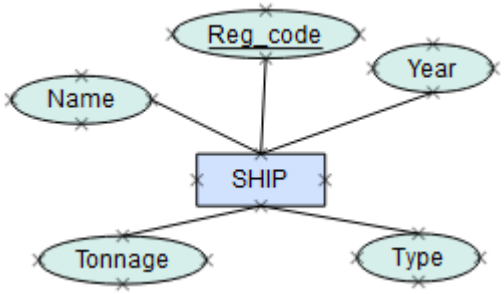
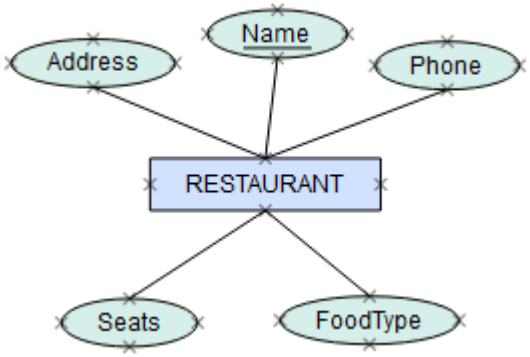
COSC265 Tutorial 1 Solutions

1. Entities

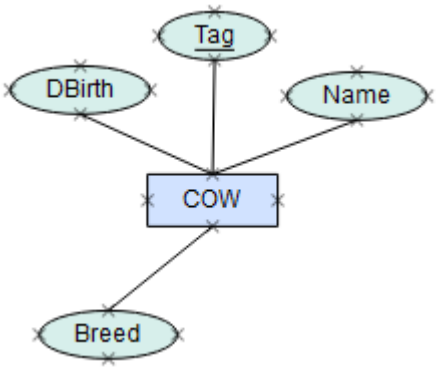
   a. Ship:



   b. Restaurant:

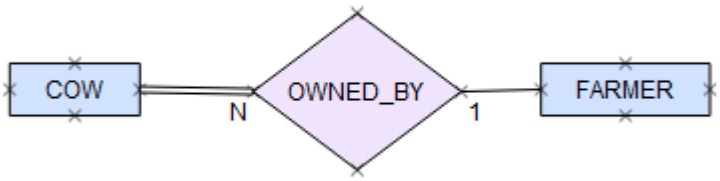


   c. Cow:

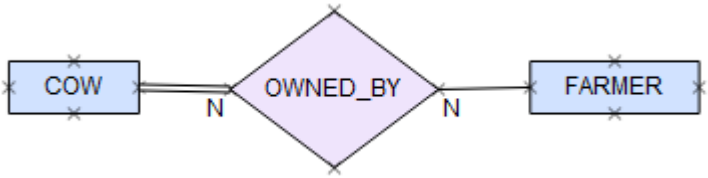


2. Relationships

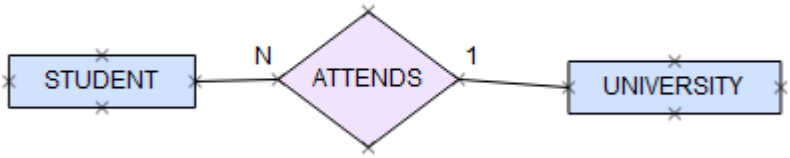
2.a.



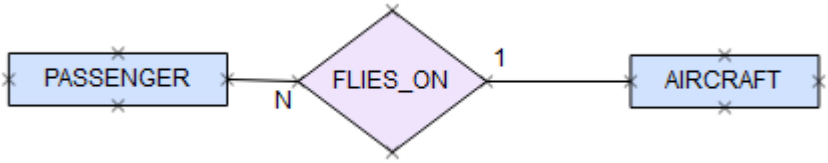
2.b.



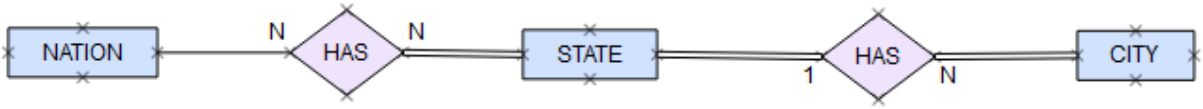
2.c.



