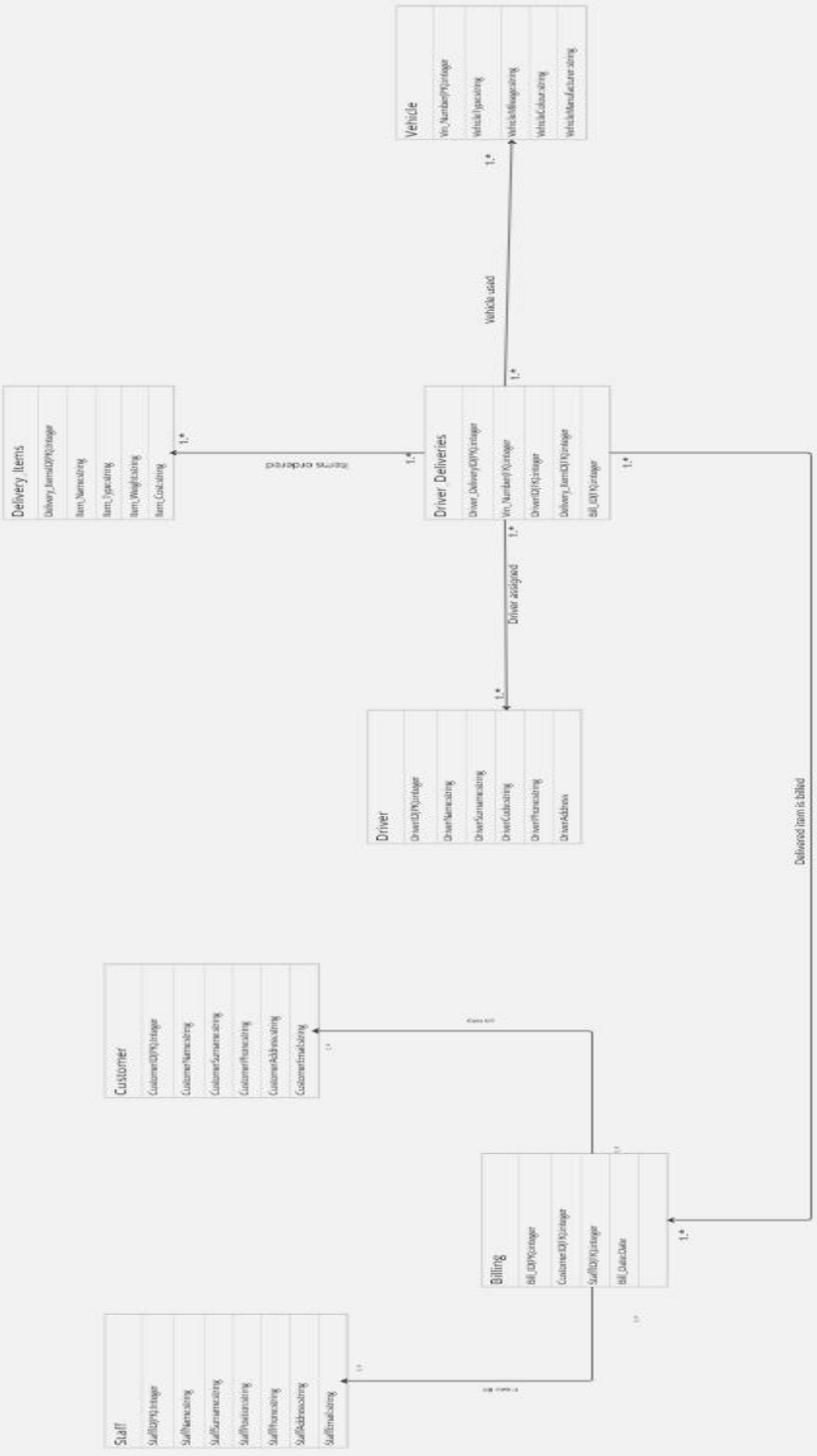
ST10255824-ASSIGNMENT 1

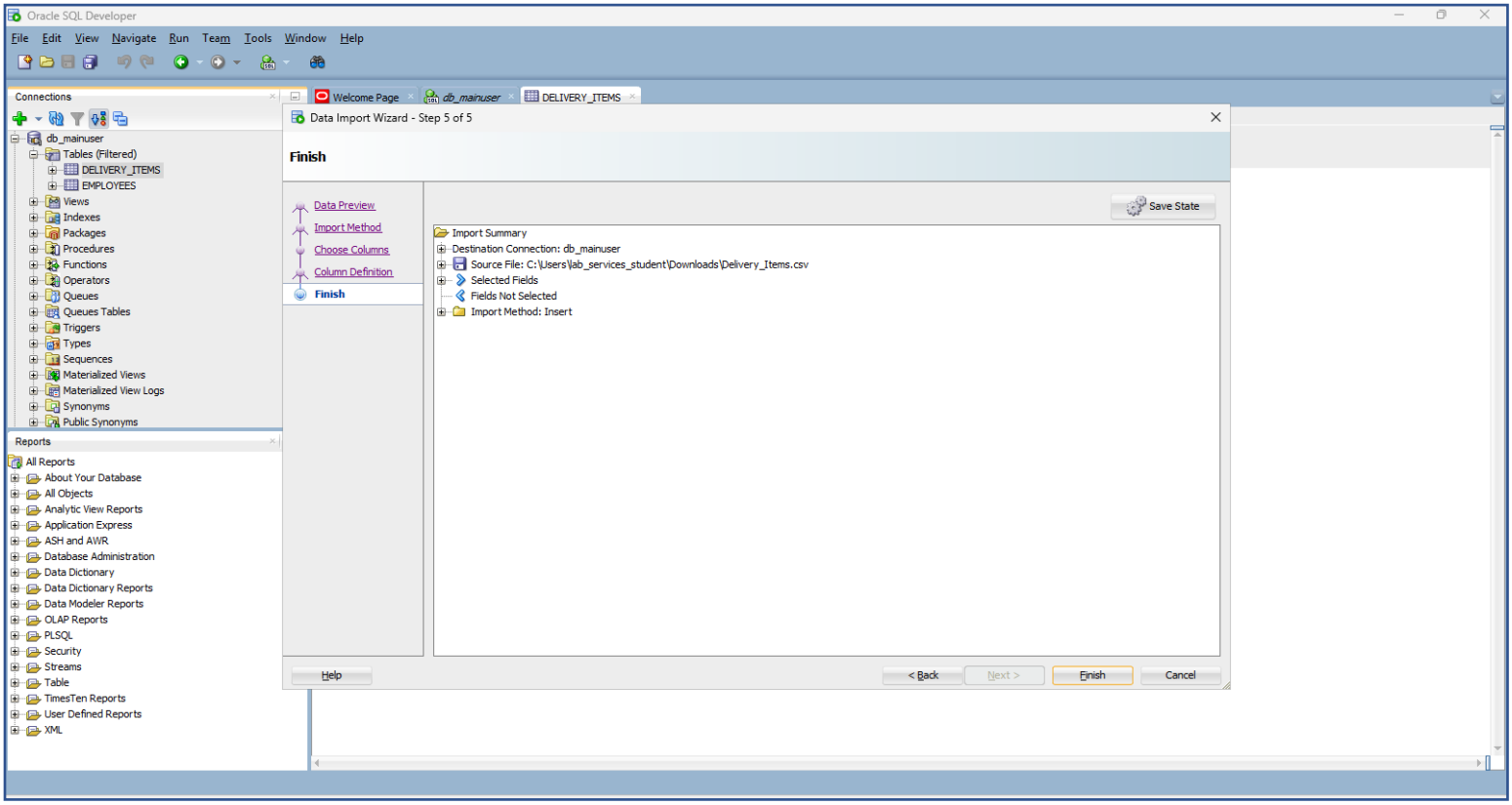
LCHATEAU-INSY7213

Question 1



(Khusid, 2011)

