QAP 2 – Databases

Exercise 5 – Students and Classes

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1. **Location:**
   * Attributes: **location\_id** (PK), **street\_address**, **unit\_number**, **postal\_code**, **city\_id** (FK), **province\_id** (FK).
   * Associations: One-to-One relationship with University (each university has one location), Many-to-One relationship with City and Province (many locations can belong to one city and one province).
2. **University:**
   * Attributes: **university\_id** (PK), **university\_name**, **university\_head**, **university\_email**, **location** (FK).
   * Associations: One-to-One relationship with Location (each university has one location), One-to-Many relationship with Department (each university can have multiple departments).
3. **Department:**
   * Attributes: **department\_id** (PK), **department\_name**, **department\_head**, **department\_email**, **university\_id** (FK).
   * Associations: Many-to-One relationship with University (each department belongs to one university), One-to-Many relationship with Faculty (each department can have multiple faculty members), Many-to-Many relationship with Student (each department can have multiple students, and each student can be enrolled in multiple departments).
4. **Faculty:**
   * Attributes: **faculty\_id** (PK), **faculty\_first\_name**, **faculty\_last\_name**, **faculty\_email**, **university\_id** (FK), **department\_id** (FK).
   * Associations: Many-to-One relationship with University (each faculty member belongs to one university), Many-to-One relationship with Department (each faculty member belongs to one department), One-to-Many relationship with FacultySemesterClass (each faculty member can teach multiple classes in multiple semesters).
5. **Student:**
   * Attributes: **student\_id** (PK), **student\_first\_name**, **student\_last\_name**, **student\_email**, **university\_id** (FK).
   * Associations: Many-to-One relationship with University (each student belongs to one university), Many-to-Many relationship with Department (each student can be enrolled in multiple departments, and each department can have multiple students), Many-to-Many relationship with SemesterClass (each student can be enrolled in multiple classes in multiple semesters).
6. **Class:**
   * Attributes: **class\_id** (PK), **class\_name**.
   * Associations: Many-to-Many relationship with Semester (each class can be offered in multiple semesters, and each semester can have multiple classes), One-to-Many relationship with SemesterClass (each class can have multiple instances in different semesters).
7. **Semester:**
   * Attributes: **semester\_id** (PK), **semester\_name**.
   * Associations: Many-to-Many relationship with Class (each semester can have multiple classes, and each class can be offered in multiple semesters), One-to-Many relationship with SemesterClass (each semester can have multiple class instances).
8. **SemesterClass:**
   * Attributes: **semester\_id** (FK), **class\_id** (FK), **semester\_class\_id** (PK).
   * Associations: Many-to-One relationship with Semester (each semester class belongs to one semester), Many-to-One relationship with Class (each semester class belongs to one class), One-to-Many relationship with StudentSemesterClass and FacultySemesterClass (each semester class can have multiple enrolled students and faculty members).
9. **StudentSemesterClass:**
   * Attributes: **student\_id** (FK), **semester\_class\_id** (FK), **student\_semester\_class\_id** (PK).
   * Associations: Many-to-One relationship with Student (each record belongs to one student), Many-to-One relationship with SemesterClass (each record belongs to one semester class), One-to-Many relationship with ExamStudentGrade (each student semester class can have multiple exam grades).
10. **FacultySemesterClass:**
    * Attributes: **faculty\_id** (FK), **semester\_class\_id** (FK).
    * Associations: Many-to-One relationship with Faculty (each record belongs to one faculty member), Many-to-One relationship with SemesterClass (each record belongs to one semester class).
11. **ExamStudentGrade:**
    * Attributes: **exam\_type\_id** (PK), **exam\_type**, **grade**, **student\_semester\_class\_id** (FK).
    * Associations: Many-to-One relationship with StudentSemesterClass (each exam grade belongs to one student semester class).

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