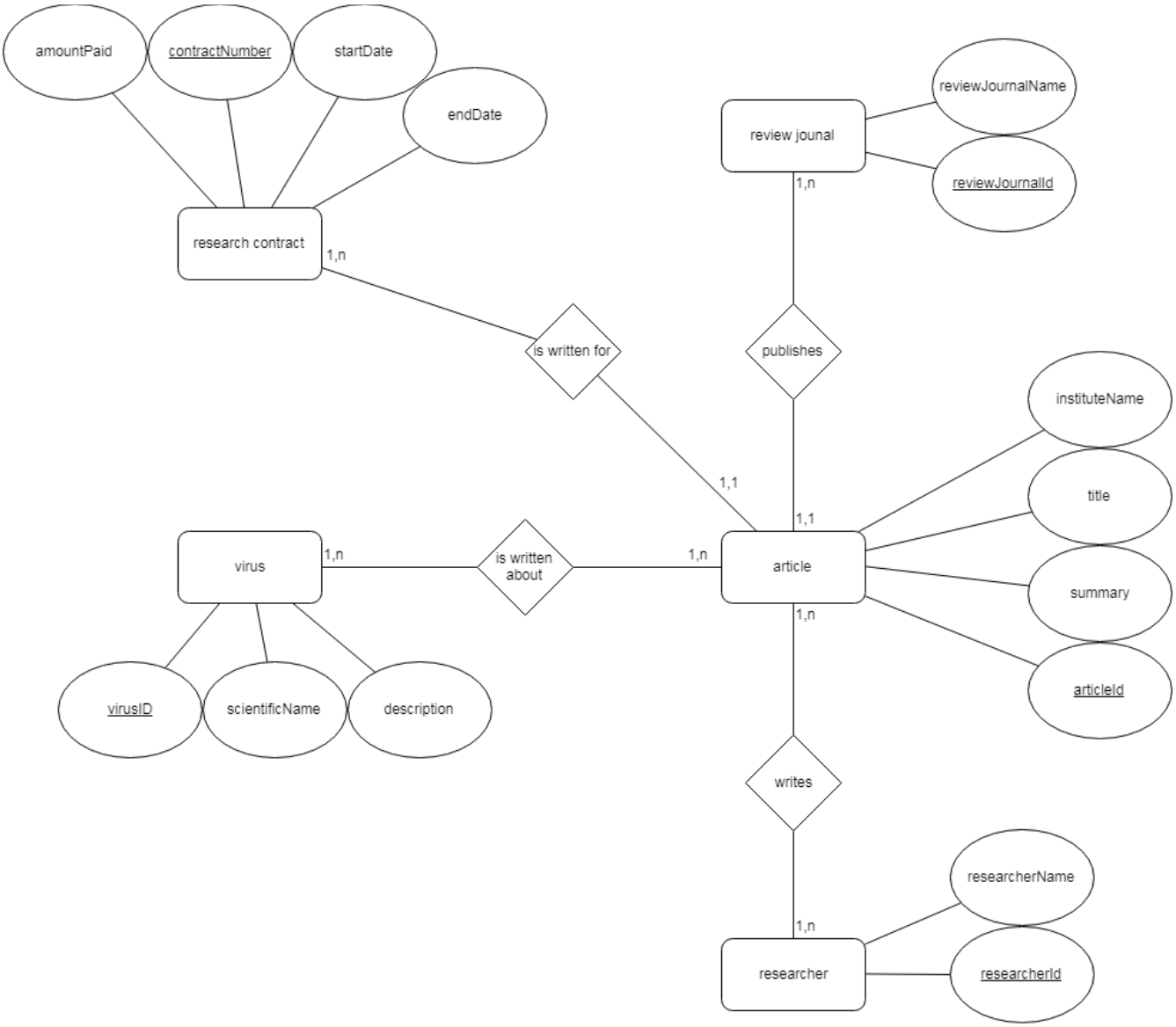
Exercises

1. Look at the database represented in the E-R diagram named 'E-R diagram – carpooling service company' (on Omnivox – also present in today's review of the last course) and:

- Formulate ten queries that might be made to that database.
- Identify the integrity constraints that have to be respected.
- Put each entity from the diagram in a table (turning it into a relation) and verify that it respects the first, second and third Normal Forms. If it doesn't, make the necessary changes so that it does.

2.



For the E-R diagram above:

- Identify the integrity constraints that have to be respected.
- Put each entity from the diagram in a table (turning it into a relation) and verify that it respects the first, second and third Normal Forms. If it doesn't, make the necessary changes so that it does.

3. An online movie provider rents movies and movie downloads. Each movie is categorized by gender. For a movie, we know its director and the main actors. The movies are always available to download, and some movies are also available on one or several DVDs. Each DVD can be rented for a period of 7 days at the most. The movie provider has customers; for each customer, we have a first name, a last name, an address, a phone number and/or an e-mail address. For each movie, we have its title, its length, its year of filming, and a summary. The directors and actors are each identified by their social insurance number, first name, last name, and date of birth.

For the situation above, please:

- Draw an E-R diagram which represents the system described.
- Specify the integrity constraints that have to be respected.
- Put each entity from the diagram in a table (turning it into a relation) and verify that it respects the first, second and third Normal Forms.

4. For every table presented, make the necessary corrections to put it in the Third Normal Form.

a)

Employee

ID	First Name	Last Name	Supervises
3	Ronald	Gratton	/
5	John	James	3,9
8	Marc	Roy	/
9	Pierre	Roivas	8

b)

StudentCourse

IDStudent	IDCourse	Grade	StudentName	CourseName
1	16	B	Gratton	Bio
7	14	A	James	Comp
9	16	C	Roy	Bio
7	18	B+	Roivas	Chem

c)

StudentDepartment

IDStudent	StudentName	Department	DepartmentCode
1	Gratton	CompSci	CMS
7	James	CompSci	CMS
9	Roy	Engineering	ENG
7	Roivas	PoliSci	POL

5. a) Name 4 reasons why SQL transactions are considered to be reliable.

b) For each of those 4 reasons, briefly explain what it means.

6. Name two integrity constraints and explain each of them.