Brandon Kline

Database Systems Lab 2

```
CAP=# select *
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=#
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 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=#
```

```
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=#
```

1. The data from the queries are identical to those in the CAP snapshot.

2. Primary keys in SQL are a constraint that identify individual records in a table. They are unique to each record and may not be null. A candidate key is a column or group of columns that share a unique key in a table, only one of which can be considered a primary key. A superkey is a set of columns that defines a row within a table.

3. One example of a table that could be made with SQL is a table that determines the stock of different models of computers at a computer store. The table itself would be named CompStock, and its fields would be Pid, Model, Stock, and Price. Each field would be a VARCHAR data type, as each string would be small and may need to be occasionally edited. None of these fields would be nullable as they all need to contain some value.

4a. The "first normal form" rule states that all data must be in a database table and must have a primary key. The table cannot contain repeating columns or negligible values. An example of this rule is the Agents table from the CAP snapshot, as it follows these points. This rule is important as it prevents databases from becoming cluttered with useless information.

4b. The "access rows by content only" rule states that rows can only be accessed by content that is within or defines them in some way. This can be seen in every CAP snapshot table as well as most tables created using SQL. This rule is important as it helps to differentiate rows in extremely large or complex tables.

4c. The "all rows must be unique" rule states that all rows in a given database table must be unique from each other, but may contain n the same information. An example of this is the Orders table from the CAP snapshot, as it contains multiple rows with the field "Mar", but each row still contains a unique identifier in the form of a primary key. This rule is important as it prevents sets of data from being entered into the same database twice.