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CMSC 461

CMSC 461 Project Phase A & B Report

The project is an implementation of a SQL database powered by Python and intractable by a user to perform a specified set of actions, while following a series of steps in order to ensure maximum familiarisation with the processes involved in the designing of a database.

Project Phases Analysis

Phase A of the project consists of an analysis of each phase of the project as well as analysis of the requirements of the database server to be created. By analysing the phases of the project in depth, one can learn more about and better understand the various steps of designing a database server.

Phase B of the project involves the creation of ER diagrams identifying relationships, entities, attributes and constraints that become the design of the final database's tables. This phase involves close analysis of the project requirements in order to create entities containing the correct required attributes and relationships.

Phase C of the project is the mapping of Phase B's ER model to actual tables that will be used in the database server. Normalisation skills will be applied in this phase to produces the most efficient tables possible whilst retaining satisfaction of project requirements.

Phase D is the writing of SQL scripts to create physical SQL tables based on designs made in earlier phases. This phase will test SQL writing skills and understanding of the ER model and tables designed in previous phases. The requirements must be well understood in order to write efficient scripts retrieving the correct required information from the tables.

Phase E is the development of the Python interface which will interact with the SQL database and perform required actions, as well as indexing of the database. This phase will require skills on how to properly use the SQL database now that it has been created.

Requirements Analysis

The database to be implemented is an academics-assisting database designed to process graduate applications to a college. Applications contain a variety of information and are ultimately evaluated by a professor and given a final decision. The requirements specify a list of queries the database should be able to make, and most of these queries seem to be statistical data retrievals of the applications in the database.

Data Requirements Analysis
What required attributes I determined each required entity should have, based on the project descriptions.

Applicant
- -student ID
- -contact information
- -birthday
- -name
- -gender

Application
- -degree program
- -GRE information
- -essay
- -requirements answers
- -semester
- -year
- -reference emails
- -education

Degree Program
- -name
- -director
- -email
- -department
- -phone

Admission Requirement
- -question
- -possible answers

Admission Rubric
- -evaluation criteria
- -criteria possible score and description

Admission Evaluation
- -professor [making evaluation]
- -decision
- -degree program
- -criteria scores
- -date/time for evaluation decision and evaluation creation