Public Service Announcement

ATTN Latina/o Coders:
The Hispanic Heritage Foundation and the Infosys Foundations USA are excited to host a LOFT Coder Summit at Stanford University on Saturday, May 6th from 8:00 am - 5:00 pm, as hundreds of Latina/o coders gather to share ideas, energy and cultural pride! For more details and to register visit lcsrsvp.com.

This summit is part of HHF’s broader Code as a Second Language (CSL) national initiative which has included LOFT Coder Summits in Austin at SXSW, New York, Minneapolis and Stanford, The Rio Grande Valley and Los Angeles!

If you are a Latina/o coder, programmer, hacker, developer, and/or a computer scientist, we invite you to be a part of this one-of-a-kind experience. The summit is a free one-day event filled with back to back workshops, discussions, and opportunities to expand your network. Please join us in redefining the landscape of computer technology through a heightened collaboration and representation of like-minded Latina/o students and professionals, all united and ignited by their endless passion for technology.
with 

( select a.child, b.child 
from people as a, people as b 
where a.parent = b.parent 
and a.child != b.child )

select distinct kin.second, child 
from people, kin 
where kin.first = parent;

---

```
Example: Integers

• Define the table ints to contain integers from 1–30:
  create table ints as
    with ints(n) as
      ( select 1 union
      select n+1 from ints
      where n<=30 )
    select n from ints;

• Here, I've chosen to use ints for both the local and global tables.
  • Usual sort of scope rules apply: the local ints is distinct from the global one, so I didn't have to make up a new name.
```

---

```
A Famous Number

• There is a famous story about the “interesting” number 1729, the first of the “taxicab numbers.”
  • The story told by G. H. Hardy describes a meeting between him and Srinivasa Ramanujan:
    “I remember once going to see [Ramanujan] when he was lying ill at Putney. I had ridden in taxi-cab No. 1729, and remarked that the number seemed to be rather a dull one. “No,” he replied, “it is a very interesting number; indeed it is the smallest number expressible as the sum of two cubes in two different ways.”
    “I remember once going to see Ramanujan, when he was ill at Putney. I had ridden in taxi-cab No. 1729, and remarked that the number seemed to be rather a dull one. “No,” he replied, “it is a very interesting number; indeed it is the smallest number expressible as the sum of two cubes in two different ways.”
  • Given our table ints (numbers up to 50) how do we find such numbers?
```

---

```
Solution

with cubes(a, b, c) as
  ( select x.n, y.n, x.n*x.n*x.n + y.n*y.n*y.n 
  from ints as x, ints as y 
  where x.n <= y.n )
select left.a, left.b, right.a, right.b, left.c 
from cubes as left, cubes as right 
where left.a < right.a 
and left.c = right.c;
```

---

```
Defining Ancestor Recursively

• An ancestor is a parent or an ancestor of a parent.
```

---

```
Example: Ancestry Relationships

• What does the program on the left do?
  • (distinct removes duplicate rows.)
```

---

```
Recursion, Yet Again

• As with Python, Scheme, and streams (limited) recursion is possible
```

---

```
Example: Ancestry Relationships

people

<table>
<thead>
<tr>
<th>parent</th>
<th>child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin F</td>
<td>George N</td>
</tr>
<tr>
<td>George N</td>
<td>Martin F</td>
</tr>
<tr>
<td>George N</td>
<td>Paul</td>
</tr>
<tr>
<td>George N</td>
<td>Ann</td>
</tr>
<tr>
<td>George N</td>
<td>John</td>
</tr>
<tr>
<td>Martin F</td>
<td>Robert</td>
</tr>
<tr>
<td>Martin F</td>
<td>Donald</td>
</tr>
<tr>
<td>Donald</td>
<td>Peter</td>
</tr>
</tbody>
</table>
```

---

```
Example: Ancestry Relationships

• The recursively defined table must appear only once in the from clause of the last select in the with clause.
  • Because of these restrictions, no mutual recursions or tree recursions are allowed.
```