

## Tables

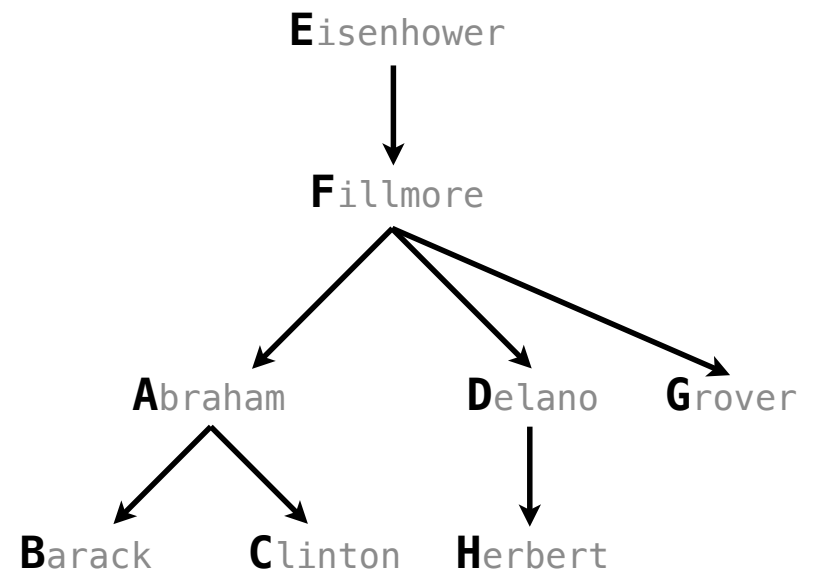
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# Announcements

