Advance SQL assingment no 7

QUESTTION 1 **What is a Common Table Expression (CTE), and how does it improve SQL query readability?**

ANSWER

A Common Table Expression (CTE) is a temporary named result set in SQL that you can use inside a SELECT, INSERT, UPDATE, or DELETE statement.

It is created using the WITH keyword.

How CTE Improves SQL Query Readability -:

Makes Complex Queries Easy to Understand

Breaks big queries into logical parts

Each CTE has a meaningful name

Replaces Nested Subqueries

Avoids deeply nested SELECT statements

Makes queries clean and structured

Improves Maintainability

Easy to modify or debug

Change logic in one place instead of many

QUESTION 2	**Why are some views updatable while others are read-only? Explain with an example.**
ANSWER	A view is a virtual table based on a SELECT query.
	Whether a view is updatable or read-only depends on how clearly SQL can map changes in the view back to the base table(s).
	Conditions for an Updatable View
	A view is usually updatable if:
	It is based on a single table
	No JOIN
	No GROUP BY
	No aggregate functions (SUM, AVG, COUNT)
	No DISTINCT
	No subquery in SELECT
	If one row in the view maps to exactly one row in one base table, the view is updatable.
	If not, the view is read-only.

QUESTION 3	**What advantages do stored procedures offer compared to writing raw SQL queries repeatedly?**
ANSWER	What Are Stored Procedures?
	A stored procedure is a precompiled set of SQL statements stored inside the database and executed using a single call.
	Reusability
	Write SQL logic once
	Reuse it many times
	Better Performance
	Stored procedures are precompiled
	Execution plan is stored in cache
	Improved Security
	Users can be given permission to execute procedures, not access tables directly
	Helps prevent SQL Injection

QUESTION 4 | **What is the purpose of triggers in a database? Mention one use case where a trigger is essential.**

ANSWER

A trigger is a special database object that automatically executes when a specific event occurs on a table or view.

Events can be:

INSERT

UPDATE

DELETE

Timing can be:

BEFORE

AFTER

Main Purposes of Triggers

Enforce Business Rules Automatically

Ensures rules are followed no matter which application accesses the database

Example:

Prevent negative salary

Prevent deleting critical records

Maintain Data Integrity

Keeps data consistent and accurate

Especially when related tables must stay in sync

QUESTION 5	**Explain the need for data modelling and normalization when designing a database.**
ANSWER	**When designing a database, our goal is to store data in a way that is:**
	Accurate
	Consistent
	Efficient
	Easy to maintain
	Data modelling helps us plan the structure.
	Normalization helps us remove problems in that structure.
	Data Modelling – Design Before Building
	What Is Data Modelling?
	Data modelling is the process of defining how data is structured, stored, and related in a database.
	What entities exist? (Employee, Customer, Order)
	What attributes do they have?
	How are they related?
	Normalization – Clean and Organize Data
	What Is Normalization?
	Normalization is the process of organizing data to:
	Remove redundancy

