DBMS-Class Hackathon

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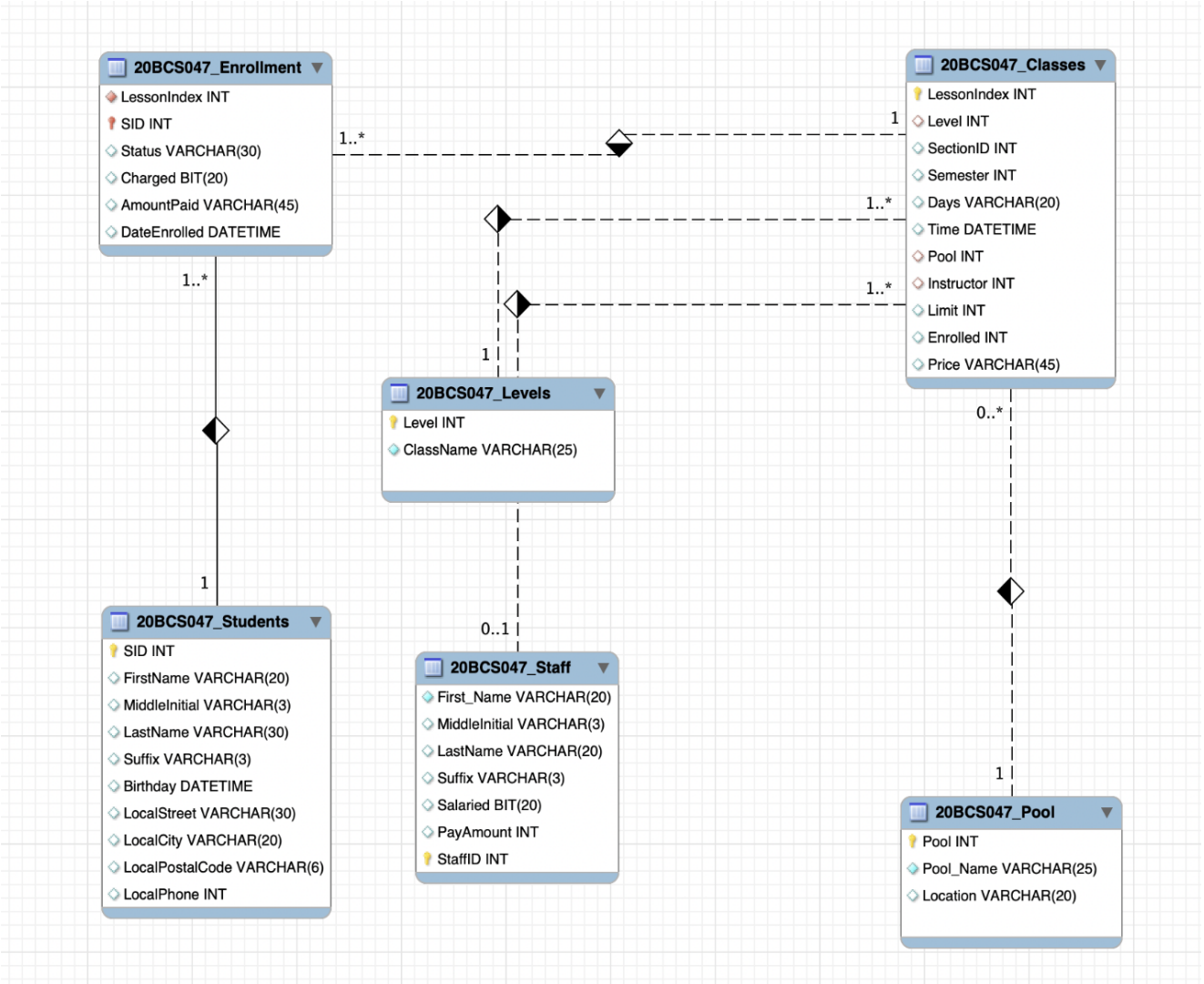
Entity-Relationship Diagram:



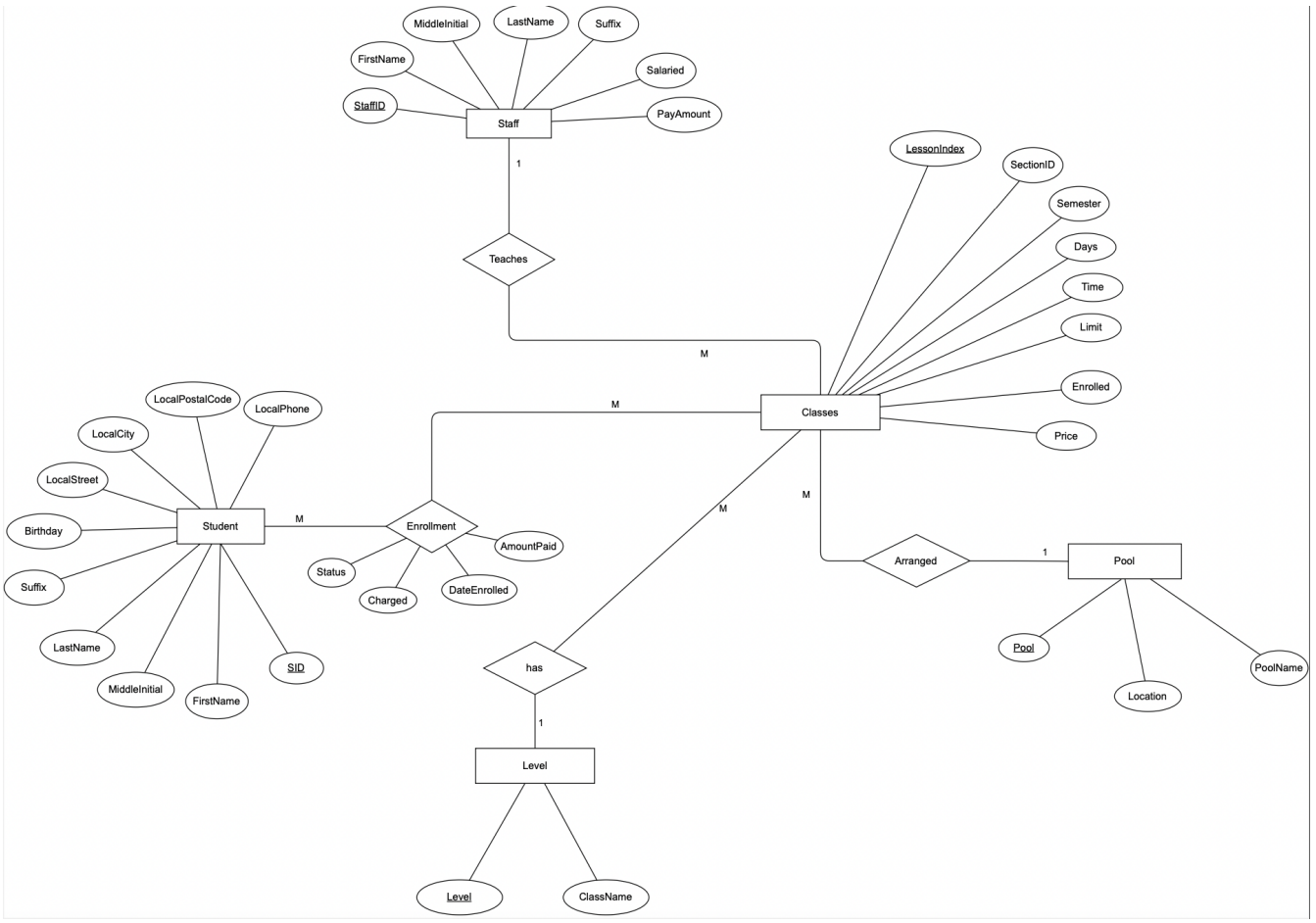
2. All the relationships in the above ERD diagram are binary relationships.

The Degree of these relationships is 6 (Quaternary)

All the relationships in the above ERD diagram are binary relationships. The cardinality of these relationships is as follows:

- Students-Enrollment : One to Many
- Enrollment-Classes: Many to One
- Classes-Staff: Many to One
- Classes-Pool: Many to One
- Classes-Level: Many to One

3. Conceptual E-R Diagram:



4. As we can see from the above diagram one instructor can take many classes but it is mandatory that each class have an instructor (from staff) while the participation of staff is optional i.e. it is not necessary that an instructor has a class assigned to him/her.

Similarly a pool can be used to conduct many classes but it is mandatory for a class to be conducted inside a pool. There can be a pool where no classes are conducted hence it's participation in the relationship is optional.

A class has to be on some level (beginner, intermediate, advanced etc…) and there will be at least one class for every level.

In the above diagram we can see that enrollment is a weak entity as it has no unique primary key. One Student can enroll into many classes and many students can enroll for the same class. So we cannot use student id or class id to identify enrollment. So we use a composite key consisting of two foreign keys SID and LessonIndex and assign it as the primary key. Thus we can give each enrollment a unique id and convert it into a strong entity by identifying it using two strong entities.

Since a student has to enroll and a class must have enrolled students we can infer that a class will have at least one student.

There can be a situation when one class is conducted more than once in a day for the same group of students. It is possible that due to timing clashes that these classes are conducted by the same instructor in different pools or by different instructors in different pools or by different instructors in different pools. In any case there will be multiple records of that class with a change in only two or three fields. Due to this any update in record might be tricky.
This can be solved by creating another entity which can be identified through a combination of instructor id and lesson id.

5.

In the table no 2 and 5 have same attribute ,i.e, named SID so we can relate in one