**SQL Training**

### Attention

1. The <XXXX> used in this article represents the employee ID. Please replace it with your own employee ID.

### Create data object

#### Create tables and table indexes

Table ：CUX\_OM\_CUSTOMERS\_XXXX

For storing customer information。

| Field | Type | Nullable | Default Value | Description |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| CUSTOMER\_ID | BIGINT | N |  |  |
| CUSTOMER\_NUMBER | VARCHAR(30) | N |  |  |
| CUSTOMER\_NAME | VARCHAR(100) | N |  |  |
| TELEPHONE | VARCAHR(50) | Y |  |  |
| START\_DATE\_ACTIVE | DATE | Y |  |  |
| END\_DATE\_ACTIVE | DATE | Y |  |  |
| CREATED\_BY | BIGINT | N |  |  |
| CREATION\_DATE | DATE | N |  |  |
| LAST\_UPDATED\_BY | BIGINT | N |  |  |
| LAST\_UPDATE\_DATE | DATE | N |  |  |
| LAST\_UPDATE\_LOGIN | BIGINT | Y |  |  |

Create indexes：

| Index | Unique | Field | Description |
| --- | --- | --- | --- |
|  |  |  |  |
| CUX\_OM\_CUSTOMERS\_XXXX\_U1 | Y | CUSTOMER\_ID |  |
| CUX\_OM\_CUSTOMERS\_XXXX\_U2 | Y | CUSTOMER\_NUMBER |  |
| CUX\_OM\_CUSTOMERS\_XXXX\_U3T N | Y | CUSTOMER\_NAME |  |

Table：CUX\_OM\_ITEMS\_XXXX

For storing product information。

| Field | Type | Nullable | Default Value | Description |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| ITEM\_ID | BIGINT | N |  |  |
| ITEM\_NUMBER | VARCHAR(30) | N |  |  |
| ITEM\_NAME | VARCHAR(100) | N |  |  |
| UOM\_CODE | VARCHAR(25) | Y |  |  |
| START\_DATE\_ACTIVE | DATE | Y |  |  |
| END\_DATE\_ACTIVE | DATE | Y |  |  |
| CREATED\_BY | BIGINT | N |  |  |
| CREATION\_DATE | DATE | N |  |  |
| LAST\_UPDATED\_BY | BIGINT | N |  |  |
| LAST\_UPDATE\_DATE | DATE | N |  |  |
| LAST\_UPDATE\_LOGIN | BIGINT | Y |  |  |

Create indexes：

| Index | Unique | Field | Description |
| --- | --- | --- | --- |
|  |  |  |  |
| CUX\_OM\_ITEMS\_XXXX\_U1 | Y | ITEM\_ID |  |
| CUX\_OM\_ITEMS\_XXXX\_U2 | Y | ITEM\_NUMBER |  |

table：CUX\_OM\_HEADERS\_XXXX

For storing sales order header information。

| Field | Type | Nullable | DefaultValue | Description |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| HEADER\_ID | BIGINT | N |  |  |
| ORG\_ID | BIGINT | Y | 101 |  |
| ORDER\_NUMBER | VARCHAR(30) | N |  |  |
| CUSTOMER\_ID | BIGINT | Y |  |  |
| ORDER\_DATE | DATE | N |  |  |
| ORDER\_STATUS | VARCHAR(30) | Y |  | status list:  UNAPPROVED  APPROVED  CANCELLED  CLOSED |
| DESCRIPTION | VARCHAR(240) | Y |  |  |
| CREATED\_BY | BIGINT | N |  |  |
| CREATION\_DATE | DATE | N |  |  |
| LAST\_UPDATED\_BY | BIGINT | N |  |  |
| LAST\_UPDATE\_DATE | DATE | N |  |  |
| LAST\_UPDATE\_LOGIN | BIGINT | Y |  |  |
| ATTRIBUTE\_CATEGORY | VARCHAR(30) | Y |  |  |
| ATTRIBUTE1 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE2 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE3 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE4 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE5 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE6 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE7 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE8 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE9 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE10 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE11 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE12 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE13 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE14 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE15 | VARCHAR(150) | Y |  |  |

Create Indexes：

| Index | Unique | Field | Description |
| --- | --- | --- | --- |
|  |  |  |  |
| CUX\_OM\_HEADERS\_XXXX \_U1 | Y | HEADER\_ID |  |
| CUX\_OM\_HEADERS\_XXXX \_U2 | Y | ORDER\_NUMBER |  |
| CUX\_OM\_HEADERS\_XXXX \_N1 |  | CUSTOMER\_ID |  |