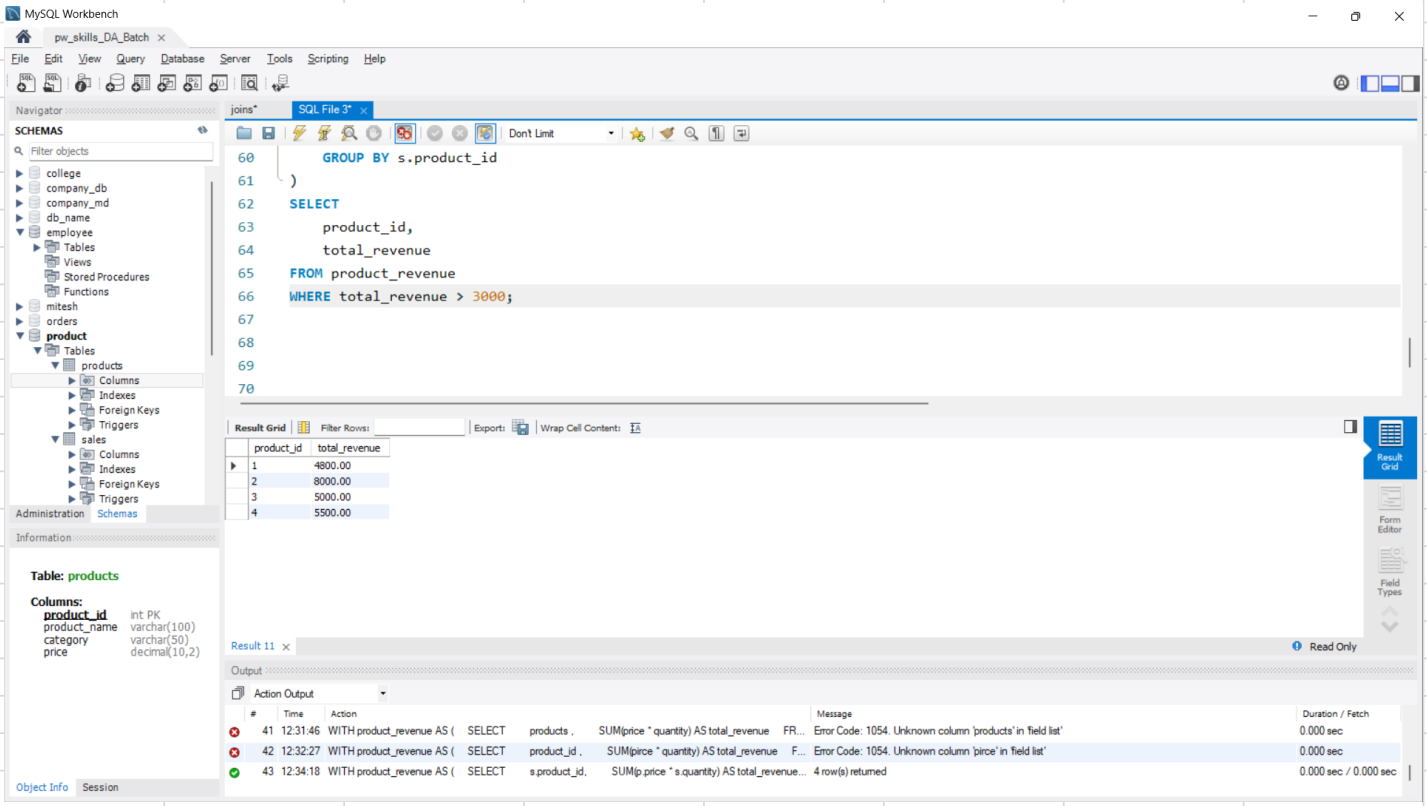
		Avoid anomalies						
		Improve data integrity						

Dataset (Use for Q6–Q9)

QUESTION 6

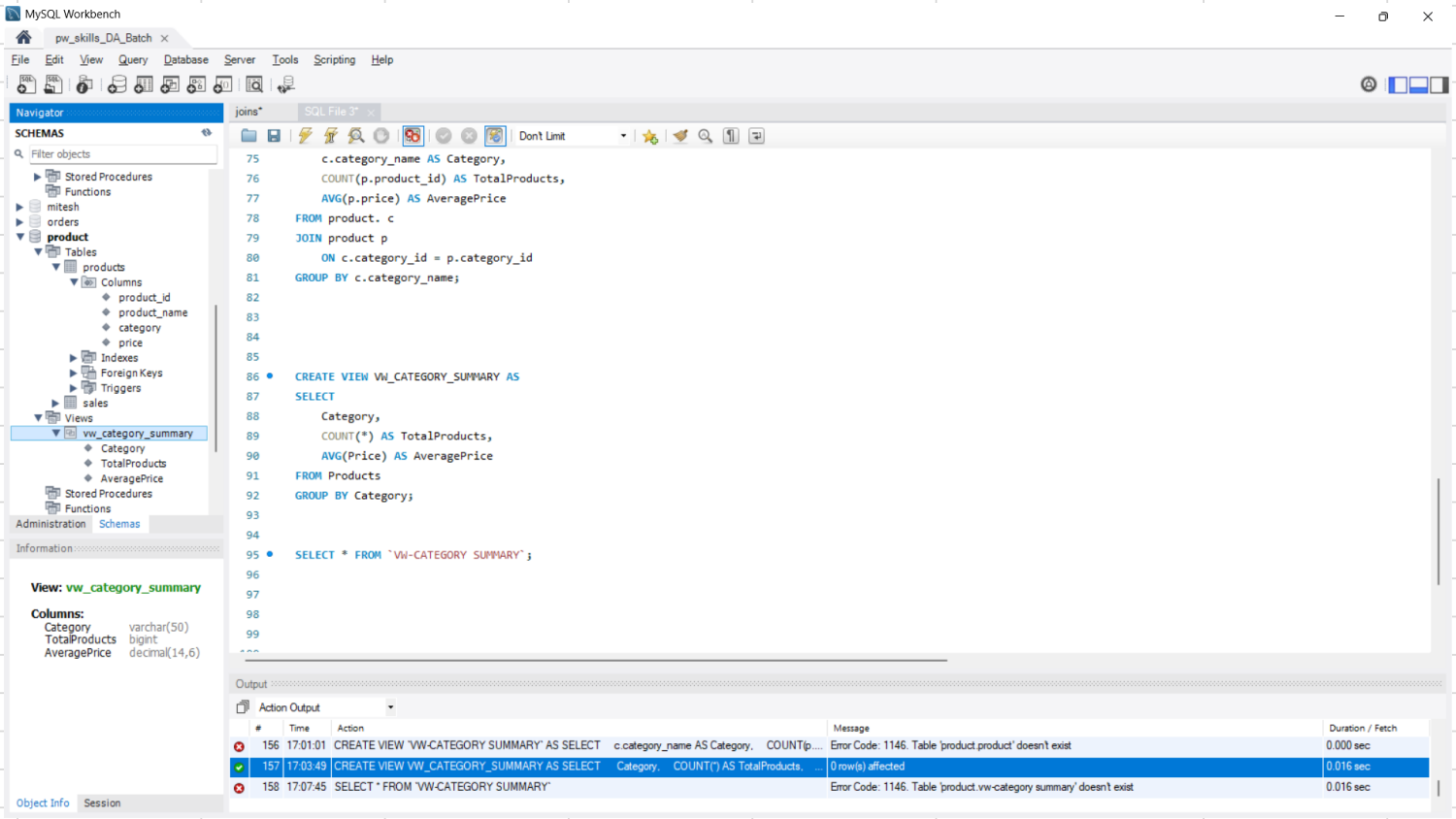
Write a CTE to calculate the total revenue for each product (Revenues = Price × Quantity), and return only products where revenue > 3000.

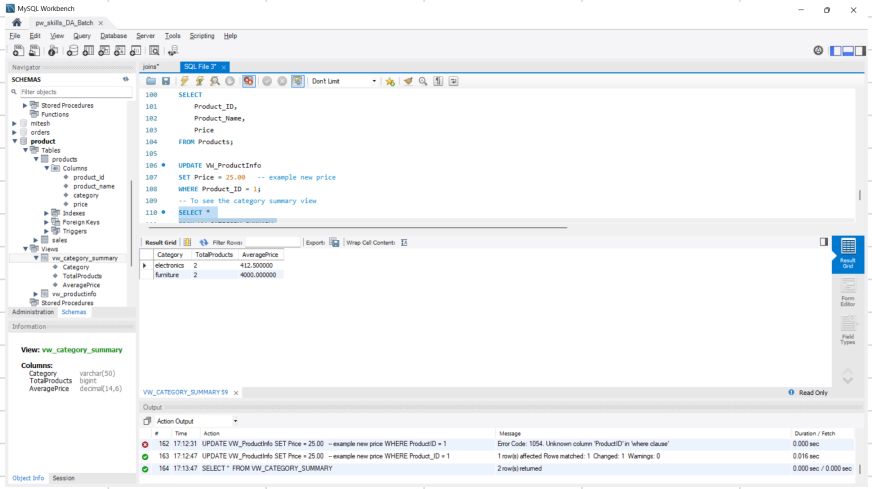
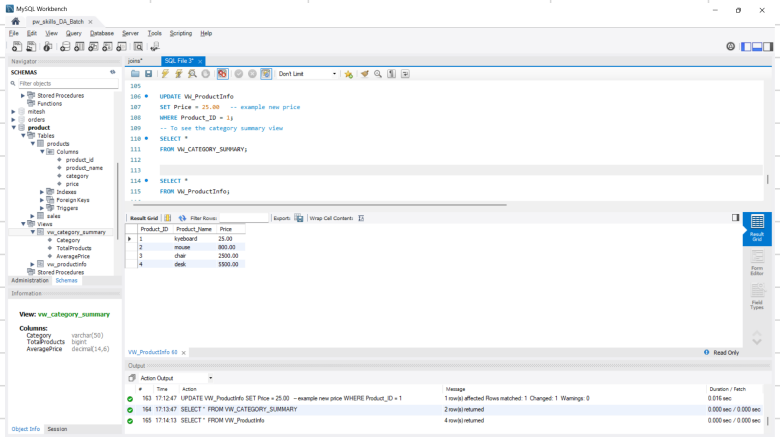
ANSWER



QUESTION 7	Create a view named VW-CATEGORY SUMMARY that shows Category, TotalProducts, AveragePrice.

ANSWER



QUESTION 8	Create an updatable view containing ProductID, ProductName, and Price. Then update the price of ProductID = 1 using the view
ANSWER	 

QUESTION 9		**Create a stored procedure that accepts a category name and returns all products belonging to that category.**						
ANSWER		sorry i didnt get the answer this question						
		please help me for that particular reason						

QUESTION 10	**Create an AFTER DELETE trigger on the product able that archives deleted product rows into a new table product archive .The archive should store ProductID, ProductName, Category, Price, and DeletedAt**
ANSWER	sorry i didnt get the answer this question
	please help me for that particular reason