## Joining Tables

## Reminder: John the Patriotic Dog Breeder

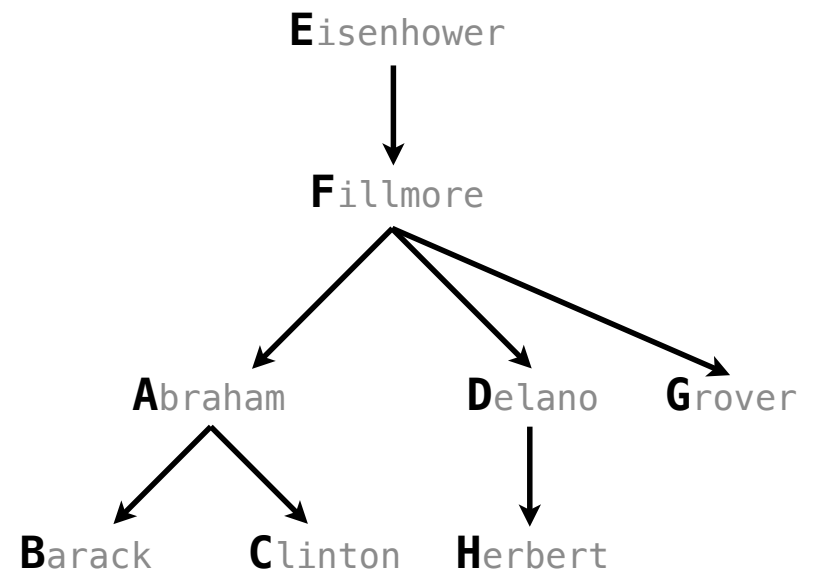
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## Reminder: John the Patriotic Dog Breeder



```
SELECT "abraham" AS parent, "barack" AS child UNION
SELECT "abraham"      , "clinton"      UNION
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SELECT "fillmore"     , "abraham"     UNION
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SELECT "fillmore"     , "grover"     UNION
SELECT "eisenhower"   , "fillmore";
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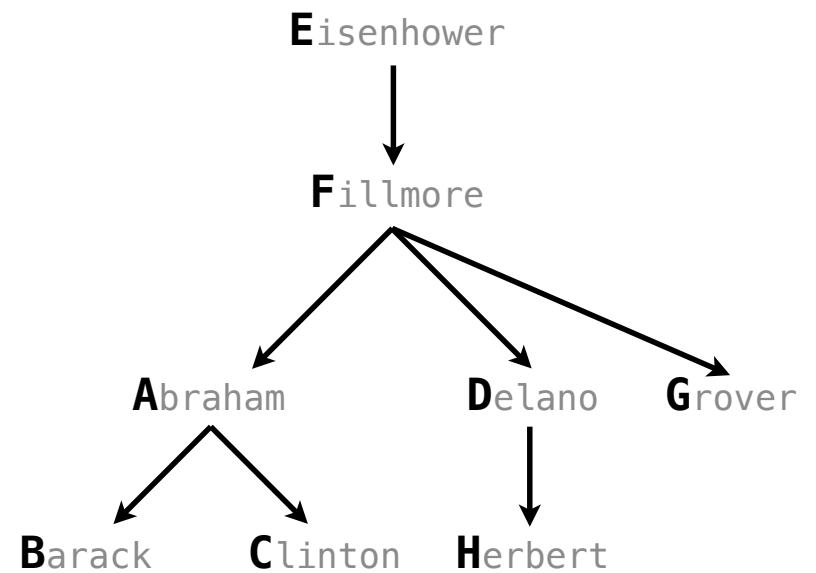


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```

Parents :

Parent	Child
abraham	barack
abraham	clinton
delano	herbert
fillmore	abraham
fillmore	delano
fillmore	grover
eisenhower	fillmore

## Joining Two Tables

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— —  
| A |  
— —

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**A**

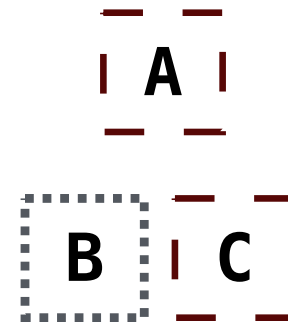
