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Lab 2- CAP database

2. There are distinctions amongst the terms primary key, candidate key, and superkey. A superkey is unique but also could be redundant, by including all related information. For example, if you have a persons name, social security, and phone number listed together that is a super key. If you have only social security number that is also a super key, as well as having both name and phone number. The superkey is a combination of attributes that allow identification of the missing fields, because all the information is uniquely related. A super key can't be either a candidate key nor a primary key. A candidate key is a super key without redundancy. There could be multiple possible candidate keys. A primary key is a candidate key that is used for database design and implementation, which is chosen by the designer for identification purposes.

3. Essay on Data Types:

Data types in SQL include text, numbers, and date. An example of a text data type include TINYTEXT which may include a maximum of 255 characters. An example of a number data type would be DOUBLE(size, d) which is a decimal number with an optional size parameter (size), and an optional maximum decimal parameter (d). An example of date data types include DATE() which is formatted in YYYY-MM-DD.

In order to make a table for "Books in the Marist Library" one should have a table listing book ID, title, author, edition/version number, date book was bought, book status, and book

condition. Book ID would have a data type of INT() and would not be nullable. Title, author, edition/version number, book status and book condition would have a data type of TEXT, and only edition/version number should have the ability to be null. Data book was bought should have a data type of DATE(), and this should not be nullable.

4a. The first normal form is to make sure that all the data collected is appropriately stored in the table. The table should be organized using primary keys in columns to uniquely identify each row, without repeating groups. The column should contain only atomic values and sub columns, or listing more than one piece of data, is not allowed. This is important when attempting to search, filter, and sort information in a proper SQL table.

4b. Accessing rows by content only is a rule stating that one can not give a number to a given row or column for easier access of information. For example, if someone had a 3x3 table they are not allowed to number the columns A,B, and C, the rows !, 2, and 3, and retrieve the data in B3 in this manner.

4c. All rows must be unique is important in order to avoid repetition which may lead to faulty data. It is not allowed to have two rows with identical data.

```
CAP-# from Customers;
 cid  |  name   |  city   | discountpct
------+---------+---------+-------------
 c001 | Tiptop  | Duluth  |       10.00
 c002 | Tyrell  | Dallas  |       12.00
 c003 | Eldon   | Dallas  |        8.00
 c004 | ACME    | Duluth  |        8.50
 c005 | Weyland | Risa    |        0.00
 c006 | ACME    | Beijing |        0.00
(6 rows)

CAP=#
CAP=# select *
CAP-# from Agents;
 aid | name  |   city    | commission
-----+-------+-----------+------------
 a01 | Smith | New York  |       5.60
 a02 | Jones | Newark    |       6.00
 a03 | Perry | Hong Kong |       7.00
 a04 | Gray  | New York  |       6.00
 a05 | Otasi | Duluth    |       5.00
 a06 | Smith | Dallas    |       5.00
 a08 | Bond  | London    |       7.07
(7 rows)

CAP=#
CAP=# select *
CAP-# from Products;
 pid |          name           |  city  |  qty   | priceusd
-----+-------------------------+--------+--------+----------
 p01 | Heisenberg compensator  | Dallas | 111400 |     0.50
 p02 | universal translator    | Newark | 203000 |     0.50
 p03 | Commodore PET           | Duluth | 150600 |     1.00
 p04 | LCARS module            | Duluth | 125300 |     1.00
 p05 | pencil                  | Dallas | 221400 |     1.00
 p06 | trapper keeper          | Dallas | 123100 |     2.00
 p07 | flux capacitor          | Newark | 100500 |     1.00
 p08 | HAL 9000 memory core    | Newark | 200600 |     1.25
(8 rows)

CAP=#
CAP=# select *
CAP-# from Orders;
 ordno | month | cid  | aid | pid | quantity | totalusd
-------+-------+------+-----+-----+----------+----------
  1011 | Jan   | c001 | a01 | p01 |     1100 |   495.00
  1012 | Jan   | c002 | a03 | p03 |     1200 |  1056.00
  1015 | Jan   | c003 | a03 | p05 |     1000 |   920.00
  1016 | Jan   | c006 | a01 | p01 |     1000 |   500.00
  1017 | Feb   | c001 | a06 | p03 |      500 |   540.00
  1018 | Feb   | c001 | a03 | p04 |      600 |   540.00
  1019 | Feb   | c001 | a02 | p02 |      400 |   180.00
  1020 | Feb   | c006 | a03 | p07 |      600 |   600.00
  1021 | Feb   | c004 | a06 | p01 |     1000 |   457.50
  1022 | Mar   | c001 | a05 | p06 |      450 |   810.00
  1023 | Mar   | c001 | a04 | p05 |      500 |   450.00
  1024 | Mar   | c006 | a06 | p01 |      880 |   400.00
  1025 | Apr   | c001 | a05 | p07 |      888 |   799.20
  1026 | May   | c002 | a05 | p03 |      808 |   711.04
(14 rows)

CAP=#
```