Virtual University of Pakistan SEMESTER Fall 2023

CS403 –Database Management Systems
Assignment No.2 (Graded)

Maximum Marks: 20

Due Date: 12th Jan 2024

Instructions

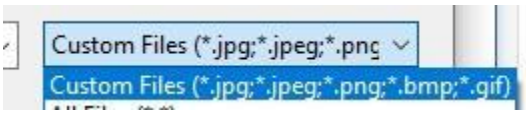
The purpose of this assignment is to give you hands-on practice. It is expected that students will solve the assignment themselves. The following rules will apply during the evaluation of the assignment.

- 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.
- DOC/pdf File uploading option will not be available) in inline assignment submission.

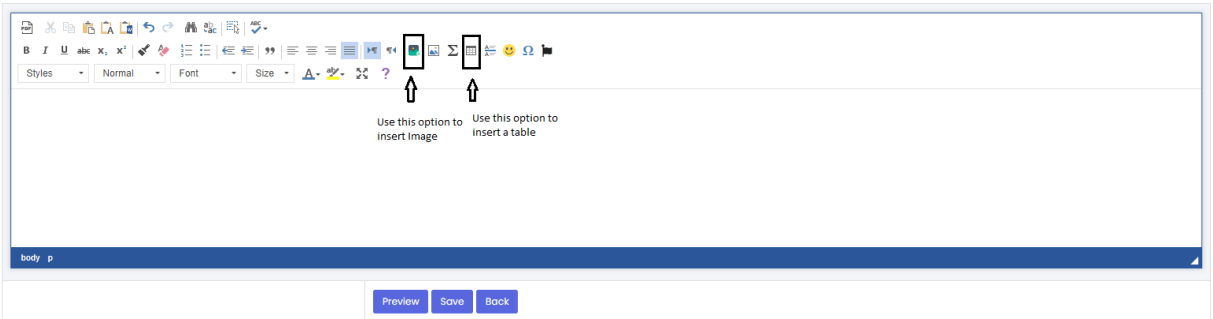
Uploading Assignment Instruction

Follow the given instructions to submit inline assignments.

- Students can insert the images of the following formats.



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



Objectives and Learning Outcomes:

The objectives of this assignment are to:

- Implement Relational Algebra.
- Implement different types of Joins.

The Learning Outcome of this assignment is that,

- Students will be able to implement different types of Joins using relational algebra.

For any query about the assignment, contact at cs403@vu.edu.pk.

Scenario:

Assume that you are working as a database administrator for a company named XYZ. XYZ is a prominent vehicle spare parts manufacturing company known for producing a wide range of spare parts, including Headlights, Bumper , Seats, Tires, Engines, and Breaks for popular car brands such as Toyota, Honda, Suzuki, MITSUBISHI and Nissan. Some of the spare parts such as engines, headlights and engines are delivered in pieces (PCs) while seats, tires and breaks are delivered in sets. As part of your role, you are responsible for managing the company's database to ensure optimal performance and facilitate seamless operations. Review and understand the existing data schema of the spare parts database and perform join operation on the following spare parts.

The Following are the two tables named COMPANY & ITEM.

COMPANY

Comp_ID	Comp_Name	Comp_City	Comp_Ph#
C001	Toyota	Islamabad	051-321002
C002	Honda	Lahore	042-321002
C003	Suzuki	Peshawar	091-321002
C004	MITSUBISHI	Quetta	081-321002
C005	Nissan	Gilgit	092-321002

ITEM

Item_ID	Item_Name	Item_Unit	Item_Quantity	CID
1	Lights	PCs	50	C001
2	Bumper	PCs	20	C002
3	Seats	Set	10	C003
4	Tires	Set	60	
5	Engine	PCs	5	
6	Breaks	Set	14	C005

Question Statement:

Students are required to apply the following Join Operations in the form of relational algebra on given tables "COMPANY and ITEM" and provide resultant tables.

i. Theta Join on Company and Item tables having a condition Item_Unit = PCs
ii. Equi join on Company and Item tables.
iii. Natural join on Company and Item tables.
iv. Semi join on Company and Item tables

Dos:

- Understand Relational Algebra Operations and perform joins.
- In solution, provide only relational algebra expression and resultant table for each type of join.

Donts:

- SQL code for join operations is not required.

Submission Guidelines:

You can insert tables in inline assignment Interface as highlighted in screenshot given in "Uploaded Assignment Instruction" Section.

Labs Covered: This assignment covers Lectures # 17 - 18.

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 CS403@vu.edu.pk