# Mini Project – Garment Factory

A report submitted to the

Department of Electrical and Information

Engineering Faculty of Engineering

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Sri Lanka

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EE4350 Database Systems


By group No: 52:

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# 1. CHAPTER I – REQUIREMENT ANALYSIS

## 1.1 INTRODUCTION

In today's modern world, databases and database management systems are essential for day-to-day life. It involves nearly all day-to-day activities. For example, financial management systems in banks, hotel management systems, ticket booking systems like movie or for the travelling, airports, universities etc. small level businesses to huge level companies all are maintaining databases to store the data and retrieve easily. Using proper database management system, easily maintain a huge collection of data. When planning to create a database, need to consider so many things like purpose and requirements, performance, scalability, data security and integrity, data modelling, normalization techniques etc.

In this project, our group developed garment factory management system database. To develop this project, first we analyze the garment factory management system like how it operates, how processes are going on and as well as collect all required information to implement the database. This system aims to manage and organize factory data effectively as well as improve the garment factory performance. By using this system, the factory can manage huge amounts of data easily. This system fulfills all the functional and data requirements.

To complete this project, our project team mainly focused on creating a database system to manage whole garment factory works and function. First, we started to closely study the factory works and understand the factory operations and processes. Using this system factory can manage large amount of data easily as well as it full-fill all the factory's needs and helps factory to running without any issues.

## 1.2 DATA REQUIREMENT

Data requirements are the data which provide a detailed description of the data model, and the system must be used to fulfill its functional requirements. In the ER diagram, there are many entities and each entity has some attributes. These things are needed to create a garment factory management system database.

**List of Entities**

1. Employee
2. Order
3. Worker
4. Supplier
5. Product
6. Machine or Equipment
7. Raw Material
8. Seller
9. Department

**Attributes List**

| Entity | Attributes (data requirements) |
|---|---|
| Employee | Employee ID |
| | Department |
| | Full Name |
| | Date of birth |
| | Contact |
| Worker | Worker ID |
| | Full Name |
| | Department |
| | Date of birth |
| | Contact |
| Product | Product ID |
| | Product Name |
| | Product type |
| | Department |
| | Stock Quality |
| Raw material | Raw material ID |
| | Row material Name |
| | Department |
| | Supplier |

| | |
|---|---|
| Department | Department ID |
| | Department Name |
| | Department Head |
| | No of workers |
| | No of Employees |
| Order | Order ID |
| | Seller |
| | Product |
| | Quantity |
| Supplier | Supplier Name |
| | Raw material |
| | Contact |
| Machine or Equipment | Machine ID |
| | Machine Name |
| | Department |
| | Function |
| Seller | Seller Name |
| | Order |
| | Contact |

# 2. CHAPTER II – CONCEPTUAL DESIGN (ER DIAGRAM)

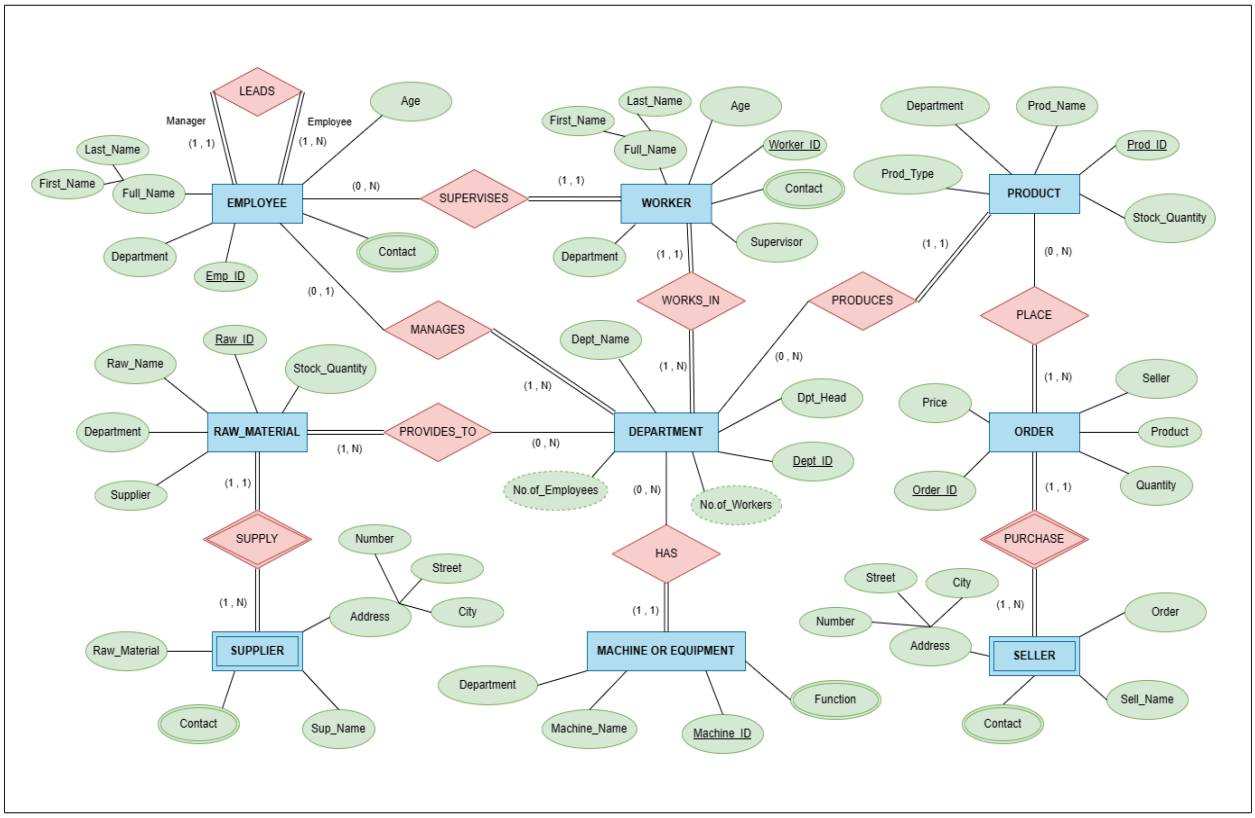



Figure 1: ER diagram of the garment factory database system

In the ER diagram, relationship is association among two or more entities. In every relationship, no of entities that participate in that relationship is called degree of relationship. In this garment factory management system database, we consider all the scenarios which are involved in the garment to get the relationships.

**List of Relationships**

- A manager can supervise multiple employees. The cardinality of this relationship is (1, N), which means that a manager can supervise one or more employees, but each employee can only be supervised by one manager.
- One employee can manage one department and department can have more than one employee. One of them is the head of the particular department.
- One raw material can supply by one supplier and one supplier can supply more than one raw material.
- One product can get minimum zero order and maximum many orders.

- All the departments have employees, but all the employees don't need to have departments.

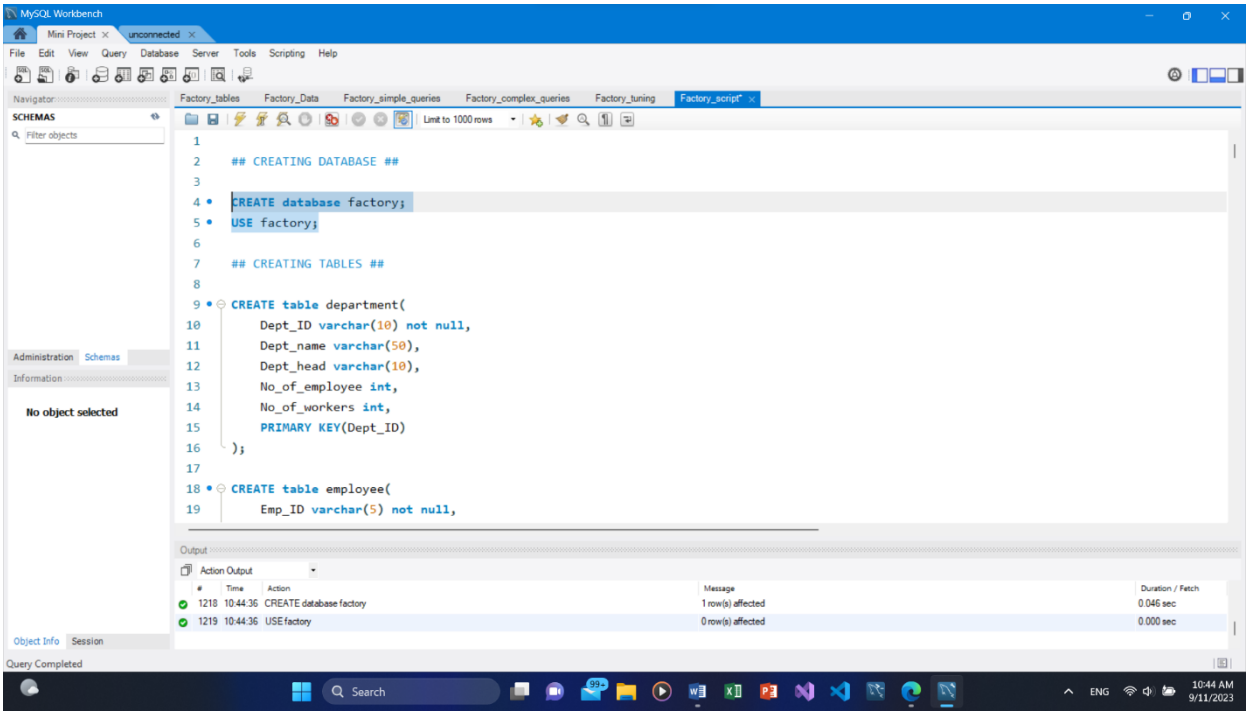
- Workers and departments are in total participation in WORKS_IN relationship. It means all the workers have departments and all the departments have workers.

- All the machine/equipment has departments, and all the departments don't need to have machine/equipment.

These are some of the relationships in our garment factory management system database.

