**Semi-Review**

**Homework:** Semi-Final Review on Chapters 2 through 5 (15 points) - Due \_\_\_ \_\_\_ \_\_ Before Class

* Download and use the Zoo Starter.accdb database.

The following database design shows the relations and relationships in the Zoo database:

* ANIMAL (AnimalID, NickName, Species, Sex, Age, *Exhibit*, *Keeper*)
* EXHIBIT (ExhibitName, Environment)
* KEEPER (KeeperID, LastName, FirstName)
* Exhibit in ANIMAL must exist in ExhibitName in EXHIBIT.
* Keeper in ANIMAL must exist in KeeperID in KEEPER.

The following data has already been inserted in Zoo Starter.accdb:

**ANIMAL**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| AnimalID | NickName | Species | Sex | Age | Exhibit | Keeper |
| 1 | Biggo | Elephant | Male | 37 | Africa | 1 |
| 2 | Biggette | Elephant | Female | 27 | Africa | 1 |
| 3 | Josie | Camel | Female | 17 | Africa | 1 |
| 4 | Flipper | Porpoise | Male | 7 | Ocean | 2 |
| 5 | Patty | Porpoise | Female | 5 | Ocean | 2 |
| 6 | Sally | Seal | Female | 8 | Ocean | 3 |
| 7 | Tusky | Walrus | Male | 12 | Ocean | 3 |

**EXHIBIT**

|  |  |
| --- | --- |
| ExhibitName | Environment |
| Africa | Grassland |
| Ocean | Saltwater |

**KEEPER**

|  |  |  |
| --- | --- | --- |
| KeeperID | LastName | FirstName |
| 1 | Abrams | Beth |
| 2 | Cooley | Doug |
| 3 | Evertt | Fran |

**Problem 1:** Draw an Entity-Relationship (E-R) Crow's-Foot diagram for the original Zoo data model.

* Use strong and/or weak entities as appropriate.
* Use non-identifying or identifying relationships as appropriate.
* Specify minimum and maximum cardinalities.

**Problem 2:** Change the relationship between the ANIMAL and KEEPER entities so that animals can have more than one keeper.

(continued on next page)

**Problem 3:** Update the database design shown above for the new animal to keeper relationship.

* Update the tables and add new tables as needed.
* Underline the primary key in each table, and italicize the foreign keys.
* Write the referential integrity constraint for each foreign key.

**Problem 4:** Normalize the following table: (This is *not* part of the Zoo database shown above.)

* ZOO (Name, City, State, Director, Salary)
* Write down any assumptions you make.
* Show the candidate key(s).
* Show the functional dependency(s).
* Show the new relations, including the primary keys, foreign keys, and referential integrity constraints.

**Problem 5:** Update the database in Access for the new animal to keeper relationship.

* Update the tables and add new tables as needed.
* Designate or update the primary key in each table.
* Update or create the relationships.

**Problem 6:** Update or add data to the database in Access to show the following new relationships:

* Biggo is also taken care of by Doug Cooley.
* Patty is also taken care of by Fran Evertt.
* Sally is also taken care of by Beth Abrams.

**Problem 7:** Create and run SQL and QBE queries to display the following information from the updated Zoo database:

* Save each SQL query as SQLQuery-Semi-#, where the # sign is the letter of the query.
* Save each QBE query as QBEQuery-Semi-#, where the # sign is the letter of the query.
* **Query A**: Display the animal nicknames and sexes, and exhibit names and environments,  
   for all female animals.
* **Query B**: Display the animal nicknames and ages, and keeper first and last names,  
   for all animals 12 years old or younger.
* **Query C**: Display the animal nicknames, environments, and keeper last names,  
   for all animals that live in a saltwater environment.

Make sure your queries run with no error messages or input prompts, and the results look reasonable.

* Submit the diagrams for problems 1 and 2 in a Word, graphics, or image file.
* Submit the answers for problems 3 and 4 in Word or WordPad.
* Exit from Access and then submit your updated .accdb file.