CS 450 Project 3

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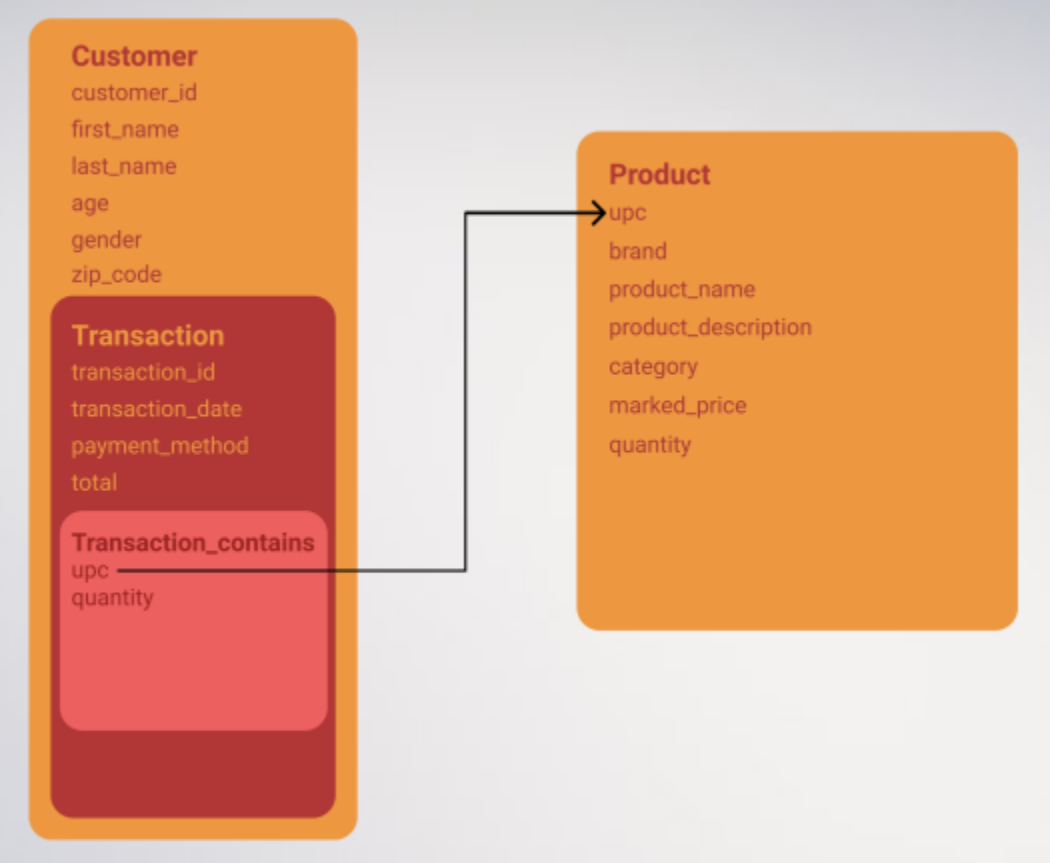
Part 1:



Explanation:

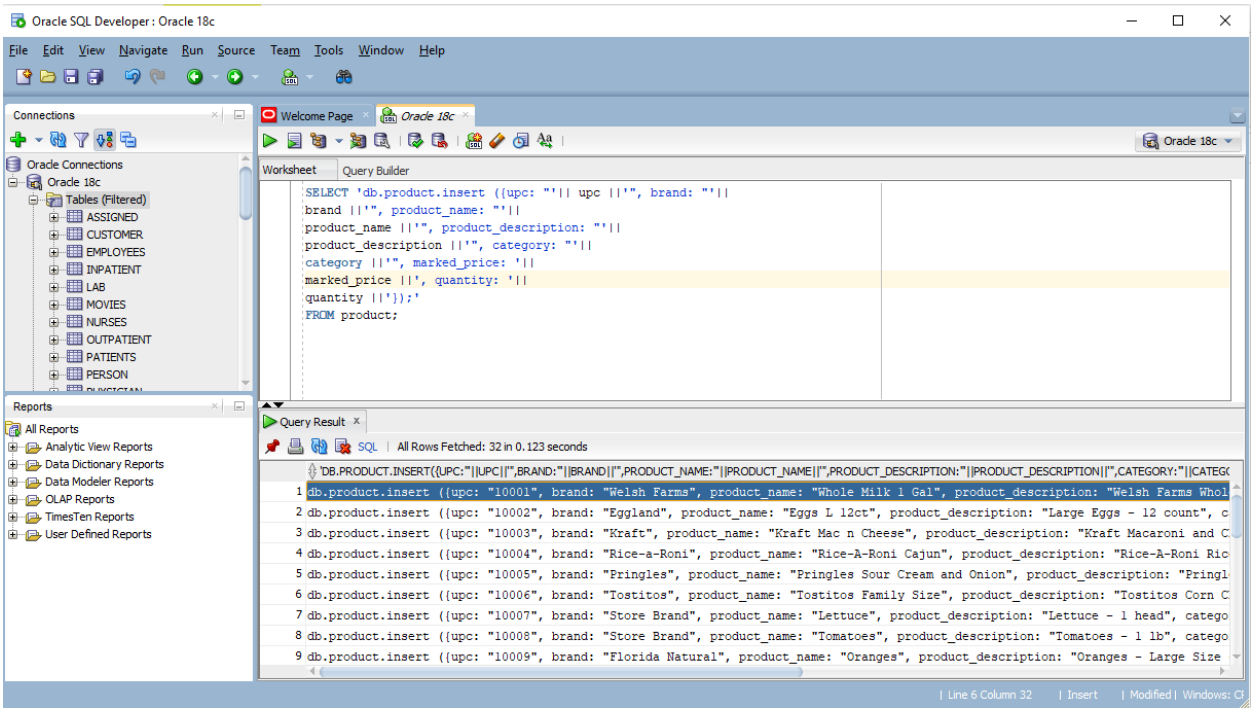
I have embedded Transaction_contains inside transaction as there is an One-to-Many relationship between them and they are connected by transaction_id. I have also done document embedding for Customer and Transaction as they also have an One-to-many relationship and they are connected by customer_id. Product and Customer have a M:N relationship. There is a document linking with upc from Transaction_contains referencing upc in Product.

Part 2:

SQL Commands:

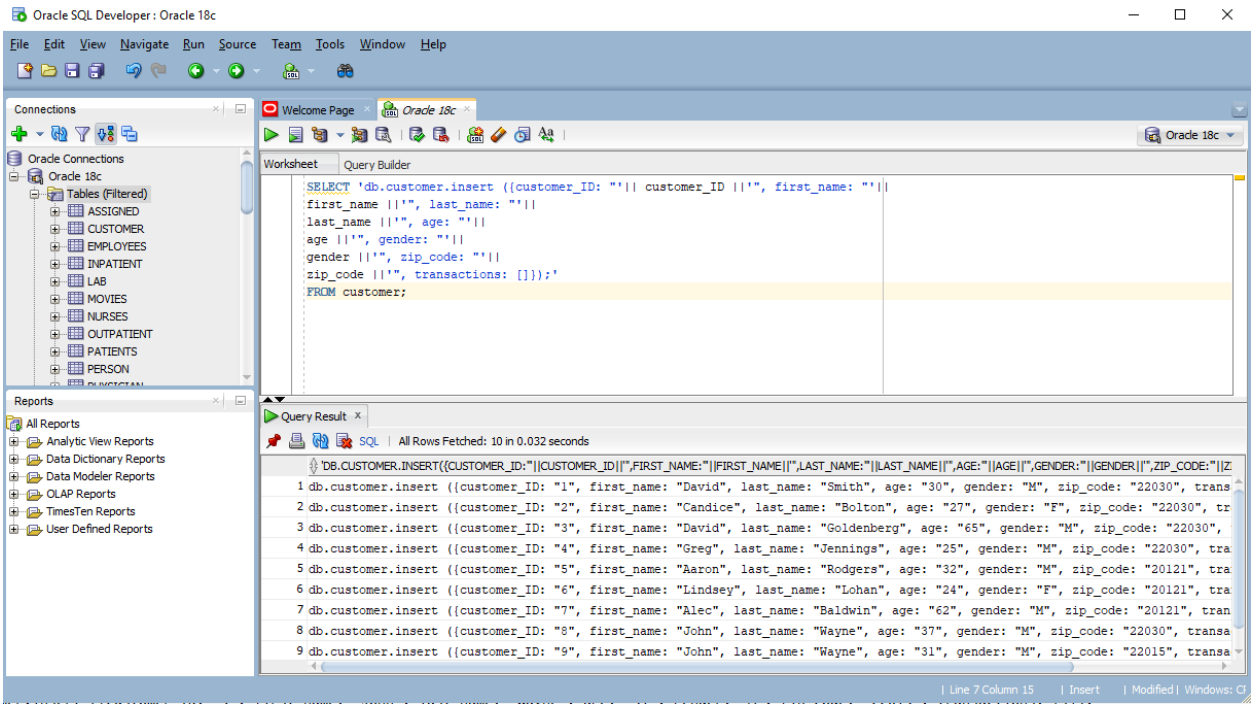
1)

```
SELECT 'db.product.insert ({upc: "'|| upc ||'", brand: "'||
brand ||'", product_name: "'||
product_name ||'", product_description: "'||
product_description ||'", category: "'||
category ||'", marked_price: '||
marked_price ||', quantity: '||
quantity ||'});'
FROM product
```



2)

```
SELECT 'db.customer.insert ({customer_ID: "'|| customer_ID ||'", first_name: "'||
first_name ||'", last_name: "'||
last_name ||'", age: "'||
age ||'", gender: "'||
gender ||'", zip_code: "'||
zip_code ||'", transactions: []});'
FROM customer;
```



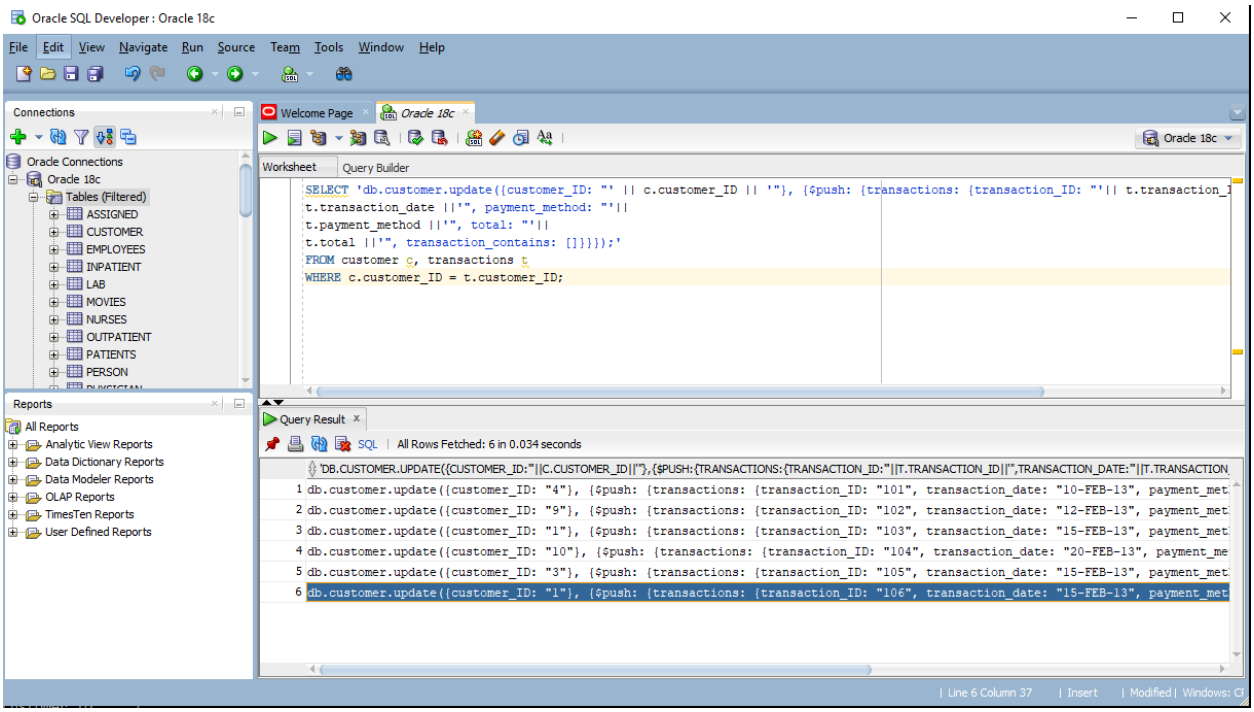
3)

```
SELECT 'db.customer.update({customer_ID: "' || c.customer_ID || '"}, {$push: {transactions:
{transaction_ID: "'|| t.transaction_ID ||'", transaction_date: "'||
t.transaction_date ||'", payment_method: "'||
t.payment_method ||'", total: "'||
```

t.total ||'", transaction_contains: []}}});'

FROM customer c, transactions t

WHERE c.customer_ID = t.customer_ID;



4)

SELECT 'db.customer.update({customer_ID: "' || c.customer_ID || '" ,
''transactions.transaction_ID'': "' || t.transaction_ID || '" },

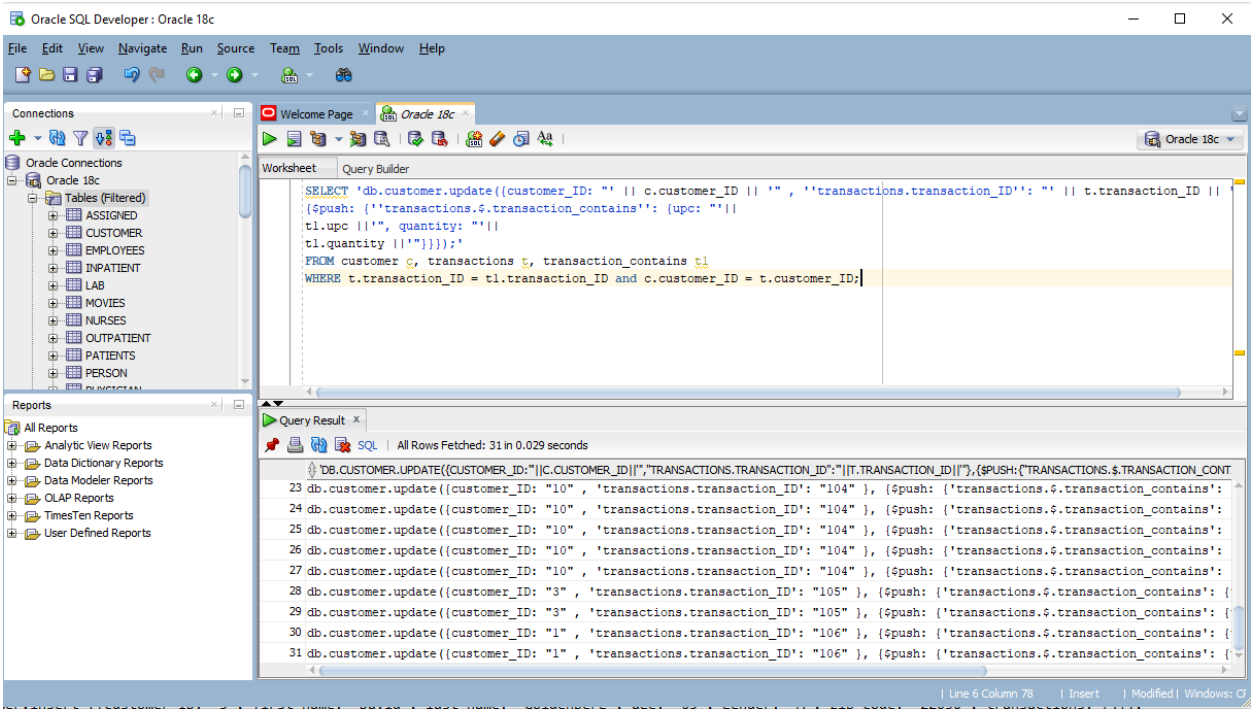
{$push: {''transactions.$.transaction_contains'': {upc: "'||

t1.upc ||'", quantity: "'||

t1.quantity ||'"}}});'

FROM customer c, transactions t, transaction_contains t1

WHERE t.transaction_ID = t1.transaction_ID and c.customer_ID = t.customer_ID;



MongoDB commands:

> db.product.count()

32

> db.customer.count()

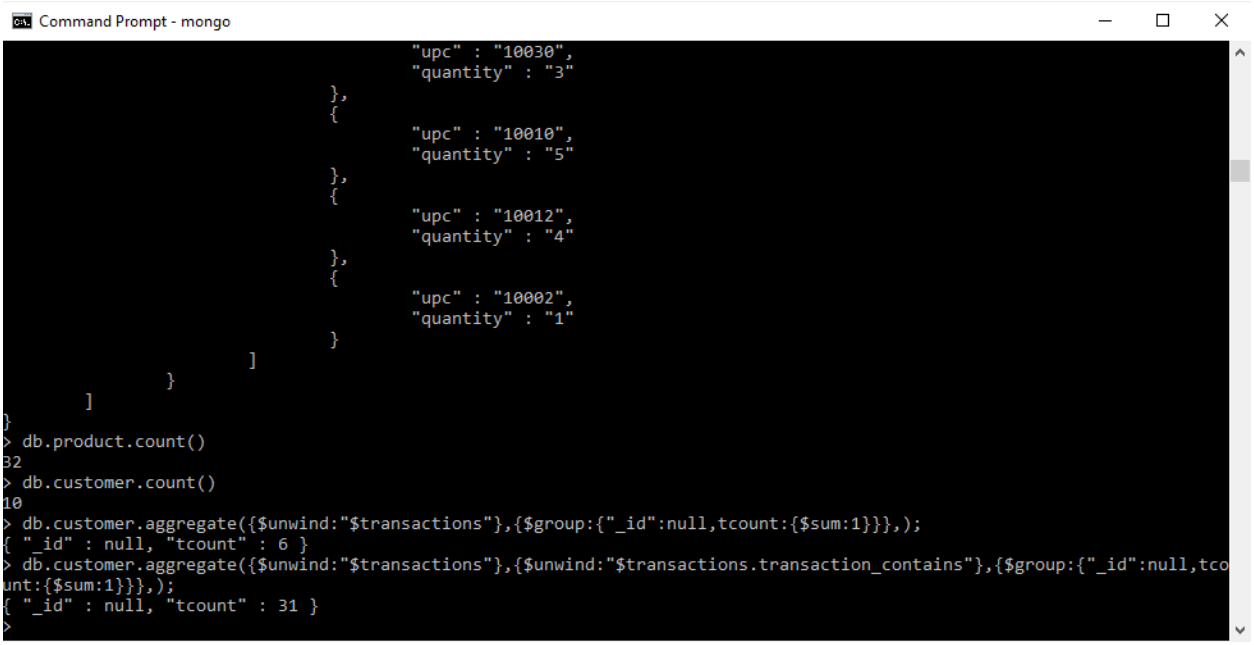
10

> db.customer.aggregate({$unwind:"$transactions"},{$group:{"_id":null,tcount:{$sum:1}}},);

{ "_id" : null, "tcount" : 6 }

>
db.customer.aggregate({$unwind:"$transactions"},{$unwind:"$transactions.transaction_contains"},{$group:{"_id":null,tcount:{$sum:1}}},);

{ "_id" : null, "tcount" : 31 }



Part 3:

Query 1:

> db.product.find({category:'Alcohol'}, {upc: 1, _id:0})

{ "upc" : "10029" }

{ "upc" : "10030" }

{ "upc" : "10031" }

{ "upc" : "10032" }

Query 2:

> db.customer.find({zip_code:'22030'}, {customer_ID: 1, _id:0})

{ "customer_ID" : "1" }

{ "customer_ID" : "2" }

{ "customer_ID" : "3" }

{ "customer_ID" : "4" }

{ "customer_ID" : "8" }

{ "customer_ID" : "10" }

Query 3:

```
> db.product.find({marked_price: {$lt: 10}, quantity: {$gte:50}}).count()
```

4

Query 4:

```
> db.customer.find({transactions: []}).count()
```

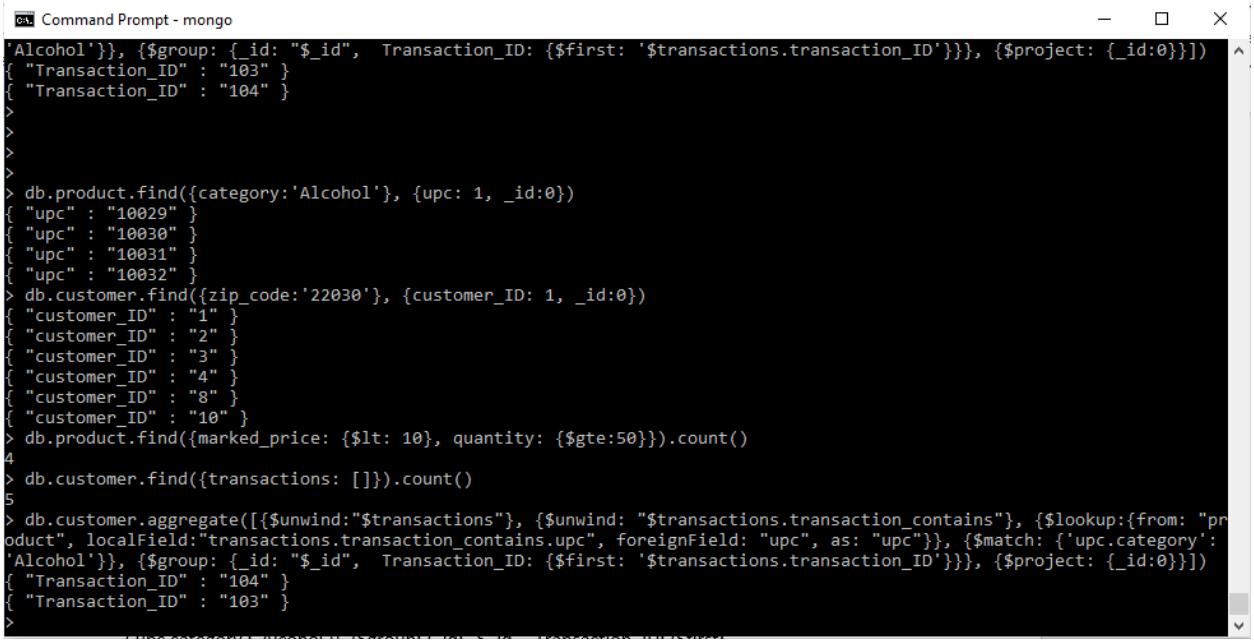
5

Query 5:

```
> db.customer.aggregate([{$unwind:"$transactions"}, {$unwind:
"$transactions.transaction_contains"}, {$lookup:{from: "product",
localField:"transactions.transaction_contains.upc", foreignField: "upc", as: "upc"}}, {$match:
{'upc.category': 'Alcohol'}}, {$group: {_id: "$_id",  Transaction_ID: {$first:
'$transactions.transaction_ID'}}}, {$project: {_id:0}}])
```

{ "Transaction_ID" : "103" }

{ "Transaction_ID" : "104" }


Command Prompt - mongo
'Alcohol'}}, {$group: {_id: "$_id", Transaction_ID: {$first: '$transactions.transaction_ID'}}}, {$project: {_id:0}}])
{ "Transaction_ID" : "103" }
{ "Transaction_ID" : "104" }
> db.product.find({category:'Alcohol'}, {upc: 1, _id:0})
{ "upc" : "10029" }
{ "upc" : "10030" }
{ "upc" : "10031" }
{ "upc" : "10032" }
> db.customer.find({zip_code:'22030'}, {customer_ID: 1, _id:0})
{ "customer_ID" : "1" }
{ "customer_ID" : "2" }
{ "customer_ID" : "3" }
{ "customer_ID" : "4" }
{ "customer_ID" : "8" }
{ "customer_ID" : "10" }
> db.product.find({marked_price: {$lt: 10}, quantity: {$gte:50}}).count()
4
> db.customer.find({transactions: []}).count()
5
> db.customer.aggregate([{$unwind:"$transactions"}, {$unwind: "$transactions.transaction_contains"}, {$lookup:{from: "pr
oduct", localField:"transactions.transaction_contains.upc", foreignField: "upc", as: "upc"}}, {$match: {'upc.category':
'Alcohol'}}, {$group: {_id: "$_id", Transaction_ID: {$first: '$transactions.transaction_ID'}}}, {$project: {_id:0}}])
{ "Transaction_ID" : "104" }
{ "Transaction_ID" : "103" }
>