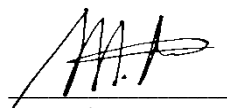


## Faculty of Information Technology

**SUBJECT NAME:** Business Programming  
**SUBJECT CODE:** PRG522

I declare that I am familiar with, and will abide to the Examination rules of CTU

  
Signature

**FORMATIVE ASSESSMENT**

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**Examiner:** Junior Manganyi  
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2

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## Scenario Question(s)

### Question

### Transforming Nicky Motors database

Below is data extracted from the dealership's products table.

Stock Number	Make	Model	Year	Color	Mileage	Transmission	Price (R)
001	Ford	F-150	2022	Blue	0	Automatic	500,000
002	Toyota	Camry	2021	Black	12,000	Manual	280,000
003	Tesla	Model 3	2023	White	0	Automatic	450,000
004	Chevrolet	Silverado	2020	Red	30,000	Automatic	350,000
005	Honda	Civic	2019	Silver	20,000	Manual	180,000
006	BMW	3 Series	2022	Black	0	Automatic	550,000
007	Audi	A4	2021	White	5,000	Automatic	400,000
008	Nissan	Altima	2018	Blue	50,000	Manual	150,000
009	Mercedes	C-Class	2022	Grey	0	Automatic	600,000
010	Subaru	Outback	2020	Green	25,000	Manual	270,000

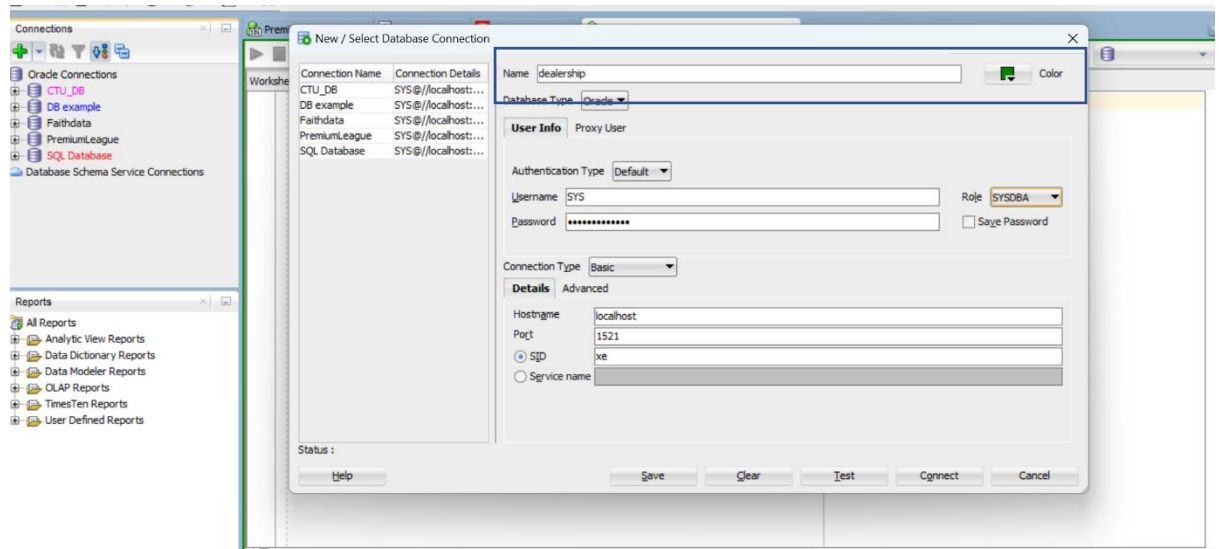
Below is data extracted from the dealership's supplier table

Supplier ID	Supplier Name	Country	Contact	Phone Number	Stock Number
S1	American Autos	USA	John Smith	555-1234	001, 004, 010
S2	Asian Car Masters	Japan	Yuki Tanaka	555-5678	002, 005, 008
S3	Electric Innovations	USA	Emily Johnson	555-9101	003
S4	European Luxury	Germany	Hans Müller	555-1122	006, 007, 009

