Creating Learning Networks for African Teachers

UNESCO PROJECT (Contract No. 408.302.9)

DATA BASES TUTORIALS

USEFUL LINKS FOR DATABASES

Introduction to Ms Access
(http://cimic3.rutgers.edu/~holowcza/classes/baruch/2200/access/access1.html)
This tutorial is designed to get the user up and running with MS Access in a rapid
fashion. The four basic modules of Access are demonstrated: Tables, Forms, Reports and Queries. A business example is discussed first which provides a background for developing a simple database.

Online Tutorials - Access 2000
(http://www.fgcu.edu/support/office2000/access/)
Begin the Access tutorial Begin the tutorial Getting Started: A few terms; Getting started and lots more.

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Digestive System
Matrices
Simple Cell
Lightening Conductor
Discharging Tube
Human Eye
Telecollaboration

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DATABASE TUTORIAL

INTRODUCTION TO DATABASE CONCEPTS AND TERMINOLOGY

Definitions

A database is collection of information, such as an address book. Whenever you access a database, whether it be to add new information, get information, change information, or transform the information into some meaningful order, you are **managing** the database.

Suppose you have the address book. Each section in the book contains the name, address and phone number of an individual. The book contains three lines of information: (1) Name, (2) Physical

address, and (3) phone number as shown below:

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Malinzi J.K. Steve 40 Acacia Avenue Kololo, Kampala 041 355 524
Fred & Wilma Flinstone 33 Yusuf Lule Road Nakasero Kampala 071 777 890

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A database is an integrated collection of related files along with details of the intepretation of the data contained therein.

Types of database systems

Basically there two catagories of databases systems:

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(a) Electronic/computer based database:
A computer-based database system such as Microsoft Access, Clipper, Fox-pro, Database III & IV perform these types of operations on a database that is stored on a computer disk.

It allows you to:

- **Add new empty files to the data base**
- **Retrieve data into existing files**
- **Insert new data in the existing files**
- **Update data in the existing files or transform data into meaningful information**
- **Remove existing files from the data base**

Examples of uses of electronic databases:

-Photo gallery (online photo album)
-A cache engine (where book marked internet resources are kept for future reference).
-Personal database showing names, location and phone number.

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EN1-10	Carol	Schaaf	2306 Palisade Ave.	Union City	NJ	07087	201-863-4283
EN1-12	Gayle	Murray	1855 Broadway	New York	NY	12390	212-790-1253
EN1-15	Steve	Baranco	742 Forrest St.	Kearny	NJ	07032	201-439-6620
EN1-16	Kristine	Racich	416 Bloomfield St.	Hoboken	NJ	07030	201-861-9950
EN1-19	Barbara	Zumbo	24 Central Avenue	Ritchfield Park	NJ	07660	201-842-1683
EN1-20	Daniel	Gordon	2 Angelique St.	Weehawken	NJ	07087	201-865-9127
EN1-22	Jacqueline	Rivet	3600 Bergeline Ave.	Union City	NJ	07087	201-867-8240
EN1-23	Betsy	Rosyln	1800 Boulevard East	Weehawken	NJ	07086	201-845-0101
EN1-25	Will	Strick	2100 91st St.	North Bergen	NJ	07047	201-854-3387
EN1-26	Susan	Shipe	240 Fifth Avenue	New York	NY	10018	212-560-5216
EN1-27	Joseph	Fink	390 Summit Ave.	Union City	NJ	07085	201-544-8730
EN1-28	Sara	Rubinstein	801 59th St.	West New York	NJ	07088	201-861-7844

This cross-section is an example of Personal database.

(b)Manual database systems:

Paper databases are referred to as files. When using a computer, however, we refer to them as either files or tables, depending on the program. Microsoft Access refers to them as tables.
The term is used in connection to the unique design that all databases use, being organised in columns and rows.

Examples of manual database:

-Box of library catalogues: The catalogue is a record that can be referenced to find out which book was taken, when it was taken

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and when it would be returned to the library.
-A file showing marks of a student : The records here are: Name of student, class, marks per subject and possibly the total.