**B**

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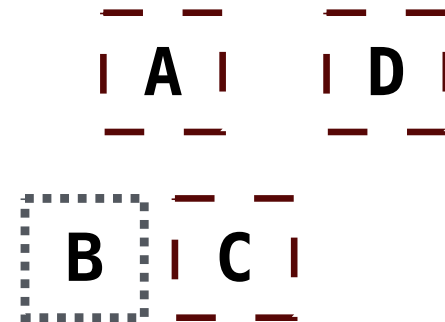


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**E**



**A**   **D**



**B**   **C**

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```



E



F



A



D



B



C

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E

F

A

D

G

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E

F

A

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G

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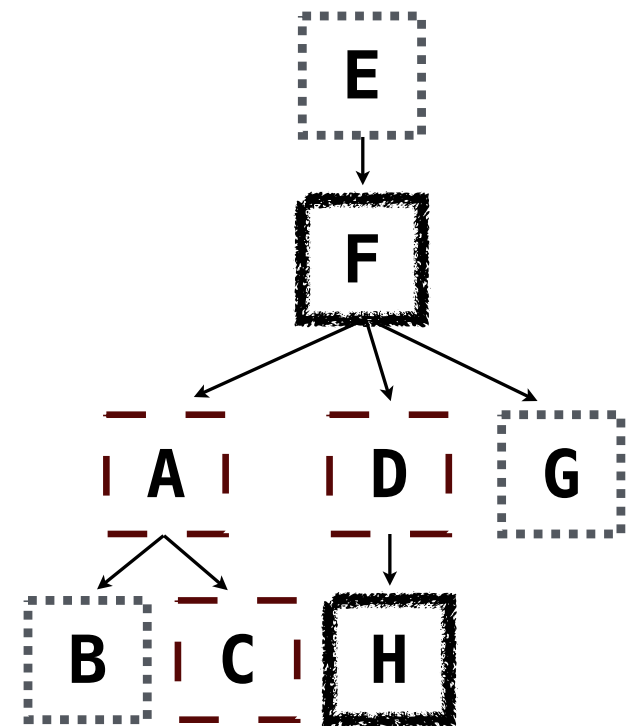
H

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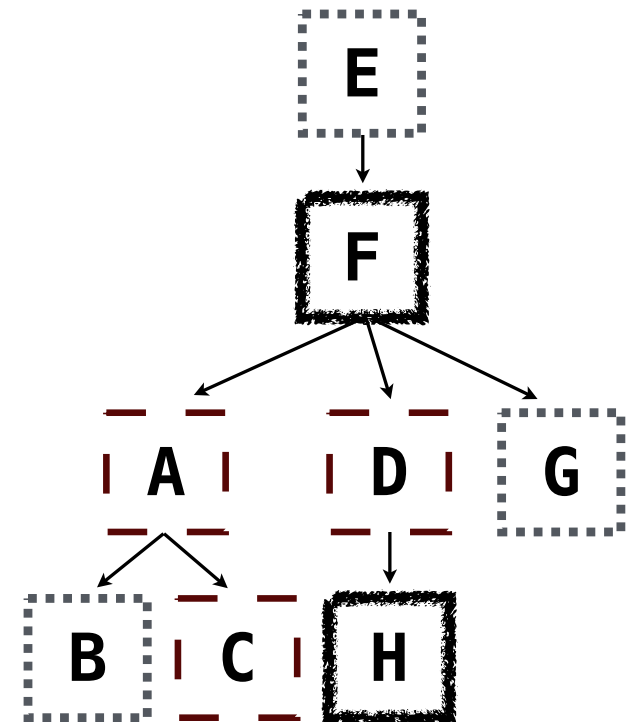
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Select the parents of curly-furred dogs



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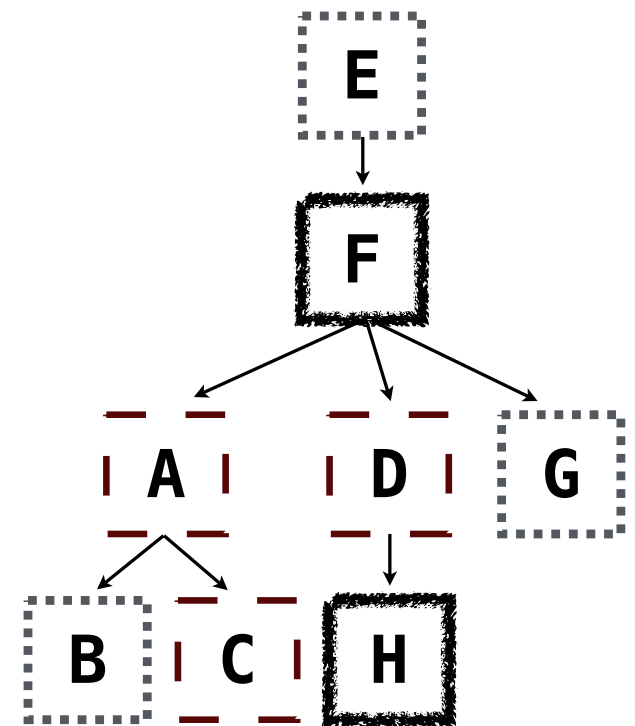
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SELECT parent FROM parents, dogs
      WHERE child = name AND fur = "curly";
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## Joining Two Tables