## Question 1

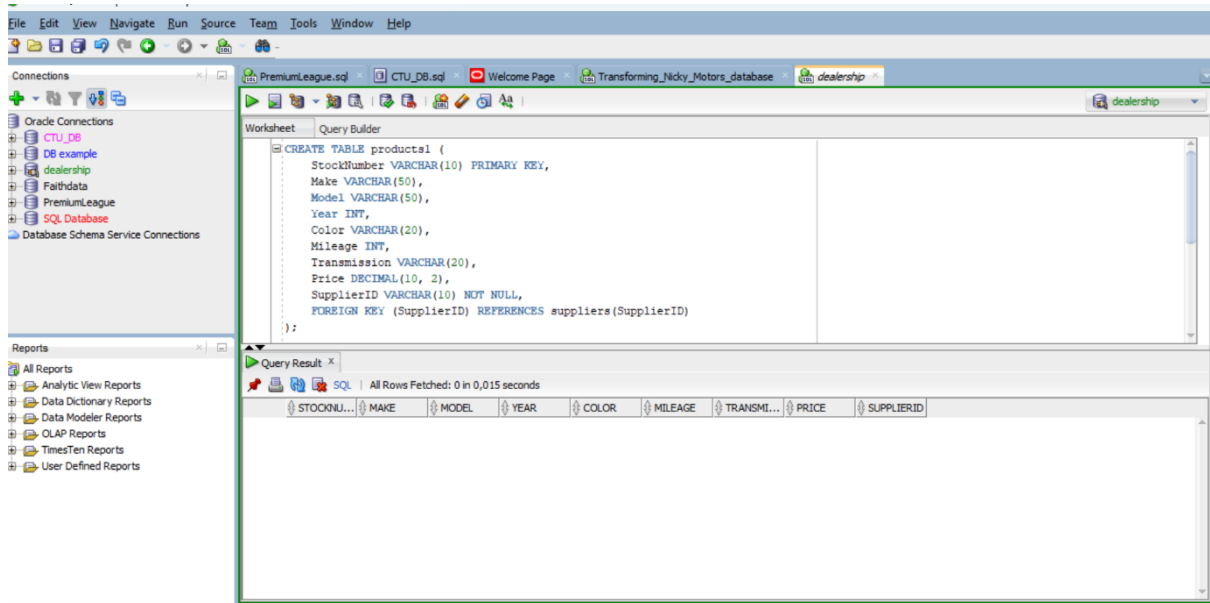
This task includes preparing the data

- 1.1 On Oracle, write SQL statements to create a database for Nicky Motors called “dealership”



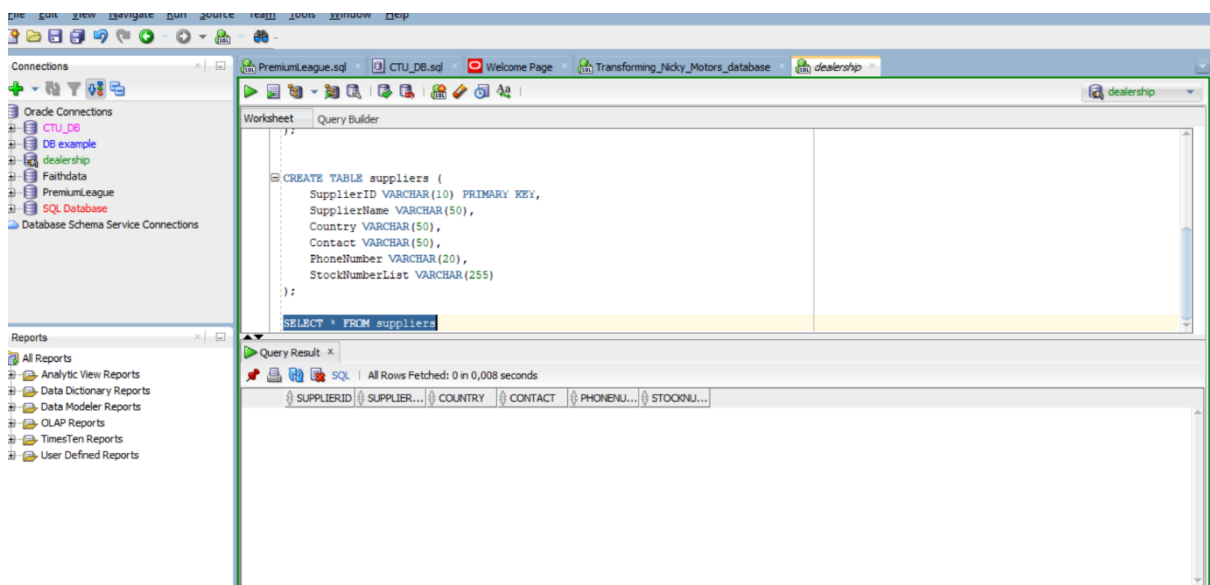
- 1.2 Write SQL statements that will recreate the product table for Nicky Motors, this table should include an additional column called “Supplier ID” which has a foreign key and the data cannot be null.

```
CREATE TABLE products1 (
  StockNumber VARCHAR(10) PRIMARY KEY,
  Make VARCHAR(50),
  Model VARCHAR(50),
  Year INT,
  Color VARCHAR(20),
  Mileage INT,
  Transmission VARCHAR(20),
  Price DECIMAL(10, 2),
  SupplierID VARCHAR(10) NOT NULL,
  FOREIGN KEY (SupplierID) REFERENCES suppliers(SupplierID)
);
```



### 1.3 Write SQL statements that will recreate the supplier table for Nicky Motors on Oracle

```
CREATE TABLE suppliers (
  SupplierID VARCHAR(10) PRIMARY KEY,
  SupplierName VARCHAR(50),
  Country VARCHAR(50),
  Contact VARCHAR(50),
  PhoneNumber VARCHAR(20),
  StockNumberList VARCHAR(255)
);
```

