Department of Computing Technologies

# Fundamentals of Data Management

Project Phase-05- D and HD Project

## Project Overview

In today's complex data environment, not all information fits neatly into tables. This project challenges you to design and implement a hybrid data system capable of handling:

- Structured data (e.g., relational tables)
- Semi-structured data (e.g., JSON, XML)
- Unstructured data (e.g., text files, notes, images)

This project is an extension of all previous project phases you have completed. You are now tasked with transforming your prior work into a full-featured smart data system. This final stage should demonstrate your capacity to design and build an advanced, hybrid data solution suitable for real-world deployment.

In this phase, you must extend it by integrating semi-structured (e.g., JSON/XML) and unstructured (e.g., text, image) data and advanced query processing.

I. Design a basic interface for interacting with your database:

   a) Role-based access (admin/user)
   b) Connect to your MySQL database as well as unstructured and semi-structured data storage.

II. Design a reporting module that summarizes key metrics from your database:

   a) Prepare at least three reports (e.g., joining at least three entities, usage trends, summary statistics) containing data from a variety of sources (unstructured, semi-structured and structured). It is important that your reports reflect the requirements of your domain.
   b) Include filtering and sorting options.
   c) Implement export functionality (CSV or PDF).
   d) Automate report generation using stored procedures or scheduling tools.

Note: In order to create a single report, you must combine the outputs of MySQL, text files, and JSON files. In the context of data integration, this is a common requirement.

## Submission

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| Presentation Slides | Slide deck summarizing your approach, architecture, file structure, queries, and results/outputs |
| Code as a Zip file | .sql / .json / .xml + .txt+… |
| Final Video (for D students) | 10-min walkthrough with real data and slides. |
| Live Interview (for HD students) | Live Presentation + Justify and demonstrate work during evaluation |
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