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	**FORMATIVE ASSESSMENT** **Duration**: Apr 26 – 20 May **Date** 20 May 2024 **Total Marks**: 100 **Total pages**: 15			**Examiner**: Junior Manganyi **Moderator:** Faith Muwishi				
Signature	**Student number**							
	2	0	2	3	2	7	5	9	
	Surname: Poponi			**Initials**: M.P				/	%

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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

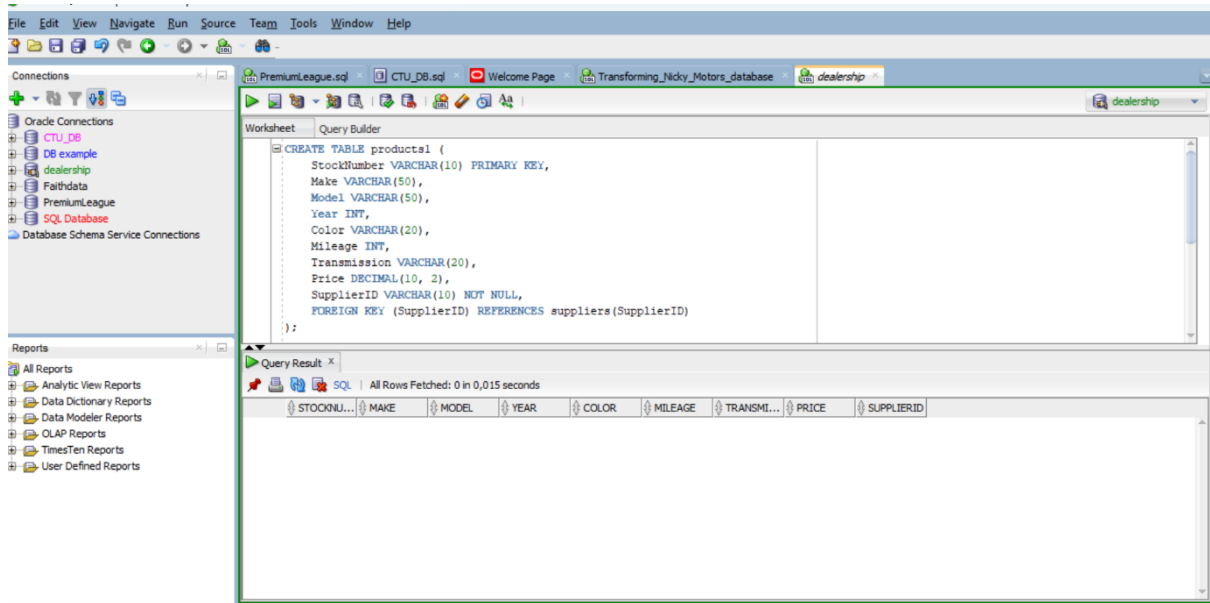| Supplier ID	Supplier Name	Country	Contact	Phone Number	Stock Number
S1	American Autos	USA	John Smith	555-1234	001, 004, 010
S2	Asian Car Masters	Japan	Yuki Tanaka	555-5678	002, 005, 008
S3	Electric Innovations	USA	Emily Johnson	555-9101	003
S4	European Luxury	Germany	Hans Müller	555-1122	006, 007, 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"
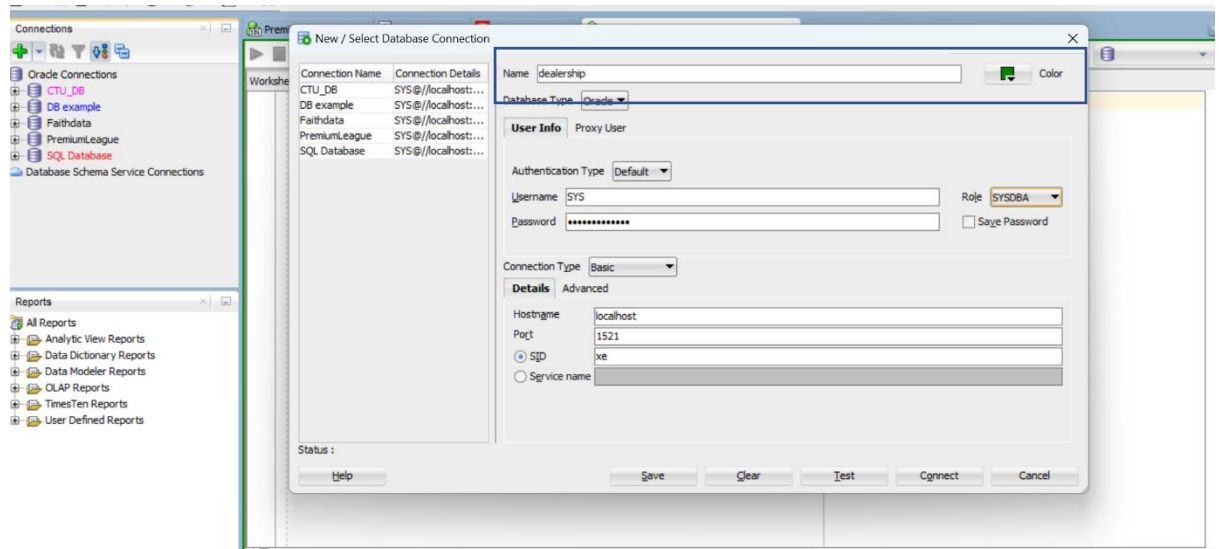
1.2 Write SQL statements that will recreate the product table for Nicky Motors, this table should include an additional column called "Supplier ID" which has a foreign key and the data cannot be null.

```
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