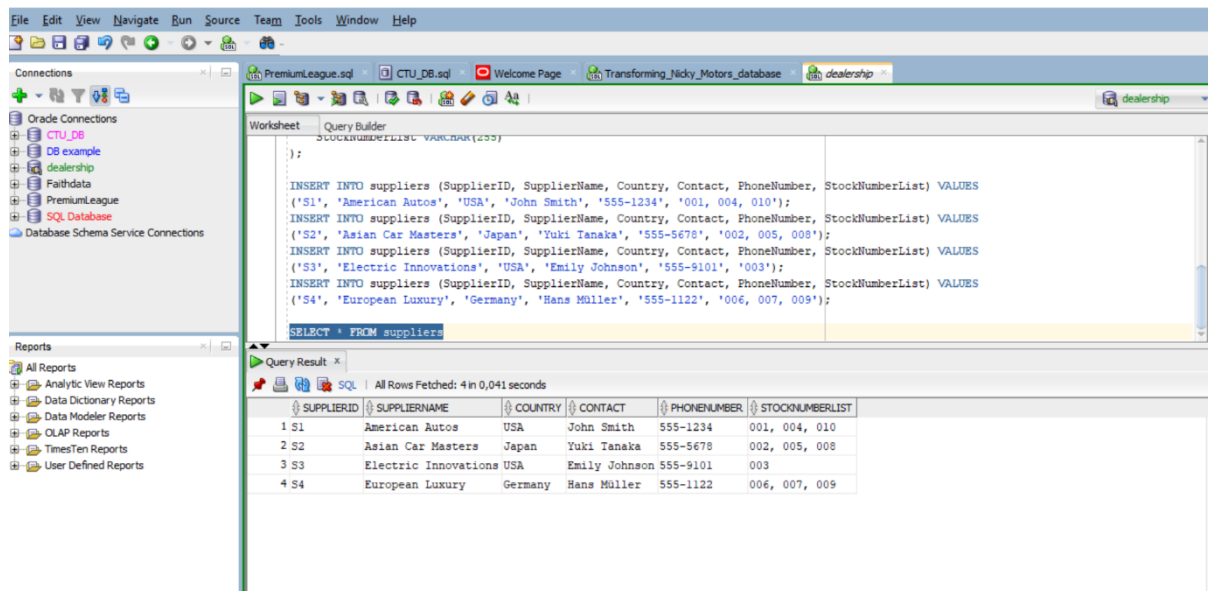


## 1.1 Write SQL statements that will flood both tables with the data as shown above.

```

INSERT INTO suppliers (SupplierID, SupplierName, Country, Contact,
PhoneNumber, StockNumberList) VALUES
('S1', 'American Autos', 'USA', 'John Smith', '555-1234', '001, 004, 010');
INSERT INTO suppliers (SupplierID, SupplierName, Country, Contact,
PhoneNumber, StockNumberList) VALUES
('S2', 'Asian Car Masters', 'Japan', 'Yuki Tanaka', '555-5678', '002, 005,
008');
INSERT INTO suppliers (SupplierID, SupplierName, Country, Contact,
PhoneNumber, StockNumberList) VALUES
('S3', 'Electric Innovations', 'USA', 'Emily Johnson', '555-9101', '003');
INSERT INTO suppliers (SupplierID, SupplierName, Country, Contact,
PhoneNumber, StockNumberList) VALUES
('S4', 'European Luxury', 'Germany', 'Hans Müller', '555-1122', '006, 007,
009');

```



```

INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('001', 'Ford', 'F-150', 2022, 'Blue', 0, 'Automatic', 50000, 'S1');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('002', 'Toyota', 'Camry', 2021, 'Black', 12000, 'Manual', 280000, 'S2');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('003', 'Tesla', 'Model 3', 2023, 'White', 0, 'Automatic', 450000, 'S3');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('004', 'Chevrolet', 'Silverado', 2020, 'Red', 30000, 'Automatic', 350000,
'S1');

```

```

INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('005', 'Honda', 'Civic', 2019, 'Silver', 20000, 'Manual', 180000, 'S2');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('006', 'BMW', '3 Series', 2022, 'Black', 0, 'Automatic', 550000, 'S4');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('007', 'Audi', 'A4', 2021, 'White', 5000, 'Automatic', 400000, 'S4');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('008', 'Nissan', 'Altima', 2018, 'Blue', 50000, 'Manual', 150000, 'S2');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('009', 'Mercedes', 'C-Class', 2022, 'Grey', 0, 'Automatic', 600000, 'S4');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('010', 'Subaru', 'Outback', 2020, 'Green', 25000, 'Manual', 270000, 'S1');

```

The screenshot shows the Oracle SQL Developer interface. The 'Query Builder' tab is active, displaying a series of INSERT statements into the 'products1' table. The 'Query Result' tab below shows the results of the query, which is a table with 10 rows and 9 columns: STOCKNUMBER, MAKE, MODEL, YEAR, COLOR, MILEAGE, TRANSMISSION, PRICE, and SUPPLIERID. The results are as follows:

	STOCKNUMBER	MAKE	MODEL	YEAR	COLOR	MILEAGE	TRANSMISSION	PRICE	SUPPLIERID
1	001	Ford	F-150	2022	Blue	0	Automatic	500000	S1
2	002	Toyota	Camry	2021	Black	12000	Manual	280000	S2
3	003	Tesla	Model 3	2023	White	0	Automatic	450000	S3
4	004	Chevrolet	Silverado	2020	Red	30000	Automatic	350000	S1
5	005	Honda	Civic	2019	Silver	20000	Manual	180000	S2
6	006	BMW	3 Series	2022	Black	0	Automatic	550000	S4
7	007	Audi	A4	2021	White	5000	Automatic	400000	S4
8	008	Nissan	Altima	2018	Blue	50000	Manual	150000	S2
9	009	Mercedes	C-Class	2022	Grey	0	Automatic	600000	S4
10	010	Subaru	Outback	2020	Green	25000	Manual	270000	S1

