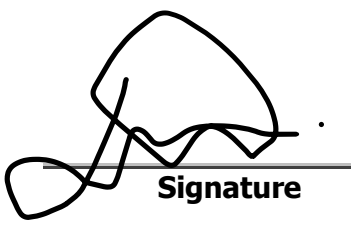


Faculty of Information Technology									
<p>I declare that I am familiar with, and will abide to the Examination rules of CTU</p>  <p>Signature</p>	<p>SUBJECT NAME: Business Programming SUBJECT CODE: PRG522</p>								
	<p>Formative Assessment 3 Duration: 27 Days Date: 12-10-2023 Total Marks: 100 Total pages: -</p>					<p>Examiner: Mr Junior Manganyi Moderator:</p>			
	<p>Student number</p>								
	2	0	2	3	1	4	0	5	
	<p>Surname: Moshoeshoe</p>				<p>Initials: Leduma Tlotliso</p>		<p>/</p>		<p>%</p>

Question 1:

The screenshot shows the MySQL Workbench interface with a new SQL file open. The script contains the following SQL statements:

```
1 CREATE DATABASE dealership;
2
3 CREATE TABLE Product (
4     StockNumber VARCHAR(50) PRIMARY KEY,
5     Make VARCHAR(50),
6     Model VARCHAR(50),
7     Year INT,
8     Color VARCHAR(50),
9     Mileage INT,
10    Transmission VARCHAR(50),
11    Price NUMBER(10, 2),
12    SupplierID VARCHAR(50),
13    FOREIGN KEY (SupplierID) REFERENCES Supplier(SupplierID) ON DELETE NO ACTION
14 );
15
16 CREATE TABLE Supplier (
17     SupplierID VARCHAR(50) PRIMARY KEY,
18     SupplierName VARCHAR(50),
19     Country VARCHAR(50),
20     Contact VARCHAR(50),
21     PhoneNumber VARCHAR(15)
22 );
23
24 -- Insert into the Product table
25 INSERT INTO Product (StockNumber, Make, Model, Year, Color, Mileage, Transmission, Price, SupplierID)
26 VALUES
27 ('001', 'Ford', 'F-150', 2022, 'Blue', 0, 'Automatic', 500000, 'S1'),
28 ('002', 'Toyota', 'Camry', 2023, 'Black', 12000, 'Manual', 200000, 'S2'),
29 ('003', 'Tesla', 'Model S', 2023, 'White', 0, 'Automatic', 450000, 'S3');
```

The left sidebar shows the 'MANAGEMENT' tab with 'Server Status' selected. The 'Output' tab at the bottom is empty.

The screenshot shows the continuation of the SQL script in MySQL Workbench. The script continues with the following statements:

```
29 ('003', 'Tesla', 'Model S', 2023, 'White', 0, 'Automatic', 450000, 'S3'),
30 ('004', 'Chevrolet', 'Silverado', 2020, 'Red', 30000, 'Automatic', 350000, 'S1'),
31 ('005', 'Honda', 'Civic', 2019, 'Silver', 20000, 'Manual', 180000, 'S2'),
32 ('006', 'BMW', '3 Series', 2022, 'Black', 0, 'Automatic', 550000, 'S4'),
33 ('007', 'Audi', 'A4', 2021, 'White', 5000, 'Automatic', 400000, 'S4'),
34 ('008', 'Nissan', 'Altima', 2018, 'Blue', 50000, 'Manual', 150000, 'S2'),
35 ('009', 'Mercedes', 'C-Class', 2022, 'Grey', 0, 'Automatic', 600000, 'S4'),
36 ('010', 'Subaru', 'Outback', 2020, 'Green', 25000, 'Manual', 270000, 'S1');
37
38 -- Insert into the Supplier table
39 INSERT INTO Supplier (SupplierID, SupplierName, Country, Contact, PhoneNumber)
40 VALUES
41 ('S1', 'American Autos', 'USA', 'John Smith', '555-1234'),
42 ('S2', 'Asian Car Masters', 'Japan', 'Yuki Tanaka', '555-5678'),
43 ('S3', 'Electric Innovations', 'USA', 'Emily Johnson', '555-9101'),
44 ('S4', 'European Luxury', 'Germany', 'Hans Müller', '555-1122');
```

The 'Output' tab at the bottom is still empty.