```sql
CREATE TABLE suppliers (
    SupplierID VARCHAR(10) PRIMARY KEY,
    SupplierName VARCHAR(50),
    Country VARCHAR(50),
    Contact VARCHAR(50),
    PhoneNumber VARCHAR(20),
    StockNumberList VARCHAR(255)
);
```
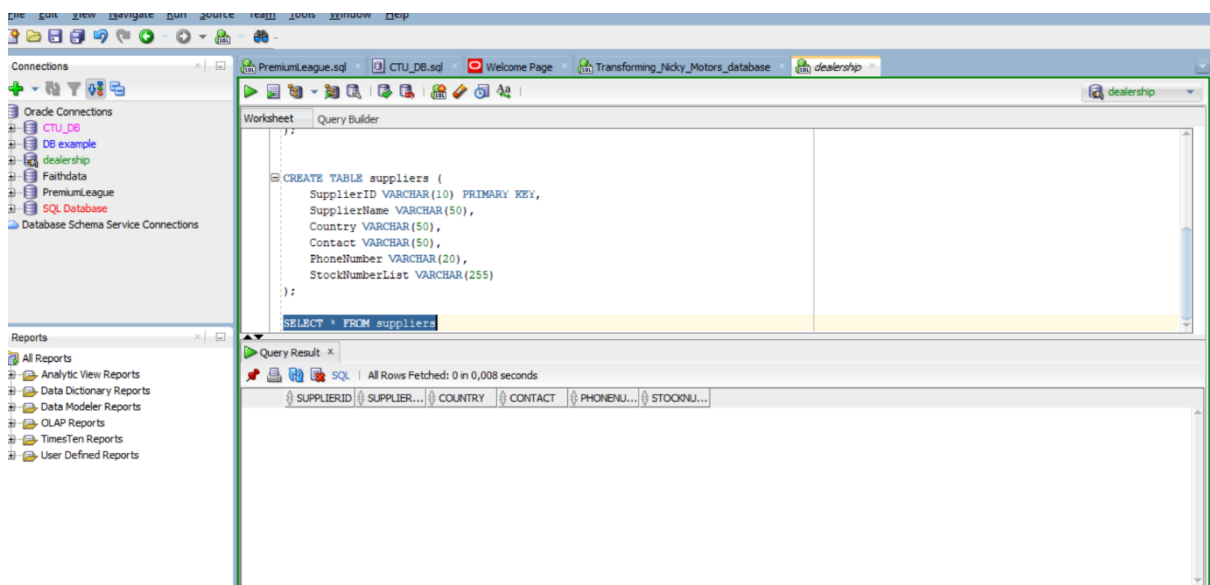
1.1 Write SQL statements that will flood both tables with the data as shown above.