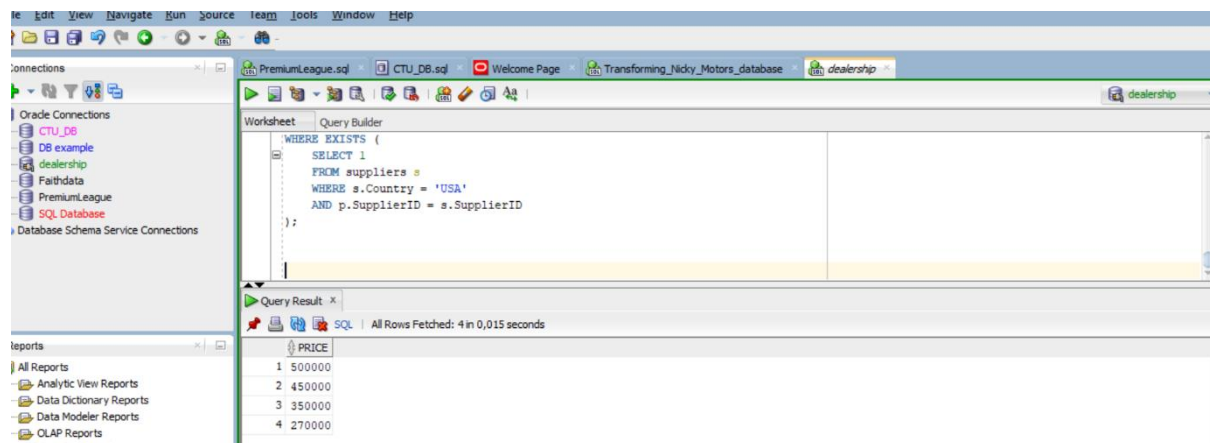
## Question 2

This task includes learning unit 9: Using subqueries to solve queries.

Write SQL statements to perform the following subqueries:

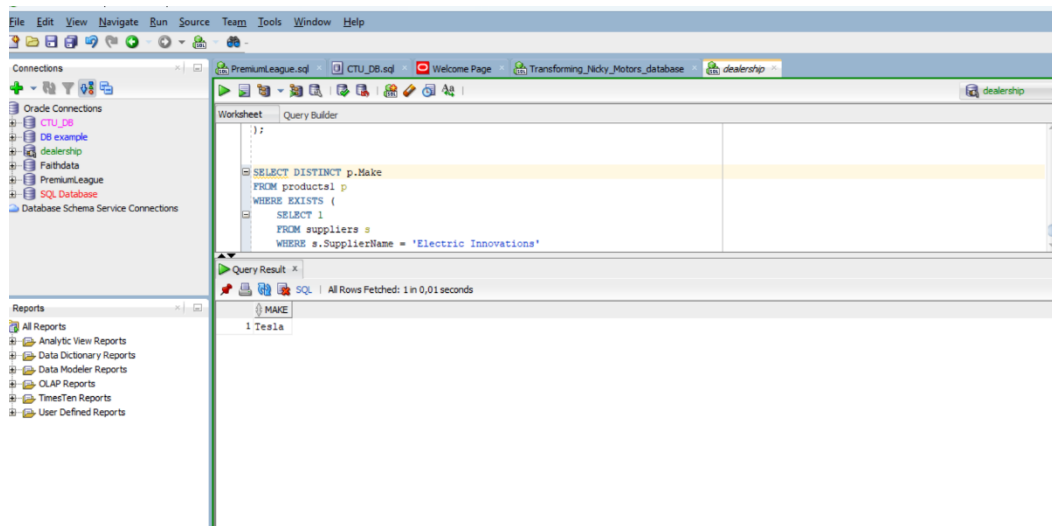
## 2.1 Display the price of a product if ANY records on the supplier table are from the USA

```
SELECT p.Price
FROM products1 p
WHERE EXISTS (
    SELECT 1
    FROM suppliers s
    WHERE s.Country = 'USA'
    AND p.SupplierID = s.SupplierID
);
```



## 2.2 Display the make of a product if ANY records on the supplier table are supplied by Electric Innovations

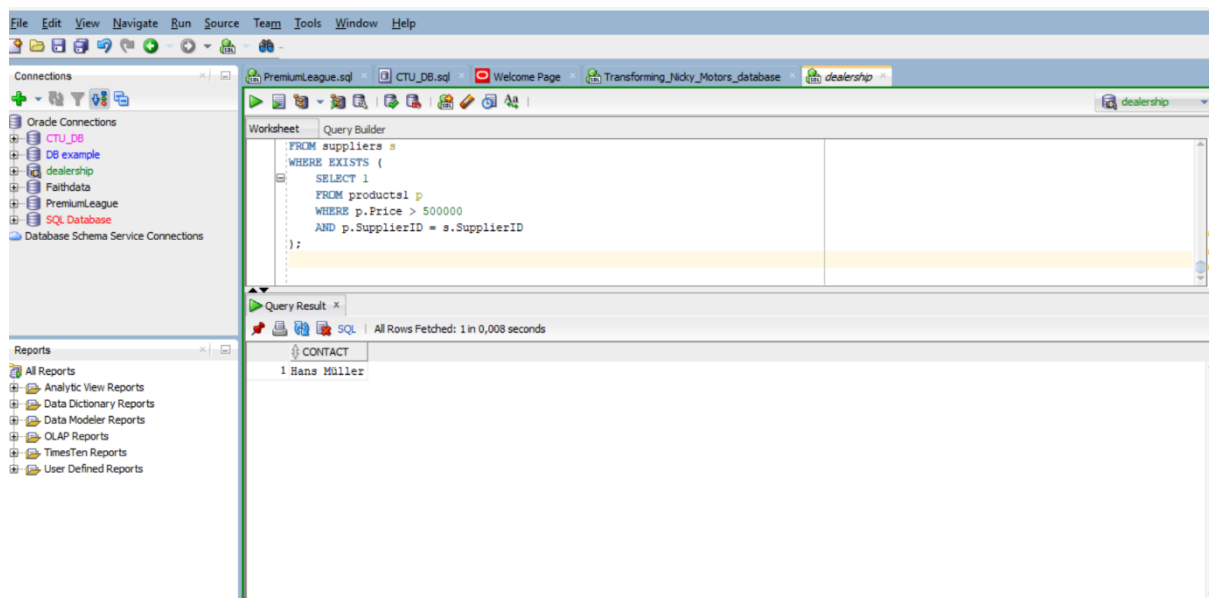
```
SELECT DISTINCT p.Make
FROM products1 p
WHERE EXISTS (
    SELECT 1
    FROM suppliers s
    WHERE s.SupplierName = 'Electric Innovations'
    AND p.SupplierID = s.SupplierID
);
```