Table：CUX\_OM\_LINES\_XXXX

For storing sales order line information。

| Field | Type | Nullable | Default Value | Description |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| LINE\_ID | BIGINT | N |  |  |
| HEADER\_ID | BIGINT | N |  |  |
| LINE\_NUMBER | VARCHAR(30) | N |  |  |
| ITEM\_ID | BIGINT | N |  |  |
| UNIT\_PRICE | DECIMAL(10,2) | Y |  |  |
| QUANTITY | DECIMAL(10,2) | Y |  |  |
| DESCRIPTION | VARCHAR(240) | Y |  |  |
| ADDITION1 | VARCHAR(150) | Y |  |  |
| ADDITION2 | VARCHAR(150) | Y |  |  |
| ADDITION3 | VARCHAR(150) | Y |  |  |
| ADDITION4 | VARCHAR(150) | Y |  |  |
| ADDITION5 | VARCHAR(150) | Y |  |  |
| CREATED\_BY | BIGINT | N |  |  |
| CREATION\_DATE | DATE | N |  |  |
| LAST\_UPDATED\_BY | BIGINT | N |  |  |
| LAST\_UPDATE\_DATE | DATE | N |  |  |
| LAST\_UPDATE\_LOGIN | BIGINT | Y |  |  |
| ATTRIBUTE\_CATEGORY | VARCHAR(30) | Y |  |  |
| ATTRIBUTE1 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE2 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE3 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE4 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE5 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE6 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE7 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE8 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE9 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE10 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE11 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE12 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE13 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE14 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE15 | VARCHAR(150) | Y |  |  |

Create Indexes：

| Index | Unique | Field | Description |
| --- | --- | --- | --- |
|  |  |  |  |
| CUX\_OM\_LINES\_XXXX \_U1 | Y | LINE\_ID |  |
| CUX\_OM\_LINES\_XXXX \_N1 |  | HEADER\_ID |  |
| CUX\_OM\_LINES\_XXXX \_N2 |  | ITEM\_ID |  |

#### Import data

excel：《1 – Table Data.xls》

1．CUX\_OM\_CUSTOMERS\_XXXX

2．CUX\_OM\_ITEMS\_XXXX

4．CUX\_OM\_HEADERS\_XXXX

5．CUX\_OM\_LINES\_XXXX

### Questions

#### NO.01

Please create the above objects in the database: table, table index。

#### NO.02

Please import the corresponding table data in the file: "1 – Table Data.xlsx" into the table。

#### NO.03

Create a view：CUX\_OM\_HEADERS\_V

* view：CUX\_OM\_HEADERS\_V

| Field | Type | Nullable | DefaultValue | Description |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| HEADER\_ID | BIGINT | N |  |  |
| ORDER\_NUMBER | VARCHAR(30) | N |  |  |
| CUSTOMER\_ID | BIGINT | Y |  |  |
| ORDER\_DATE | DATE | N |  |  |
| ORDER\_STATUS | VARCHAR(30) | Y |  | status list:  UNAPPROVED  APPROVED  CANCELLED  CLOSED |
| DESCRIPTION | VARCHAR(240) | Y |  |  |
| CREATED\_BY | BIGINT | N |  |  |
| CREATION\_DATE | DATE | N |  |  |
| LAST\_UPDATED\_BY | BIGINT | N |  |  |
| LAST\_UPDATE\_DATE | DATE | N |  |  |
| LAST\_UPDATE\_LOGIN | BIGINT | Y |  |  |
| ATTRIBUTE\_CATEGORY | VARCHAR(30) | Y |  |  |
| ATTRIBUTE1 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE2 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE3 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE4 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE5 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE6 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE7 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE8 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE9 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE10 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE11 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE12 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE13 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE14 | VARCHAR(150) | Y |  |  |
| ATTRIBUTE15 | VARCHAR(150) | Y |  |  |
| CUSTOMER\_NUMBER | VARCHAR(30) |  |  |  |
| CUSTOMER\_NAME | VARCHAR(100) |  |  |  |
| TELEPHONE | VARCHAR(50) | Y |  |  |

#### NO.04

Write SQL to display the following information and sort it by customer\_number and order\_number in ascending order。

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| order\_number | customer\_number | customer\_name | order\_date | order\_status | description |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

#### NO.05

Write SQL to display order and order line information, sorted by order number and line number in ascending order (including orders with all statuses)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| order\_number | customer\_name | order\_date | order\_status | line\_number | item\_number | item\_name |
|  |  |  |  |  |  |  |

#### NO.06

Write SQL to display products purchased by customers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| customer\_number | customer\_number | item\_number | item\_name | uom\_code |
| 1101 | 汉得信息技术股份有限公司 | SB86662 | 办公用品 | 个 |

#### NO.07

Write SQL to count all orders (excluding canceled orders) and calculate the average sales unit price and the highest and lowest unit price by product.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| item\_number | item\_name | average\_unit\_price | highest\_unit\_price | lowest\_unit\_price |
|  |  |  |  |  |

#### NO.08

Write SQL to query customer information about canceled orders.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| customer\_number | customer\_name | telephone | start\_date\_active | end\_date\_active |
|  |  |  |  |  |

#### NO.09

Write SQL to count the company's total sales in 2015. (All orders with status CANCELLED are excluded from statistics)

|  |
| --- |
| Total Sales |
|  |

#### NO.10

Write a script to add an index to the table: CUX\_OM\_ITEMS\_XXXX: a normal index, and the applicable field: ITEM\_NAME.