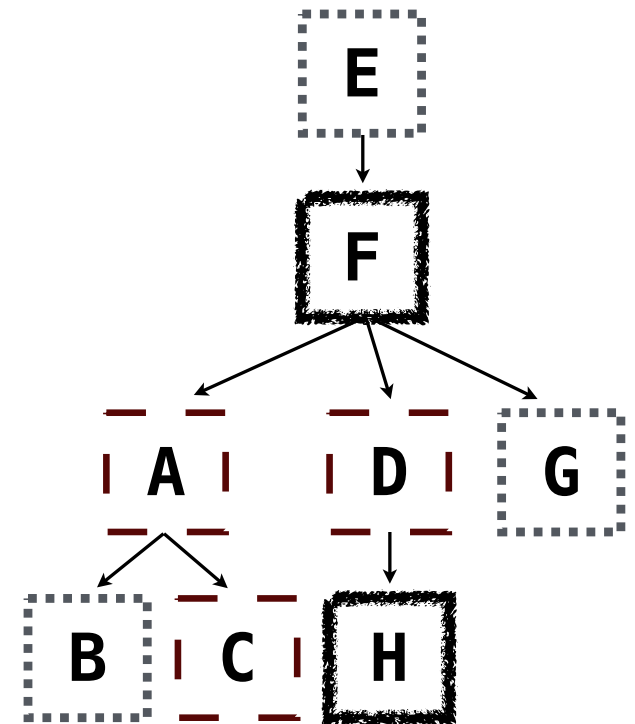
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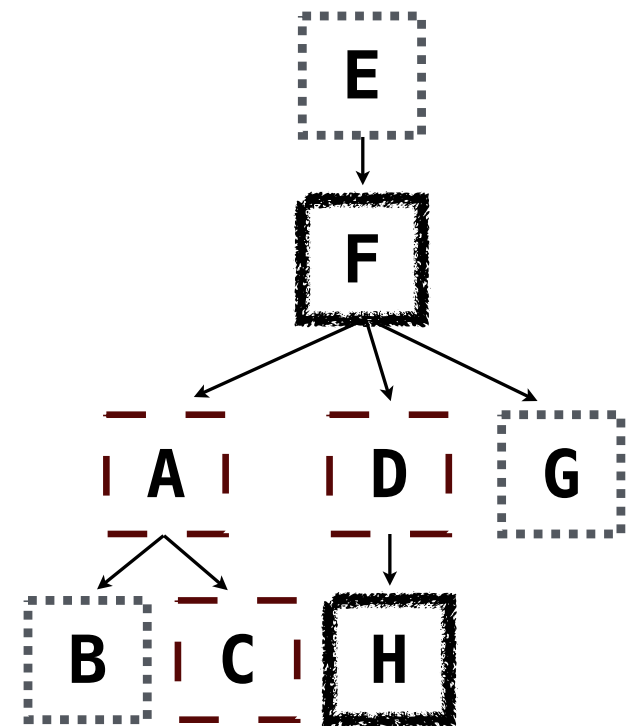
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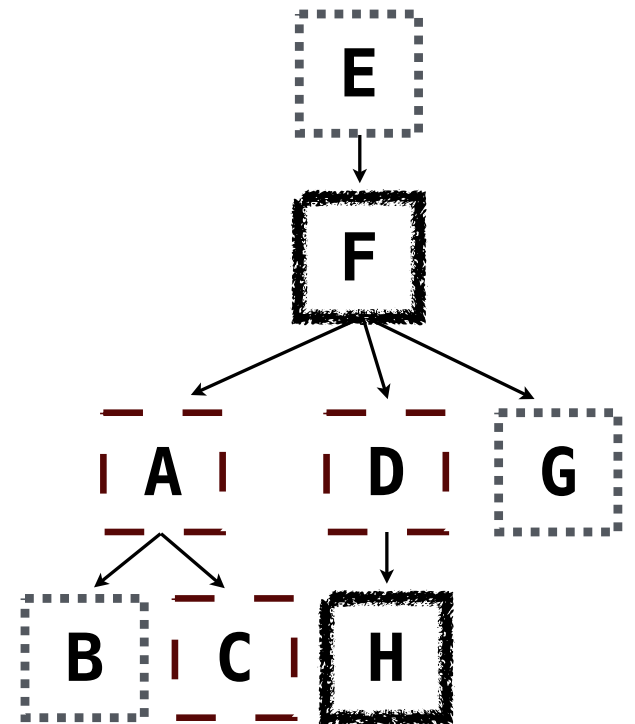


(Demo)

## Aliases and Dot Expressions

## Joining a Table with Itself

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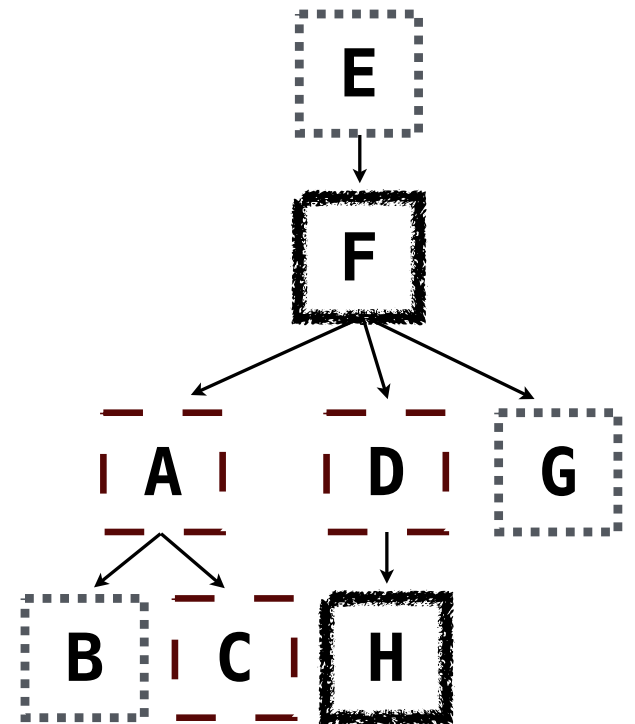




## Joining a Table with Itself

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Two tables may share a column name; dot expressions and aliases disambiguate column values

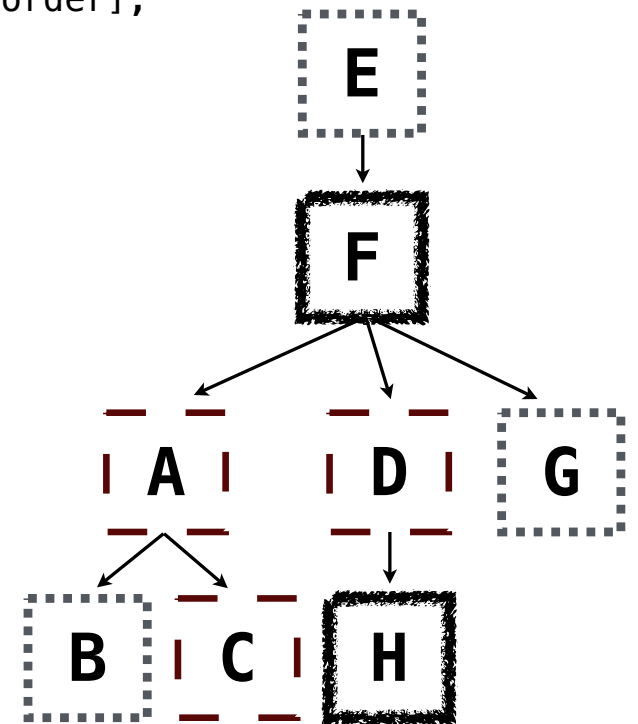


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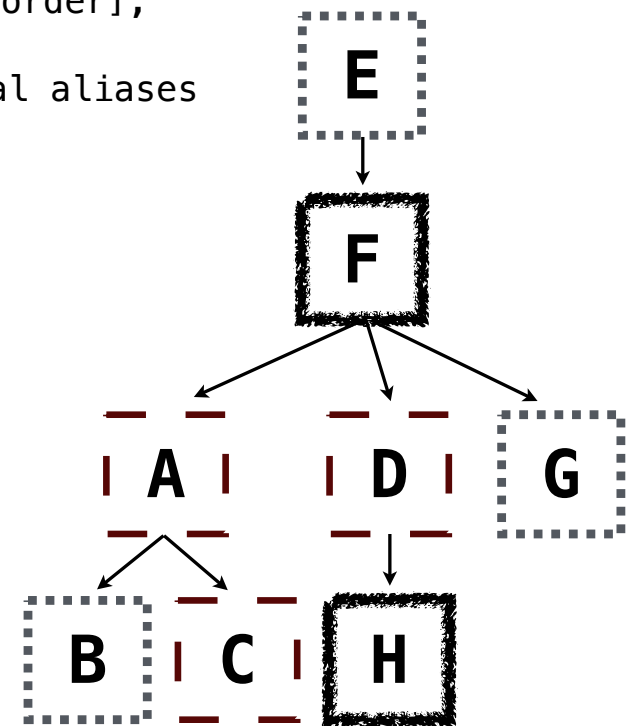
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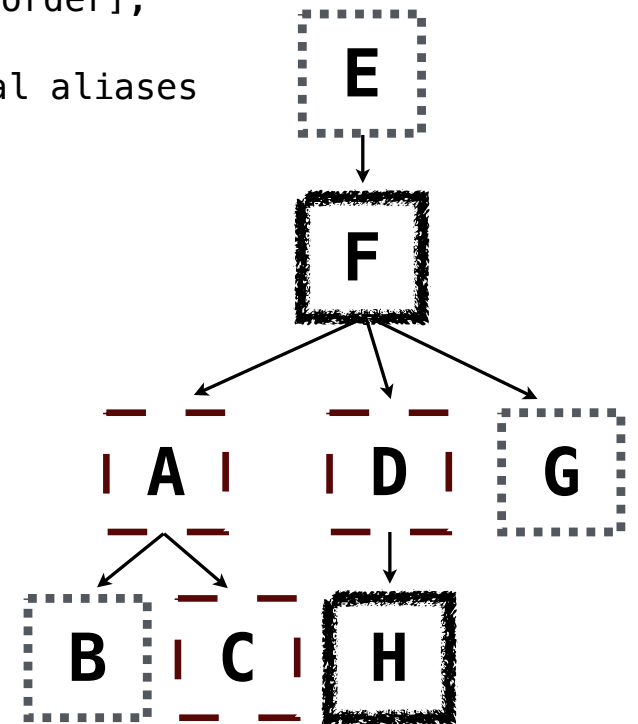
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Select all pairs of siblings



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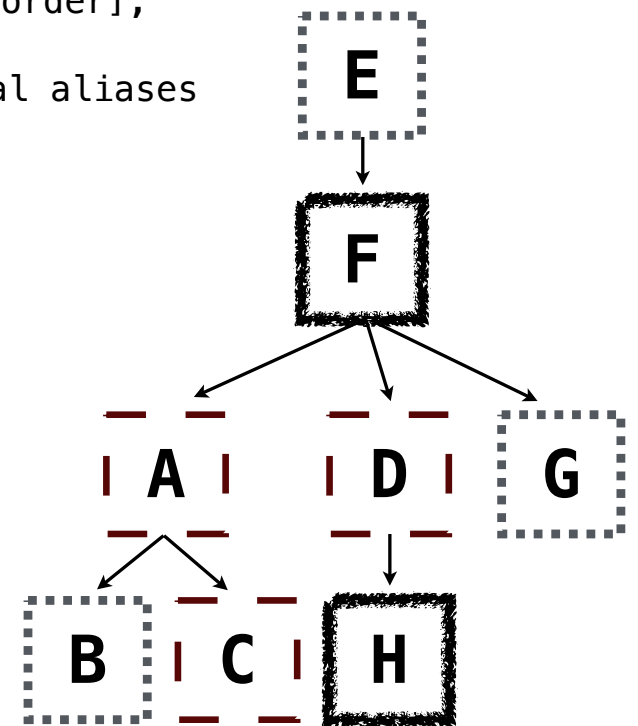
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Select all pairs of siblings

