CS310- DBMS - Class Hackathon ***04 /02/2022*** ***30 Marks*** ***Duration : Total 3 hours***
Test Time : 4.00 PM to 7.00 PM - GitHub Upload Time(before 7.00 PM)

Read the following description and answer the questions given at the end.
Instructions : 1. Coping is not allowed. 2. PDF version of the Conceptual data model and Physical data model (ERD) to be uploaded on Git hub account. 3. OPTIONAL: If student is unable to work due to any reason specific to machine or network related challenges, he/she can work in a two member team. They need to state the reason in the Google sheet and mention their names and roll numbers properly.
4. Use only institute user ids while answering and uploading the documents..

PROBLEM STATEMENT :*The following Swimming Pool database has been designed to hold information about users who are enrolled in swim classes. The information is stored in the given relations- students, enrolment, swim classes, pools where classes are held, instructors for the classes, and various levels of swim classes. DRAW Conceptual and Physical data model based on the following instructions. Relations(Tables) and attributes are mentioned below.*

Note: While creating the data models, you are instructed to replace the letter tbl with your roll number in all the Relations(Tables)

Relation/Table 1: tblLevels
Level – PK
ClassName – text 25 – nulls are not allowed

Relation/Table 2: tblPool
Pool – PK
PoolName – text 25 – nulls are not allowed
Location – text 20

Relation/Table 3: tblStaff
FirstName – text 20
MiddleInitial – text 3
LastName – text 20
Suffix – text 3
Salaried – Bit
PayAmount – money
StaffID – PK

Relation/Table 4 : tblClasses
LessonIndex – PK
Level – Integer FK
SectionID – Integer

Semester – Int

Days – text 20

Time – datetime

Pool – Integer FK

Instructor – Integer FK

Limit – Int

Enrolled – Int

Price – money

Relation/Table 5: tblEnrollment

LessonIndex – Integer FK

SID – Integer FK (LessonIndex and SID) Primary Key

Status – text 30

Charged – bit

AmountPaid – money

DateEnrolled – datetime

Relation/Table 6: tblStudents

SID – PK

FirstName – text 20

MiddleInitial – text 3

LastName – text 30

Suffix – text 3

Birthday – datetime

LocalStreet – text 30

LocalCity – text 20

LocalPostalCode – text 6

LocalPhone – int

Questions :

1. Write the schema for all the relations and design a Conceptual Data model (ERD)- Use online Tool or any other DBMS software . Submit a screenshot of the Conceptual Data model with all the descriptions as a PDF on the GitHub *(Note: While creating the data models, you are instructed to replace the letter tbl with your roll number in all the Tables)*

2. Identify degree and cardinality in the conceptual data model.

3.Assume the following rules and draw Physical Data model (ERD). Submit a screenshot of the Physical Data model with all the descriptions as a PDF on the GitHub .

a. A pool may or may not ever have a class.

		b. The levels table must always be associated with at least one class.
		c. The staff table may not have ever taught a class.
		d. All students must be enrolled in at least one class.
		e. The class must have students enrolled in it.
		f. The class must have a valid pool.
		d. The class may not have an instructor assigned.
		e. The class must always be associated with an existing level.
		4. List the weak entity, if exists? Convert them to Strong entity wherever possible in your Physical data model. Create additional Tables if required.
		5. Physical data model should have minimal scope for data redundancy. Highlight such data redundancy scenarios in your Physical data model Table if it exists.