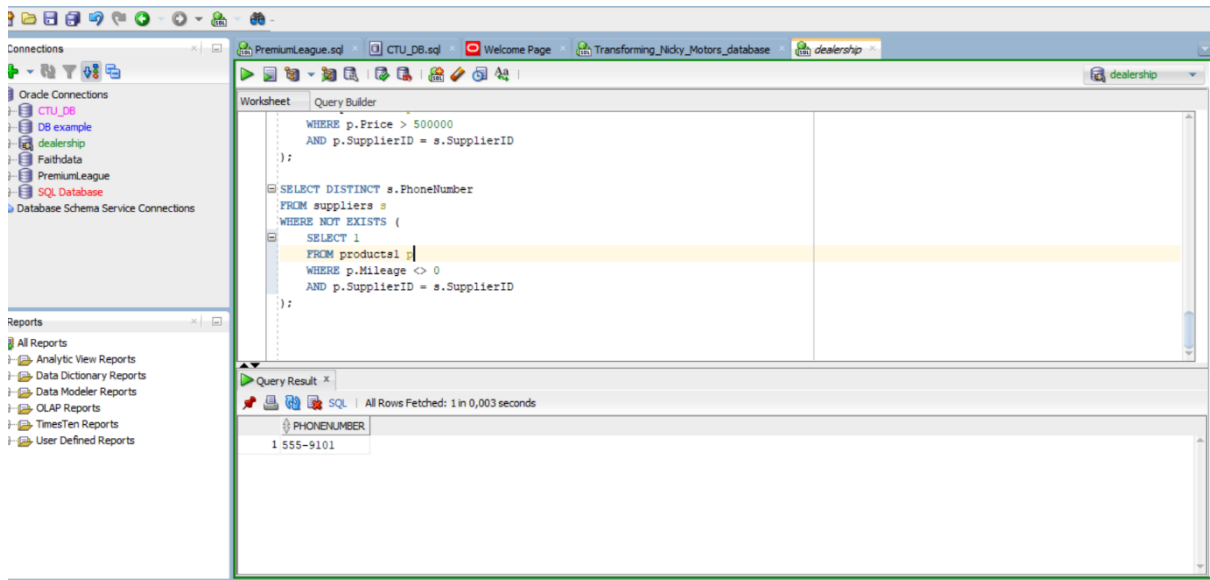
2.3 Display the contact of the supplier if ANY records on the products table have a price greater than 500,000

```
SELECT s.Contact
FROM suppliers s
WHERE EXISTS (
    SELECT 1
    FROM products1 p
    WHERE p.Price > 500000
    AND p.SupplierID = s.SupplierID
);
```



2.1 Display the phone number of the supplier if ALL records on the products table have mileage equal to zero

```
SELECT DISTINCT s.PhoneNumber
FROM suppliers s
WHERE NOT EXISTS (
    SELECT 1
    FROM products1 p
    WHERE p.Mileage <> 0
    AND p.SupplierID = s.SupplierID
);
```



### Question 3

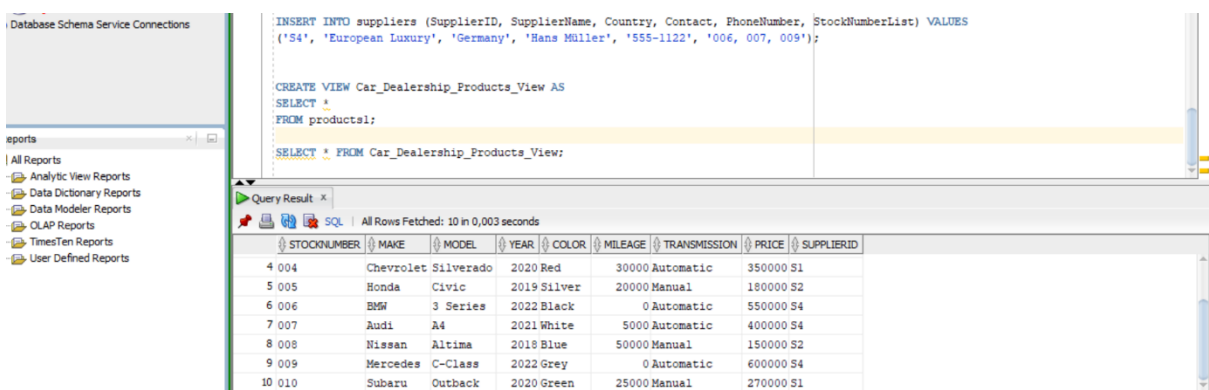
This task includes learning unit 10: Managing Schema Objects.