```
SELECT a.child AS first, b.child AS second  
FROM parents AS a, parents AS b  
WHERE a.parent = b.parent AND a.child < b.child;
```



## Joining a Table with Itself

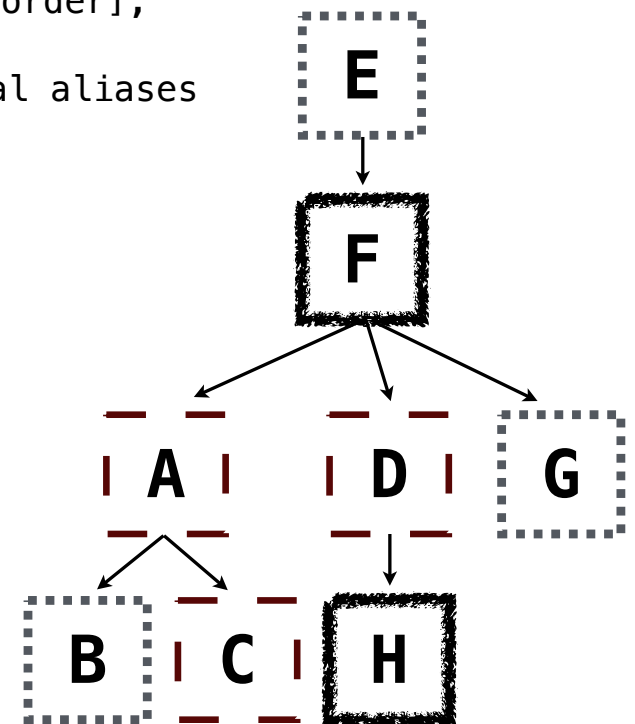
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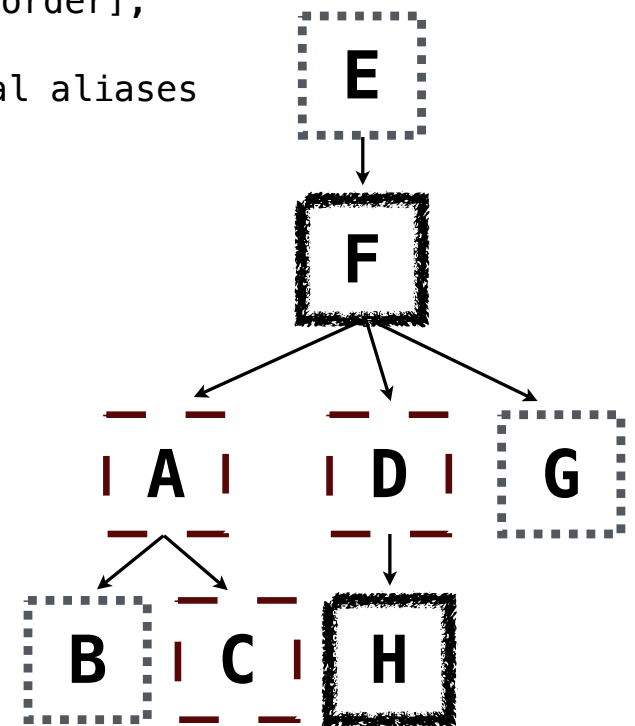
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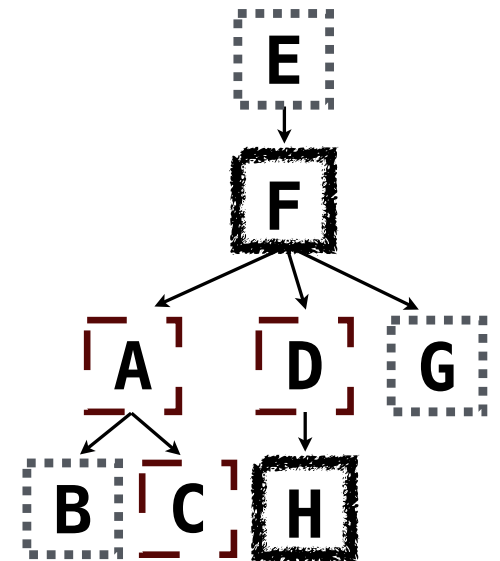
first	second
barack	clinton
abraham	delano
abraham	grover
delano	grover



## Example: Grandparents

Which select statement evaluates to all grandparent, grandchild pairs?

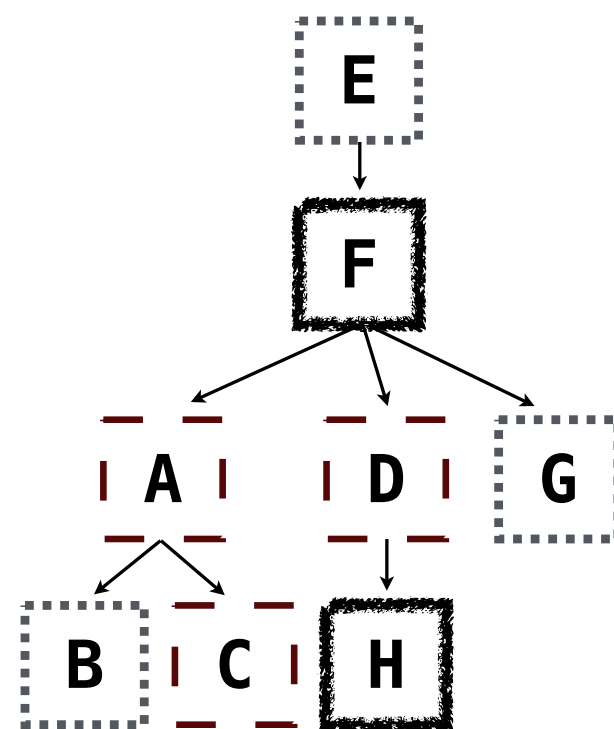
- 1 `SELECT a.grandparent, b.child FROM parents AS a, parents AS b WHERE b.parent = a.child;`
- 2 `SELECT a.parent, b.child FROM parents AS a, parents AS b WHERE a.parent = b.child;`
- 3 `SELECT a.parent, b.child FROM parents AS a, parents AS b WHERE b.parent = a.child;`
- 4 `SELECT a.grandparent, b.child FROM parents AS a, parents AS b WHERE a.parent = b.child;`
- 5 None of the above





## Joining Multiple Tables

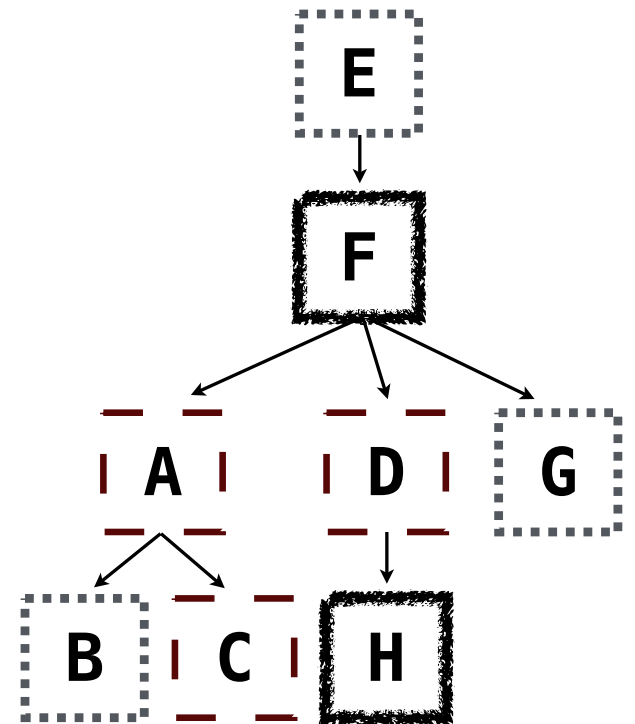
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## Joining Multiple Tables

---

Multiple tables can be joined to yield all combinations of rows from each

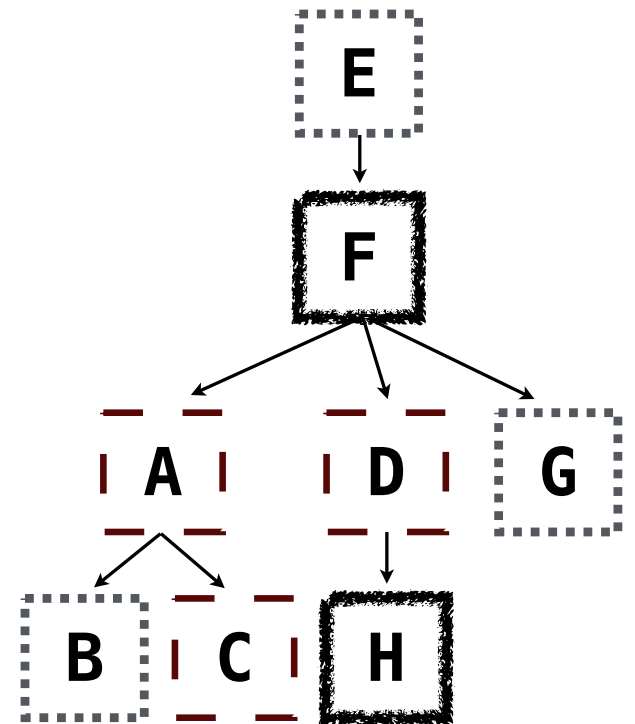


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CREATE TABLE grandparents AS
SELECT a.parent AS grandog, b.child AS granpup
FROM parents AS a, parents AS b
WHERE b.parent = a.child;
```



