MSIT 3860 – Data Management for Info Tech

Term Project Final Deliverable

AMAZON CASE STUDY

Prexa Dedhia

Clark University

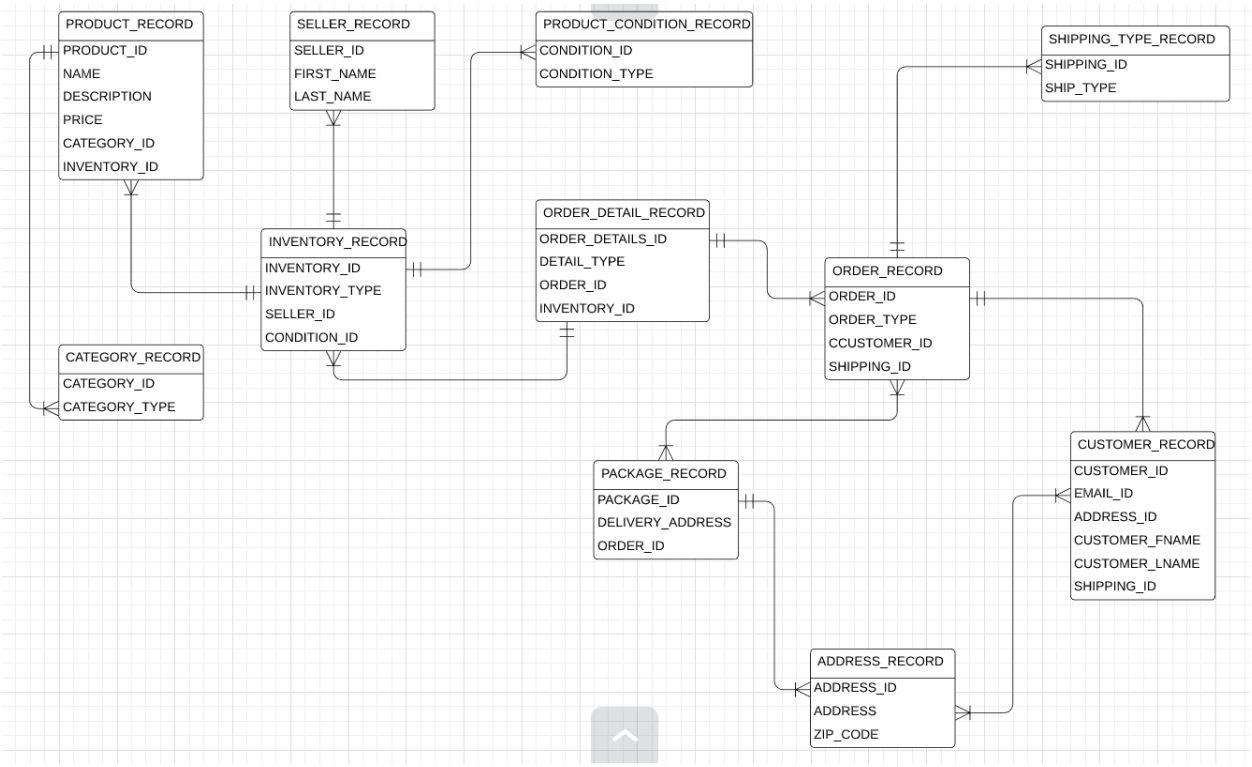
05/04/2020

Table of Contents

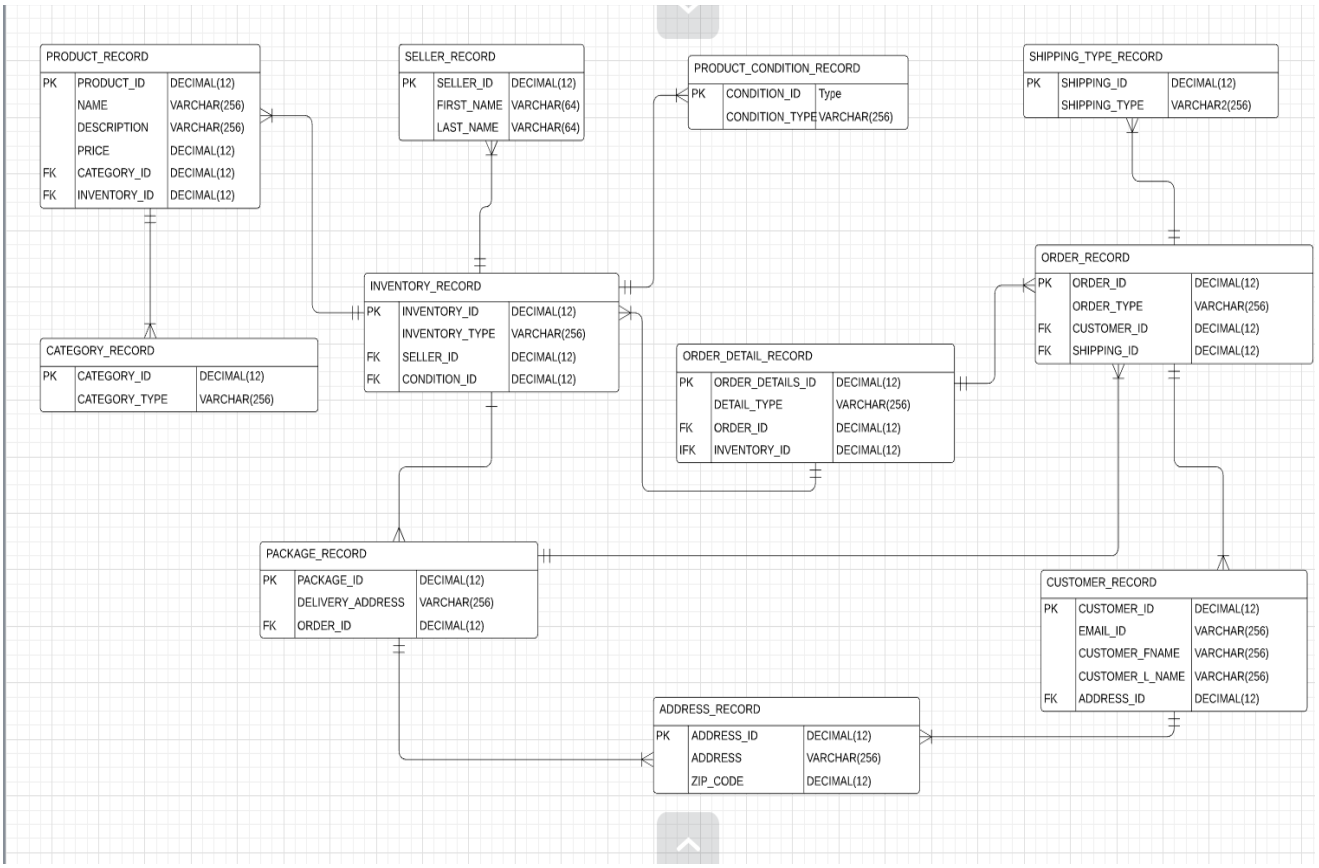
1. Structural Business Rules

- Inventory record has one and only one product record
- Inventory record has one and only one condition record
- Inventory record has one and only one seller record
- Inventory record has one or more order detail record
- Product record has one or more inventory record
- Product record has one and only one category record; category record has one or more product record
- Seller record has one or more inventory record
- Order detail record has one and only one inventory record
- Order detail record has one and only one order record
- Order record has one or more order detail record
- Order record has one and only one customer record
- Order record has one and only one package record
- Order record has one and only one shipping type record
- shipping type record has one or more order record
- package record has one and only one order record
- Customer record has one or more order record
- Customer record has one or more address record
- address record has one or more Customer record
- address record has one or more package record
- package record has one and only one address record

2. Conceptual ERD

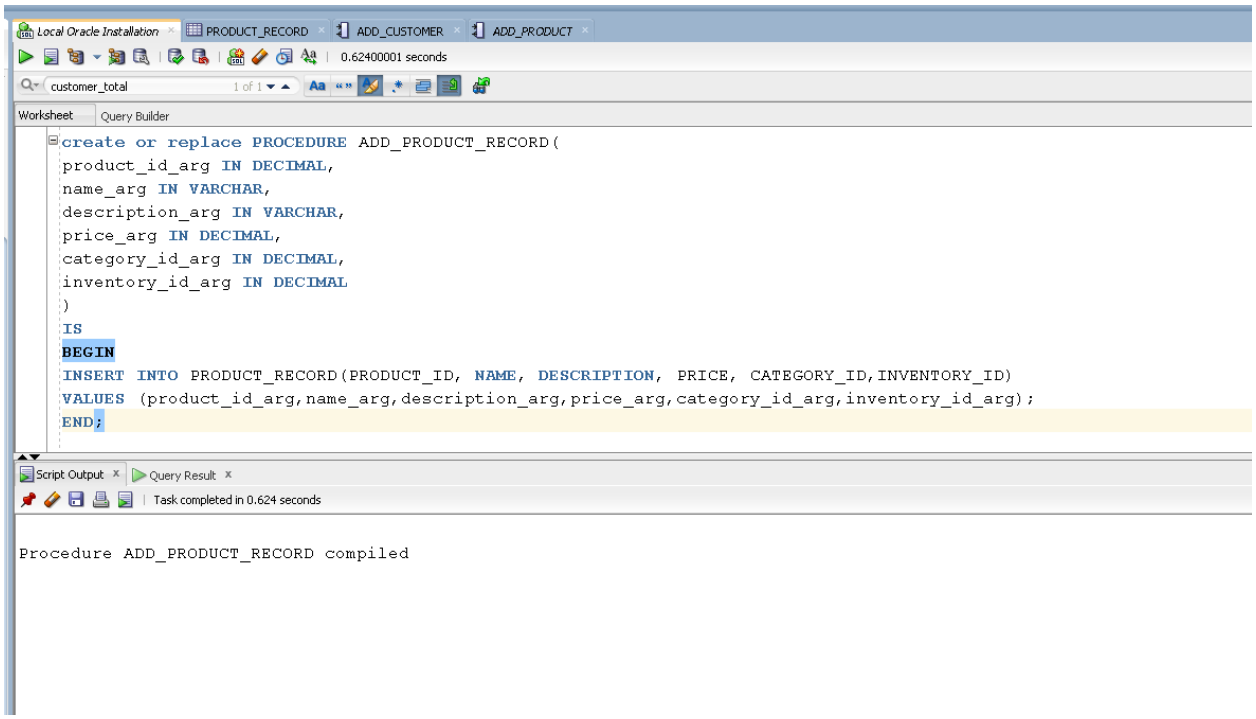


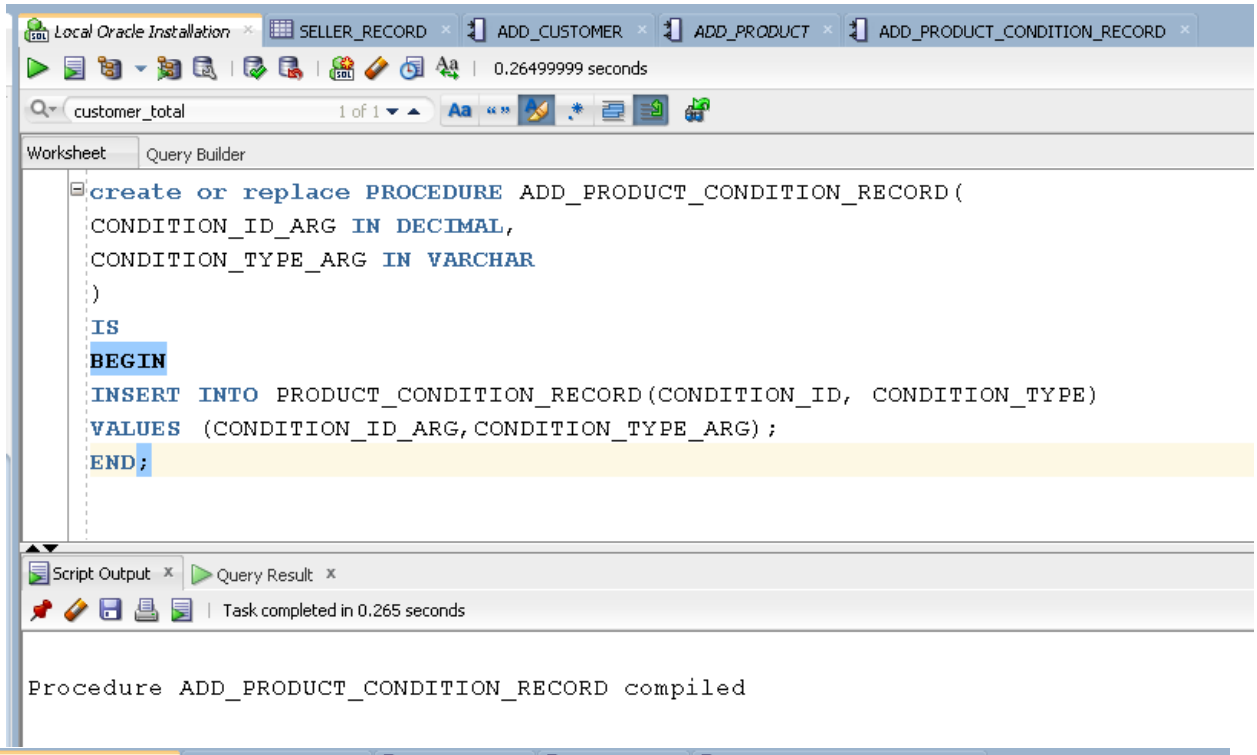
3. Logical ERD

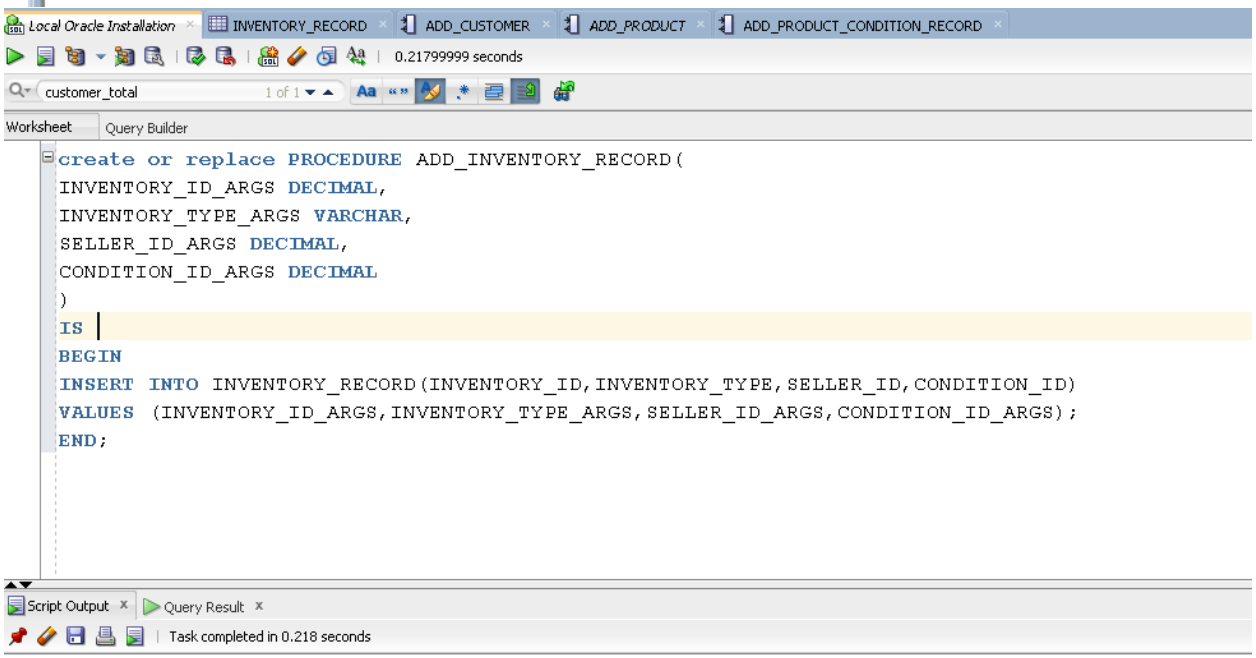


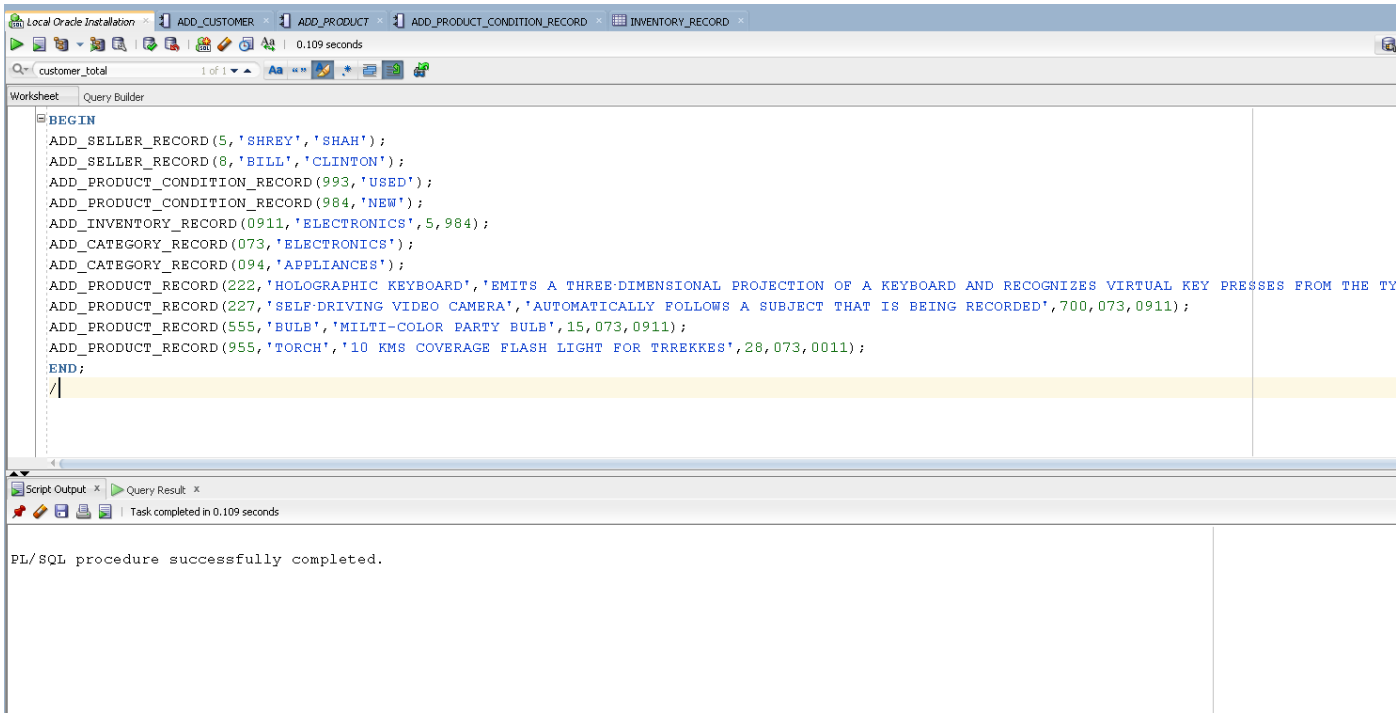
4. Screenshots of the SQL addressing the five Aspect .

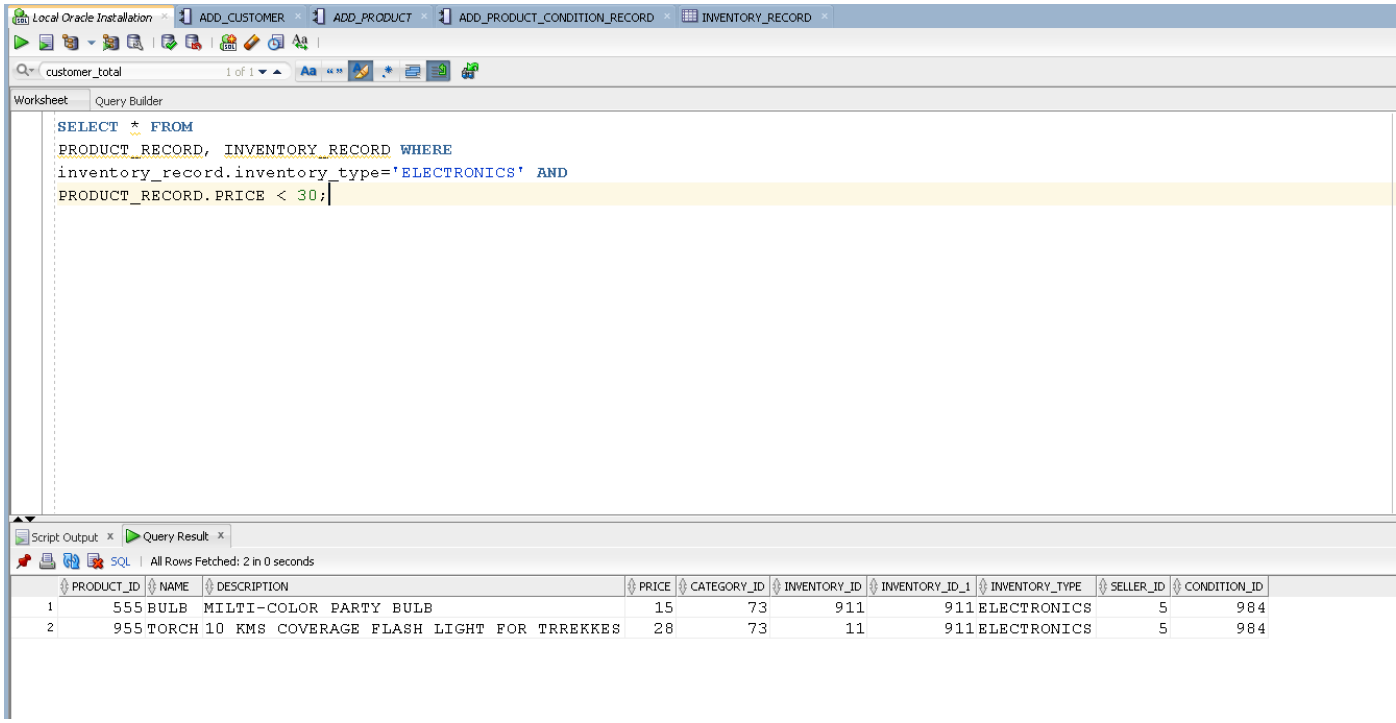
Aspect 1: New Product Created by Seller



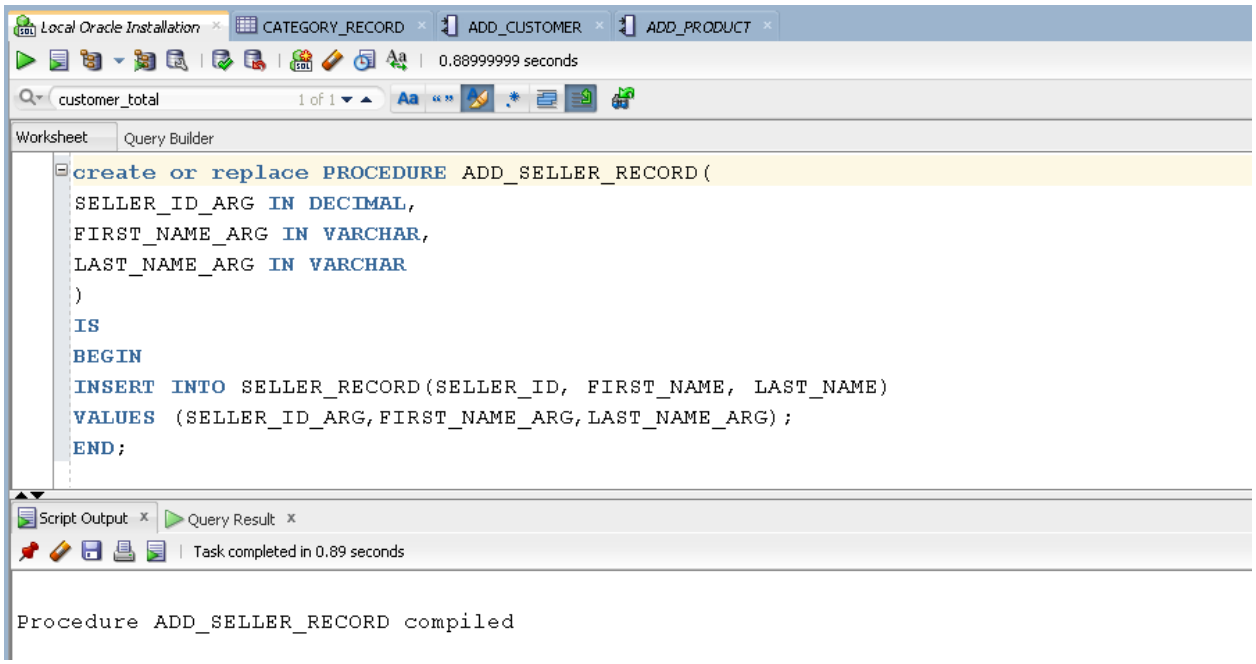

Local Oracle Installation
SELLER_RECORD
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
0.26499999 seconds
customer_total
1 of 1
Worksheet
Query Builder
create or replace PROCEDURE ADD_PRODUCT_CONDITION_RECORD(
CONDITION_ID_ARG IN DECIMAL,
CONDITION_TYPE_ARG IN VARCHAR
)
IS
BEGIN
INSERT INTO PRODUCT_CONDITION_RECORD(CONDITION_ID, CONDITION_TYPE)
VALUES (CONDITION_ID_ARG,CONDITION_TYPE_ARG);
END;
Script Output
Query Result
Task completed in 0.265 seconds
Procedure ADD_PRODUCT_CONDITION_RECORD compiled

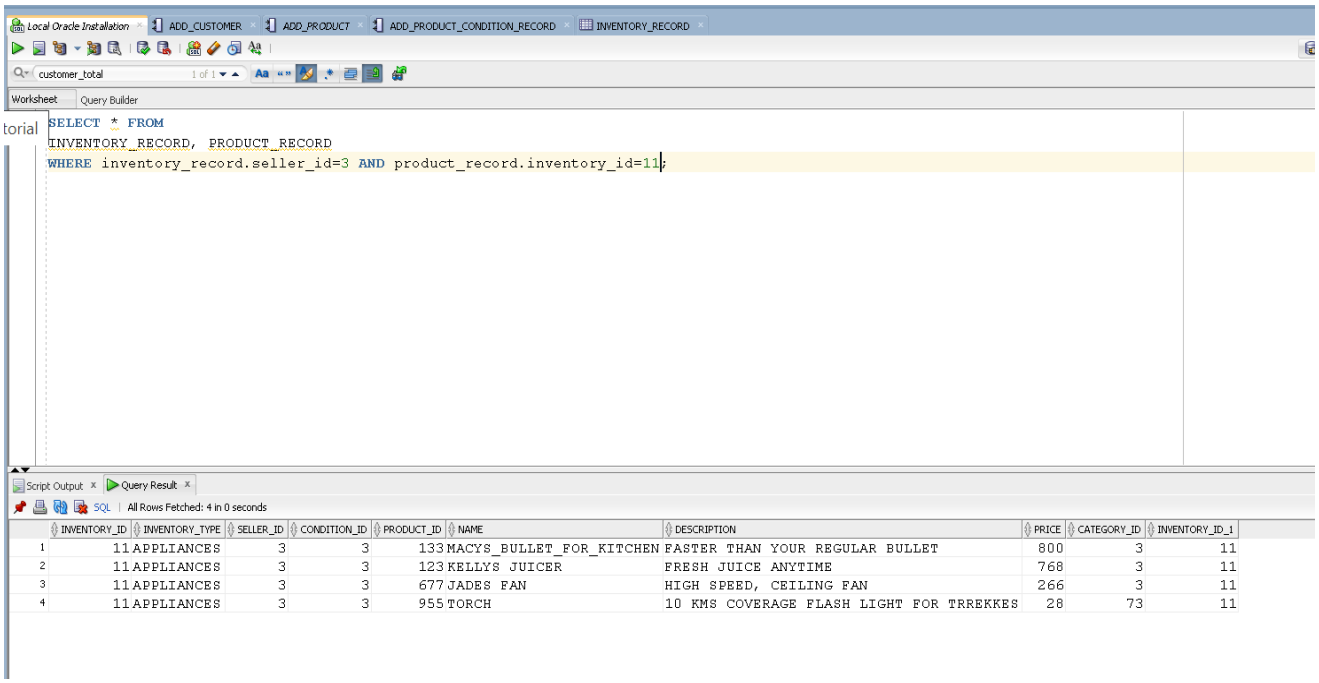

Local Oracle Installation
INVENTORY_RECORD
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
0.21799999 seconds
customer_total
1 of 1
Worksheet
Query Builder
create or replace PROCEDURE ADD_INVENTORY_RECORD(
INVENTORY_ID_ARGS DECIMAL,
INVENTORY_TYPE_ARGS VARCHAR,
SELLER_ID_ARGS DECIMAL,
CONDITION_ID_ARGS DECIMAL
)
IS
BEGIN
INSERT INTO INVENTORY_RECORD(INVENTORY_ID,INVENTORY_TYPE,SELLER_ID,CONDITION_ID)
VALUES (INVENTORY_ID_ARGS,INVENTORY_TYPE_ARGS,SELLER_ID_ARGS,CONDITION_ID_ARGS);
END;
Script Output
Query Result
Task completed in 0.218 seconds
Procedure ADD_INVENTORY_RECORD compiled


Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
INVENTORY_RECORD
0.109 seconds
customer_total
Worksheet
Query Builder
BEGIN
ADD_SELLER_RECORD(5,'SHREY','SHAH');
ADD_SELLER_RECORD(8,'BILL','CLINTON');
ADD_PRODUCT_CONDITION_RECORD(993,'USED');
ADD_PRODUCT_CONDITION_RECORD(984,'NEW');
ADD_INVENTORY_RECORD(0911,'ELECTRONICS',5,984);
ADD_CATEGORY_RECORD(073,'ELECTRONICS');
ADD_CATEGORY_RECORD(094,'APPLIANCES');
ADD_PRODUCT_RECORD(222,'HOLOGRAPHIC KEYBOARD','EMITS A THREE-DIMENSIONAL PROJECTION OF A KEYBOARD AND RECOGNIZES VIRTUAL KEY PRESSES FROM THE TY
ADD_PRODUCT_RECORD(227,'SELF-DRIVING VIDEO CAMERA','AUTOMATICALLY FOLLOWS A SUBJECT THAT IS BEING RECORDED',700,073,0911);
ADD_PRODUCT_RECORD(555,'BULB','MILTI-COLOR PARTY BULB',15,073,0911);
ADD_PRODUCT_RECORD(955,'TORCH','10 KMS COVERAGE FLASH LIGHT FOR TRREKKES',28,073,0011);
END;
/
Script Output
Query Result
Task completed in 0.109 seconds
PL/SQL procedure successfully completed.

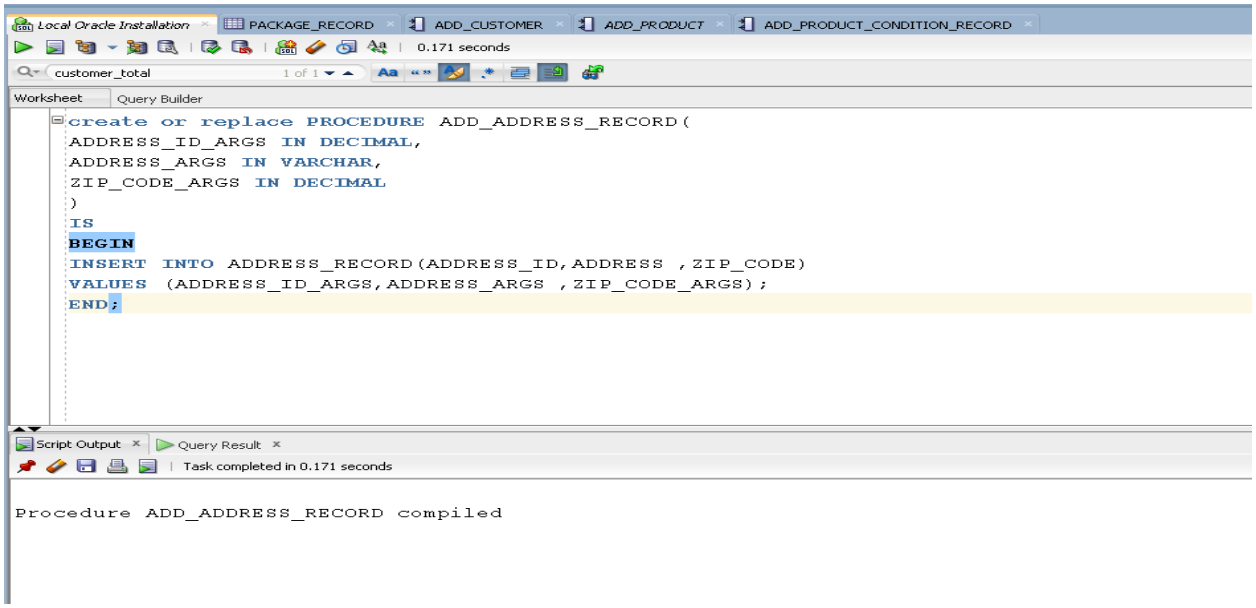

Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
INVENTORY_RECORD
customer_total
Worksheet
Query Builder
SELECT * FROM
PRODUCT_RECORD, INVENTORY_RECORD WHERE
inventory_record.inventory_type='ELECTRONICS' AND
PRODUCT_RECORD.PRICE < 30;
Script Output
Query Result
SQL
All Rows Fetched: 2 in 0 seconds
PRODUCT_ID NAME DESCRIPTION PRICE CATEGORY_ID INVENTORY_ID INVENTORY_ID_1 INVENTORY_TYPE SELLER_ID CONDITION_ID
1 555 BULB MILTI-COLOR PARTY BULB 15 73 911 911 ELECTRONICS 5 984
2 955 TORCH 10 KMS COVERAGE FLASH LIGHT FOR TRREKKES 28 73 11 911 ELECTRONICS 5 984

