Design a school's course registration database.

1.Create proper business rules for the database.

1). Each student has a unique student ID and a profile. The profile includes first/last names, gender, date of birth, local address, department, enrolled year, username, login password, and may have a picture. You can also add other necessary information.

2). Each instructor has a unique faculty ID and a profile. The profile must indicate the instructor's department(s). An instructor may work at more than one department.

3). Each course has a course number, an instructor, given department, term, credits, classroom, periods, prerequisite courses, textbooks, and other information you think is necessary.

4). A classroom has a unique ID and a unique location. Classrooms can hold more than one course each term, but these courses cannot conflict in time. Classrooms have capacities. Registered students' numbers cannot exceed the classroom capacity.

5). Must maintain all the courses a student has already taken/registered. This is used to check course prerequisites when registering.

6). Students may login (with username and password) to the system to register for courses or retrieve all the courses they have already taken/registered.

7). Instructors may login (with username and password) to the system to add courses or retrieve all the courses they have already given/added.

8). A student cannot register a course if 1) they don't meet the prerequisites, 2) the students registered in the course exceed the capacity of the classroom, 3) the course has a time conflict with other courses in the same term.

9). An instructor cannot add a course if: 1) the classroom has already been occupied by another course in the same period, 2) he/she has another course in the same period, 3) he/she is not affiliated to the department of this course

10). A day has 12 periods and a week has 5 days. The instructor provides periods when adding courses to the system.

11). Students may retrieve all the courses given by a department, an instructor, or held in a specific period.

12). A college can have several departments. Each department belongs to a college.

<college><must><have><at least one><department>

< department ><must><belong to>< one>< college>

13). A department can have several courses. Each course belongs to a department.

< department ><can<have><at least one>< course>

< course ><belong to>< one>< department >

14). A student can register for several courses. Each course can be registered by several students.

< student><can>< register for ><at least one><course>

< course >< can be registered ><by>< more than one><students>

15). There can be an arbitrary number of students/instructors /classrooms/courses

2. Define data and entities for the database

Entities:

Student
StudentID
Name

Instructor
InstructorID
Name

Course
CourseID
Name
Credits

Registration
RegistrationID
Type
StudentID
SectionID

Section
SectionID
Number
Classroom
Date/Time
CourseID
InstructorID

College
CollegeID
Name
Address
Telephone

Department
DepartmentID
Name
CollegeID

3.Define metadata based on your item #2.

Entity type:student

Attributes	Data type	Required/Optical	Key	Description
StudentID	Varchar(20)	Required	PK	The ID of the student
Name	Varchar(20)	Required		The name of the student

Entity type:Instructor

Attributes	Data type	Required/Optical	Key	Description
Instructor ID	Varchar(20)	Required	PK	The ID of the instructor
Name	Varchar(20)	Required		The name of the instructor

Entity type:Course

Attributes	Data type	Required/Optical	Key	Description
CourseID	Varchar(20)	Required	PK	The ID of the course
Name	Varchar(20)	Required		The name of the course
Credits	Varchar(20)	Required		The credits of the course

Entity type: Registration

Attributes	Data type	Required/Optical	Key	Description
Registration ID	Varchar(20)	Required	PK	The ID of the Registration
Type	Varchar(20)	Optical		The type of the student
StudentID	Varchar(20)	Required		The ID of the student
SectionID	Varchar(20)	Required		The ID of the section

Entity type: Section

Attributes	Data type	Required/Optical	Key	Description
SectionID	Varchar(20)	Required	PK	The ID of the Section
Number	Varchar(20)	Required		Section number
Classroom	Varchar(20)	Required		Classroom name/number
Date/Time	DATE	Required		Course date/time
CourseID	Varchar(20)	Required	FK1	The ID of the course
InstructorID	Varchar(20)	Required	FK2	The ID of the instructor

Entity type: College

Attributes	Data type	Required/Optical	Key	Description
CollegeID	Varchar(20)	Required	PK	The ID of the College
Name	Varchar(20)	Required		College name
Address	Varchar(20)	Required		College address
Telephone	INT	Required		College phone number

Entity type: Department

Attributes	Data type	Required/Optical	Key	Description
DepartmentID	Varchar(20)	Required	PK	The ID of the Department
Name	Varchar(20)	Required		College name
CollegeID	Varchar(20)	Required	FK	The ID of the College

4.Draw an ERD for your data model (do not mix two different ER icons, use only one format).