

**King Fahd University of Petroleum and Minerals**

**Information and Computer Science Department**

**ICS324**

**Term 143**

**Phase 1: Conceptual and Logical Design**

**Team Number:**

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# Problem Statement

We have to design and implement a database that can be used by academic institutions to record the grades of students in specific course. To design this, we have to consider 3 main actors: student, instructor and a course. Each of those will affect the final product.

# Assumptions

* 1. We will assume that the database will be made for KFUPM use.
  2. We will assume that the length of names will not exceed 15 characters.
  3. We will assume that the condition on delete will be ‘set null’.
  4. Assume that each course will have at least 2 grading component.
  5. Assume that the number of grading component for all courses won’t exceed 1000.

# Database Requirements (defines the entities, attributes, relationships and constraints).

We can summarize the database requirements as follows:

1. Main Entities:
2. Attributes of Each Entity:
3. Relationships between Entities:
4. The constraints:

# Conceptual schema (ER/EER Model)

# Relational schema (all relations and constraints)

COLLEGE

|  |  |  |
| --- | --- | --- |
| Id | Name | Abbreviation |

DEPARTMENT

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Name | abbreviation | Course\_id |

MAJOR

|  |  |  |
| --- | --- | --- |
| name | code | Department\_id |

STUDENT

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Fname | Lname | Major\_name |

ENROLLMENT

|  |  |  |
| --- | --- | --- |
| Reg\_date | Student\_id | Ref\_ number |

COURSE

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Title | Number | Major\_name |

SECTION

|  |  |  |
| --- | --- | --- |
| Ref\_number | Course\_id | Instructor\_id |

GRADE\_CUTOFFS

|  |  |  |
| --- | --- | --- |
| Letter\_grade | Value | Ref\_ number |

GRADING\_COMPONENT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Max\_point | Weight | Id | Course\_id | Instructor\_id |

INSTRUCTOR

|  |  |  |
| --- | --- | --- |
| Id | Fname | Lname |

POINT

|  |  |  |
| --- | --- | --- |
| Earned\_point | Instructor\_id | Grade\_compnent\_id |

ENROLLED\_IN

|  |  |
| --- | --- |
| Student\_id | Ref\_number |

# DDL STATEMENTS TO CREATE DATABASE TABLES