Chirayu Sharma Day-3 Assignments

Problem Statement 1 :- Create an employee table with required details.

Explanation :-
So in this question i have to create a employee table with some columns by my choice so i am making 5 columns id, name , age , phone no and salary and making id as primary key in it i will use CREATE TABLE to make this

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/Q1.sql

Problem Statement 2 :- Create a Student table with required details.

Explanation :-
So in this question i have to make a student table with some columns by my own so i will make student id, name, age, email and course and will make ID as primary key

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q2.sql

Problem Statement 3 :- Create a employee and salary details tables with by having a foreign key.

Explanation :-
So i have to make two tables employee and salary and one table should contain primary key of other table in form of foreign key so first i will make employee table with employee id, name, age, phone number and will make employee id as primary key then i will create salary table with salary id, employeeid, department, basic salary, job title as columns and will make employee id the foreign key linked with employee table.

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q3.sql

Problem Statement 4 :- Create a Student table with 2 values is identified as primary key.

Explanation :-
So i need to create a student table with 2 columns combining and becoming a primary key this is also called as composite key so i will make 5 columns studentid, courseid, name , age and email and will make combination of studentid and courseid as primary key i can use PRIMARY KEY (student_id,course_id) this syntax for it.

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q4.sql

Problem Statement 5 :- Update the employee table to add new designation column.

Explanation :-
So in this problem I have to update my table and add a new column. I can do this by using the ALTER command of sql.

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q5.sql

Problem Statement 6 :- Update the Employee table to increase the size of the column email.

Explanation :-
So in this question i have to update the employee table and increase the size of the column email

So firstly i need to add email in my employee table as it was missing i will use alter for it and give a VARCHAR(50) size and then i will again ALTER command to MODIFY COLUMN to VARCHAR(100)

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q6.sql

Problem Statement 7 :- Rename the Student table to studentDetails

Explanation :-
So in this question i have to just rename Student table to studentDetials

So i can use ALTER statement again and just add RENAME TO studentDetials and it will get changed to studentDetials

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q7.sql

Problem Statement 8 :- Drop the studentDetails table if the table is exists.

Explanation :-
So i need to drop the studenDetials table if it exist so i need to use DROP table name statement to perform this DROP statement clears table from memory location and nothing is left after DROP statement so we need to perform it carefully

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q8.sql

Problem Statement 9 :- Create studentDetails table with (courseId as mandatory, email as unique, any 2 fields as primary key)

Explanation :-
So in this question i have to create a studentDetials table with courseid as not null or mandatory , email as unique and 2 fields i will choose like that so there combination is a primary key its called a composite key .

So i will first create a student details table and add columns like studentid,courseid, firstname, last name, date of birth and email field and will make student id and course id as primary key like combination of them will be primary key and i will add NOT NULL constraint during courseid creation

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q9.sql

Problem Statement 10 :- Demonstrate the difference between drop and truncate.

Explanation :-
So in this question i have to demonstrate the difference between drop and truncate

So the DROP statement is used when we have to remove the whole table from memory location and permanently delete it . TRUNCATE we use to remove all rows from the table and just keeping the structure there like column names and all will be there but no data will be there

So for this question i will make 2 dummy table and i will use DROP on one and TRUNCATE on other one to demonstrate this and after doing that only one table will be there in memory location whom which i used TRUNCATE statement

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q10.sql

Problem Statement 11 :- Remove the comments column from the Student table.

Explanation :-
So in this question i have to remove comments column from the student table

So first i need to add comments column in student table as it was not there before so i need to use ALTER statement to ADD column

Then i need to again use ALTER statement to DROP that column by using DROP COLUMN statement

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q11.sql

Problem Statement 12 :- Insert 40-50 records to each table studentDetails, employee, salary, course.

Explanation :-
So i need to insert 40-50 records to each table student Details , employee ,salary and course

So first i need to CREATE TABLE so i will make structure of these tables by using CREATE TABLE statement and assigning them column names

To insert in table i need to use INSERT INTO tablename VALUES statement by this i can add 40-50 records to each table

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q12.sql

Problem Statement 13 :- Demonstrate the update command by updating the data in the tables studentDetails, employee, salary, course (Single record update, Multiple records update)

Explanation :-
So i need to demonstrate how to use update command by updating the data in tables studenDetails, employee , salary, course and updation should be performed on single record or multiple record

So to UPDATE any record there is three statement which need to keep in mind UPDATE,SET and WHERE so UPDATE tablename (where we wanna perform updation) SET columnname = “new updated value” and WHERE is the condition to get that row like WHERE id = 1 something like that so we can update that and if we wanna update multiple rows we need to add that in WHERE like WHERE id > 1 AND id < 10 so like this we can perform multiple updation

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q13.sql

Problem Statement 14 :- Demonstrate the delete command by deleting the data in the tables studentDetails, employee, salary, course (Single record update, Multiple records update)

Explanation :-
So we need to demonstrate deletion of record from tables it should be single record or multiple

So for this we need to follow DELETE FROM tablename WHERE condition and like this we can delete rows which we dont want we should only use this to delete some rows from table if we wanna delete all rows we should use TRUNCATE and if we wanna erase whole table only in memory we should use DROP statement

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q14.sql

Problem Statement 15 :- Demonstrate the difference between delete, truncate and drop commands with examples and explain its business usages.

