

Lab 2: Executed Queries
Ethan Ondreicka
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Professor Labouseur

1. Executing given queries from pgAdmin

The screenshot shows the pgAdmin interface for a PostgreSQL database. The top bar indicates the connection is 'CAP/postgres@PostgreSQL 16'. Below the toolbar, the 'Query' tab is active, displaying a SQL query: `1 SELECT *` and `2 FROM People;`. The 'Data Output' tab is selected, showing a table with 9 rows and 8 columns. The columns are: `pid` (integer, primary key), `prefix` (text), `firstname` (text), `lastname` (text), `suffix` (text), `homecity` (text), and `dob` (date). The rows contain data for various individuals, including Dr. (Hon) Maynard Ferguson, Ms. Bria Skonberg, Mr. Miles Davis, Mr. Doc Severinsen, Mr. Louis Armstrong, Ms. Tine Helseth, Dr. Cynthia Robinson, Dr. James Morrison, and Mr. Dizzy Gillespie.

	<code>pid</code> [PK] integer	<code>prefix</code> text	<code>firstname</code> text	<code>lastname</code> text	<code>suffix</code> text	<code>homecity</code> text	<code>dob</code> date
1	1	Dr. (Hon)	Maynard	Ferguson		Montreal	1928-05-04
2	2	Ms.	Bria	Skonberg	[null]	Chilliwack	1987-12-29
3	3	Mr.	Miles	Davis	Esq.	Alton	1926-05-26
4	4	Mr.	Doc	Severinsen	[null]	Arlington	1927-07-07
5	5	Mr.	Louis	Armstrong	[null]	New Orleans	1901-08-04
6	6	Ms.	Tine	Helseth	Esq.	Oslo	1987-08-18
7	7	Dr.	Cynthia	Robinson	MD	Sacramento	1944-01-12
8	8	Dr.	James	Morrison	Ph.D.	Oslo	1962-11-11
9	10	Mr.	Dizzy	Gillespie	III	Montreal	1917-10-21

CAP/postgres@PostgreSQL 16

No limit

Query
Query History

Scratch

```

1 SELECT *
2 FROM Orders;

```

Data Output
Messages
Notifications

	ordernum [PK] integer	dateordered date	custid integer	agentid integer	prodid character	quantityordered integer	totalusd numeric (12,2)
1	1011	2024-01-22	1	2	p01	1100	58794.00
2	1012	2023-01-23	4	3	p03	1200	76096.81
3	1015	2022-01-23	5	3	p05	1000	15771.20
4	1016	2021-01-23	8	3	p01	1000	60977.22
5	1017	2023-02-14	1	3	p03	500	25643.98
6	1018	2023-02-14	1	3	p04	600	8050.49
7	1019	2023-02-14	1	2	p02	400	16249.28
8	1020	2023-02-14	4	5	p07	600	585.18
9	1021	2023-02-14	4	5	p01	1000	66086.33
10	1022	2023-03-15	1	3	p06	450	31236.48
11	1023	2023-03-15	1	2	p05	500	6550.98
12	1024	2023-03-15	5	2	p01	880	56671.55
13	1025	2022-04-01	8	3	p07	888	799.11
14	1026	2022-05-04	8	5	p03	808	47277.29

2. Explain distinctions among the terms primary key, candidate key and superkey

- A Superkey is a set of one or more columns that can uniquely identify a row in a table.
- A Candidate key is like a Superkey except that it has the property of being minimal, meaning no subset of the key can uniquely identify a row in a table
- A Primary key is a candidate key that is used to identify each row in a table. Only one candidate key is selected as the PK and cannot be null

3. Short Essay on Data Types

Data types are crucial in the organization and management of information within databases. All the different data types ensure accurate representation, as well as ease of data retrieval. To demonstrate the different data types, I am going to use the Pokemon TCG and create a table with fields.

Pokemon TCG		
Fields	Data Type	Nullable?
CardID	INT	Not Null
CardName	TEXT	Not Null
Rarity	TEXT	Not Null
Type	TEXT	Not Null
HP	INT	Not Null
AttackName	TEXT	Nullable
EvolutionStage	TEXT	Nullable
Illustrator	TEXT	Nullable
ReleaseDate	DATE	Not Null

In conclusion, my Pokemon TCG table demonstrates the use of various data types used to represent and organize information accurately. Choosing the correct data type is crucial for making an effective database with strong data integrity and seamless data retrieval.

4. Explain the relational rules with examples and reasons why they are important

- The “first normal form” rule says that a relation must contain only atomic values, and cannot repeat and fields. An example for this would be a table containing a column called “Products”, where each product is stored in one comma-separated list. The first normal form rule is important in avoiding redundancy and makes it easier to update data without causing problems.
- The “access by content only” rule says that we can only query data by what’s there, never by where it is. An example of this would be querying customers by a CustID number instead of the order in which they were added to your database. This rule is important to retrieving data from your database and lets it become much more scalable.

- The “all rows must be unique” rule says that since elements have no intrinsic order, the only way to ensure the ability to get at every row in the table is for every row to be unique. For example, in a table of employees, each employee may have a unique employee id in-case two employees share the same name. This rule is important because it ensures that any updates to a specific row doesn't affect others.