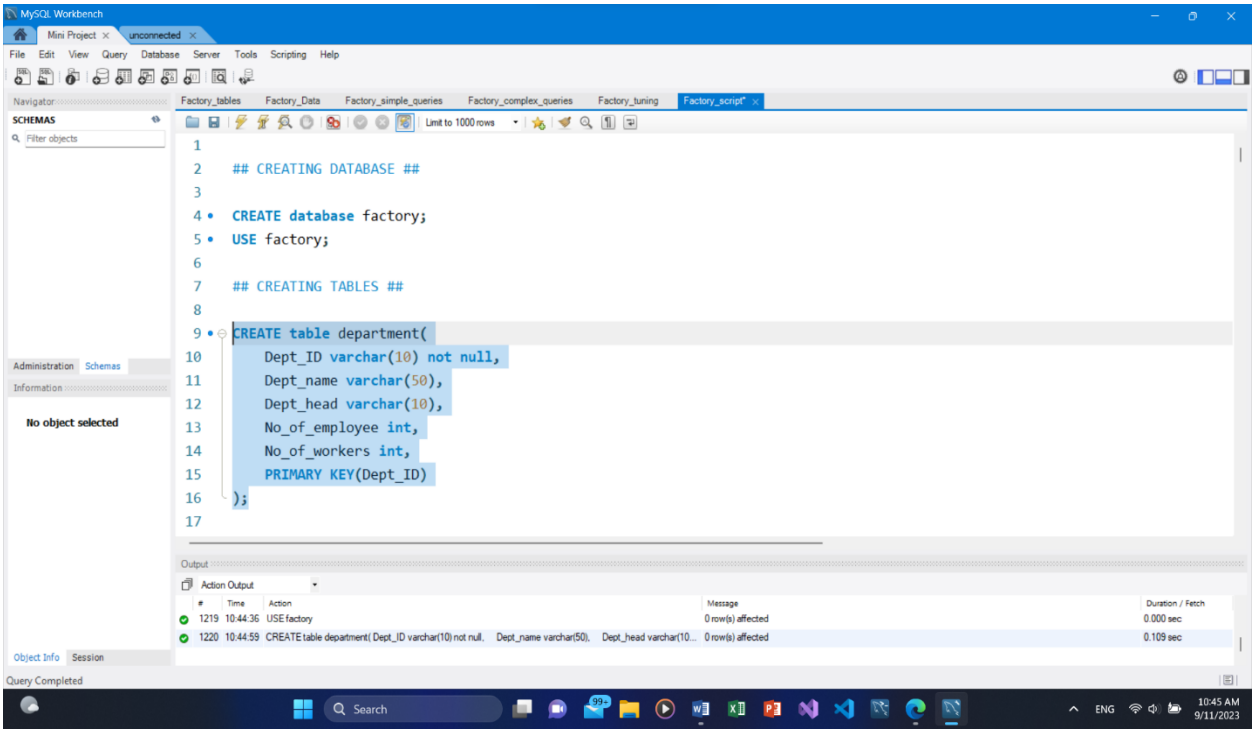
# 3. CHAPTER IV – IMPLEMENTATION

## 3.1 CREATING DATABASE

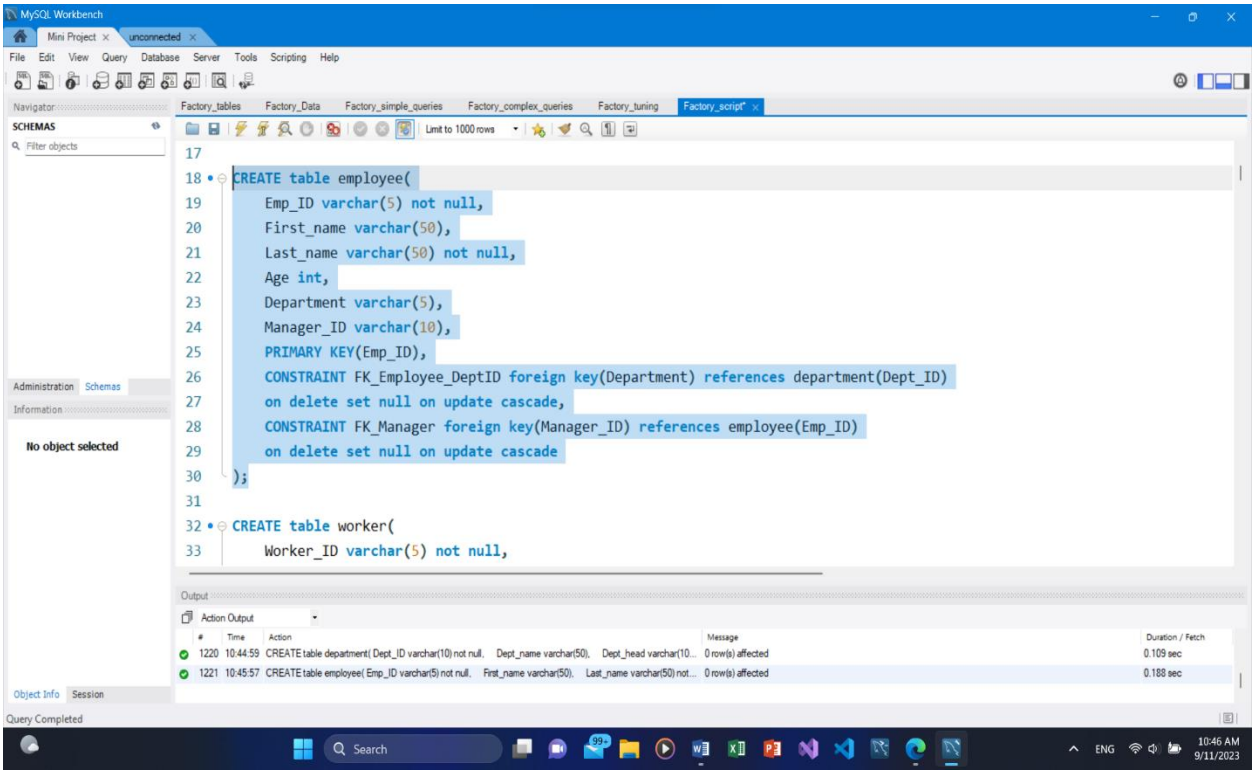



## 3.2 TABLE CREATION

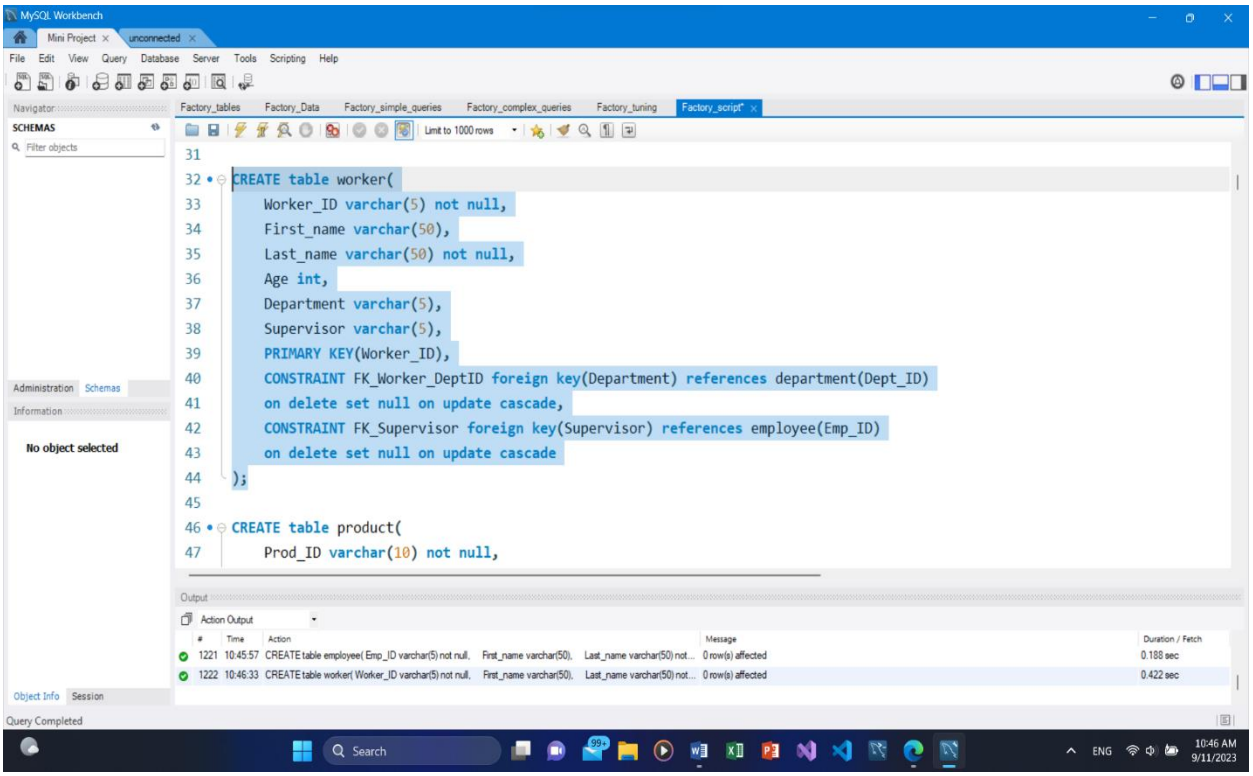
Department Table



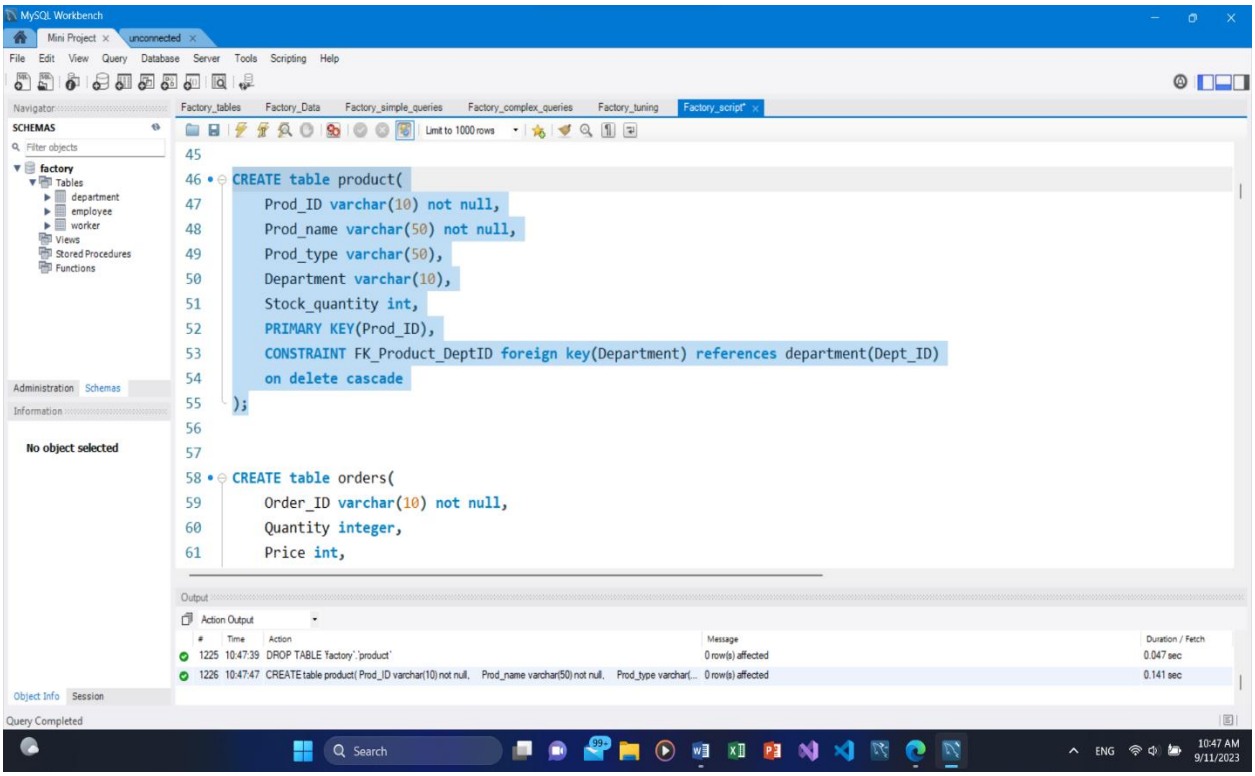
Employee Table



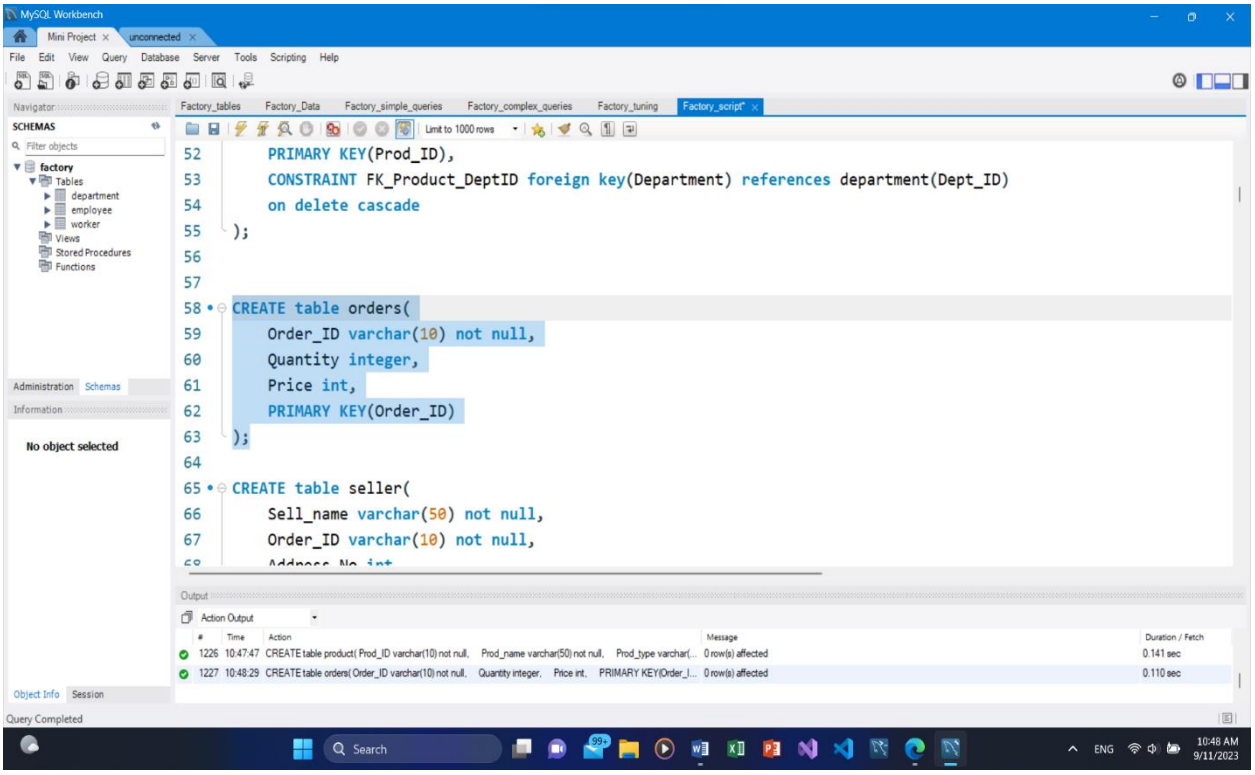

Worker Table



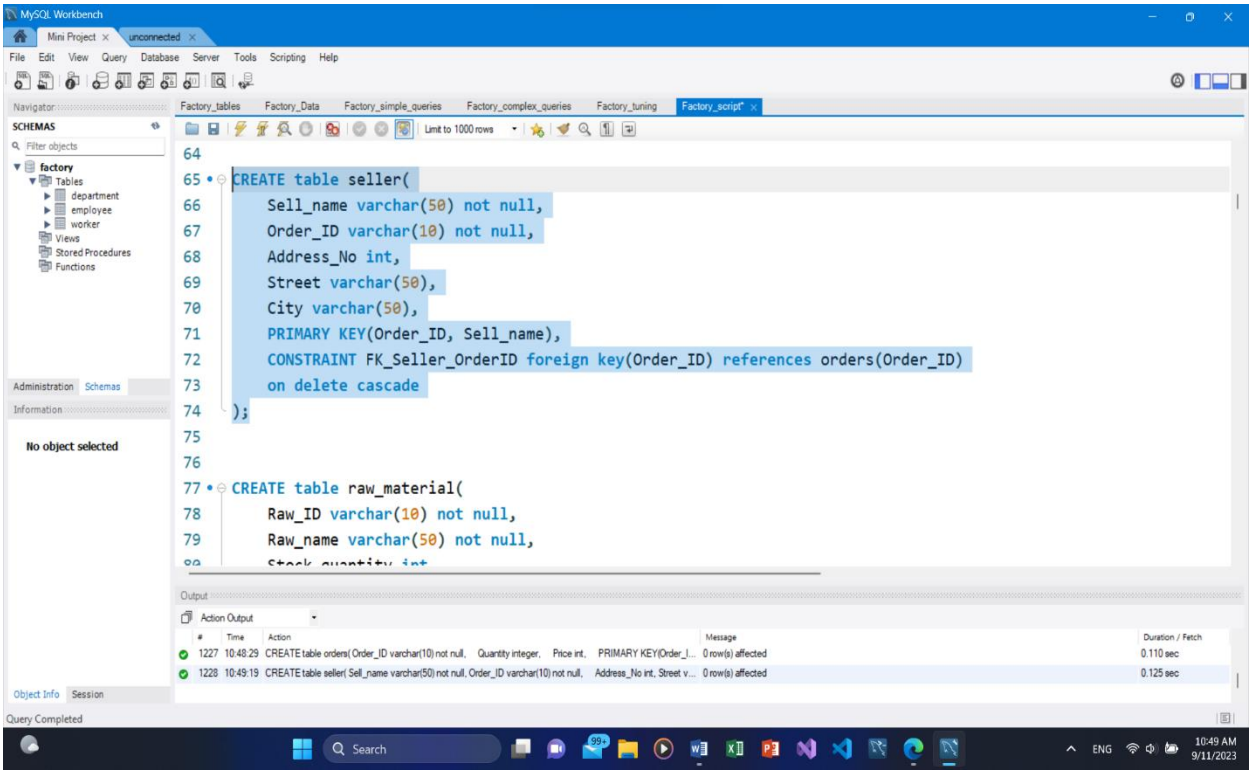
Product Table



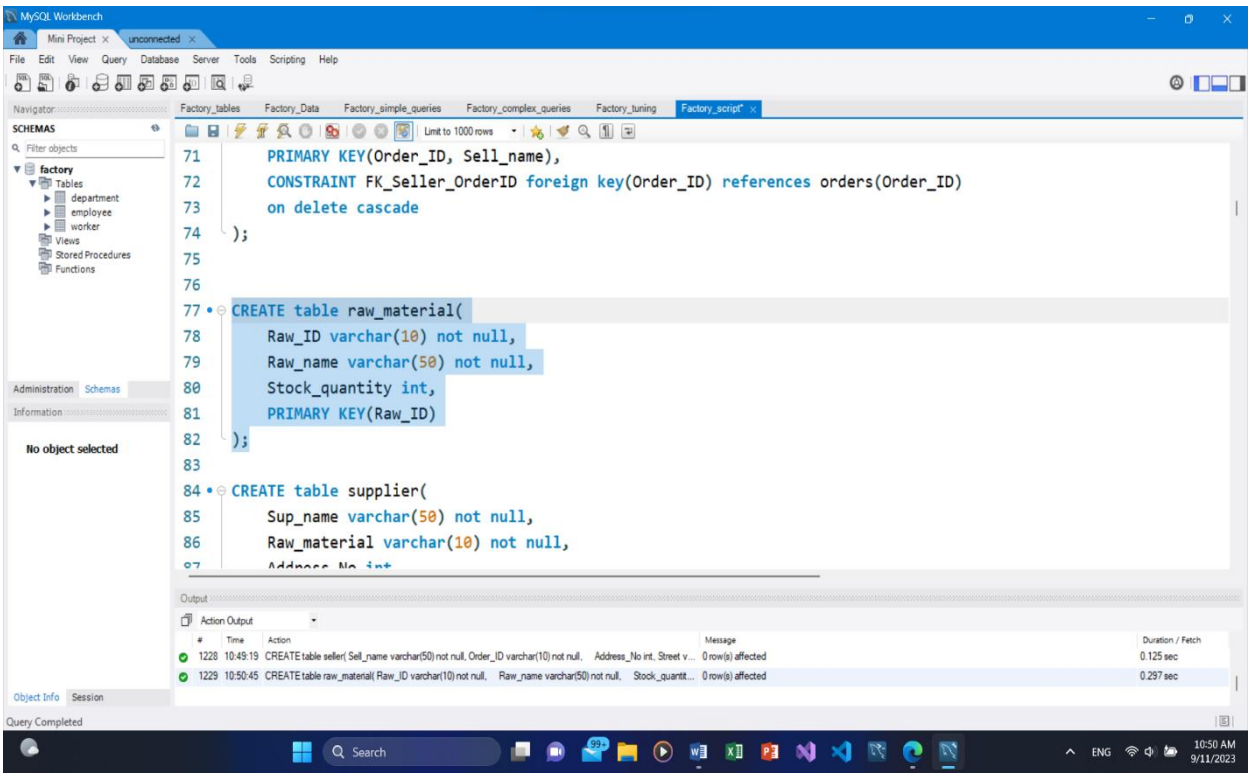

Orders Table



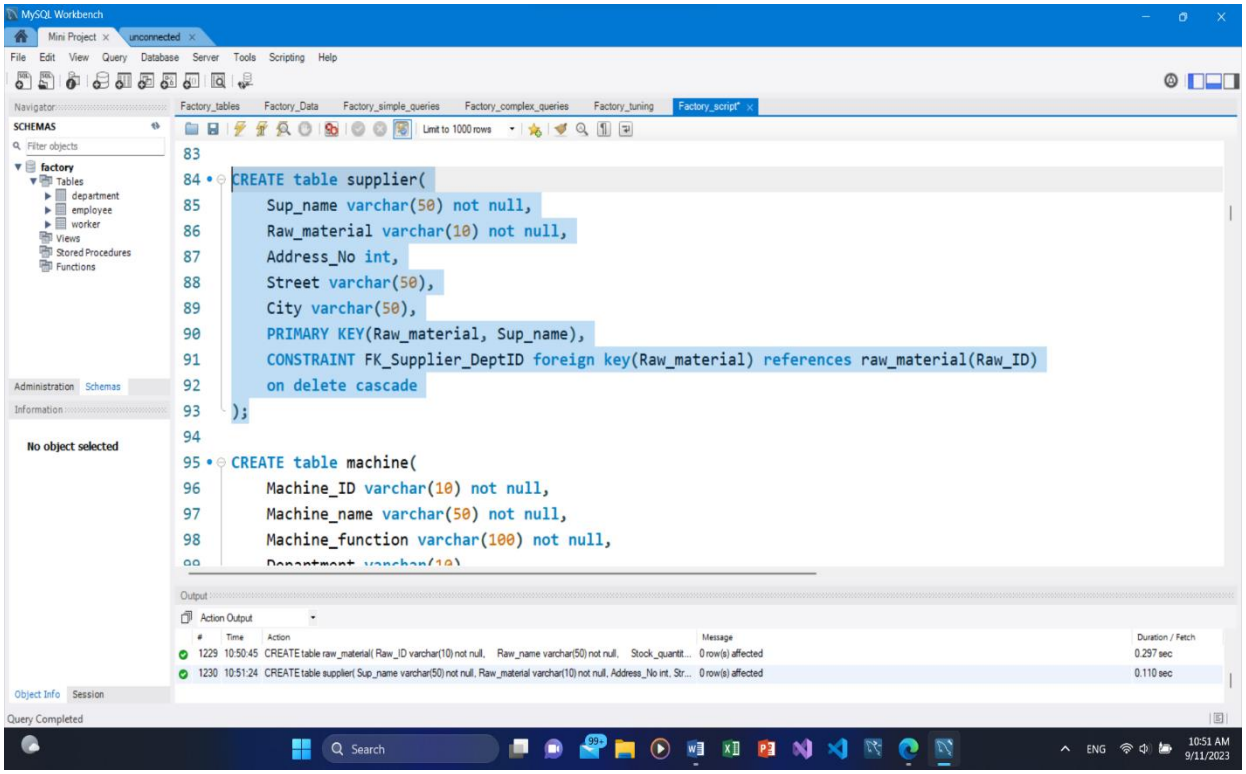
Seller Table



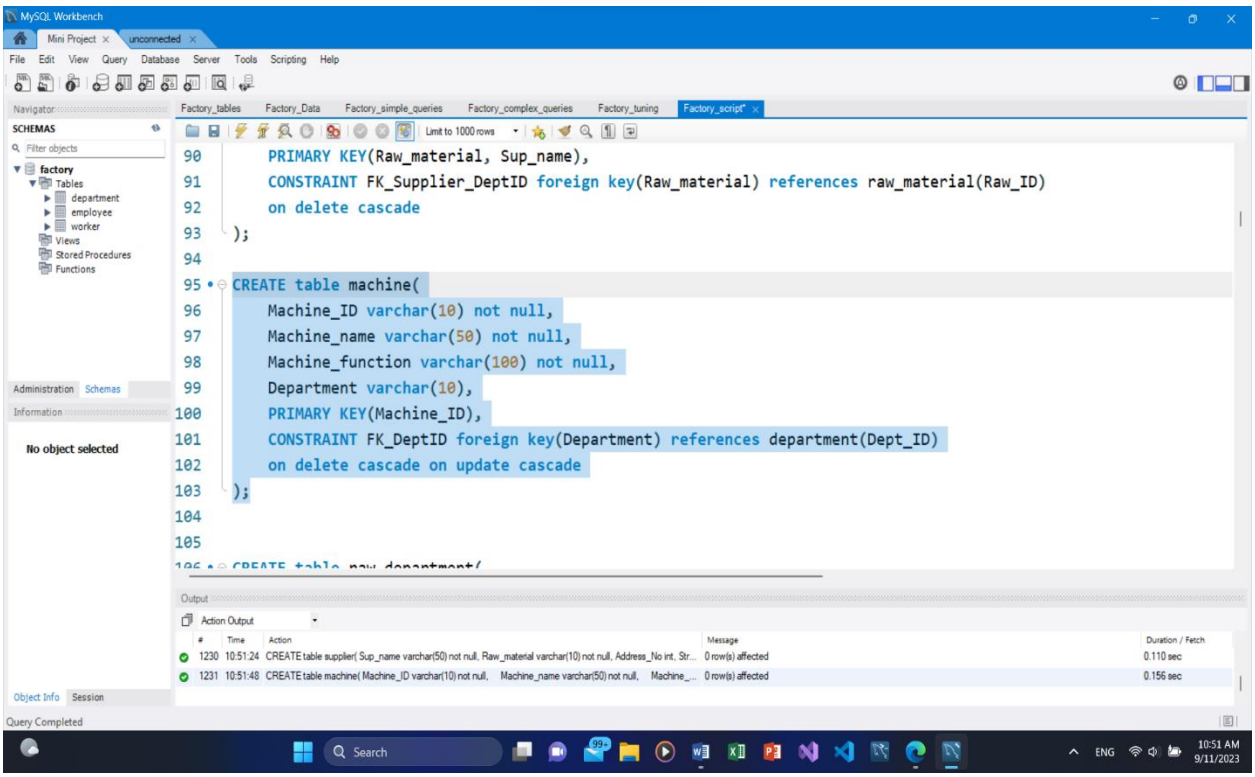

Raw Material



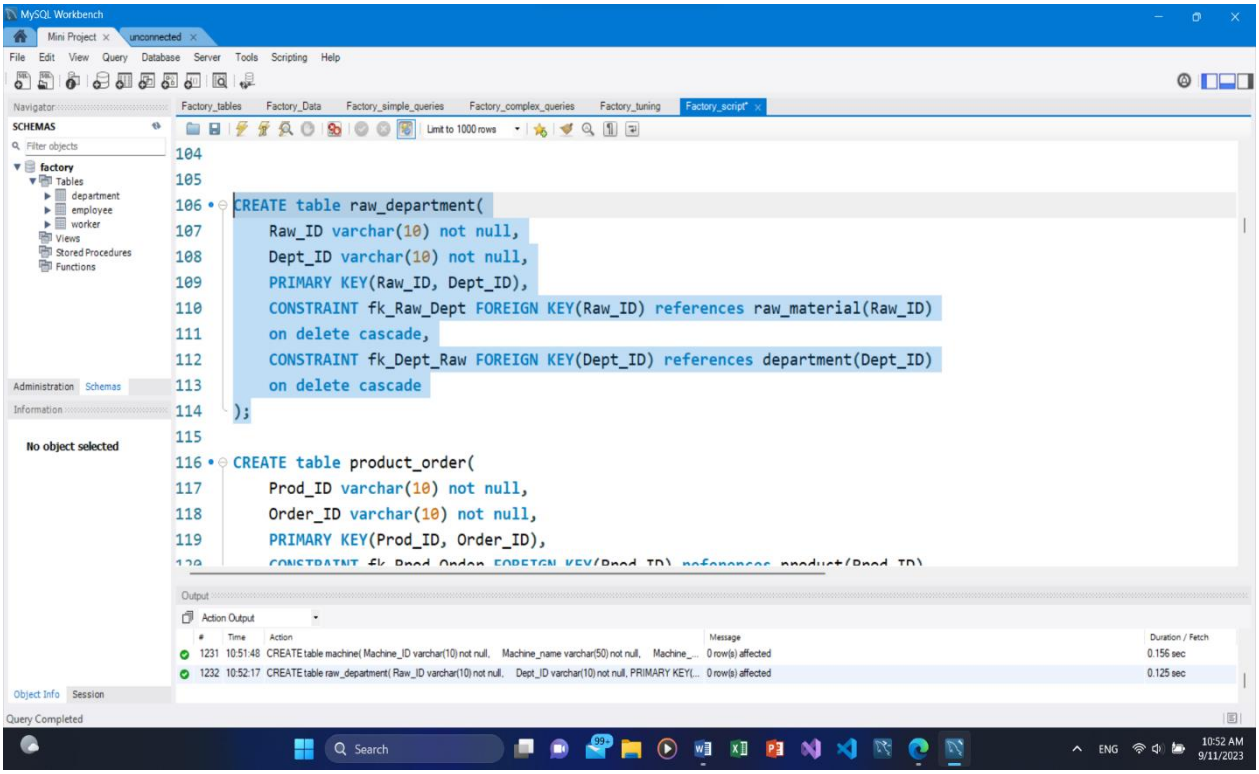
Supplier Table



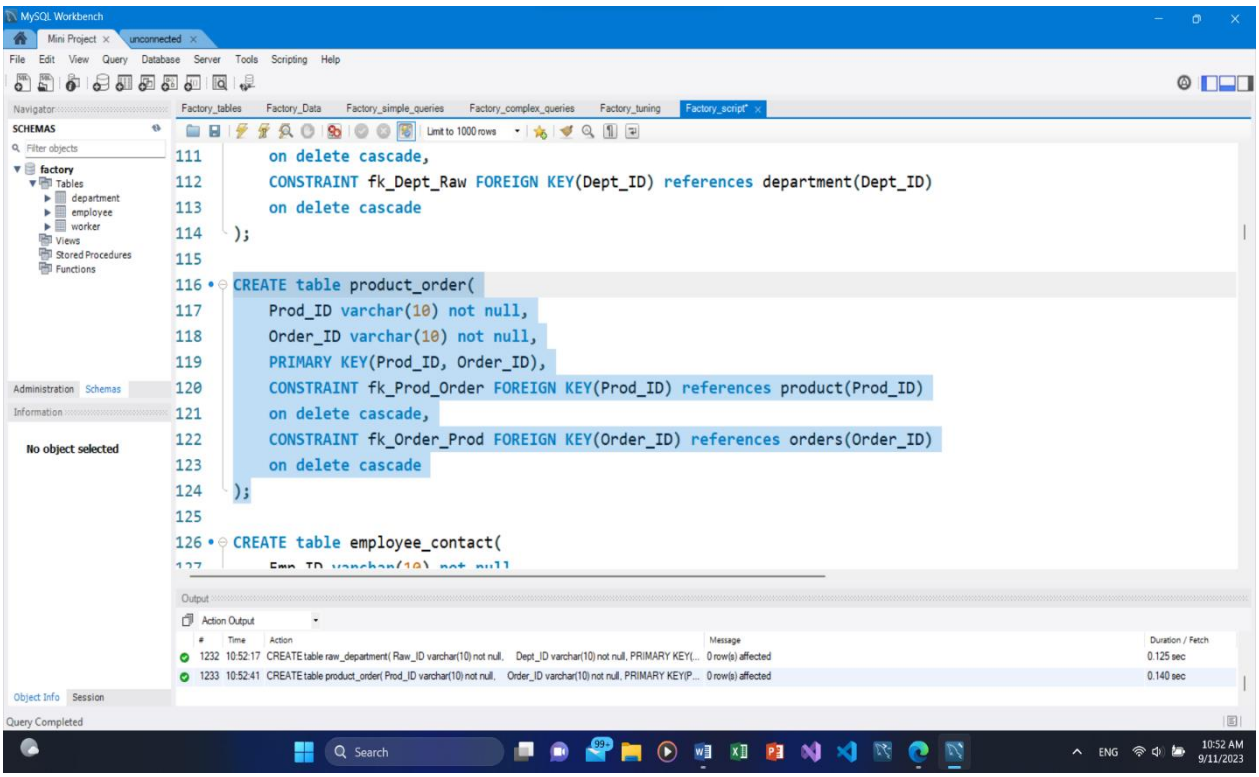

Machine Table



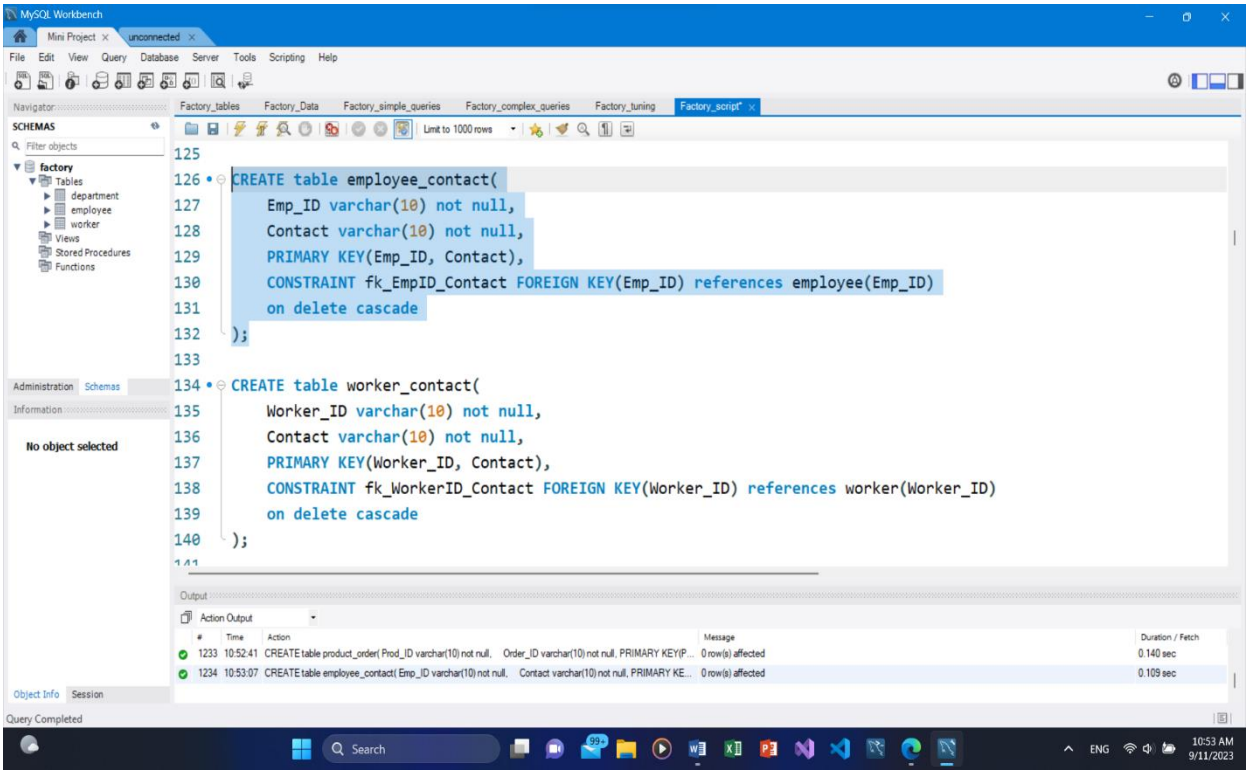
Raw-Department Table



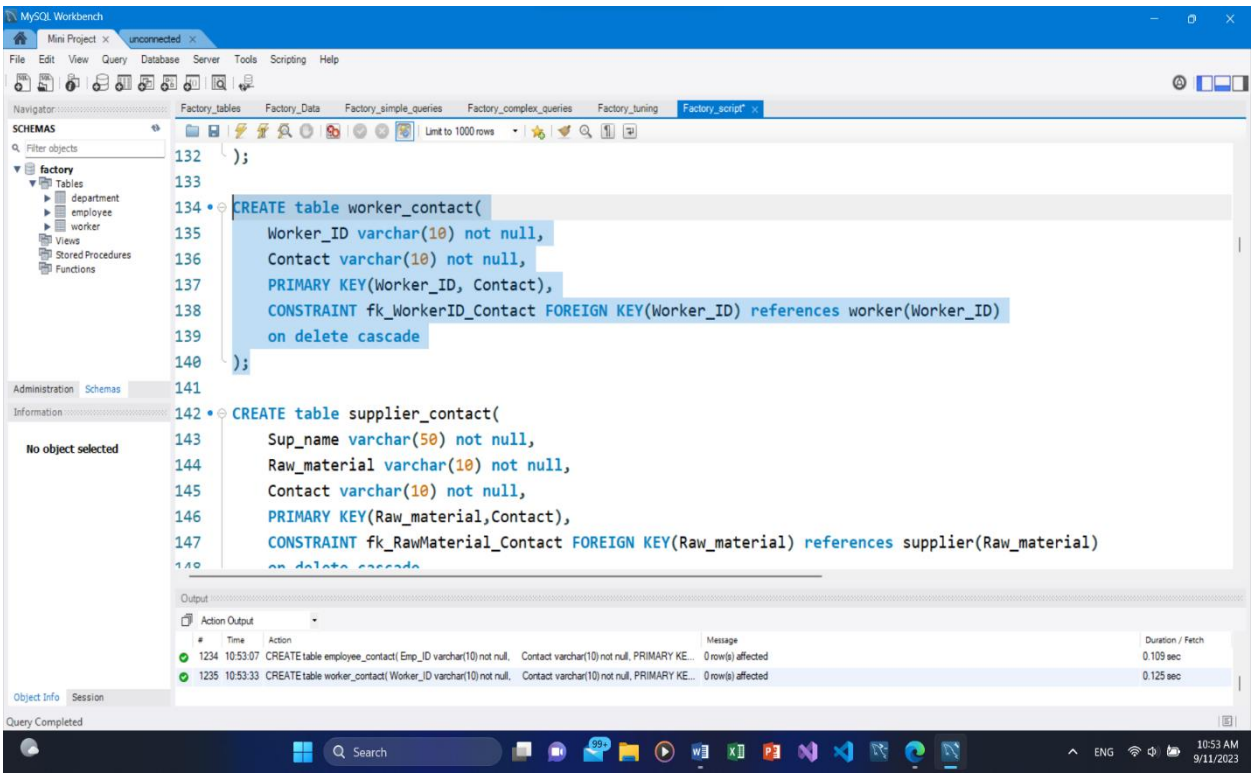

Product-Order Table



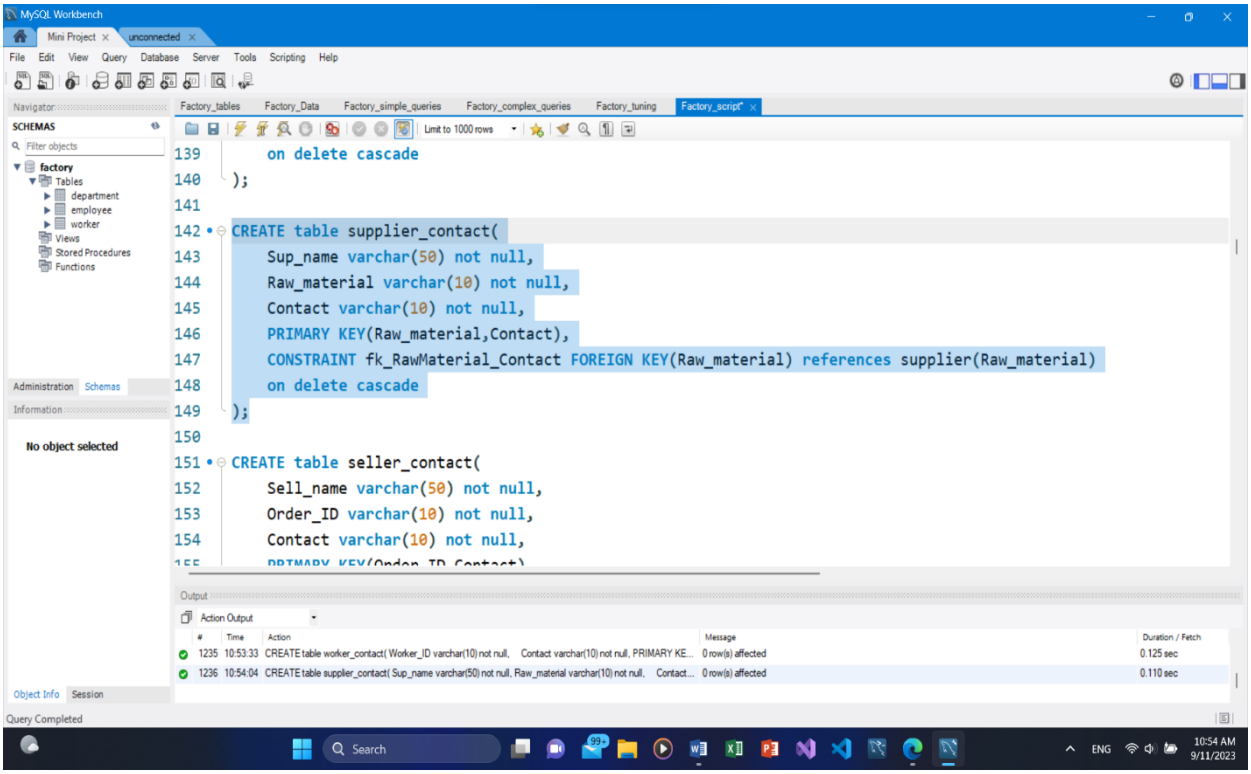
Employee-Contact Table



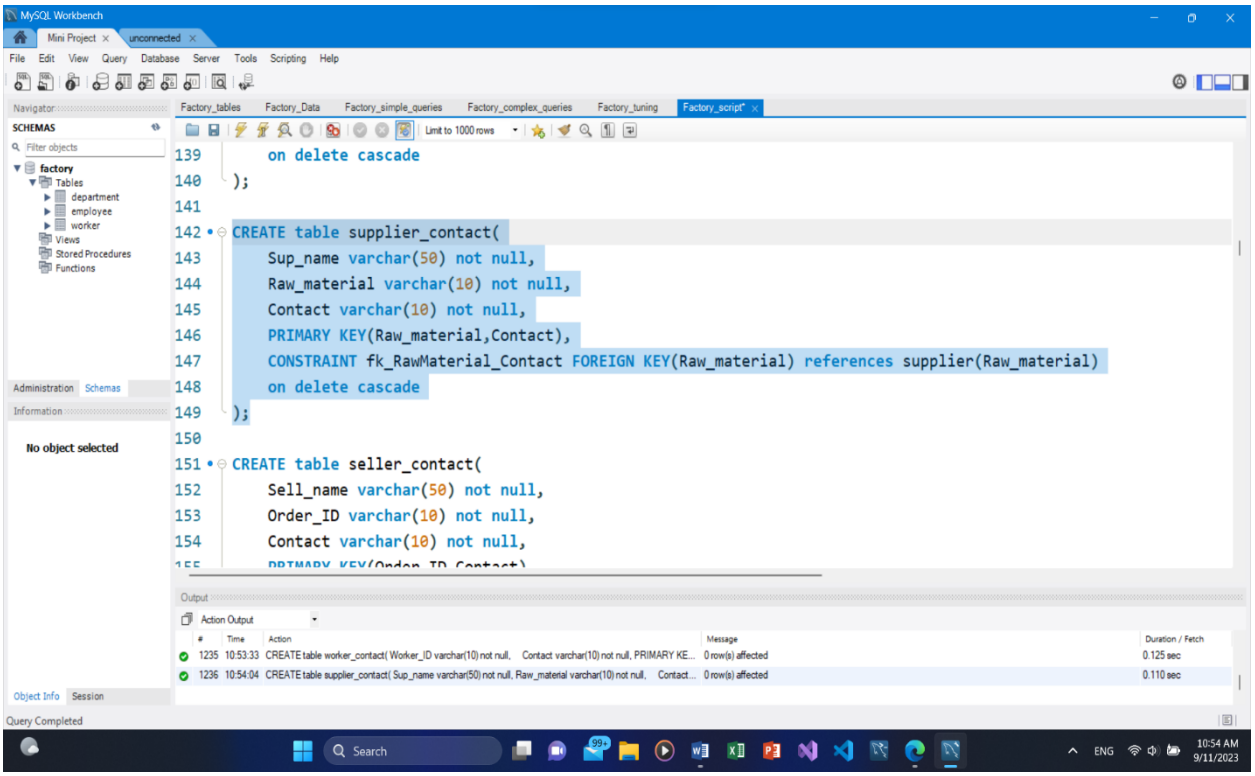

Worker-Contact Table



Supplier-Contact Table

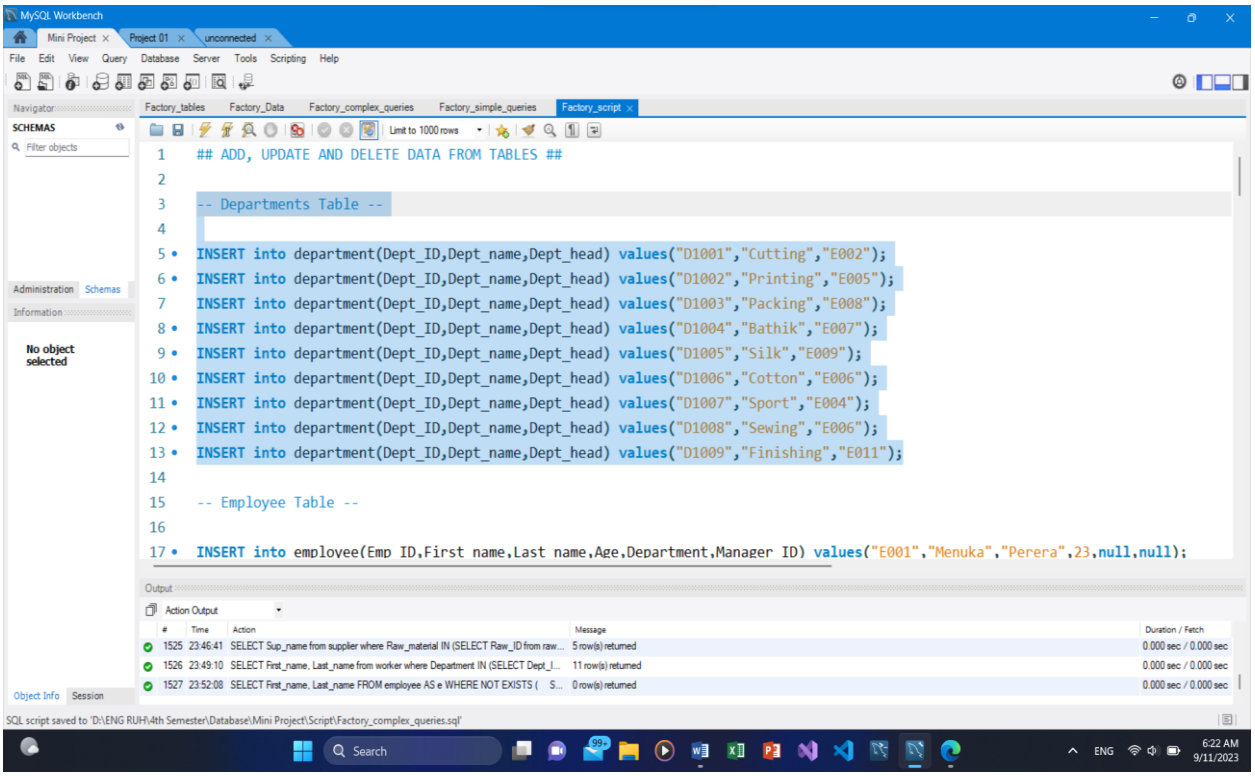



Seller-Contact Table

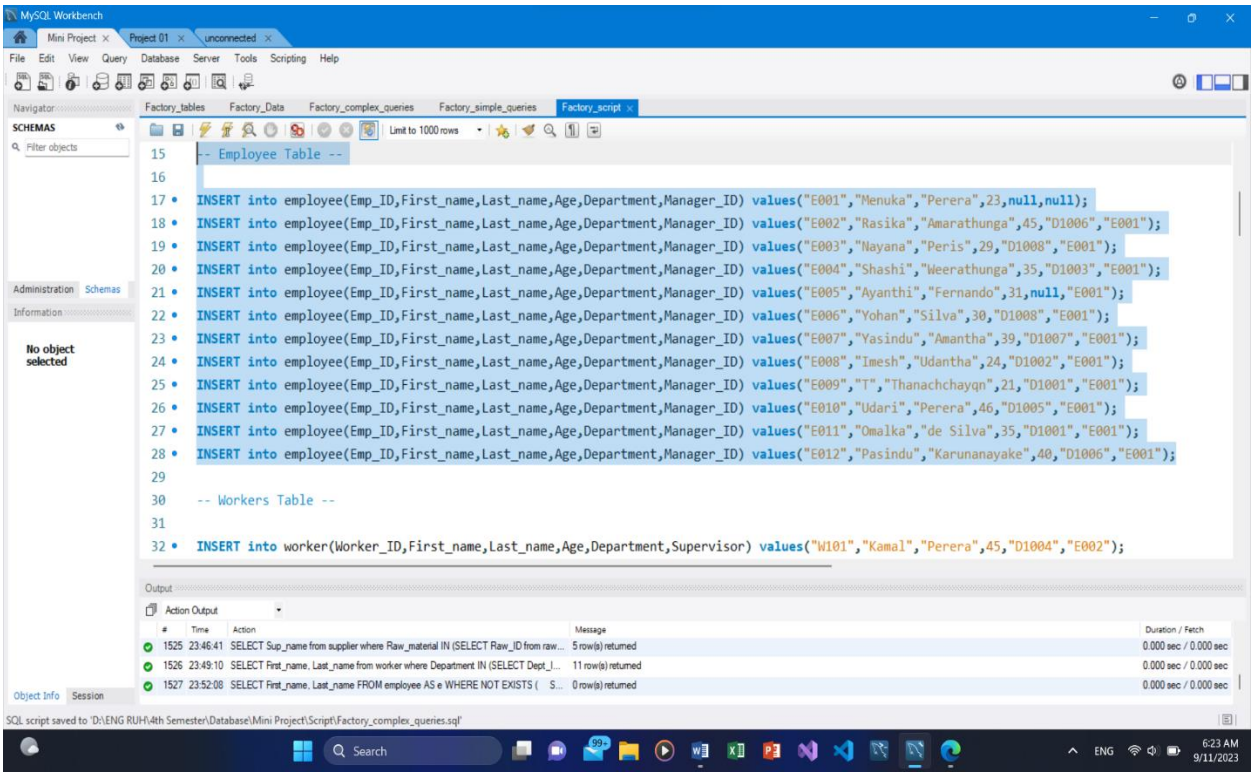


## 3.3 INSERTING TUPLES

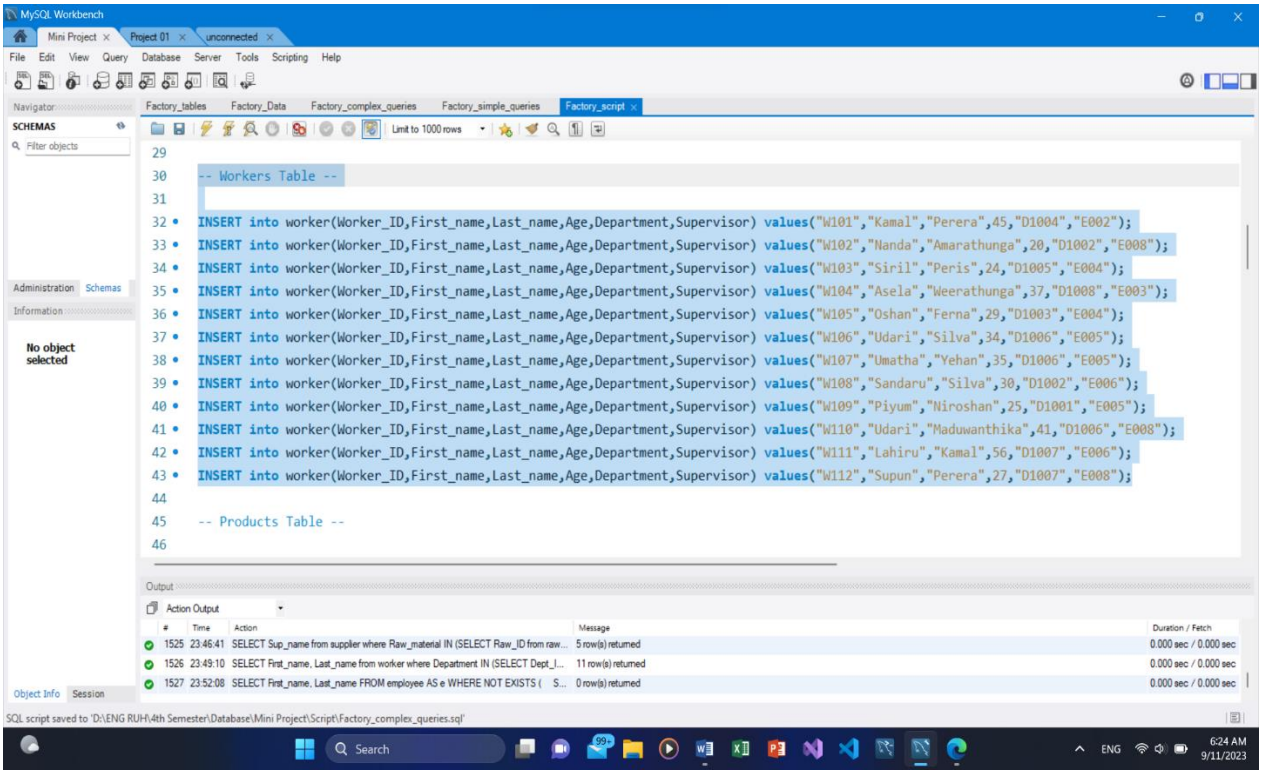
Department Table



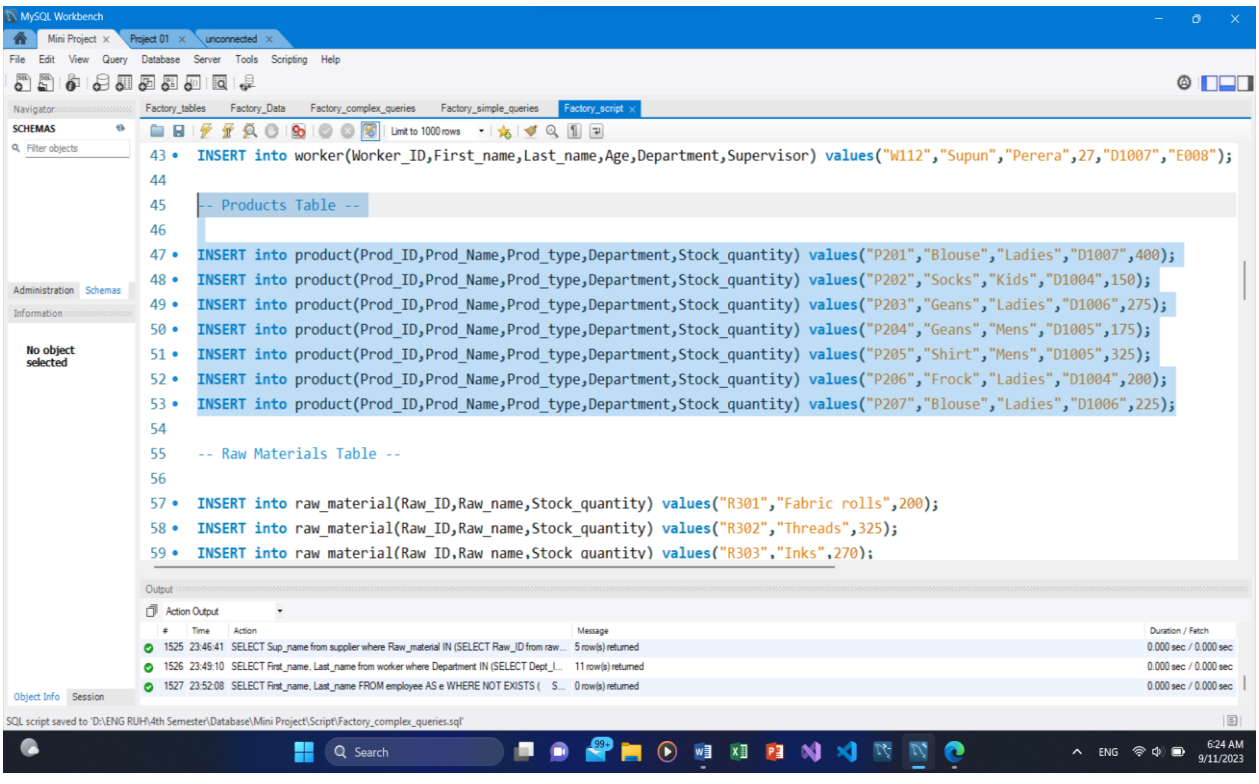

Employee Table



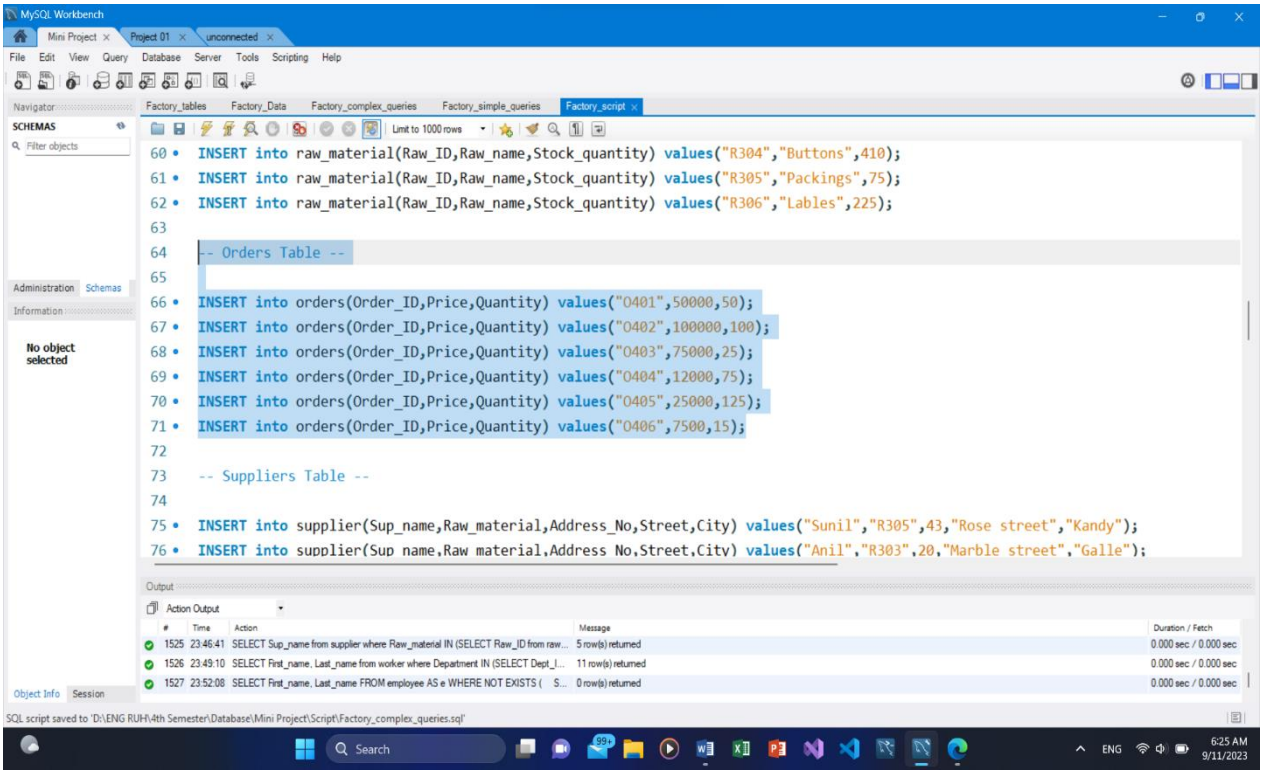
Worker Table



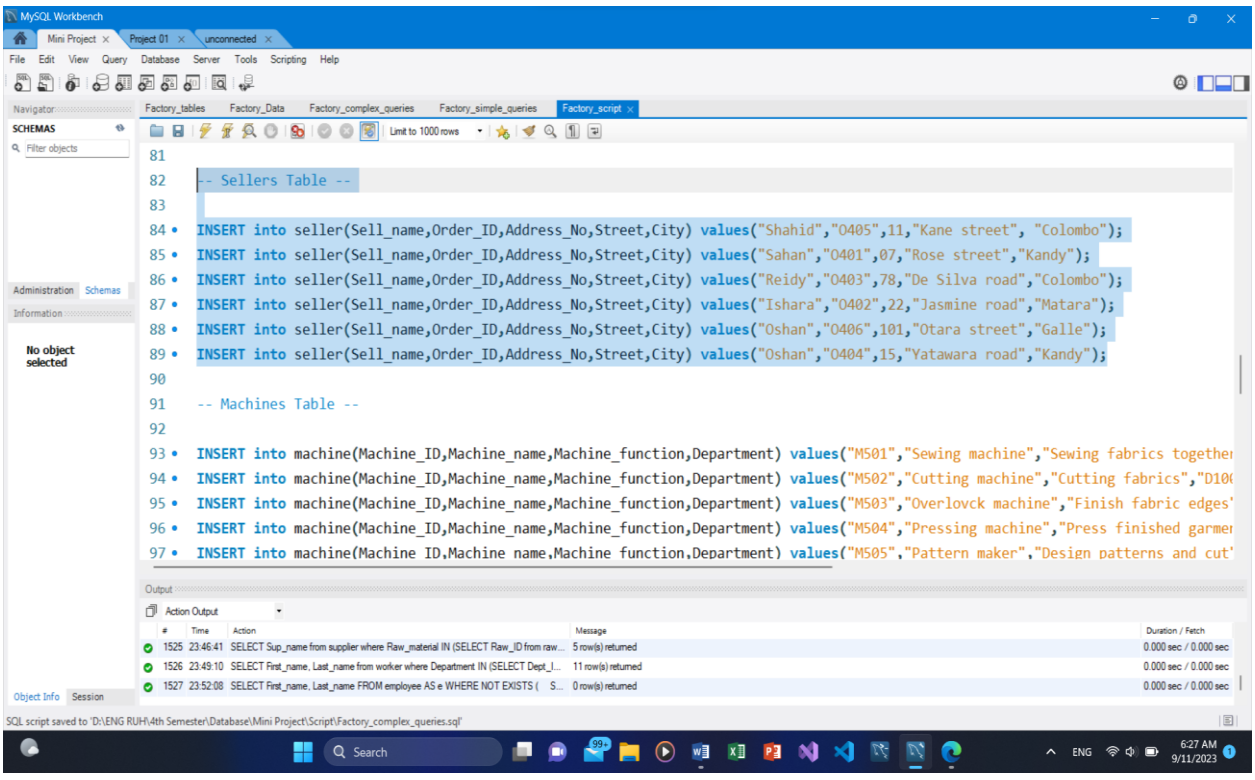

Product Table



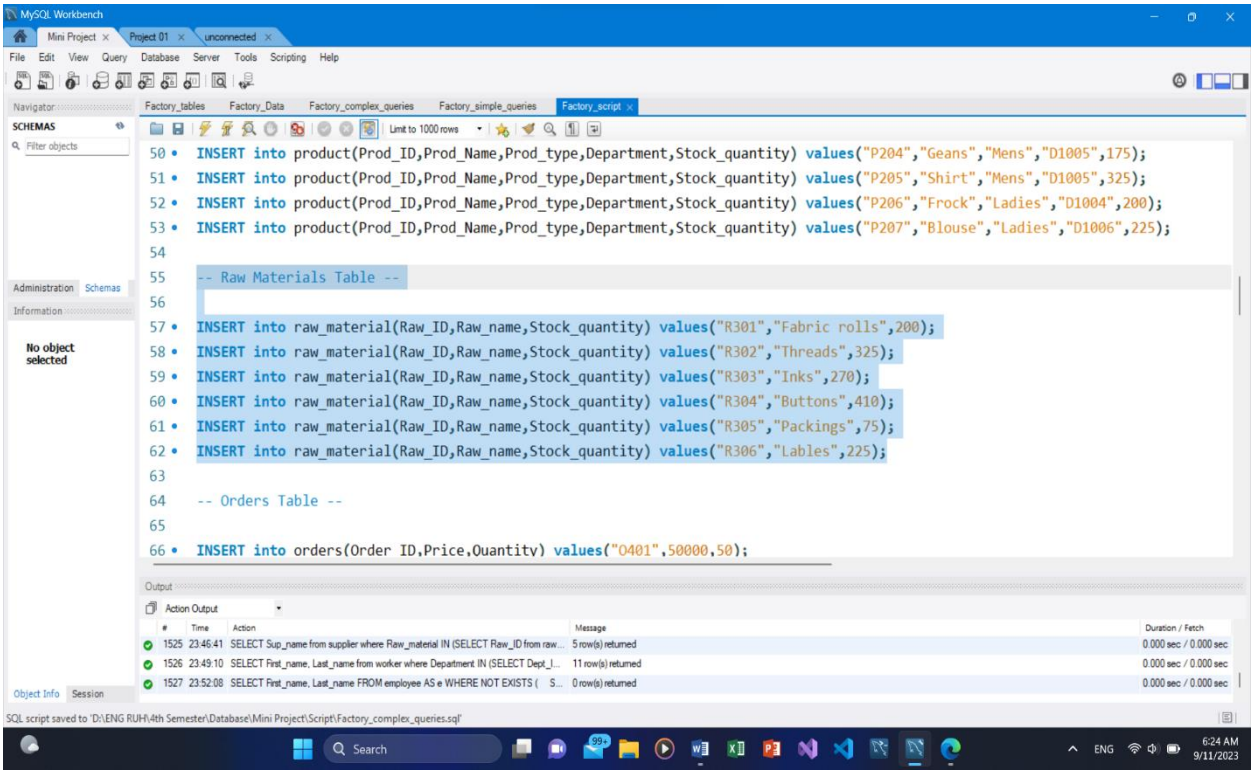
Orders Table



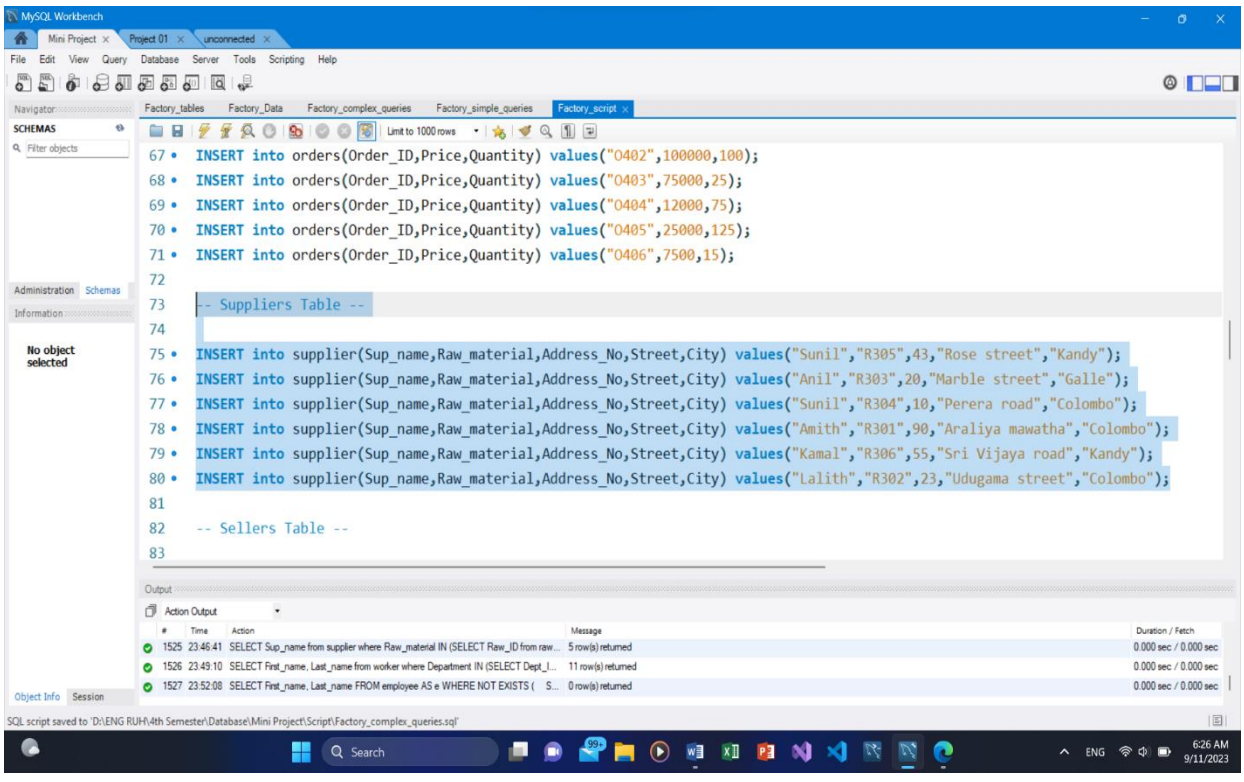

Sellers Table



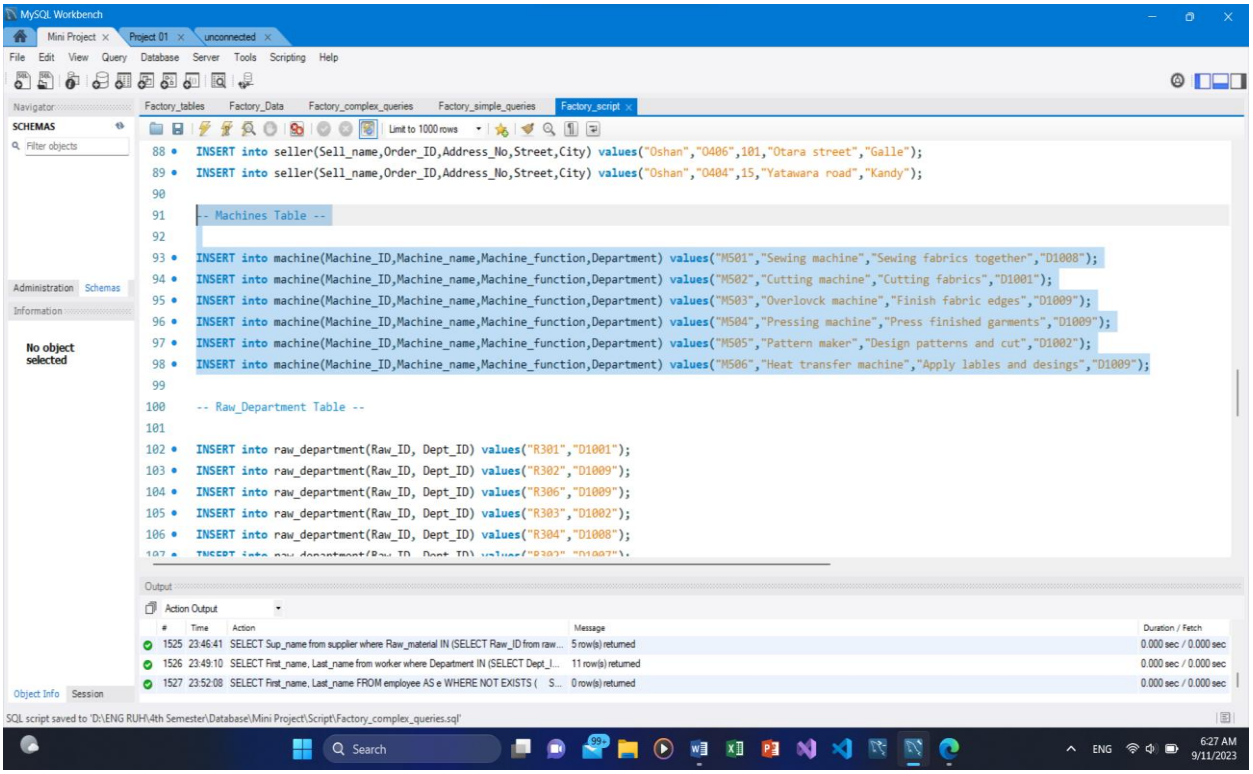
Raw Materials



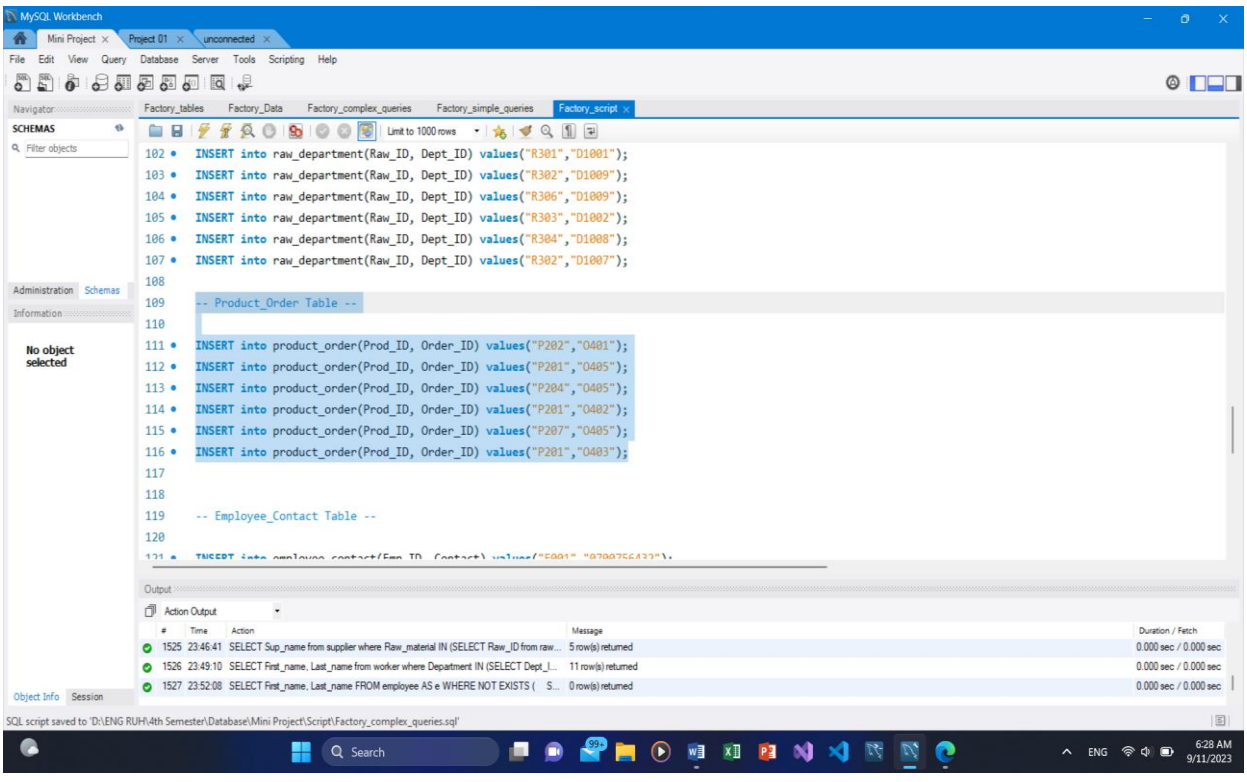

Supplier Table



Machines Table




Product-Order Table



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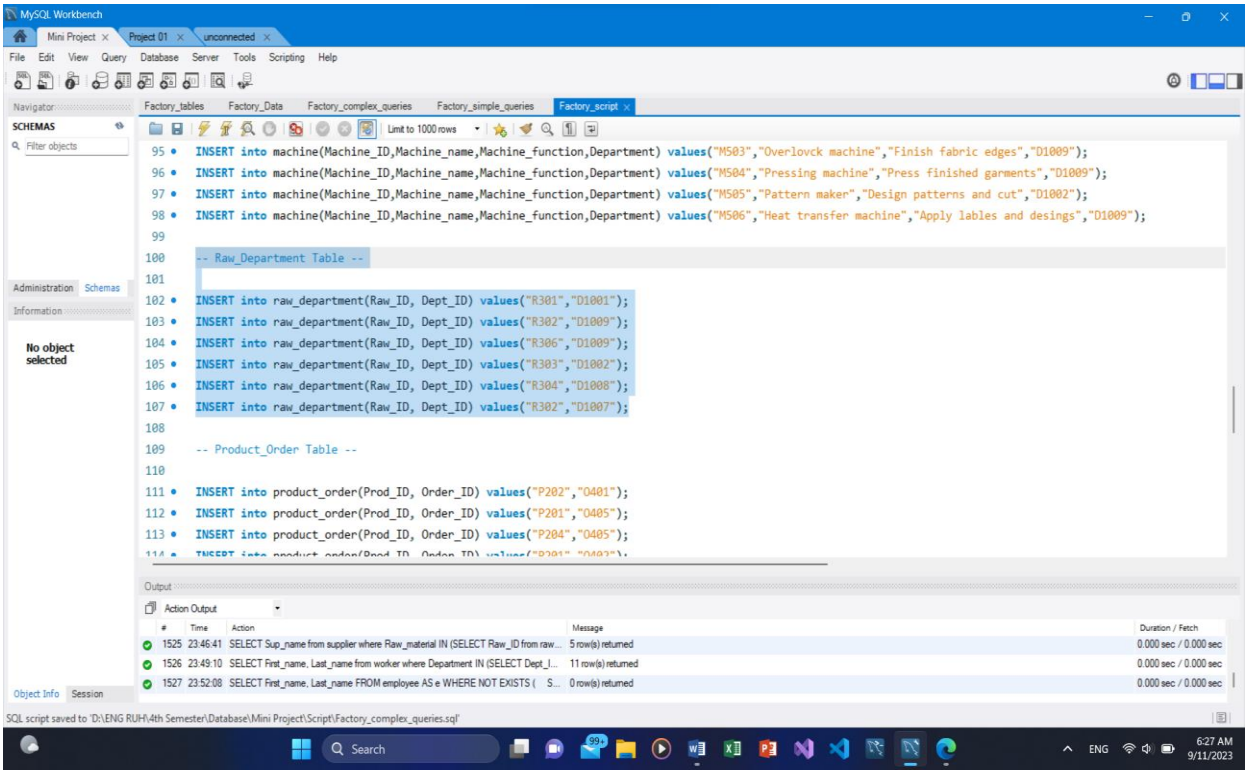
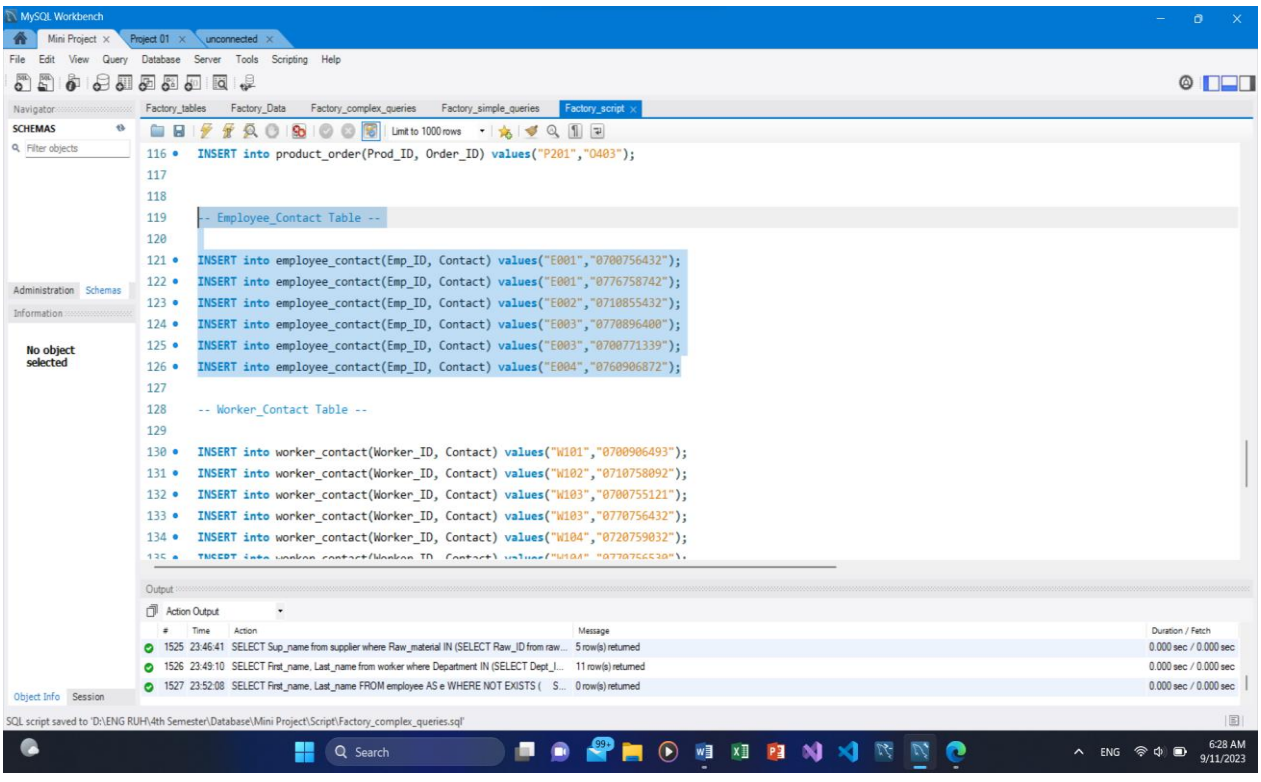
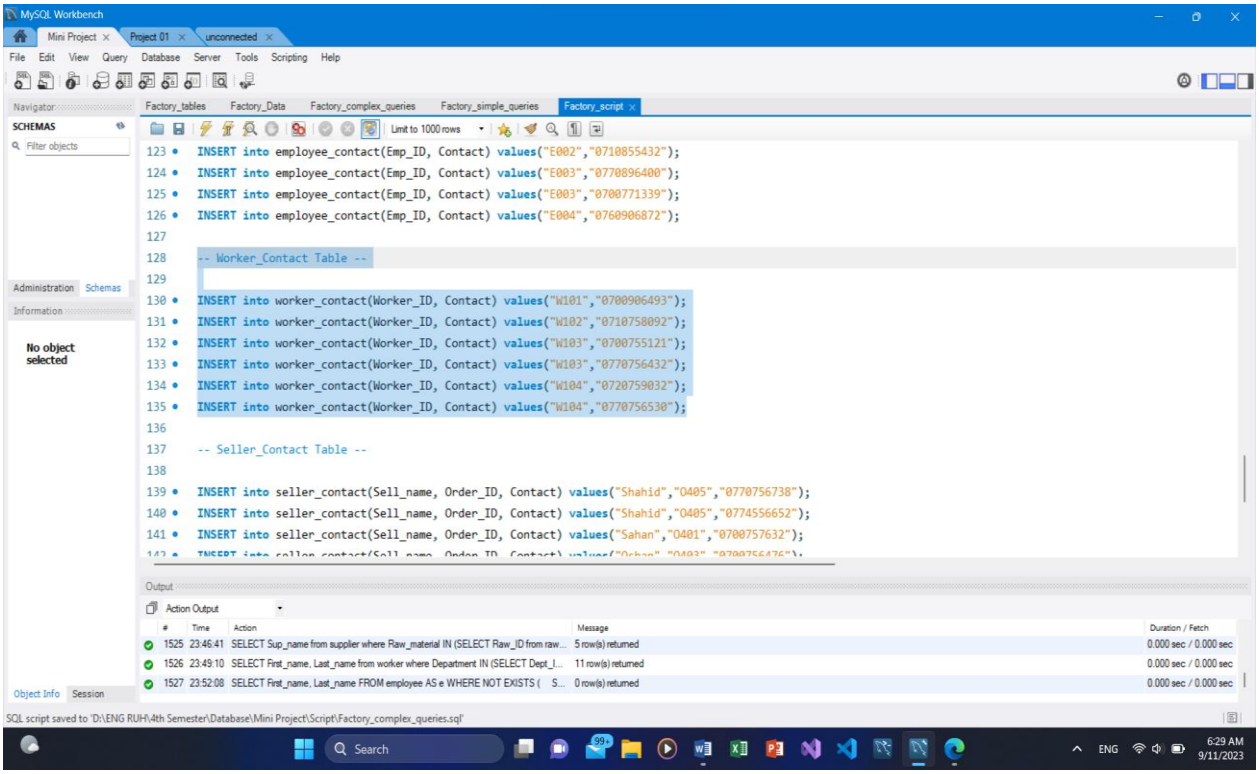


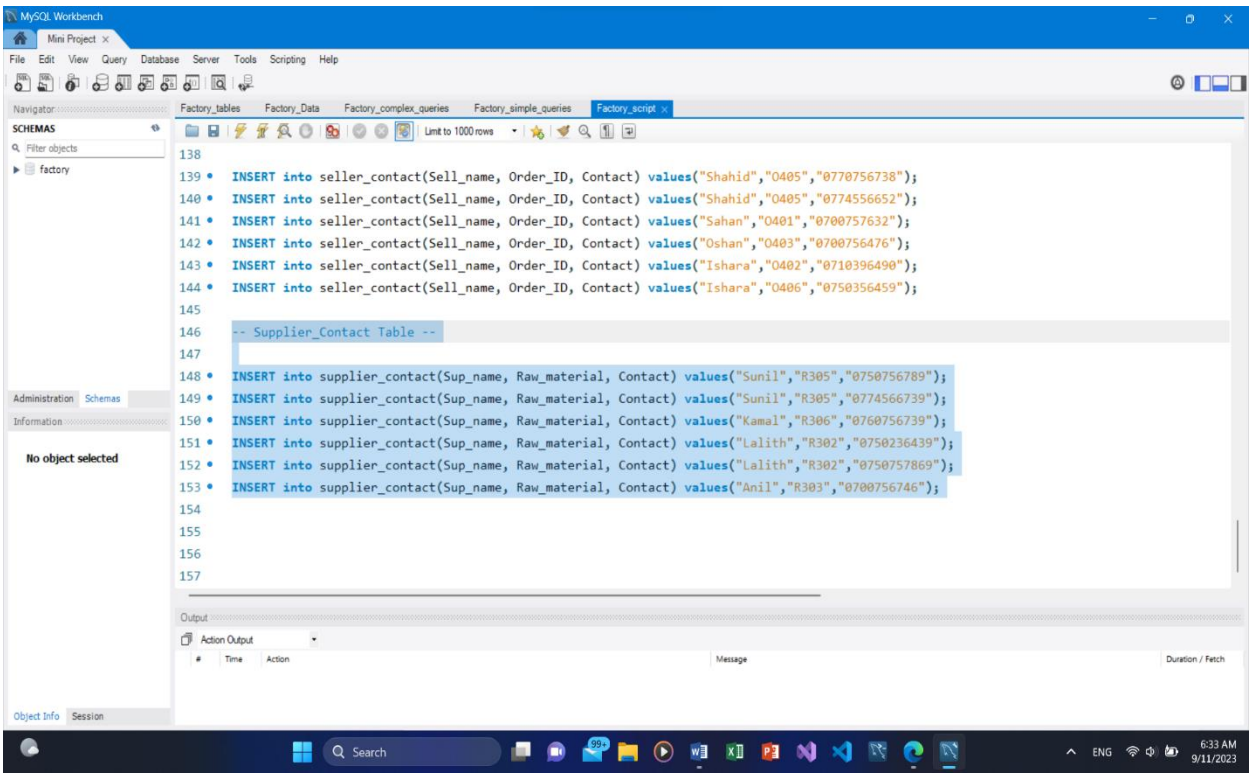

Employee-Contact Table



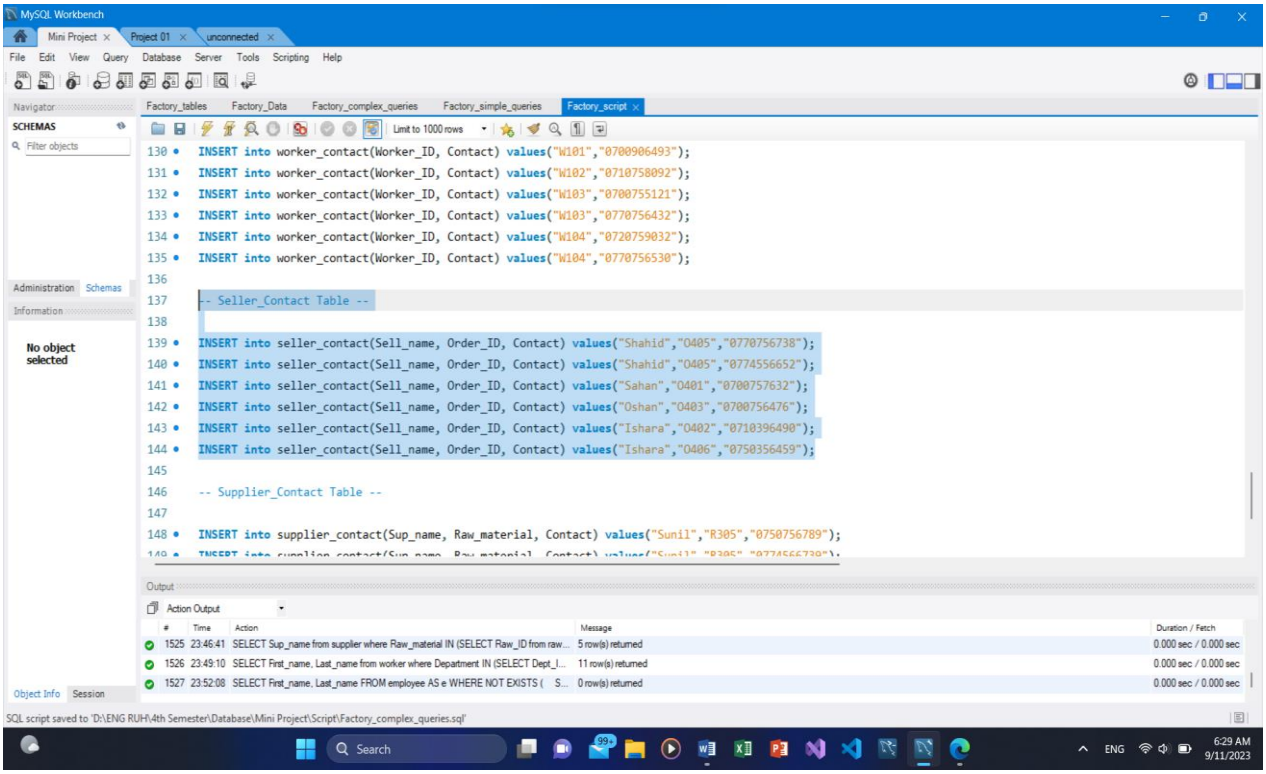
## Worker-Contact Table




## Supplier-Contact Table

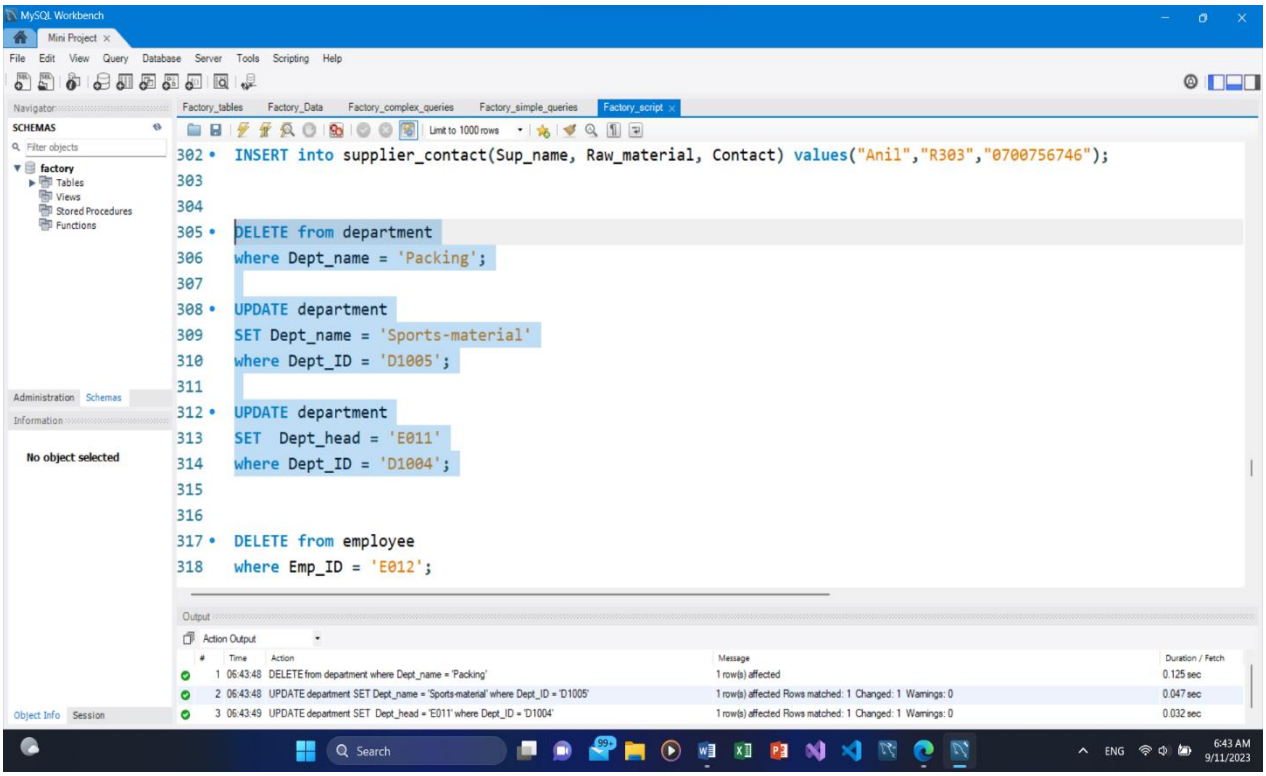


Seller-Contact Table

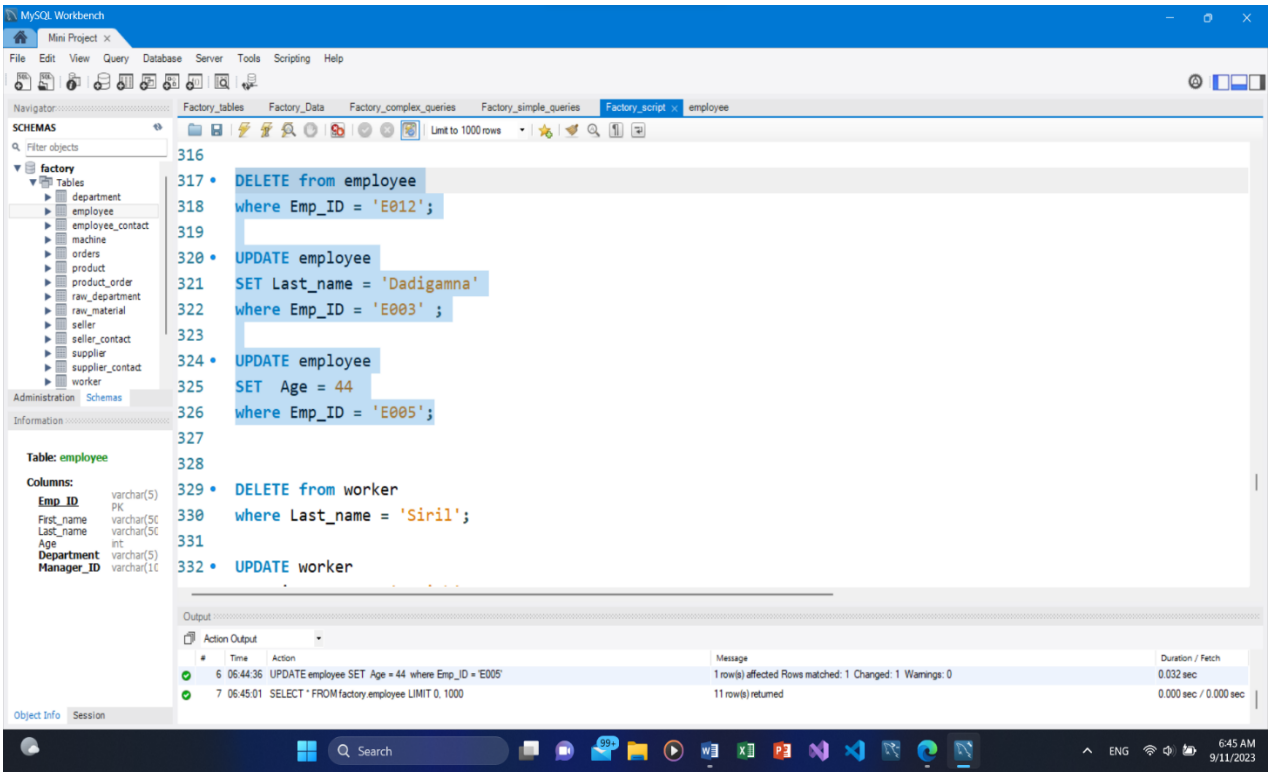


## 3.4 UPDATING AND DELETING FROM TABLES

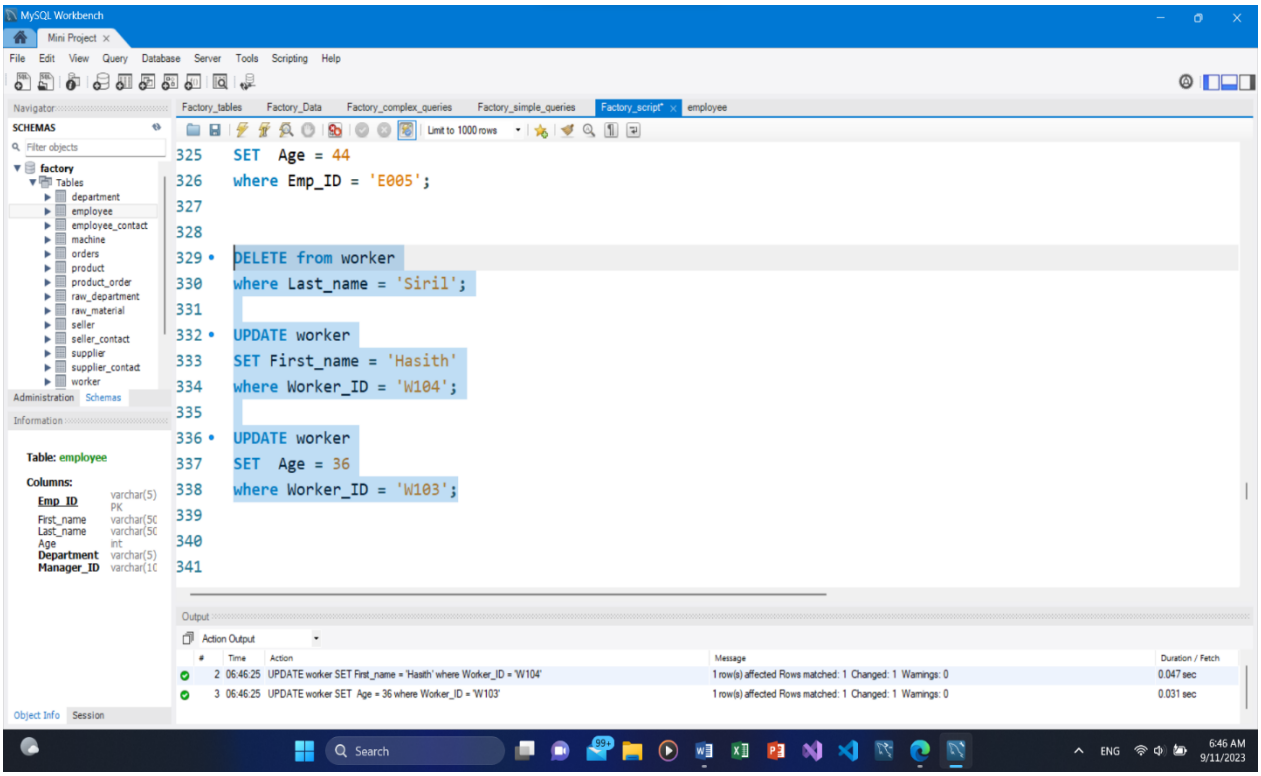
Department Table



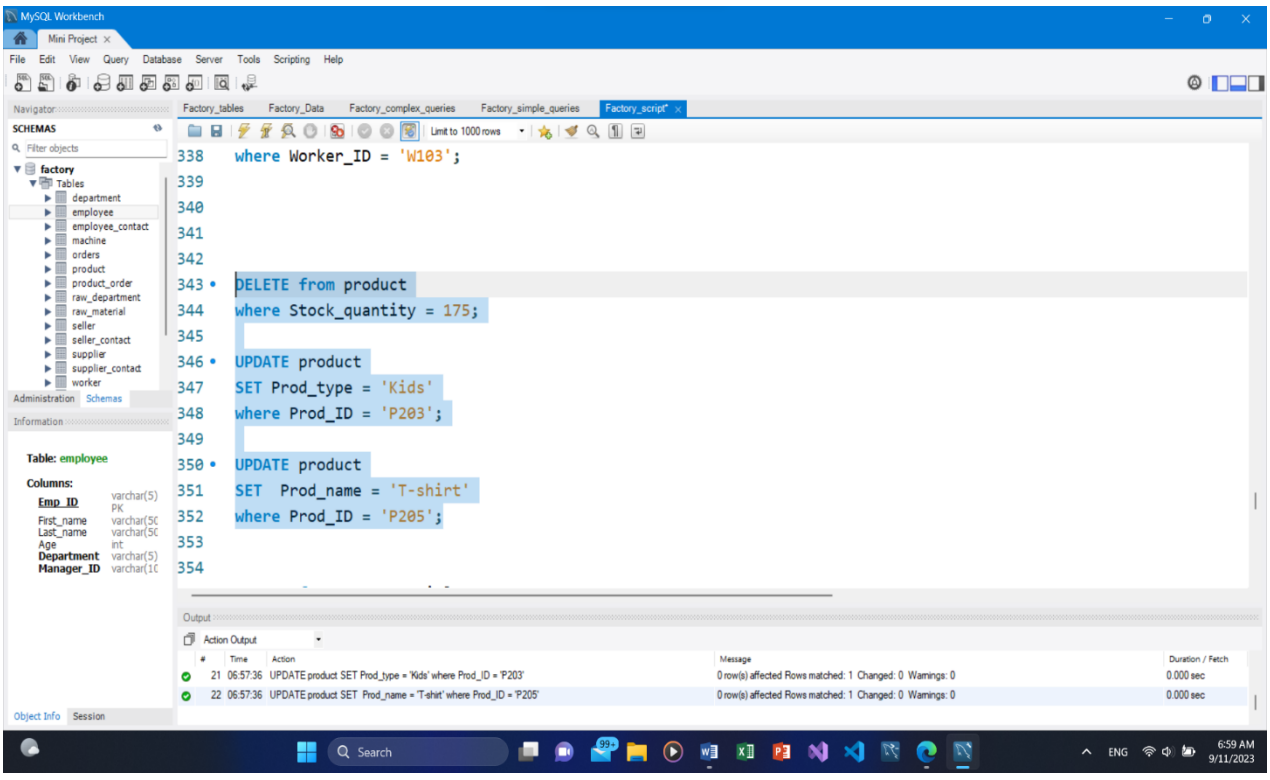

Employee Table



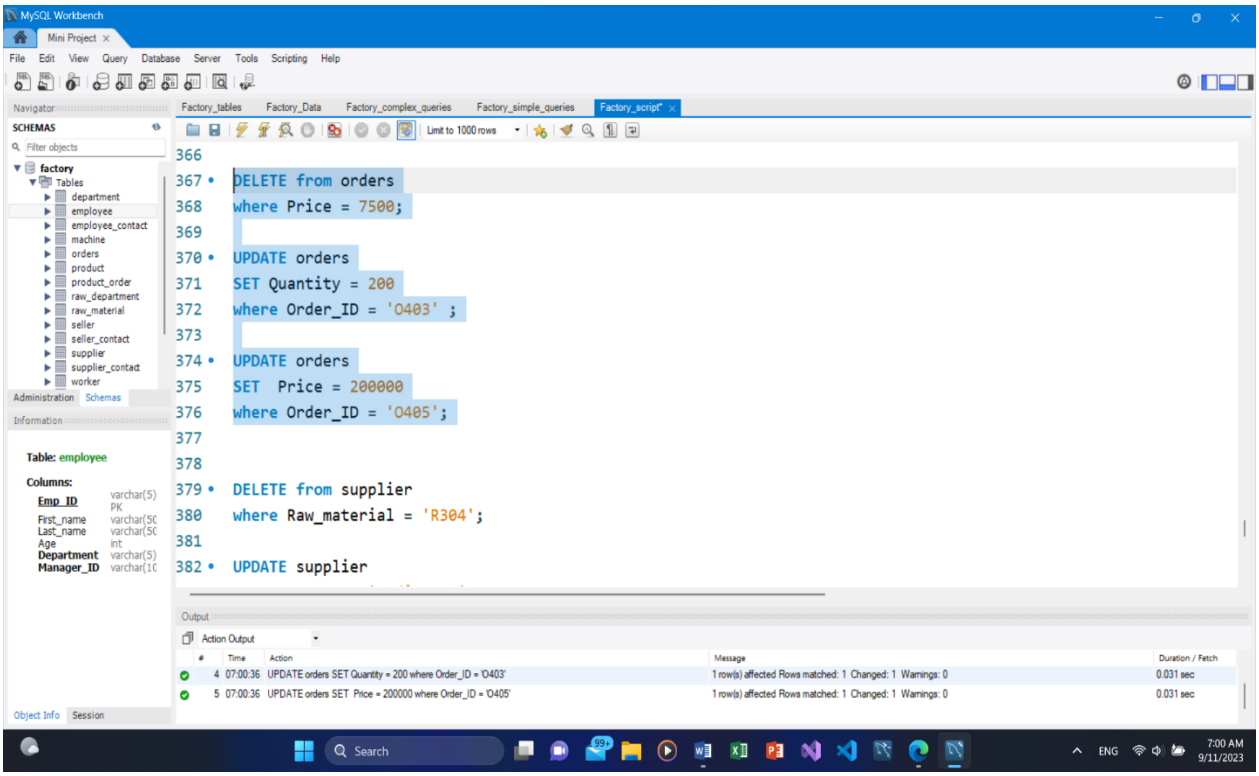
Worker Table



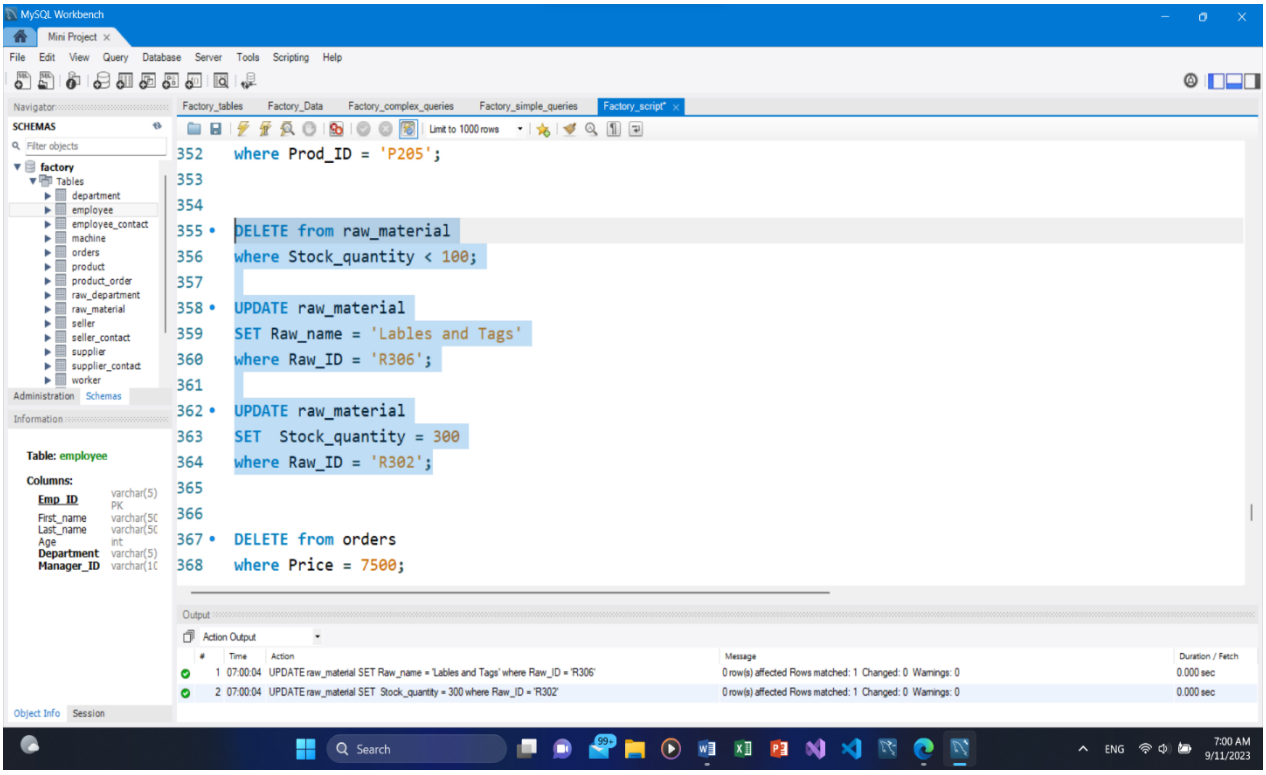

Product Table



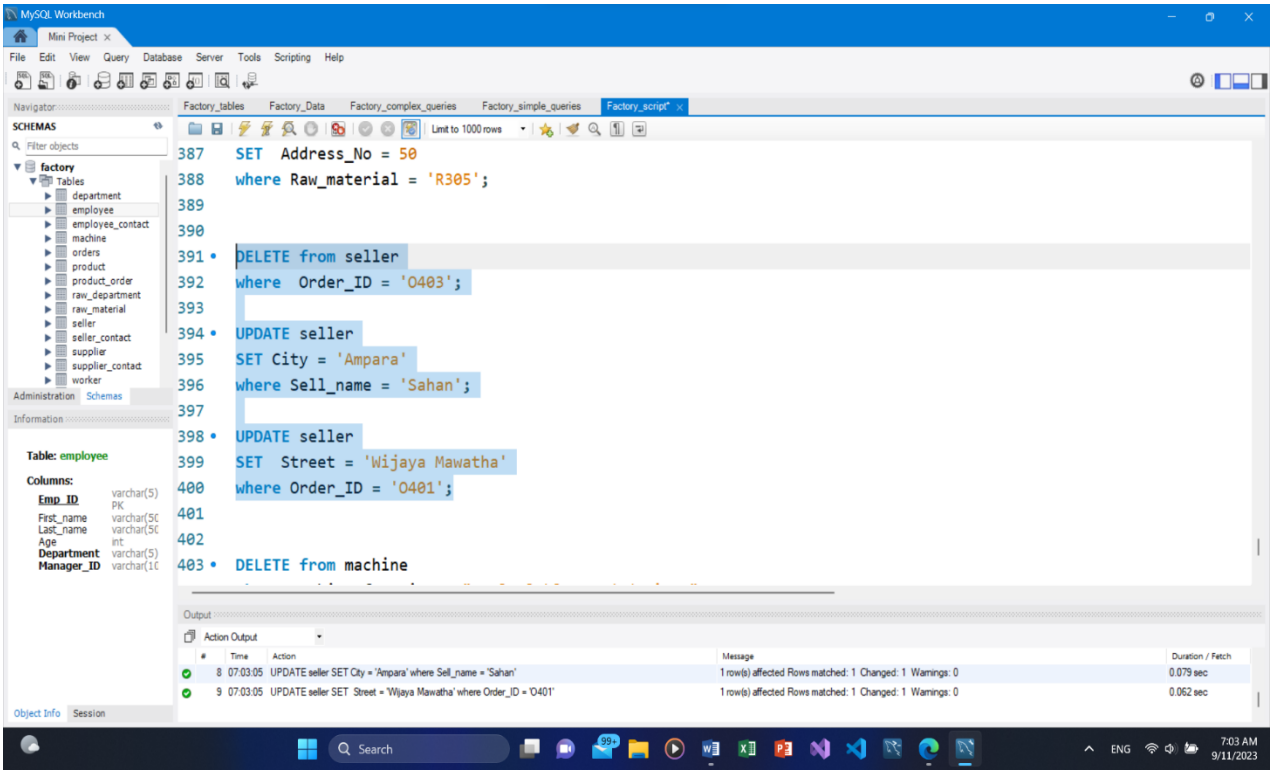
Orders Table



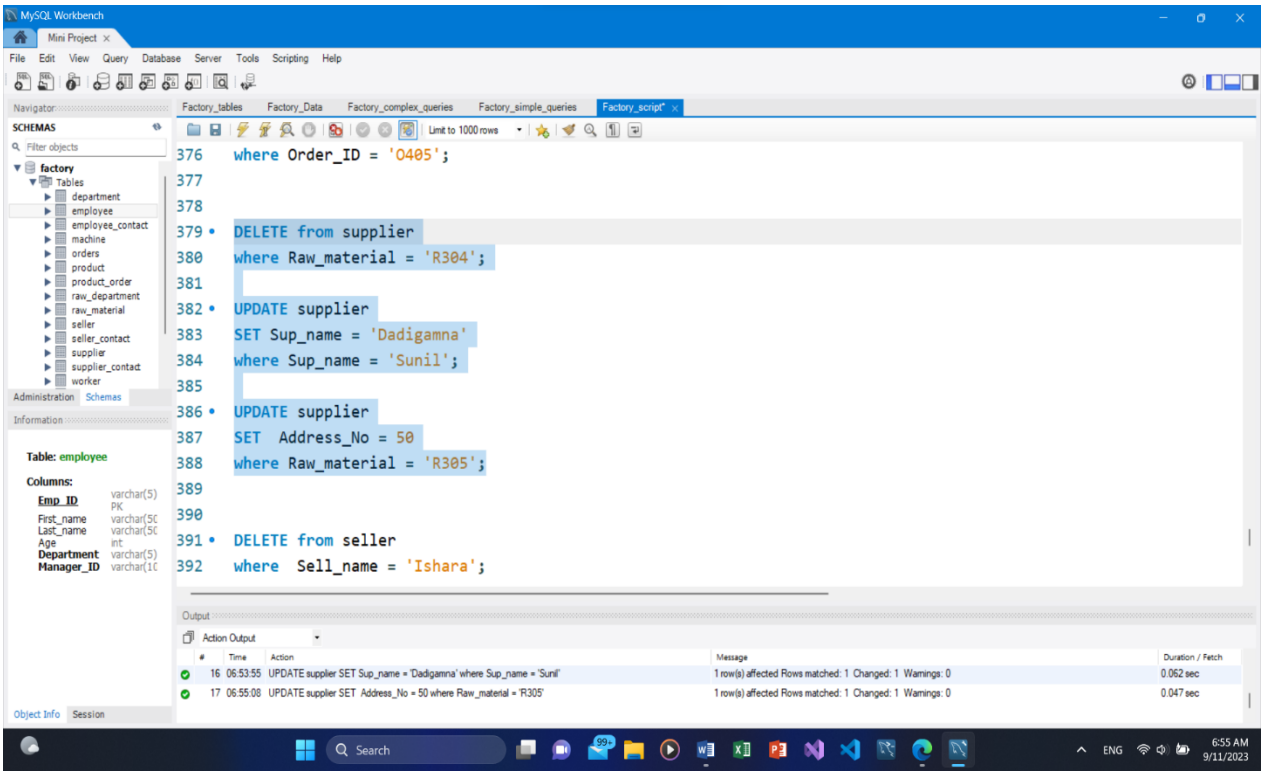

Raw Materials Table



Seller Table



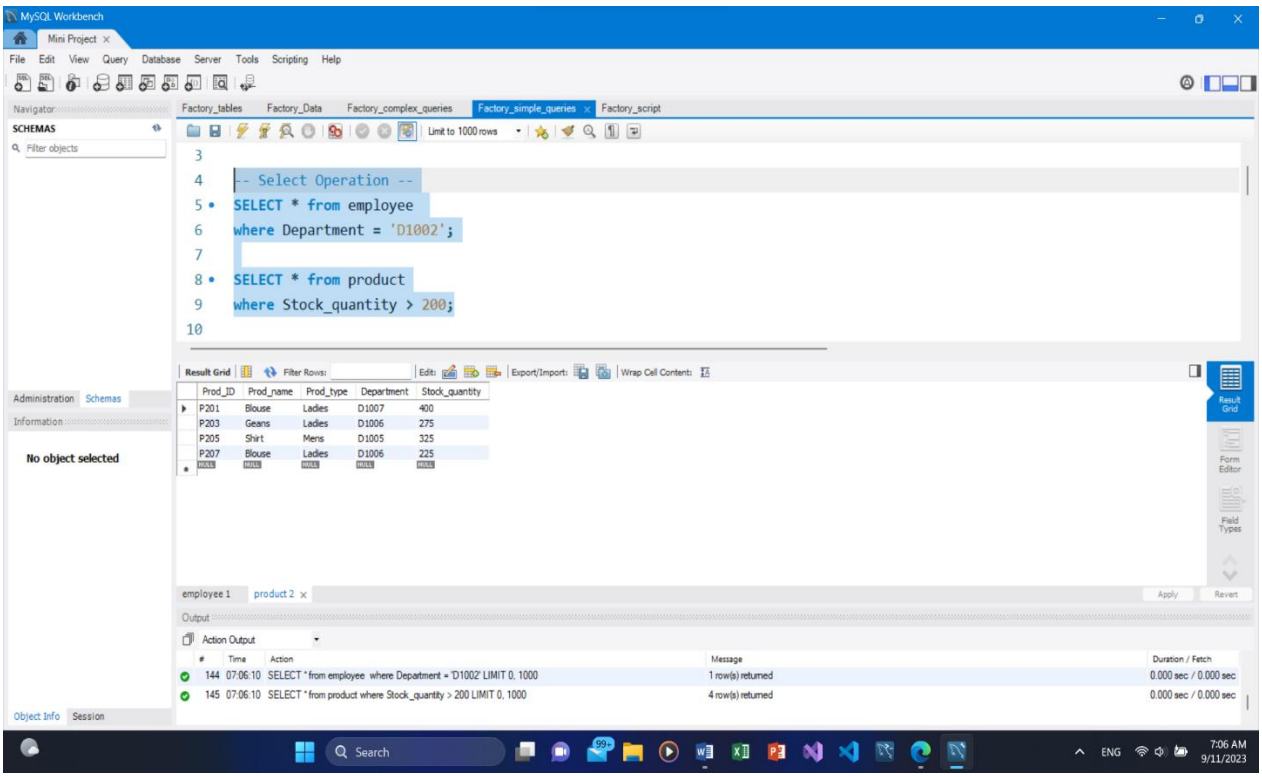

Supplier Table



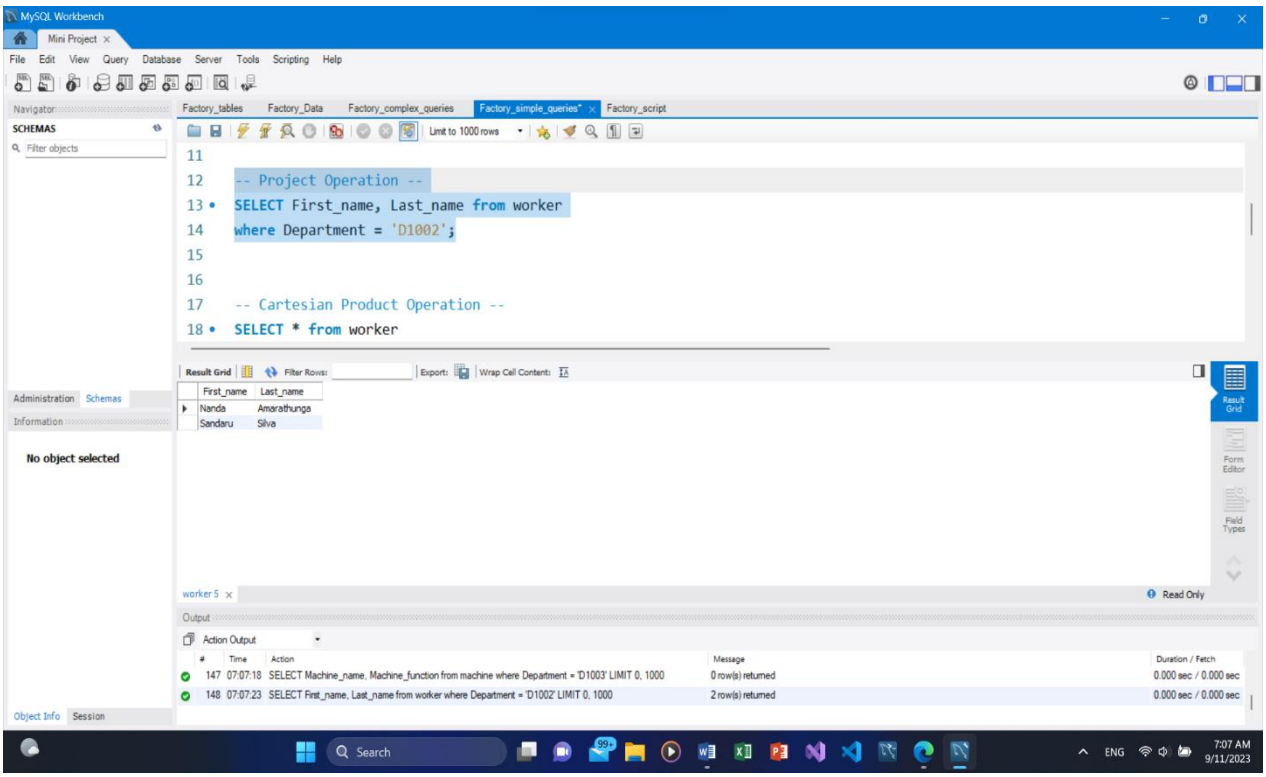
# 4. CHAPTER IV – TRANSACTIONS

## 4.1 SIMPLE QUERIES

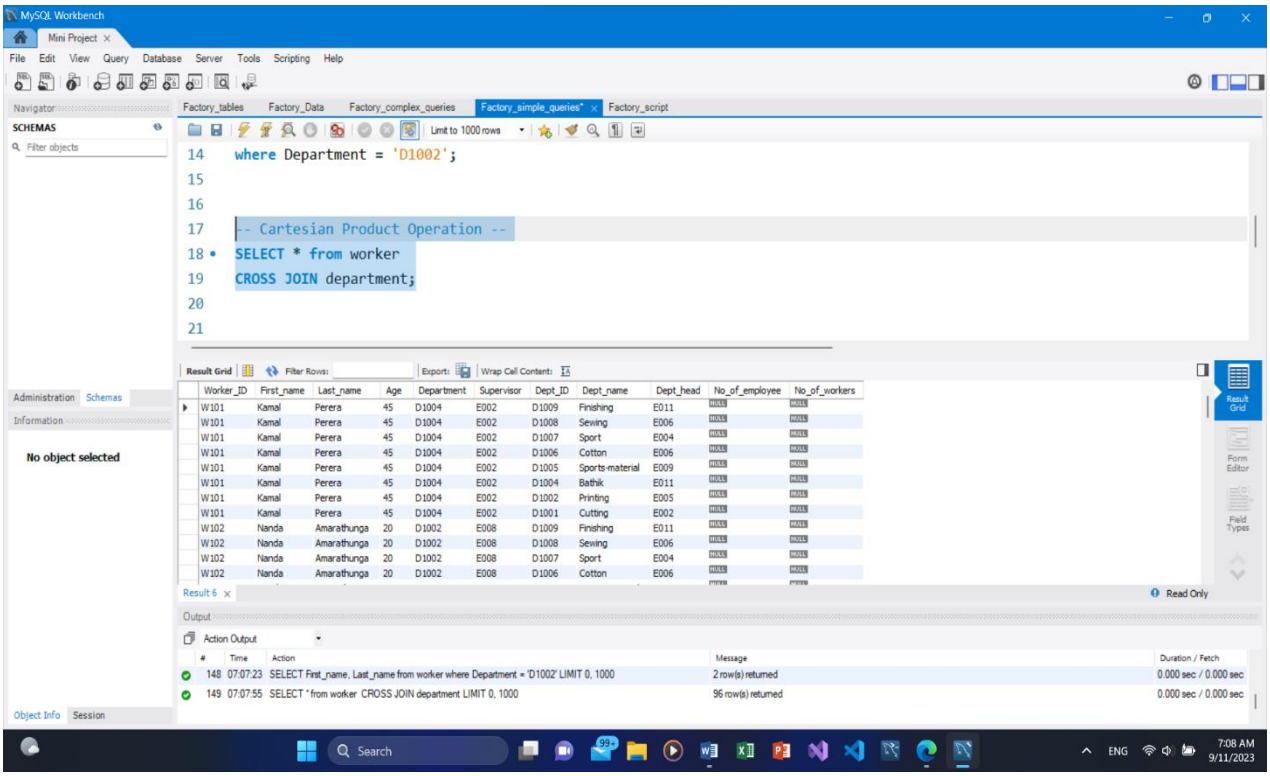
1. Select Operation



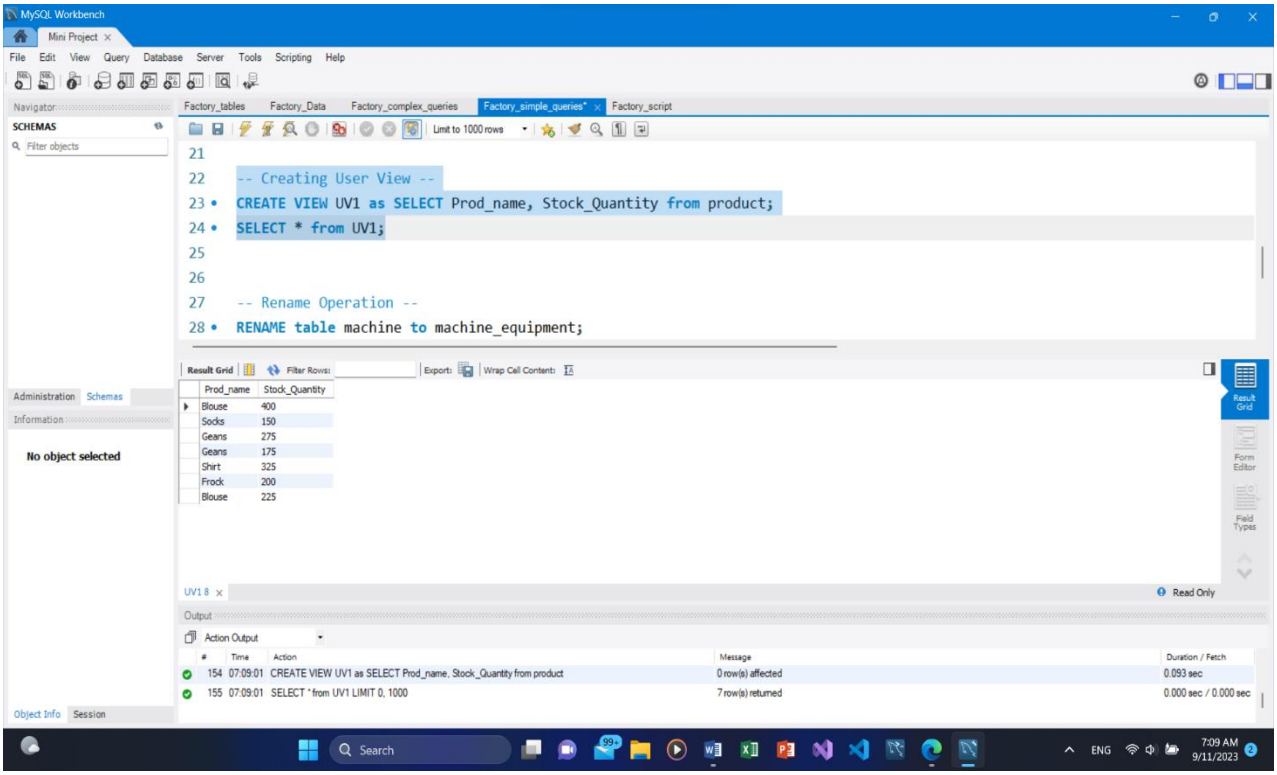

2. Project Operation



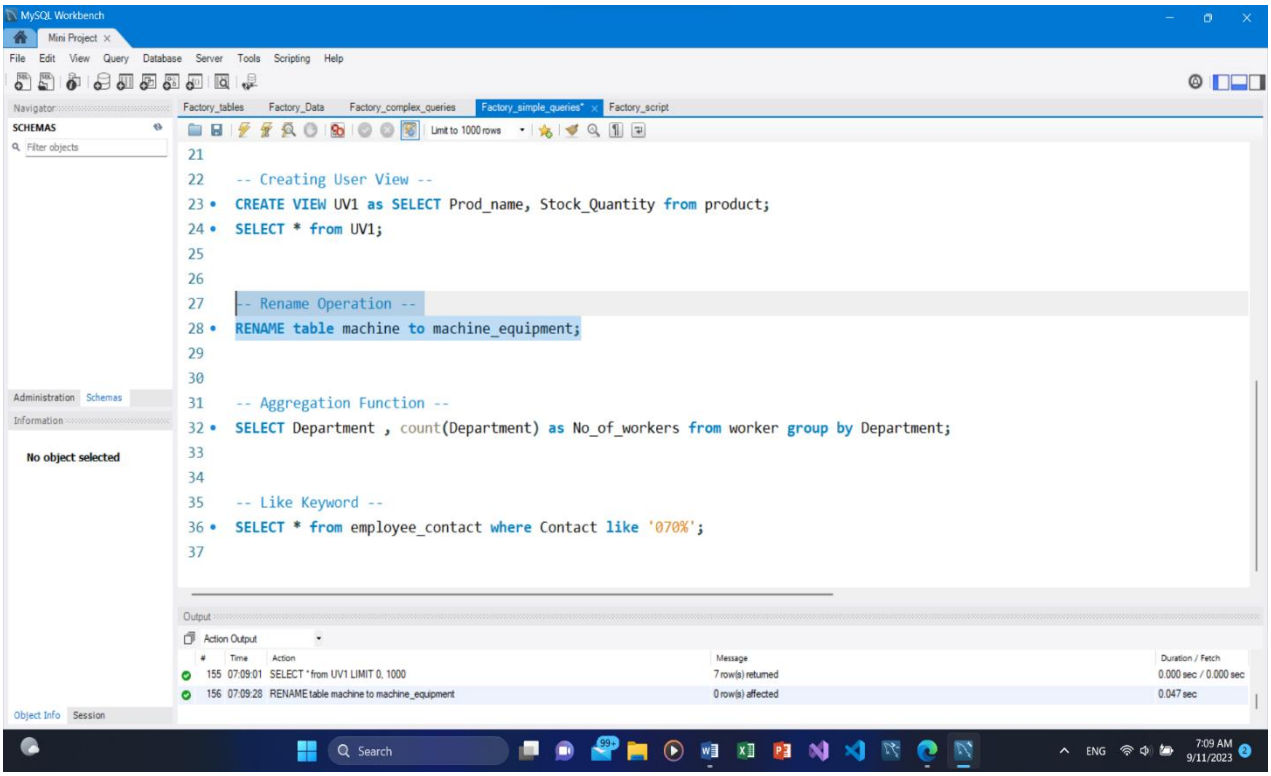
3. Cartesian Product Operation



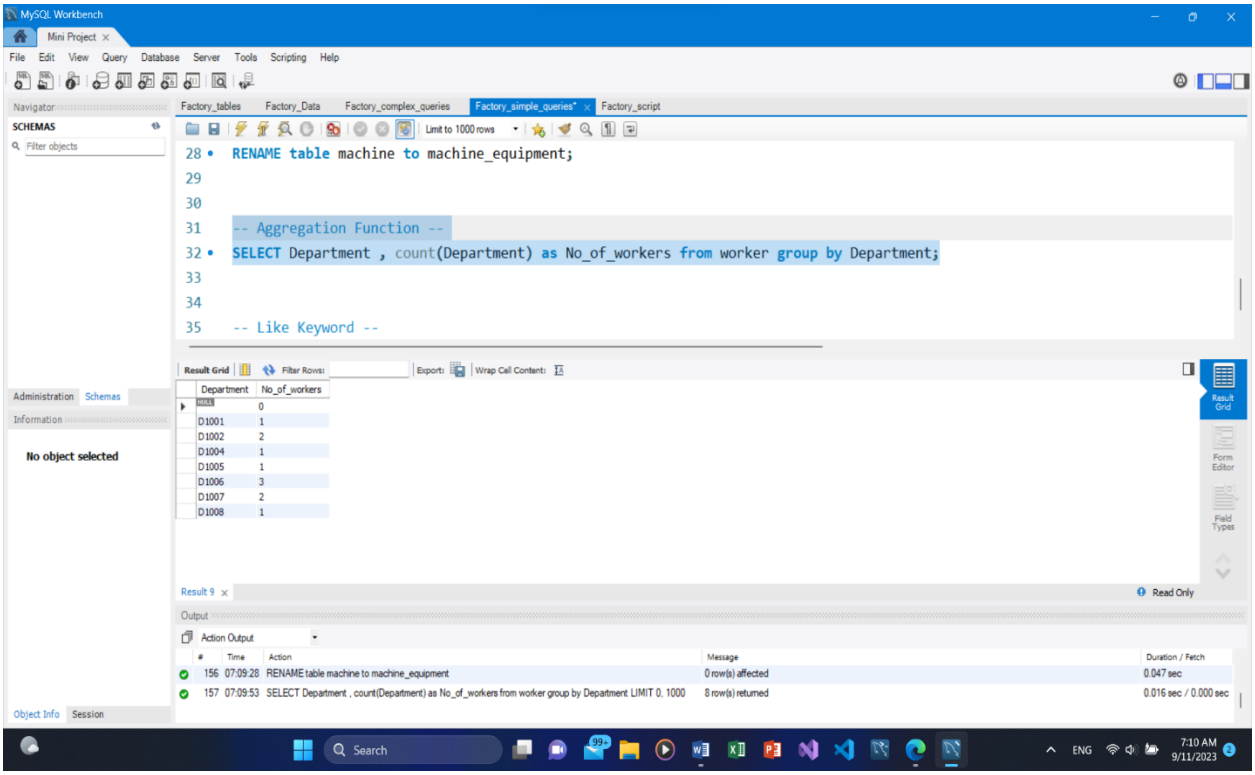

4. Creating User View



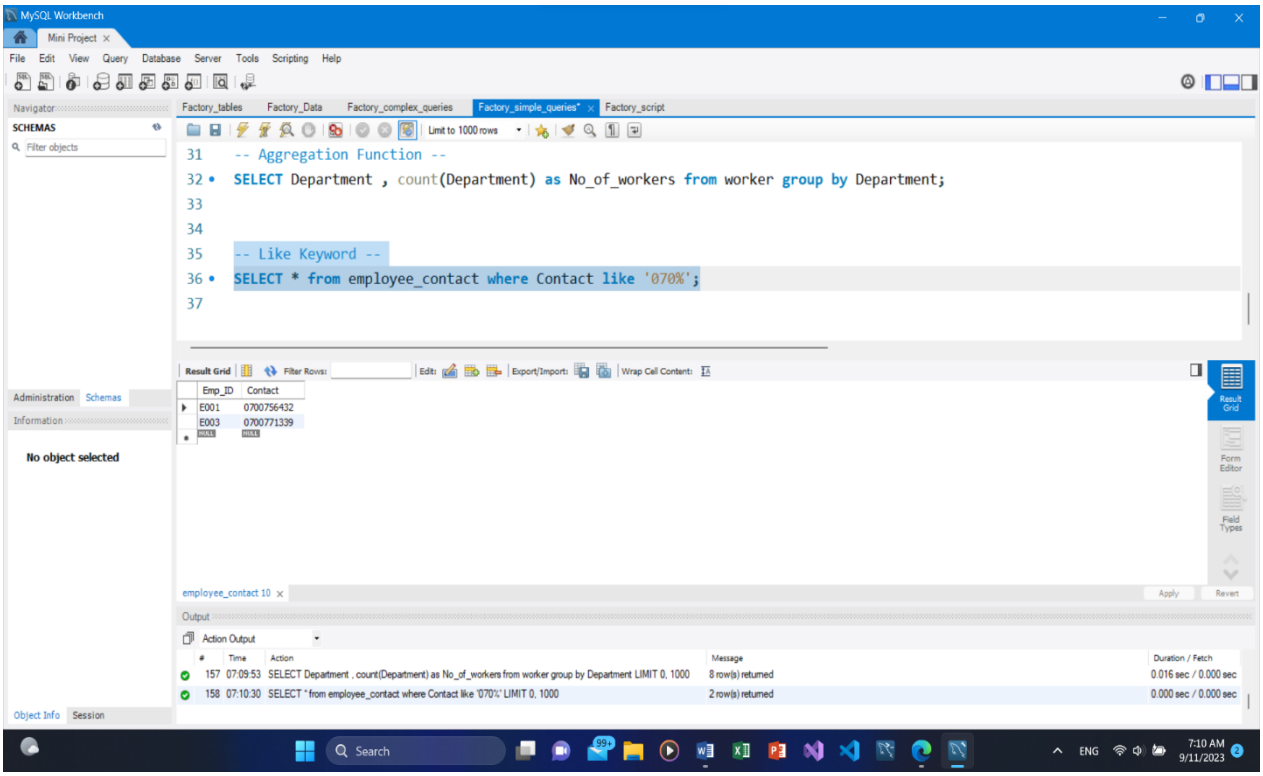
5. Rename Operation




6. Aggregation Function

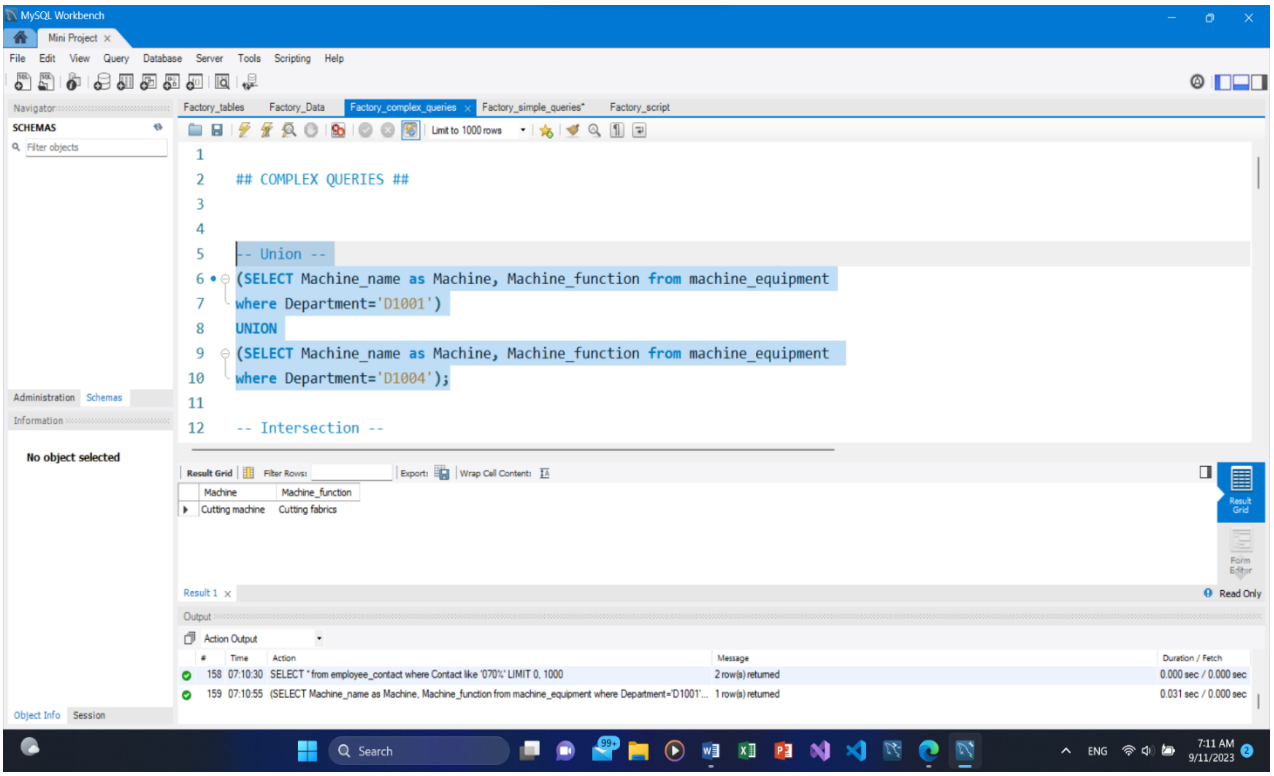


7. Function using LIKE keyword

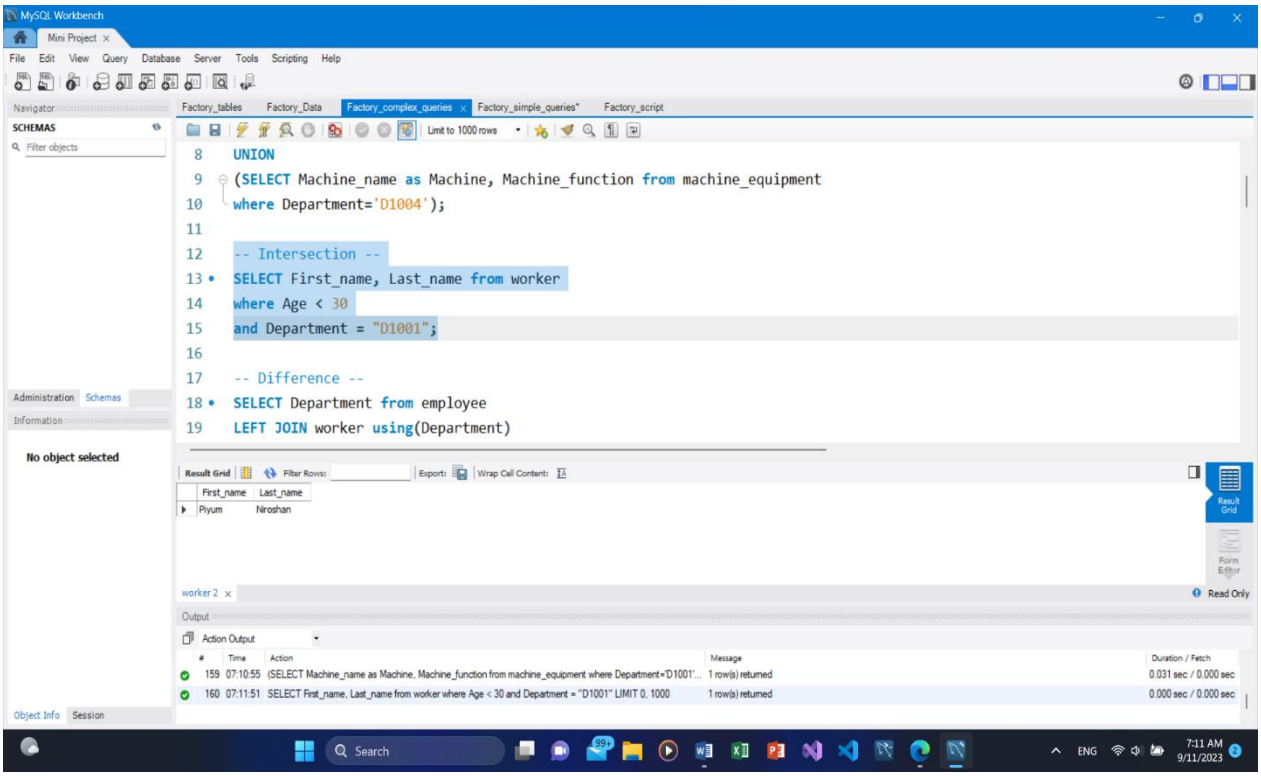


## 4.2 COMPLEX QUERIES

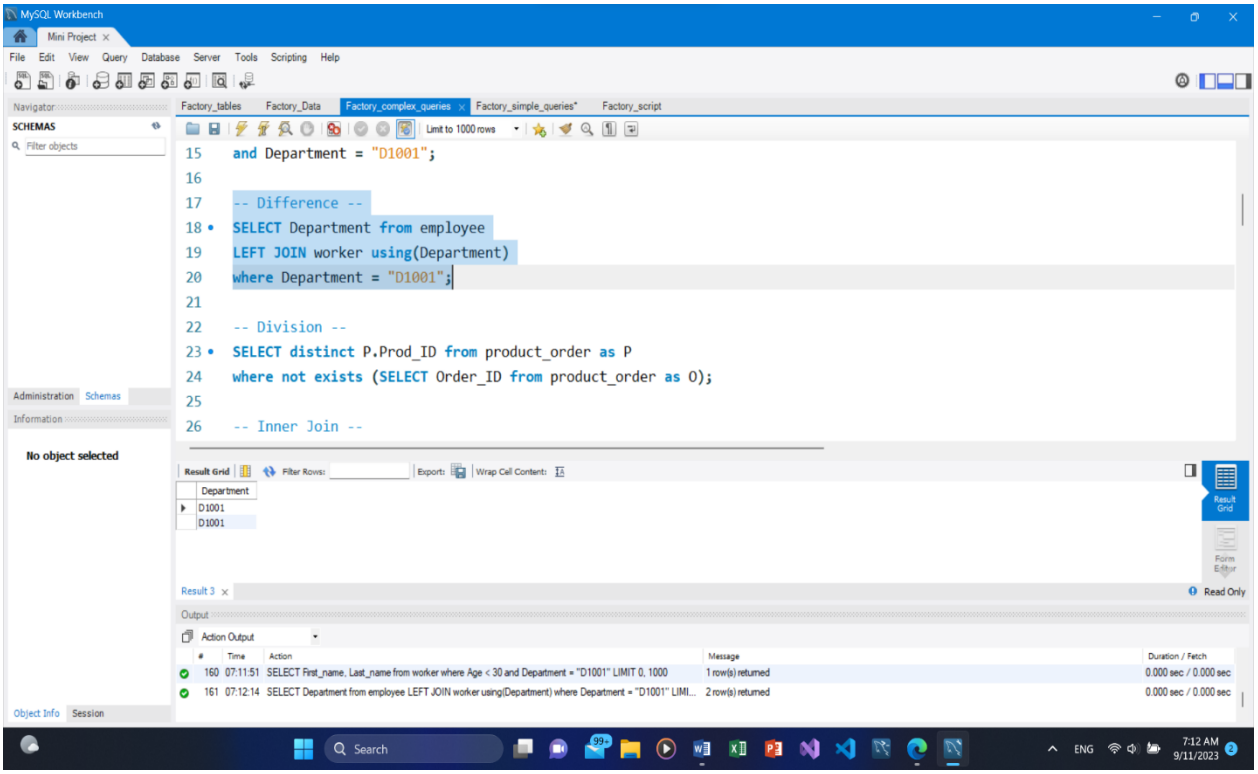
1. Union Operation



