



Spring-2024 DataBase Systems (CS-103)

Lab Task # 04

Data Definition Language (DDL) and Constraints

Instructors: Mr. Hamza Javed

Date: 19 April 2023

Important Instruction

1. No plagiarism allowed.
2. You will required to submit only soft copy via google classroom
3. Late submission not accepted
4. Rename submission file DB24-Name-RegNo. like: **DB24-hamza-1234**
5. You will required to submit single **pdf**

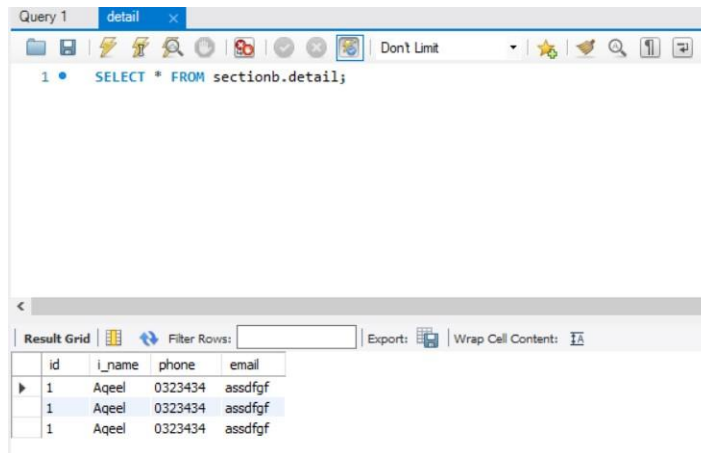
Submission Example

Question .

Write query to select all data from table:

Solution

SELECT * FROM db.detail;



Question 1

Tasks:1

1. Create Department table based on the following design:

	Column Name	Data Type	Allow Nulls
▶	deptno	Int	<input type="checkbox"/>
	dname	varchar(14)	<input checked="" type="checkbox"/>
	loc	varchar(13)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Solution

```
Query 1 x department_table - Table department
1 • CREATE SCHEMA IF NOT EXISTS company;
2
3 • CREATE TABLE company.department (
4     dept_no INT,
5     dept_name VARCHAR(14) NULL,
6     dept_loc VARCHAR(13) NULL
7 );
8
9
```

Table: department

Columns:

dept_no	int
dept_name	varchar(14)
dept_loc	varchar(13)

Object Info Session

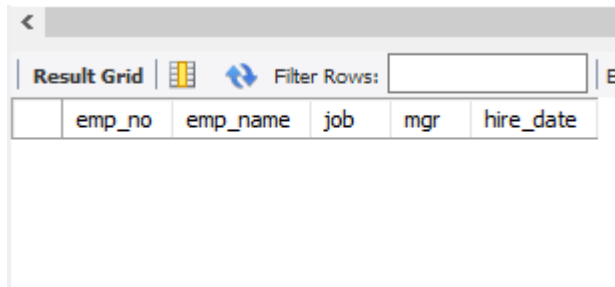
2

2. Create Employee table based on the following design:

	Column Name	Data Type	Allow Nulls
►🔑	empno	Int	<input type="checkbox"/>
	ename	varchar(10)	<input type="checkbox"/>
	job	varchar(9)	<input checked="" type="checkbox"/>
	mgr	Int	<input checked="" type="checkbox"/>
	hiredate	date	<input checked="" type="checkbox"/>


Solution

```
CREATE TABLE company.employee (  
    emp_no INT,  
    emp_name VARCHAR(10) ,  
    job VARCHAR(9) NULL,  
    mgr INT NULL ,  
    hire_date DATE NULL  
);
```