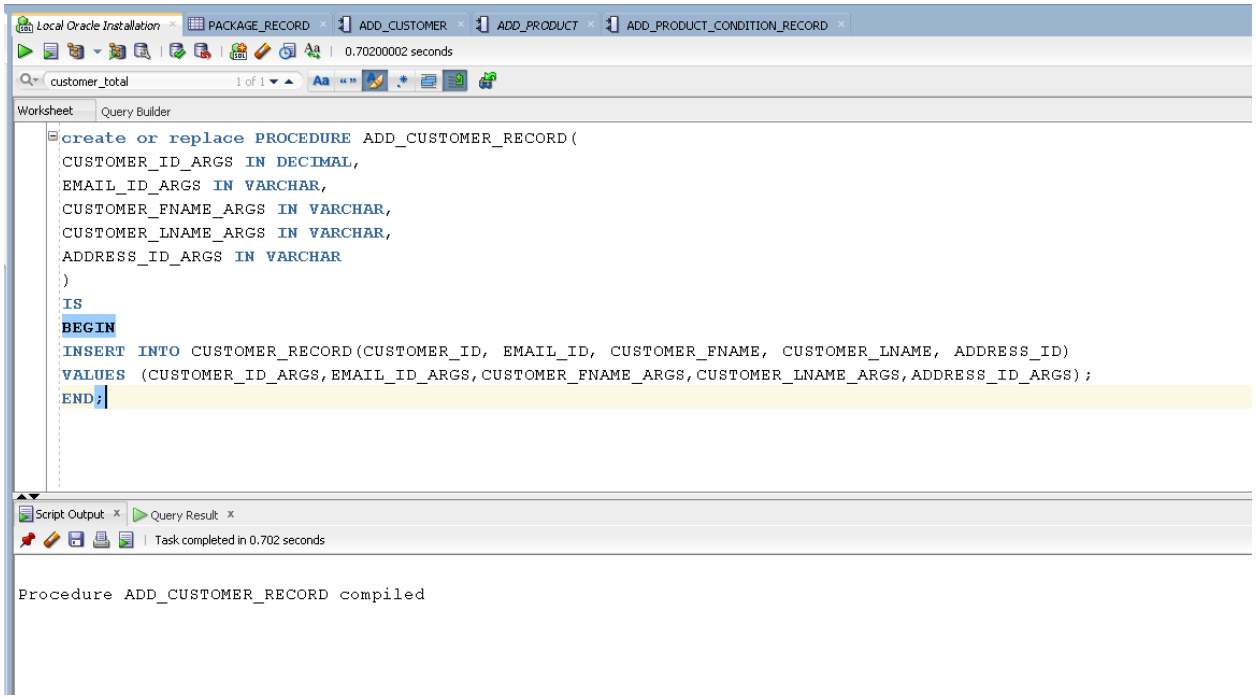
Aspect 2: Amazon Receipt of Product from Seller