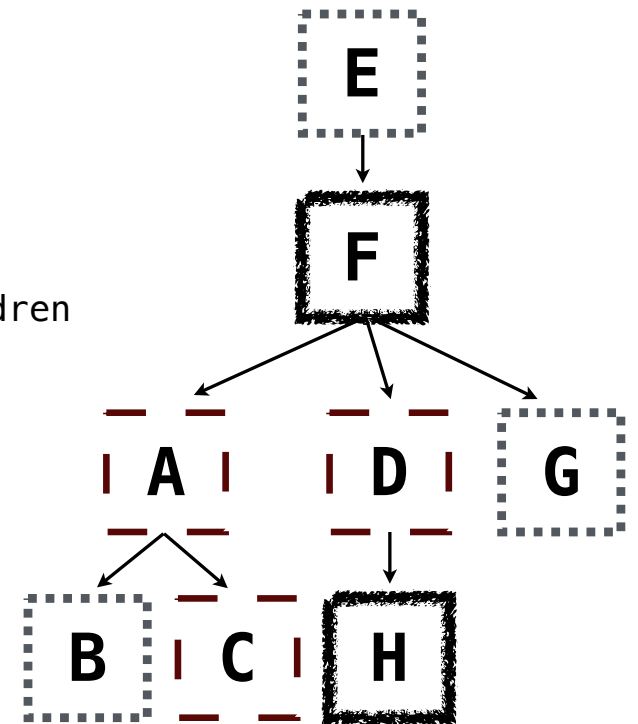
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Select all grandparents with the same fur as their grandchildren