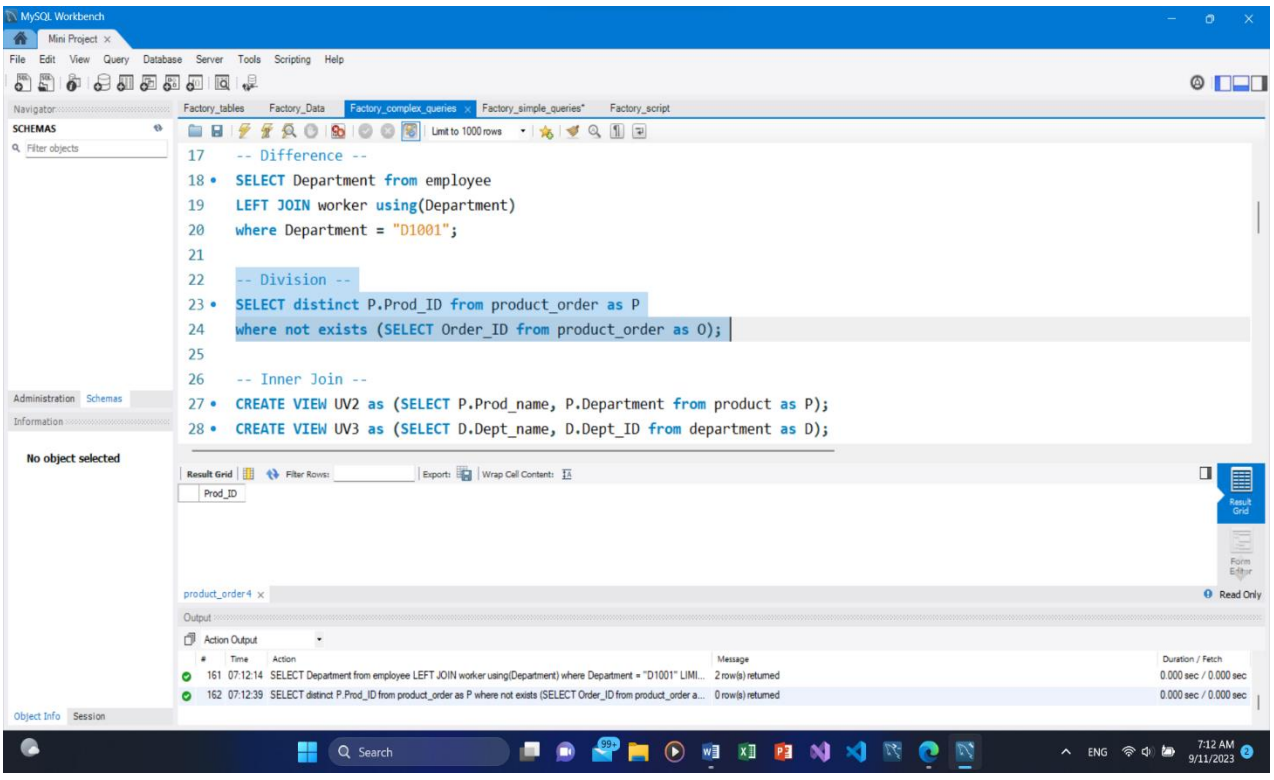

2. Intersection Operation



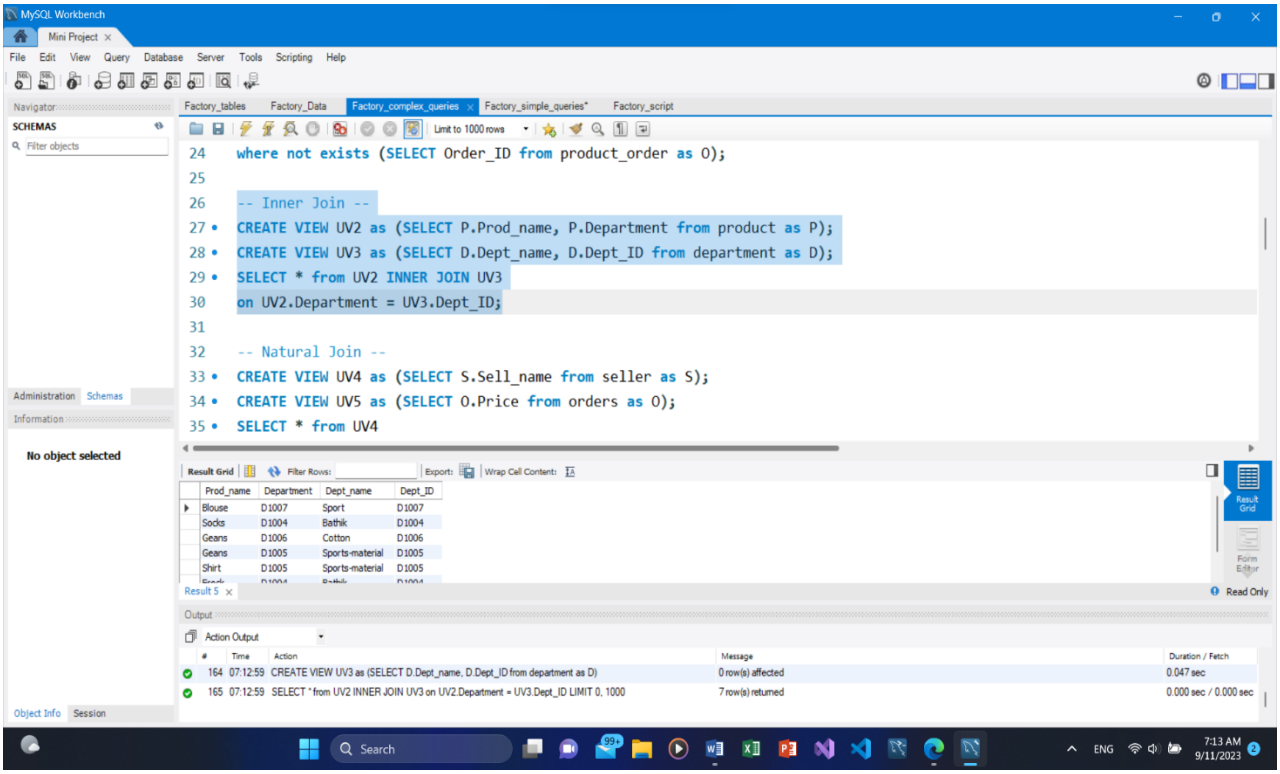
3. Set Difference Operation



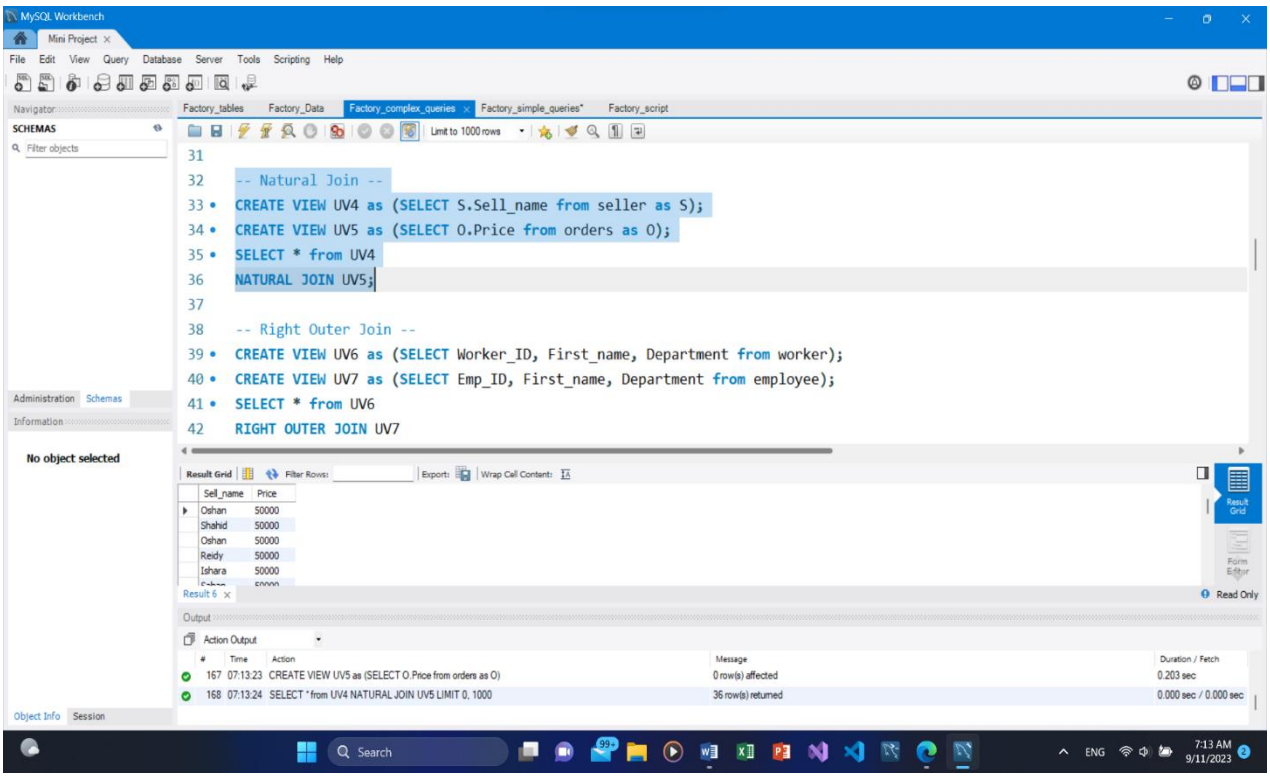

4. Division Operation



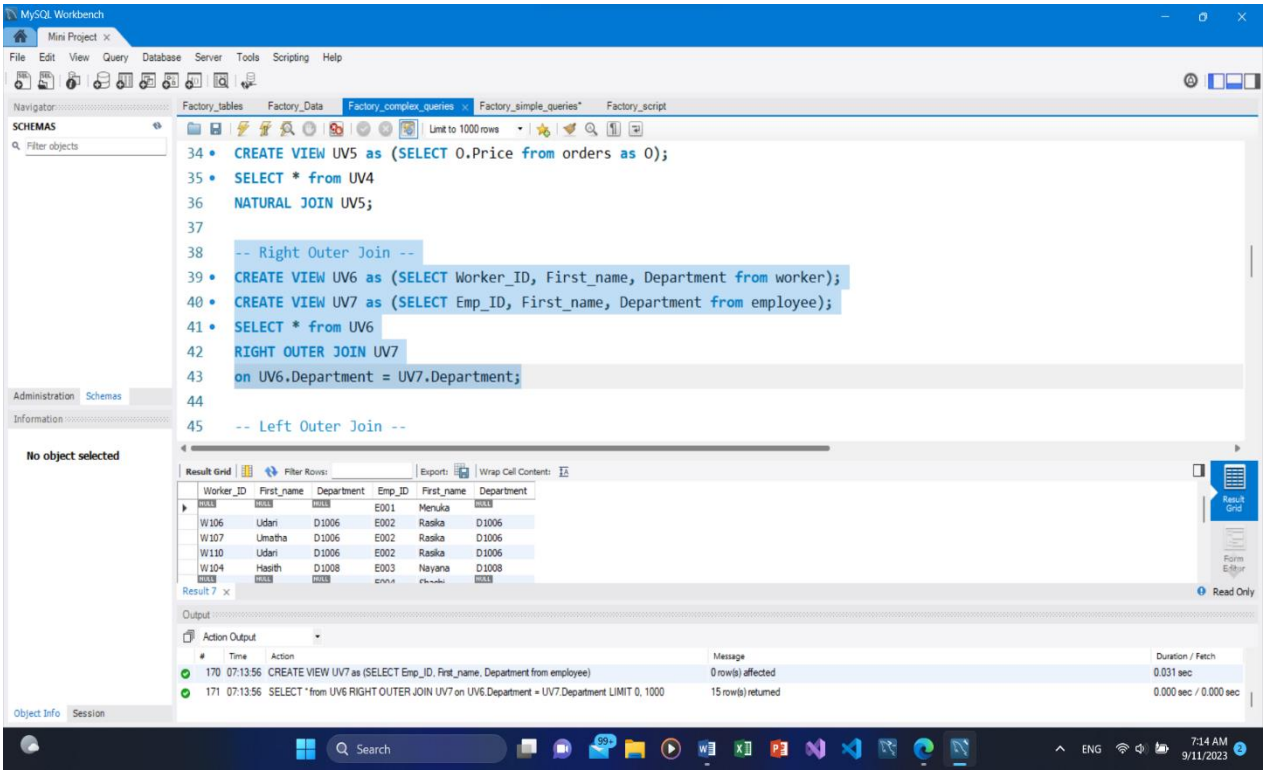
5. Inner Join Operation



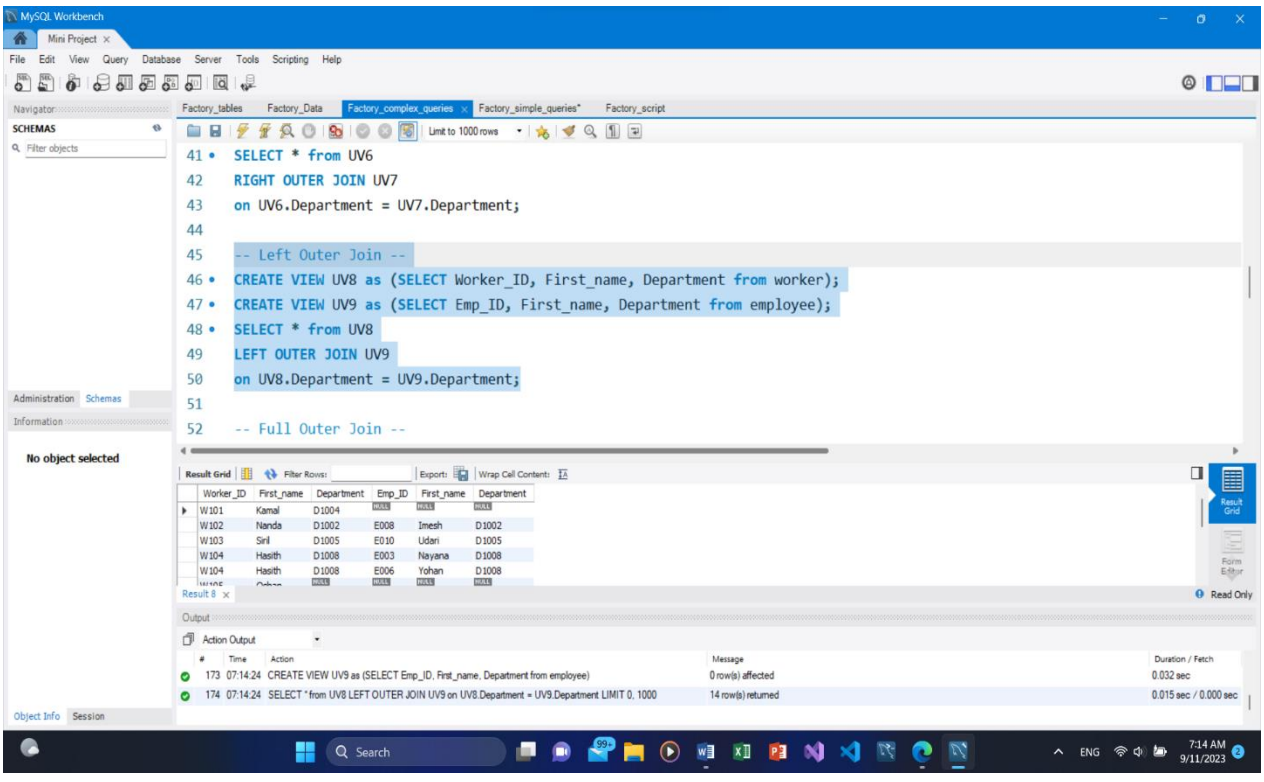

6. Natural Join Operation



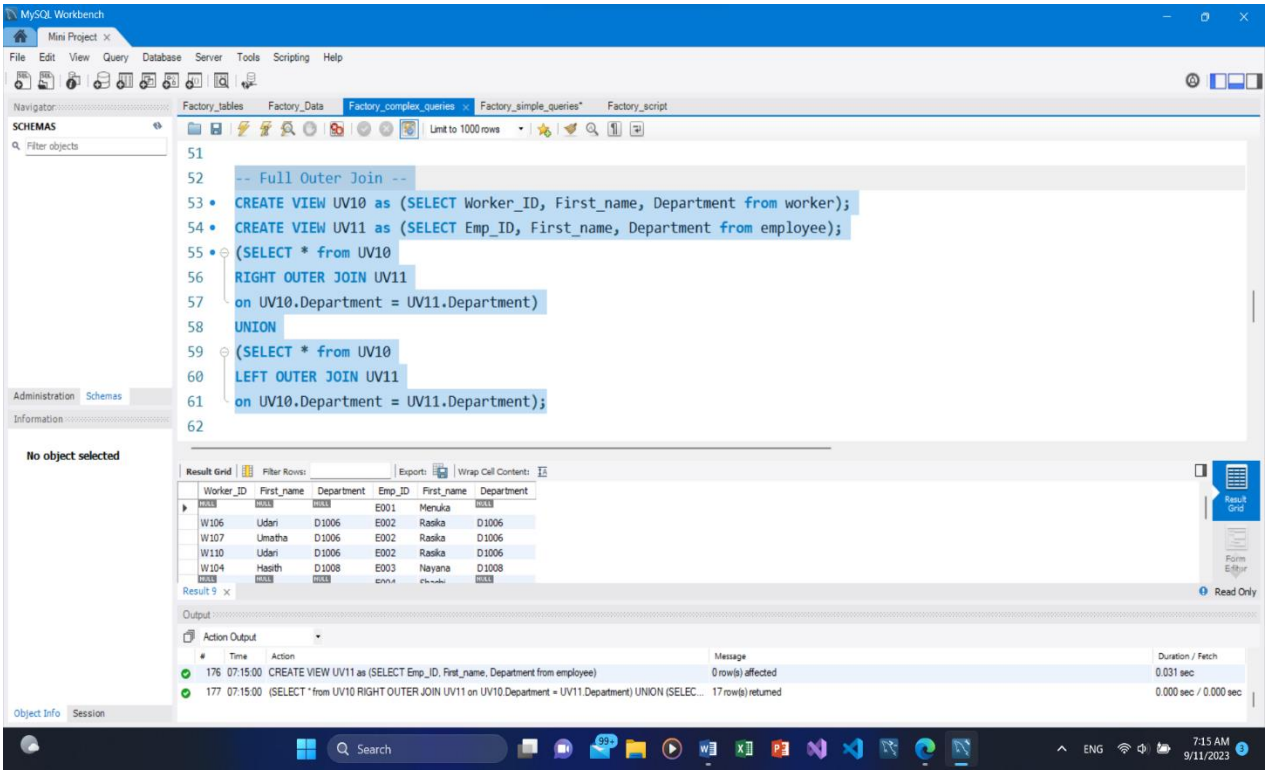
7. Right Outer Join Operation



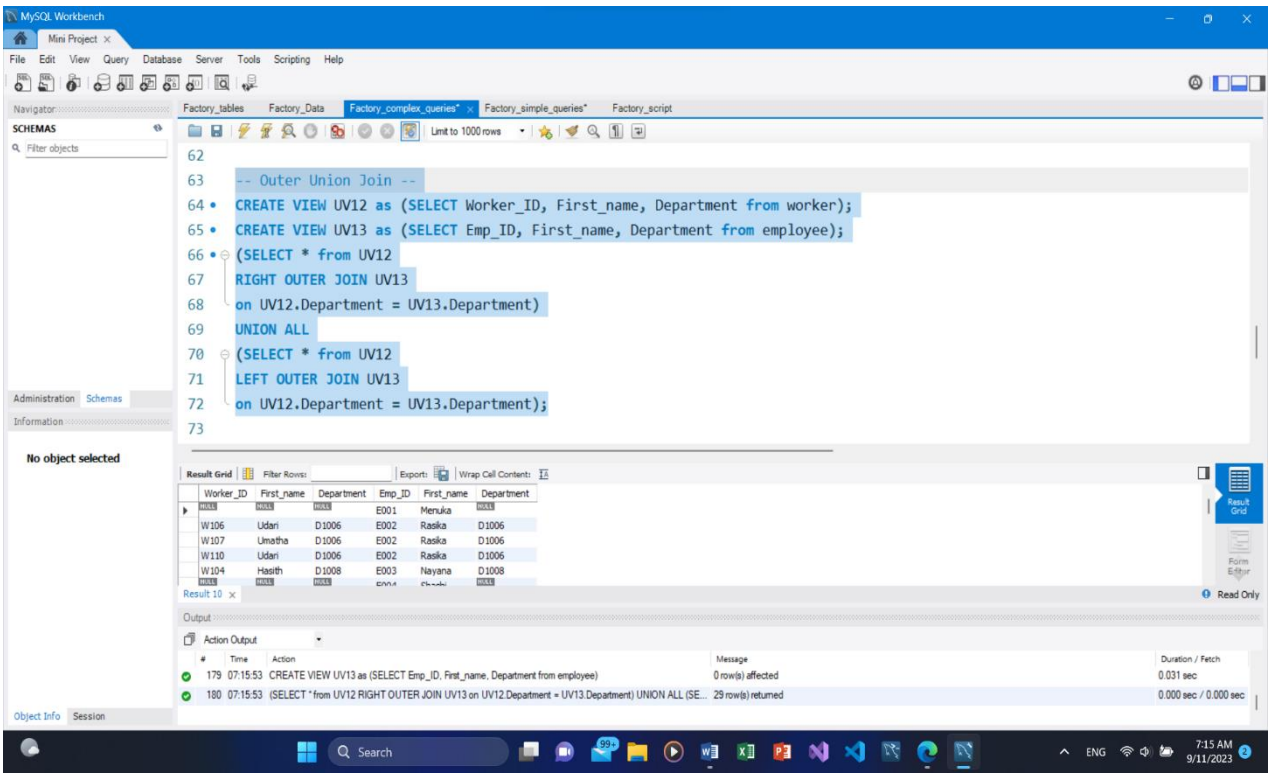

8. Left Outer Join Operation



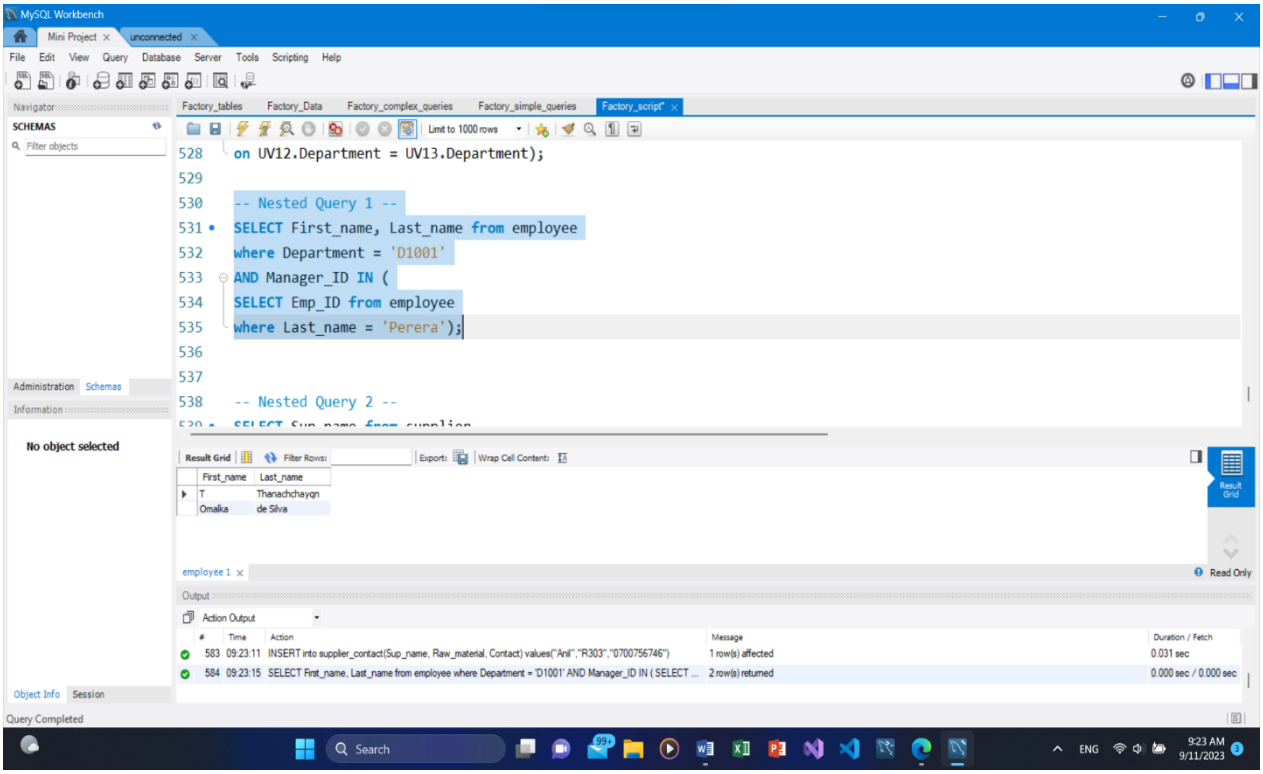
9. Full Outer Join Operation



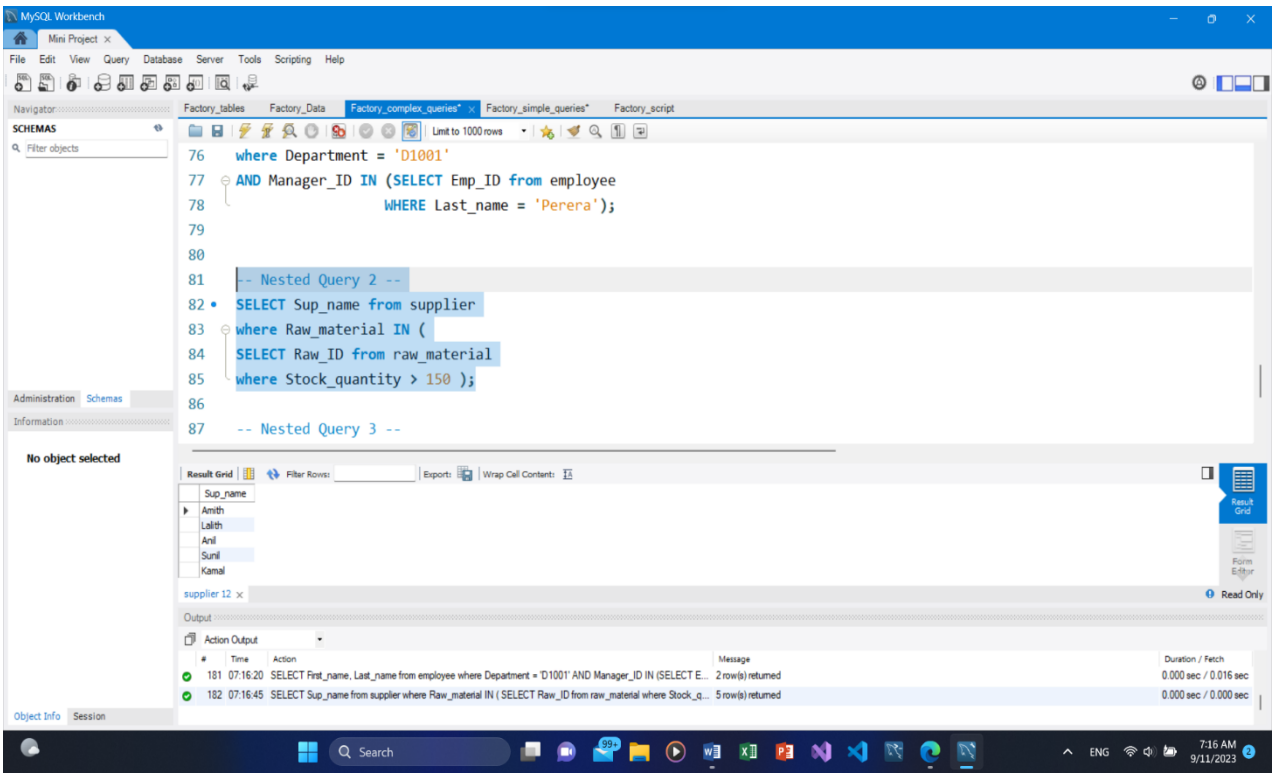

10. Outer Union Operation



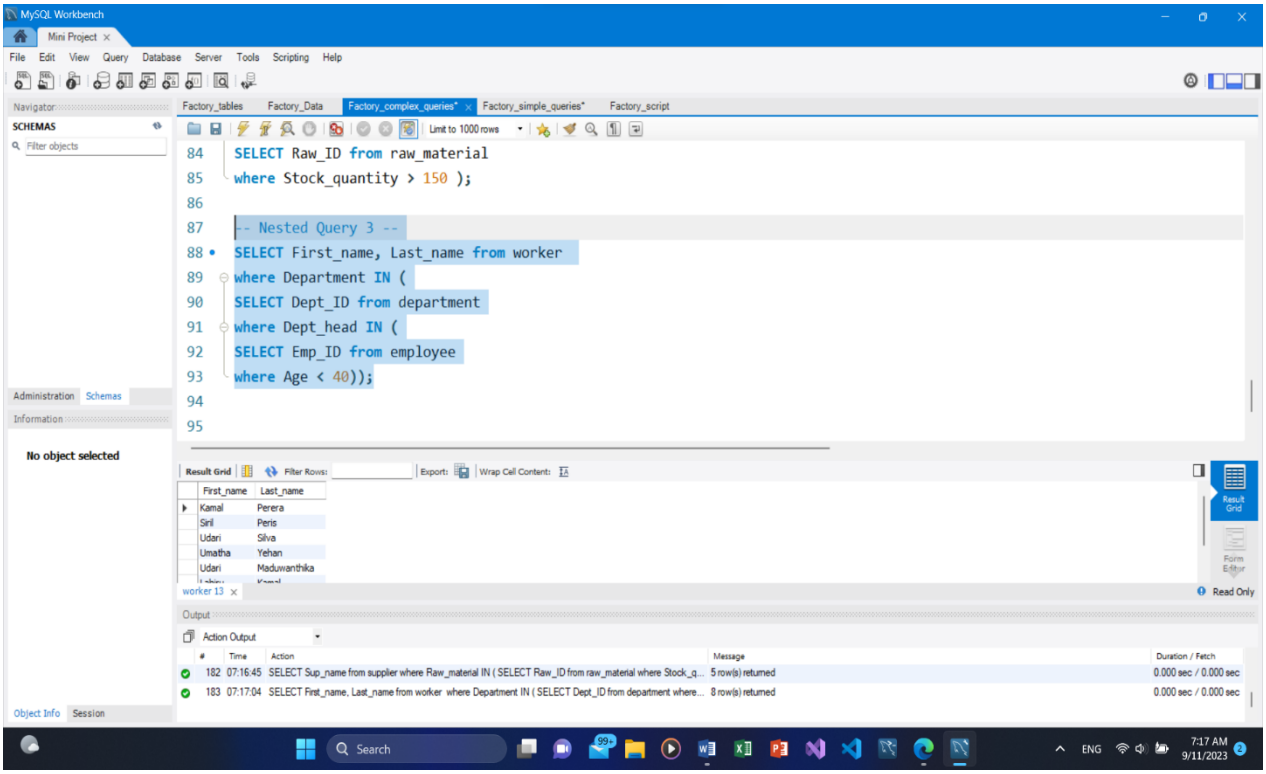
11. Nested Query 01