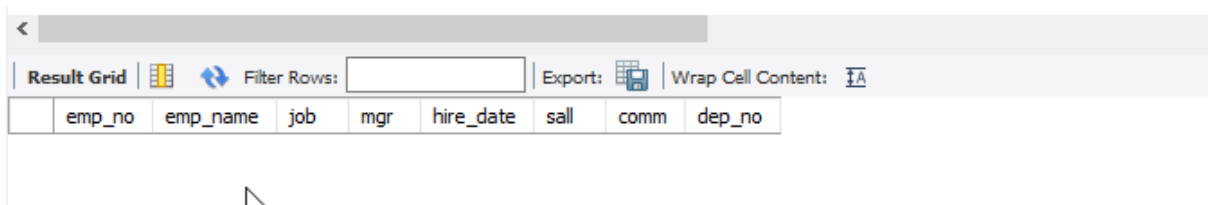
emp_no	emp_name	job	mgr	hire_date
--------	----------	-----	-----	-----------

3. Modify Employee table and add three more columns:

	Column Name	Data Type	Allow Nulls
	empno	Int	<input type="checkbox"/>
	ename	varchar(10)	<input type="checkbox"/>
	job	varchar(9)	<input checked="" type="checkbox"/>
	mgr	Int	<input checked="" type="checkbox"/>
	hiredate	date	<input checked="" type="checkbox"/>
	sal	Int	<input checked="" type="checkbox"/>
	comm	Int	<input checked="" type="checkbox"/>
	deptno	Int	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Solution

```
ALTER TABLE company.employee  
ADD COLUMN sall INT NULL,  
ADD COLUMN comm INT NULL,  
ADD COLUMN dep_no INT NULL;
```



emp_no	emp_name	job	mgr	hire_date	sall	comm	dep_no
--------	----------	-----	-----	-----------	------	------	--------

4. Insert at least five Record into Employee table

Solution

```
INSERT INTO company.employee (emp_no, emp_name, job, mgr, hire_date, sall, comm, dep_no)
VALUES
(1, 'Fakhar', 'Manager', NULL, '2022-01-01', 50000, NULL, 101),
(2, 'Saif', 'Analyst', 1, '2022-02-15', 40000, 2000, 102),
(3, 'Mehwish', 'Developer', 1, '2022-03-10', 45000, 1000, 103),
(4, 'Munawar', 'Designer', 2, '2022-04-05', 38000, NULL, 102),
(5, 'Awan', 'Tester', 3, '2022-05-20', 42000, NULL, 103);
```

```
31
32 • SELECT * FROM company.employee;
```

emp_no	emp_name	job	mgr	hire_date	sall	comm	dep_no
1	Fakhar	Manager	NULL	2022-01-01	50000	NULL	101
2	Saif	Analyst	1	2022-02-15	40000	2000	102
3	Mehwish	Developer	1	2022-03-10	45000	1000	103
4	Munawar	Designer	2	2022-04-05	38000	NULL	102
5	Awan	Tester	3	2022-05-20	42000	NULL	103

5. Drop Column loc from Department table

Solution

```
34 • ALTER TABLE company.department
35 DROP COLUMN loc;
36 • SELECT * FROM company.department;
```

dept_no	dept_name	dept_loc
---------	-----------	----------

6. Delete all record from Employee table

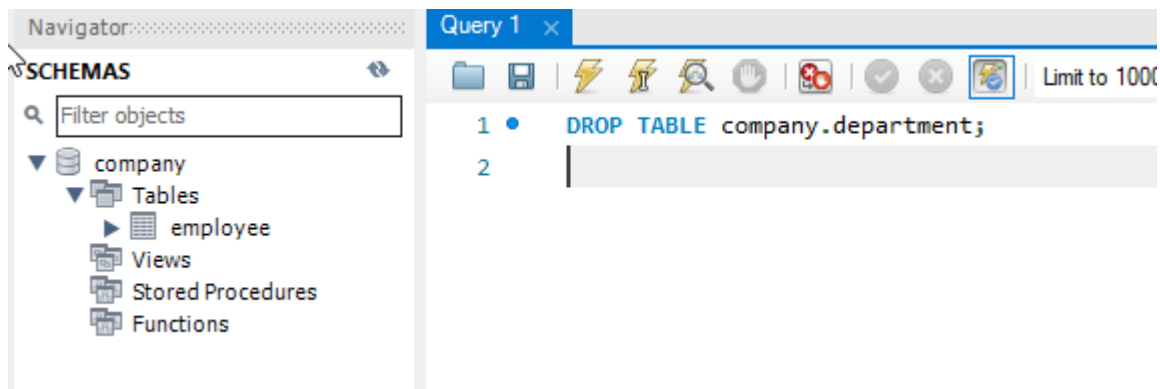
Solution

```
38 • TRUNCATE TABLE company.employee;
39 • SELECT * FROM company.employee;
```

