INFORMATION MANAGEMENT

Databases are useful tools when organizing facts.

Raw facts, though truths, can be disorganized.

They are more useful when structured.

When you take DATA and apply STRUCTURE it becomes INFORMATION and can be used proactively to make DECISIONS.

Data---🡪Structure------🡪Information---🡪Decisions

The basic structure of databases:

Databases ----🡪 Tables ----🡪 Records ----🡪 Fields ----🡪 Datatype ----🡪 Constraints

Datatype and constraints: characteristics of the data such as dates, numbers, or names.

Metadata is smaller more detailed data about data or facts.

ENTITY RELATIONSHIP DIAGRAMS or ERDs

* Used to visualize the data and how it can be used together.
* ERDs are used to show developers such as coders.
* Simple ERDs can be used to explain the database program to a customer. Completed databases are too difficult to explain or to comprehend for some customers.
* Tables could be considered as NOUNS where relation between them are as VERBS

CARDINALITY: The number of values in a set. In databases, cardinality identifies relationships among different tables, and identifies the number of values in the tables.

ERD relations use SYMBLES to represent the CARDINALITY of the relationship between tables:

* Table ------------- Table One to Many Crow’s foot
* Table --------------l-- Table One to One Very simple and effective
* Table --------------/-- Table No Many to Many Many to Many CANNOT BE CODED
* A one to one relationship, at least one between tables: --l------------l—
* A one to many relationship between tables: --l--------------
* A one and only one relationship between tables: --l-----------l-l--
* A one to zero/none relationship between tables: --l-----------O-l-
* A one to one OR many relationship between tables: --l------------l-
* A one to zero OR many relationship between tables: --l-----------O-

A diagram of a number of numbers

Description automatically generated

Since many to many CANNOT BE CODED, another table must be used to

bridge many to many.

 Table --------------- Table NO

Table----------Bridging Table-------------Table

The bridging table will create two new one to many relationships. The bridging table must contain the “primary keys” (as foreign keys) from the two many to many tables.

ELECTRONIC DATABASES

Electronic databases add speed, convenience and most importantly security to data:

When information is organized into a database like MySQL, it is locked inside a layer of security.

* A Primary Key is the main distinctive column in a relational database that is unique in most ways. There can only be one primary key per table.
* Primary keys cannot be repeated in two or more tables.
* Primary keys can be repeated as Foreign Keys in other tables to create a distinctive relationship between those two tables.
* A Foreign Key is used when the column from another table called a Primary Key is duplicated in another table within the same database.
* The only way to duplicate a column from a table in another table in the same database is to have one be the Primary Key, and another be the Foreign Key.
* There can only be one column called the Primary Key in each table occurring once. There can be one to many duplications of this column in other tables as the Foreign Key.
* To designate one of the columns in a table as the primary key when creating and ERD, write PK beside this column name. For Foreign Key, write FK.
* A Primary Key can also be two or more columns in a table, this is called a Composite Key. Both (or more) should be called PK in the ERD.
* Each row in a table should be NAMED. Use the first letter of the name of the table, followed by an underscore, and the first letter of the name of the column.
* Each column will have a type of data that can be entered and recovered from those fields such as dates, numbers, or names.

The ERD is used to create a digital RELATIONAL DATABASE MANAGEMENT SYSTEM or RDBMS.

MySQL is an open source database management system that is commonly used in industry.