Question 2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Save State
Import Summary
Destination Connection: db_mainuser
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Fields Not Selected
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Help
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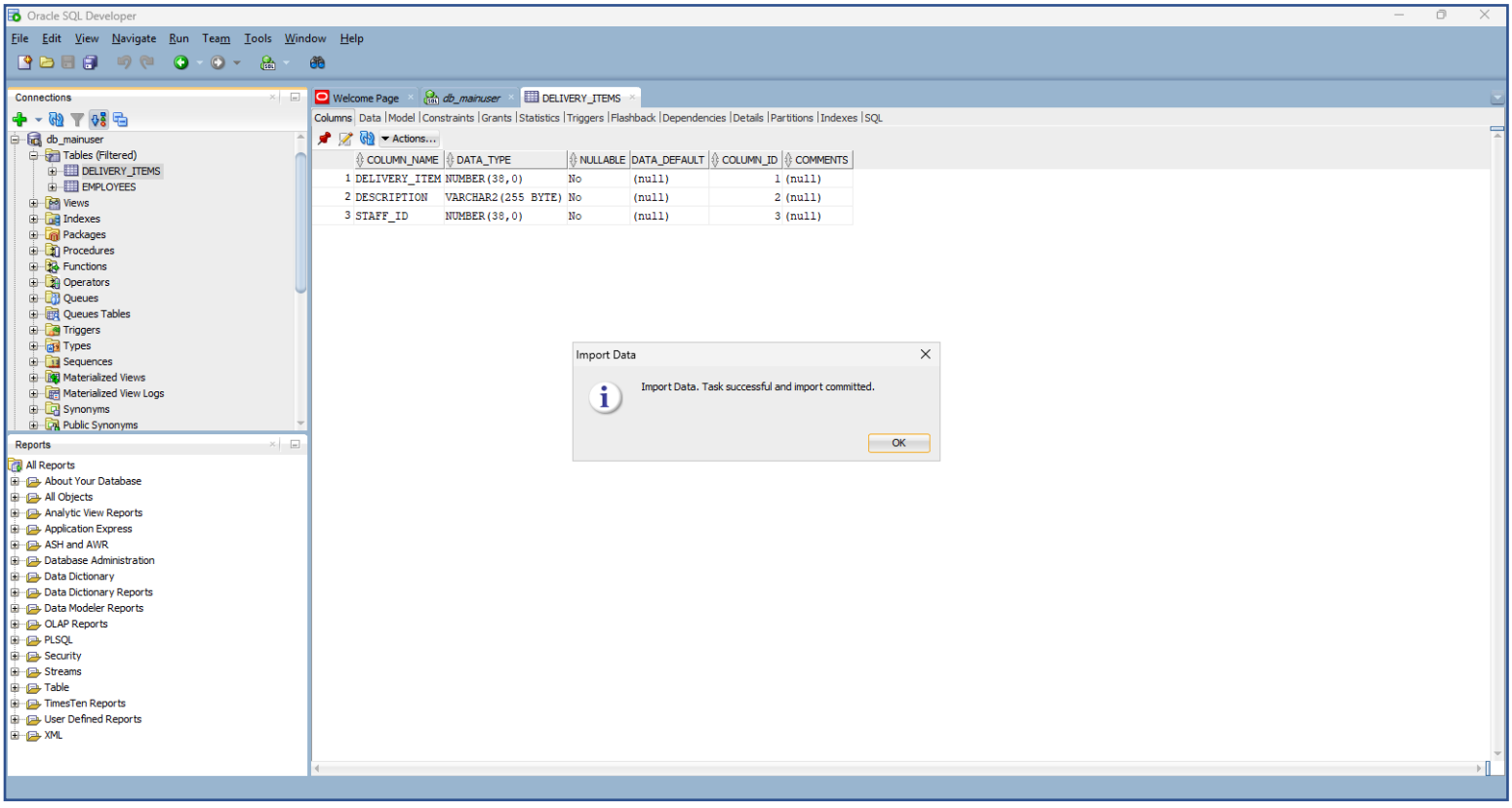
Next >
Finish
Cancel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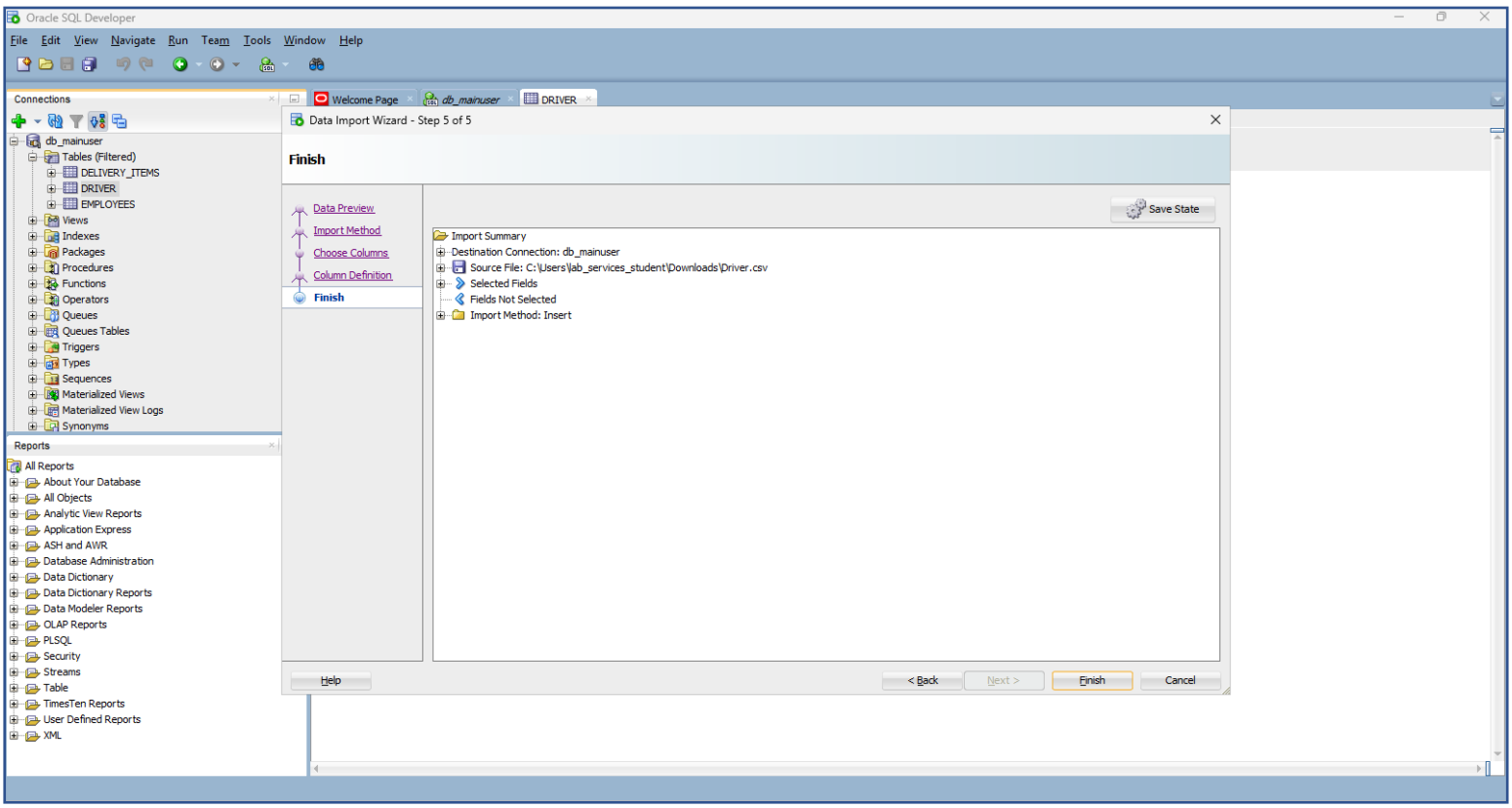
db_mainuser
DELIVERY_ITEMS
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 DELIVERY_ITEM NUMBER(38,0) No (null) 1 (null)
2 DESCRIPTION VARCHAR2(255 BYTE) No (null) 2 (null)
3 STAFF_ID NUMBER(38,0) No (null) 3 (null)
Import Data
Import Data. Task successful and import committed.
OK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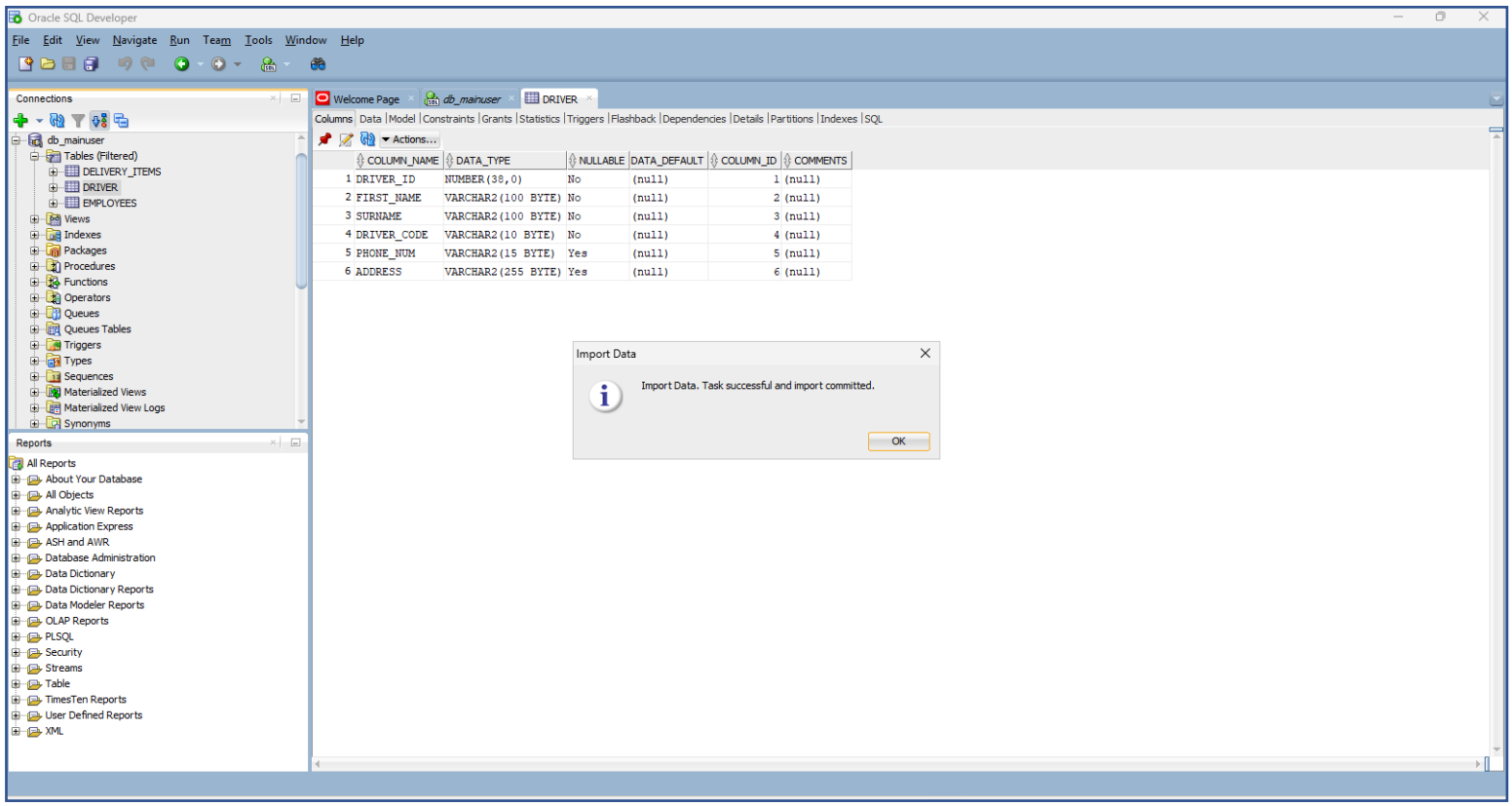
Data Preview
Import Method
Choose Columns
Column Definition
Finish
Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\lab_services_student\Downloads\Driver.csv
Selected Fields
Fields Not Selected
Import Method: Insert
Help
< Back
Next >
Finish
Cancel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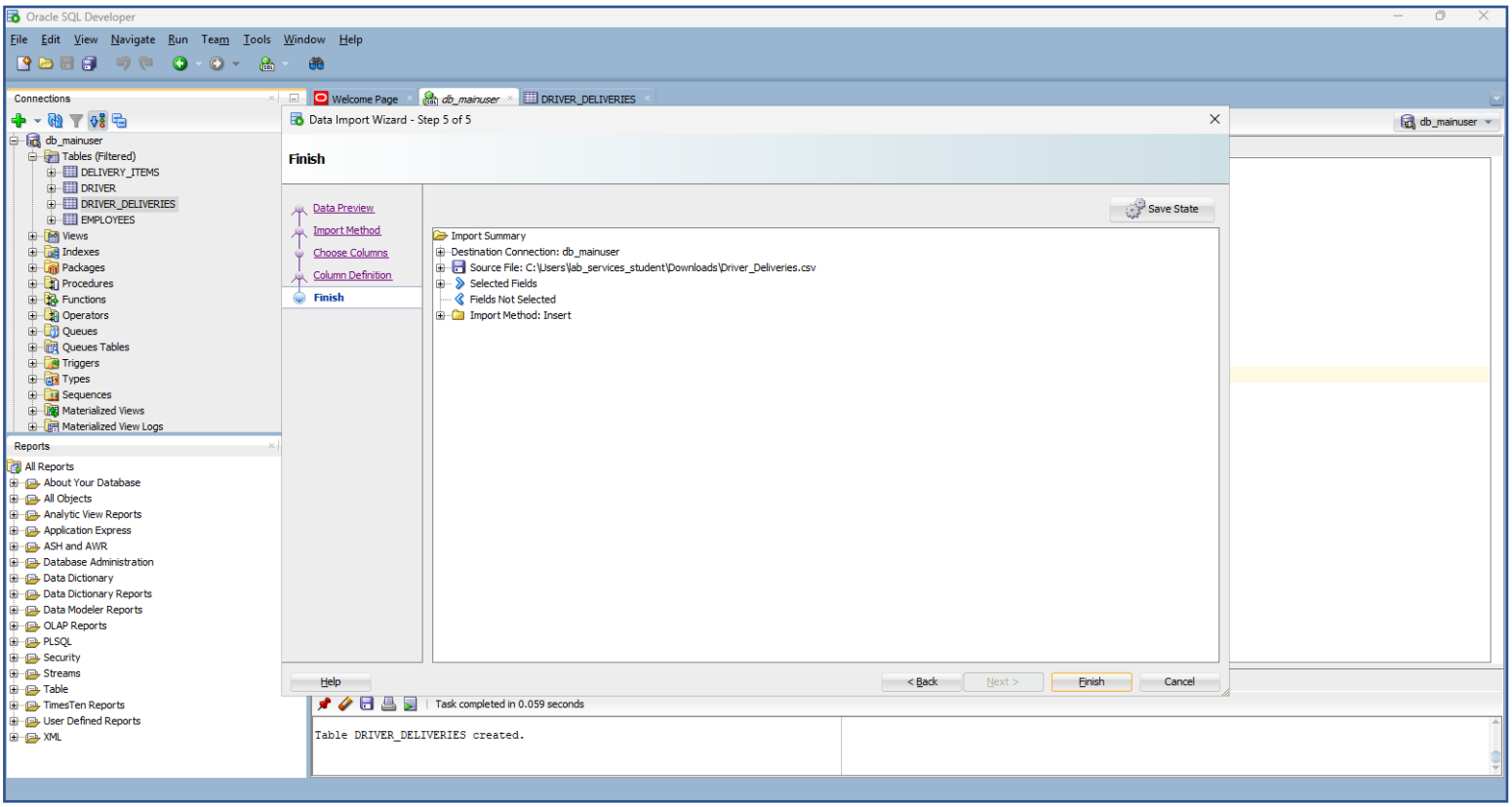
DRIVER
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 DRIVER_ID NUMBER(38,0) No (null) 1 (null)
2 FIRST_NAME VARCHAR2(100 BYTE) No (null) 2 (null)
3 SURNAME VARCHAR2(100 BYTE) No (null) 3 (null)
4 DRIVER_CODE VARCHAR2(10 BYTE) No (null) 4 (null)
5 PHONE_NUM VARCHAR2(15 BYTE) Yes (null) 5 (null)
6 ADDRESS VARCHAR2(255 BYTE) Yes (null) 6 (null)
Import Data
Import Data. Task successful and import committed.
