Practical NO:-1

Aim:- Design schema for college Management system.

Theory :-

Relational Model :-

Relational model can represent as the table with columns and rows. Each row is known as tuple and each column of table is known as attribute

Domain :-

It contains a set of atomic values that an attribute can take.

Attribute :-

It contains the name of a column in a particular table. Each attribute Ai must have a domain dom(Ai)

Relational Instance

In the relational database system, the relational instance is represented by a finite set of tuples. Relational instances do not have duplicate tuples

Relational Schema :-

A relational schema contains the name of the relation and name of all columns or attributes.

Relational key:-

In relational key, each row has one or more attributes It can identify the row in the relation uniquely

e.g:- student Relation

Name	ROLLNO	Phone-no	Address	Age.
Ram	1	9158232526	Mumbai	24
Shyam	5	7276612094	Thane	29
Laxman	7	83907 14981	kalyan	27
Mahesh	8	81809 71389	Panvel	23

In above table Name, Roll-No, Phone-no, Address, Age are attributes The instance of schema student has 5 tuples.

Integrity constraints

- Integrity constraints are a set of Rules. It is used to maintain the quality of information
- Integrity constraint is used to guard against accidental damage to the database.

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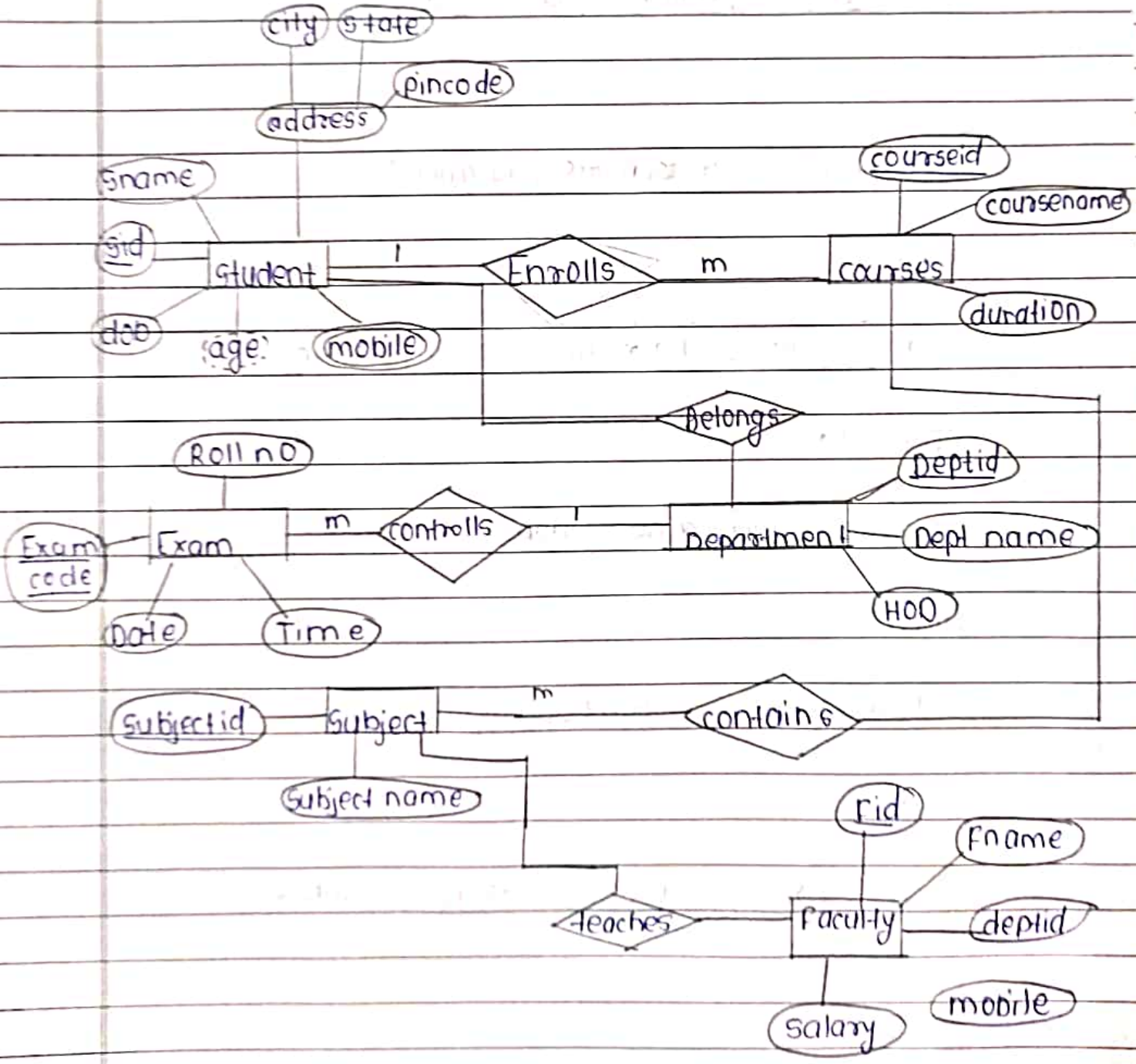
Output:-