Explanation :-
So i need to demonstrate the difference between delete, truncate and drop commands and have to explain its business usages

So first start with DELETE command so we use DELETE FROM tablename WHERE condition to DELETE specific rows from table we can use this in streaming website service we will first check if a user has paid the bill if not we can remove his data from paid user and from that table

TRUNCATE command is used to delete all data from a table and we use it by TRUNCATE table name we just delete everydata from it but we keep the structure and column names . we can use it in classroom table like grade 5 will have kids list and all but when they go to grade six we need to remove them all from table grade 5 but we dont need to delete whole structure only so we can use TRUNCATE to remove data

DROP command is used when we have to delete everything data and structure we use it by DROP table name we can use it when if we are closing one part of business and dont wanna use it ever so we can just drop that table like google had fire all python team and dont need there data anymore so they can just DROP the table

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q15.sql

Problem Statement 16 :- Demonstrate the REPLACE / UPSERT functionality with examples

Explanation :-
So in this question i need to demonstrate the REPLACE and UPSERT function with examples

So first let start with what is UPSERT so it is made up of two words UPDATE and INSERT so it insert a new row data if same data is not exist in it before or if a data is there before it update that also so in mysql we directly dont have UPSERT so we can use like INSERT INTO table name VALUES (data) ON DUPLICATE KEY UPDATE and we need to specify what to update and all i have mentioned that in the sql file below

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q16.sql

Problem Statement 17 :- Demonstrate the keys(primary, foreign and composite) by creating the tables Students, Courses and departments

Explanation :-
So in this problem i have to Demonstrate the concept of foreign , primary and composite key by creating the tables Students , Courses and departments

So let me explain one by one what each key is and how it work

PRIMARY KEY it is the NOT NULL UNIQUE KEY that every table must contain it distinguish the whole row from other and make it easy to access data but in one table there can be only one PRIMARY KEY we can use PRIMARY KEY (column name) to invoke it

FOREIGN KEY is a PRIMARY KEY of other table that we are also including in our own table it is used to link two tables together FOREIGN KEY can be NULL NON UNIQUE too as multiple rows can be attached to one FOREIGN KEY we can use it by FOREIGN KEY (column name) REFERENCES table name where it is a primary key (column name of that table where it is primary key)

COMPOSITE KEY it is a type of PRIMARY KEY but it is made up by combination of multiple columns in a table like the combination of two column makes a unique pattern which is NOT NULL and that can be used a PRIMARY KEY

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q17.sql

Problem Statement 18 :- Demonstrate SELECT query for the below conditions
select single column
select multiple column
select all column
select using WHERE condition
select using ORDER BY
select using LIMIT and fetch
select using BETWEEN both numeric and non numeric
select using IN
select using LIKE

Explanation :-
So in this problem i need to perform many select query operation so i will explain them one by one now
For single column just use SELECT column name FROM table name and you will ge a single column
For multiple columns you can add SELECT column name 1, column name 2 …. And so on it will go on FROM table name
WHERE is used to set condition to get specific rows onlys like SELECT * FORM tablename WHERE id = something or you can give range or anything that you like
ORDER BY is used to sort the selected table in ASC or DESC order by selected column value it is used after the WHERE statement like ORDER BY name DESC
LIMIT is only used in mysql it limit the number of output to display like LIMIT 10 so it will just show 10 output and so on
BETWEEN is used in WHERE statement like WHERE age BETWEEN 10 and 15 or non numeric too
IN is used in WHERE to say somenumber or non number should be IN THIS list for example WHERE id IN (10,20,40) so only people with id 10,20 or 40 will be selected for this
LIKE works as regex where we say we dont know full data that we need to match but we know some word or number comes in between , start or end and we use LIKE “%test%” like test comes in between a word so return word where test is in between

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q18.sql

Problem Statement 19 :- Demonstrate SELECT using all the aggregate functions & aggregate function with GROUP BY and HAVING

Explanation :-
So in this question i have to Demonstrate SELECT using all the aggregate function with GROUP BY and HAVING

So first let me tell you about aggregated functions . So aggregated functions are methods which we perform on column like to get a single value from the operation made on whole column there can be many aggregated functions but some common ones are COUNT() it counts the number of rows are there , SUM () it return the sum of every element in that column , MAX () it gives the max element in that column , MIN() it gives the minimum element in that column , AVG() gives the average of that column and there are many more aggregated functions we can use