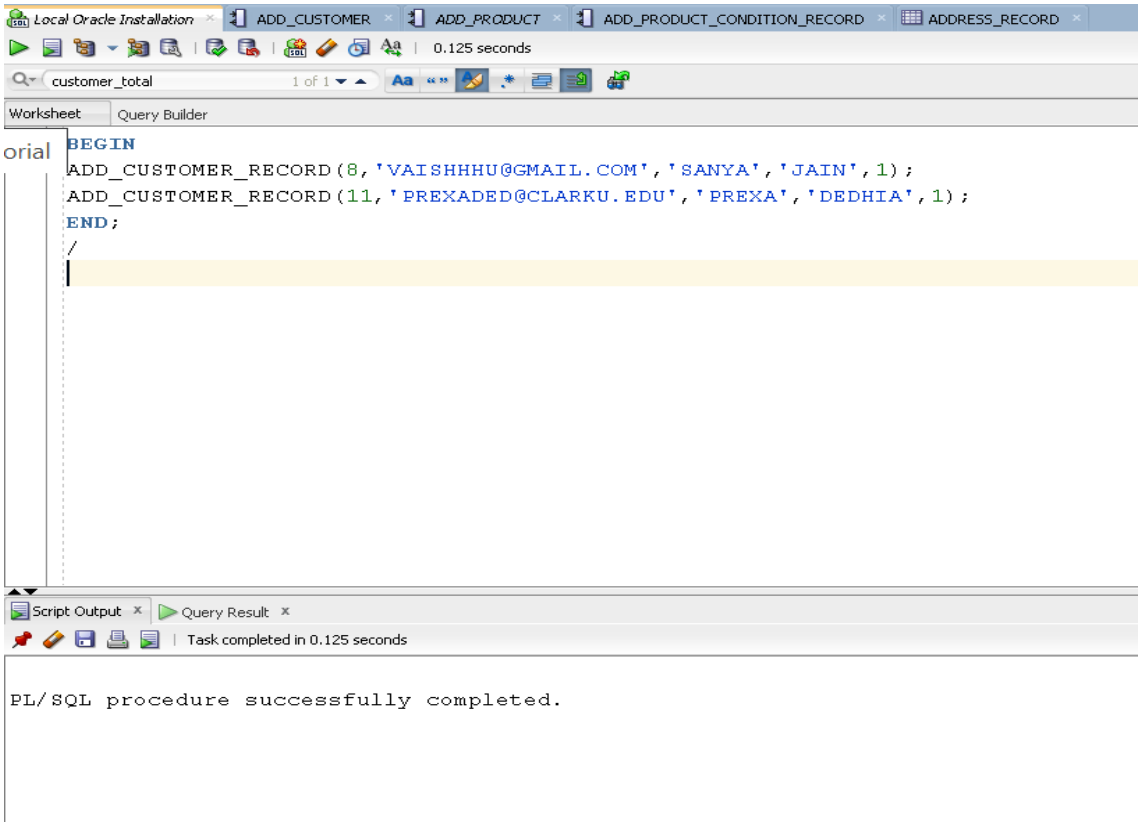


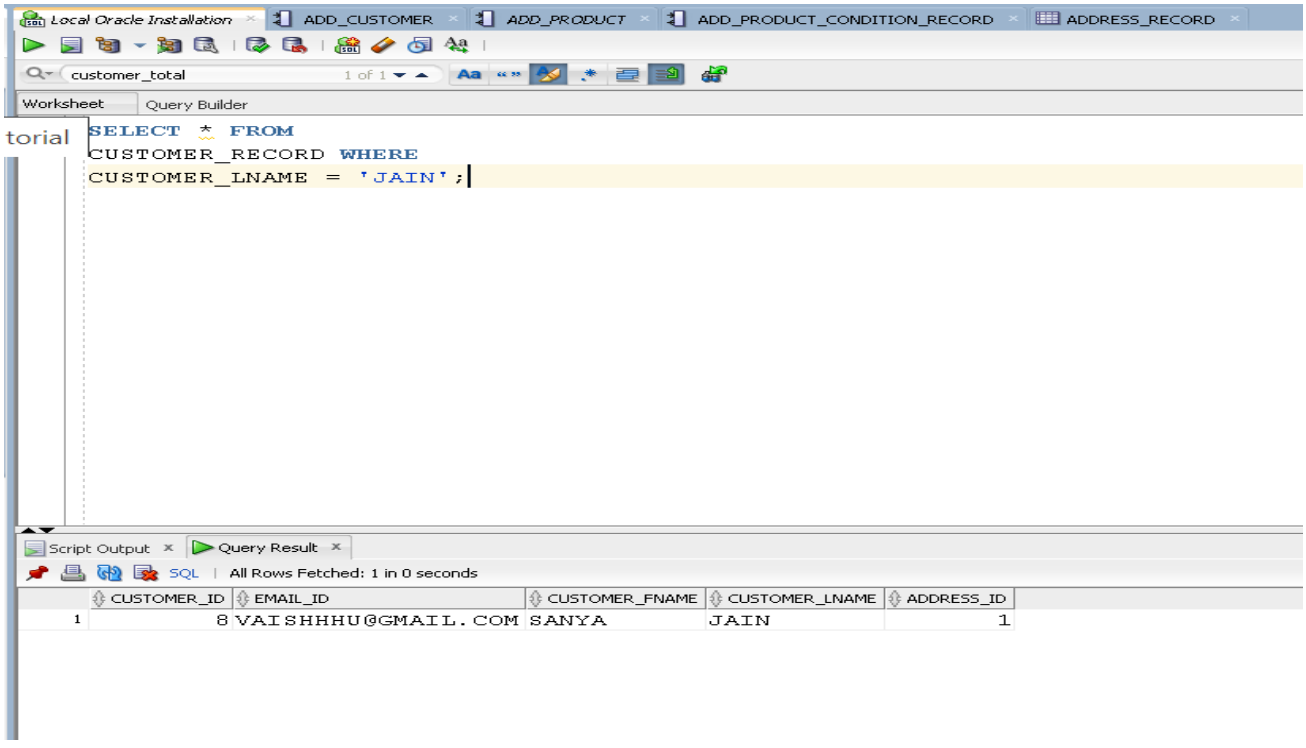


Aspect 3: New Consumer Account

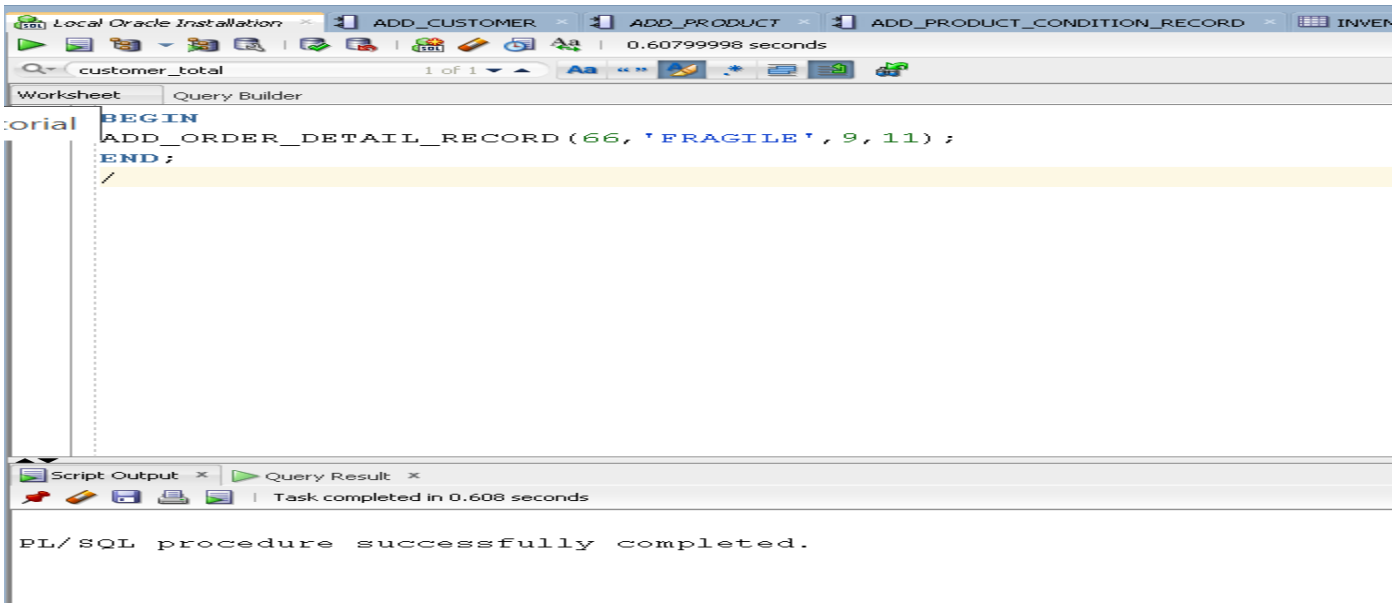


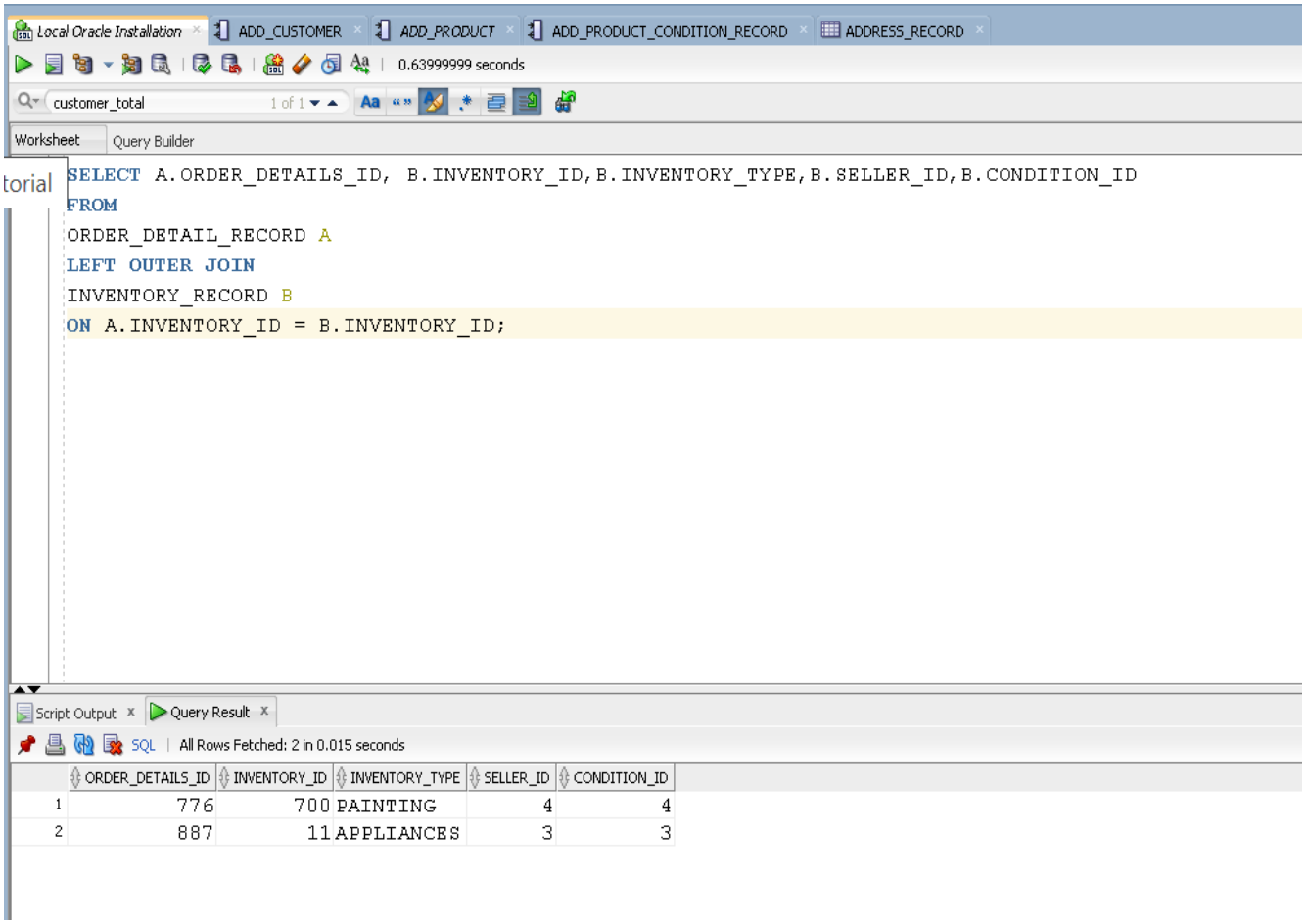


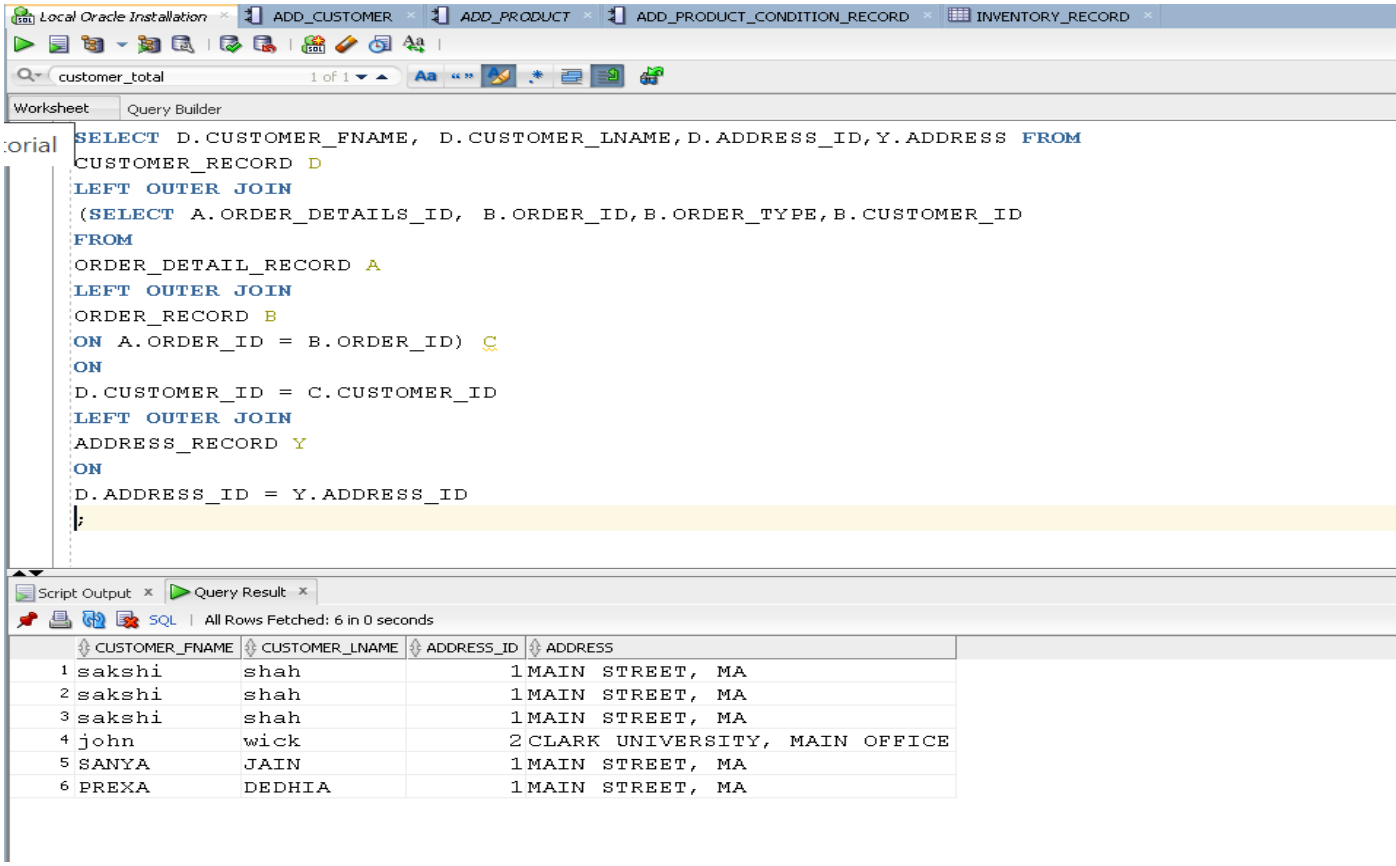

Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
ADDRESS_RECORD
0.125 seconds
customer_total
1 of 1
Worksheet
Query Builder
orial
BEGIN
ADD_CUSTOMER_RECORD(8,'VAISHHHU@GMAIL.COM','SANYA','JAIN',1);
ADD_CUSTOMER_RECORD(11,'PREXADED@CLARKU.EDU','PREXA','DEDHIA',1);
END;
/
Script Output
Query Result
Task completed in 0.125 seconds
PL/SQL procedure successfully completed.


Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
ADDRESS_RECORD
customer_total
1 of 1
Worksheet
Query Builder
torial
SELECT * FROM
CUSTOMER_RECORD WHERE
CUSTOMER_LNAME = 'JAIN';
Script Output
Query Result
SQL
All Rows Fetched: 1 in 0 seconds
CUSTOMER_ID
EMAIL_ID
CUSTOMER_FNAME
CUSTOMER_LNAME
ADDRESS_ID
1
8
VAISHHHU@GMAIL.COM
SANYA
JAIN
1