1. ER Diagram For college management system.



2) Relational Schema For college Management system

Student

sid	sname	address	dob	age	mobile

courses

courseid	coursename	duration

Exam

Examcode	Room_no	Date	Time

Department

deptid	deptname	HOD

Subject

Subjectid	Subject_name

Faculty

Fid	fname	deptid	salary	mobile

Practical No:-2

Aim:- Creating tables, Renaming tables, Data constraints (Primary key, Foreign key, NOT NULL), Data insertion into a table.

Theory:-

SQL Languages:-

1) DDL:- Data Defination Language provides commands for defining the relational schema, deleting, modifying relation at schema.

2) DML:- It provides ability to query information from the database and insert tuples, delete tuples modify tuples in database.

create command

create command is used to create database or table.

Syntax:-

create database name of_database

e.g:- create database college.

create table:-

Syntax:

create table table_name (col 1 datatype, col 2 datatype (integrity constraints)

e.g:- create table student (sid int, sname varchar (30), state varchar(30), city varchar (30), pin int, age int, dob date, primary key (sid));

output:-

sid	sname	state	city	pin	age	dob

ALTER command:-

Alter table command is used to add, modify, drop the column in existing table.

1) Add:-

syntax:- Alter table table_name add (col1 datatype....).

e.g:-

alter table student add (deptid int).

2) Modify:-

It is used to modify the datatypes.

syntax:-

Alter table table_name modify col name data type.

e.g:- Alter table table_name modify col_name data type.

3) Drop:-

The drop statement is used to delete a table derination & all data from a table.

Syntax:-

Altertable table_name drop column col_name.

e.g:-

Alter table student drop column deptid.

4) Rename:-

Any database user can easily change the name by using the rename table and alter table statement instructed query language.

Syntax:-

Rename old_table_name to new_table_name;

e.g:-

Rename cars to car2021_details;

INSERT

Insert command is data manipulation command that used to manipulate data by inserting information into the tables.

syntax:- insert into table_name (col1, col2... coln).
Values (value1, value2, ... valuen).

Update:-

update command is a data manipulation command which is used to edit the records of the table.

Syntax:-

update table_name set col1 = value1, col2 - value2
Where condition

e.g:-

Update student set deptid = 5 where sid = 3.

Delete:-
Delete statement is used to delete existing Records in a table

Syntax:-
Delete from table_name where condition;

e.g:-
Delete from student where sid = 4.

Practical No:-3

Aim:- Implementing sql commands for grouping and Aggregate functions.

Theory:-

SQL clause

- Group By

The GROUP BY statement in sql is used to arrange identical data into groups with the help of some functions. i.e if a particular column has same values in different rows then it will arrange these rows in a group.

Syntax:-

```
SELECT column1, function_name (column)
FROM table_name
WHERE condition
GROUP BY column1, column2
ORDER BY column1, column2;
```

e.g:- `SELECT NAME, SUM (SALARY) FROM EMPLOYEE GROUP BY NAME;`

Order BY:-

The order by keyboard is used to sort the result-set in ascending or descending order.

- The order by keyword stars the records in ascending order by default. To sort the records in descending order, use the DESC keyword.

Syntax:-

```
SELECT column 1, column 2 . . .
FROM table_name
ORDER BY column 1, column 2, . . .
ASC|DESC;
```

e.g:- SELECT * From customer
ORDER BY county;

- SQL Aggregate Functions.

COUNT():-

count returns the total count
count (*) returns total no. of records
e.g:-
count (salary): return number of non-null values over the column salary.

AVG(): Returns the average value
e.g:-
AVG (salary) = sum (salary) / count (salary)

sum(): Returns the summation
e.g.:
sum(salary) : sum all non-null values of salary column

Min(): Returns the minimum value.
e.g.:-
min(salary) : minimum value in the salary column except NULL

Max(): Returns the maximum value
e.g.:- max(salary);
maximum value in salary attribute.

SQL query: