About the Taipei 101 Computers:

Taipei 101 Computers is a company selling different models of laptops based on their panel sizes and CPUs to their users. The company intends to develop a website to sell laptops online and track sales record. Through this project, we aim to analyze and track their sales to make effective business recommendations and optimize their database systems.

Data Resources:

Customer:
To generate the customer list, we referred to the following dataset on Kaggle to get customer names and customer gender:
https://www.kaggle.com/datasets/claudiodavi/superhero-set
Customer ID and Customer Phone Number were made up by ourselves.

Product:
One of our group members used to work at Micro-Star Int'l (MSI), a laptop brand from Taiwan, so we directly use the product list of MSI to get product names, CPU types, and panel sizes. Product IDs and Product Price were made up by ourselves.

Shipment:
Shipment IDs, Shipment Mode, Estimated Delivery Date, and Actual Delivery Date were all made up by ourselves.

Order:
Order IDs and Order Dates were made up by ourselves.

Include:
Quantity was made up by ourselves.

References:

We referred to the content we learned in class and the textbook, Modern Database Management, to finish the design of our database.

Steps to Test the Group Project:

Step 1: Connect to the SQL Server on SQL Server Management Studio by entering the right authentication details.

- Server type: Database Engine
- Server name: doitsqlx.rhsmith.umd.edu,9703
- Authentication: Windows Authentication
- Username: AD\your_umd_login
- Password: your_umd_password

Step 2: After connecting to the server, switch to the database BUDT703_Project_0501_09

Step 3: After switching the database, review the database tables and their information before performing the required business transactions to analyze sales

Part 1: By executing the SQL file: "Project_0501_09_DDL.sql", we will be able to create the table for Customer, Product, Shipment, Order, and Include. Besides, the first raw data of each table will be also created after executing "Project_0501_09_DDL.sql".

Part 2: To insert more rows into each table, we have to execute insert queries for each table, and these queries were stored in different SQL files.

To insert more rows to 'Customer', please execute "Project_0501_09_InsertCustomer.sql"

To insert more rows to 'Product', please execute "Project_0501_09_InsertProduct.sql"

To insert more rows to 'Shipment', please execute "Project_0501_09_InsertShipment.sql"

To insert more rows to 'Order', please execute "Project_0501_09_InsertOrder.sql"

To insert more rows to 'Include', please execute "Project_0501_09_InsertInclude.sql"

After creating the tables and inserting the data we need, we can execute the

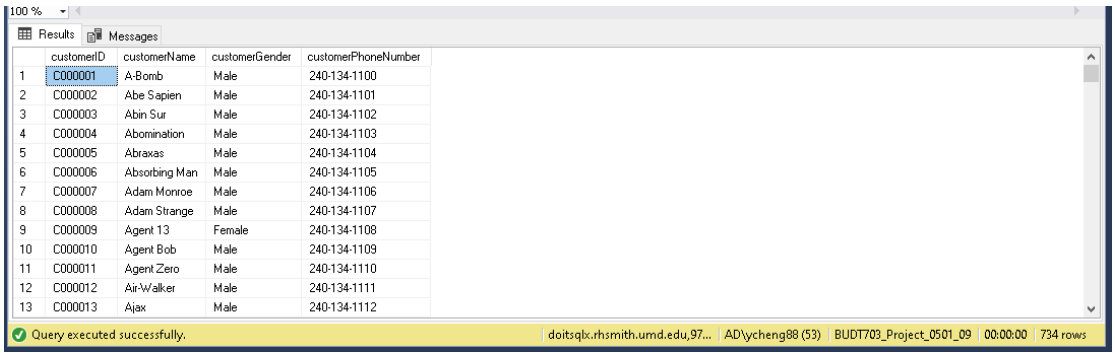
select statement to check the content of each table:

```
USE BUDT703_Project_0501_09

--Check Customer table
SELECT [Taipei101Com.Customer].*
From [Taipei101Com.Customer]
--Check Product table
SELECT [Taipei101Com.Product].*
From [Taipei101Com.Product]
--Check Shipment table
SELECT [Taipei101Com.Shipment].*
From [Taipei101Com.Shipment]
--Check Order table
SELECT [Taipei101Com.Order].*
From [Taipei101Com.Order]
--Check Include table
SELECT [Taipei101Com.Include].*
From [Taipei101Com.Include]
```

After executing above queries, we can get the below results for each table.

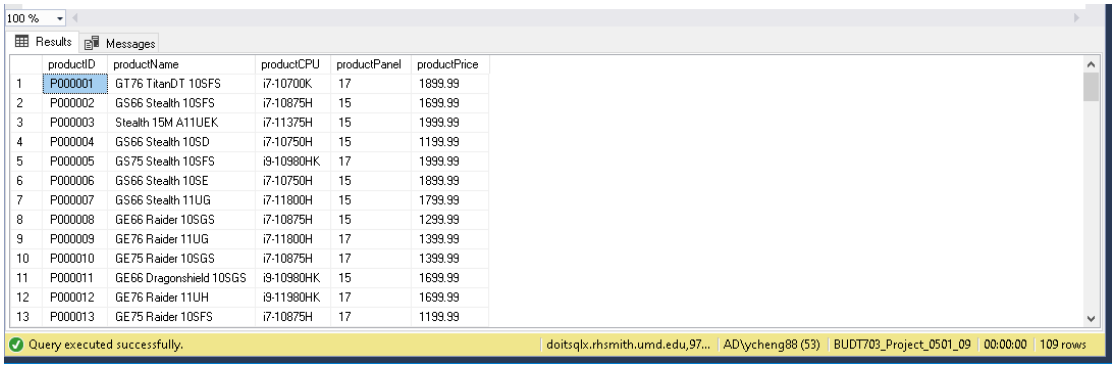
Customer:



	customerID	customerName	customerGender	customerPhoneNumber
1	C000001	A-Bomb	Male	240-134-1100
2	C000002	Abe Sapien	Male	240-134-1101
3	C000003	Abin Sur	Male	240-134-1102
4	C000004	Abomination	Male	240-134-1103
5	C000005	Abraxas	Male	240-134-1104
6	C000006	Absorbing Man	Male	240-134-1105
7	C000007	Adam Monroe	Male	240-134-1106
8	C000008	Adam Strange	Male	240-134-1107
9	C000009	Agent 13	Female	240-134-1108
10	C000010	Agent Bob	Male	240-134-1109
11	C000011	Agent Zero	Male	240-134-1110
12	C000012	Air-Walker	Male	240-134-1111
13	C000013	Ajax	Male	240-134-1112

Query executed successfully. | doitsqlx.rhsmith.umd.edu,97... | AD\ycheng88 (53) | BUDT703_Project_0501_09 | 00:00:00 | 734 rows

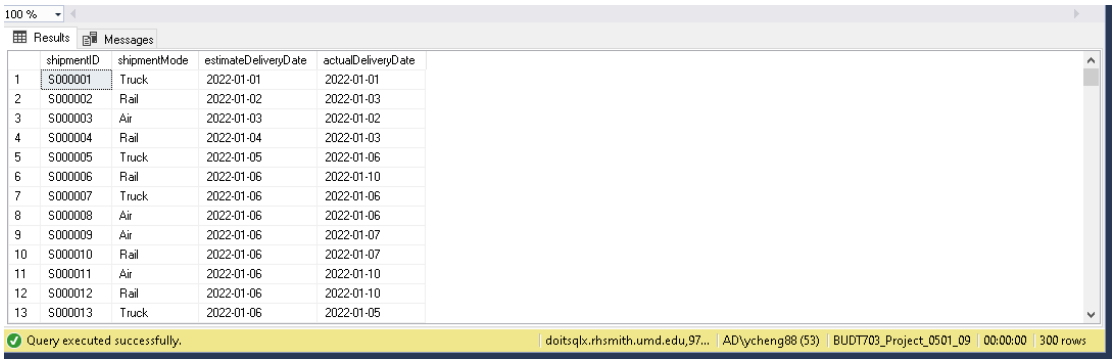
Product:



	productID	productName	productCPU	productPanel	productPrice
1	P000001	GT76 TitanDT 10SFS	i7-10700K	17	1899.99
2	P000002	GS66 Stealth 10SFS	i7-10875H	15	1699.99
3	P000003	Stealth 15M A11UEK	i7-11375H	15	1999.99
4	P000004	GS66 Stealth 10SD	i7-10750H	15	1199.99
5	P000005	GS75 Stealth 10SFS	i9-10980HK	17	1999.99
6	P000006	GS66 Stealth 10SE	i7-10750H	15	1899.99
7	P000007	GS66 Stealth 11UG	i7-11800H	15	1799.99
8	P000008	GE66 Raider 10SGS	i7-10875H	15	1299.99
9	P000009	GE76 Raider 11UG	i7-11800H	17	1399.99
10	P000010	GE75 Raider 10SGS	i7-10875H	17	1399.99
11	P000011	GE66 Dragonshield 10SGS	i9-10980HK	15	1699.99
12	P000012	GE76 Raider 11UH	i9-11980HK	17	1699.99
13	P000013	GE75 Raider 10SFS	i7-10875H	17	1199.99

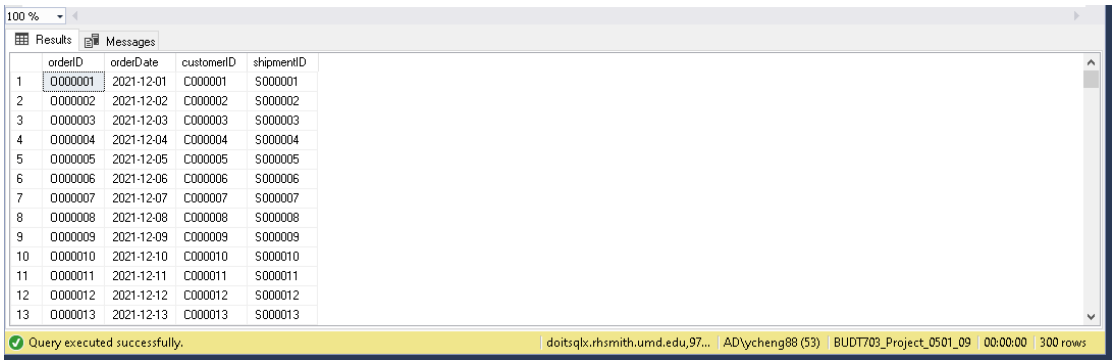
Query executed successfully. | doitsqlx.rhsmith.umd.edu,97... | AD\ycheng88 (53) | BUDT703_Project_0501_09 | 00:00:00 | 109 rows

Shipment:



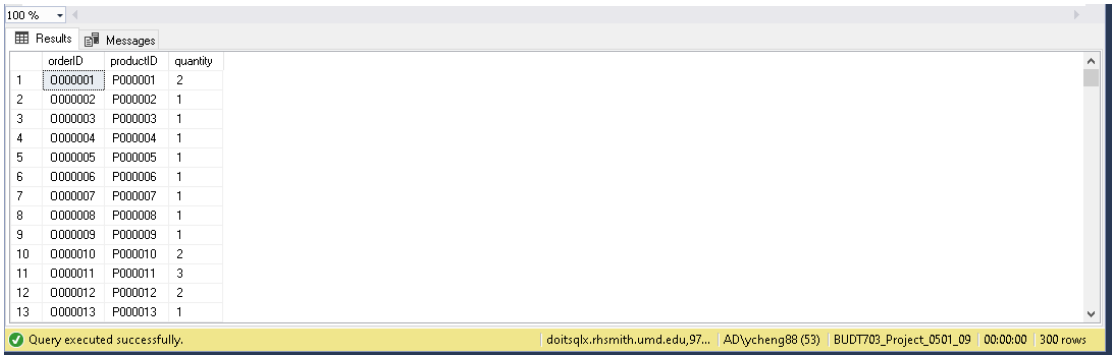
	shipmentID	shipmentMode	estimateDeliveryDate	actualDeliveryDate
1	S000001	Truck	2022-01-01	2022-01-01
2	S000002	Rail	2022-01-02	2022-01-03
3	S000003	Air	2022-01-03	2022-01-02
4	S000004	Rail	2022-01-04	2022-01-03
5	S000005	Truck	2022-01-05	2022-01-06
6	S000006	Rail	2022-01-06	2022-01-10
7	S000007	Truck	2022-01-06	2022-01-06
8	S000008	Air	2022-01-06	2022-01-06
9	S000009	Air	2022-01-06	2022-01-07
10	S000010	Rail	2022-01-06	2022-01-07
11	S000011	Air	2022-01-06	2022-01-10
12	S000012	Rail	2022-01-06	2022-01-10
13	S000013	Truck	2022-01-06	2022-01-05