12. Nested Query 02



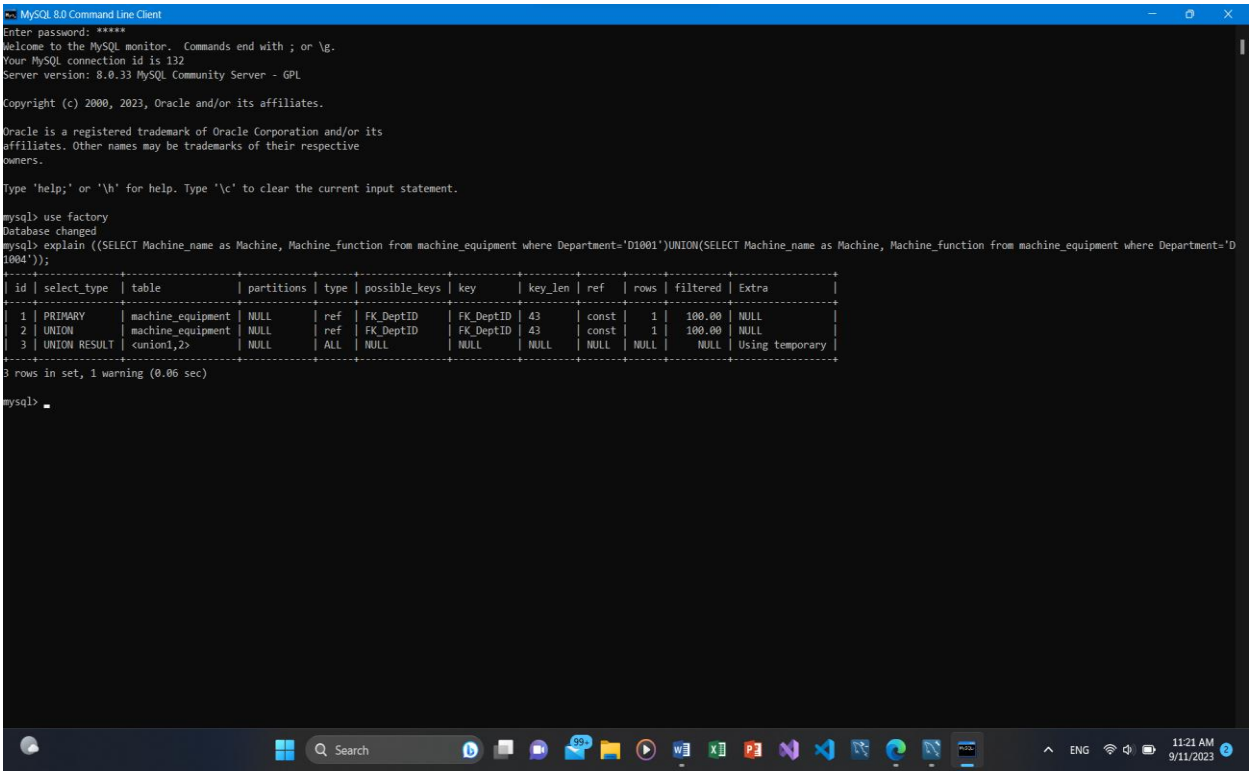
13. Nested Query 03



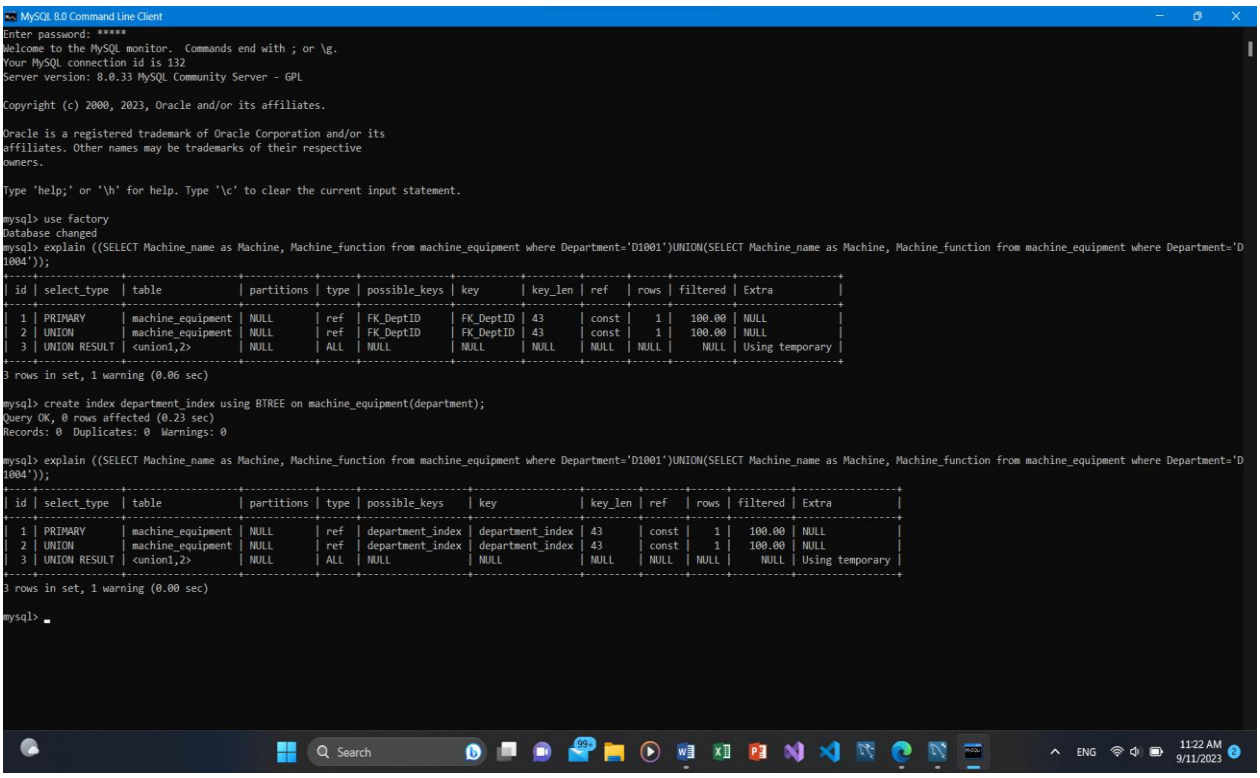
# 5. CHAPTER V – TUNING

## Union

Without Indexing

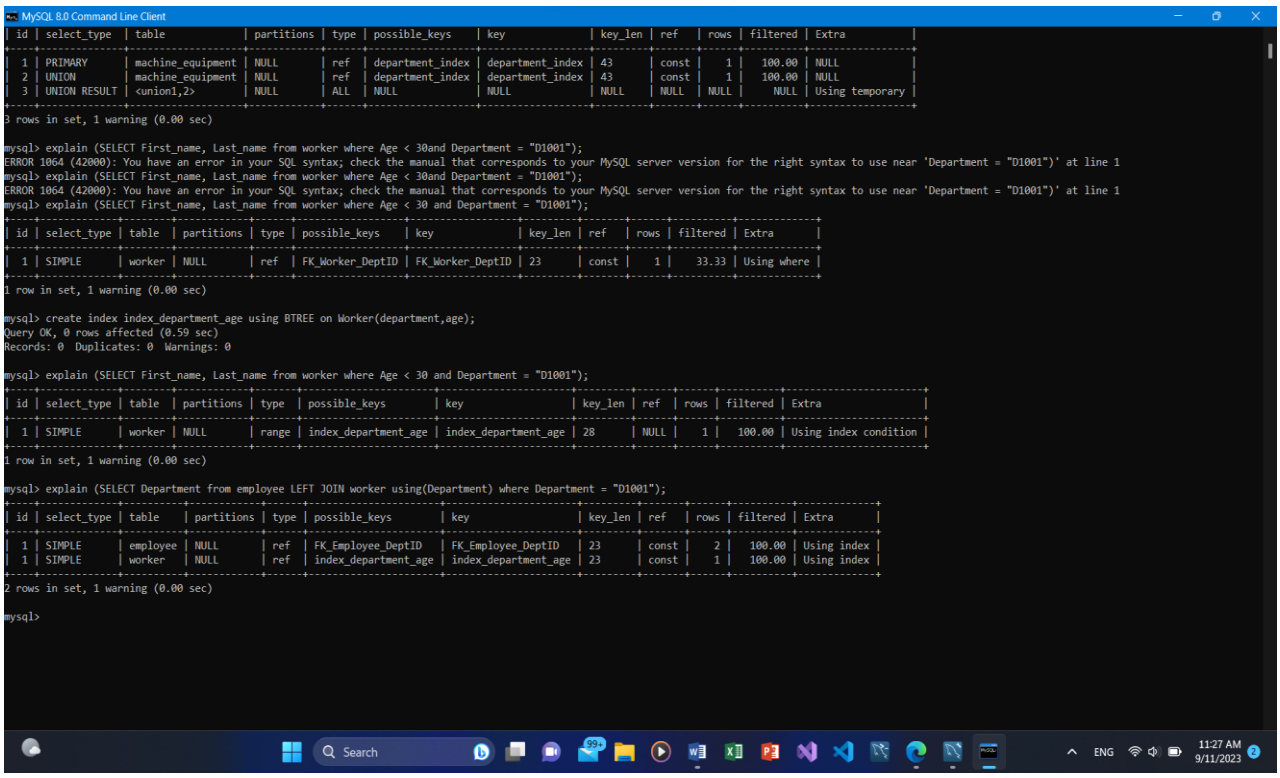



With Indexing

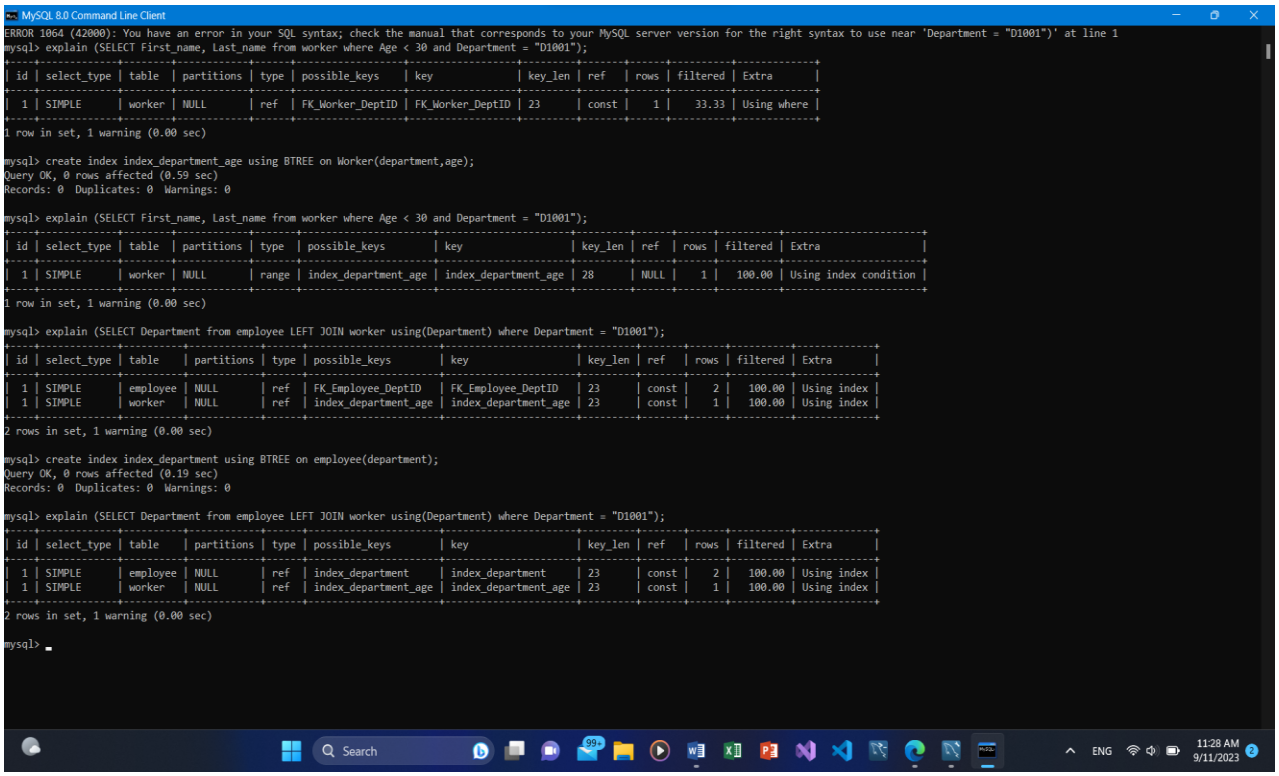


## Difference

### Without Indexing

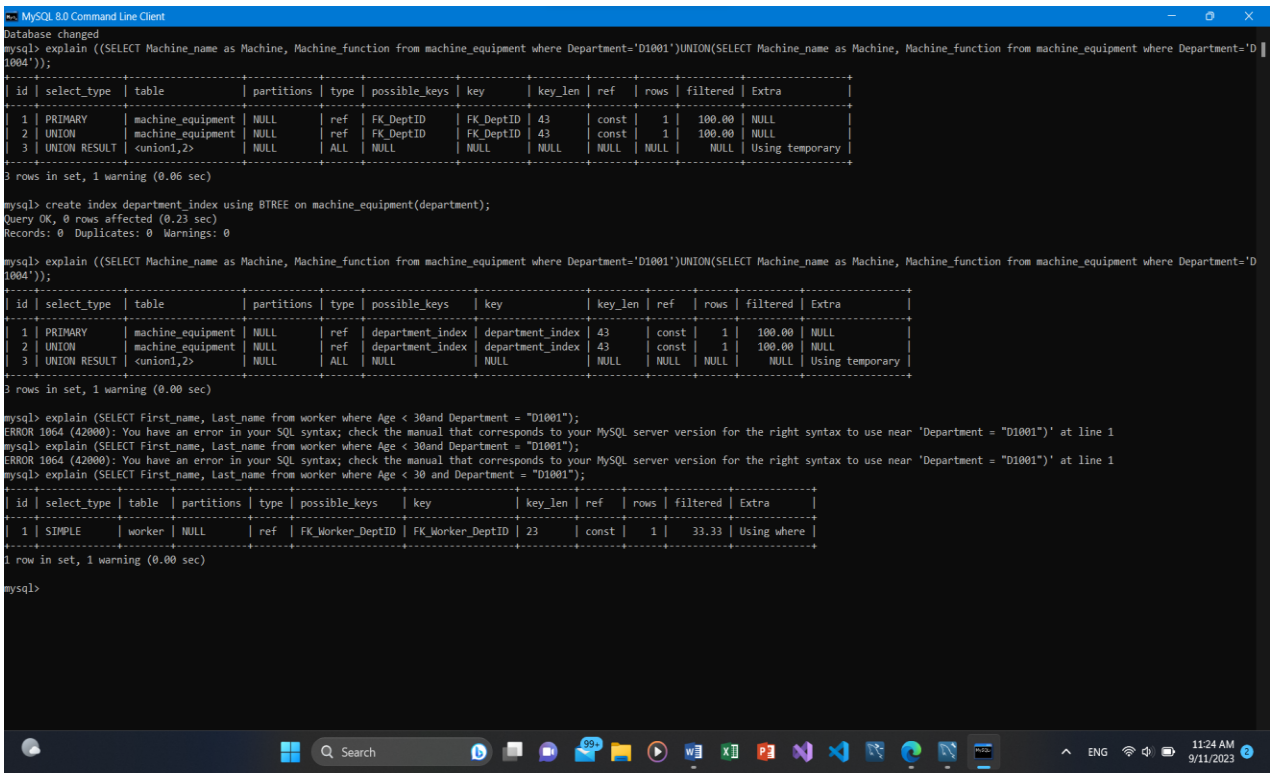



### With Indexing

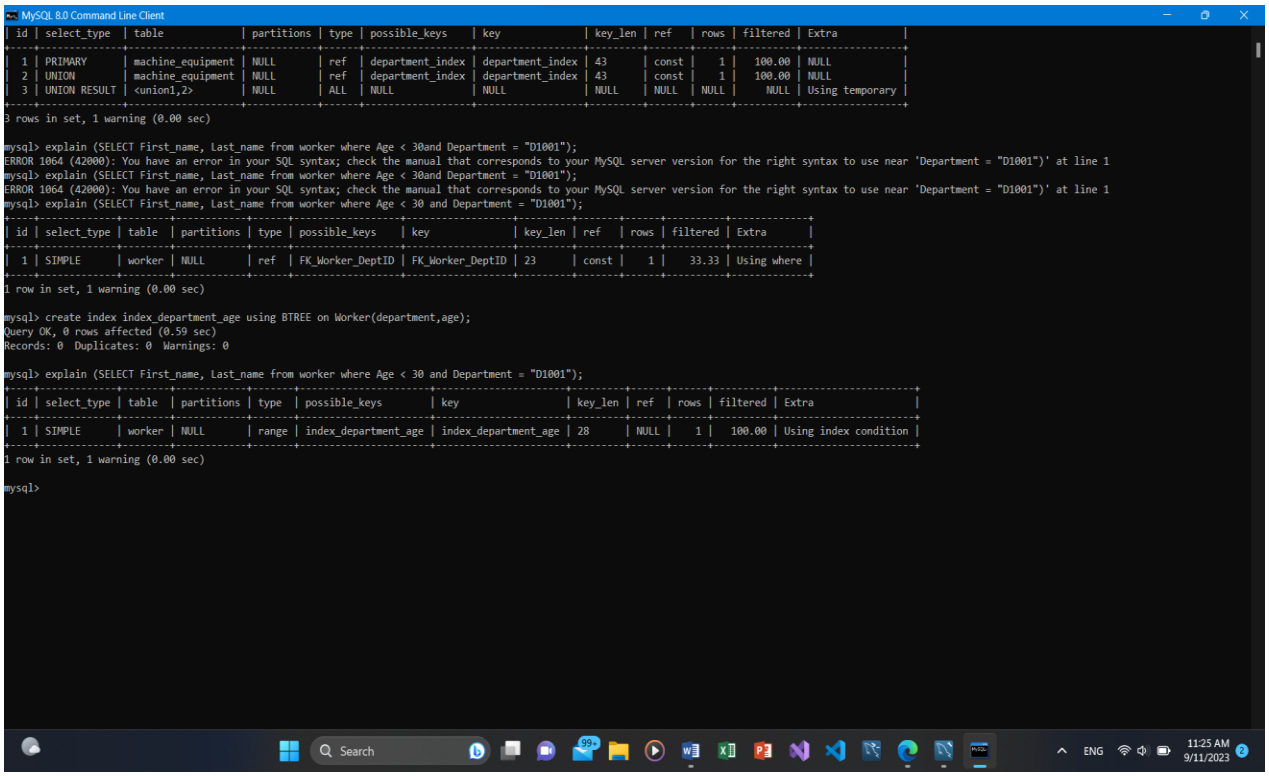


## Intersection

### Without Indexing

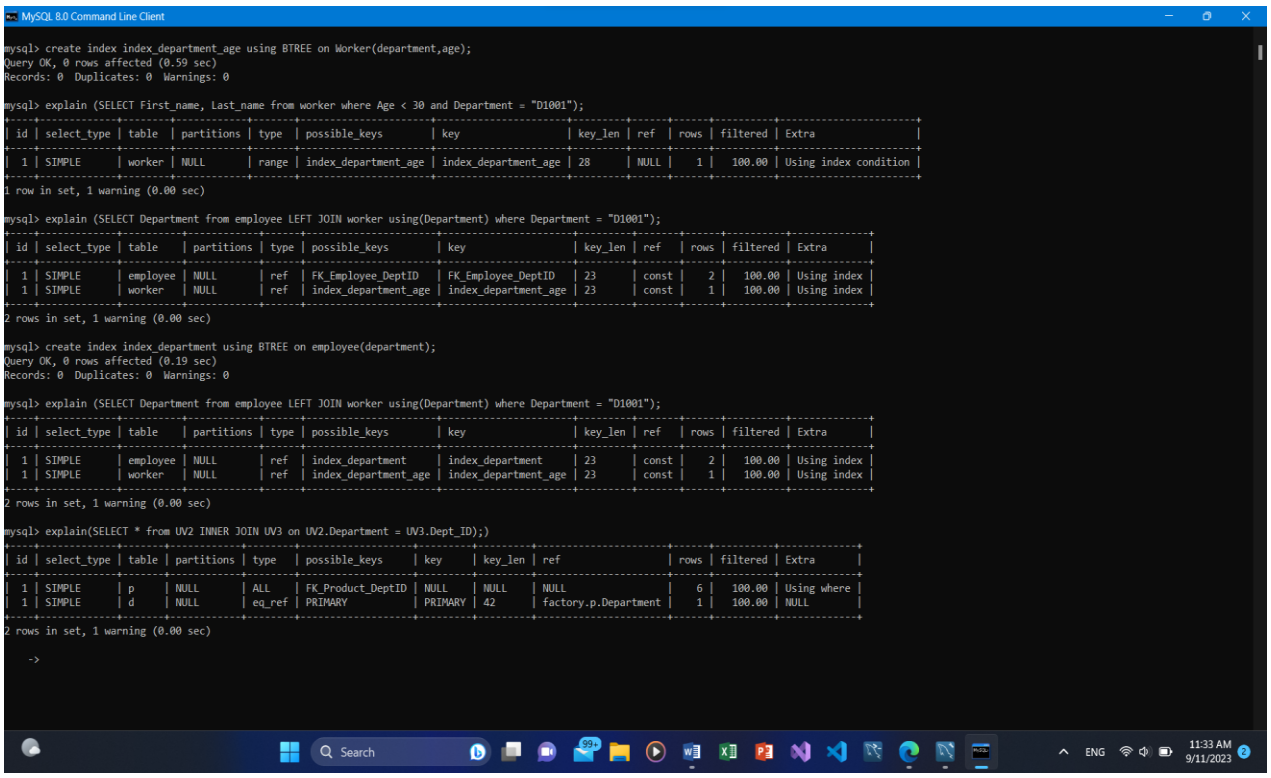



### With Indexing

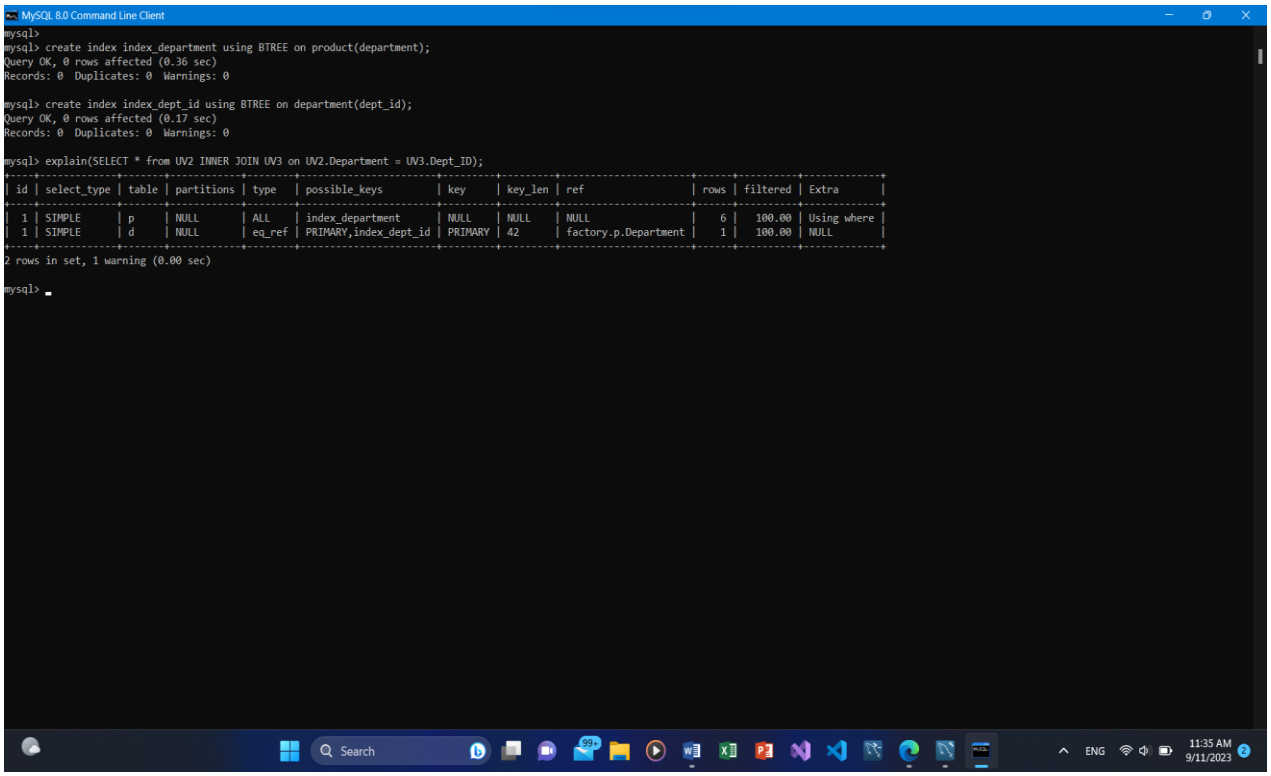


## Inner Join

### Without Indexing

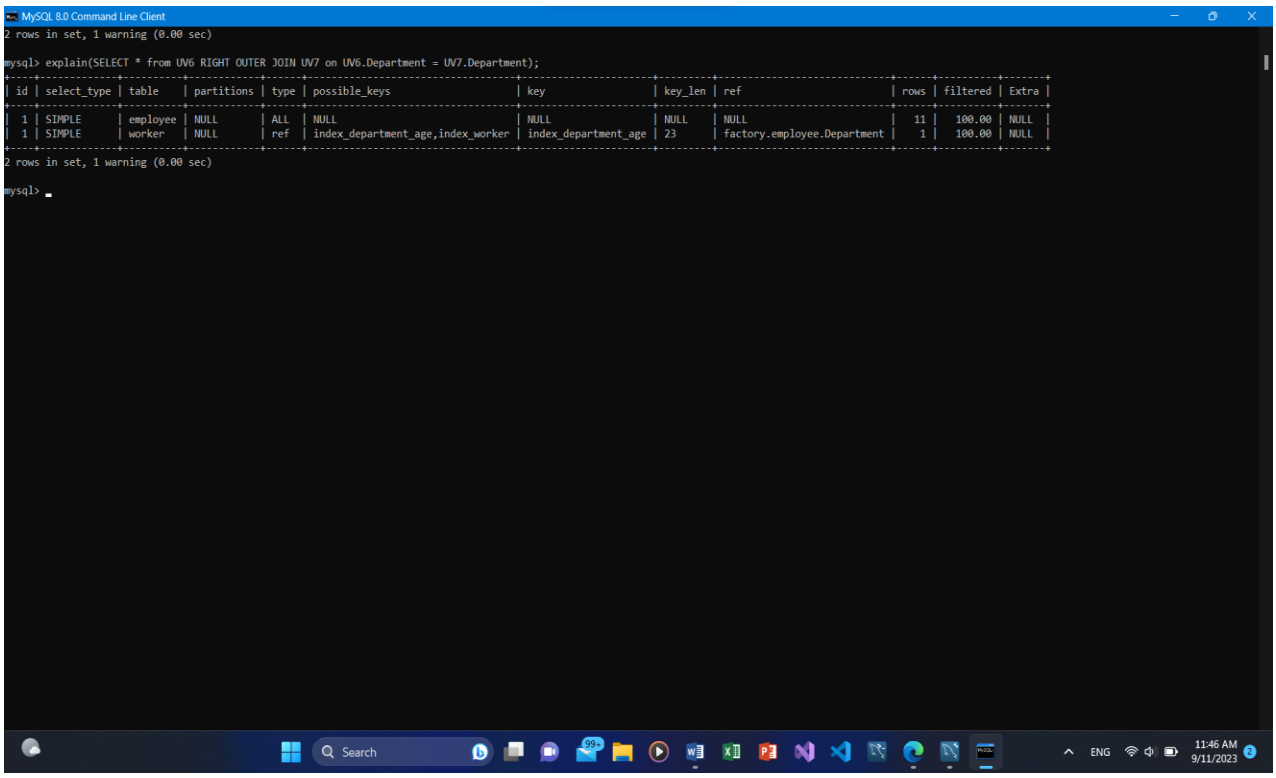



### With Indexing

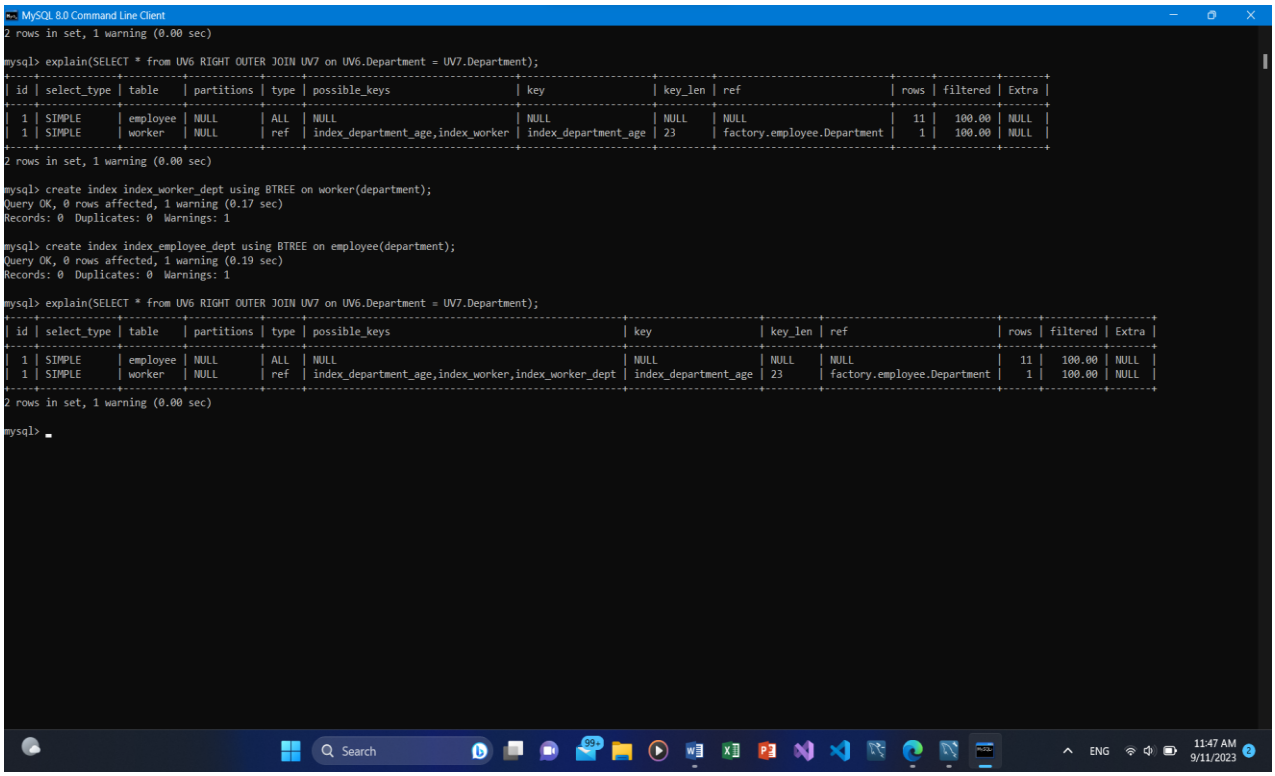