Write SQL statements to perform the following Views:

3.1 Create a simple view that shows all the columns from the Car Dealership Products Table.

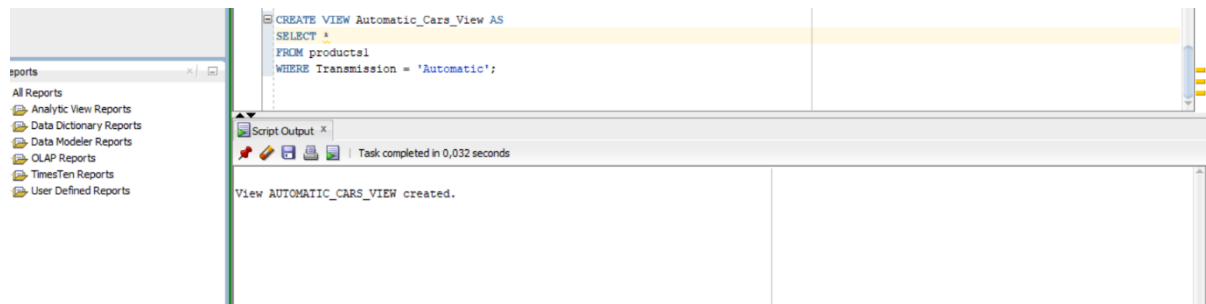
```
CREATE VIEW Car_Dealership_Products_View AS
SELECT *
FROM products1;
```

```
SELECT * FROM Car_Dealership_Products_View;
```

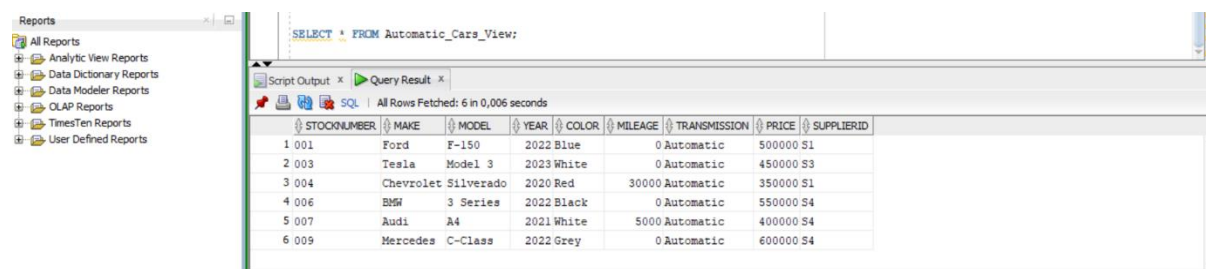


### 3.2 Create a view that shows all cars with automatic transmission and their details.

```
CREATE VIEW Automatic_Cars_View AS
SELECT *
FROM products1
WHERE Transmission = 'Automatic';
```

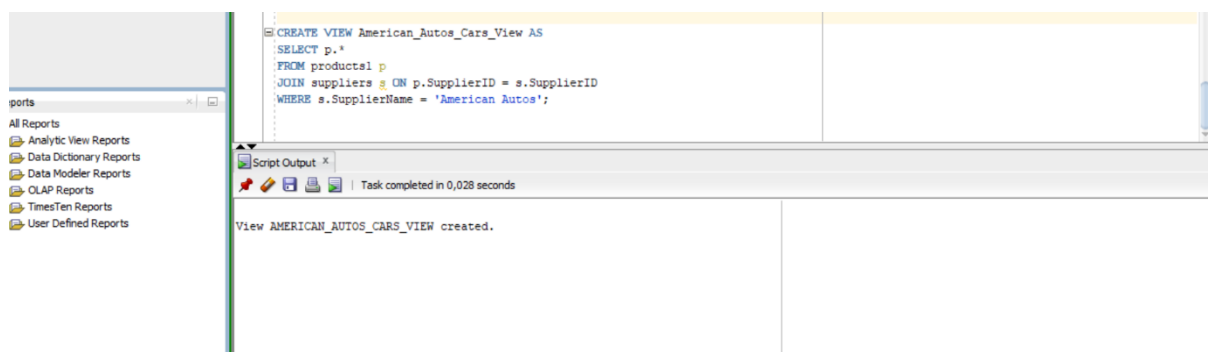


```
SELECT * FROM Automatic_Cars_View;
```

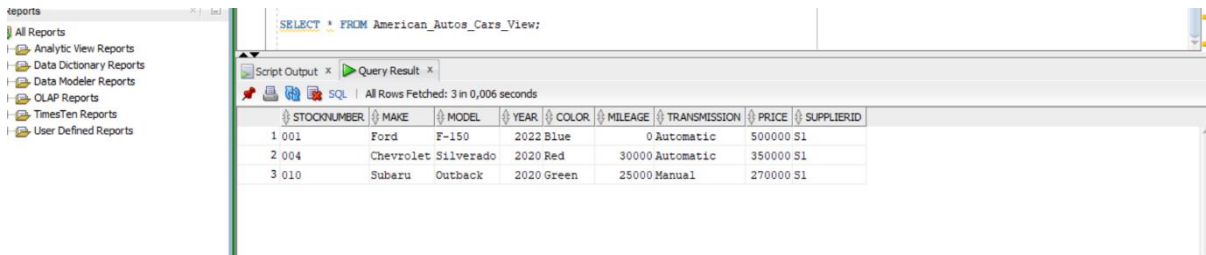


### 3.3 Create a view that lists all cars supplied by "American Autos" with their details.

```
CREATE VIEW American_Autos_Cars_View AS
SELECT p.*
FROM products1 p
JOIN suppliers s ON p.SupplierID = s.SupplierID
WHERE s.SupplierName = 'American Autos';
```



```
SELECT * FROM American_Autos_Cars_View;
```



