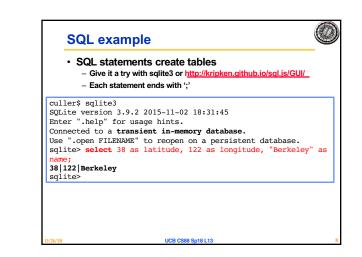
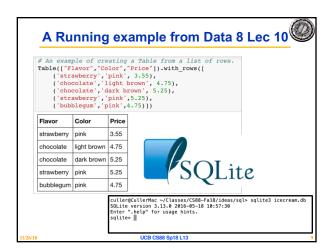


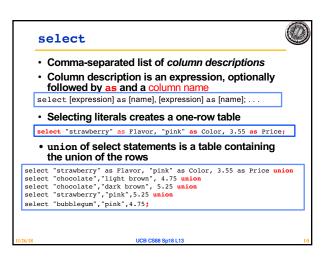
SQL

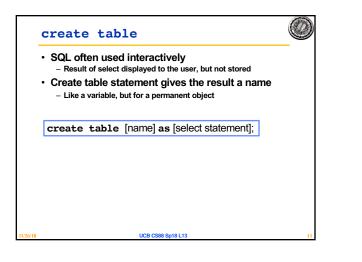
- · A declarative language
 - Described what to compute
 - Imperative languages, like python, describe how to compute it
 Query processor (interpreter) chooses which of many equivalent query plans to execute to perform the SQL statements
- · ANSI and ISO standard, but many variants
- select statement creates a new table, either from scratch or by projecting a table
- create table statement gives a global name to a table
- Lots of other statements - analyze, delete, explain, insert, replace, update, ...
- The action is in select

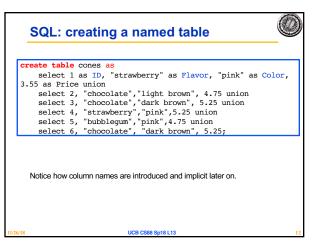
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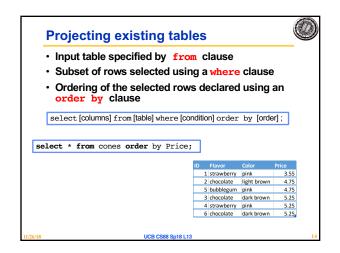


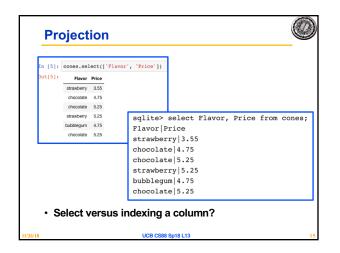


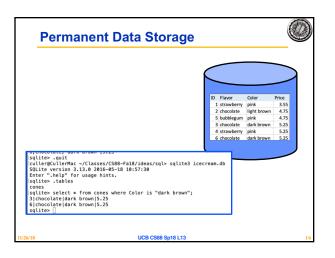


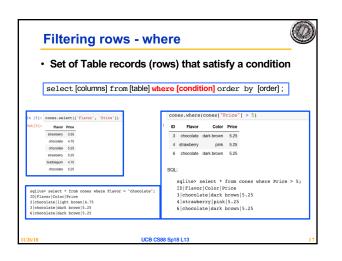


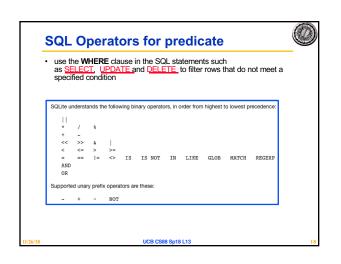
• • •	sql — sqlite3 ice	cream.db — 80×24
SQLite version Enter ".help" f sqlite> create > sel ce union > sel > sel > sel > sel	3.13.0 2016-05-18 10:57:30 or usage hints. table comes as ect l as ID, "strawberry" ect 2, "chocolate", "light ect 3, "chocolate", "gink ect 5, "bubblegum","pink ect 6, "chocolate", "dark # from cones; kl]3.55 4.75 klp2.55 kl,25 kl,25	- as Flavor, "pink" as Color, 3.55 as Pri brown", 4.75 union ",5.25 union 4.75 union
		ID Flavor Color Price
		1 strawberry pink 3.55
		2 chocolate light brown 4.75
		3 chocolate dark brown 5.25 4 strawberry pink 5.25
		5 bubblegum pink 4.75