## Right Outer Join

Without Indexing

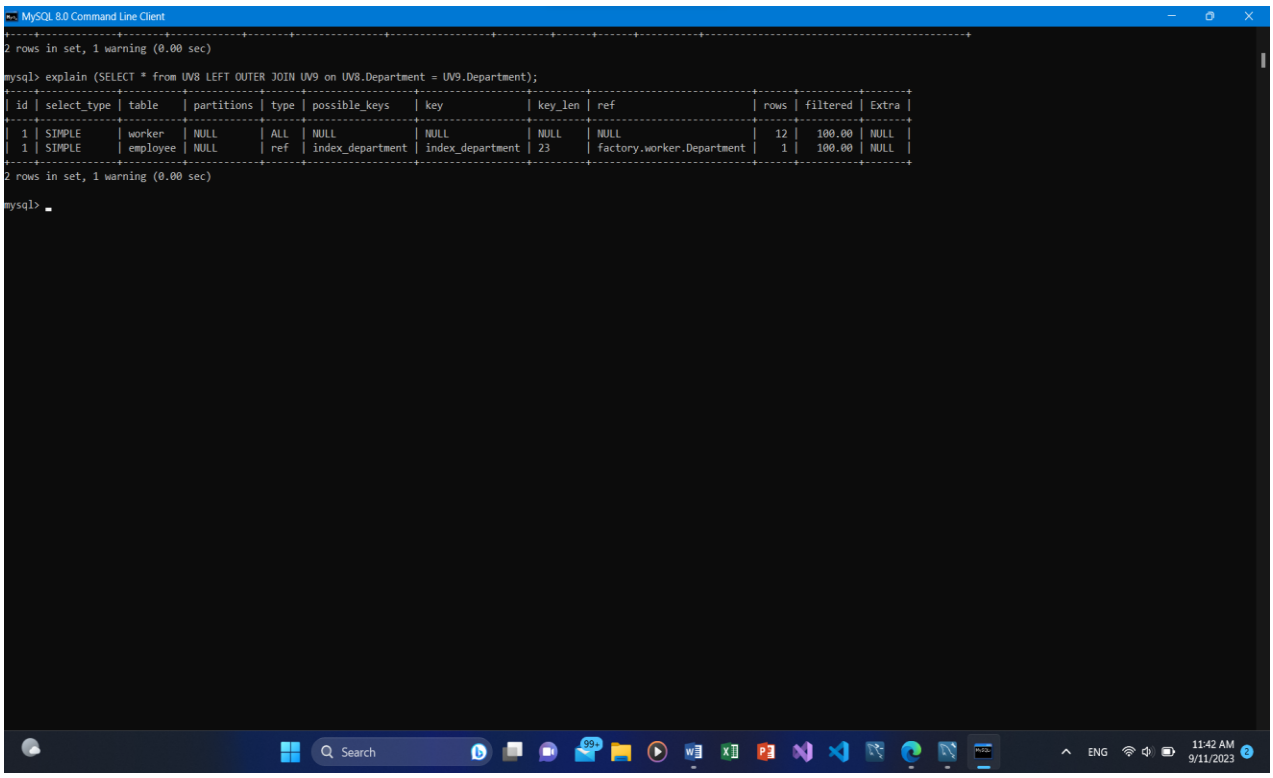



With Indexing



## Left Outer Join

Without Indexing

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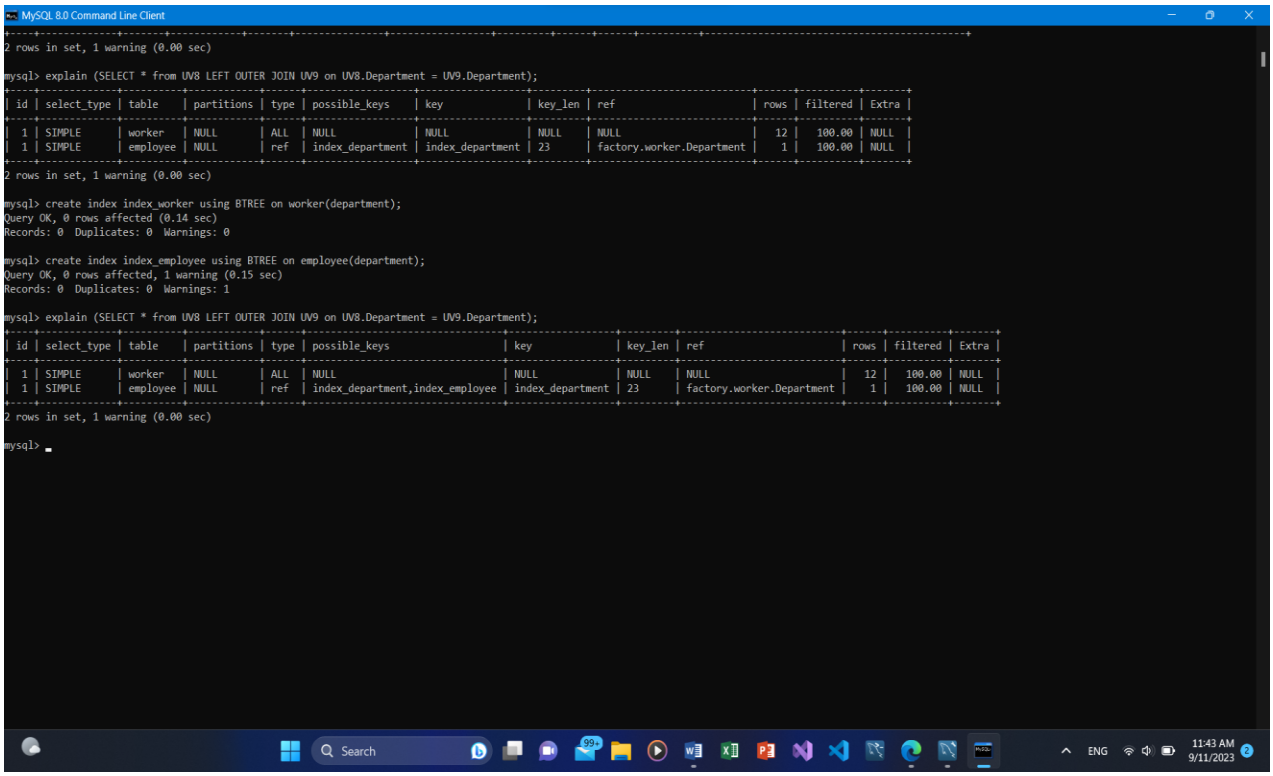
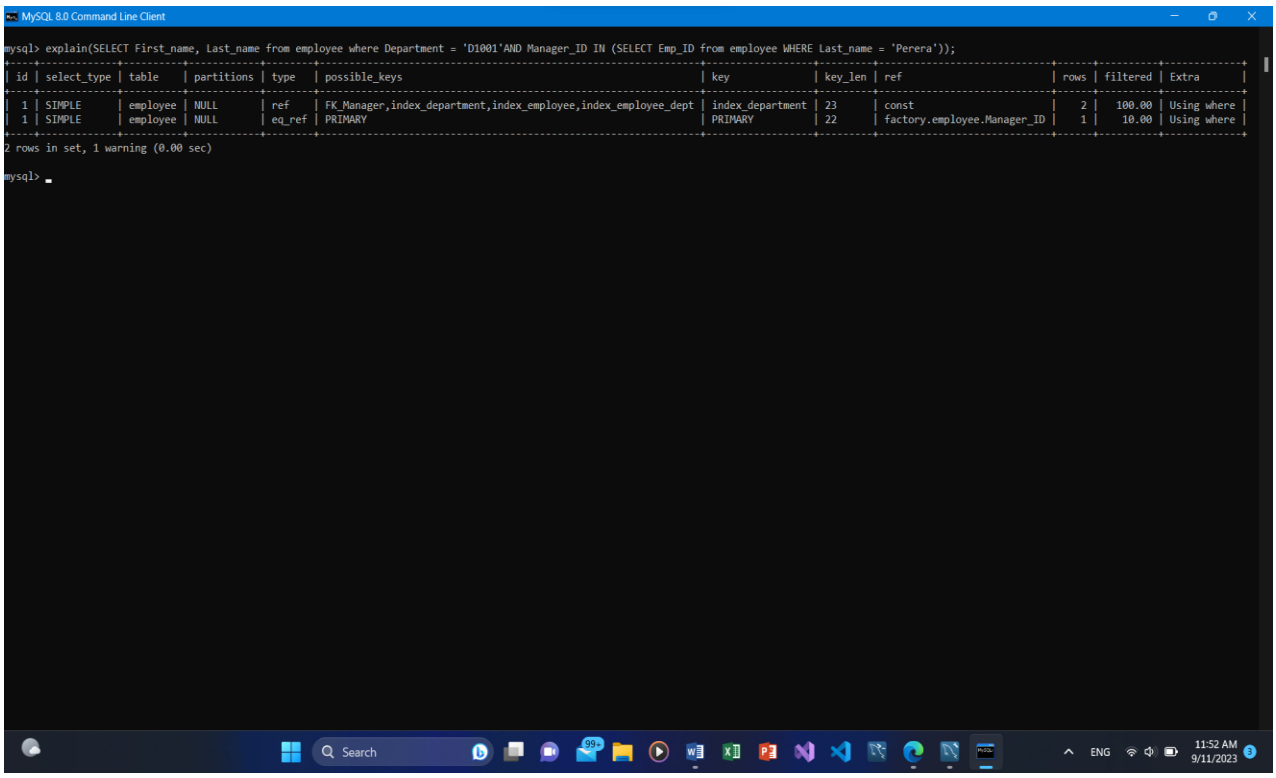
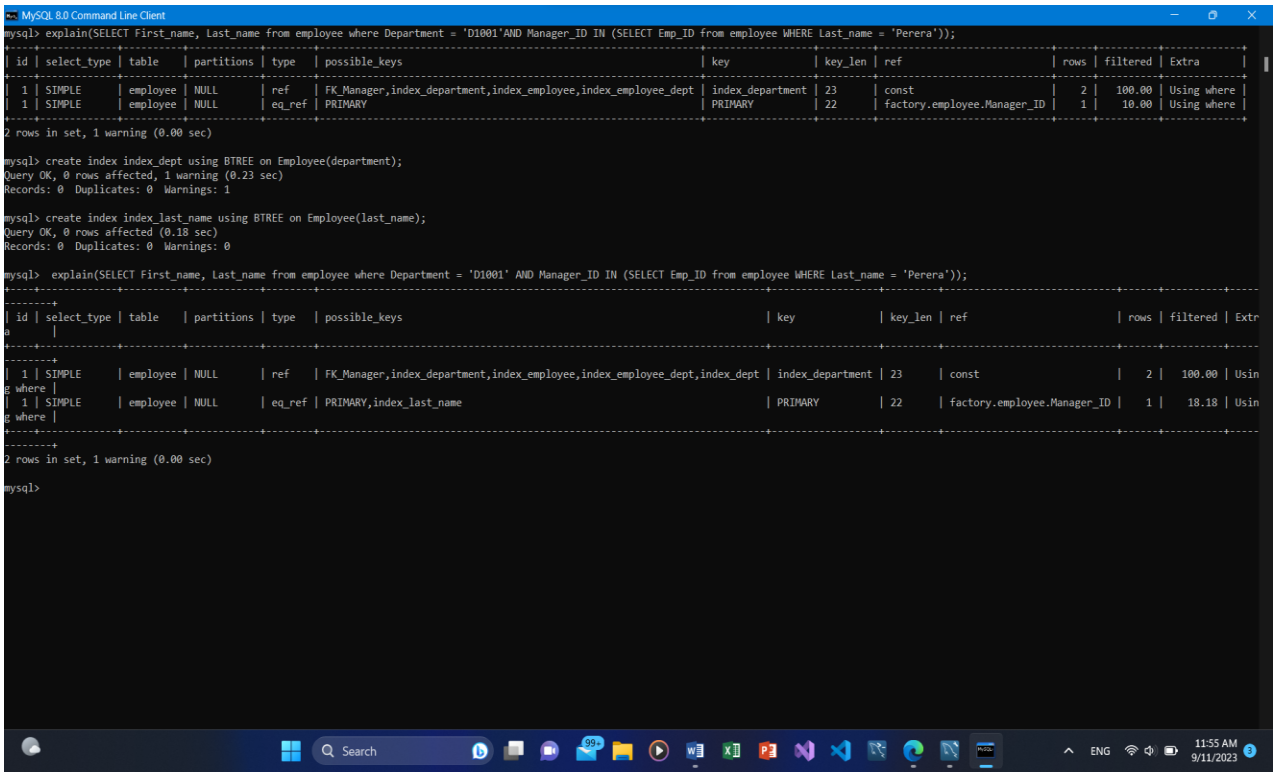


## Nested Query 01

### Without Indexing




### With Indexing



## Nested Query 02

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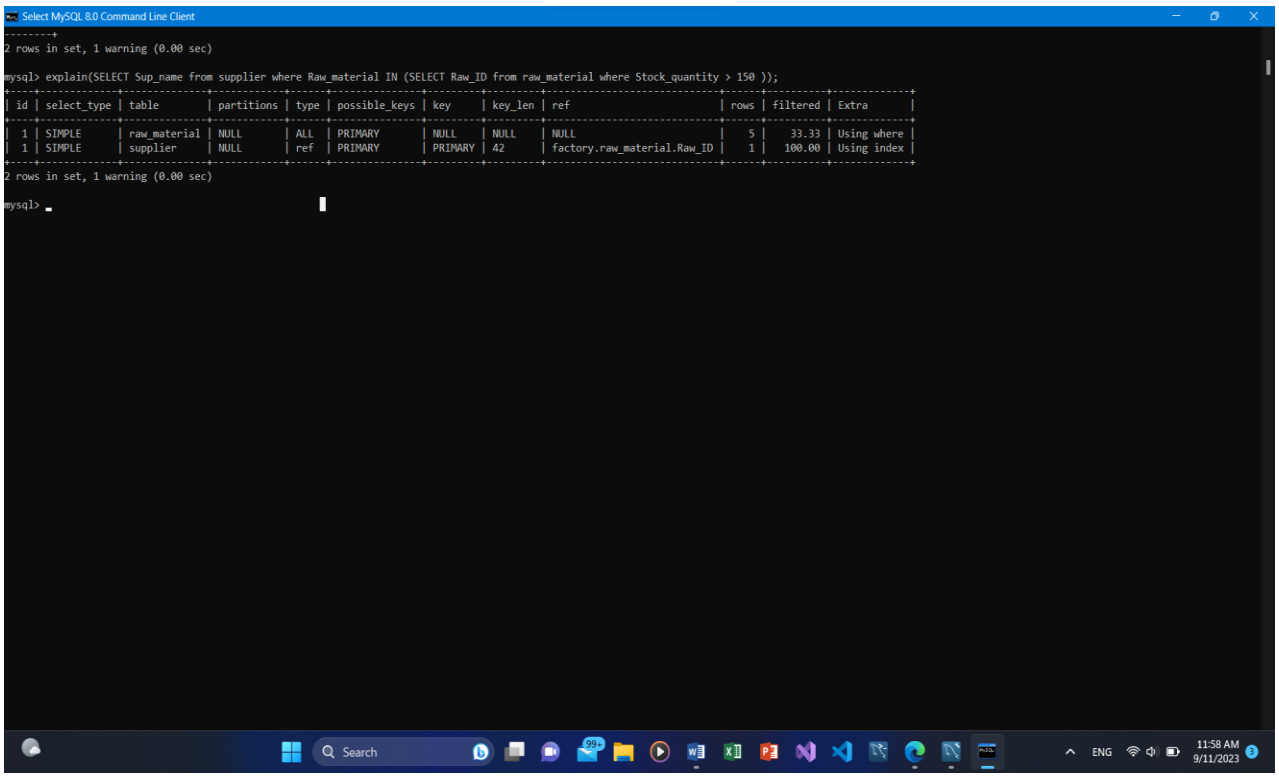
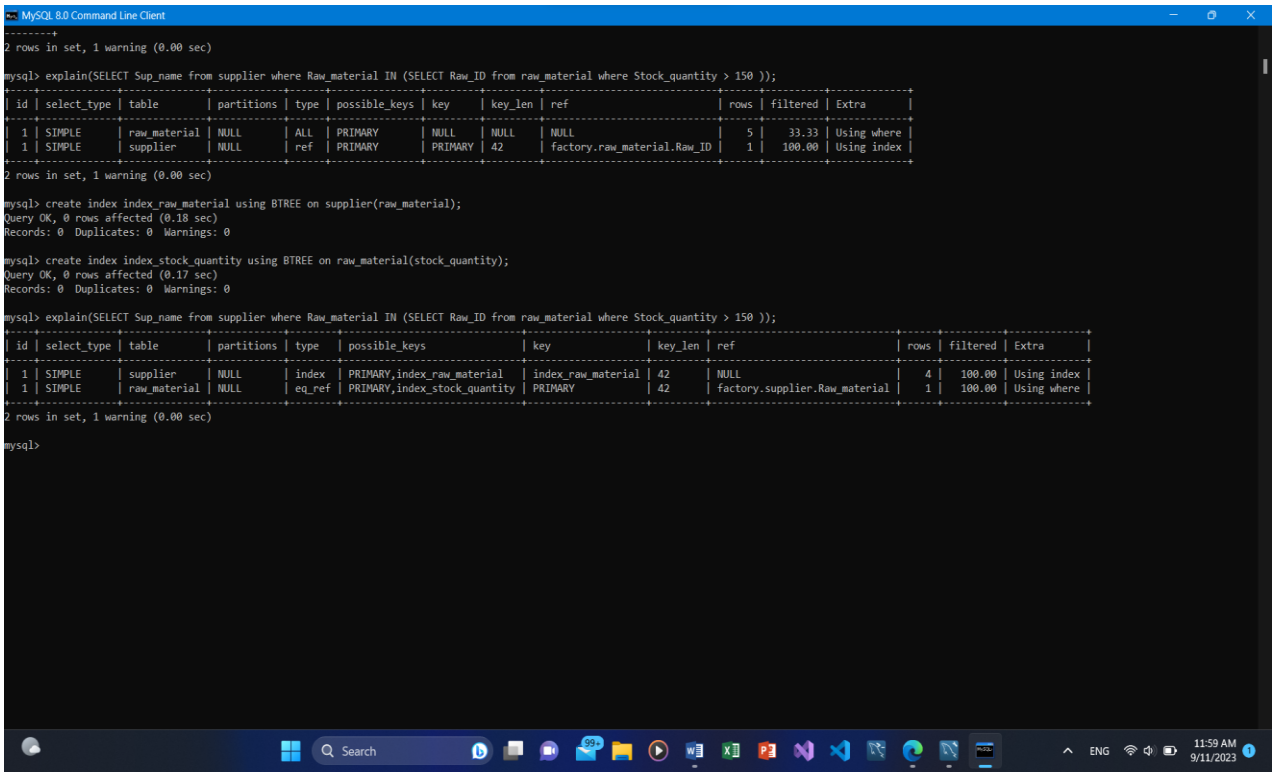



With Indexing



## Nested Query 03

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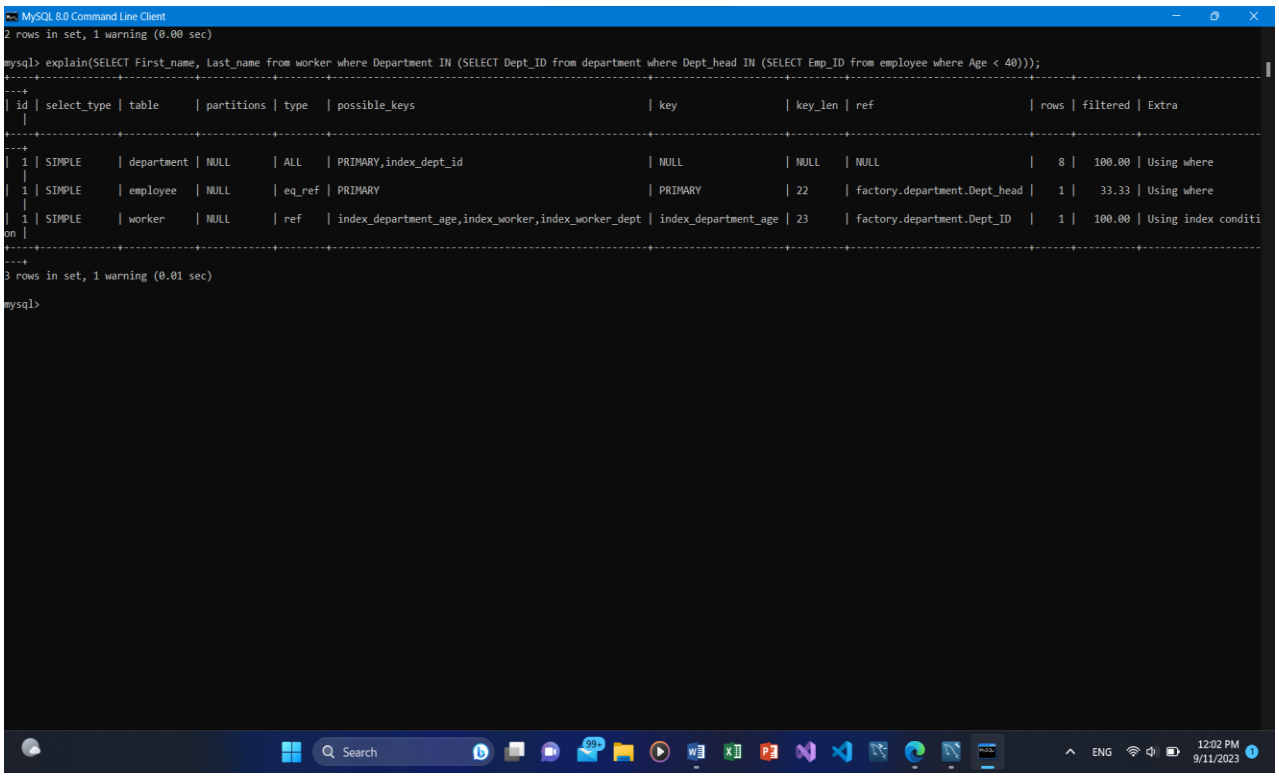


### With Indexing