

# Assignment 3 – Relational Database

## Summary

This hands-on assignment begins with creating four database Tables in Design View, utilizing a Database Management System such as Microsoft Access and then enter the data. Link the tables utilizing Relationships primary key to foreign key. Referential integrity needs to be enabled for the database to work properly. If you don't see the 1-∞ for the relationships then check entered values.

1. Create a blank database and save with filename: **DB-YourName.accdb**
2. Create a table in design view and name it **Project** with the following structure:

Field Name	Field Type	Field Size	Required	Primary Key
ProjID	Text	2	Yes	Yes
ProjName	Text	15	Yes	
ProjStart	Date	Auto	No	

3. Create a table in design view and name it **Job** with the following structure:

Field Name	Field Type	Field Size	Required	Primary Key
JobID	Text	3	Yes	Yes
Description	Text	30	Yes	
ChargeHour	Currency	Auto	Yes	

4. Create a table in design view and name it **Assign** with the following structure:

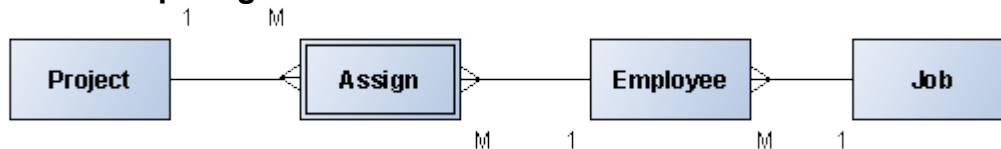
Field Name	Field Type	Field Size	Required	Primary Key
AssignID	Text	4	Yes	Yes
ProjID	Text	2	Yes	
EmpID	Text	3	Yes	
Hours	Number	Double	Yes	

5. Create a table in design view and name it **Employee** with the following structure:

Field Name	Field Type	Field Size	Required	Primary Key
EmpID	Text	3	Yes	Yes
LastName	Text	30	Yes	
FirstName	Text	15	Yes	
JobID	Text	3	No	

6. The xID fields with key image must be selected as primary keys for each table. Save and close.
7. Select Database Tools tab in ribbon and click on relationships. Add one occurrence of each table and arrange tables from left to right in the order: **Project, Assign, Employee, Job**  
The Entity-Relationship diagram shown at top of next page also illustrates this order.

## Entity Relationship Diagram



- Create the relationships between the tables by dragging the primary key field (1) of each table to the foreign key field (Many ∞) of the adjacent table. The 1 to Many relationships are illustrated above. Enforce Referential Integrity must be checked on each relationship for full credit. Save and then close relationships.
- Insert the record data described below into each table in sequence: Job, Employee, Project, Assign. The table on the [1] side of the relationship must be entered before the [Many ∞] side because Referential Integrity is being enforced. If you have a value mismatch with the primary key it will not let you continue.

### Enter data first

JobID	Description	ChargeHour
501	Programmer	75.50
502	Systems Analyst	90
503	Database Designer	55.50
504	Electrical Engineer	95
505	Mechanical Engineer	85
506	Civil Engineer	78
507	Clerical Support	28.75
508	Manager	45.95
509	Application Designer	48.50
510	Bio Technician	34.55
511	General Support	18.35

### Enter data second

EmpID	LastName	FirstName	JobID
101	News	John	502
102	Senior	David	501
103	Arbough	June	503
104	Ramoras	Anne	501
105	Johnson	Alice	502
106	Smithfield	William	504
107	Alonzo	Maria	504
108	Washington	Ralph	501
109	Smith	Larry	501
110	Olenko	Gerald	505
111	Wabash	Geoff	506
112	Smithson	Darlene	507
113	Joenbrood	Delbert	508
114	Jones	Annelise	508

### Enter data third

ProjID	ProjName	ProjStart
15	Evergreen	2/14/2014
18	Amber Wave	7/1/2016
22	Rolling Tide	
25	Star Flight	11/30/2015

### Enter data last

AssignID	ProjID	EmpID	Hours
1001	15	103	2.6
1002	18	108	1.4
1003	15	101	3.6
1004	22	113	2.5
1005	15	103	1.9
1006	25	105	4.1
1007	22	105	5.2
1008	25	101	1.7
1009	15	105	2
1010	15	102	3.3
1011	22	104	2.6
1012	15	101	2.3
1013	25	114	1.8
1014	22	111	3.9
1015	25	114	3.4
1016	18	112	1.2
1017	18	108	2.1
1018	18	104	2.6
1019	15	103	3
1020	22	105	2.7

10. **Forms** are used in databases to review and enter data one record at a time. Create a form named **Employee Form** utilizing **Create** tab and click on **Form Wizard** button.  
Select all fields >> and click **Finish**.  
Add yourself as an employee by selecting ►\* [new record] in the record selector at the bottom of the form.  
Enter your name, **EmpID** = 125, and **JobID** = 501 and then [enter] key.  
Scroll through the records to verify your name was entered as a record in the employee table.
11. **Reports** are used to output information to users and do not allow editing of the data. Create a report named **Employee Report** utilizing **Create** tab **Report Wizard** button.  
Select all fields >> and click **Finish**.  
Print this report for the database as a PDF file.  
In Microsoft Access this can be done by selecting **External Data** tab in ribbon and **PDF Export**. Name this PDF file EmployeeReport.pdf and save so you can upload to LEO.
12. **Queries** are used to extract relevant information from a relational database long after the database is created and data entered. SQL (Structured Query Language) is a fourth generation language used to make a query and can actually be used to create the entire database. However, Microsoft likes to keep the *end users* away from coding and utilizes a Query-by-Example to make queries. Create a query named **Programmers** utilizing **Create** tab **Query Design** button.  
Add two tables to the query the Employee table and Job table and close dialog box.  
Drag the FirstName and LastName fields from the Employee table to the first two fields of table below and verify the Show checkbox is checked.  
Drag the all fields from the Job table to the next three fields of table below and verify the Show checkbox is checked.  
Uncheck the Show checkbox for JobID field as you don't want this number showing when run.  
Set the criteria row for the query to **JobID field =501** and save the query naming it **Programmers**.  
Run the programmers query and note the results. Click the **External Data** tab of ribbon and export this query result that appears as table as a PDF file named ProgrammersQuery.pdf.
13. Microsoft Access has an SQL View for queries. You can view the verbose converted SQL code by clicking on Home tab then under View down arrow button select SQL View. It will be interesting to examine this code after doing the Kahn Academy SQL exercise this week.
14. Upload to LEO's Database assignment folder three files:
  - a. **DB-YourName.accdb** database file
  - b. **EmployeeReport.pdf** file
  - c. **ProgrammersQuery.pdf** file