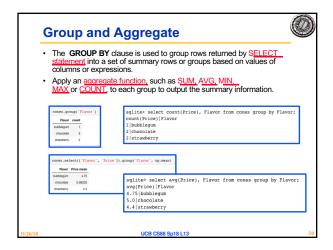


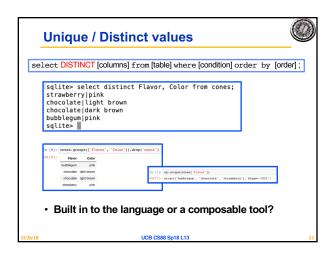


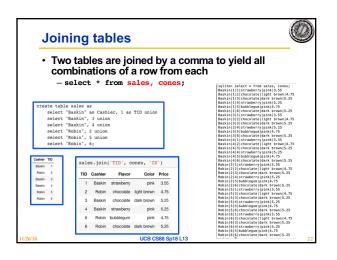


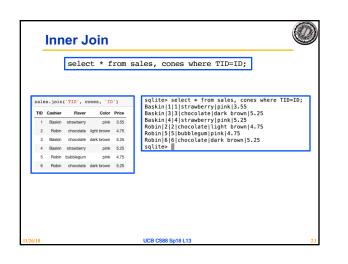


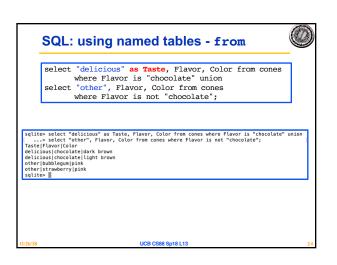
Reç	jular express	sion mat	tches a	re so common that they are built in in SQL.
	sqlite> s	select	* fro	om cones where Flavor like "%berry%";
	Flavor			,
	strawber	ry pin	k 3.5	5
	strawber	cy pin	k 5.29	ō
	sqlite>			
Эn	-	nd, you	have th	ne full power of Python to express what you mear
Лn	-	nd, you	have th	e full power of Python to express what you mean
	the other ha			ne full power of Python to express what you mear (lambda x:'berry' in x, 'Flavor'))
201	the other ha		.apply	
201	the other ha	Color	.apply	







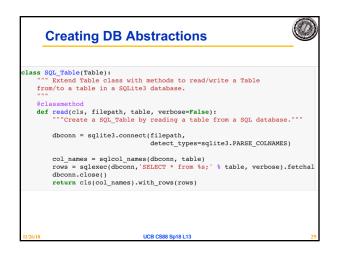


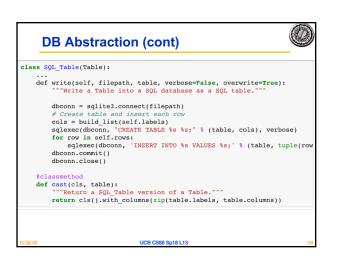


Any place that a table is named within a select statement, a table could be computed	<pre>INSERT INTO table(column1, column2,) VALUES (value1, value2,);</pre>
- As a sub-query select TID from sales where Cashier is "Baskin"; select * from cones where ID in (select TID from sales where Cashier is "Baskin"); sqlite> select * from cones > where ID in (select TID from sales where Cashier is "Baskin"); ID Flavor Color Price strawberry pink 3.55 3 chocolate dark brown 5.25 4 strawberry pink 3.25	sqlite> slete + from cones(ID, Flavor, Color, Price) values (7, "Vanila", "W isqlite> select + from cones(ID, Flavor, Color, Price) values (7, "Vanila", "W ID[Flavor[Color]Price 1] strawberry[pink[3.55 2] chocolate[dirk brown[4.75 3] chocolate[dirk brown[5.25 4] strawberry[pink[5.25 6] chocolate[dirk brown[5.25 7] Vanila white]3.95 sqlite> 1 3 chocome date Joant 4 thomberry pink 3.55 5 bddmount 5 bddmount 6 chocome date Joant 7 ywaha 8 ymain
	 A database table is typically a shared, dura repository shared by multiple applications



In [64]:	<pre>import sqlite3</pre>
In [65]:	<pre>icecream = sqlite3.connect('icecream.db')</pre>
In [66]:	<pre>icecream.execute('SELECT * FROM cones;')</pre>
Out[66]:	<sqlite3.cursor 0x111127960="" at=""></sqlite3.cursor>
In [67]:	<pre>icecream.execute('SELECT DISTINCT Flavor FROM cones;').fetchall()</pre>
Out[67]:	[('strawberry',), ('chocolate',), ('bubblegum',)]
In [68]:	<pre>icecream.execute('SELECT * FROM cones WHERE Flavor is "chocolate";').fetch.</pre>
Out[68]:	<pre>[(2, 'chocolate', 'light brown', 4.75), (3, 'chocolate', 'dark brown', 5.25), (6, 'chocolate', 'dark brown', 5.25)]</pre>





SELECT <col< th=""><th>spec> FROM <ta< th=""><th>ble spec> 1</th><th>HERE <c< th=""><th>ond spec</th></c<></th></ta<></th></col<>	spec> FROM <ta< th=""><th>ble spec> 1</th><th>HERE <c< th=""><th>ond spec</th></c<></th></ta<>	ble spec> 1	HERE <c< th=""><th>ond spec</th></c<>	ond spec
	¥ <group spe<="" th=""><th>•</th><th></th><th>•</th></group>	•		•
	table(column1 S (value1, val)	
THEOL	. (,,,		
CREATE TABL	E name (<colu< td=""><td>mns>) ;</td><td></td><td></td></colu<>	mns>) ;		
CREATE TABL	E name AS <s< td=""><td>elect statem</td><td>ent> ;</td><td></td></s<>	elect statem	ent> ;	
DROP TABLE	name ;			