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
1	18:20:00	CREATE TABLE Supplier (SupplierID VARCHAR(50) PRIMARY KEY, SupplierName VARCHAR(50), Country VARCHAR(50), Contact VARCHAR(50), PhoneNumber VARCHAR(15))	0 row(s) affected	0.094 sec
2	18:20:01	CREATE TABLE Product (StockNumber VARCHAR(50) PRIMARY KEY, Make VARCHAR(50), Model VARCHAR(50), Year INT, Color VARCHAR(50), Mileage INT, Transmission VARCHAR(50), Price NUMBER(10, 2), SupplierID VARCHAR(50), FOREIGN KEY (SupplierID) REFERENCES Supplier(SupplierID) ON DELETE NO ACTION)	0 row(s) affected	0.031 sec
3	18:20:01	INSERT INTO Supplier (SupplierID, SupplierName, Country, Contact, PhoneNumber) VALUES ('S1', 'American Autos', 'USA', 'John Smith', '555-1234'), ... 4 row(s) affected	Records: 4 Duplicates: 0 Warnings: 0	0.016 sec
4	18:20:01	INSERT INTO Product (StockNumber, Make, Model, Year, Color, Mileage, Transmission, Price, SupplierID) VALUES ('001', 'Ford', 'F-150', 2022, 'Blue', ... 10 row(s) affected	Records: 10 Duplicates: 0 Warnings: 0	0.000 sec

SCHEMAS

Filter objects

▼

ctu_db

▼

Tables

▶

courses

▶

enrollments

▶

students

Views

Stored Procedures

Functions

▼

dealership

▼

Tables

▶

product

▶

supplier

Views

Stored Procedures

Functions

▶

sakila

▶

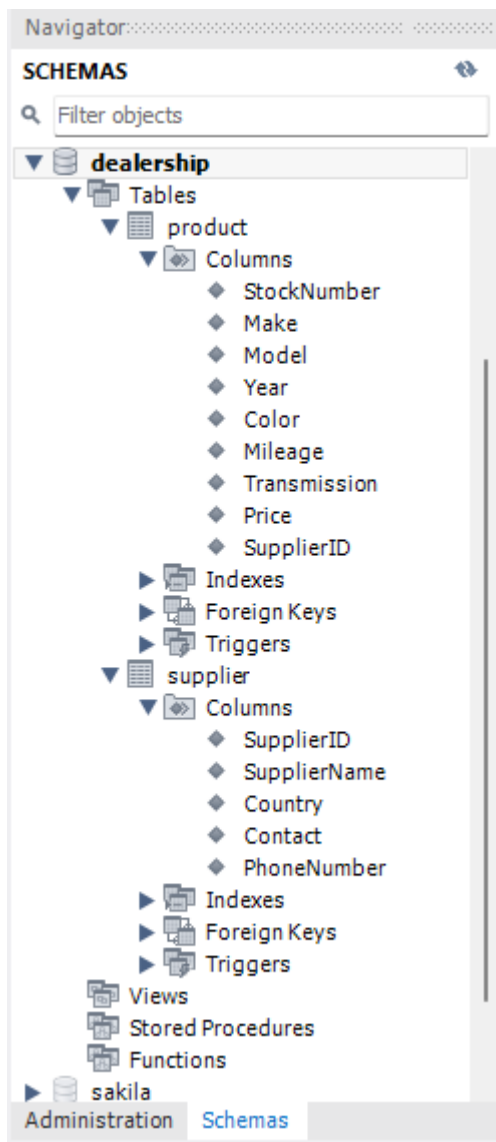
sys

▶

world

Administration

Schemas



Question 2:

This screenshot shows the MySQL Workbench interface with a query executed in the 'question-2.1' tab. The query is:

```
1 SELECT Price
2 FROM Product
3 WHERE SupplierID IN (SELECT SupplierID FROM Supplier WHERE Country = 'USA');
4
```

The result grid displays the following data:

Price
5000.00
3900.00
2700.00
4800.00

The bottom status bar shows the execution message: "1 18:29:58 SELECT Price FROM Product WHERE SupplierID IN (SELECT SupplierID FROM Supplier WHERE Country = 'USA') LIMIT 0, 1000" with "4 rows returned".

