Individual Exercise 1:

Questions:

a) *Specify the following queries in SQL on the database schema of Figure 1.2.*

   a. *Retrieve the name of each course along with the name of the instructor who taught that course during the fall of 08.*

```
SELECT Course_name, Instructor
FROM COURSE
INNER JOIN SECTION
ON COURSE.Course_number = SECTION.Course_number
WHERE Semester = 'Fall' AND YEAR = '08';
```

   The expected output for this query should be Discrete Mathematics by Chang, Intro to Computer Science by Anderson, and Database by Stone, all in the of fall of 08.

   b. *For each section taught by Professor Anderson, retrieve the course number, semester, year, and number of students who took the section.*

```
SELECT Course_number, Semester, Year, COUNT(Student_number)
FROM SECTION
INNER JOIN GRADE_REPORT
ON SECTION.Section_identifier = GRADE_REPORT.Section_identifier
WHERE Instructor = 'Anderson'
GROUP BY Course_number, Semester, Year;
```

   The expected output for this query should be course number CS1310 in semester Fall, with 1 student undertaking that course, and in years 07 and 08.

   c. *For each student who completed more than two courses, retrieve the name, student number of the student and the number of courses completed by that student.*

```
SELECT STUDENT.Name, GRADE_REPORT.Student_number, COUNT(Section_identifier)
FROM STUDENT
INNER JOIN GRADE_REPORT
ON STUDENT.Student_number = GRADE_REPORT.Student_number
WHERE Section_identifier > 2
GROUP BY Name, Student_number;
```

   The expected output for this query should be name Smith, student number 17, with the number of courses completed by that student being 4.

STUDENT

Name	Student_number	Class	Major
Smith	17	1	CS
Brown	8	2	CS

COURSE

Course_name	Course_number	Credit_hours	Department
Intro to Computer Science	CS1310	4	CS
Data Structures	CS3320	4	CS
Discrete Mathematics	MATH2410	3	MATH
Database	CS3380	3	CS

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
85	MATH2410	Fall	07	King
92	CS1310	Fall	07	Anderson
102	CS3320	Spring	08	Knuth
112	MATH2410	Fall	08	Chang
119	CS1310	Fall	08	Anderson
135	CS3380	Fall	08	Stone

GRADE_REPORT

Student_number	Section_identifier	Grade
17	112	B
17	119	C
8	85	A
8	92	A
8	102	B
8	135	A

PREREQUISITE

Course_number	Prerequisite_number
CS3380	CS3320
CS3380	MATH2410
CS3320	CS1310

Figure 1.2 Example of a simple database

b) Map the BANK ER schema shown in Figure 3.22 into a relational schema. Specify all primary keys and foreign keys.

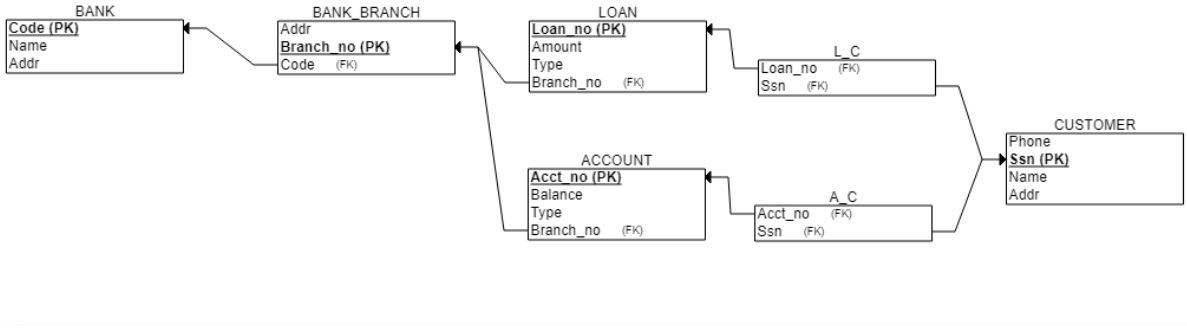

Figure 3.22
An ER diagram for a BANK database schema.