OK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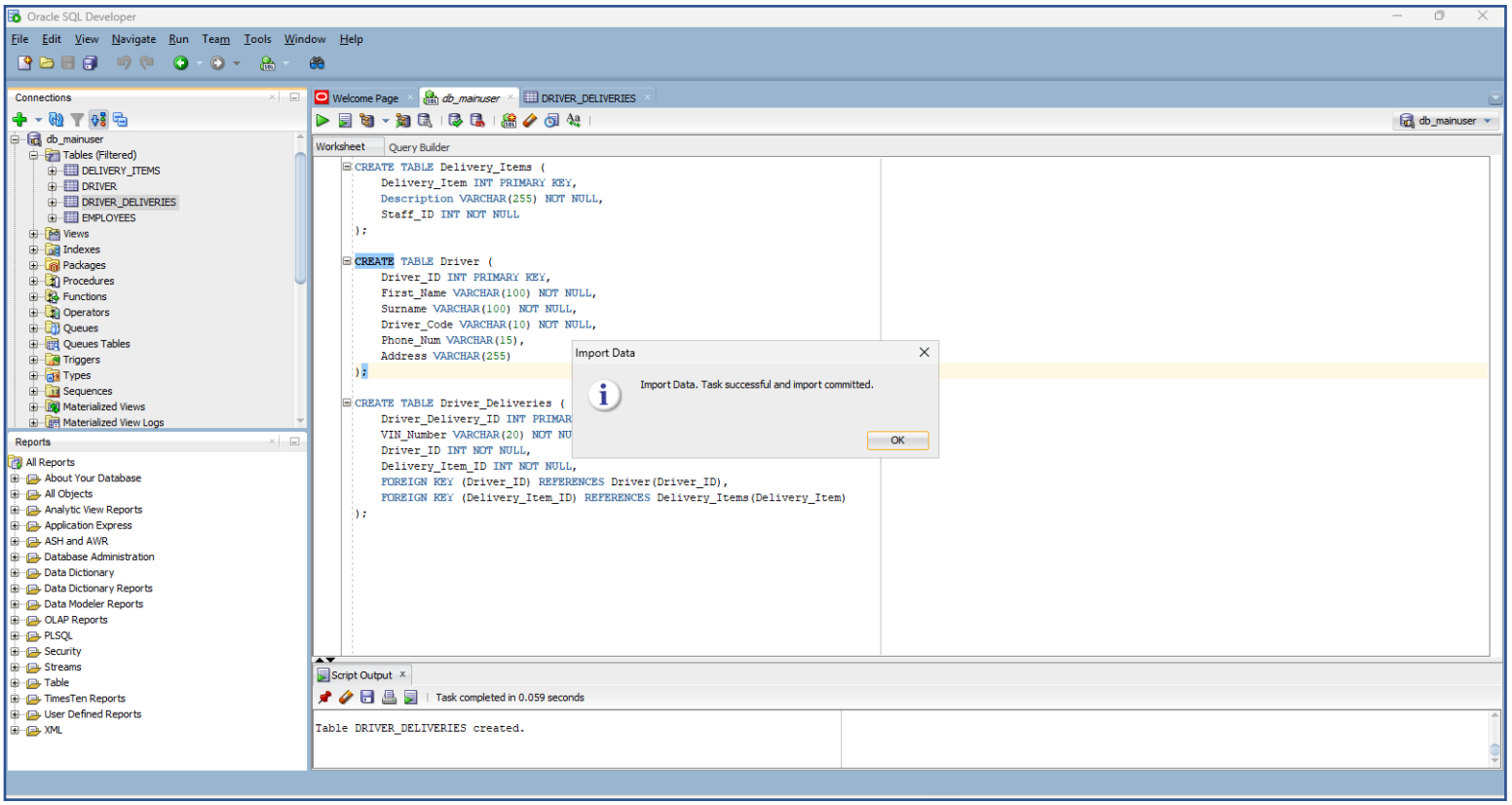
Import Method
Choose Columns
Column Definition
Finish
Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\ab_services_student\Downloads\Driver_Deliveries.csv
Selected Fields
Fields Not Selected
Import Method: Insert
Help
< Back
Next >
Finish
Cancel
Task completed in 0.059 seconds
Table DRIVER_DELIVERIES created.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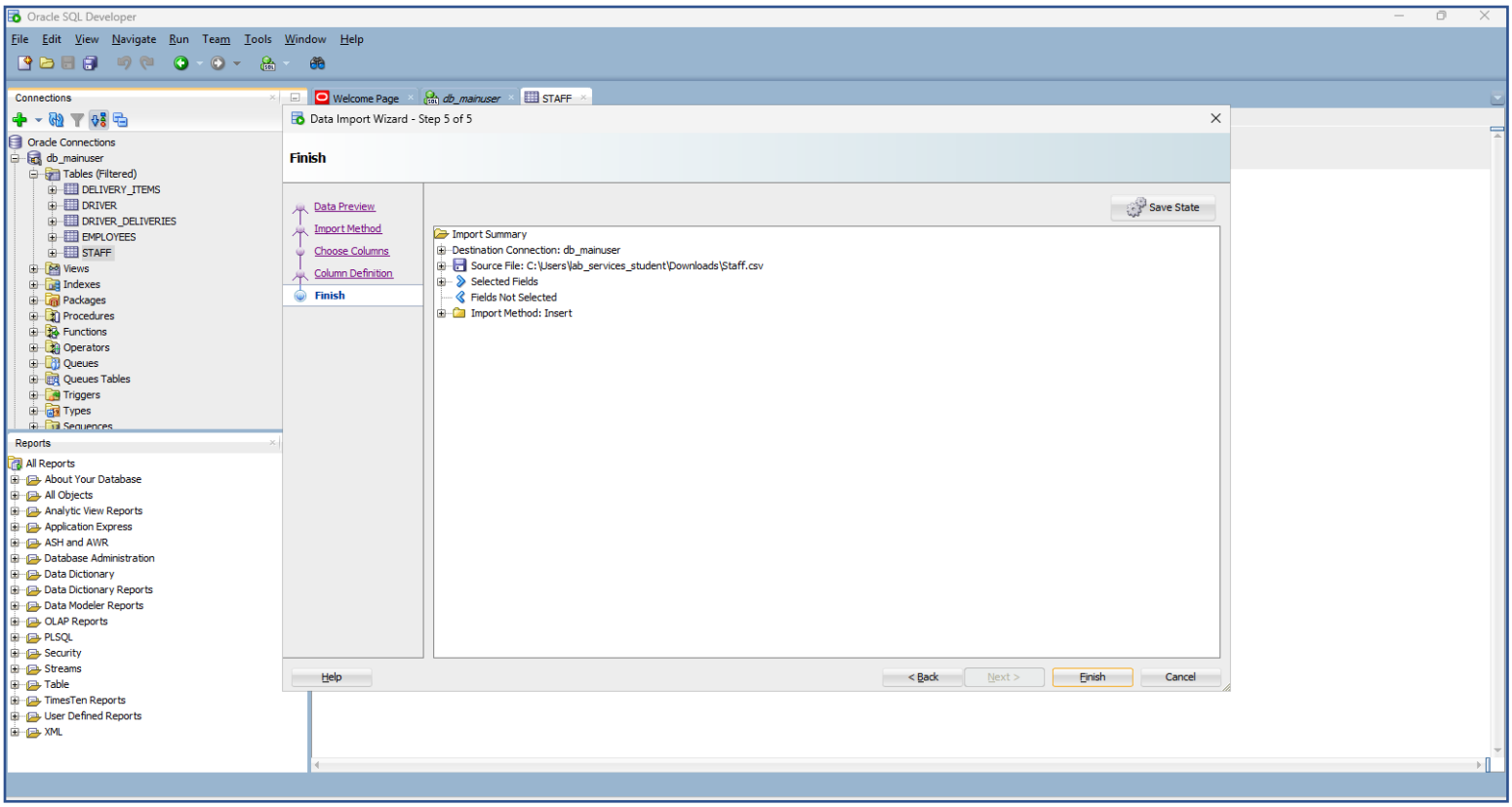
DRIVER_DELIVERIES
Worksheet
Query Builder
CREATE TABLE Delivery_Items (
Delivery_Item INT PRIMARY KEY,
Description VARCHAR(255) NOT NULL,
Staff_ID INT NOT NULL
);
CREATE TABLE Driver (
Driver_ID INT PRIMARY KEY,
First_Name VARCHAR(100) NOT NULL,
Surname VARCHAR(100) NOT NULL,
Driver_Code VARCHAR(10) NOT NULL,
Phone_Num VARCHAR(15),
Address VARCHAR(255)
);
CREATE TABLE Driver_Deliveries (
Driver_Delivery_ID INT PRIMAR
VIN_Number VARCHAR(20) NOT NU
Driver_ID INT NOT NULL,
Delivery_Item_ID INT NOT NULL,
FOREIGN KEY (Driver_ID) REFERENCES Driver(Driver_ID),
FOREIGN KEY (Delivery_Item_ID) REFERENCES Delivery_Items(Delivery_Item)
);
Import Data
Import Data. Task successful and import committed.
OK
Script Output
Task completed in 0.059 seconds
Table DRIVER_DELIVERIES created.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Column Definition
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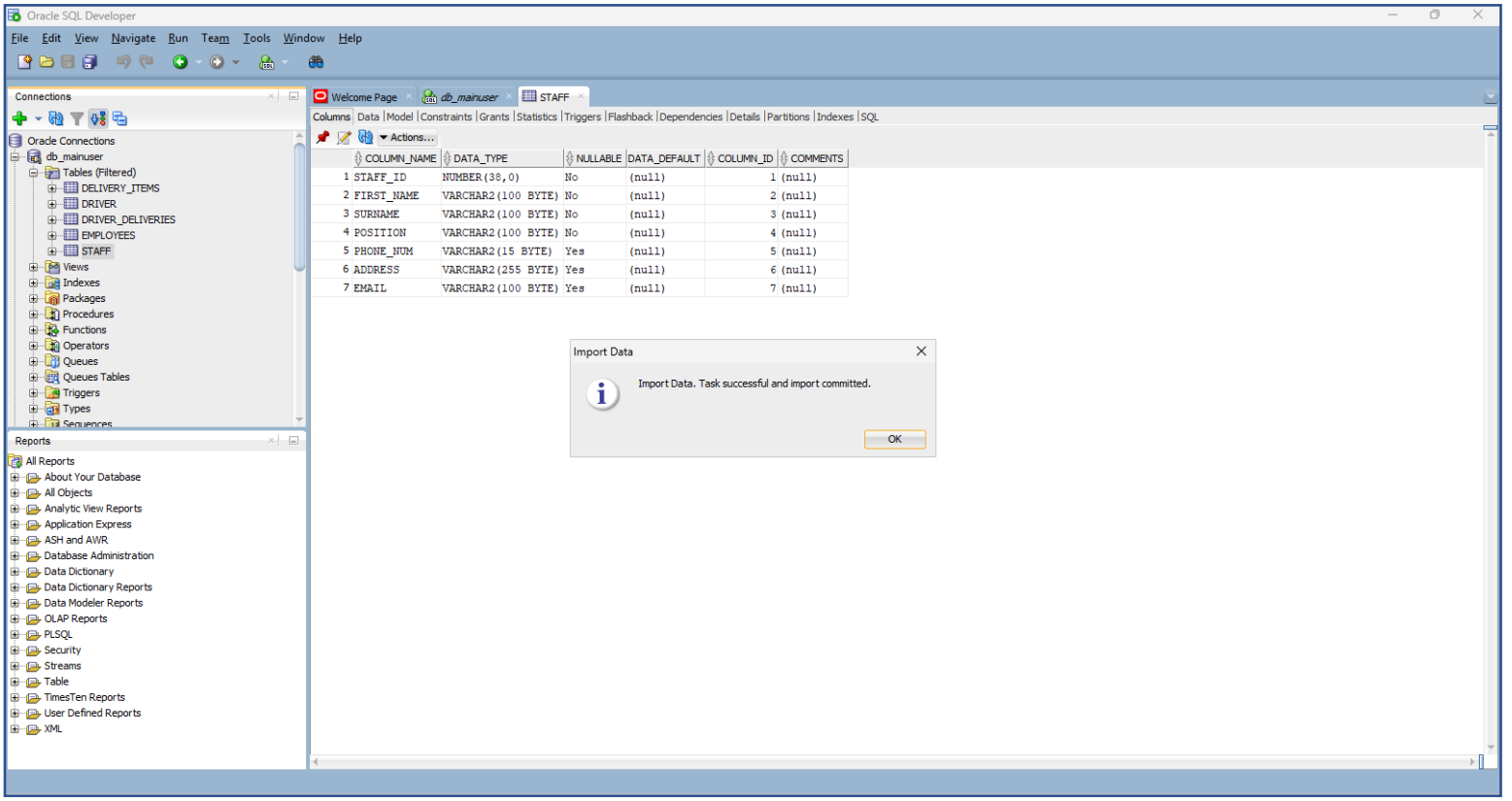
Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\lab_services_student\Downloads\Staff.csv
Selected Fields
Fields Not Selected
Import Method: Insert
Help
< Back
Next >
Finish