-Dictionary
-Diary book is a database of your friend's addresses.
-Encylopedia
Whatever the type of a database, the major objective of it is for record-keeping, so that these records are referenced whenever need arises.
However, tasks that may take you days doing the operation manually may take the computer only a few seconds to accomplish.

Database system:

A database system is a computerised record-keeping system whose overall purpose is to record, retrieve and maintain information.

Components of a database system:

(a) Users of the data base system
(b) Data:

Data is of various types:

Data is of various types:

(i) Text data types: used to store non-numeric type of information like names, address etc.,
and the maximum length it can take is 256 characters.

(ii) Numeric data type: used to store numbers of digits, including (-) and decimal point.(.)

(iii) Date: used to store date. Format of storing date is either mm/dd/yr or dd/mm/yr.
Date is automatically checked for validity without programmers intervention.

(iv) Logical data type: Used to store one of the two conditions. (True/False, Yes/No or F/M)

(v) Memo fields: These are stored in files outside the actual data

base file. Memo fields can
be used as a variable in the main memory unlike other types.

(c) Software: This is an interface between the system users and the physical database itself. Some of the database system softwares include:
Microsoft Access
Fox-pro
Clippers

Clippers
Data base 111 & 1v etc

(d) Hardware

Why do we need databases?

It's now clear that a database consists of records, and in any instutition, company or organisations record-keeping is very important. Therefore, an organisation, company or institution, if any, without records is absolutely undefined, and it's not worthy being called what it claims to be. For record-keeping,organisational structure and easier and fast access of information is the major reason why any company, organisation or institution needs a database.

How does one create a database file?

There are few steps to follow and you get the work done: We shall restrict ourselves to Microsoft Access in creating a data base file, the steps required are here outlined below. We shall begin by creating a database structure/table; which defines the names of various fields, Data types and the length for each field as illustrated below:

(i) Database structure

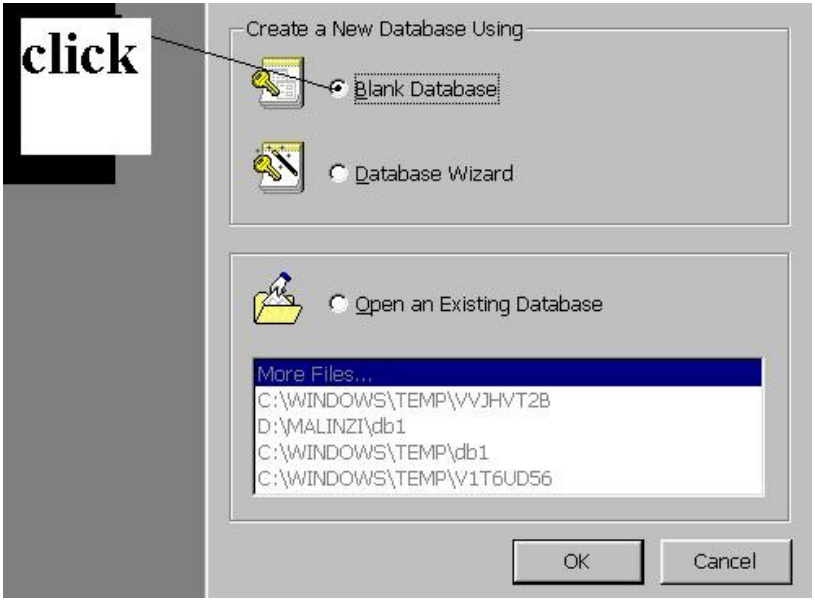
When storing information within a database table, each piece of data must be stored under unique field name as shown below:.

Field name	Data type	Length
Name	Character	15
Amount	Numeric	10
Sex	Logical	1

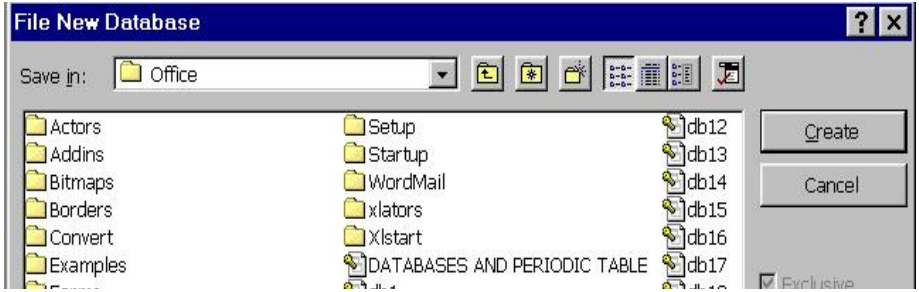
(ii) Start a database program:

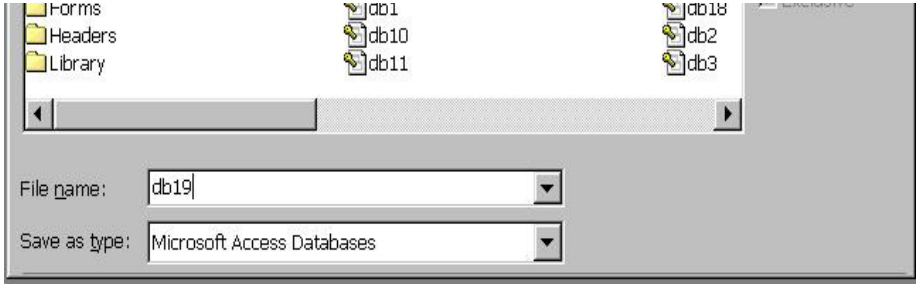
Start---> programs---> Microsoft Access. The screen below is automatically displayed:

Click on Blank Database to create a new database.

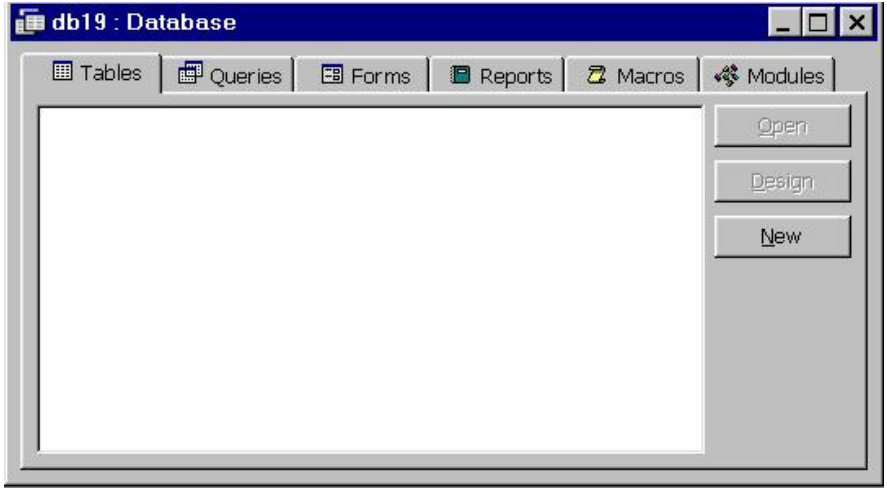


Click on Blank Database----> Ok

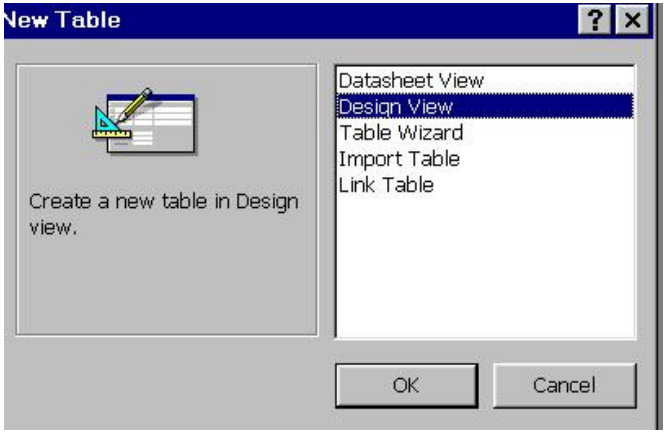




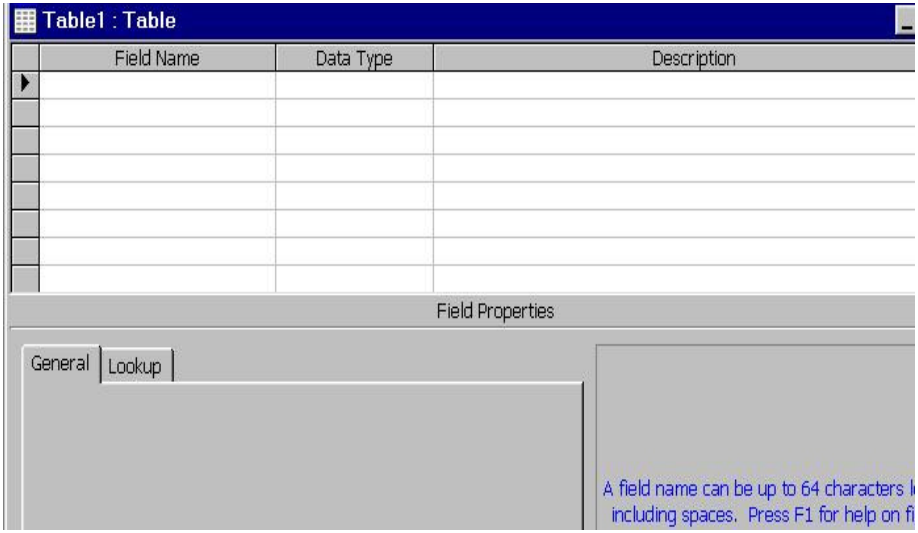
Click on Table then New.



Click on Table then New. The screen below is displayed:



When you choose "Design view", a table is displayed prompting you to fill the required data: Field name, Data type and the Field Description.



Example of a database design:

A director of studies in one Secondary School in Uganda would like to etablish a database of all student biodata .This example is already designed for you.
Click here to view the worked out database design -> Click Table and select STUDENT BIODATA.

Using that database one can query the following:

(a) List either Congolese or Ugandans who are orphans
(b) List all students above 13 years of age and are female.
(c) List students above 11 years of age and are male
(d) Select all American students above 11 years of Age
(e) Select all Tanzanians or Rwandese above 10 years but below 17 years.
(f) Select all Ugandans who are male.

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solid *liquid* **THE PERIODIC TABLE** *gas* *synth*

Discoverer

1 H | AtomicWeight | Melt\|Boil(C) | 2 He

3 Li | 4 Be | Isotopes | Shell | 5 B | 6 C | 7 N | 8 O | 9 F | 10 Ne

11	12		Orbital									13	14	15	16	17	18
Na	Mg	SpecificGravity										Al	Si	P	S	Cl	Ar
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
87	88	89	104	105	106	107	108	109	110	111	112	113	114				
Fr	Ra	Ac	Rh	Db	Sg	Bh	Hs	Mt	Uun	Uuu	Uub	Uut	Uuq				
	lanthanons	58	59	60	61	62	53	64	65	66	67	68	69	70	71		
		Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
	actinons	90	91	92	93	94	95	96	97	98	99	100	101	102	103		
		Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

Dmitri's Dream

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Background

COMMON APPLICATIONS

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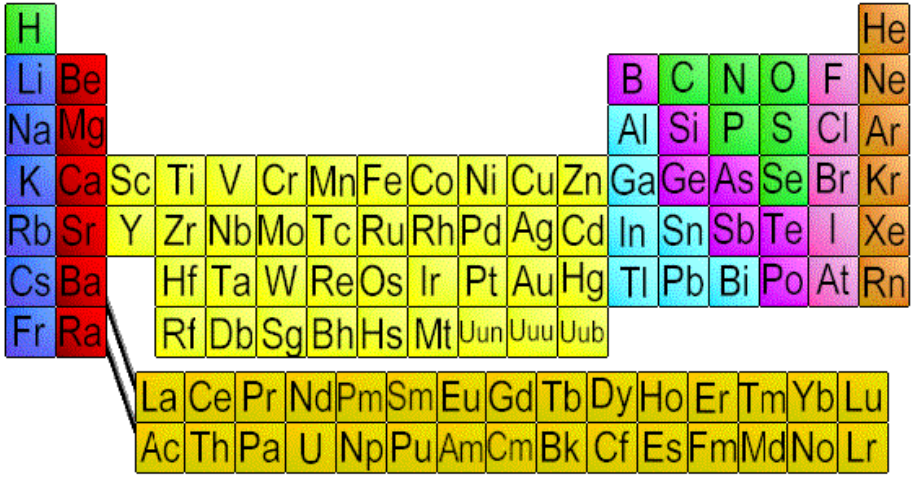
THE PERIODIC TABLE