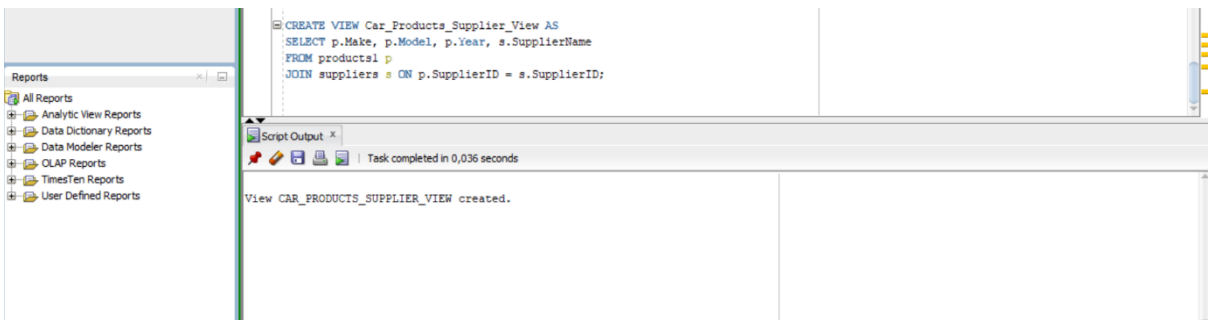
Script Output x Query Result x

SQL | All Rows Fetched: 3 in 0,006 seconds

STOCKNUMBER	MAKE	MODEL	YEAR	COLOR	MILEAGE	TRANSMISSION	PRICE	SUPPLIERID
1 001	Ford	F-150	2022	Blue	0	Automatic	500000	S1
2 004	Chevrolet	Silverado	2020	Red	30000	Automatic	350000	S1
3 010	Subaru	Outback	2020	Green	25000	Manual	270000	S1

3.4 Create a complex view that joins the Car Dealership Products Table and the Supplier Table to show the Make, Model, Year, and Supplier Name.

```
CREATE VIEW Car_Products_Supplier_View AS
SELECT p.Make, p.Model, p.Year, s.SupplierName
FROM products1 p
JOIN suppliers s ON p.SupplierID = s.SupplierID;
```

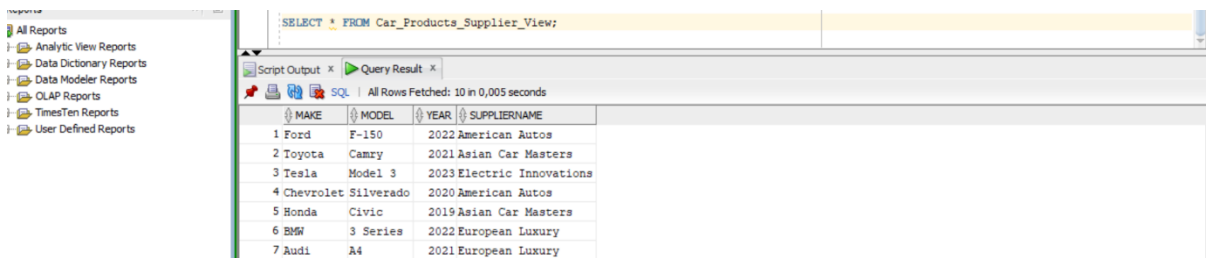


Script Output x

Task completed in 0,036 seconds

View CAR\_PRODUCTS\_SUPPLIER\_VIEW created.

```
SELECT * FROM Car_Products_Supplier_View;
```



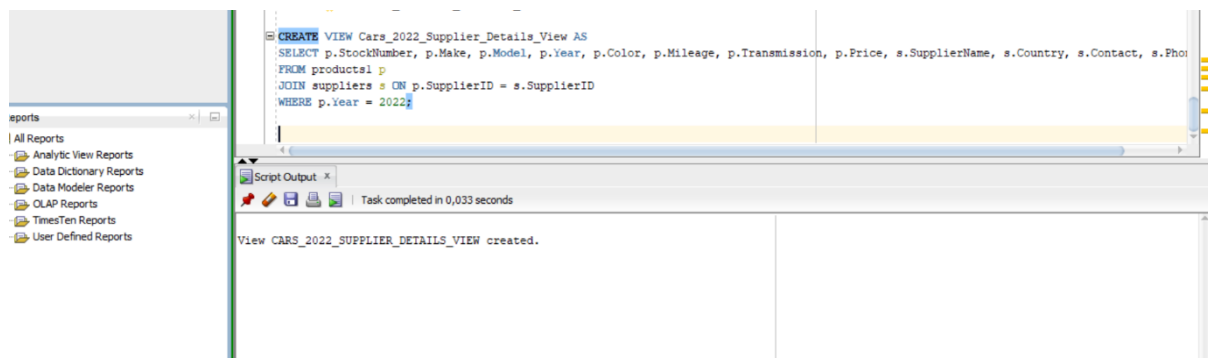
Script Output x Query Result x

SQL | All Rows Fetched: 10 in 0,005 seconds

MAKE	MODEL	YEAR	SUPPLIERNAME
1 Ford	F-150	2022	American Autos
2 Toyota	Camry	2021	Asian Car Masters
3 Tesla	Model 3	2023	Electric Innovations
4 Chevrolet	Silverado	2020	American Autos
5 Honda	Civic	2019	Asian Car Masters
6 BMW	3 Series	2022	European Luxury
7 Audi	A4	2021	European Luxury