This screenshot shows the MySQL Workbench interface with a query executed in the 'question-2.2' tab. The query is:

```
1 SELECT DISTINCT Make
2 FROM Product
3 WHERE SupplierID = (SELECT SupplierID FROM Supplier WHERE SupplierName = 'Electric Innovations');
4
```

The result grid displays the following data:

Make
Tesla

The bottom status bar shows the execution message: "1 18:31:26 SELECT DISTINCT Make FROM Product WHERE SupplierID = (SELECT SupplierID FROM Supplier WHERE SupplierName = 'Electric Innovations')..." with "1 rows returned".

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

- Filter objects
- ch_db
- dealership
 - Tables
 - Views
 - Stored Procedures
 - Functions
- saiba
- sys
- world

Administration Schemas

Information

Connection Details

Name: Local instance MySQL80
Host: localhost
Port: 3306
Login: root
User: root@localhost
Current: root@localhost
SSL: TLS_AES_256_GCM_SHA384
Cipher: TLS_AES_256_GCM_SHA384
Server: MySQL Community Server - GPL
Version: 8.0.34
Connector: Version: C++ 8.1.0

Object Info Session

question-1 question-2.1 question-2.2 question-2.3 question-2.4

1 SELECT Contact
2 FROM Supplier
3 WHERE SupplierID IN (SELECT SupplierID FROM Product WHERE Price > 500000);
4

Result Grid

Filter Rows: Export Wrap Cell Contents

Supplier 1 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
1	18:31:26	SELECT DISTINCT Make FROM Product WHERE SupplierID = (SELECT SupplierID FROM Supplier WHERE SupplierName = 'Electric Innovations')	1 row(s) returned	0.000 sec / 0.000 sec
2	18:33:58	SELECT Contact FROM Supplier WHERE SupplierID IN (SELECT SupplierID FROM Product WHERE Price > 500000) LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec

SQL Additions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

- Filter objects
- ch_db
- dealership
 - Tables
 - Views
 - Stored Procedures
 - Functions
- saiba
- sys
- world

Administration Schemas

Information

Connection Details

Name: Local instance MySQL80
Host: localhost
Port: 3306
Login: root
User: root@localhost
Current: root@localhost
SSL: TLS_AES_256_GCM_SHA384
Cipher: TLS_AES_256_GCM_SHA384
Server: MySQL Community Server - GPL
Version: 8.0.34
Connector: Version: C++ 8.1.0

Object Info Session

question-1 question-2.1 question-2.2 question-2.3 question-2.4

1 SELECT PhoneNumber
2 FROM Supplier
3 WHERE SupplierID IN (
4 SELECT SupplierID
5 FROM Product
6 GROUP BY SupplierID
7 HAVING COUNT(*) = SUP(CASE WHEN Mileage < 0 THEN 1 ELSE 0 END)
8)
9