Answer:

1. CREATE DATABASE IF NOT exists SQLTraining;

USE sqltraining;

CREATE TABLE CUX\_OM\_CUSTOMERS\_46321 (

CUSTOMER\_ID BIGINT primary key,

CUSTOMER\_NUMBER VARCHAR(30) NOT NULL,

CUSTOMER\_NAME VARCHAR(100) NOT NULL,

TELEPHONE VARCHAR(50) ,

START\_DATE\_ACTIVE DATE ,

END\_DATE\_ACTIVE DATE,

CREATED\_BY BIGINT NOT NULL,

CREATION\_DATE date NOT NULL,

LAST\_UPDATED\_BY BIGINT NOT NULL,

LAST\_UPDATE\_DATE DATE NOT NULL,

LAST\_UPDATE\_LOGIN BIGINT

);

CREATE UNIQUE INDEX CUX\_OM\_CUSTOMERS\_46321\_U2

ON CUX\_OM\_CUSTOMERS\_46321 (CUSTOMER\_NUMBER);

CREATE UNIQUE INDEX CUX\_OM\_CUSTOMERS\_46321\_U3TN

ON CUX\_OM\_CUSTOMERS\_46321 (CUSTOMER\_NAME);

CREATE TABLE CUX\_OM\_ITEMS\_46321 (

ITEM\_ID BIGINT primary key,

ITEM\_NUMBER VARCHAR(30) NOT NULL,

ITEM\_NAME VARCHAR(100) NOT NULL,

UOM\_CODE VARCHAR(25) ,

START\_DATE\_ACTIVE DATE ,

END\_DATE\_ACTIVE DATE,

CREATED\_BY BIGINT NOT NULL,

CREATION\_DATE date NOT NULL,

LAST\_UPDATED\_BY BIGINT NOT NULL,

LAST\_UPDATE\_DATE DATE NOT NULL,

LAST\_UPDATE\_LOGIN BIGINT

);

CREATE UNIQUE INDEX CUX\_OM\_ITEMS\_\_46321\_U2

ON CUX\_OM\_ITEMS\_46321 (ITEM\_NUMBER);

CREATE TABLE CUX\_OM\_HEADERS\_46321(

HEADER\_ID BIGINT PRIMARY KEY,

ORG\_ID BIGINT DEFAULT 101,

ORDER\_NUMBER VARCHAR(30) NOT NULL,

CUSTOMER\_ID BIGINT,

ORDER\_DATE DATE NOT NULL,

ORDER\_STATUS VARCHAR(30),

`DESCRIPTION` VARCHAR(240),

CREATED\_BY BIGINT NOT NULL,

CREATION\_DATE DATE NOT NULL,

LAST\_UPDATED\_BY BIGINT NOT NULL,

LAST\_UPDATE\_DATE DATE NOT NULL,

LAST\_UPDATE\_LOGIN BIGINT,

ATTRIBUTE\_CATEGORY VARCHAR(30),

ATTRIBUTE1 VARCHAR(150),

ATTRIBUTE2 VARCHAR(150),

ATTRIBUTE3 VARCHAR(150),

ATTRIBUTE4 VARCHAR(150),

ATTRIBUTE5 VARCHAR(150),

ATTRIBUTE6 VARCHAR(150),

ATTRIBUTE7 VARCHAR(150),

ATTRIBUTE8 VARCHAR(150),

ATTRIBUTE9 VARCHAR(150),

ATTRIBUTE10 VARCHAR(150),

ATTRIBUTE11 VARCHAR(150),

ATTRIBUTE12 VARCHAR(150),

ATTRIBUTE13 VARCHAR(150),

ATTRIBUTE14 VARCHAR(150),

ATTRIBUTE15 VARCHAR(150)

);

CREATE UNIQUE INDEX CUX\_OM\_HEADERS\_\_46321\_U2

ON CUX\_OM\_HEADERS\_46321 (ORDER\_NUMBER);