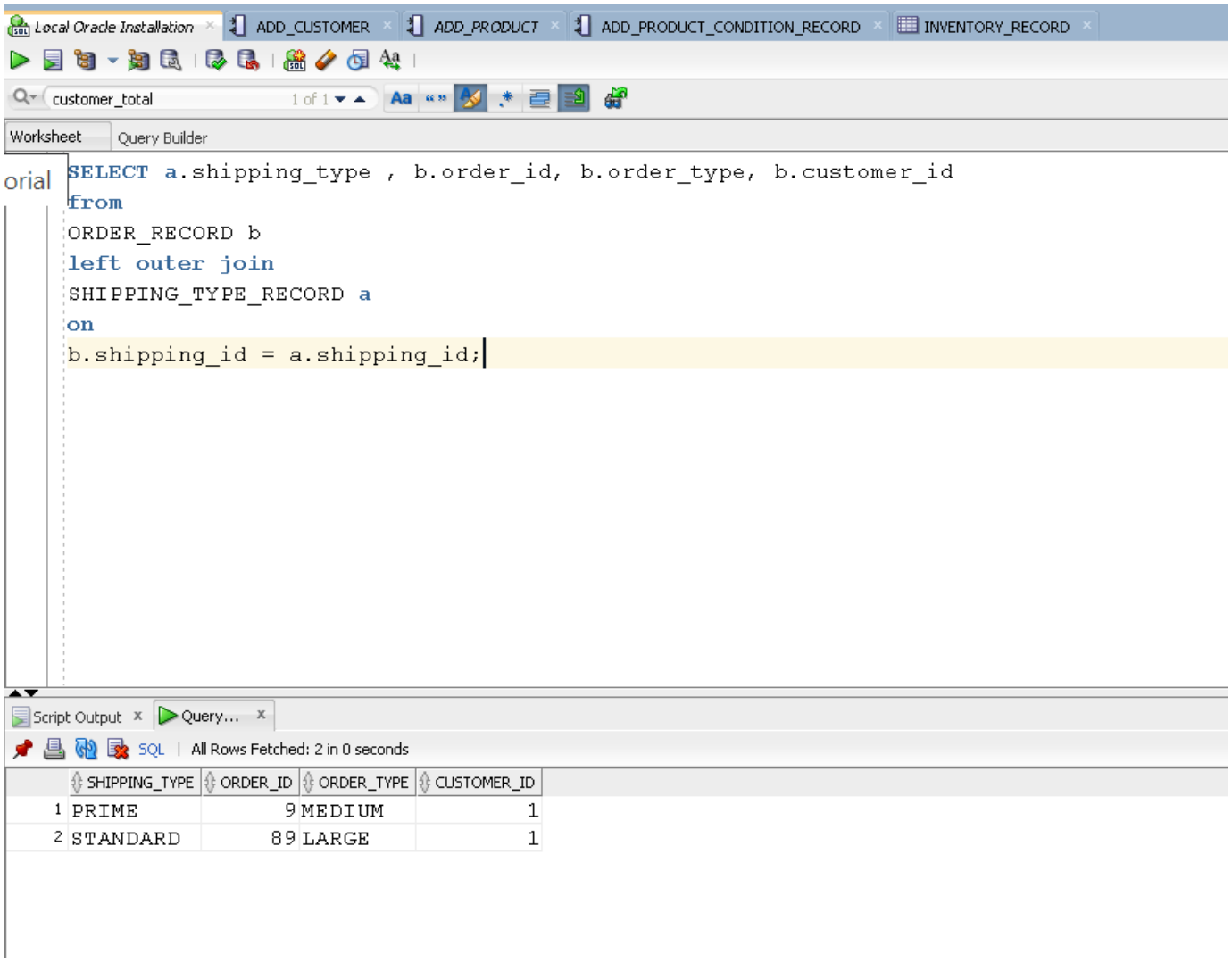
Aspect 4: Product Purchase by Consumer

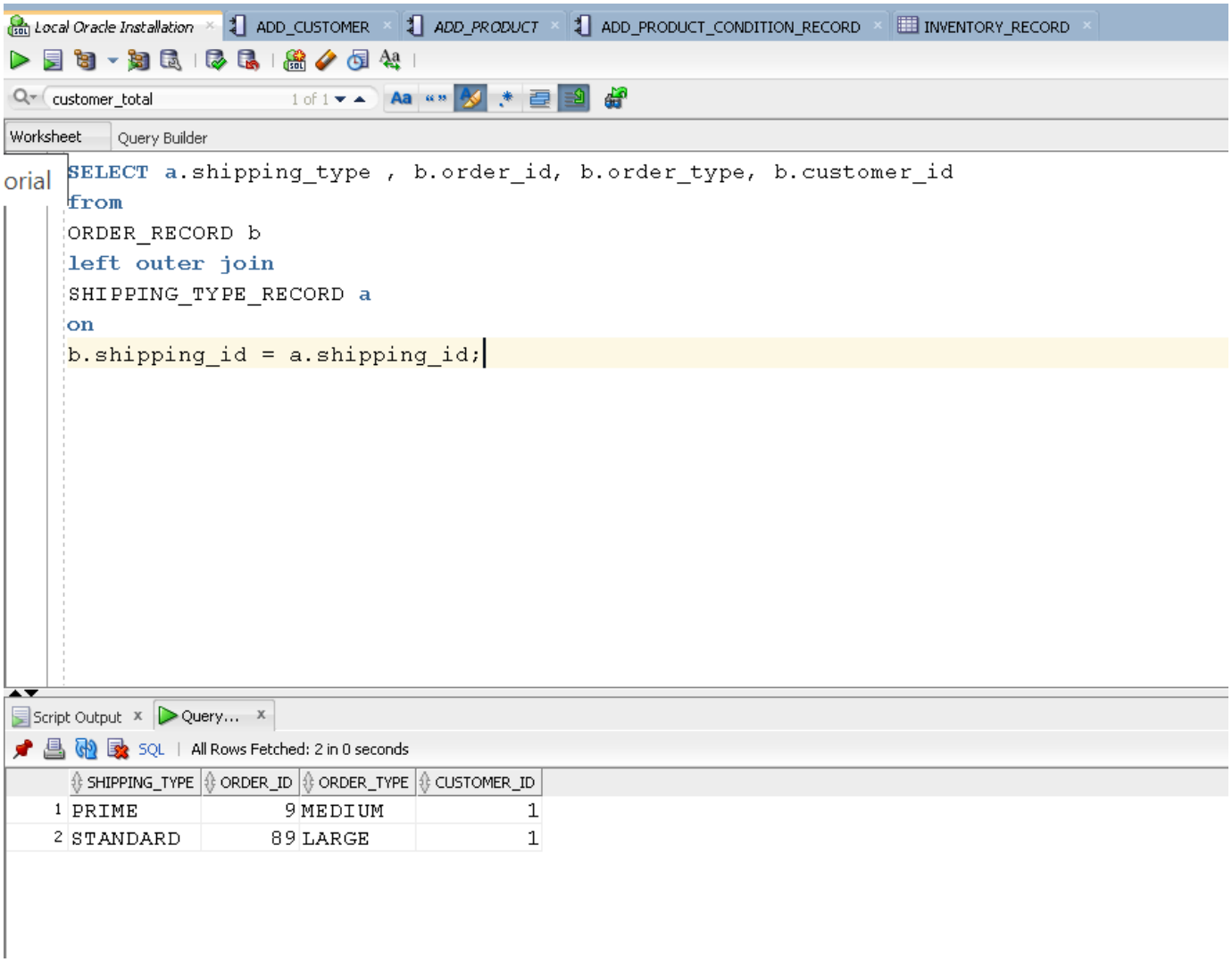





Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
INVENTORY_RECORD
customer_total
1 of 1
Worksheet
Query Builder
SELECT D.CUSTOMER_FNAME, D.CUSTOMER_LNAME,D.ADDRESS_ID,Y.ADDRESS FROM
CUSTOMER_RECORD D
LEFT OUTER JOIN
(SELECT A.ORDER_DETAILS_ID, B.ORDER_ID,B.ORDER_TYPE,B.CUSTOMER_ID
FROM
ORDER_DETAIL_RECORD A
LEFT OUTER JOIN
ORDER_RECORD B
ON A.ORDER_ID = B.ORDER_ID) C
ON
D.CUSTOMER_ID = C.CUSTOMER_ID
LEFT OUTER JOIN
ADDRESS_RECORD Y
ON
D.ADDRESS_ID = Y.ADDRESS_ID
;
Script Output
Query Result
SQL
All Rows Fetched: 6 in 0 seconds
CUSTOMER_FNAME CUSTOMER_LNAME ADDRESS_ID ADDRESS
1 sakshi shah 1 MAIN STREET, MA
2 sakshi shah 1 MAIN STREET, MA
3 sakshi shah 1 MAIN STREET, MA
4 john wick 2 CLARK UNIVERSITY, MAIN OFFICE
5 SANYA JAIN 1 MAIN STREET, MA
6 PREXA DEDHIA 1 MAIN STREET, MA

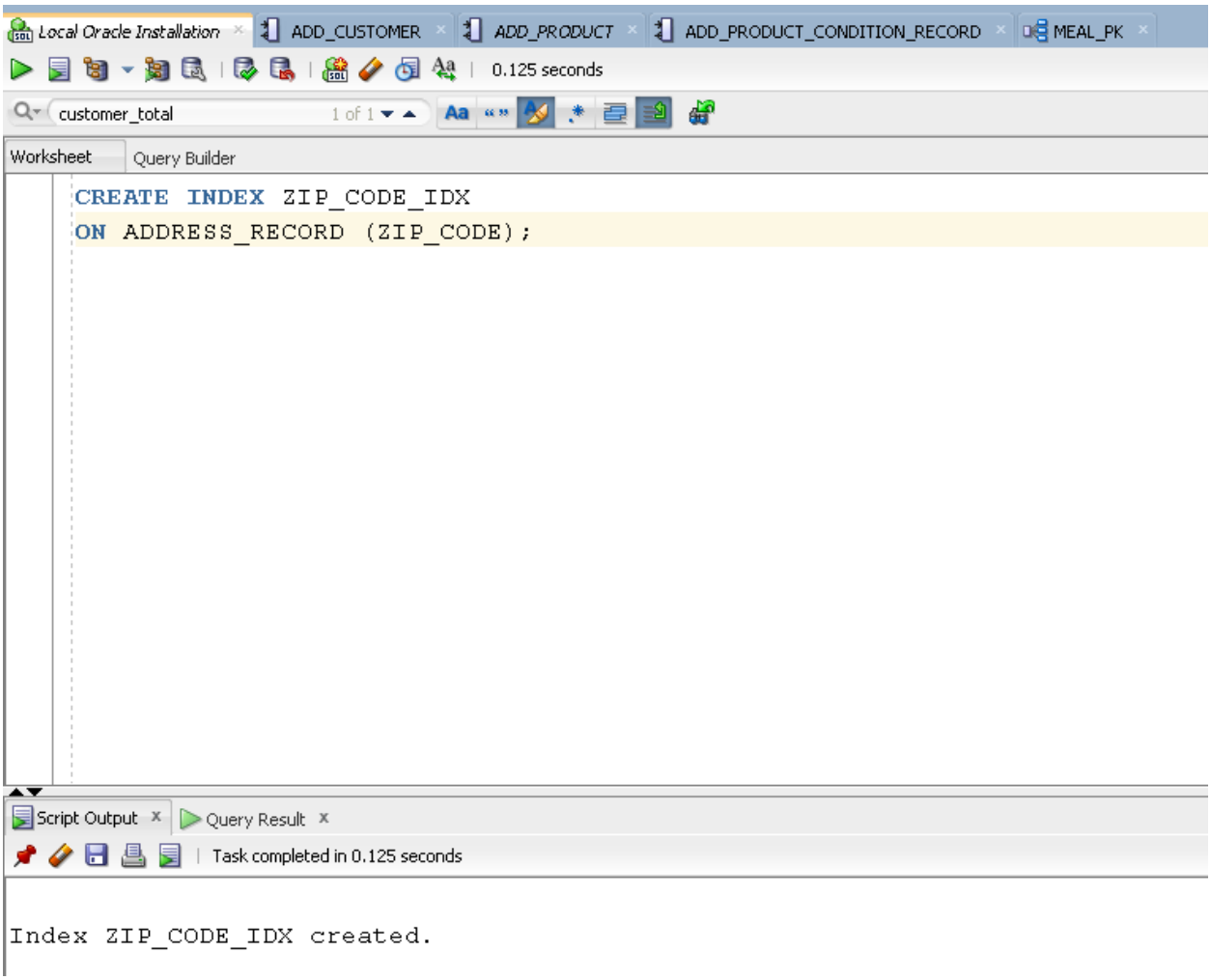
Aspect 5: Product Shipment by Amazon




Local Oracle Installation
ADD_CUSTOMER
ADD_PRODUCT
ADD_PRODUCT_CONDITION_RECORD
INVENTORY_RECORD
customer_total
1 of 1
Worksheet
Query Builder
orial
SELECT a.shipping_type , b.order_id, b.order_type, b.customer_id
from
ORDER_RECORD b
left outer join
SHIPPING_TYPE_RECORD a
on
b.shipping_id = a.shipping_id;
Script Output
Query...
SQL
All Rows Fetched: 2 in 0 seconds
SHIPPING_TYPE
ORDER_ID
ORDER_TYPE
CUSTOMER_ID
1 PRIME 9 MEDIUM 1
2 STANDARD 89 LARGE 1

5. Creation Of INDEX

The database will have multiple customer records, and to do some analysis region wise, its best to filter address based on zip-codes. Hence indexing zip-codes will help save a lot of time and help process the data quicker.



Indexing inventory type will help save a ton of time as it is associated with most of the important tables and it helps retrieve majority of information.