Result Grid

Filter Rows: Export Wrap Cell Contents

PhoneNumber

1 555-9101

Supplier 1 x

Output

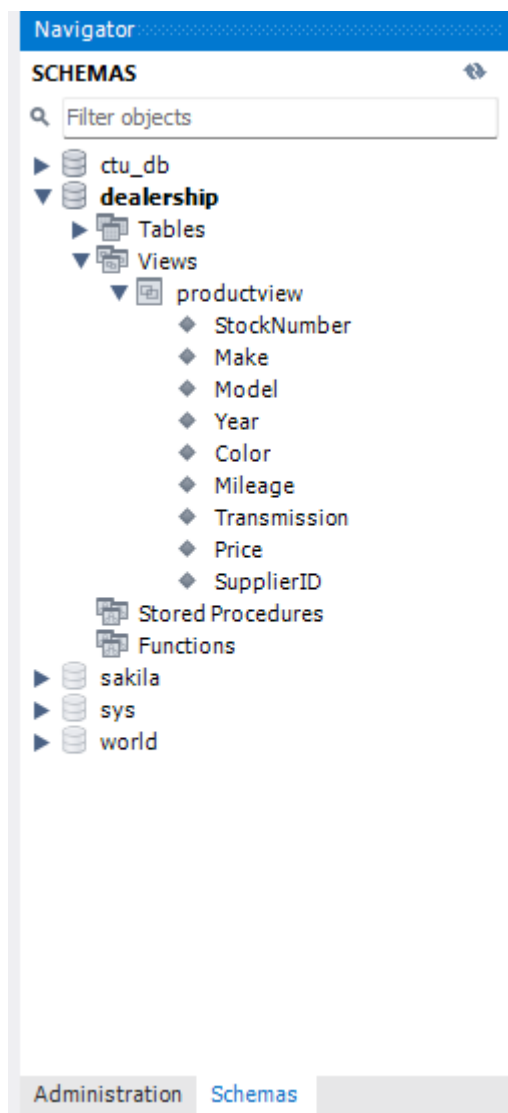
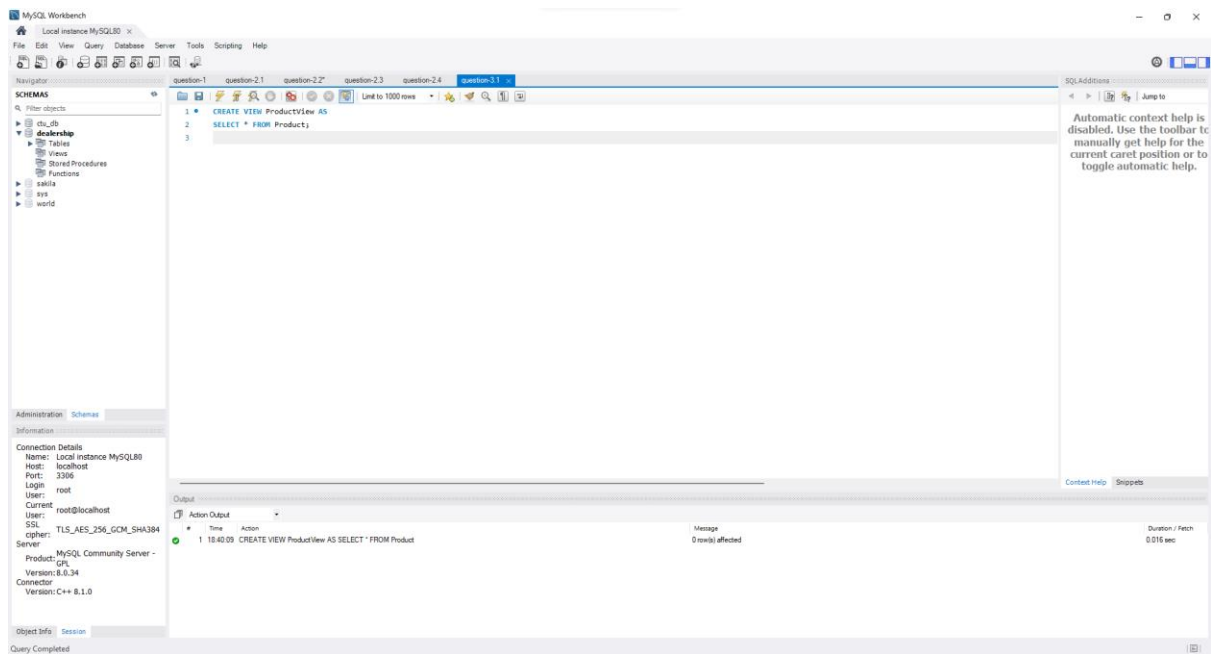
Action Output