```sql
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');
```
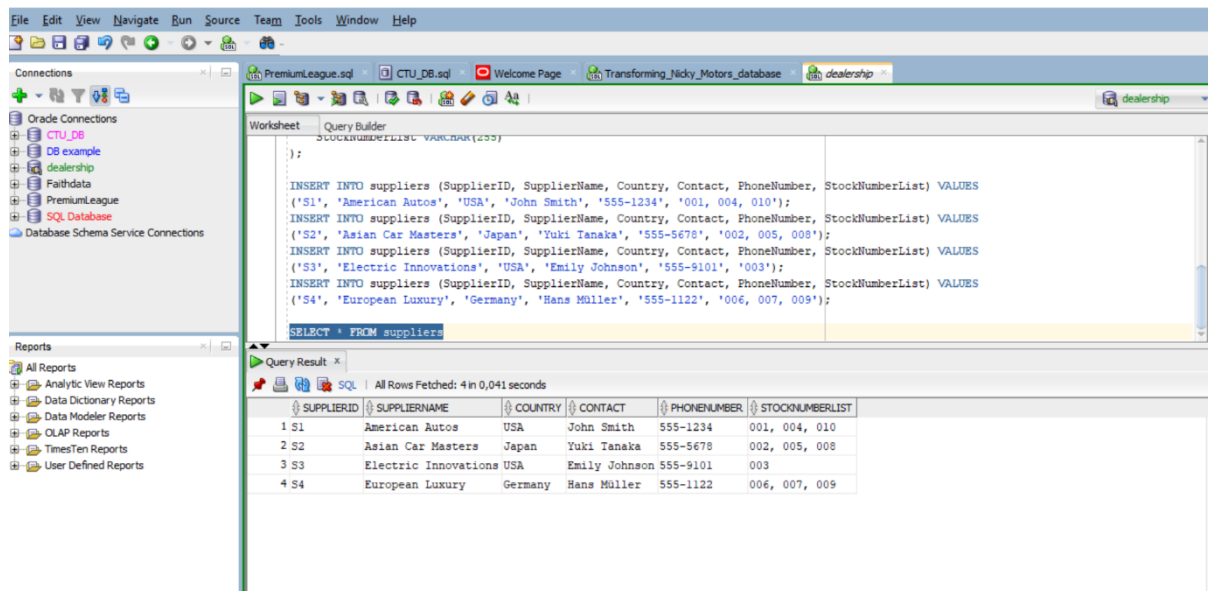


```sql
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID)VALUES
('001', 'Ford', 'F-150', 2022, 'Blue', 0, 'Automatic', 500000, 'S1');
INSERT INTO products1 (StockNumber, Make, Model, Year, Color, Mileage,
Transmission, Price, SupplierID) VALUES
('002', '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');
```
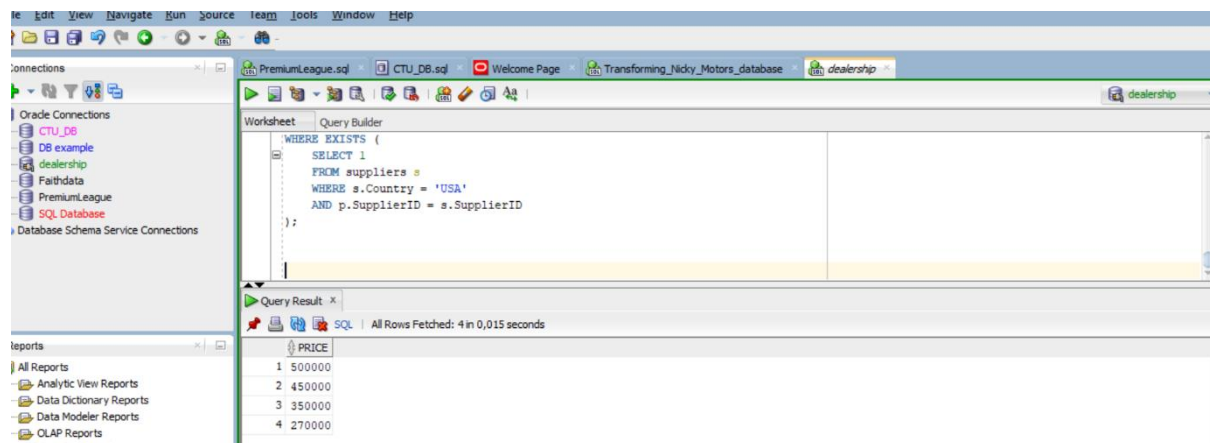

Question 2

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

