* A [*median*](https://en.wikipedia.org/wiki/Median) is defined as a number separating the higher half of a data set from the lower half. Query the *median* of the *Northern Latitudes* (*LAT\_N*) from **STATION** and round your answer to  decimal places.

- select ROUND(MEDIAN(LAT\_N), 4) from STATION;

- Generate the following two result sets:

1. Query an *alphabetically ordered* list of all names in **OCCUPATIONS**, immediately followed by the first letter of each profession as a parenthetical (i.e.: enclosed in parentheses). For example: AnActorName(A), ADoctorName(D), AProfessorName(P), and ASingerName(S).
2. Query the number of ocurrences of each occupation in **OCCUPATIONS**. Sort the occurrences in *ascending order*, and output them in the following format:

There are a total of [occupation\_count] [occupation]s.

where [occupation\_count] is the number of occurrences of an occupation in **OCCUPATIONS** and [occupation] is the *lowercase* occupation name. If more than one *Occupation* has the same [occupation\_count], they should be ordered alphabetically.

**Note:** There will be at least two entries in the table for each type of occupation.

**Input Format**

The **OCCUPATIONS** table is described as follows:  *Occupation* will only contain one of the following values: **Doctor**, **Professor**, **Singer** or **Actor**.

**Sample Input**

An **OCCUPATIONS** table that contains the following records:



**Sample Output**

Ashely(P) Christeen(P) Jane(A) Jenny(D) Julia(A) Ketty(P) Maria(A) Meera(S) Priya(S) Samantha(D) There are a total of 2 doctors. There are a total of 2 singers. There are a total of 3 actors. There are a total of 3 professors.

**Explanation**

The results of the first query are formatted to the problem description's specifications.  
The results of the second query are ascendingly ordered first by number of names corresponding to each profession (), and then alphabetically by profession (, and ).

- select NAME||'('||SUBSTR(Occupation,1,1)||')' from OCCUPATIONS order by NAME;

- select 'There are a total of '||count(OCCUPATION)||' '||LOWER(OCCUPATION)||'s.' from OCCUPATIONS

group by OCCUPATION order by count(OCCUPATION), OCCUPATION;

[Pivot](https://en.wikipedia.org/wiki/Pivot_table" \t "_blank) the Occupation column in **OCCUPATIONS** so that each Name is sorted alphabetically and displayed underneath its corresponding Occupation. The output column headers should be Doctor, Professor, Singer, and Actor, respectively.

**Note:** Print **NULL** when there are no more names corresponding to an occupation.

**Input Format**

The **OCCUPATIONS** table is described as follows:



Occupation will only contain one of the following values: **Doctor**, **Professor**, **Singer** or **Actor**.

**Sample Input**



**Sample Output**

Jenny Ashley Meera Jane Samantha Christeen Priya Julia NULL Ketty NULL Maria

**Explanation**

The first column is an alphabetically ordered list of Doctor names.  
The second column is an alphabetically ordered list of Professor names.  
The third column is an alphabetically ordered list of Singer names.  
The fourth column is an alphabetically ordered list of Actor names.  
The empty cell data for columns with less than the maximum number of names per occupation (in this case, the Professor and Actor columns) are filled with **NULL** values.

**Current Buffer** (saved locally, editable)

[Pivot](https://en.wikipedia.org/wiki/Pivot_table" \t "_blank) the Occupation column in **OCCUPATIONS** so that each Name is sorted alphabetically and displayed underneath its corresponding Occupation. The output column headers should be Doctor, Professor, Singer, and Actor, respectively.

**Note:** Print **NULL** when there are no more names corresponding to an occupation.

**Input Format**

The **OCCUPATIONS** table is described as follows:



Occupation will only contain one of the following values: **Doctor**, **Professor**, **Singer** or **Actor**.

