**Ch3-Test**

**Test:** Chapter 3 Test - In-Class \_\_\_ \_\_\_ \_\_

* Tests must be completed in-person, from scratch, and submitted in-class.
* Tests are open-book, open-notes, and open online help and reference, but closed neighbor.
* Download and use the Zoo Starter.accdb database to create, run, and save queries using Microsoft Access SQL. Or you may use your completed Ch3-Review database file. (There are no QBE queries on the test.)

The following relations and relationships have already been created in Zoo Ch3-Test Starter.accdb:

* 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 |

**SQL Queries:** Using Microsoft Access SQL, create and run queries to answer the questions that follow. Save each query using the query name format SQLQuery-Test-#, where the # sign is replaced by the letter of the question.

Hint: If the same column name is contained in two different tables, Microsoft Access requires the table name to be specified with the column name, for example: EMPLOYEE.EmployeeNumber

Make sure your queries run with no error messages or input prompts from Microsoft Access.

1. Create a SQL query to display the nickname, species, and exhibit of each animal. Create, run, and save this SQL query as SQLQuery-Test-A.
2. Create a SQL query to display the nickname, species, and age of all female animals. Create, run, and save this SQL query as SQLQuery-Test-B.
3. Create a SQL query to display each animal's nickname and species, along with its keeper's first and last names. Create, run, and save this SQL query as SQLQuery-Test-C.
4. Create a SQL query to display the nickname, species, exhibit, and environment of all animals 12 years old or older. Create, run, and save this SQL query as SQLQuery-Test-D.
5. Create a SQL query to display the nickname, exhibit, environment, and keeper (first and last names) of all female animals less than 20 years of age. Create, run, and save this SQL query as SQLQuery-Test-E.

Exit from Microsoft Access and then submit your database file in the assignment.

**Bonus Question** (5 Points Extra Credit): Type your answer in Microsoft Word or WordPad, and submit your file in the same assignment.

Apply the normalization process to the following relation. Show the following steps for each relation:

1. Show the candidate keys from the original relation.
2. Show the functional dependencies from the original relation.
3. Is any determinant not a candidate key? If so, show the following:
   1. The new normalized relations.
   2. The primary key in each new relation.
   3. The foreign keys in the new relations.
   4. The referential integrity constraints for the foreign keys.

FIRE\_FIGHTER (FireFighterID, LastName, FirstName, HomePhone, FireHouseID, FireHousePhone)

Step 1: Candidate Key: FireFighterID

Step 2: Functional Dependencies:

FireHouseID 🡪 FireHousePhone

Step 3: FireHouseID is not a candidate key.

Step 3 a,b:

FIREHOUSE ( FireHouseID, FireHousePhone )

Step 3 c:

FIRE\_FIGHTER ( FireFighterID, LastName, FirstName, HomePhone, *FireHouseID* )

Step 3 d:

FireHouseID in FIRE\_FIGHTER must exist in FireHouseID in FIREHOUSE.