```sql
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

```sql
SELECT DISTINCT p.Make
FROM products1 p
WHERE EXISTS (
    SELECT 1
    FROM suppliers s
    WHERE s.SupplierName = 'Electric Innovations'
    AND p.SupplierID = s.SupplierID
);
```
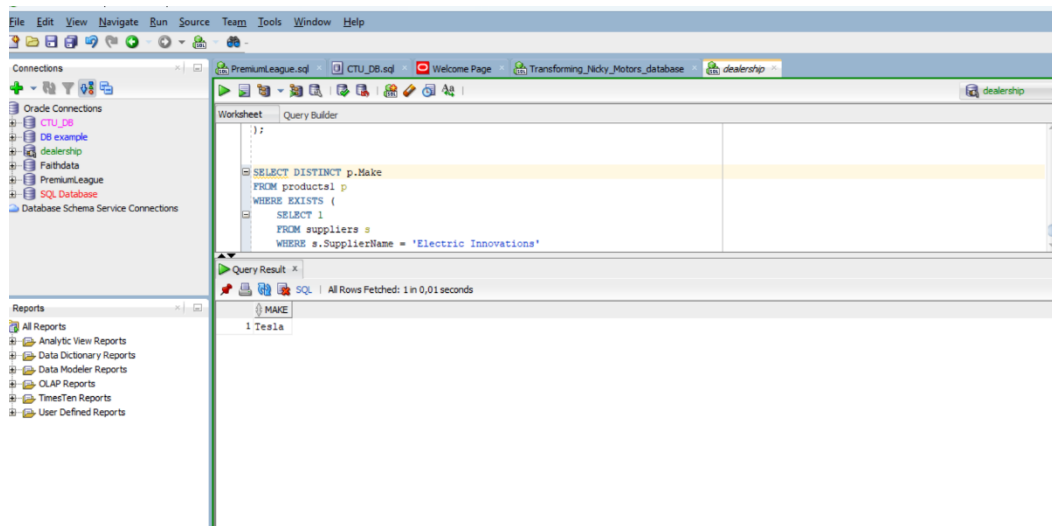
2.3 Display the contact of the supplier if ANY records on the products table have a price greater than 500,000

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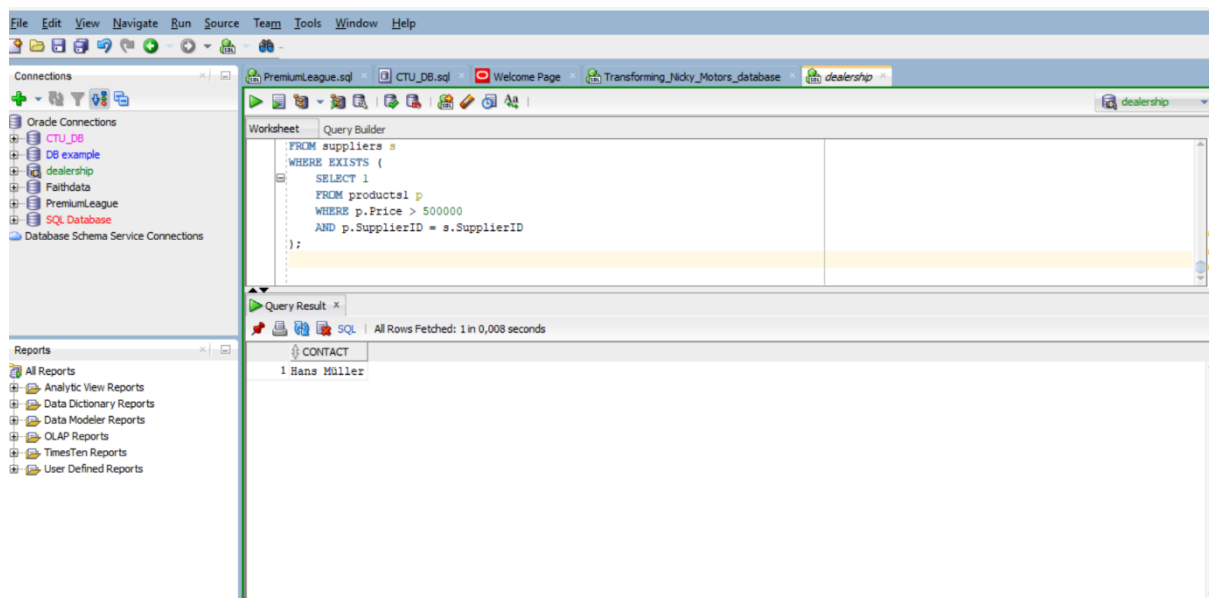

