	AvgGrade
▶	ART	Charli	Baqatyan	44
	ART	Ahmed	Yao	74
	ART	Jon	Goodwin	80
	ART	Mohamed	Krueger	44
	ART	Aditi	Danalian	95
	ART	Edison	Canessa	61
	ART	Reign	Aird	90
	ENG	Emory	Sinah	57

Stored Procedures and Functions

1. Parking permit type determination from payment amount
2. Scholarship amount derivation from tuition estimate (25% scholarship of estimate)
3. Grade determination based on scores
4. Net employee salary after tax deductions
5. Determining seniority level of faculty



1. Amount owed based on Student ID
2. Student verification by any department
3. Generate custom email addresses for employees and students
4. Parking verification for Transportation office employees
5. Assigning Grades based on marks obtained for a particular class

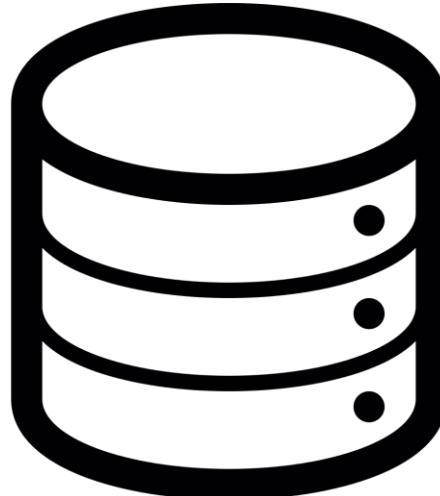


Additional Features

Triggers

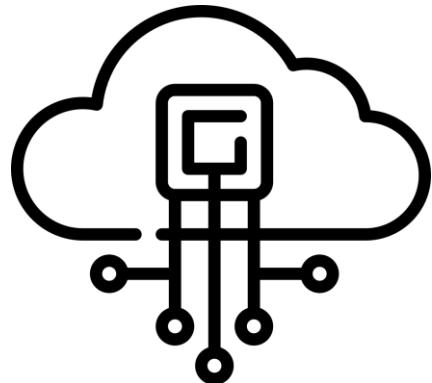
Database keeps track of any changes to the master tables with audit tracking and history logging.

Database keeps track of ex employees, alumni, newly admitted students by itself.



Sensitive data not exposed (Views)

Creation of views (virtual tables) within the database allows for only specific data to be exposed to all the users. Keeps sensitive data away from the eyes of all users. ex) Departments with employee chairperson and contact information



Conclusion & Future Scope of the project