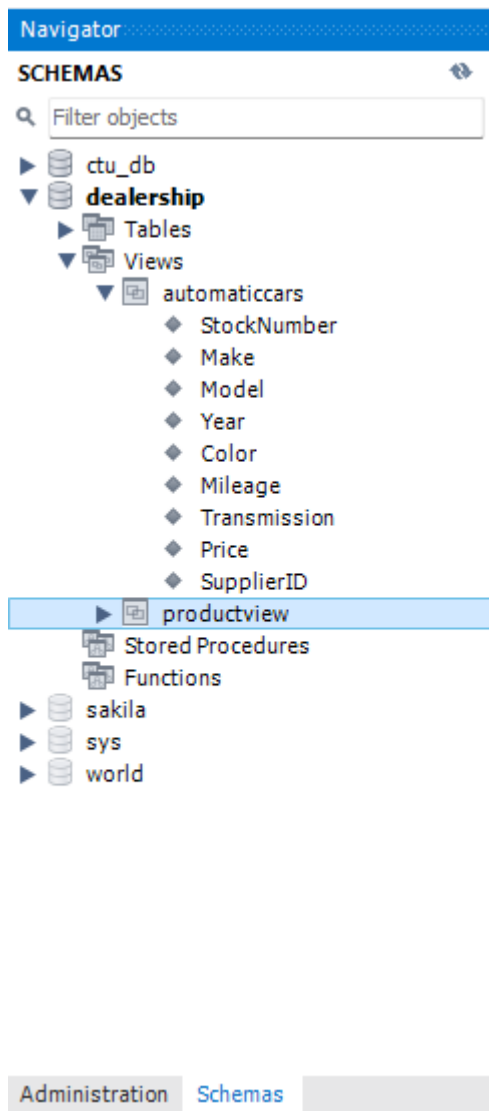
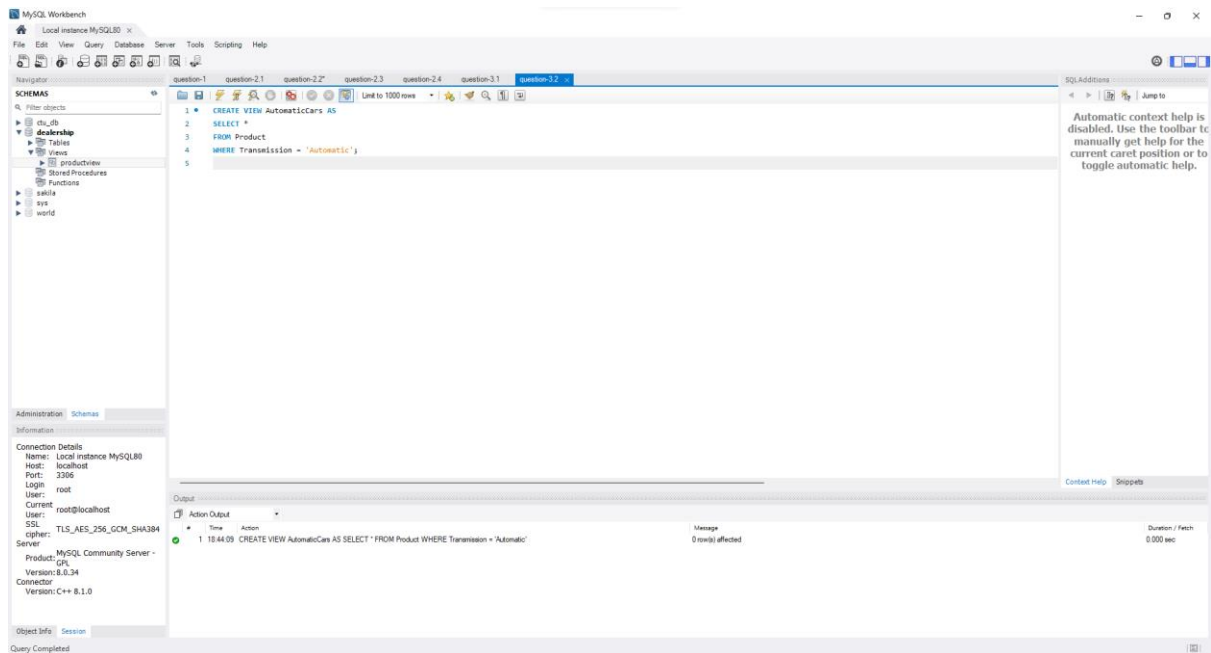
#	Time	Action	Message	Duration / Fetch
1	18:35:43	SELECT PhoneNumber FROM Supplier WHERE SupplierID IN (SELECT SupplierID FROM Product GROUP BY SupplierID HAVING CO...	1 row(s) returned	0.016 sec / 0.000 sec