emp_no	emp_name	job	mgr	hire_date	sall	comm	dep_no
--------	----------	-----	-----	-----------	------	------	--------

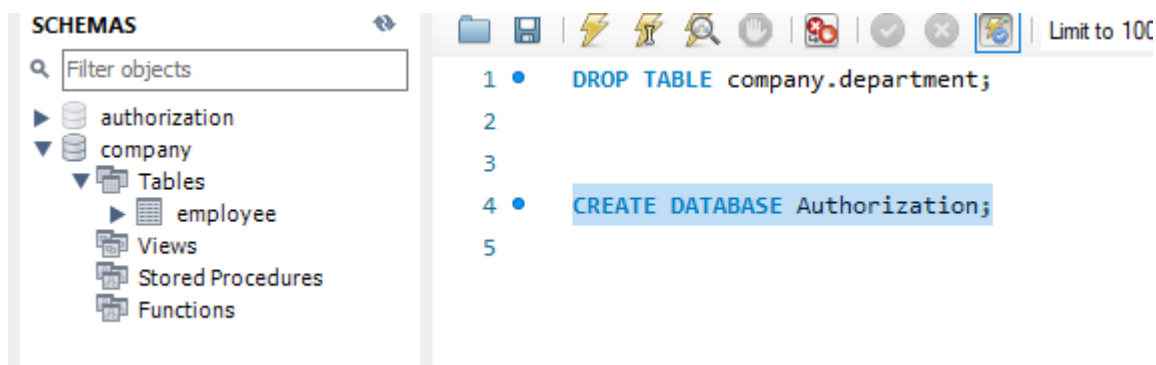
7. Delete Department Table.

