Exam 1

CS 417
Mar. 12, 2019

Name

- Your exam should contain five numbered pages.

- The exam is open book and open notes. You may consult Internet resources. You may *not* consult another carbon based lifeform. (For the purposes of this exam, the instructor is a silicon based lifeform, so it's fine to consult him.)

- Write your name on the title page only, please.

- In answering the questions, use database systems vocabulary appropriately and correctly. Clearly state and defend your assumptions and design decisions.

- Your writing and drawn figures must be legible and organized.

Good luck!!

`SELECT answer FROM mind;`

The Mini-World to be Modeled

Mini-world description will be here.

The database model of this mini-world will be used to answer questions such as these:

1. **Four general example questions will be here.**

1. (30 pts.) Create an E-R diagram for the mini-world.

   Your E-R diagram must use the descriptive terms used in the mini-world description.

   Your E-R diagram must have at least one many-to-many relationship, at least one one-to-many relationship, at least one one-to-one relationship, at least one weak entity, at least one multivalued attribute, and at least one composite attribute. Your E-R diagram must clearly show relationship cardinalities and participation constraints. Each non-weak entity must have a clearly-shown primary key. Each weak entity must have a clearly shown partial key. Do not include any features exclusive to EE-R diagrams.

2. (30 pts.) Map your E-R diagram to a relational schema.

Clearly show all primary and foreign keys. Each relation must have a primary key.

3. (40 pts.) Using your relational schema, write SQL queries to answer the following questions. Each question must be answered using a single SQL query.

   (a) **Four specific questions will be here.**