### 3.1 Create a view that lists cars from the year 2022 and their supplier details.

```
CREATE VIEW Cars_2022_Supplier_Details_View AS
SELECT p.StockNumber, p.Make, p.Model, p.Year, p.Color, p.Mileage,
p.Transmission, p.Price, s.SupplierName, s.Country, s.Contact,
s.PhoneNumber
FROM products1 p
JOIN suppliers s ON p.SupplierID = s.SupplierID
WHERE p.Year = 2022;
```



```
SELECT * FROM Cars_2022_Supplier_Details_View;
```

STOCKNUMBER	MAKE	MODEL	YEAR	COLOR	MILEAGE	TRANSMISSION	PRICE	SUPPLIERNAME	COUNTRY	CONTACT	PHONENUMBER
1 001	Ford	F-150	2022	Blue	0	Automatic	500000	American Autos	USA	John Smith	555-1234
2 006	BMW	3 Series	2022	Black	0	Automatic	550000	European Luxury	Germany	Hans Müller	555-1122
3 009	Mercedes	C-Class	2022	Grey	0	Automatic	600000	European Luxury	Germany	Hans Müller	555-1122

## Question 4

This task includes learning unit 11: Using the Set Operators.

Write SQL statements to use Set Operator to Combine Multiple Queries into a Single Query:

### 4.1 List all unique car makes available in the Car Dealership Products Table and Supplier countries in a single column.

```
SELECT Make AS Name
FROM products1
UNION
SELECT DISTINCT Country AS Name
FROM suppliers
ORDER BY Name;
```

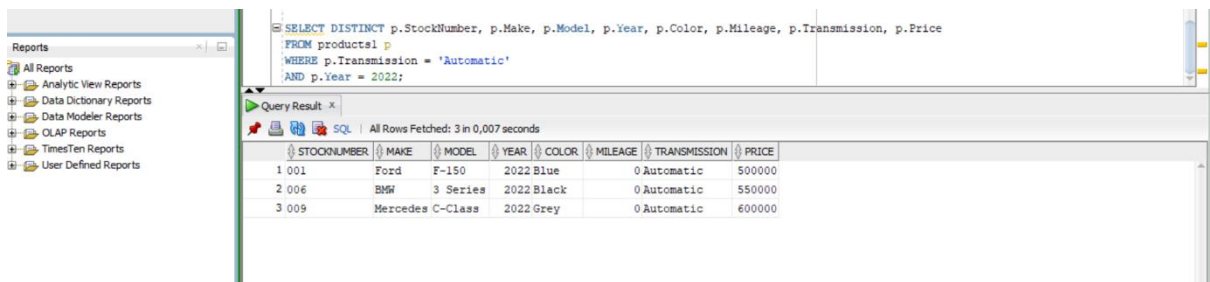


#### 4.2 List cars with Automatic transmissions and cars from the year 2022. Eliminate duplicate rows

```

SELECT DISTINCT p.StockNumber, p.Make, p.Model, p.Year, p.Color, p.Mileage,
p.Transmission, p.Price
FROM products1 p
WHERE p.Transmission = 'Automatic'
AND p.Year = 2022;

```



#### 4.3 Find car models that are both supplied by "American Autos" and have Automatic transmissions.

```

SELECT DISTINCT p.Model
FROM products1 p
JOIN suppliers s ON p.SupplierID = s.SupplierID
WHERE s.SupplierName = 'American Autos'
AND p.Transmission = 'Automatic';

```



The screenshot shows the SQL Developer interface. On the left is a 'Reports' tree with categories like 'All Reports', 'Analytic View Reports', 'Data Dictionary Reports', 'Data Modeler Reports', 'OLAP Reports', 'TimesTen Reports', and 'User Defined Reports'. The main window displays a SQL query: `SELECT DISTINCT p.Model FROM productsl p JOIN suppliers s ON p.SupplierID = s.SupplierID WHERE s.SupplierName = 'American Autos' AND p.Transmission = 'Automatic';`. Below the query, the 'Query Result' tab shows 'All Rows Fetched: 2 in 0,007 seconds'. A table with the header 'MODEL' contains two rows: '1 F-150' and '2 Silverado'.

MODEL
1 F-150
2 Silverado

4.4 List car models that are supplied by "American Autos" but do not have Automatic transmissions.

```
SELECT DISTINCT p.Model
FROM productsl p
JOIN suppliers s ON p.SupplierID = s.SupplierID
WHERE s.SupplierName = 'American Autos'
AND p.Transmission != 'Automatic';
```



The screenshot shows the SQL Developer interface with the same 'Reports' tree on the left. The main window displays the same SQL query as above: `SELECT DISTINCT p.Model FROM productsl p JOIN suppliers s ON p.SupplierID = s.SupplierID WHERE s.SupplierName = 'American Autos' AND p.Transmission != 'Automatic';`. The 'Query Result' tab shows 'All Rows Fetched: 1 in 0,007 seconds'. A table with the header 'MODEL' contains one row: '1 Outback'.

MODEL
1 Outback