**Ch2-Test**

**Test:** Chapter 2 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.

Apply the normalization process to the following relations. 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.

**Relation 1:**

* EMPLOYEE (EmployeeID, EmployeeName, EmployeeEmail, Department, Manager, Office)
* Assumptions:
  + Each employee belongs to a particular department.
  + Each department has one manager and office.
  + State any other assumptions you make.

Step 1: The candidate key is: EmployeeID

Step 2: The function dependencies are:

EmployeeID 🡪 EmployeeName, EmployeeEmail

Department 🡪 Manager, Office

Step 3: Are there any determinants that are not candidate keys? Yes.

Department is a determinants, but not a candidate key.

Step 3a, b:

DEPARTMENT ( Department, Manager, Office )

Step 3c:

EMPLOYEE ( EmployeeID, EmployeeName, EmployeeEmail, *Department* )

Step 3d:

Department in EMPLOYEE must exist in Department in DEPARTMENT.

**Relation 2:**

* PATIENT (PatientName, PatientAddress, PatientPhone, DoctorName, DoctorPhone, HospitalName, HospitalAddress)
* Assumptions:
  + Each patient has only one doctor.
  + Each doctor works at only one hospital.
  + State any other assumptions you make.

Step 1: The candidate key is: PatientID

Step 2: The function dependencies are:

PatientID 🡪 PatientName, PatientAddress, PatientPhone

DoctorID 🡪 DoctorName, DoctorPhone

HospitalID 🡪HospitalName, HospitalAddress

Step 3: Are there any determinants that are not candidate keys? Yes.

DoctorID and HospitalID are determinants, but not candidate keys.

Step 3a, b:

DOCTOR ( DoctorID, DoctorName, DoctorPhone )

HOSPITAL ( HospitalID, HospitalName, HospitalAddress )

Step 3c:

PATIENT ( PatientID, PatientName, PatientAddress, PatientPhone, *DoctorID*, *HospitalID* )

Step 3d:

DoctorID in PATIENT must exist in DoctorID in DOCTOR.

HospitalID in PATIENT must exist in HospitalID in HOSPITAL.

Hints:

* Each key will be a single column, so there are no composite keys.
* How many themes are there? That's how many tables there will be.
* Double-check your functional dependencies after you create your new tables.
* There should be a referential integrity constraint for each foreign key.

**Continued on next page.**

**Microsoft Access:**

1. Create a Microsoft Access database named Pets.accdb.
2. Create the PET table in the Pet database using the following column characteristics:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ColumnName** | **Type** | **Key** | **Required** | **Remarks** |
| PetID | AutoNumber | Primary Key | Yes | Surrogate Key |
| PetName | Text (25) | No | Yes |  |
| Type | Text (25) | No | Yes | Dog, Cat, etc. |
| Breed | Text (35) | No | No | Collie, etc. |

1. Using Datasheet view, enter the data in the PET table:

|  |  |  |  |
| --- | --- | --- | --- |
| **PetID** | **PetName** | **Type** | **Breed** |
| [AutoNumber] | Lassie | Dog | Collie |
| [AutoNumber] | Morris | Cat |  |
| [AutoNumber] | Mr. Ed | Horse | Palomino |

1. Create a Form to enter data into the PET table.
2. Create a Report to display data from the PET table.
3. Export a PDF file of the report.

**Submit the following in the Ch2-Test assignment at the bottom of the Chapter 2 page on Blackboard:**

1. Normalization Word or WordPad file.
2. .accdb Access database file.
3. Report PDF file.