## Joining Multiple Tables

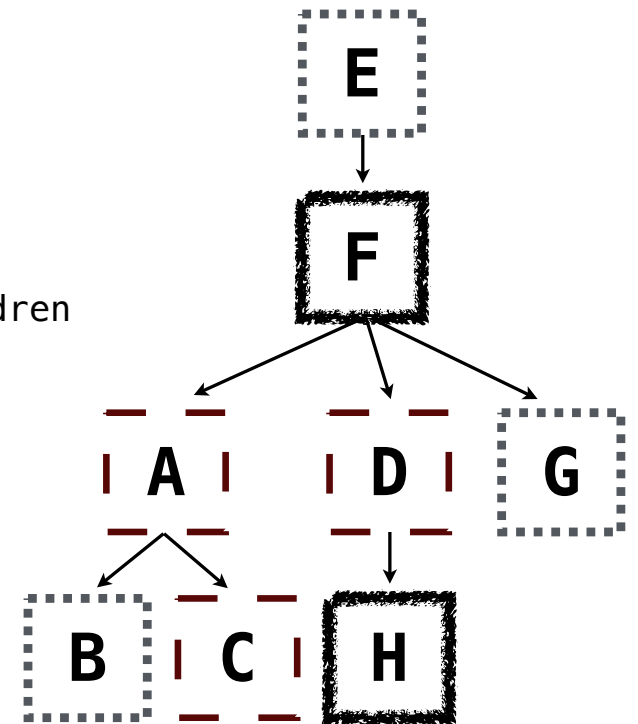
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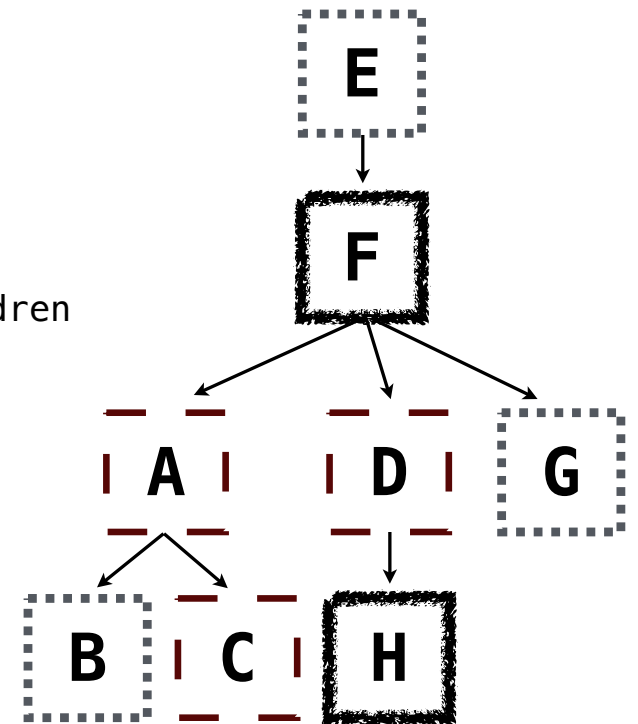
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Which tables need to be joined together?

```
SELECT granddog FROM grandparents, dogs AS c, dogs AS d
WHERE granddog = c.name AND
granpup = d.name AND
c.fur = d.fur;
```