Order:



	orderID	orderDate	customerID	shipmentID
1	O000001	2021-12-01	C000001	S000001
2	O000002	2021-12-02	C000002	S000002
3	O000003	2021-12-03	C000003	S000003
4	O000004	2021-12-04	C000004	S000004
5	O000005	2021-12-05	C000005	S000005
6	O000006	2021-12-06	C000006	S000006
7	O000007	2021-12-07	C000007	S000007
8	O000008	2021-12-08	C000008	S000008
9	O000009	2021-12-09	C000009	S000009
10	O000010	2021-12-10	C000010	S000010
11	O000011	2021-12-11	C000011	S000011
12	O000012	2021-12-12	C000012	S000012
13	O000013	2021-12-13	C000013	S000013

Include:



	orderID	productID	quantity
1	O000001	P000001	2
2	O000002	P000002	1
3	O000003	P000003	1
4	O000004	P000004	1
5	O000005	P000005	1
6	O000006	P000006	1
7	O000007	P000007	1
8	O000008	P000008	1
9	O000009	P000009	1
10	O000010	P000010	2
11	O000011	P000011	3
12	O000012	P000012	2
13	O000013	P000013	1

According to the above results, we have finished creating the required tables and inserting the necessary data to perform business transactions through our database.

Step 4: Furthermore, we can also execute SQL queries to test whether we can successfully run the business transactions and achieve the intended results from our database:

Business Transaction 1 - What are the details and quantity of the top 5 selling laptops?

SQL Query:

```sql
--Top 5 selling laptops with the details of the product
SELECT TOP 5 i.productID AS 'Product ID' ,p.productName AS 'Model Name' ,
       p.productCPU AS 'CPU', p.productPanel AS 'Panel Size' ,
       p.productPrice AS 'MSRP USD', SUM(i.quantity) AS 'Total Sell QTY'
FROM [Taipei101Com.Include] i, [Taipei101Com.Product] p
WHERE  i.productID = p.productID
GROUP BY i.productID, p.productID, p.productName , p.productCPU,  p.productPanel , p.productPrice
ORDER BY SUM(i.quantity) DESC
```

Result:

	Product ID	Model Name	CPU	Panel Size	MSRP USD	Total Sell QTY
1	P000062	GF63 Thin 10SCXR	i5-10300H	15	1799.99	232
2	P000037	GL65 Leopard 9SDK	i7-9750H	15	1799.99	11
3	P000041	Pulse GL66 11UDK	i7-11800H	15	1999.99	10
4	P000064	GF65 Thin 10SDR	i7-10750H	15	1899.99	10
5	P000042	Pulse GL76 11UEK	i7-11800H	17	1599.99	9

Business Transaction 2 - Which gender contributed significantly to the sales of laptops?'

SQL Query:

```sql
-- Which Gender contributed most of the sellout of laptop
SELECT c.customerGender AS 'Gender', SUM (i.quantity) AS 'Taipei101Com Laptop Sellout QTY'
FROM [Taipei101Com.Order] o, [Taipei101Com.Customer] c, [Taipei101Com.Include] i
WHERE o.customerID = c.customerID AND o.orderID = i.orderID
GROUP BY c.customerGender
```

Result:

	Gender	Taipei101Com Laptop Sellout QTY
1	Female	114
2	Male	497

Business Transaction 3 - What is the total quantity of laptops sold in the second quarter of 2022?

SQL Query:

```sql
-- What is the 2022 Q2 total sellout QTY of laptop
SELECT SUM (i.quantity) as '2022 Q2 Taipei101Com Laptop Sellout QTY'
FROM [Taipei101Com.Order] o,[Taipei101Com.Include] i
WHERE o.orderDate BETWEEN '2022-04-01' and '2022-06-30' and i.orderID = o.orderID
```

Result:

	2022 Q2 Taipei101Com Laptop Sellout QTY
1	202

Business Transaction 4 - What is the most popular shipment mode?

SQL Query:

```
-- What is the most popular shipment mode
SELECT  s.shipmentMode AS 'Shipment Mode', COUNT(s.shipmentMode ) AS 'Usage count'
FROM [Taipei101Com.Shipment] s
GROUP BY s.shipmentMode
ORDER BY  COUNT(s.shipmentMode ) DESC
```

Result:

	Shipment Mode	Usage count
1	Truck	101
2	Air	100
3	Rail	99

Step 5: After successfully running and testing the group project, disconnect from the server and close the connection before exiting the platform