INSTRUCTIONS

- You have 5 minutes to complete this quiz.
- The exam is closed book, closed notes, closed computer, closed calculator.
- Mark your answers on the exam itself. We will not grade answers written on scratch paper.
- For multiple choice questions, fill in each option or choice completely.
  - □ means mark all options that apply
  - ○ means mark a single choice

<table>
<thead>
<tr>
<th>Last name</th>
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<tr>
<td>First name</td>
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<td>Student ID number</td>
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<td>CalCentral email (<a href="mailto:_@berkeley.edu">_@berkeley.edu</a>)</td>
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<td>Discussion Section</td>
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All the work on this exam is my own. (please sign)

0. Your thoughts? What was your favorite topic from CS 61A this semester?
1. **Anagrams**

Create a table anagrams that contains all the anagrams of a word like cats. An anagram is a rearrangement of the letters in a word. For example, tacs and sact are anagrams of cats.

*Hint*: Each letter must be used exactly once, so the sum of the positions should equal 1111.

```sql
CREATE TABLE anagrams as
WITH word(letter, position) AS (
  SELECT 'c', 1 UNION
  SELECT 'a', 10 UNION
  SELECT 't', 100 UNION
  SELECT 's', 1000
)

SELECT ____________________________________________________________________________________
FROM ____________________________________________________________________________________
WHERE ____________________________________________________________________________________;

SELECT * FROM anagrams;
tacs
sact
...
ctsa
atsc
```

2. **Squares**

Using recursive SQL, create a table squares containing all the perfect squares between 156 and 1145.

```sql
CREATE TABLE squares AS
WITH naturals(n) AS (
  SELECT 1 UNION
  SELECT ________________________________________________________________________________
)

SELECT ____________________________________________________
FROM ____________________________________________________
WHERE ____________________________________________________________________________________;

SELECT * FROM squares;
169
196
...
1024
1089
```