CREATE TABLE CUX\_OM\_LINES\_46321(

LINE\_ID BIGINT PRIMARY KEY,

HEADER\_ID BIGINT NOT NULL,

LINE\_NUMBER VARCHAR(30) NOT NULL,

ITEM\_ID BIGINT NOT NULL,

UNIT\_PRICE DECIMAL(10,2),

QUANTITY DECIMAL(10,2),

`DESCRIPTION` VARCHAR(240),

ADDITION1 VARCHAR(150),

ADDITION2 VARCHAR(150),

ADDITION3 VARCHAR(150),

ADDITION4 VARCHAR(150),

ADDITION5 VARCHAR(150),

CREATED\_BY BIGINT NOT NULL,

CREATION\_DATE DATE NOT NULL,

LAST\_UPDATED\_BY BIGINT NOT NULL,

LAST\_UPDATE\_DATE DATE NOT NULL,

LAST\_UPDATE\_LOGIN BIGINT,

ATTRIBUTE\_CATEGORY VARCHAR(30),

ATTRIBUTE1 VARCHAR(150),

ATTRIBUTE2 VARCHAR(150),

ATTRIBUTE3 VARCHAR(150),

ATTRIBUTE4 VARCHAR(150),

ATTRIBUTE5 VARCHAR(150),

ATTRIBUTE6 VARCHAR(150),

ATTRIBUTE7 VARCHAR(150),

ATTRIBUTE8 VARCHAR(150),

ATTRIBUTE9 VARCHAR(150),

ATTRIBUTE10 VARCHAR(150),

ATTRIBUTE11 VARCHAR(150),

ATTRIBUTE12 VARCHAR(150),

ATTRIBUTE13 VARCHAR(150),

ATTRIBUTE14 VARCHAR(150),

ATTRIBUTE15 VARCHAR(150)

);