2.1 Display the phone number of the supplier if ALL records on the products table have mileage equal to zero

```sql
SELECT DISTINCT s.PhoneNumber
FROM suppliers s
WHERE NOT EXISTS (
    SELECT 1
    FROM products1 p
    WHERE p.Mileage <> 0
    AND p.SupplierID = s.SupplierID
);
```
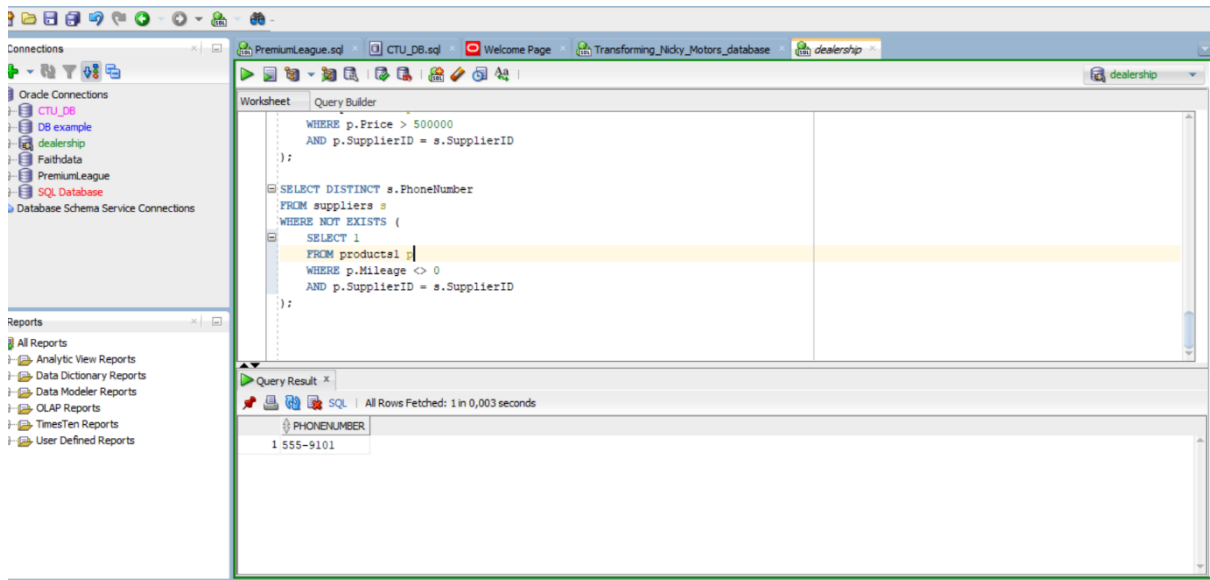
Question 3

 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.