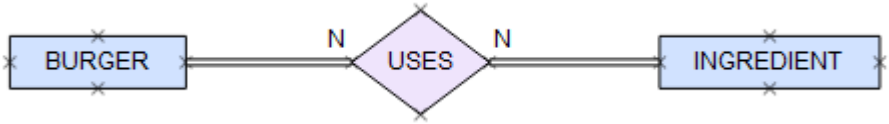
2.d.



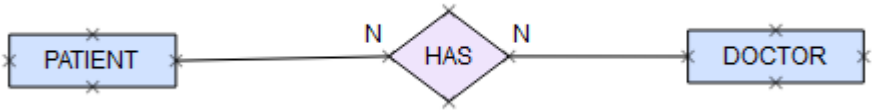
2.e.



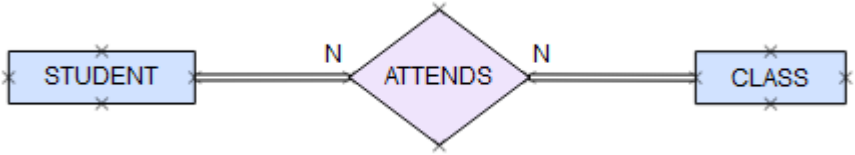
2.f.



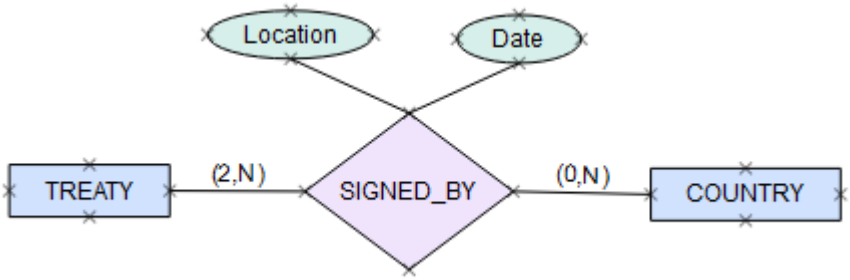
2.g.



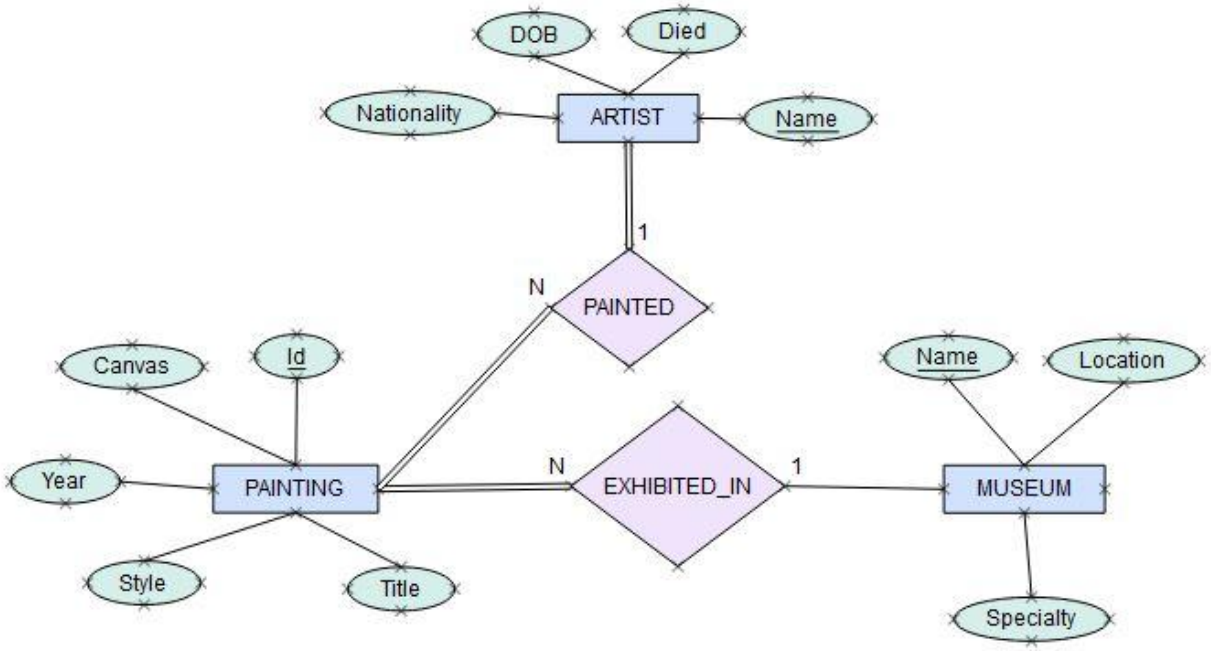
2.h.