1. Imported Data Below

A screenshot of a phone number

Description automatically generated

A screenshot of a computer

Description automatically generated

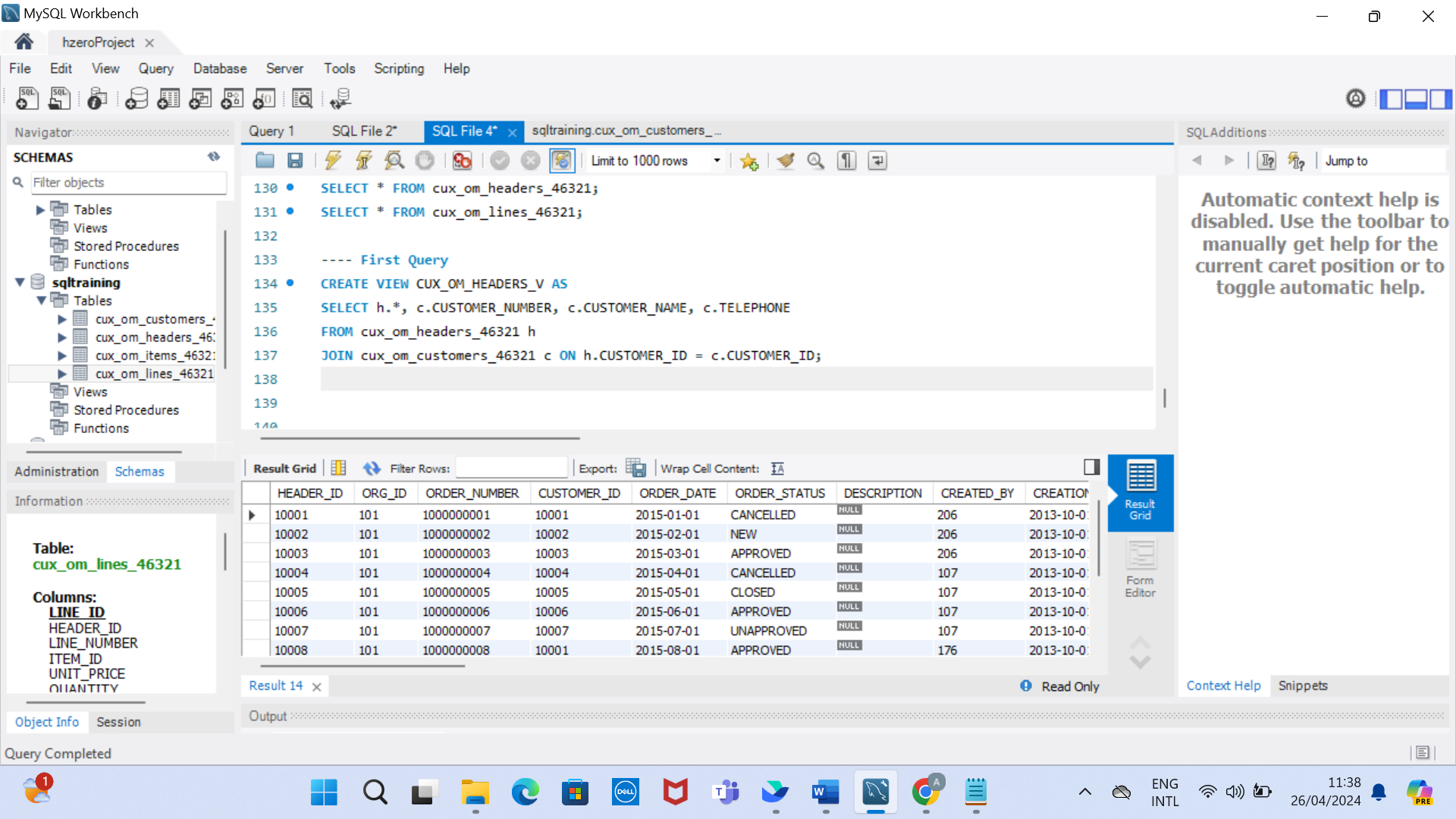
A screenshot of a computer

Description automatically generated

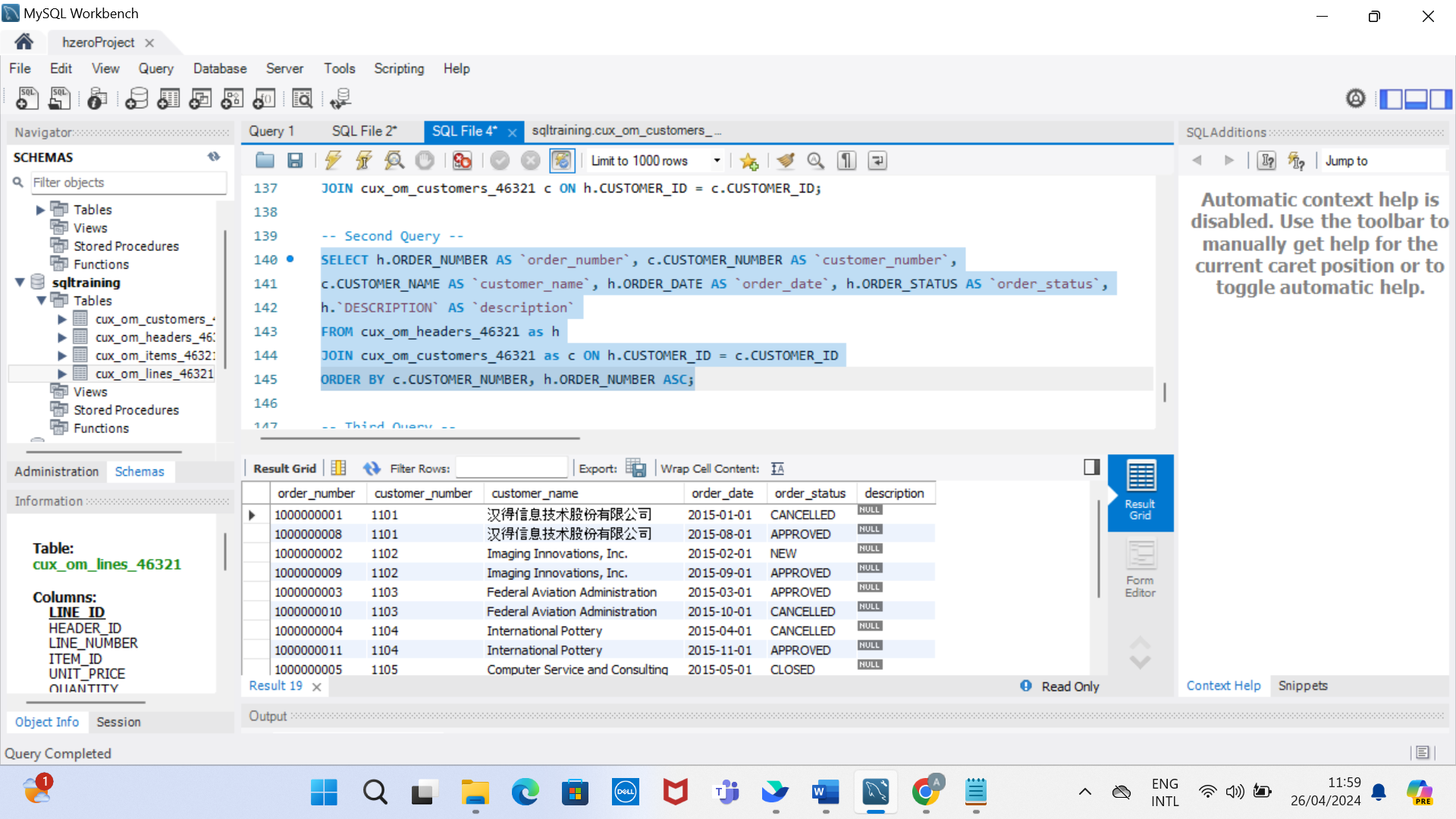
A screenshot of a computer screen

Description automatically generated