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

SELECT * FROM Car_Dealership_Products_View;
```
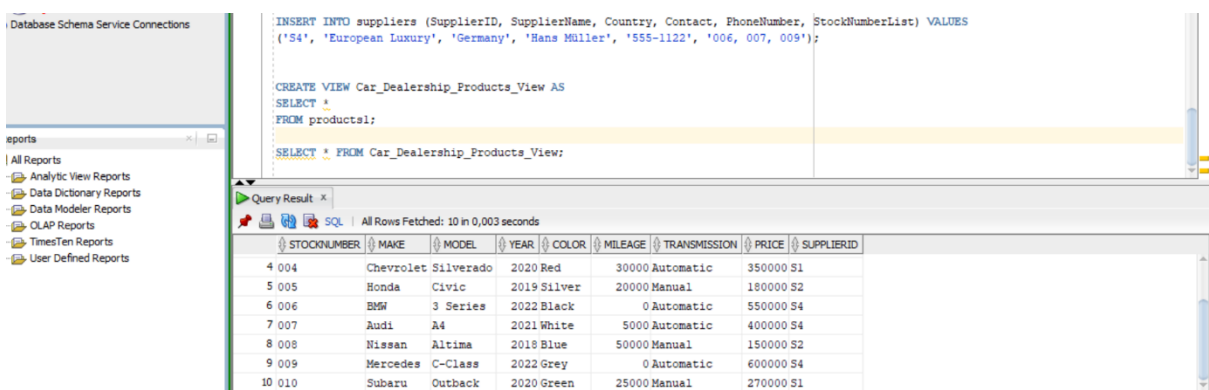
3.2 Create a view that shows all cars with automatic transmission and their details.

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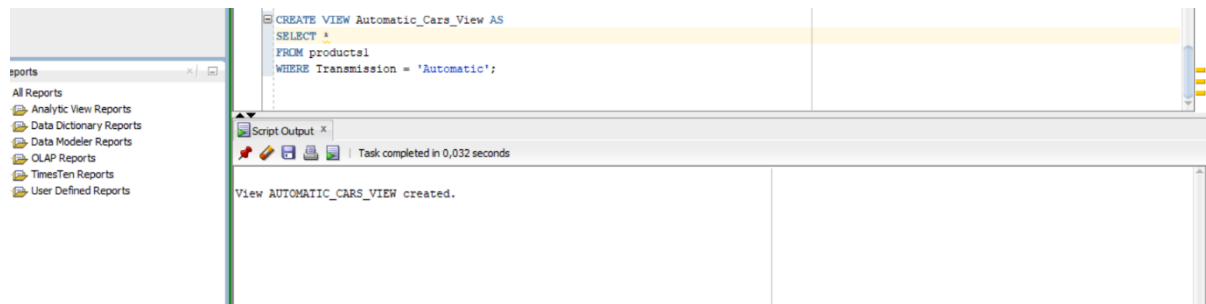


```sql
SELECT * FROM Automatic_Cars_View;
```
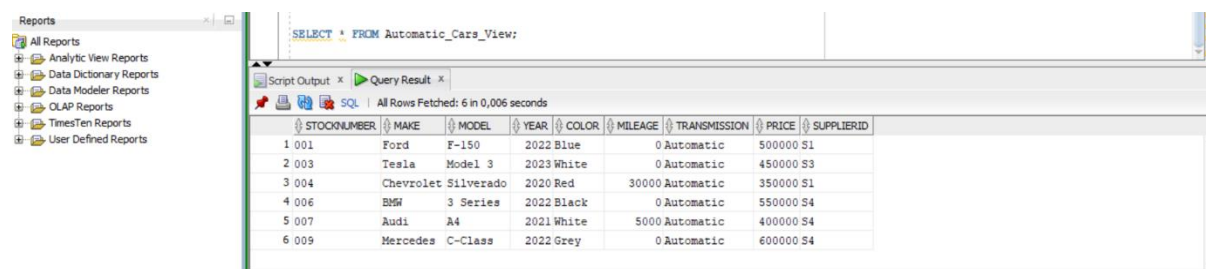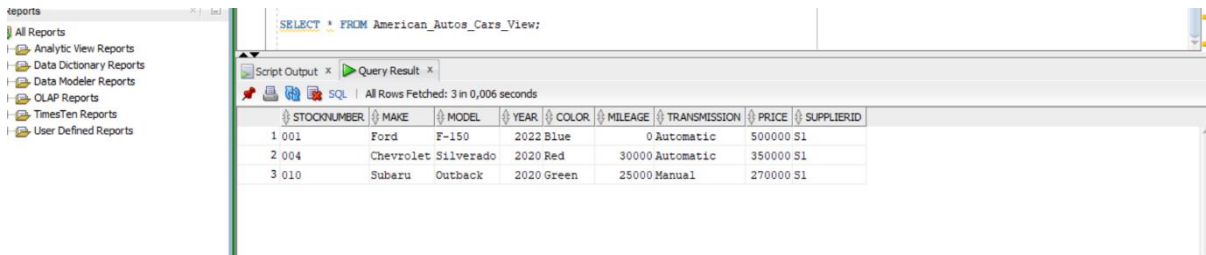

3.3 Create a view that lists all cars supplied by "American Autos" with their details.

```sql
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';
```
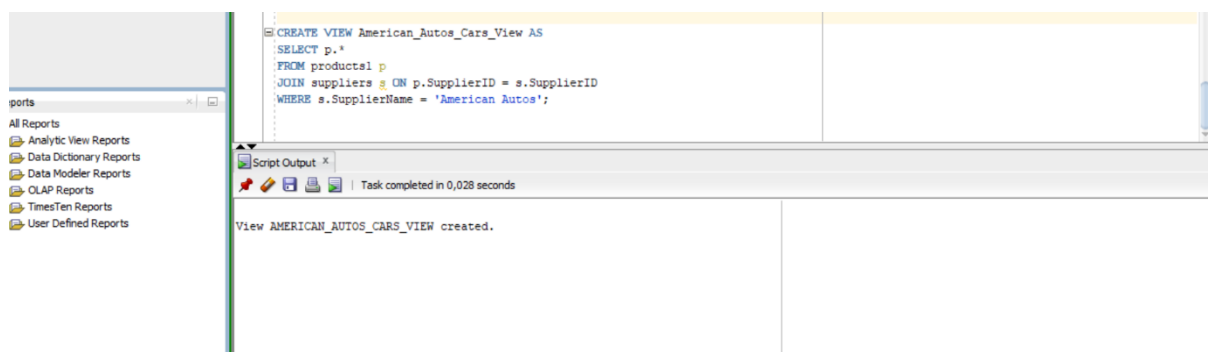
```sql
SELECT * FROM American_Autos_Cars_View;
```
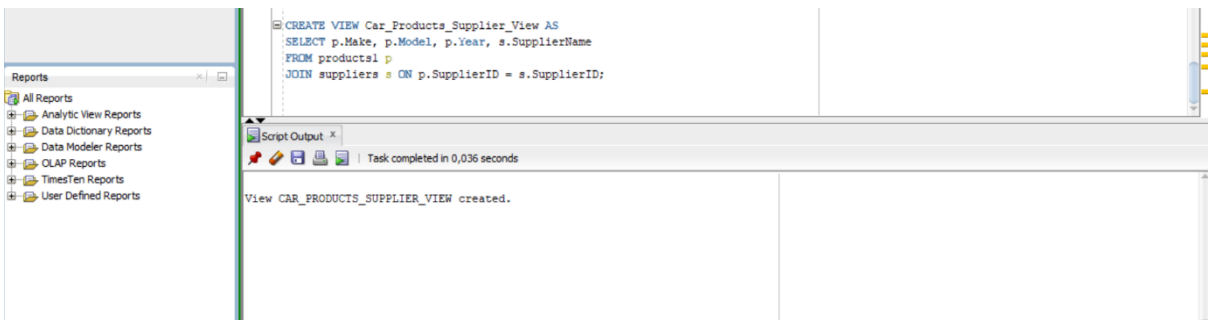

3.4 Create a complex view that joins the Car Dealership Products Table and the Supplier Table to show the Make, Model, Year, and Supplier Name.

```sql
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;
```
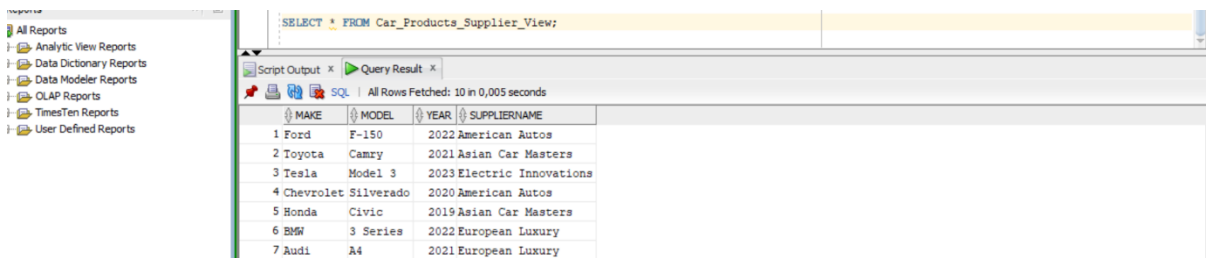


```sql
SELECT * FROM Car_Products_Supplier_View;
```

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

```sql
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;
```
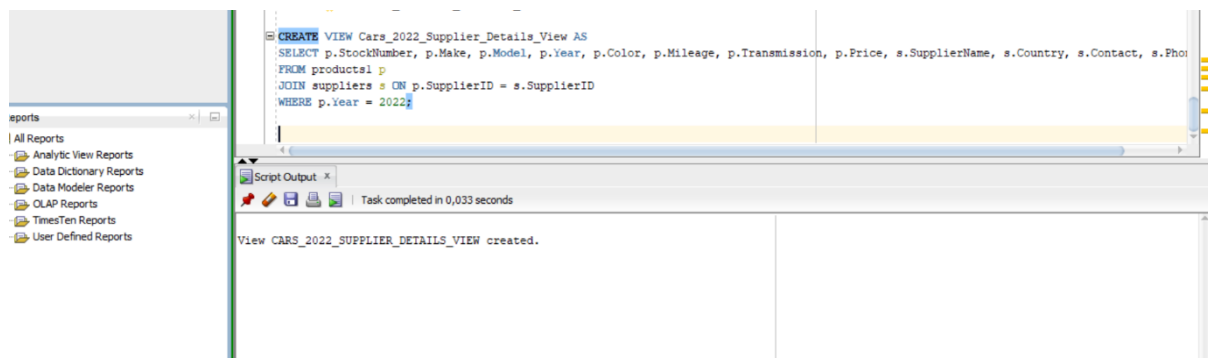


```sql
SELECT * FROM Cars_2022_Supplier_Details_View;
```


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.

```sql
SELECT Make AS Name
FROM products1
UNION
SELECT DISTINCT Country AS Name
FROM suppliers
ORDER BY Name;
```
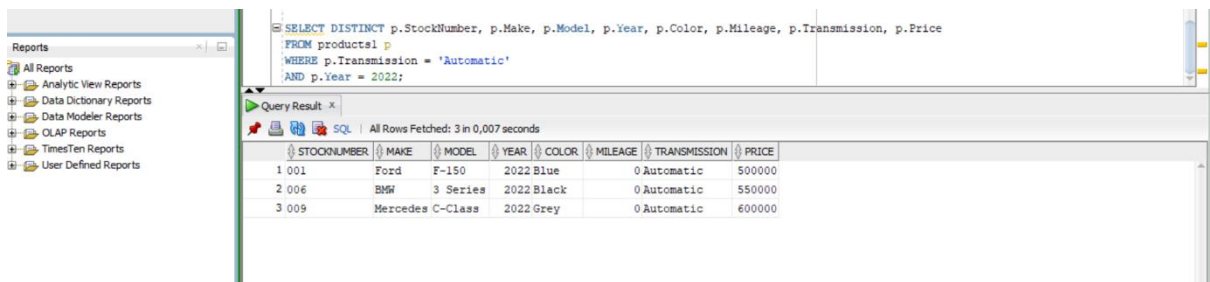
4.2 List cars with Automatic transmissions and cars from the year 2022. Eliminate duplicate rows

```
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';
```

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

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