Example: Dog Triples

## Fall 2014 Quiz Question (Slightly Modified)

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Write a SQL query that selects all possible combinations of three different dogs with the same fur and lists each triple in *inverse* alphabetical order

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  SELECT "abraham" AS name, "long" AS fur UNION
  SELECT "barack"      , "short"      UNION
  ...;
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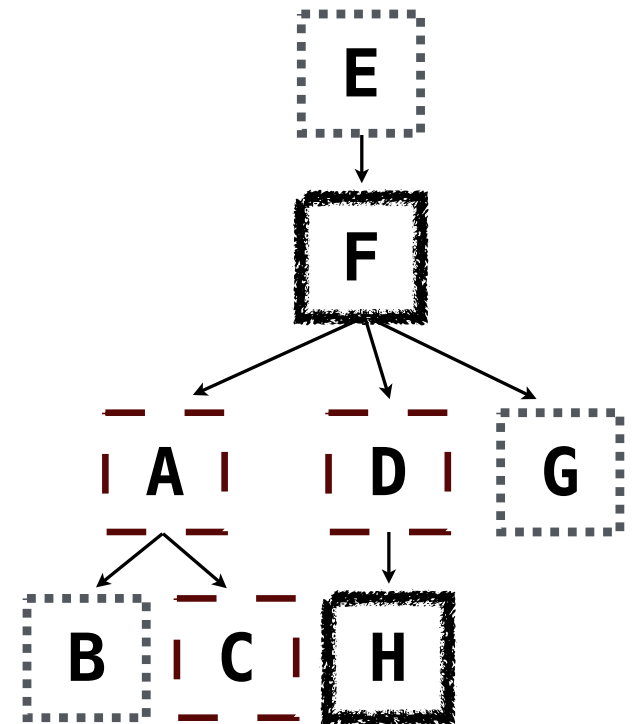
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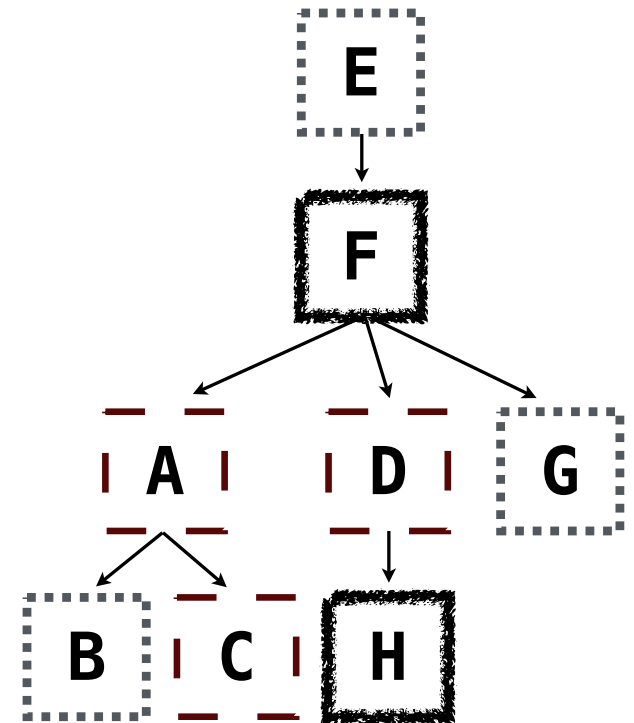
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Expected output:

```
delano|clinton|abraham
grover|eisenhower|barack
```



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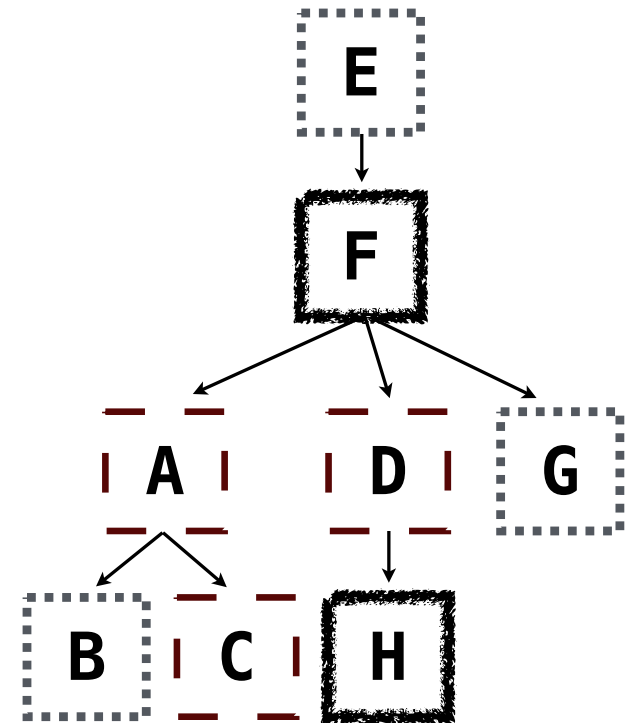
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(Demo)



# Numerical Expressions

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[expression] AS [name], [expression] AS [name], ...
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(Demo)

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String values can be combined to form longer strings



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```
sqlite> SELECT "hello," || " world";  
hello, world
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```

Basic string manipulation is built into SQL, but differs from Python

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(Demo)