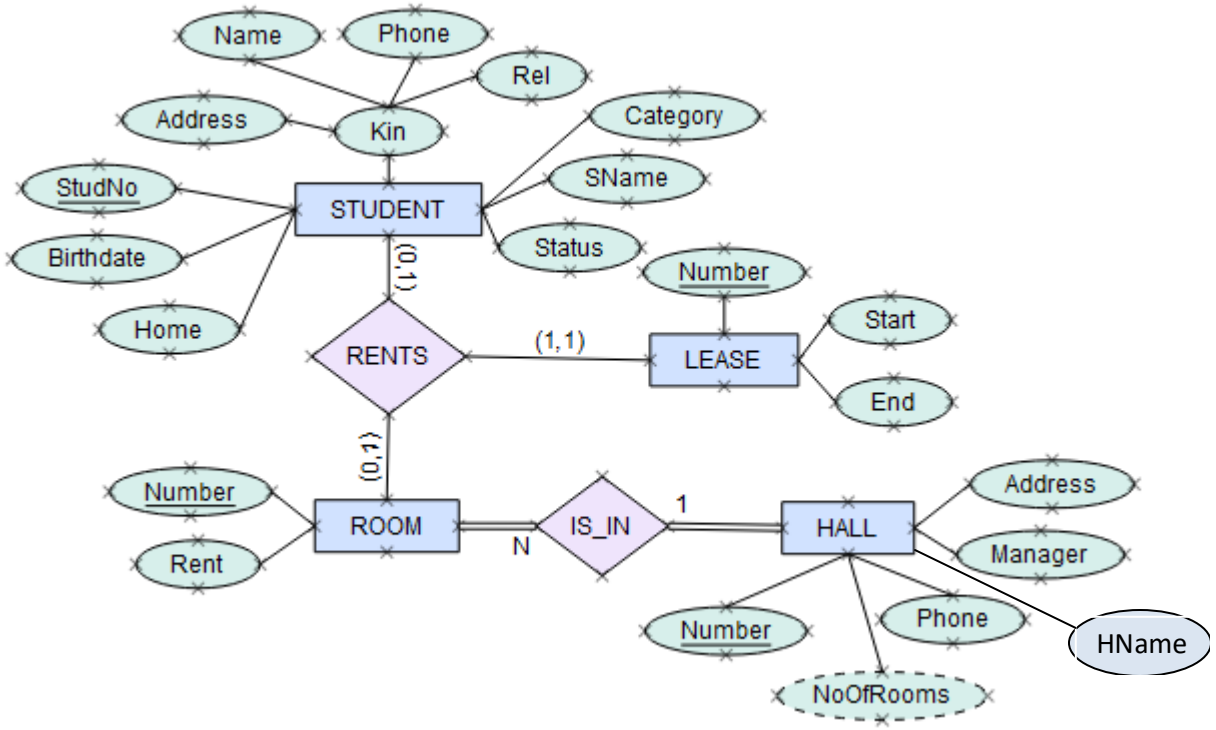
2.i.



3. Databases
   a. Museum



b. University Accommodation Office



4. The diagram represents a database which stores information about books, journal articles, and their authors. A book may be written by more than one author. Authors are described in terms of their name, a unique ID, and may write books or articles. For books, we have a unique bibliographic record number (BRN), and a unique ISBN number. In addition, we have the title, the language, and information about the publisher. For journals we store similar information, but we have ISSN instead of ISBN. For each article we need to know what journal it is published in, and also the volume and issue. Page numbers are unique within a journal's volume, and we also have a set of keywords, the title and the language in which the article is written. There are a set of subjects, and books and journals cover a single subject.

   There are several deficiencies in the schema. The cardinality of the weak entity ARTICLE in the identifying relationship is M, and that is not allowed (an article is published only in one journal). Also, books may be written by several authors, not just one, as stated in the diagram.

   The diagram is developed in the ER model. If the EER model was used instead, we could have just one WRITTEN_BY relationship, and just one BELONGS_TO relationship, by introducing a category PUBLICATION. This category would be a union of books and journal articles.