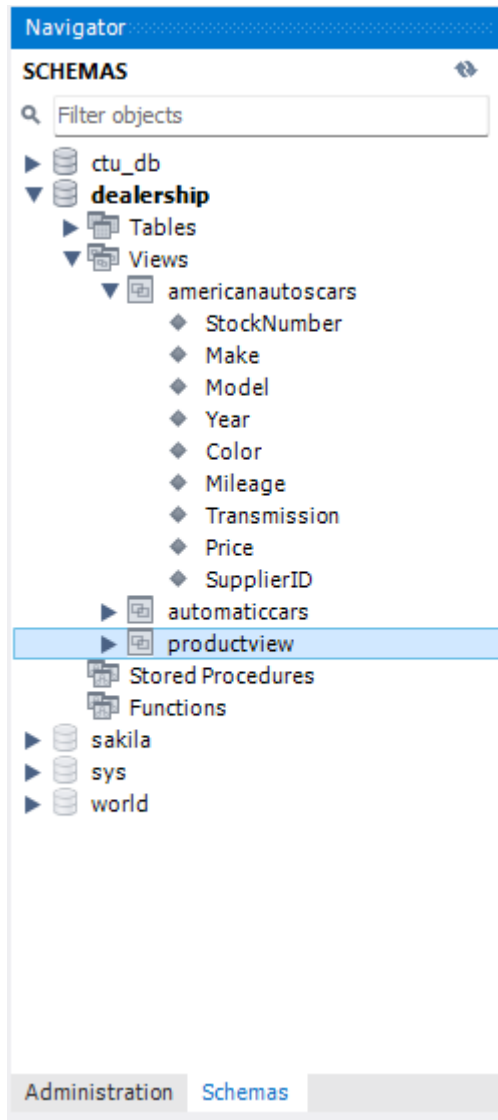
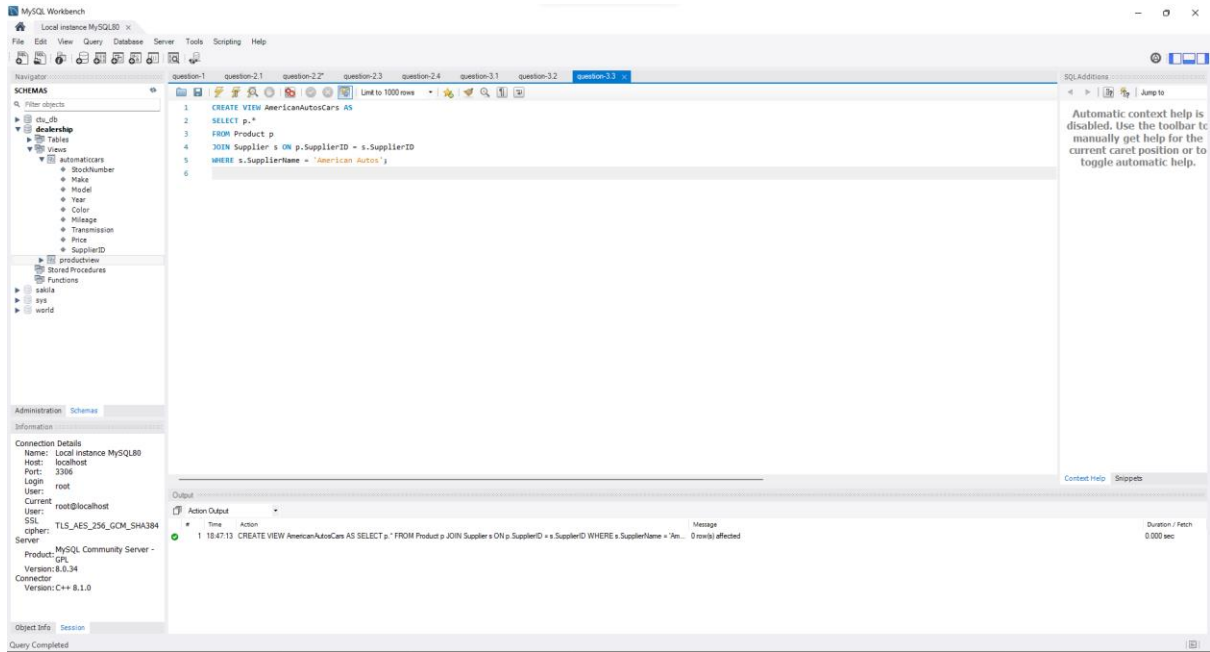
SQL Additions