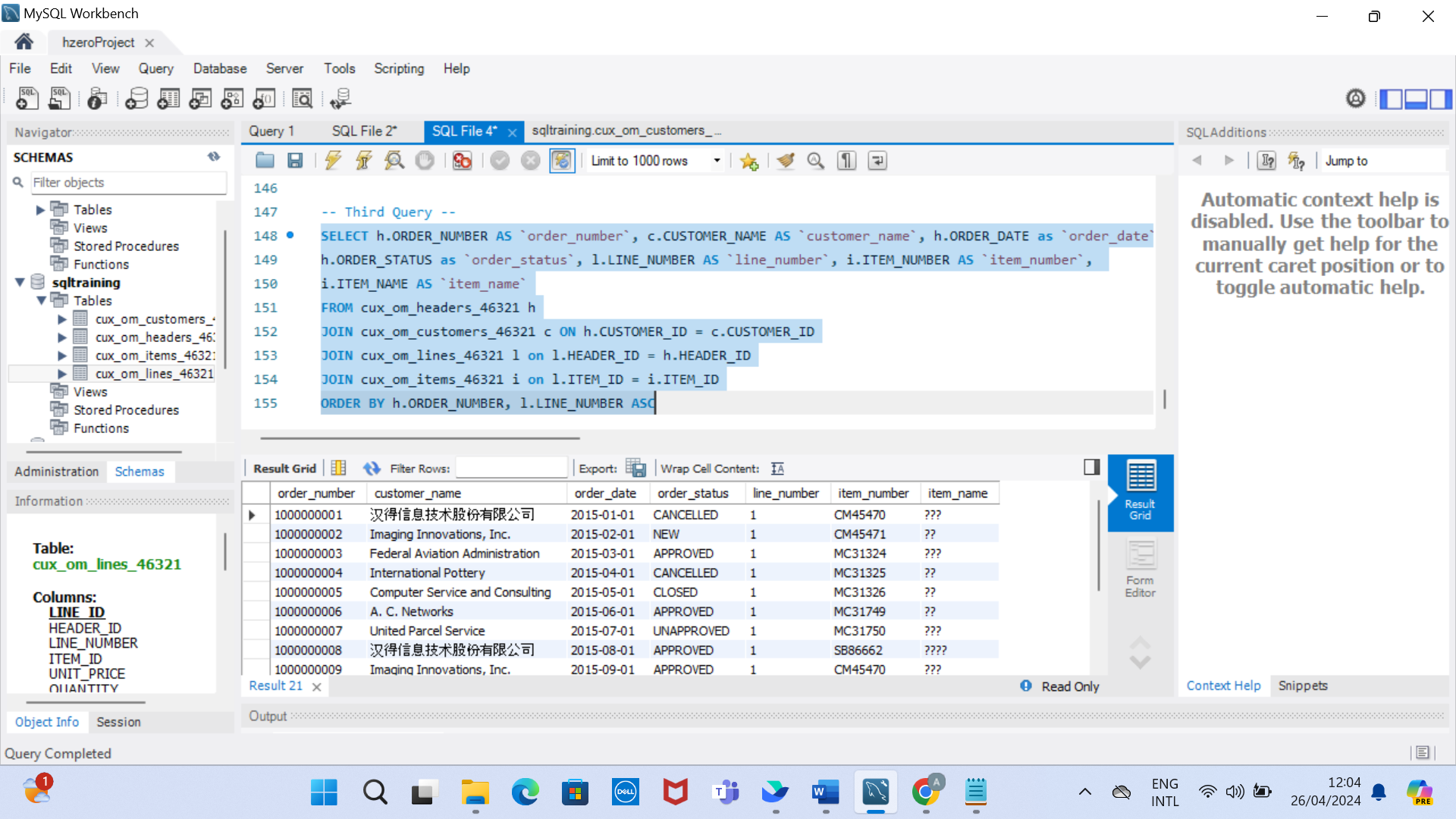
1. Answer for Create View



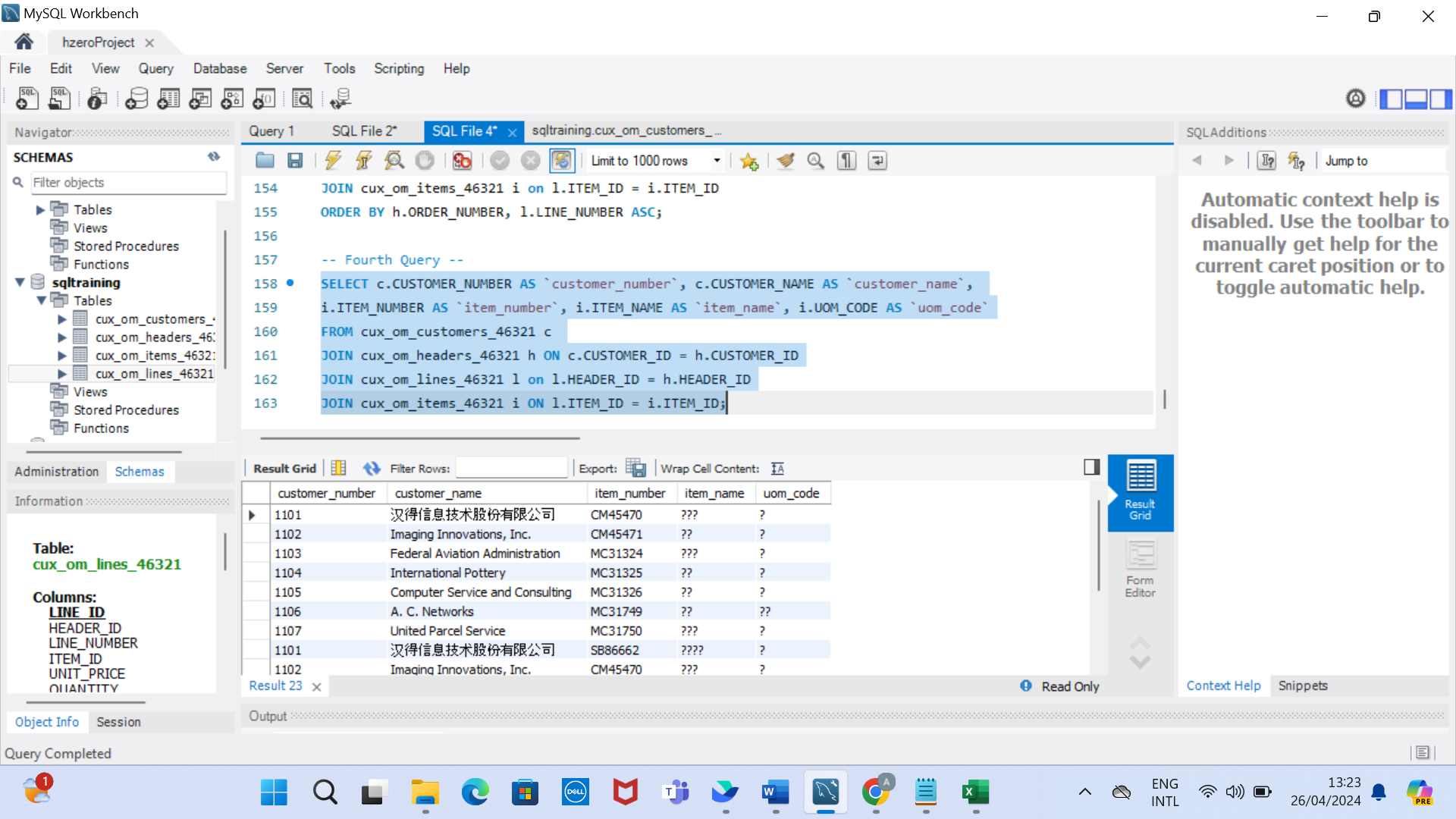
1. Answer



1. Answer



1. Answer