Solution



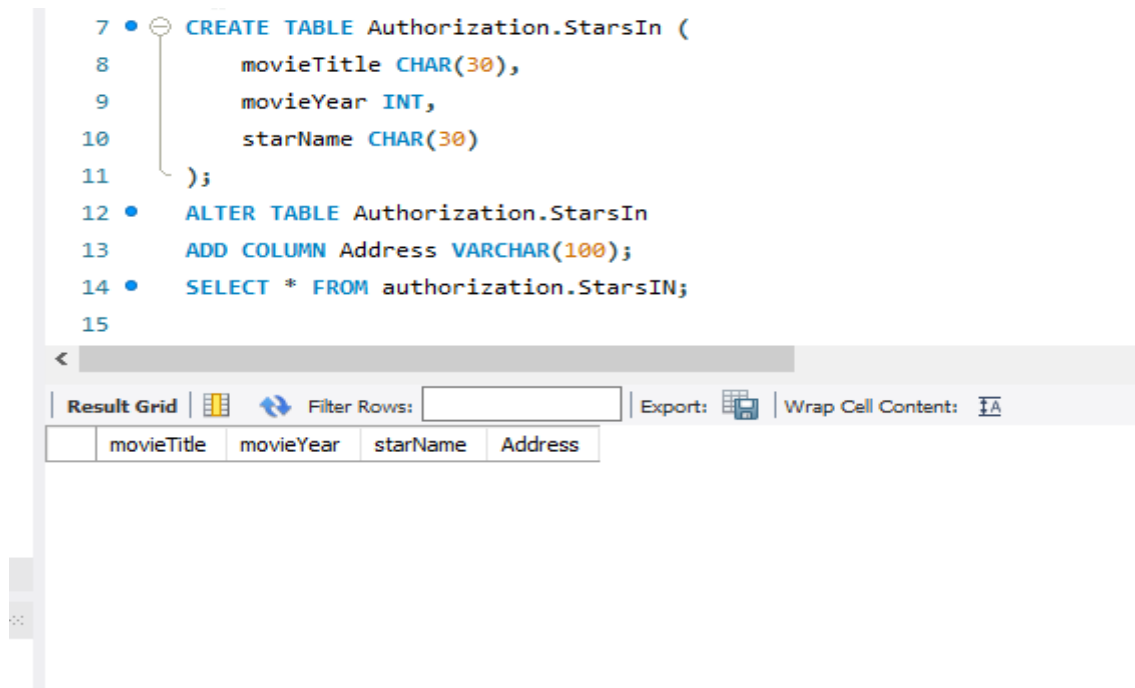
8. Create database Authorization

Solution



9. Add a column 'Address' in Starsin table in database Authorization. CREATE TABLE StarsIn (movieTitle char(30), movieYear int,starName char(30));

Solution



Question 2

Tasks:2

Solve the Queries given below according to the following tables given below:

Date: 19 April 2023 – Lab Task # 04

3



1. Apply Not Null Constraint on all columns.
2. Apply primary key constraint in OrderID and customer ID
3. Apply foreign key constraint on Customer ID in Order table.
4. Apply check constraint on city (allow Karachi, Islamabad, Lahore only).
5. Set the default value of City as 'Karachi'.
6. Add CNIC column in Customer table with unique constraint.

Solution

```
CREATE SCHEMA IF NOT EXISTS ShoppingMall;
-- Create the Order table
```

```
CREATE TABLE ShoppingMall.Order (
    Order_ID INT NOT NULL,
    Customer_ID INT NOT NULL,
    Order_Detail VARCHAR(255) NOT NULL,
    Required_Date DATE NOT NULL
);
```

```
-- Create the Customer table
```

```
CREATE TABLE ShoppingMall.Customer (
    Customer_ID INT NOT NULL,
    First_name VARCHAR(50) NOT NULL,
    Last_name VARCHAR(50) NOT NULL,
    City VARCHAR(50) NOT NULL,
    Address VARCHAR(255) NOT NULL,
    CNIC VARCHAR(15) NOT NULL
);
```

```
-- Add primary key constraint to Order_ID column
ALTER TABLE ShoppingMall.Order
ADD PRIMARY KEY (Order_ID);

-- Add primary key constraint to Customer_ID column
ALTER TABLE ShoppingMall.Customer
ADD PRIMARY KEY (Customer_ID);
```

- ALTER TABLE ShoppingMall.Order
ADD FOREIGN KEY (Customer_ID)
REFERENCES ShoppingMall.Customer(Customer_ID);

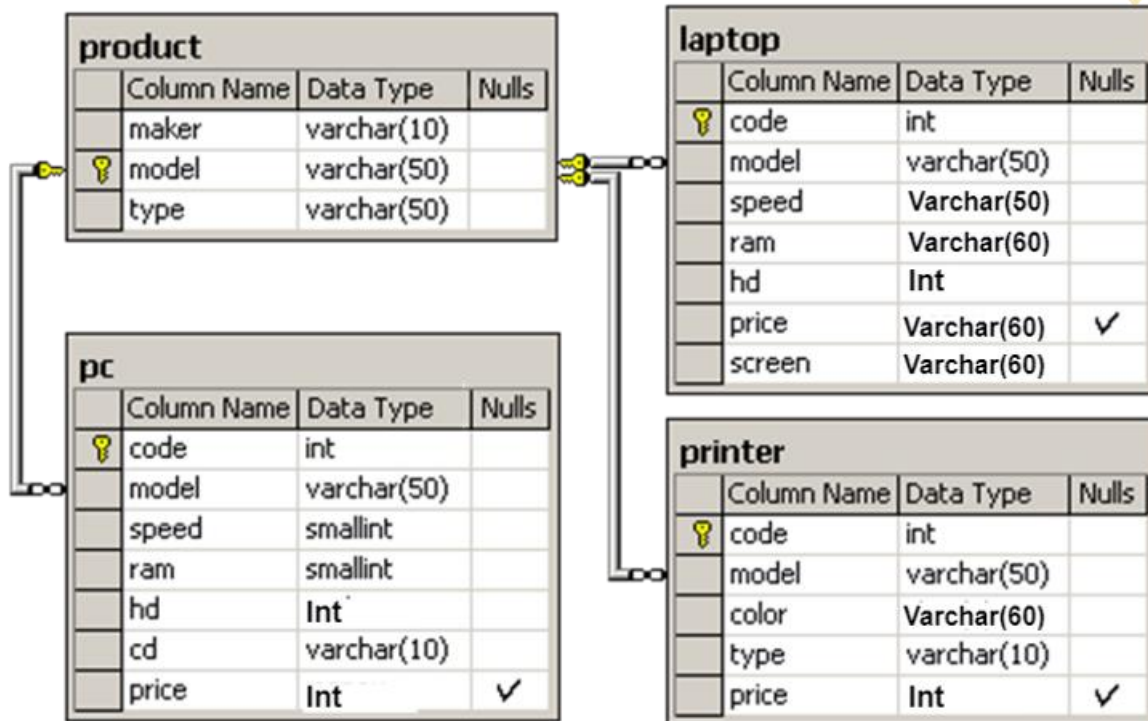
```
-- Add check constraint on City column in Customer table
ALTER TABLE ShoppingMall.Customer
ADD CONSTRAINT chk_city
CHECK (City IN ('Karachi', 'Islamabad', 'Lahore'));
```

```
-- Set default value for City column in Customer table
ALTER TABLE ShoppingMall.Customer
ALTER COLUMN City SET DEFAULT 'Karachi';
```

Question 3

Task:3

Create the following tables given in diagram with constraints (PK-FK relationship).



Solution

```
71  -- Create Table_Product
72  ● CREATE TABLE ShoppingMall.Table_Product (
73      maker VARCHAR(10),
74      model VARCHAR(50) PRIMARY KEY,
75      type VARCHAR(50)
76  );
77
78  -- Create Table_Laptop with foreign key constraint
79  ● CREATE TABLE ShoppingMall.Table_Laptop (
80      code INT PRIMARY KEY,
81      model VARCHAR(50),
82      speed VARCHAR(50),
83      ram VARCHAR(60),
84      hd INT,
85      price VARCHAR(60) DEFAULT NULL,
86      screen VARCHAR(60),
87      FOREIGN KEY (model) REFERENCES ShoppingMall.Table_Product(model)
88  );
89
```


-- Create Table_PC with foreign key constraint

```
CREATE TABLE ShoppingMall.Table_PC (  
    code INT PRIMARY KEY,  
    model VARCHAR(50),  
    speed SMALLINT,  
    ram SMALLINT,  
    hd INT,  
    cd VARCHAR(10),  
    price INT DEFAULT NULL,  
    FOREIGN KEY (model) REFERENCES ShoppingMall.Table_Product(model)  
);
```

-- Create Table_Printer with foreign key constraint

```
CREATE TABLE ShoppingMall.Table_Printer (  
    code INT PRIMARY KEY,  
    model VARCHAR(50),  
    color VARCHAR(50),  
    type VARCHAR(10),  
    price INT DEFAULT NULL,  
    FOREIGN KEY (model) REFERENCES ShoppingMall.Table_Product(model)  
);
```

