**Table of contents:**

* Major (MID, Major, Track)
* User (ID, Email, Password, Name, MID)

FK: MID refers to Major.

* RequireType(RTID, TypeName, TotalCredit)
* GraduateRule (MID, RTID)

FK: MID refers to Major not null.

FK: RTID refers to RequireType not null.

* GroupsOfType (GID, RTID, GroupAlternative, Grade)

FK: RTID refers to RequireType

* Class(CID,CName,Desription,Credit,EvaluationRate,EvaluationNumber)
* ClassesOfGroup(GID,CID, ClassAlternative)

FK: GID refers to GroupsOfType not null.

FK: CID refers to Class not null.

* ChosenClass (ID, CID)

FK: ID refers to User not null.

FK: CID refers to Class not null.

* DependentClass(CID1, CID2, DCAlternative)

FK: CID1 refers to Class not null.

FK: CID2 refers to Class not null.

* Term(TID, TermName)
* ScheduleClass(TID,CID)

FK: TID refers to Term not null.

FK: CID refers to Class not null.

**Logical Design:**

1. Major table is an entity that store some all tracks for each major.
2. User table is an entity that store the some personally basic information. Additionally, each person has a track in a major which depends on Major table.
3. RequireType is an entity. For each track, it ask students to finish some classes for Lower Division, Upper Division and so on. Therefore, this table stores the required types for each track.
4. GraduateRule is a weak entity that connects Major table and RequireType table because that is multi-to-multi relations. For example, the track, "Business Information Systems," require CIS Core Requirements. Database and Informatics also asks CIS Core Requirements.
5. GroupsOfType is an entity. For each required type in a track, it may ask students to take several groups of classes. It also may ask students to take one or two groups of several groups of classes.
6. Class is a core entity which store the information for each class.
7. ClassesOfGroup is a weak entity. It looks like a subgroup table. For each group of classes, it requires students to finish all classes in a group, and it also may require students to finish one or two classes from several classes.
8. ChosenClass is a weak entity which saves the information about which students have already token classes. The application analyzes this table and the requirement to get a result that show which classes that students need to take for the track.
9. DependentClass is a weak entity which shows relationship of each classes. For example, CIS 210 have to be token before taking CIS 211.
10. Tearm is a entity which just saves the name of each term like Sprint 2014, Summer 2014.
11. ScheduleClass is an entity which will stores whole classes for each term. For instance, Spring 2014 will have classes CIS 212, Math 251 and so on.

**Physical database design:**

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| --- | --- | --- |
| People | | |
| SSN | INT(9) | Social security number, PK |
| Fname | CHAR(30) | First Name |
| Lname | CHAR(30) | Last Name |
| Sex | CHAR(1) | The Gender of people. Values: Y or N |
| Birthday | Date | Birthday |
| Address | CHAR(100) | Current living address |
| PhoneNumber | CHAR(10) | Cell phone number |

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| --- | --- | --- |
| Major | | |
| MID | INT(4) | Major ID, PK, Auto Increment |
| Major | CHAR(30) | Major Name |
| Track | CHAR(30) | Track Name |

|  |  |  |
| --- | --- | --- |
| User | | |
| ID | INT(5) | User ID, PK, Auto Increment |
| Email | CHAR(30) | Email Address; Login ID, PK |
| PassWord | CHAR(20) | Login Password |
| Name | CHAR(20) | User Name |
| MID | INT(4) | Major ID, FK to Major table |

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| --- | --- | --- |
| ReuqireType | | |
| RTID | INT(5) | Required type ID for each track, PK, Auto Increment |
| TypeName | CHAR(30) | Type Name |
| TotalCredit | INT(3) | The total credits for each type in tracks. |

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| --- | --- | --- |
| GraduateRule | | |
| MID | INT(4) | Major ID, PK, FK to Major table |
| RTID | INT(5) | Required type ID, PK, FK to RequireType table |

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| --- | --- | --- |
| GroupsOfType | | |
| GID | INT(5) | Group ID for each required type, PK, Auto Increment |
| RTID | INT(5) | Required type ID, PK, FK to RequireType table |
| GroupAlternative | CHAR(1) | Values: Y or N.   1. N: It means a required type ask student to take several groups of classes. 2. Y: It means a required type ask student to take one or two groups of several groups of classes. |
| Graded | CHAR(1) | Values: Y or N.   1. N: It means a required type ask student to take the classes as Pass/No Pass or Graded 2. Y: It means a required type ask student to take the classes as Craded. |

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| --- | --- | --- |
| Class | | |
| CID | INT(5) | Class ID, PK, Auto Increment |
| CName | CHAR(80) | Class Name, PK |
| Description | Text | Class Description |
| Credit | INT(1) | Class Credit |
| EvaluationRate | FLOAT | The evaluated rate for each class, it means average score |
| EvaluationNumber | INT(4) | The feedback times of evaluations. |

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| --- | --- | --- |
| ClassesOfGroup | | |
| GID | INT(5) | Group ID for each required type, PK, FK to GroupsOfType table. |
| CID | INT(5) | Class ID, PK, FK to Class table |
| ClassAlternative | CHAR(1) | Values: Y or N.   1. N: It means a group ask student to take all classes in this group. 2. Y: It means a group ask student to take one or two classes from this group. |
| Graded | CHAR(1) | Values: Y or N.   1. Y: The courses must be taken Graded. 2. N: The courses may be taken Pass/No Pass or Graded |

|  |  |  |
| --- | --- | --- |
| ChosenClass | | |
| ID | INT(5) | User ID, PK, FK to User table |
| CID | INT(5) | Class ID, PK, FK to Class table |

|  |  |  |
| --- | --- | --- |
| DependentClass | | |
| CID1 | INT(5) | Class ID, The class will depend on another class. PK, FK to Class table |
| CID2 | INT(5) | Class ID, The class will be depended by another class. PK, FK to Class table |
| DCAlternative | CHAR(1) | Values: Y or N.   1. N: It means a group ask student to take all classes. 2. Y: It means a group ask student to take one class from several classes |

|  |  |  |
| --- | --- | --- |
| Term | | |
| TID | INT(5) | Term ID, PK, Auto Increment |
| TermName | CHAR(20) | Term Name (Season + Year) |

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| --- | --- | --- |
| ScheduleClass | | |
| TID | INT(5) | Term ID, PK, FK to Term table |
| CID | INT(5) | Class ID, PK, FK to Class table |