**Sample Input**



**Sample Output**

Jenny Ashley Meera Jane Samantha Christeen Priya Julia NULL Ketty NULL Maria

**Explanation**

The first column is an alphabetically ordered list of Doctor names.  
The second column is an alphabetically ordered list of Professor names.  
The third column is an alphabetically ordered list of Singer names.  
The fourth column is an alphabetically ordered list of Actor names.  
The empty cell data for columns with less than the maximum number of names per occupation (in this case, the Professor and Actor columns) are filled with **NULL** values.

set @r1 = 0, @r2 = 0, @r3 = 0, @r4 = 0;

select min(Doctor), min(Professor), min(Singer), min(Actor) from

(

Select case when Occupation = 'Doctor' then @r1 := @r1 + 1

when Occupation = 'Professor' then @r2 := @r2 + 1

when Occupation = 'Singer' then @r3 := @r3 + 1

when Occupation = 'Actor' then @r4 := @r4 + 1 end as RowNumber,

case when Occupation = 'Doctor' then Name end as Doctor,

case when Occupation = 'Professor' then Name end as Professor,

case when Occupation = 'Singer' then Name end as Singer,

case when Occupation = 'Actor' then Name end as Actor

from Occupations

order by Name

)temp

group by RowNumber

Write a query identifying the *type* of each record in the **TRIANGLES** table using its three side lengths. Output one of the following statements for each record in the table:

* **Equilateral**: It's a triangle with  sides of equal length.
* **Isosceles**: It's a triangle with  sides of equal length.
* **Scalene**: It's a triangle with  sides of differing lengths.
* **Not A Triangle**: The given values of *A*, *B*, and *C* don't form a triangle.

**Input Format**

The **TRIANGLES** table is described as follows:



Each row in the table denotes the lengths of each of a triangle's three sides.

**Sample Input**



**Sample Output**

Isosceles Equilateral Scalene Not A Triangle

**Explanation**

Values in the tuple  form an Isosceles triangle, because .  
Values in the tuple  form an Equilateral triangle, because . Values in the tuple  form a Scalene triangle, because .  
Values in the tuple  cannot form a triangle because the combined value of sides  and  is not larger than that of side .

My SQL

select if(A+B<=C or B+C<=A or A+C<=B, "Not A Triangle",

if(A=B and B=C, "Equilateral",

if(A=B or B=C or C=A,"Isosceles", "Scalene")))

from TRIANGLES;

You are given a table, *BST*, containing two columns: *N*and *P,* where *N* represents the value of a node in *Binary Tree*, and *P* is the parent of *N*.



Write a query to find the node type of *Binary Tree* ordered by the value of the node. Output one of the following for each node:

* *Root*: If node is root node.
* *Leaf*: If node is leaf node.
* *Inner*: If node is neither root nor leaf node.

**Sample Input**



**Sample Output**

1 Leaf 2 Inner 3 Leaf 5 Root 6 Leaf 8 Inner 9 Leaf

**Explanation**

The *Binary Tree* below illustrates the sample:



SQL SERVER

select N, case when BT.P is null then 'Root'

when exists(select B.P from BST as B where B.P = BT.N) then 'Inner'

else 'Leaf'

end

from BST as BT

order by BT.N;

MY SQL

select N,if(P is null,'Root',if(select count(\*) from BST where BST.N > 0), 'Inner','Leaf') from BST order by N

Amber's conglomerate corporation just acquired some new companies. Each of the companies follows this hierarchy:

Given the table schemas below, write a query to print the *company\_code*, *founder* name, total number of *lead* managers, total number of *senior* managers, total number of *managers*, and total number of *employees*. Order your output by ascending *company\_code*.

**Note:**

* The tables may contain duplicate records.
* The *company\_code* is string, so the sorting should not be **numeric**. For example, if the *company\_codes* are *C\_1*, *C\_2*, and *C\_10*, then the ascending *company\_codes* will be *C\_1*, *C\_10*, and *C\_2*.

**Input Format**

The following tables contain company data:

* *Company:* The *company\_code* is the code of the company and *founder* is the founder of the company.
* *Lead\_Manager:* The *lead\_manager\_code* is the code of the lead manager, and the *company\_code* is the code of the working company.
* *Senior\_Manager:* The *senior\_manager\_code* is the code of the senior manager, the *lead\_manager\_code* is the code of its lead manager, and the *company\_code* is the code of the working company.
* *Manager:* The *manager\_code* is the code of the manager, the *senior\_manager\_code* is the code of its senior manager, the *lead\_manager\_code* is the code of its lead manager, and the *company\_code* is the code of the working company.
* *Employee:* The *employee\_code* is the code of the employee, the *manager\_code* is the code of its manager, the *senior\_manager\_code* is the code of its senior manager, the *lead\_manager\_code* is the code of its lead manager, and the *company\_code* is the code of the working company.