In the study of chemistry it is revealed that elements are the fundamental materials of which matter is composed. From the modern viewpoint, any substance that cannot be broken down or reduced further is by definition an element. So far 109 elements are known.

Link to sources:
http://www.chemsoc.org/viselements/

We use the periodic table as tool to teach about the chemical properties of elements. There are many groups which are used to predict the behaviour of such elements in a chemical reaction.

A Typical Periodic Table of Elements using only chemical symbol names:



The application described proposes to use the Microsoft Access database application as a tool to teach a class about the various groups of elements in the periodic table.

Click here to view a detailed Periodic Table with elements.

The application was set up under a database called periodic table with the following fields:

Feild name	Meaning
At_no:	Atomic number

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Mass_no	Mass number
At_name	Atomic name
E_config	Electronic configuration
Val	Valency
Elt_type	Element type

The following graphic shows the sample data in the Element_details table.

Element_details : Table

At_no	Mass_no	Symbol	At_name	E_config	Val	Elt_type
3	7	Li	Lithium	2.1	1	Metal
4	9	Be	Beryllium	2.2	2	Metal
5	11	B	Boron	2.3	3	Metal
6	12	C	Carbon	2.4	4	Non-metal
7	14	N	Nitrogen	2.5	3	Non-metal
8	16	O	Oxygen	2.6	2	Non-metal
9	19	Fl	Fluorine	2.7	1	Non-metal
10	20	Ne	Neon	2.8		Non-metal
11	23	Na	Sodium	2.8.1	1	Metal
12	24	Mg	Magnesium	2.8.2	2	Metal
13	27	Al	Aluminium	2.8.3	3	Metal
14	28	Si	Silicon	2.8.4	4	Non-metal
15	31	P	Phosphorous	2.8.5	3 or 5	Non-metal
15	32	S	Sulphur	2.8.6	2 or 6	Non-metal
17	36	Cl	Chlorine	2.8.7	1	Non-metal
18	40	A	Argon	2.8.8		Non-metal
19	39	K	Potassium	2.8.81	1	Metal
20	40	Ca	Calcium	2.8.8.2	2	Metal
0	0					

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Procedure of Opening the Report of MS ACCESS

Step 1. Click on **Click here to go into the MS Access Illustration**

Step 2. The prompt shows a screen with options:

-Opening periodic table.mdb using MS ACCESS file (which is recommended if you have MS ACCESS installed on your computer),

-Saving the application on a disk (which is the option for a computer without MS ACCESS).

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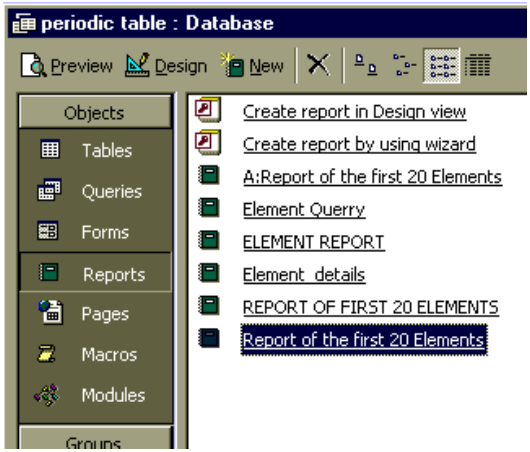

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A report named '**Report of the first 20 Elements**' was defined under Access and it displays the elements in a report format.

Step 3. Select **Reports** (if not already selected)

Step 4. Select: **Report of the first 20 Elements** and press **Enter**.

(maximize the window to gain a better view of the report)

It is proposed that this illustration could be enriched with graphics showing the electronic configuration of a selected element.

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