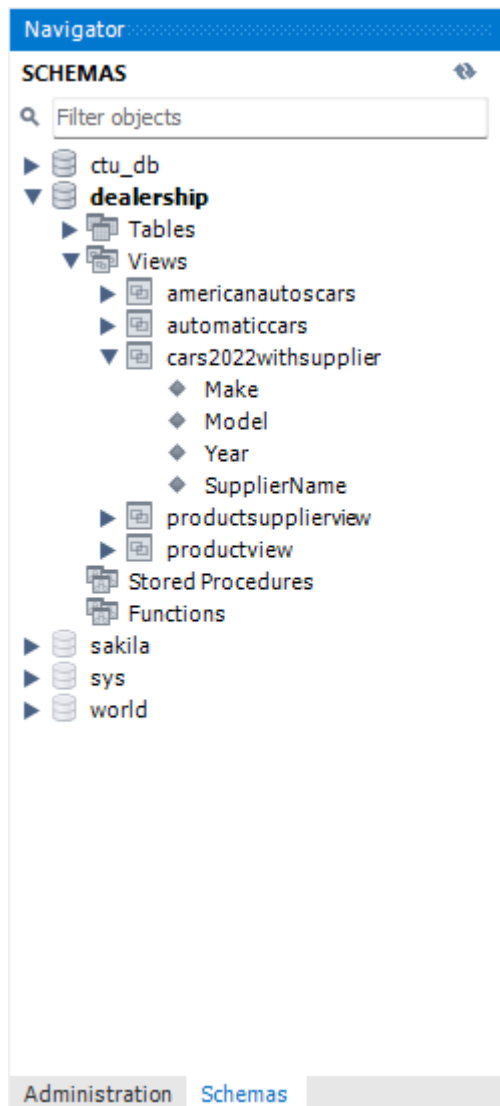
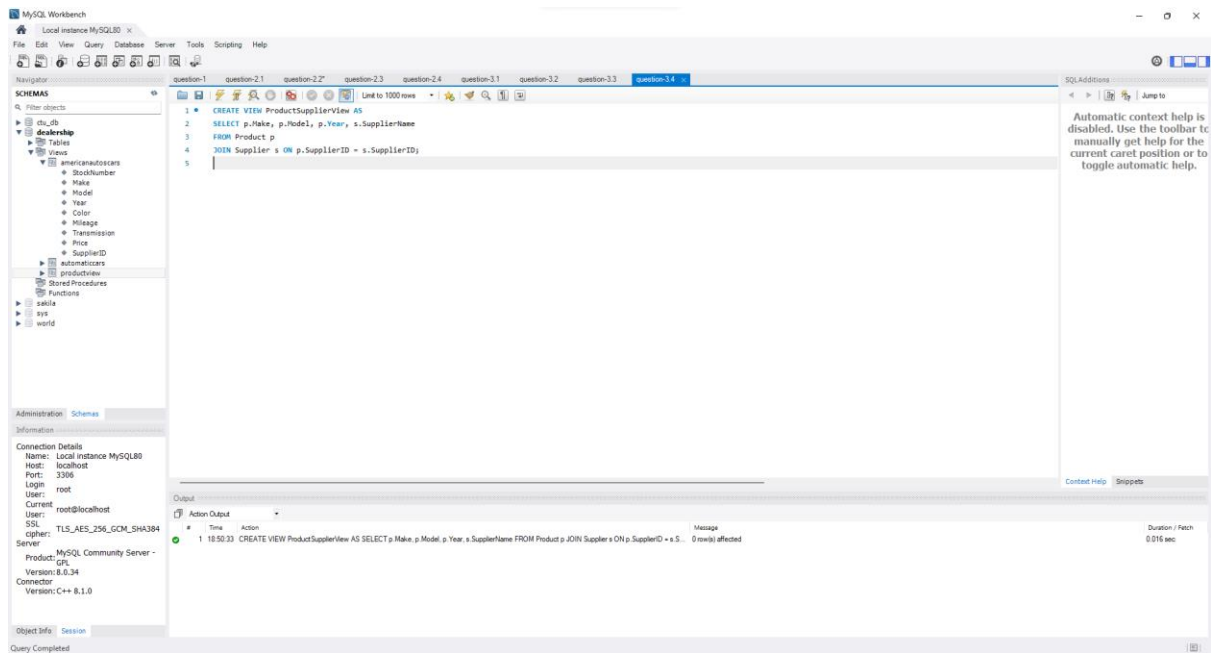
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Question 3:









Question 4:

MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: question-1 question-2.1 question-2.2 question-2.3 question-2.4 question-3.1 question-3.2 question-3.3 question-3.4 question-3.5 question-4.1

SCHEMAS: Filter objects: db, dealership, sales, sys, world

Administration Schemas

Connection Details: Name: Local instance MySQL80, Host: localhost, Port: 3306, Login: root, Current User: root@localhost, SSL: TLS_AES_256_GCM_SHA384, Server: Product: MySQL Community Server - GPL, Version: 8.0.34, Connector: Version: C++ 8.1.0

Object Info Session

Query Completed

question-4.1

```
1 SELECT Make AS CarInfo FROM Product
2 UNION
3 SELECT Country FROM Supplier;
```

Result Grid: Filter Rows: Exports: Wrap Cell Contents

CarInfo
Ford
Toyota
Tesla
Chevrolet
Honda
BMW
Audi
Nissan
Mercedes
Subaru
USA
Japan