**Sample Input**

*Company* Table:*Lead\_Manager* Table:*Senior\_Manager* Table:*Manager* Table:*Employee* Table:

**Sample Output**

C1 Monika 1 2 1 2 C2 Samantha 1 1 2 2

**Explanation**

In company *C1*, the only lead manager is *LM1*. There are two senior managers, *SM1* and *SM2*, under *LM1*. There is one manager, *M1*, under senior manager *SM1*. There are two employees, *E1* and *E2*, under manager *M1*.

In company *C2*, the only lead manager is *LM2*. There is one senior manager, *SM3*, under *LM2*. There are two managers, *M2* and *M3*, under senior manager *SM3*. There is one employee, *E3*, under manager *M2*, and another employee, *E4*, under manager, *M3*.

My SQL

select C.company\_code, C.founder, count(distinct LM.lead\_manager\_code), count(distinct SM.senior\_manager\_code), count(distinct M.manager\_code), count(distinct E.employee\_code) from Company as C, Lead\_Manager as LM, Senior\_Manager as SM, Manager as M, Employee as E where C.company\_code = LM.company\_code and LM.company\_code = SM.company\_code and SM.company\_code = M.company\_Code and M.company\_code = E.company\_code group by C.company\_code, C.founder order by C.company\_code

*P(R)* represents a pattern drawn by Julia in *R* rows. The following pattern represents *P(5)*:

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

Write a query to print the pattern *P(20)*.

DECLARE @var int

SELECT @var = 1

WHILE @var <= 20

BEGIN

PRINT replicate('\* ', @var)

SET @var = @var + 1

END;

MYSQL –

set @row := 0;

select repeat('\* ', @row := @row + 1) from information\_schema.tables where @row < 20

Write a query to print all *prime numbers* less than or equal to . Print your result on a single line, and use the ampersand () character as your separator (instead of a space).

For example, the output for all prime numbers  would be:

2&3&5&7

SELECT LISTAGG(PRIME\_NUMBER,'&') WITHIN GROUP (ORDER BY PRIME\_NUMBER)

FROM(

SELECT L PRIME\_NUMBER

FROM(

SELECT LEVEL L

FROM DUAL

CONNECT BY LEVEL <= 1000),

(SELECT LEVEL M FROM DUAL CONNECT BY LEVEL <= 1000)

WHERE M <= L

GROUP BY L

HAVING COUNT(CASE WHEN L/M = TRUNC(L/M) THEN 'Y' END) = 2

ORDER BY L);

Query a *count* of the number of cities in **CITY** having a *Population* larger than 100000

**Input Format**

The **CITY** table is described as follows:



select count(name) from CITY where POPULATION > 100000;

- Query the total population of all cities in **CITY** where *District* is **California**.

select SUM(POPULATION) from CITY where district = 'California';

- Query the average population of all cities in **CITY** where *District* is **California**.

select AVG(population) from city where district = 'California';

- Query the average population for all cities in **CITY**, rounded *down* to the nearest integer.

select ROUND(AVG(POPULATION)) from CITY

-Query the sum of the populations for all Japanese cities in **CITY**. The *COUNTRYCODE* for Japan is **JPN**.

select sum(population) from CITY where countrycode = 'JPN';

- Query the difference between the maximum and minimum populations in **CITY**.

select MAX(population) - MIN(population) from CITY;

- Samantha was tasked with calculating the average monthly salaries for all employees in the **EMPLOYEES** table, but did not realize her keyboard's  key was broken until after completing the calculation. She wants your help finding the difference between her miscalculation (using salaries with any zeroes removed), and the actual average salary.

Write a query calculating the amount of error (i.e.:  average monthly salaries), and round it up to the next integer.

select CEIL(AVG(SALARY) - AVG(REPLACE(SALARY,0,''))) from EMPLOYEES;

- We define an employee's *total earnings* to be their monthly  worked, and the *maximum total earnings* to be the maximum total earnings for any employee in the **Employee** table. Write a query to find the *maximum total earnings* for all employees as well as the total number of employees who have maximum total earnings. Then print these values as  space-separated integers.

select salary\*months as earnings, count(\*) from employee

group by earnings

order by earnings desc limit 1;