

Using Technology

**How to use databases to simplify your
work**

Overview

- **What is a database?**
- **Why & Where, we need to use one?**
- **What IT tools are available to make databases?**
- **Using MS-Access & SQL Server**
- **A simple project ?!?**

What is a database?

- Collection of data for a specific purpose
 - Books, Human Minds, Journals, Indexes
- Organizing data
 - Lists, Linked Lists, Tables

Compass Box

- Pens
- Pencil
- Set Square
- Ruler

Food

- Sweets
- Milk
- Fruits

Item	Cat
Rockets	Fire-Crackers
Sweets	Food
Sparklers	Fire-Crackers
Milk	Food

Diwali Shopping

- Food
- Garments
- Fire-Crackers

Fire-Crackers

- Rockets
- Sparklers
- *Roman Candles*

What is a database?

Storage of raw data to be retrieved in various forms

- **Subject-wise totals may be required too**
- **Profits per every type of item may also be needed**
- **Different plots may be needed of the same data**

Processing data to generate information

- **Totals of marks from a list of subject-wise marks**
- **Net profits from details of sales, taxes & payments**
- **Interpolated formulae for a set of experimental data**

Why & Where?

- **Information Management**
 - Hourly scrip information for a stock exchange
 - Availability of seats on a tour-bus
- **Record Keeping**
 - Genetic sequencing data for the human genome
 - Catalogs of stars with positioning and brightness
 - Details of birth & death for a local govt. body
- **Decision Making**
 - Whether to invest into a certain stock? Lookup its history
 - Short-listing genes common to man and fish

RDBMS

- **Relational Database Mgmt**
 - **Manages collecting and storage of data**
 - **Handles integrity of database**
 - **Handles transactions between various parts of the database and the user**
 - **Handles multiple users**
 - **Processes data as defined by user**
 - **Allows flexible retrieval of data**
 - **Presents data in different ways for different users**
 - **Manages security on the data**
 - **Allows linkages between other databases**
 - **Oracle, Sybase, Foxpro, MS-SQL, MS-Access**

MS-Access & MS-SQL Server

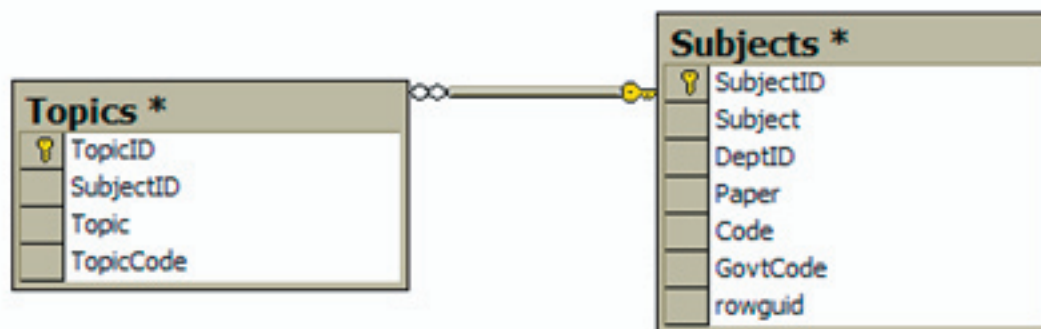
- **MS-SQL server is the backend**
 - Stores data in Tables
 - Stores different views possible on the data
 - Stores SQL procedures that can be applied on the data
- **MS-Access is the interface**
 - Contains Forms for easy viewing & data entry
 - Contains Reports for information distribution
 - Contains VB programs for manipulating data
- **ASP, JSP, etc. are other interfaces (Web)**

Relationships

Relationship - Join between two tables

- Primary Key of Table 1 is used as foreign key of Table 2
- One-One, One-Many or Many-One link is made between these fields

Snapped with HyperSnap-DX
<http://www.hyperionics.com>



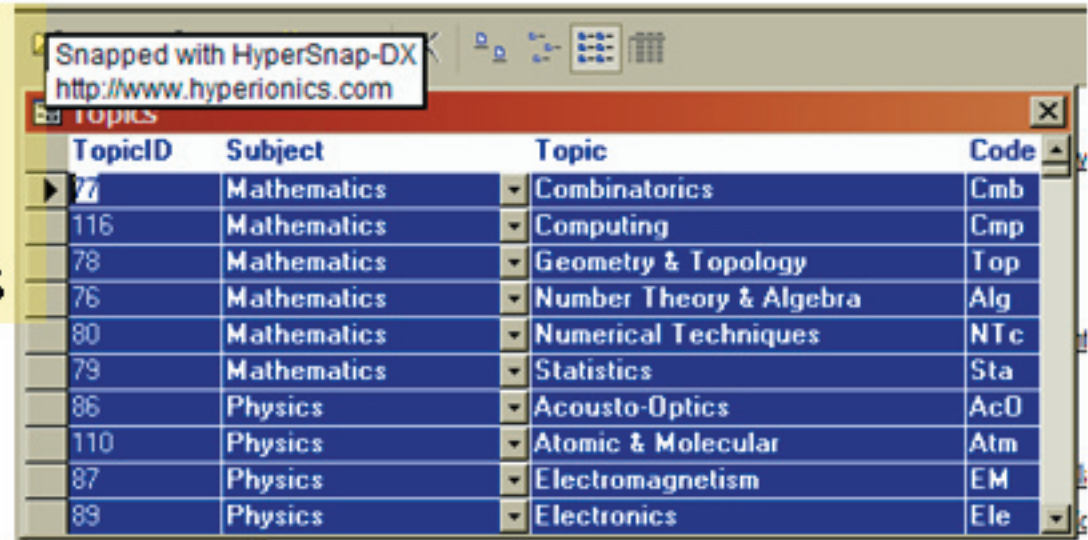
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Subject	Subject	DeptID	Code	Topic	Topic	TopicCode
2E+09	Astronomy	4	Ast	29	Astrometry	Am
2E+09	Astronomy	4	Ast	30	Visual	V
2E+09	Astronomy	4	Ast	31	Celestial Mechanics	CM
2E+09	Astronomy	4	Ast	32	Planetary Physics	PP
2E+09	Astronomy	4	Ast	38	Astrobiology	Ab
154	Information Technology	9	IT	42	html	HTM
154	Information Technology	9	IT	43	asp	ASP
154	Information Technology	9	IT	44	javascript	JSc
154	Information Technology	9	IT	45	e-commerce	eCm
154	Information Technology	9	IT	46	cyber-law and ethics	CyL
154	Information Technology	9	IT	47	vbscript	VSc
154	Information Technology	9	IT	48	database-management	DBM
154	Information Technology	9	IT	49	communications	Com
154	Information Technology	9	IT	50	file formats	FiL
154	Information Technology	9	IT	51	utilities-tools	Ui
154	Information Technology	9	IT	52	tally	TlY
181	Information Technology for Science	9	IT-S	54	Html	HTM
181	Information Technology for Science	9	IT-S	55	Javascript	JSc
181	Information Technology for Science	9	IT-S	56	E-commerce	eCm
181	Information Technology for Science	9	IT-S	57	ASP	ASP
181	Information Technology for Science	9	IT-S	58	Cyber law & Ethics	CyL

Forms

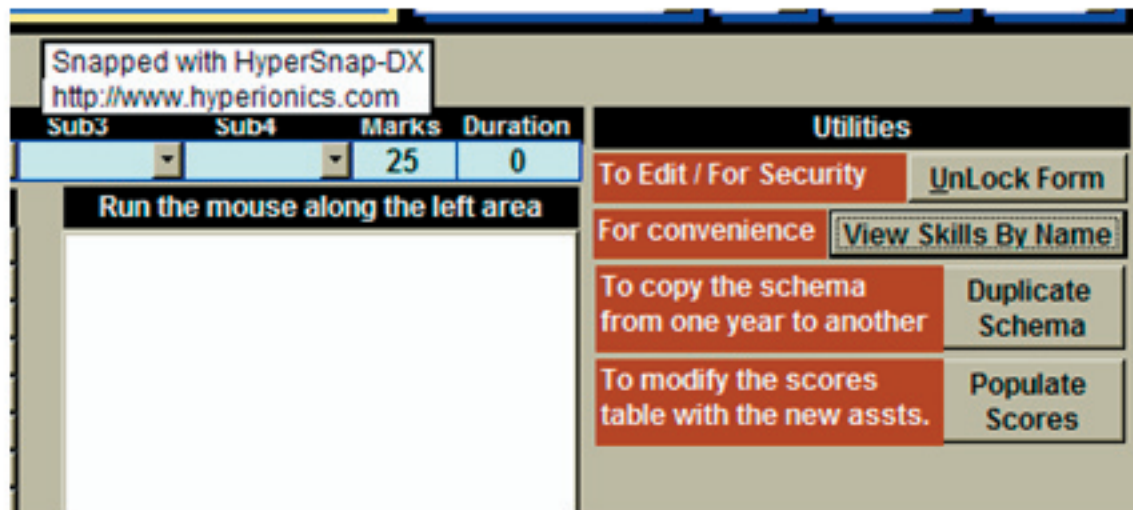
Forms allow graphical view of data.

They are used for data entry to avoid mistakes



The screenshot shows a web browser window with the URL <http://www.hyperionics.com>. The page displays a table titled "Topics" with the following data:

TopicID	Subject	Topic	Code
77	Mathematics	Combinatorics	Cmb
116	Mathematics	Computing	Cmp
78	Mathematics	Geometry & Topology	Top
76	Mathematics	Number Theory & Algebra	Alg
80	Mathematics	Numerical Techniques	NTc
79	Mathematics	Statistics	Sta
86	Physics	Acousto-Optics	AcO
110	Physics	Atomic & Molecular	Atm
87	Physics	Electromagnetism	EM
89	Physics	Electronics	Ele



The screenshot shows a web form with a table and a "Utilities" section. The table has the following data:

Sub3	Sub4	Marks	Duration
		25	0

Below the table, there is a text box with the instruction: "Run the mouse along the left area".

The "Utilities" section contains the following buttons and text:

- To Edit / For Security: UnLock Form
- For convenience: View Skills By Name
- To copy the schema from one year to another: Duplicate Schema
- To modify the scores table with the new assts.: Populate Scores

They are connected to a Table / Query

They contain buttons, combo boxes, text boxes, etc.

