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Database Management

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The screenshots in the queries are the same results as the CAP screenshot. The distinctions between the keys is that the superkey is above them all. What I mean by this is that the superkey helps define the candidate and the primary key (Garcia-Molina, D.Ullman and Widom, 2020). The candidate key is just a smaller version of a super key and a primary key is the candidate key. The superkey is any variation of fields that come together to be unique and to stop repeating values. For example, the superkey could be 'id' and 'person'. Candidate key is the minimal superkey which means we reduce the superkey into the candidate key because we don't need some of the attributes in the superkey as they are useless to be unique (Garcia-Molina, D.Ullman and Widom, 2020). Using the above example with 'id' and 'person', we would reduce this to just 'id' to be the key. We can describe each person with just an id. There can be multiple candidate keys. A primary key is a candidate key and only one candidate key (Garcia-Molina, D.Ullman and Widom, 2020).

Data types define what type of value a field has. They make sure the value that is inputted in these fields is the correct Data type. Some data types are char, varchar, bits, boolean, int, float, real and dates (Garcia-Molina, D.Ullman and Widom, 2020). For example, the data type, 'date', makes sure that only a date is properly entered. The

system goes by the year-month-day system (Garcia-Molina, D.Ullman and Widom, 2020). If I were to enter the date for today it would be 2020-09-08. If the day or month is a single value(1-9), we must put a zero before the number. Another data type is int. Ints can store numbers up to 2,147,483,647. They can only store whole numbers which means that a decimal number inputted into this value might be rounded or might cause an error. I've seen ints used in a game I use to play called, 'Runescape'. The max cash somebody could get was 2,147,483,647. If we want decimals values we have to use the data type, float or real. Booleans are used for true and false statements (Garcia-Molina, D.Ullman and Widom, 2020). There is another value unknown for booleans in sql. Booleans are really useful if we need to return something that has 2 possibilities.

I would create a table for employees in a work setting. The name would be employees. The employees attributes would be name, date-of-employment, id, Primary key(id), workplace if the employer has multiple places, and job. The data types for 'name', 'job', and 'workplace' would all be a text data type. The 'id' would be of type int and the 'date-of-employment' will be of type date. We can't make the 'id' null because it's their primary key and everyone is unique. We need this to be an employee. 'Name' can't be nullable because it's the name of the employee. We need it. All of the rest are nullable.

The first normalization rule is no repeating groups or no repeating fields. For example, say we have a column with the name "prefix". At the intersection of the row and prefix, we can't have two values in that field. We can't have a Mr. and Ms. for the value. we have to have one or the other. This is important because if we had two

values, the data would be inconsistent. The next normalization rule is we can only access rows by the content only. The reasoning for this is that rows can change and there is no distinct order. For example, we can't ask for the name in the first row because the order changes. It would be different every time when someone updates the database. The third normalization is every row must be unique. Every row has to be different with at least one attribute different unless there are 2 primary keys. The primary key means the value has to be different every time. For example, if one row has the tuple: (6 , 4 ,3 ,2), then another row can't be exactly the same under the same fields. We couldn't have (6, 4, 3, 2) again.

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14 select *
15 from Orders;
16
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	ordernum [PK] integer	dateordered date	custid integer	agentid integer	prodid character (3)	quantityordered integer	totalusd numeric (12,2)
1	1011	2020-01-23	1	2	p01	1100	58568.40
2	1012	2020-01-23	4	3	p03	1200	74871.83
3	1015	2020-01-23	5	3	p05	1000	15696.45
4	1016	2020-01-23	8	3	p01	1000	60750.00
5	1017	2020-02-14	1	3	p03	500	25643.88
6	1018	2020-02-14	1	3	p04	600	22244.16
7	1019	2020-02-14	1	2	p02	400	1735.36
8	1020	2020-02-14	4	5	p07	600	575.76
9	1021	2020-02-14	4	5	p01	1000	64773.00
10	1022	2020-03-15	1	3	p06	450	709.92
11	1023	2020-03-15	1	2	p05	500	6550.98
12	1024	2020-03-15	5	2	p01	880	56133.00

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Query Editor Query History

```

1
2 select *
3 from People;
4
5 select *
6 from Customers;
7

```

Data Output Explain Messages Notifications

	pid [PK] integer	prefix text	firstname text	lastname text	suffix text	homecity text	dob date
1	1	Dr.	Neil	Peart	Ph.D.	Toronto	1952-09...
2	2	Ms.	Regina	Schock	[null]	Toronto	1957-08...
3	3	Mr.	Bruce	Crump	Jr.	Jacksonville	1957-07...
4	4	Mr.	Todd	Sucherman	[null]	Chicago	1969-05...
5	5	Mr.	Bernard	Purdie	[null]	Teaneck	1939-06...
6	6	Ms.	Demetra	Plakas	Esq.	Santa Monica	1960-11...
7	7	Ms.	Terri Lyne	Carrington	[null]	Boston	1965-08...
8	8	Dr.	Bill	Bruford	Ph.D.	Kent	1949-05...
9	9	Mr.	Alan	White	III	Pelton	1949-06...

```

11 select *
12 from Products;
13
14 select *
15 from Orders;
16

```

Data Output Explain Messages Notifications

	prodid [PK] character (3)	name text	city text	qtyonhand integer	priceusd numeric (10,2)
1	p01	Heisen...	Dallas	47	67.50
2	p02	Univers...	Newark	2399	5.50
3	p03	Comm...	Duluth	1979	65.02
4	p04	LCARS ...	Duluth	3	47.00
5	p05	Remo ...	Dallas	8675309	16.61
6	p06	Trappe...	Dallas	1982	2.00
7	p07	Flux Ca...	Newark	1007	1.00
8	p08	HAL 90...	Newark	200	1.25
9	p09	Red Ba...	Toronto	1	379000.47

```

5 select *
6 from Customers;
7

```

Data Output Explain Messages Notifications

	pid [PK] integer	paymentterms text	discountpct numeric (5,2)
1	1	Net 30	21.12
2	4	Net 15	4.04
3	5	In Advance	5.50
4	7	On Receipt	2.00
5	8	Net 30	10.00

```

8 select *
9 from Agents;
10
11 select *
12 from Products;

```

Data Output Explain Messages Notifications

	pid [PK] integer	paymentterms text	commissionpct numeric (5,2)
1	2	Quarterly	5.00
2	3	Annually	10.00
3	5	Monthly	2.00
4	6	Weekly	1.00

Works cited

Garcia-Molina, H., D.Ullman, J. and Widom, J., 2020. Database Systems The Complete Book. 2nd ed. Upper Saddle River: Pearson Prentice Hall.