DATABASES (1)
(Microsoft Access)

Databases are collections of information that are organized so that you can easily find the information that you need. It is fairly easy to retrieve information from small databases, such as a phone book, which is organized alphabetically by last name. On the other hand, large databases, such the iTunes catalogue of over 5 million songs (July 31, 2007), are too massive to be navigated by hand. Large databases require a separate computer program, called a **database management system (DBMS)**, to help manage and retrieve information. You are using a DBMS whenever you use iTunes – searching tracks according to artist, album or genre and creating playlists, for example. These lessons will introduce you to a DBMS that is accessible and fairly easy to use, Microsoft Access.

Database Concepts

Access is structured in terms of tables that have rows and columns and look a lot like an Excel worksheet. Columns in the table, which are called **fields**, identify the **types of data** that are stored in the table – Last Name, First Name, Middle Initial, Street, City, and State in the example shown below. Each **row** in the table, which is called a **record**, is a set of information about a particular item in the database – a particular person in the example shown below.

Fields

Records

tblExample1 : Table

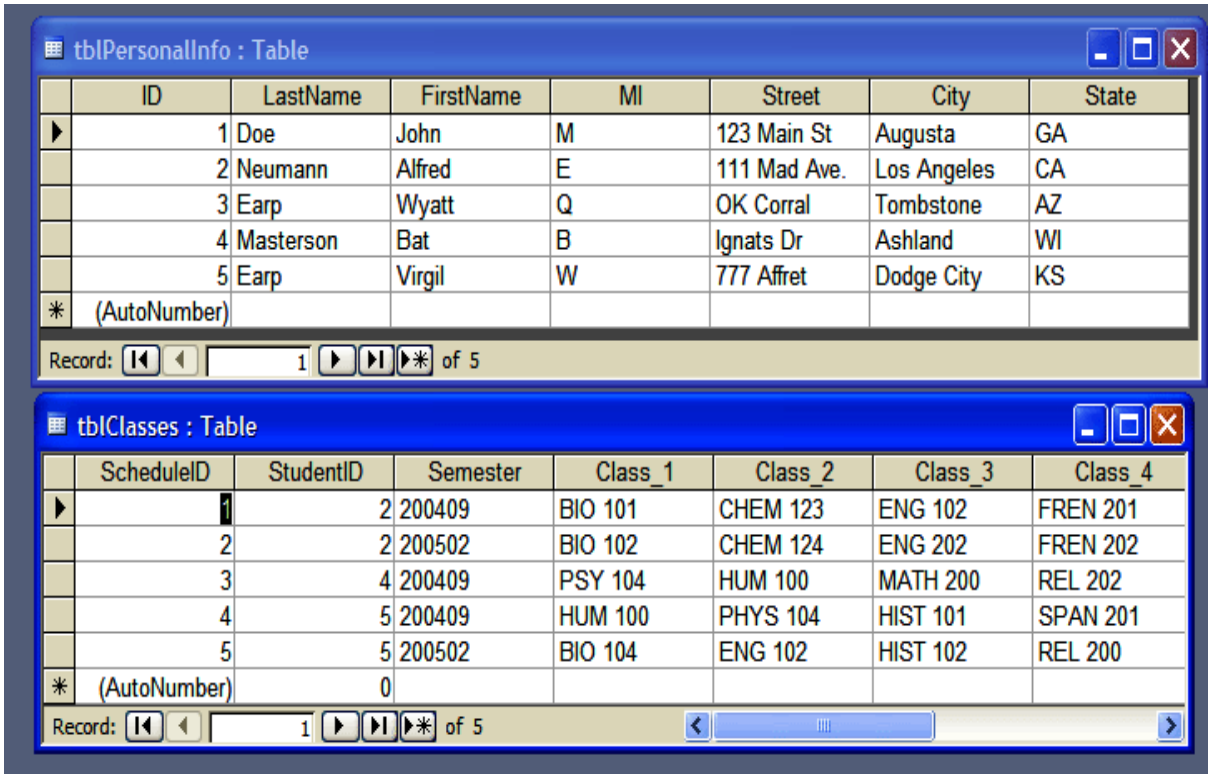
	ID	LastName	FirstName	MI	Street	City	State
	1	Doe	John	M	123 Main St	Augusta	GA
	2	Neumann	Alfred	E	111 Mad Ave.	Los Angeles	CA
	3	Earp	Wyatt	Q	OK Corral	Tombstone	AZ
	4	Masterson	Bat	B	Ignats Dr	Ashland	WI
	5	Earp	Virgil	W	777 Affret	Dodge City	KS
*	(AutoNumber)						

Record: 5 of 5

The data elements of a database at the intersection of a row (record) and a column (field) are called **values**. For example, the value of the First Name field for the second record in the table shown above is "Alfred."