Output: Action Output

#	Time	Action	Message	Duration / Fetch
1	10.5741	SELECT Make AS CarInfo FROM Product UNION SELECT Country FROM Supplier	13 row(s) returned	0.000 sec / 0.000 sec

Read Only Contact Help Snippets

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: question-1 question-2.1 question-2.2 question-2.3 question-2.4 question-3.1 question-3.2 question-3.3 question-3.4 question-3.5 question-4.1 question-4.2

SCHEMAS: Filter objects: db, dealership, sales, sys, world

Administration Schemas

Connection Details: Name: Local instance MySQL80, Host: localhost, Port: 3306, Login: root, Current User: root@localhost, SSL: TLS_AES_256_GCM_SHA384, Server: Product: MySQL Community Server - GPL, Version: 8.0.34, Connector: Version: C++ 8.1.0

Object Info Session

Query Completed

question-4.2

```
1 SELECT Make, Model, Year, Transmission
2 FROM Product
3 WHERE Transmission = 'Automatic';
4 UNION
5 SELECT Make, Model, Year, Transmission
6 FROM Product
7 WHERE Year = 2022;
```

Result Grid: Filter Rows: Exports: Wrap Cell Contents

Make	Model	Year	Transmission
Ford	F-150	2022	Automatic
Tesla	Model 3	2022	Automatic
Chevrolet	Silverado	2020	Automatic
BMW	3 Series	2022	Automatic
Audi	A4	2021	Automatic
Mercedes	C-Class	2022	Automatic

Output: Action Output

#	Time	Action	Message	Duration / Fetch
1	10.5930	SELECT Make, Model, Year, Transmission FROM Product WHERE Transmission = 'Automatic' UNION SELECT Make, Model, Year, Transmission F...	6 row(s) returned	0.000 sec / 0.000 sec

Read Only Contact Help Snippets

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

- Filter objects
- mysql
- dealerchip
- sales
- sys
- world

question-1 question-2.1 question-2.2 question-2.3 question-2.4 question-3.1 question-3.2 question-3.3 question-3.4 question-3.5 question-4.1 question-4.2 SQL File 10'

1 SELECT DISTINCT P1.Make, P1.Model
2 FROM Product P1
3 INNER JOIN Product P2 ON P1.Make = P2.Make AND P1.Model = P2.Model
4 WHERE P1.SupplierID = 'S1' AND P2.Transmission = 'Automatic';
5

Result Grid

Make	Model
Ford	F-150
Chevrolet	Silverado

Administration Schemas

Information

Connection Details

Name: Local instance MySQL80
Host: localhost
Port: 3306
Login: root
User: root
Current User: root@localhost
SSL cipher: TLS_AES_256_GCM_SHA384
Server: MySQL Community Server - GPL
Version: 8.0.34
Connector Version: C++ 8.1.0

Object Info Session

Query Completed

SQL Additions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Read Only Contact Help Snippets

Output

Action Output

#	Time	Action	Message	Duration / Fetch
1	19.46.54	SELECT DISTINCT P1.Make, P1.Model FROM Product P1 INNER JOIN Product P2 ON P1.Make = P2.Make AND P1.Model = P2.Model WHERE ... 2 rows returned		0.000 sec / 0.000 sec

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

- Filter objects
- mysql
- dealerchip
- product
- products
- supplier
- Views
- Stored Procedures
- Functions
- sales
- sys
- world

question-4.1

1 SELECT Make, Model
2 FROM Products.
3 WHERE SupplierID = 'S1' AND Transmission = 'Automatic';
4

Result Grid

Make	Model
------	-------

Administration Schemas

Information

Schema: dealerchip

Object Info Session

Query Completed

SQL Additions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Read Only Contact Help Snippets

Output

Products 1

Action Output

#	Time	Action	Message	Duration / Fetch
1	22:07:11	SELECT Make, Model FROM Products WHERE SupplierID = 'S1' AND Transmission = 'Automatic' LIMIT 0, 1000	0 rows returned	0.000 sec / 0.000 sec

Completed Declaration of Authenticity

_____ **Leduma Tlotliso Moshoeshoe** _____ hereby

(FULL NAME)

declare that the contents of this assignment PRG522 is entirely my own work
except for the following documents: (List the documents and page numbers of work in this portfolio that were
generated in a group)

Activity	Date

Signature:  Date: 12-10-2023