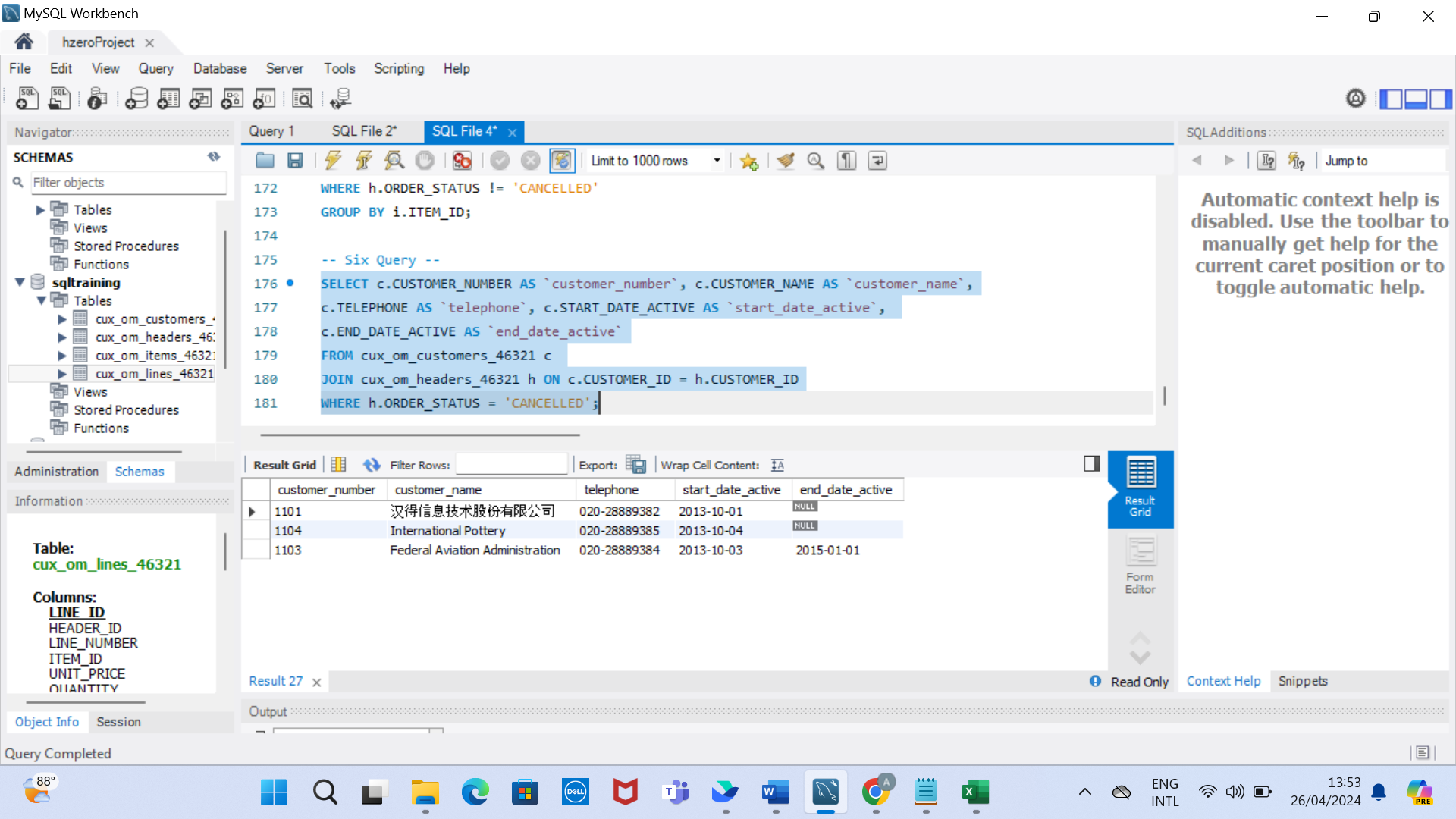


1. Answer:

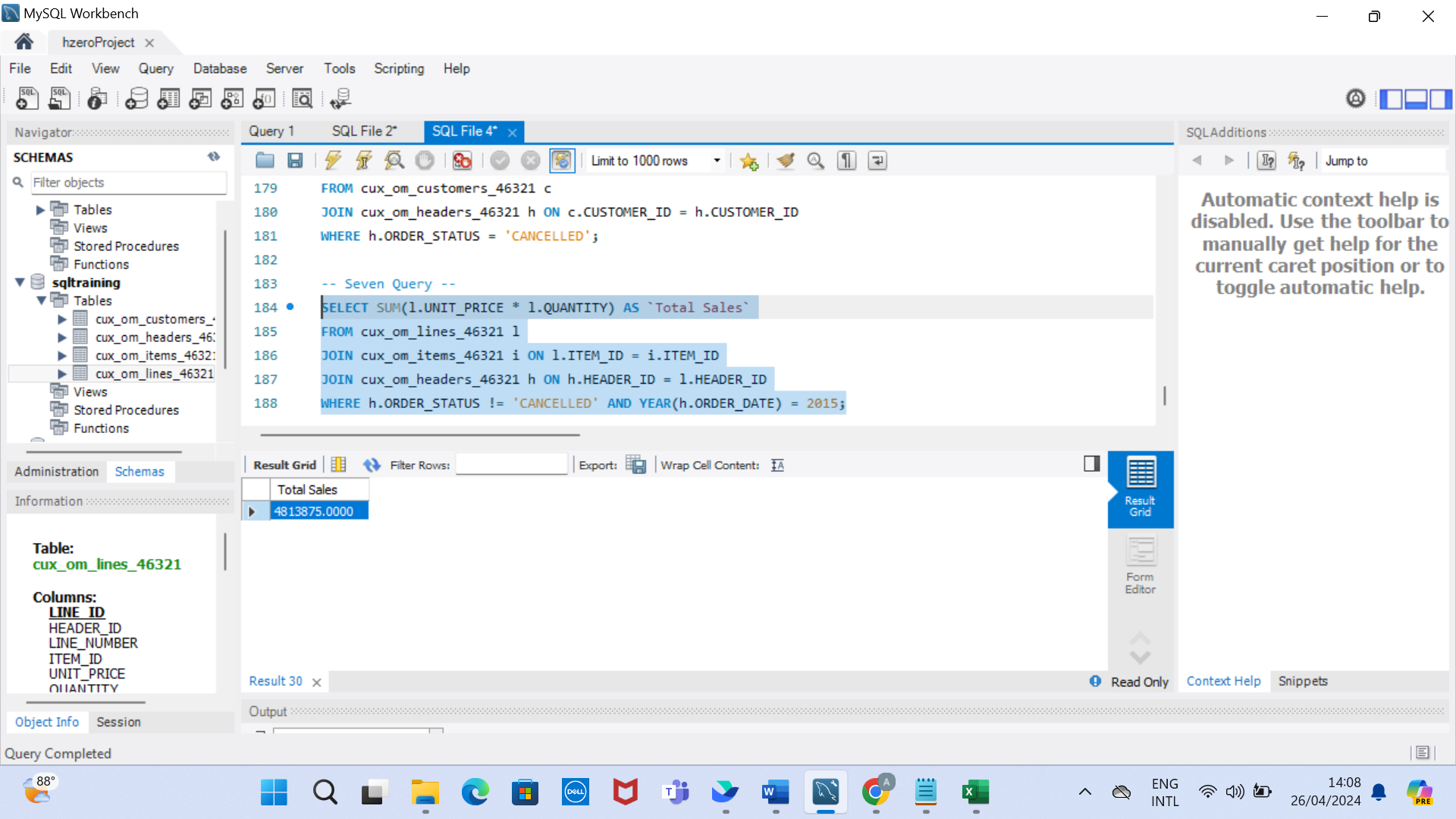
A screenshot of a computer

Description automatically generated

1. Answer:



1. Answer:



1. Answer:

