Virtual University of Pakistan Spring 2025

CS614 – Data Warehousing
Assignment No.1 (Graded)

Maximum Marks: 20

Instructions

Due Date: 02 May 2025

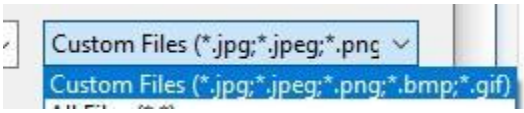
The purpose of this assignment is to give you hands-on practice. It is expected that students will solve the assignment themselves. The following rules will apply during the evaluation of the assignment.

- Cheating from any source will result in zero marks in the assignment.
- The submitted assignment does NOT open, or the file is corrupted.
- No assignment after the due date will be accepted
- Students can submit HTML, Images, & Plain text only in this inline Mode. You may also insert an image file/table.
- The DOC/PDF file uploading option in inline assignment submission is unavailable.

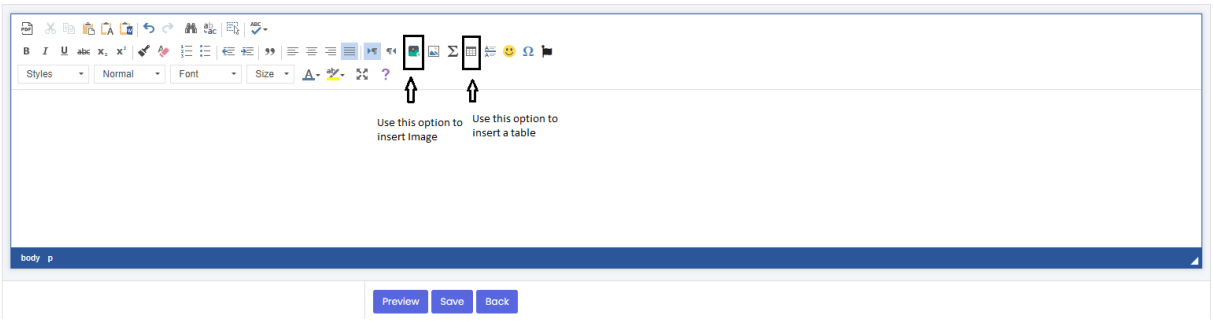
Uploading Assignment Instructions

Follow the given instructions to submit inline assignments.

- You can use MS Visio/ MS Paint to draw the diagram, etc.
- Students can insert the images in the following formats.



- Images and tables can be inserted using the following highlighted option in the interface.



Objective & Learning Outcome

After completing the assignment, the student will be able to understand the Typical Queries and apply Normalization techniques on database tables.

Question No. 1 (Marks = 05)

The following table contains five scenarios related to Online Transaction Processing (OLTP) and Data Warehouse transactions. Each scenario is followed by a blank column where you can identify whether it belongs to OLTP or Data Warehouse.

Transaction	Type (OLTP / Data Warehouse)
1. A customer places an online order for a mobile phone using an e-commerce website.	
2. A business analyst runs a report to compare yearly sales trends across different regions.	
3. A marketing team runs a query to find the top 10 most purchased products in the last quarter.	
4. An ATM transaction updates a customer's bank account balance after a withdrawal.	
5. A user updates their delivery address in their online profile	

Question No. 2 (Marks = 15)

Suppose you are working as a data analyst for a small retail company. The company keeps customer purchase data in a single table called **CustomerOrders**. Here's a simplified version of what the table looks like:

Table 1: CustomerOrders

OrderID	Customer Name	Customer Email	ProductName	ProductPrice	OrderDate
1001	Sarah Khan	sarah@email.com	Wireless Mouse	25	01-04-2025
1002	Sarah Khan	sarah@email.com	Laptop Sleeve	15	03-04-2025
1003	Ali Rehman	ali@email.com	Wireless Mouse	25	04-04-2025

After reviewing the data, your manager suggests that this table violates normalization rules and asks you to redesign it to remove data redundancy.

Based on the scenario above:

1. Identify at least two data redundancy issues in the current table.
2. Suggest how you would normalize the table up to Third Normal Form (3NF) and also convert it to 3NF.

Note: Plagiarism will be checked for each question. Please answer the questions in your own words, and marks will be awarded based on your answer and plagiarism report.

For any query about the assignment, contact at email CS614@vu.edu.pk