Cancel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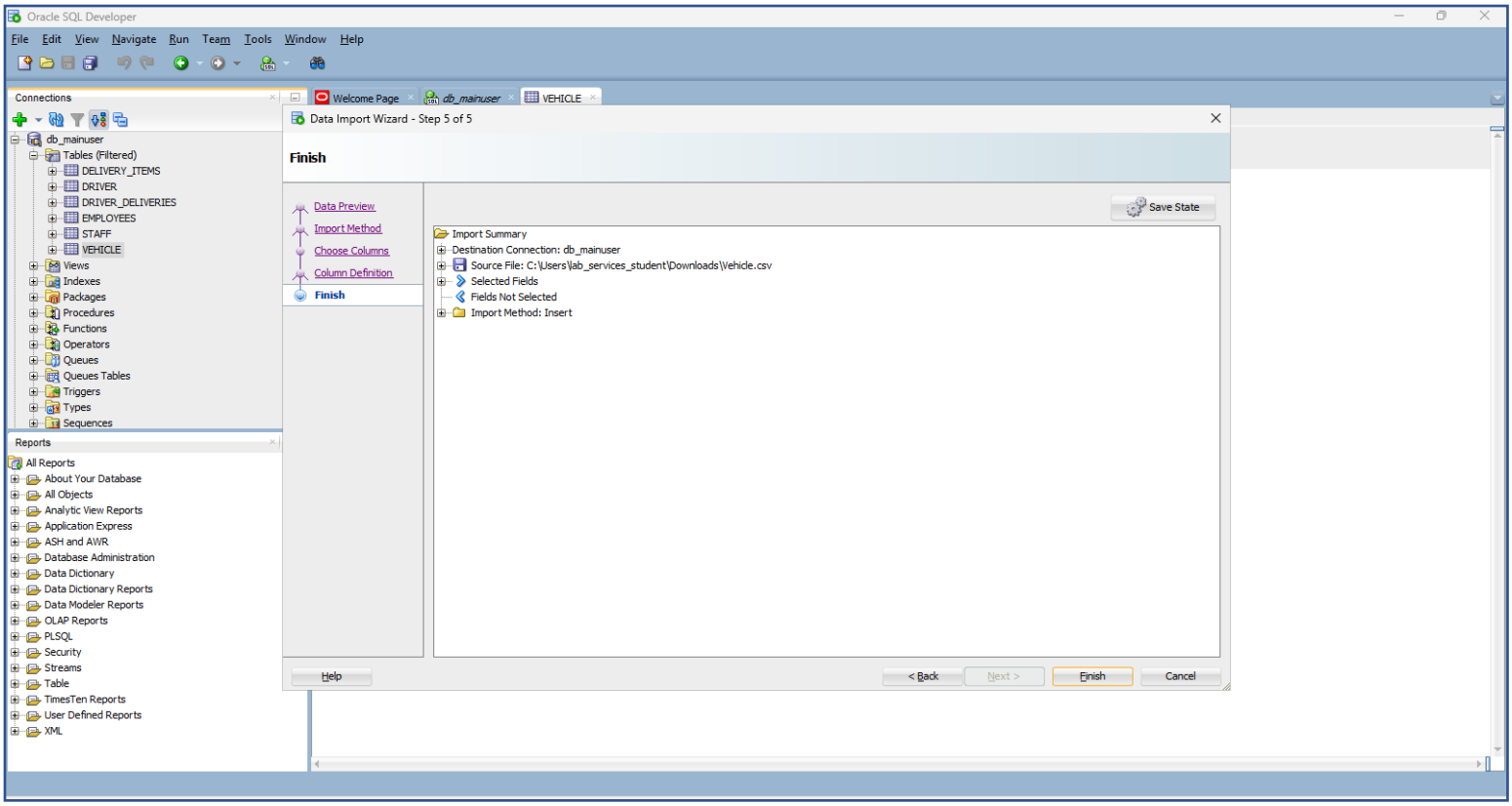
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 STAFF_ID NUMBER(38,0) No (null) 1 (null)
2 FIRST_NAME VARCHAR2(100 BYTE) No (null) 2 (null)
3 SURNAME VARCHAR2(100 BYTE) No (null) 3 (null)
4 POSITION VARCHAR2(100 BYTE) No (null) 4 (null)
5 PHONE_NUM VARCHAR2(15 BYTE) Yes (null) 5 (null)
6 ADDRESS VARCHAR2(255 BYTE) Yes (null) 6 (null)
7 EMAIL VARCHAR2(100 BYTE) Yes (null) 7 (null)
Import Data
Import Data. Task successful and import committed.
OK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Import Method
Choose Columns
Column Definition
Finish
Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\lab_services_student\Downloads\Vehicle.csv
Selected Fields
Fields Not Selected
Import Method: Insert
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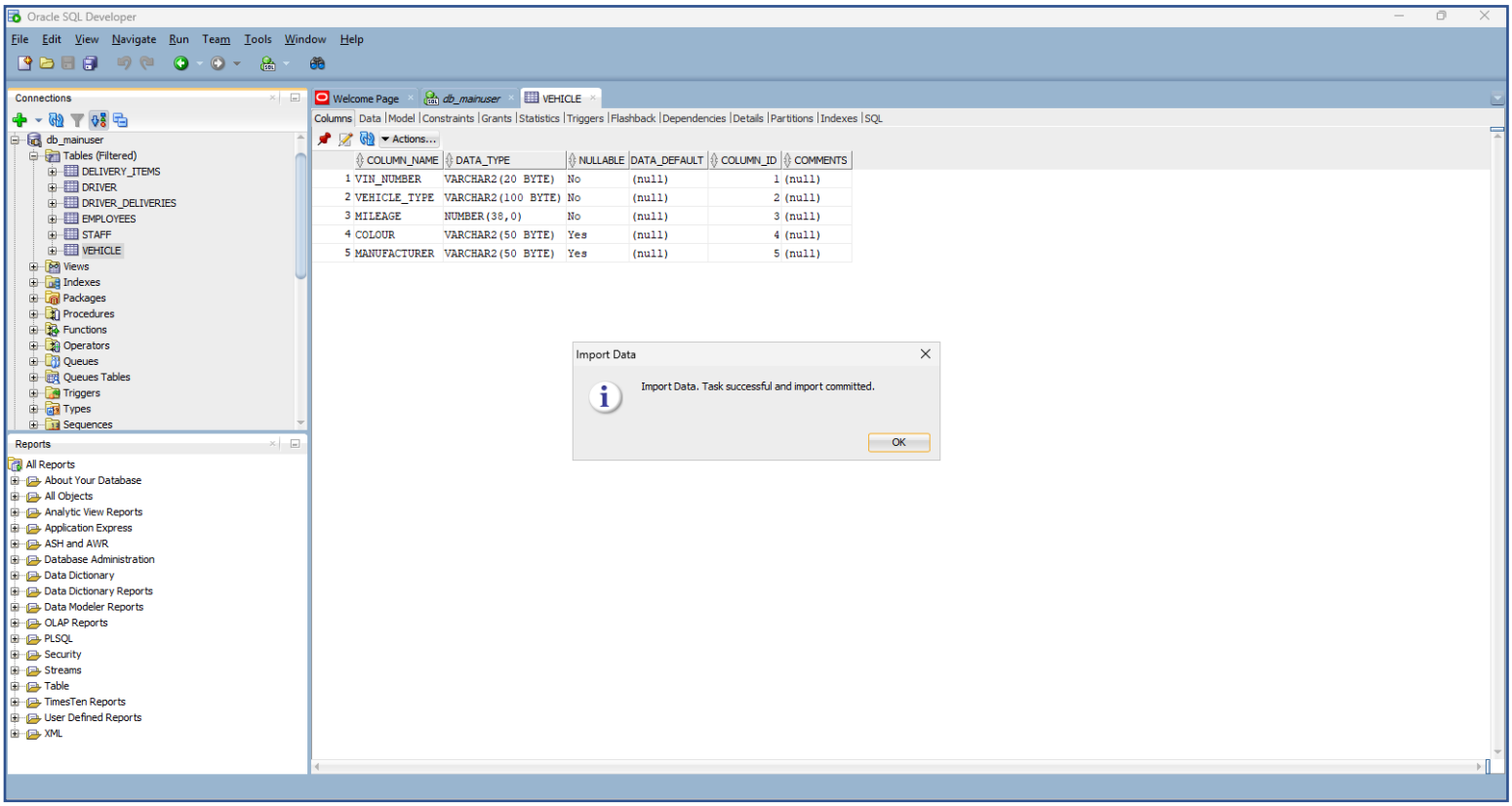
Next >
Finish
Cancel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Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 VIN_NUMBER VARCHAR2(20 BYTE) No (null) 1 (null)
2 VEHICLE_TYPE VARCHAR2(100 BYTE) No (null) 2 (null)
3 MILEAGE NUMBER(38,0) No (null) 3 (null)
4 COLOUR VARCHAR2(50 BYTE) Yes (null) 4 (null)
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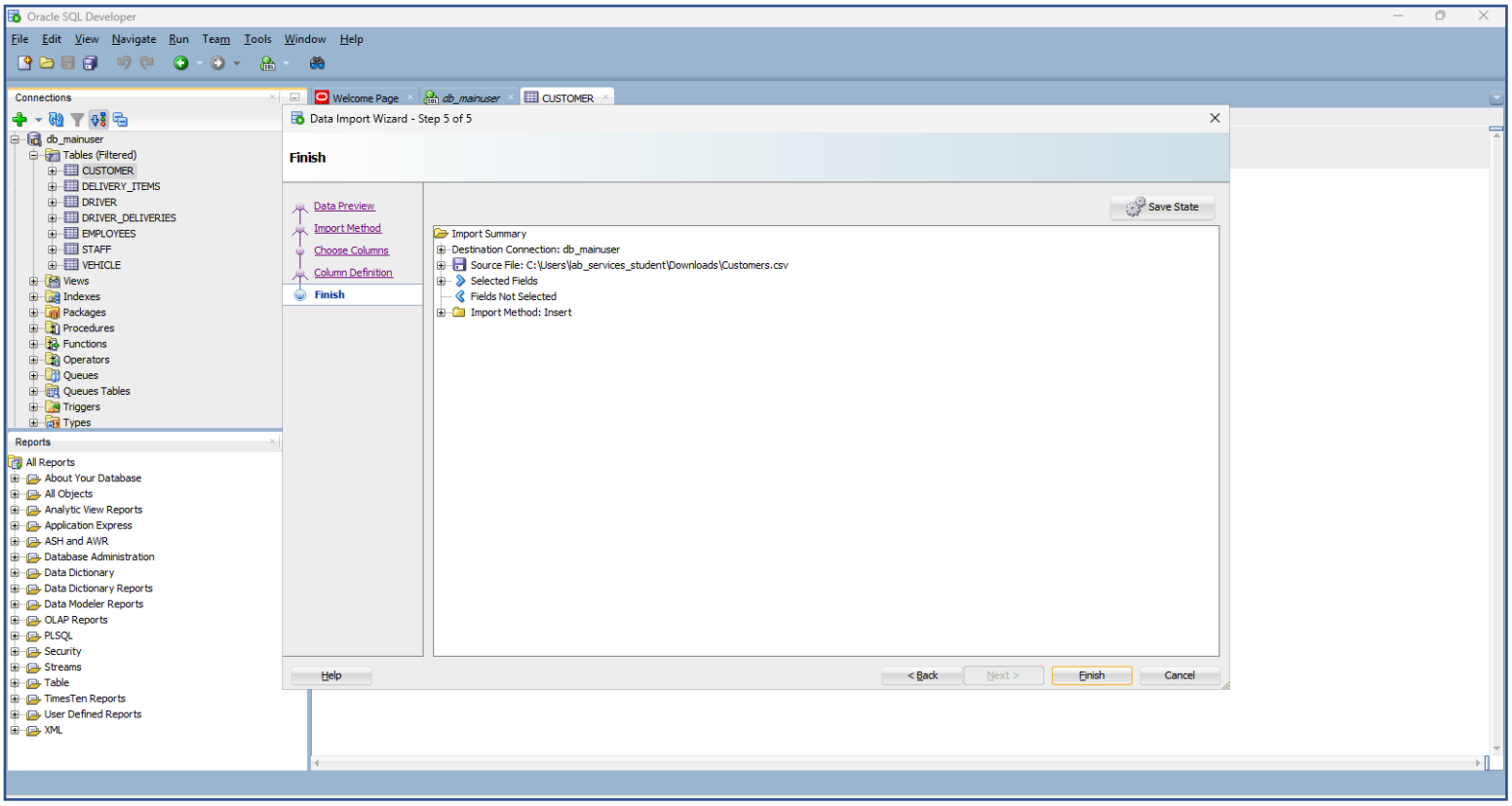
Import Data
Import Data. Task successful and import committed.
OK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Import Method
Choose Columns
Column Definition
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Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\lab_services_student\Downloads\Customers.csv
Selected Fields
Fields Not Selected
Import Method: Insert
Help
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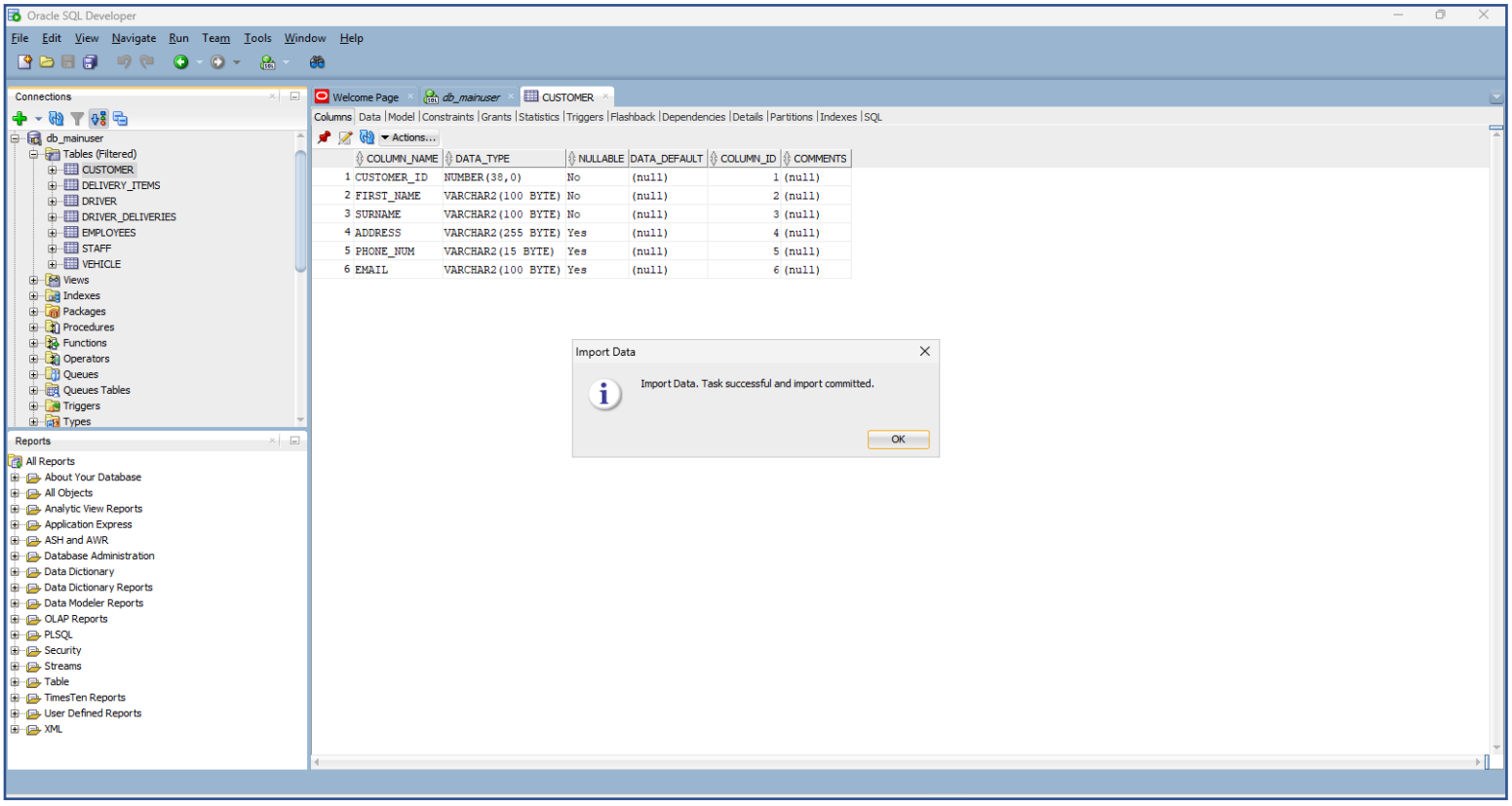
Finish
Cancel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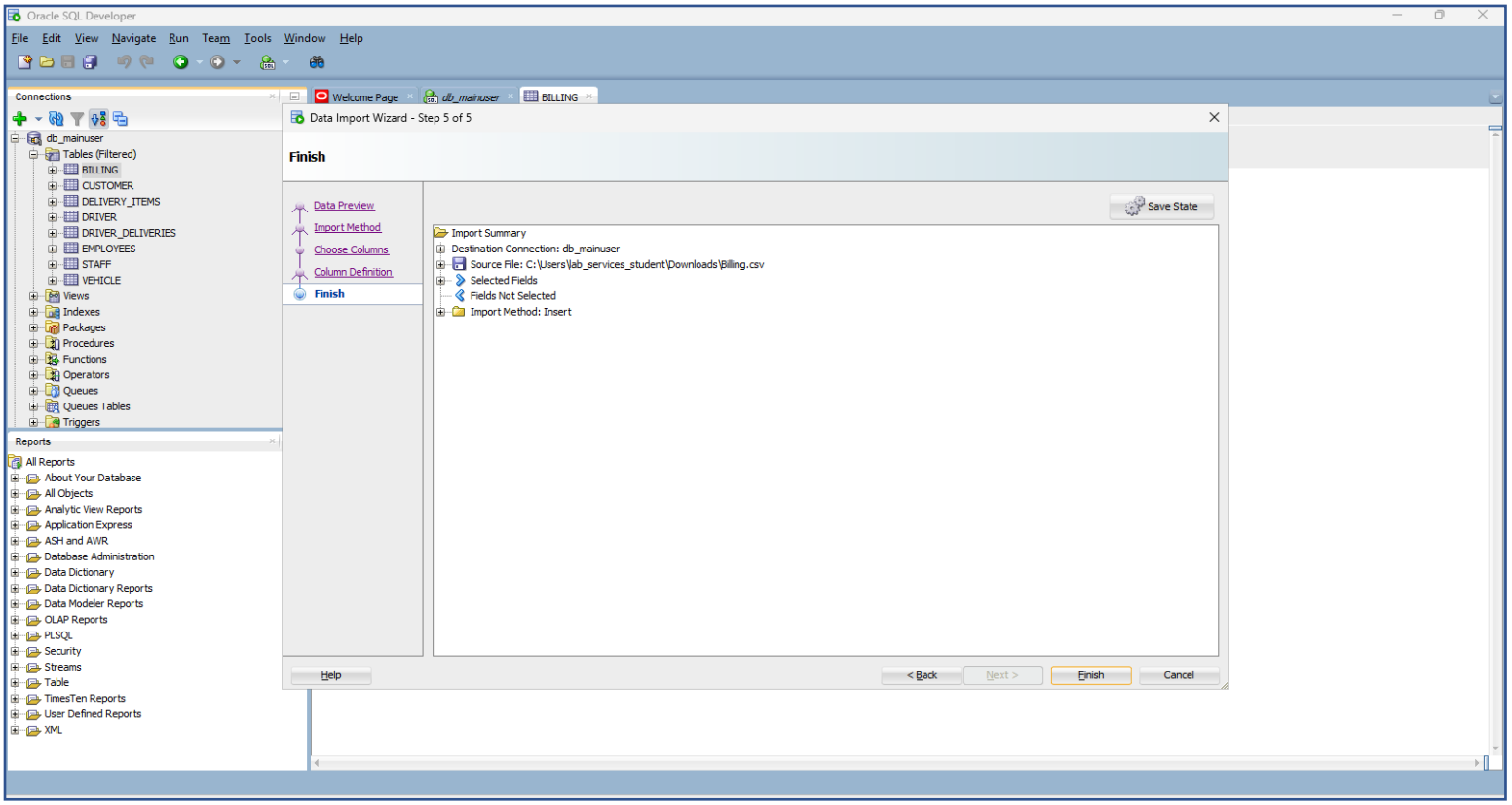
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 CUSTOMER_ID NUMBER(38,0) No (null) 1 (null)
2 FIRST_NAME VARCHAR2(100 BYTE) No (null) 2 (null)
3 SURNAME VARCHAR2(100 BYTE) No (null) 3 (null)
4 ADDRESS VARCHAR2(255 BYTE) Yes (null) 4 (null)
5 PHONE_NUM VARCHAR2(15 BYTE) Yes (null) 5 (null)
6 EMAIL VARCHAR2(100 BYTE) Yes (null) 6 (null)
Import Data
Import Data. Task successful and import committed.
OK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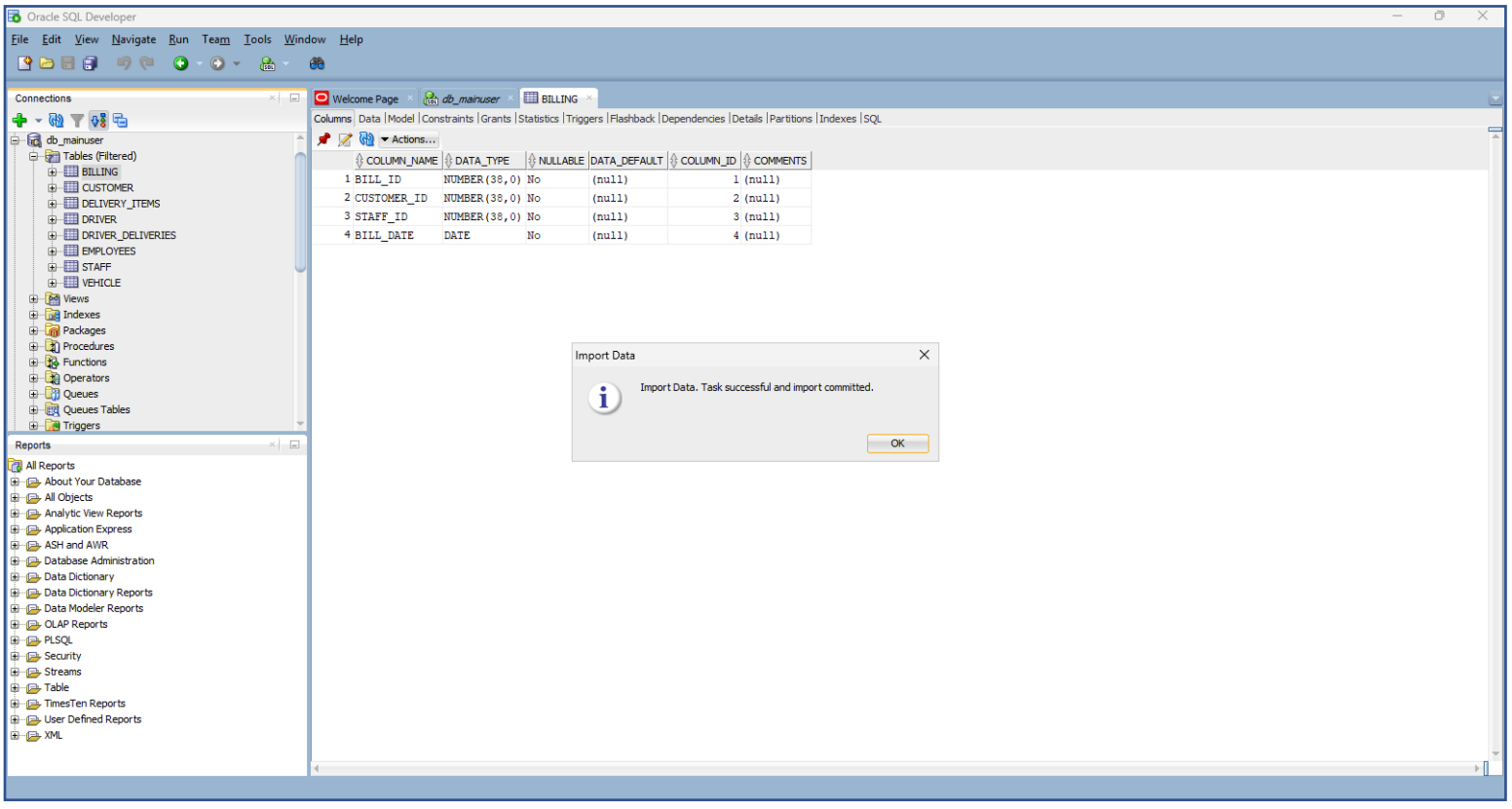
Data Preview
Import Method
Choose Columns
Column Definition
Finish
Save State
Import Summary
Destination Connection: db_mainuser
Source File: C:\Users\lab_services_student\Downloads\Billing.csv
Selected Fields
Fields Not Selected
Import Method: Insert
Help
< Back
Next >
Finish
Cancel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db_mainuser
BILLING
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL
Actions...
COLUMN_NAME DATA_TYPE NULLABLE DATA_DEFAULT COLUMN_ID COMMENTS
1 BILL_ID NUMBER(38,0) No (null) 1 (null)
2 CUSTOMER_ID NUMBER(38,0) No (null) 2 (null)
3 STAFF_ID NUMBER(38,0) No (null) 3 (null)
4 BILL_DATE DATE No (null) 4 (null)
Import Data
Import Data. Task successful and import committed.
OK

```
CREATE USER John IDENTIFIED BY Johnch2024;
GRANT CREATE SESSION TO John;
GRANT INSERT ANY TABLE TO John;
```

Script Output

Task completed in 0.043 seconds

```
User JOHN created.


Grant succeeded.


Grant succeeded.
```

```
CREATE USER John IDENTIFIED BY Johnch2024;
GRANT CREATE SESSION TO John;
GRANT Select ANY TABLE TO John;


CREATE USER Hannah IDENTIFIED BY Hannahch2024;
GRANT CREATE SESSION TO Hannah;
GRANT INSERT ANY TABLE TO Hannah;
```

Script Output

Task completed in 0.091 seconds

```
User HANNAH created.


Grant succeeded.


Grant succeeded.
```

Question 3.2

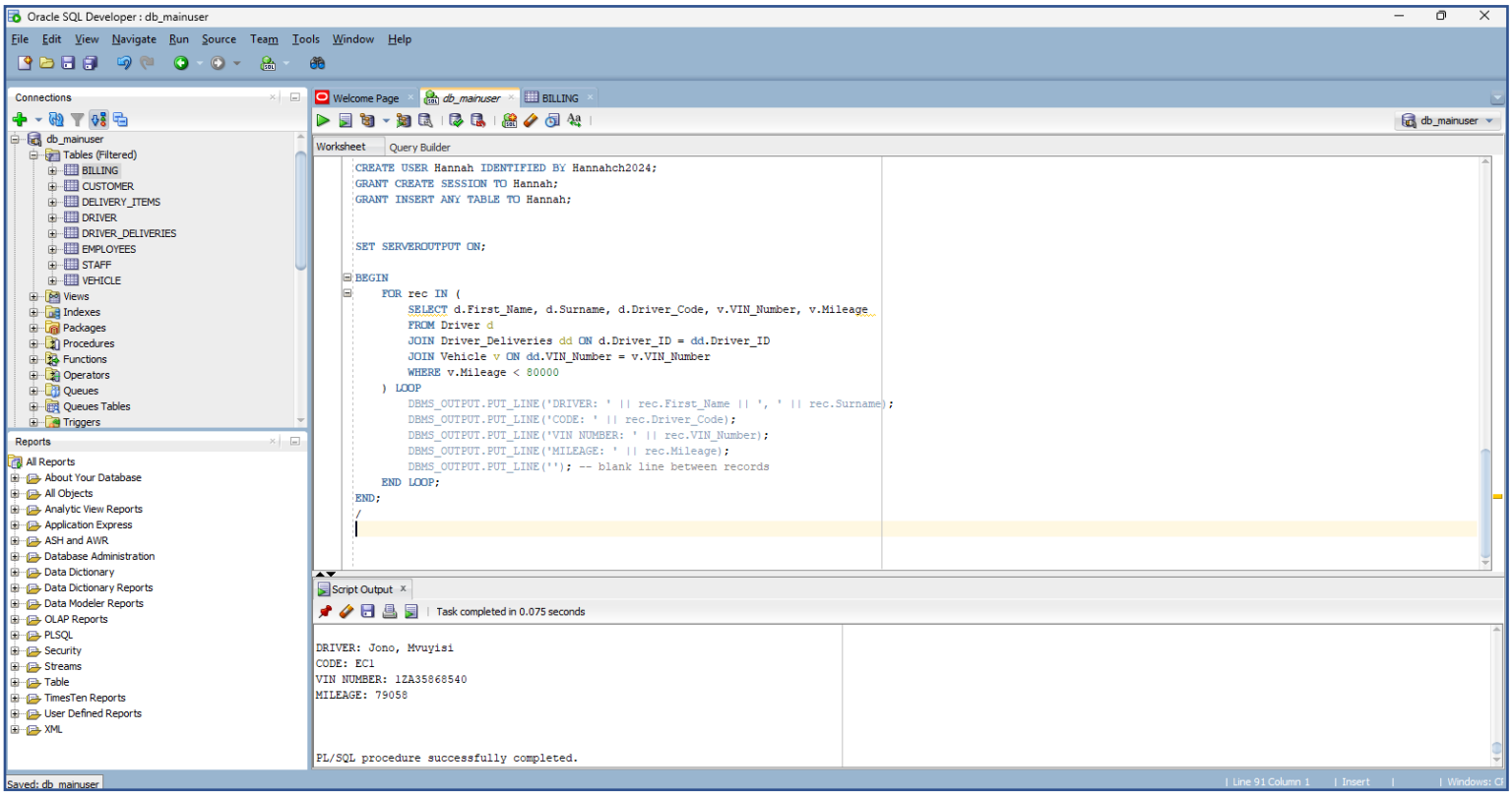
Improves the Security of Data:

- Only those who require it can access sensitive data.
- John is able to report on or analyse data, but he cannot alter it.
- Hannah is able to add new records without being able to see private data.

Reduces Unintentional Damage

- John is unable to inadvertently add or remove data while conducting queries.
- When Hannah inserts records, she cannot unintentionally reveal private information.

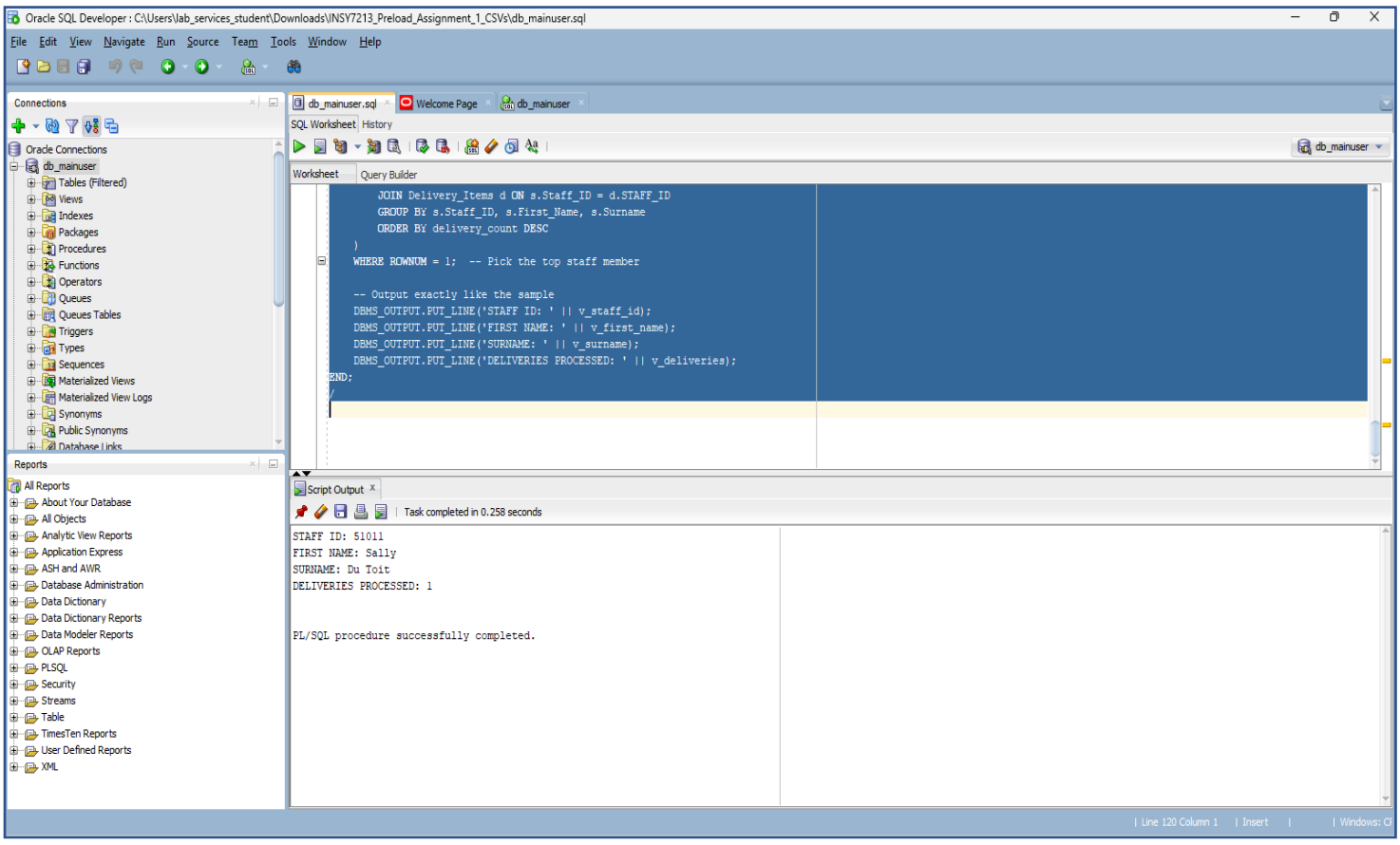
Question 4



Question 4.2

All of the data in a flat file database is kept in a single table or file, which frequently results in data redundancy, makes it harder to enforce data integrity, restricts query capabilities, and makes it difficult to scale. A relational database, on the other hand, uses primary and foreign keys to arrange data into several tables with precisely defined relationships, eliminating duplication and guaranteeing accuracy. Because it can effectively manage numerous entities, including drivers, vehicles, delivery items, staff, customers, and billing, a relational model is more appropriate for CHEETAH DELIVERIES. It can grow with the company, guarantees data integrity, and enables robust SQL queries for reporting. Management can track deliveries, create accurate reports, and keep consistent information without duplicating data by dividing entities into linked tables, which makes the relational model the best option over a flat file approach. (Staff, 2024)

Question 5



Question 5.2

The three primary parts of a PL/SQL block are Exception Handling, Execution, and Declaration.

Declaration Section: Variables, constants, cursors, and other components that the block will use are defined in this optional section. If we created a variable in the Q.5.1 query to hold the number of deliveries made by each employee, it would fall under the declaration portion. (Learning, N/A)

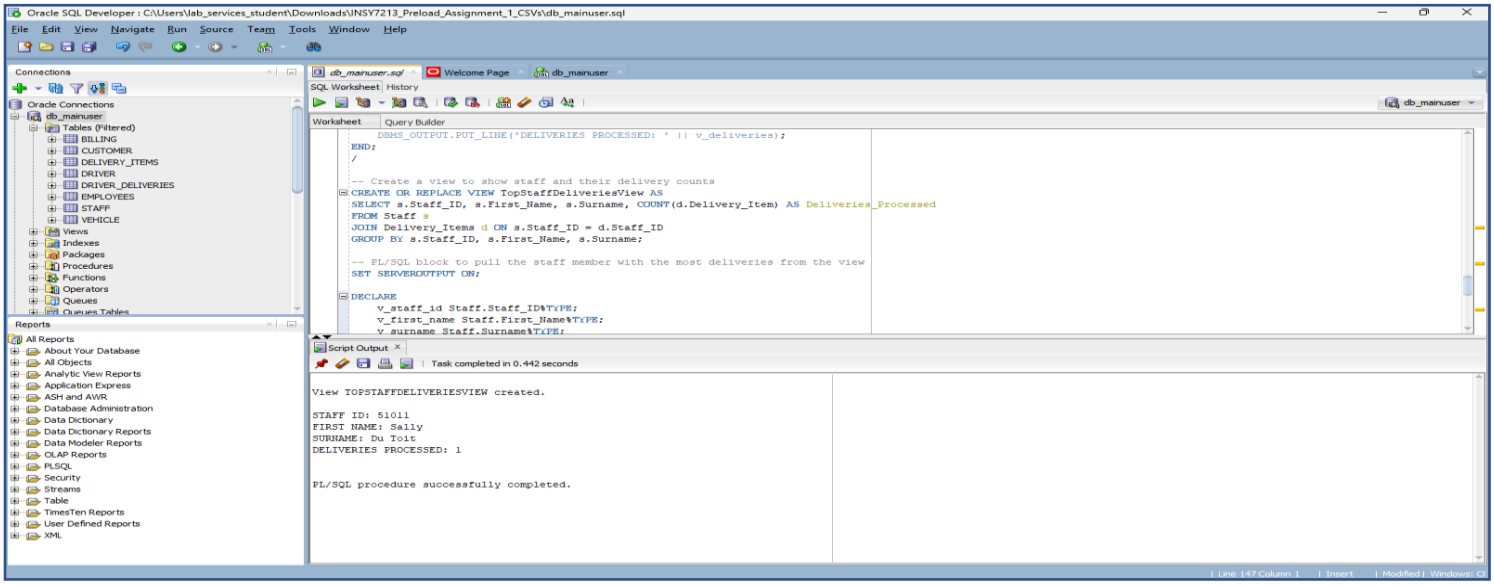
Execution part: The actual SQL statements and procedural logic that carry out the actions are contained in this required part. The SQL query that determines which employee has made the most deliveries is located in the execution section of Q.5.1. Here, the SELECT statement determines the top employees and counts deliveries. (Learning, N/A)

Exception Section: Any errors that arise during execution are handled in this optional section. For instance, the exception section can identify the error and show a helpful message rather than crashing if the query fails due to a missing table or division by zero in computations. (Learning, N/A)

Question 5.3.1

A view is a database virtual table that has a pre-written query. Instead of storing data, it dynamically shows the query's results whenever they are accessed. Management can fetch reports using a view instead than creating their own SQL queries. The advantage is that users can securely and regularly retrieve the same report without changing the underlying tables, which lowers the possibility of unintentional data changes. (Navlani, 2025)

Question 5.3.2



Question 6

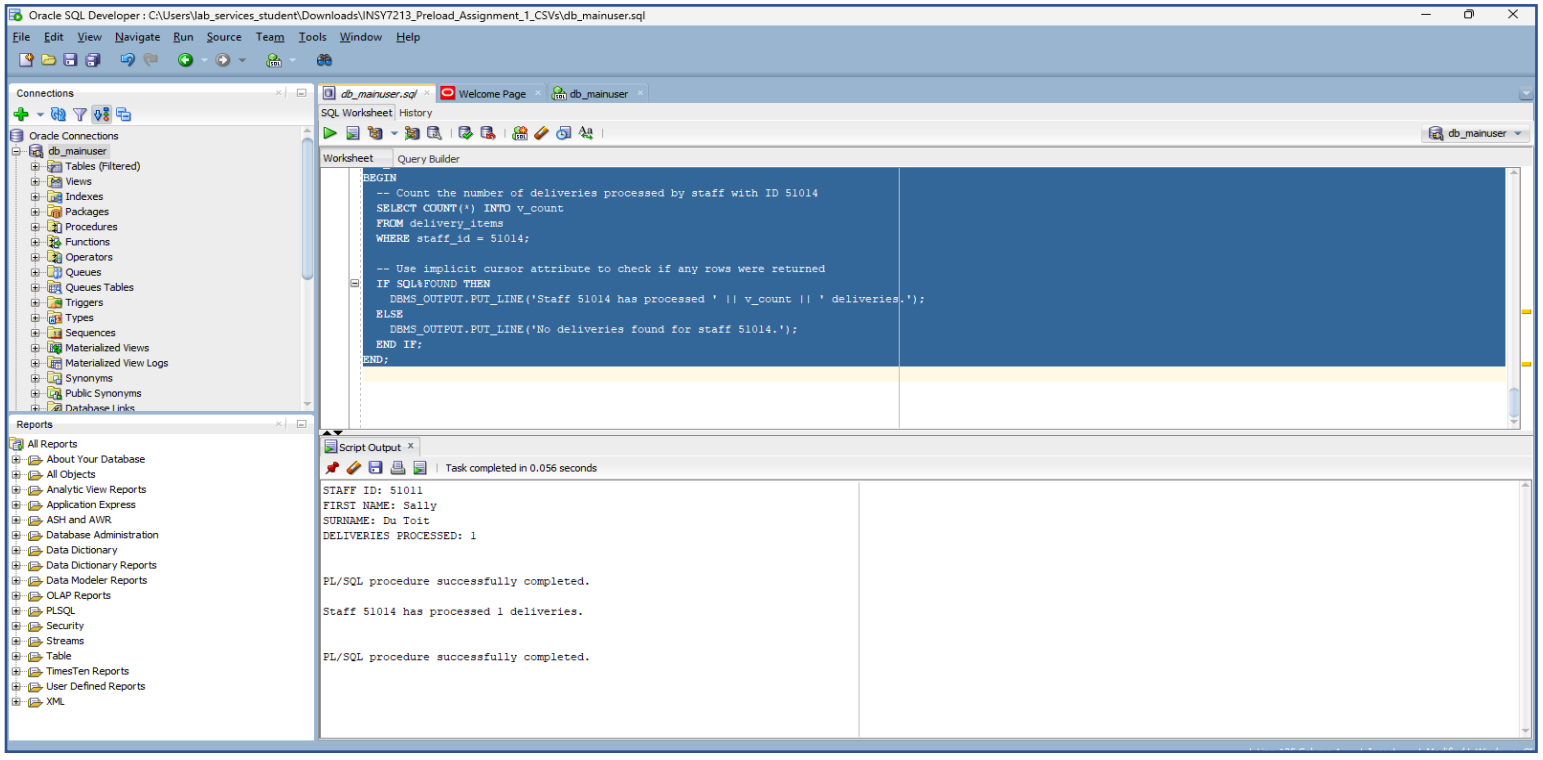
Question 6.1

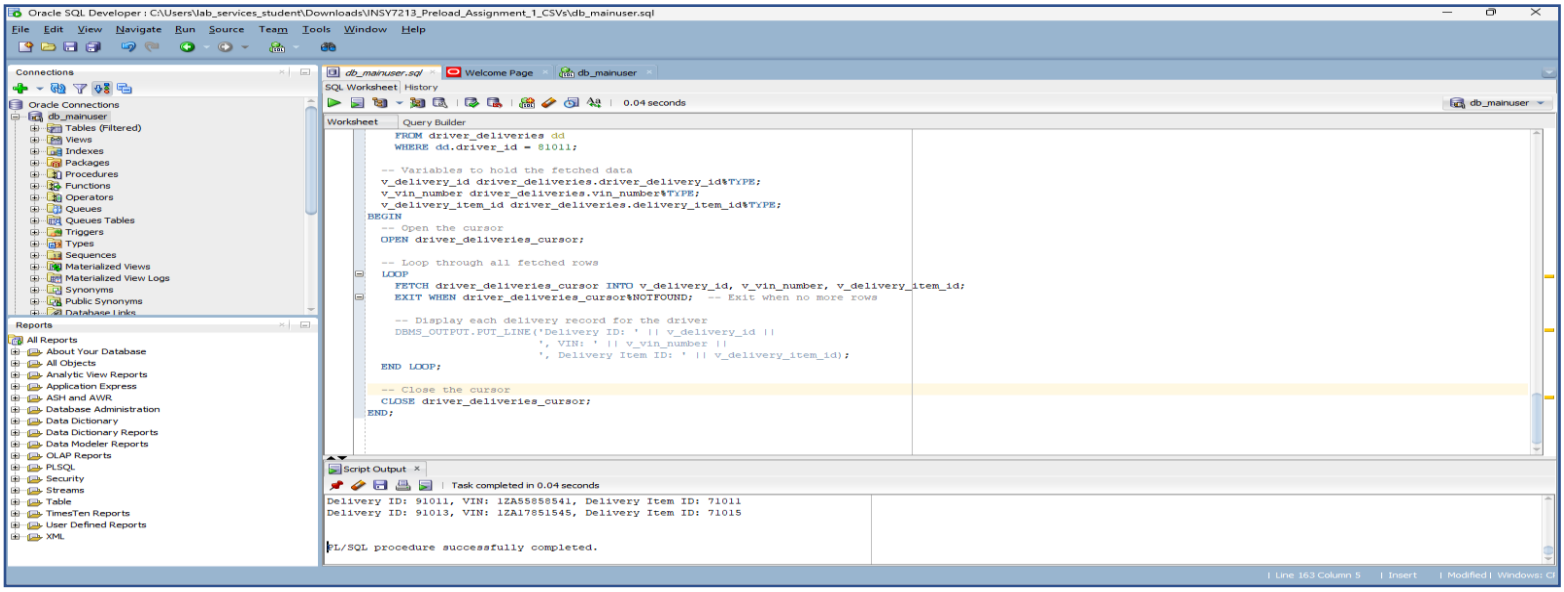
Implicit Cursors

Every time a SQL query that modifies data is run, such as a SELECT INTO, INSERT, UPDATE, or DELETE statement, Oracle automatically creates an implicit cursor. Its objective is to give instant feedback regarding the SQL statement's execution without requiring manual cursor declaration or management. SQL%ROWCOUNT (number of rows impacted), SQL%NOTFOUND (TRUE if no rows were affected), SQL%FOUND (returns TRUE if the statement affected at least one row), and SQL%ISOPEN (always FALSE because implicit cursors are automatically opened and closed) are common attributes of implicit cursors. The simplicity of implicit cursors is what drives their use; they are perfect for DML operations or single-row queries where the developer wants to rapidly determine whether a statement was successful or how many rows were impacted without having to deal with the additional burden of opening, fetching, and closing a cursor by hand. For instance, in CHEETAH DELIVERIES, an implicit cursor can be used to instantly ascertain whether any deliveries exist and tally the number of deliveries processed by a staff member. (point, N/A)

Explicit Cursors

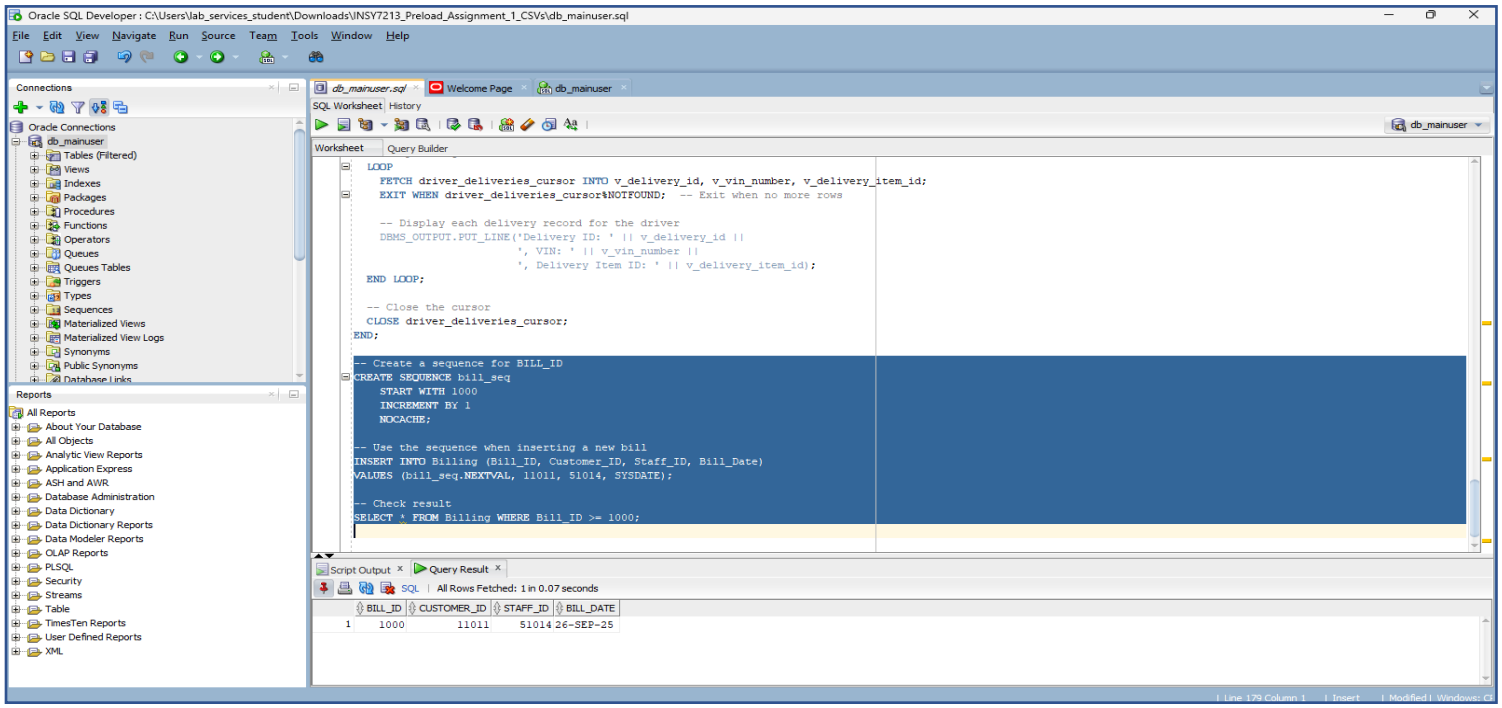
In order to get many rows from a query, an explicit cursor needs to be manually declared and managed by the developer. When working with several rows, it gives you more control than implicit cursors by enabling row-by-row processing of query results. Cursor_name%FOUND (TRUE if the last fetch returned a row), cursor_name%NOTFOUND (TRUE if the last fetch did not return a row), cursor_name%ROWCOUNT (number of rows fetched thus far), and cursor_name%ISOPEN (TRUE if the cursor is currently open) are common properties of explicit cursors. Explicit cursors are used because they enable in-depth processing of every single row from a query, which is very helpful for creating reports or carrying out intricate operations on several records. To give management a comprehensive picture of driver activity, for example, in CHEETAH DELIVERIES, an explicit cursor can be used to loop over all deliveries for a particular driver and display each delivery's ID, vehicle VIN, and delivery item. (point, N/A)





Question 6.2

Sequences, which are commonly used for primary keys or other unique identifiers, are database objects that automatically create distinct number values. Its goal is to guarantee that every new row added to a database is assigned a distinct number without the need for manual computation or monitoring of the most recent value. The following are common sequence attributes: INCREMENT BY (the amount to increment for each new value), NOCYCLE or CYCLE (if the sequence restarts after reaching its maximum value), CACHE or NOCACHE (whether values are preallocated for quicker performance), and START WITH (the first number created). Sequences are used to ensure uniqueness, avoid conflicts in multi-user setups, and make record entry easier. To ensure that every delivery item has a unique identity without having to manually check existing IDs, for instance, CHEETAH DELIVERIES can utilise a sequence to produce DELIVERY_ITEM_ID automatically when a new delivery is added. This enhances efficiency and preserves data integrity. (oracle, N/A)



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