# Problem 2118: Build the Equation

## Problem Information

**Difficulty:** Hard
**Acceptance Rate:** 0.00%
**Paid Only:** No

## Problem Description

Table:

Terms

+-------------+------+ | Column Name | Type | +-------------+------+ | power | int | | factor | int | +-------------+------+ power is the column with unique values for this table. Each row of this table contains information about one term of the equation. power is an integer in the range [0, 100]. factor is an integer in the range [-100, 100] and cannot be zero.

You have a very powerful program that can solve any equation of one variable in the world. The equation passed to the program must be formatted as follows:

The left-hand side (LHS) should contain all the terms.

The right-hand side (RHS) should be zero.

Each term of the LHS should follow the format

"<sign><fact>X^<pow>"

where:

<sign>

is either

"+"

or

"-"

.

<fact>

is the

absolute value

of the

factor

.

<pow>

is the value of the

power

.

If the power is

1

, do not add

"^<pow>"

.

For example, if

power = 1

and

factor = 3

, the term will be

"+3X"

.

If the power is

0

, add neither

"X"

nor

"^<pow>"

.

For example, if

power = 0

and

factor = -3

, the term will be

"-3"

.

The powers in the LHS should be sorted in

descending order

.

Write a solution to build the equation.

The result format is in the following example.

Example 1:

Input:

Terms table: +-------+--------+ | power | factor | +-------+--------+ | 2 | 1 | | 1 | -4 | | 0 | 2 | +-------+--------+

Output:

+--------------+ | equation | +--------------+ | +1X^2-4X+2=0 | +--------------+

Example 2:

Input:

Terms table: +-------+--------+ | power | factor | +-------+--------+ | 4 | -4 | | 2 | 1 | | 1 | -1 | +-------+--------+

Output:

+-----------------+ | equation | +-----------------+ | -4X^4+1X^2-1X=0 | +-----------------+

Follow up:

What will be changed in your solution if the power is not a primary key but each power should be unique in the answer?

## Code Snippets

### MySQL:

```
# Write your MySQL query statement below
```

### MS SQL Server:

```
/* Write your T-SQL query statement below */
```

### PostgreSQL:

```
-- Write your PostgreSQL query statement below
```

### Oracle:

```
/* Write your PL/SQL query statement below */
```

### Pandas:

```
import pandas as pd

def build_the_equation(terms: pd.DataFrame) -> pd.DataFrame:
```

## Solutions

### MySQL Solution:

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