One of the fields, called the **primary key**, in a table uniquely identifies each of the records. In the example shown above, the primary key is the ID. No two rows in a table can have the same value in a primary key field.

Access is a **relational database management system (RDBMS)** that generally uses more than one table to store information. Each table holds data that are logically inter-related. For example, a college student database might have one table of personal information about students and another showing the classes they are taking.



tblPersonalInfo : Table

ID	LastName	FirstName	MI	Street	City	State
1	Doe	John	M	123 Main St	Augusta	GA
2	Neumann	Alfred	E	111 Mad Ave.	Los Angeles	CA
3	Earp	Wyatt	Q	OK Corral	Tombstone	AZ
4	Masterson	Bat	B	Ignats Dr	Ashland	WI
5	Earp	Virgil	W	777 Affret	Dodge City	KS
(AutoNumber)						

Record: 1 of 5

tblClasses : Table

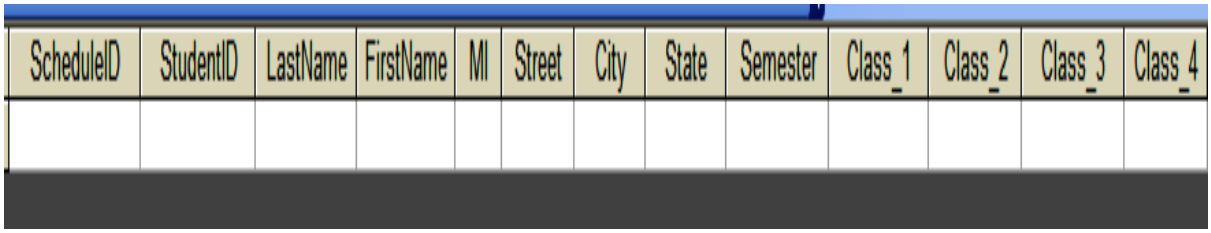
ScheduleID	StudentID	Semester	Class_1	Class_2	Class_3	Class_4
1	2	200409	BIO 101	CHEM 123	ENG 102	FREN 201
2	2	200502	BIO 102	CHEM 124	ENG 202	FREN 202
3	4	200409	PSY 104	HUM 100	MATH 200	REL 202
4	5	200409	HUM 100	PHYS 104	HIST 101	SPAN 201
5	5	200502	BIO 104	ENG 102	HIST 102	REL 200
(AutoNumber)	0					

Record: 1 of 5

These two tables have a **relationship** created by the matching StudentID numbers. For example, by matching the two StudentID numbers we can see that Bat Masterson took Psychology 104, Humanities 100, Math 200, and Religion 202 in the 200409 term.

If a database contains a large number of fields, a one-table database will be very large and unwieldy. Grouping data in multiple tables usually allows it to be maintained and manipulated more efficiently.

<u>In Class Question</u>: Suppose you were storing the data on page 2 in one table, like the one below, rather than two.



ScheduleID	StudentID	LastName	FirstName	MI	Street	City	State	Semester	Class_1	Class_2	Class_3	Class_4

Would this lead to more work entering data and an increased chance of making errors? (Hint: Think about Alfred E. Neumann, for whom class data is shown in both the 200409 and 200502 terms.) What kind of duplication will be required when you enter a record for one term and then for another? How would you store data for a student taking five classes in a semester?

Searching in several smaller tables also is more efficient because it is easy to create queries that can pull information from multiple tables.

YouTube Access Tutorials:

Here are some links to MS Access tutorials on the PC Learning Zone YouTube channel. There are loads of tutorials on YouTube. I suggest you check out some of the others as well.
Take the tutorials in small bites. Don't try to watch them all in one sitting or even in one day. If you're not familiar with databases give yourself time to absorb the information. Our lessons will give you the opportunity to build databases. We're still working with the IT department to make Access and Publisher (which we'll use later) available to you.

https://www.youtube.com/watch?v=ySyMn3H4rvg

https://www.youtube.com/watch?v=jM_O-JopORM

https://www.youtube.com/watch?v=cHRLNT4MdI4

These videos cover an introduction and planning a database.