ER Diagram Exercise 1

Draw an ER diagram to model a university database as described below. Represent the situation as accurately as possible, including participation, cardinality, and key constraints as appropriate. Also identify any attributes which are required (i.e. should be NOT NULL). Note any constraints present that you did not capture in the diagram along with a reason why they were omitted. If necessary specifics are lacking in the description of the situation, make reasonable assumptions and state those assumptions.

1. Student information includes each student's name (required), ID number (required), social security number, current address and phone, permanent address and phone (required), birth date, sex, and class (first year, sophomore, junior, senior). Some applications need to refer to the city, state, and zip code of the student's permanent address and to the student's last name. Both the social security number and student ID number are unique for each student. Class is determined by the number of credits earned.
2. A student's major(s) and minor(s) are also recorded. A major and a minor or second major are required to graduate.
3. Course information includes the course name, course description, subject prefix (e.g. CPSC), course number, and number of credits. The subject prefix and course number uniquely identify each course. Every course must be offered by a department, and one course cannot be offered by more than one department.
4. Each section of a course has an instructor, the term in which it is offered (a code which includes semester and year), and a section number. The section number distinguishes sections of the a course that are taught in the same term; its values are 1, 2, 3, etc up to the number of sections of that course taught in that term.
5. Students register for particular sections of courses. At the end of the term, a grade for the course is recorded.

A graph paper with writing on it

Description automatically generated

Not needed:

Some applications need to refer to the city, state, and zip code of the student's permanent address and to the student's last name.

Added:

Every student must enroll in a section

Every section must have enrollment by students

Every instructor must teach a section

Every section must record a grade

Every grade must be recorded by a section

Each section can only be part of one course