To use them we need to give one column where we wanna perform it like SELECT AVG(age column) FROM students like this so we will age average age of student

Now we have one more command GROUP BY which group same element in a column like in simple word it group them and just return unique values in column in from of group and we can use aggregate function to get values according to that group like COUNT(*) and we group by credit card we can see how many time which company credit card is used and then comes HAVING it is like WHERE but for columns we can put condition in it like HAVING id > 1 etc etc it behaves same like WHERE in it

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q19.sql

Problem Statement 20 :- Demonstrate SELECT using DISTINCT keyword

Explanation :-
So in this problem i need to Demonstrate SELECT using DISTINCT keyword

So DISTINCT works same as GROUP BY when not using aggregated functions so it gives unique elements in a column so we can use SELECT DISTINCT columnname FROM tablename

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q20.sql

Problem Statement 21 :- Demonstrate the SELECT using with subqueries.

Explanation :-
So i need to demonstrate SELECT using subqueries

So first lets see what subqueries is so its a simple query like we are used to writing but we use it inside another query to make our query more dynamic in nature like we can use it with SELECT too or with FROM too but mostly it is used with WHERE for example WHERE age > (select AVG(age) FROM student) something like this its like we are nesting query inside query to make it more dynamic in nature

So in my solution i will make a new table just to test and show how it is work mostly i also used it with WHERE command only as in industry this is the most common method

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q21.sql

Problem Statement 22 :- Demonstrate Different type of JOINs with examples**.**

Explanation :-
So in this problem i have to demonstrate different type of JOINS

So first let learn about JOINs so JOIN are methods which used to Join tables together with the help of foreign key so we can get required information from it like they are made to work on two tables to join them but we can again use JOIN for third and so on table there are 3 types of inbuilt join in mysql

INNER JOIN in this we join common part of both table and show them only
LEFT JOIN (left outer join) in this we join common part of both and also all rows of first table too
RIGHT JOIN (right outer join) in this we join common part of both and also all rows of second table too

There is one more join FULL OUTER JOIN but what is not available in mysql we can use UNION to achieve this and get everything in both table if they match or not its like UNION only

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q22.sql

Problem Statement 23 :- Create the below tables and insert 20-30 records into the table.

Students(StudentID, FirstName, LastName, DateOfBirth, Email)

Courses(CourseID, CourseName, Credits)

Enrollments(EnrollmentID, StudentID, CourseID, EnrollmentDate)

Explanation :-
So in this problem i need to create given tables and add 20 -30 records in it

To create table we can use CREATE TABLE tablename (column names and datatype)
To insert values in table we can use INSERT INTO tablename VALUES (data)

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q23.sql

Problem Statement 24 :- Write the queries for below questions.
a) Retrieve all students from the Students table.
b) display only the FirstName and Email of all students.
c) List all courses with exactly 4 credits.
d) Show all students born after January 1, 2000.
e) List students whose first name starts with "J".
f) Find the number of students enrolled in each course.
g) Display students and their enrollment dates.
h) List unique course IDs from the Enrollments table.
i) Find all students who are enrolled in CourseID 102.
j) Display students ordered by LastName alphabetically.
k) List all students who have not enrolled in any course.
l) Show the average number of credits across all courses.
m) List the top 3 most recently enrolled students.
n) Find all courses with names containing the word 'Data'.
o) Display the youngest student in the database.
p) Count the number of students with the same last name.
q) List courses along with the total number of enrolled students, sorted by count descending.
r) Find students who share the same first name.
s) Display enrollments made in the current year.
t) List students along with the names of the courses they are enrolled in.

Explanation :-
So we have to write SELECT queries to get required output so i have written all of them in my solution and i have used methods which i have already discussed above and explained before

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q24.sql

Problem Statement 25 :- 1. Using joins
a) List all students along with the courses they are enrolled in.
b) List all courses and the students enrolled in them (include courses with no enrollments).
c) Show all students who have not enrolled in any course.
d) List course names along with the count of enrolled students using JOIN.
e) Show each student's full name and all course names they are enrolled in, ordered by student nAnswer:
f) List students and enrollment details using INNER JOIN.
g) List all courses with student names using LEFT JOIN.
h) List student names and their course names using RIGHT JOIN (if supported by your DBMS).
i) Show students and courses using FULL OUTER JOIN (if supported).
j) Find students who are enrolled in both 'Database Systems' and 'Data Structures'.

Explanation :-
So we have to write SELECT queries and also perform JOIN operation to get required output so i have written all of them in my solution and i have used methods which i have already discussed above and explained before so i will be using them only and question (i) im skipping as in mysql full outer join is not supported but if you wanna use you can use UNION too and get the required output

Solution :-

https://github.com/ChirayuSharmaWork/Nisum/blob/main/Day%203/q25.sql