Developer

- Use the langage, tools and libraries you are familiar with and you think are appropriate.
- Best would be to post your answers on github

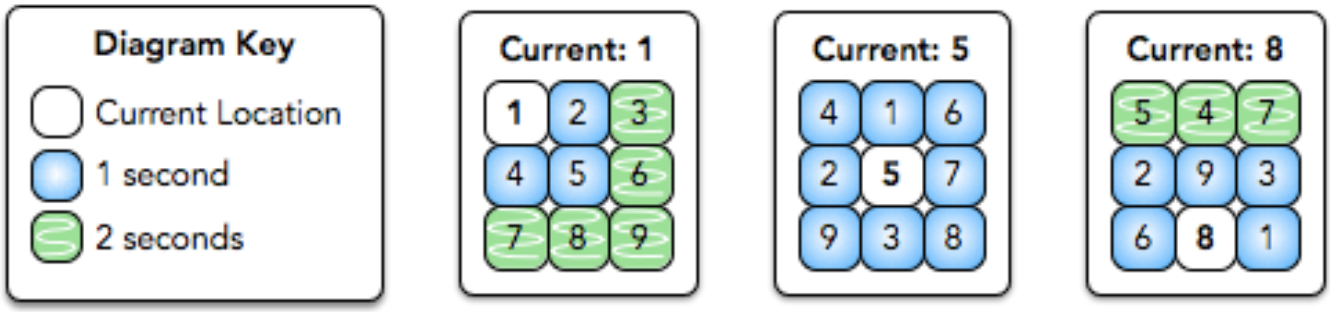
Exercise 1: Keyboard algorithm

You work at a secret organization where you must type a string of numbers into a console using a **3x3** numeric keypad.

Use the following rules to calculate the total amount of time it takes to type a string:

- It takes 0 seconds to move your finger to the first key, and it takes 0 seconds to press the key where your finger is located any number of times
- You can move your finger from one location to any adjacent key in one second.
- Moving to a non-adjacent key is done as a series of moves to adjacent keys

For example:



This diagram depicts the minimum amount of time it takes to move from the current location to all other locations on the keypad.

Function description

Write the function entryTime. The function must return an integer denoting the minimum amount of time it takes to type the string s.

entryTime has the following parameters :
s : the string to type on the keyboard
keypad: a string of 9 digits where each group of 3 digits represents a row on the keypad of the day, in order.

Use the language of your choice.

Function constraints

- $L \leq |\mathbf{s}| \leq 10^5$
- $|\mathbf{keypad}| = 9$
- **keypad**[i] $\in$ [1-9]

Sample

Sample input

423692
923857614

Sample Output

8

Explanation

The keypad looks like this:

9	2	3
8	5	7
6	1	4

We calculate the time it takes to type **s** = 423692 as follows:

- 4: We start at this number so it takes 0 seconds.
- 2: It takes 2 seconds to move from 4 → 2
- 3: It takes 1 second to move from 2 → 3
- 6: It takes 2 seconds to move from 3 → 6
- 9: It takes 2 seconds to move from 6 → 9
- 2: It tales 1 second to move from 9 → 2

The total time is **2 + 1 + 2 + 2 + 1 = 8**

Bonus : you may use an online website to post your solution.
Suggestion : https://js.do/ (allows you to use babel ES6)

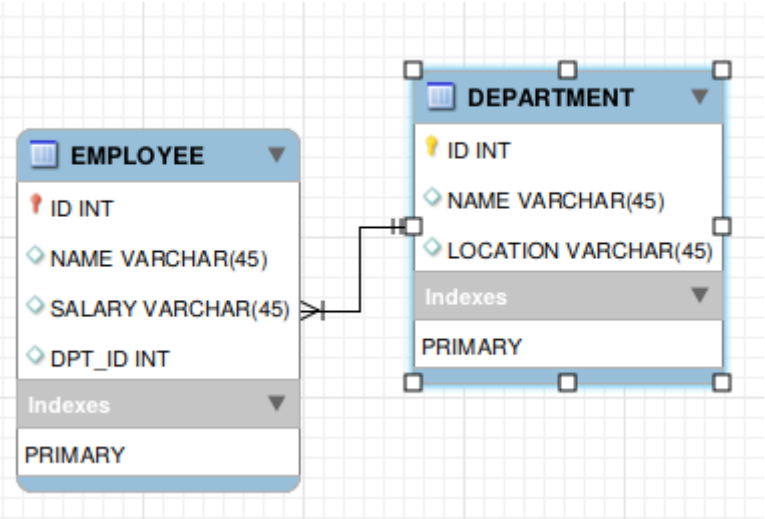
Exercise 2: DATABASE

EMPLOYEES PER DEPARTMENT

A company stores employee and department information in two data tables : *Employee and Department.*
Write a query to print the respective department name and number of employees in each department of all departments in the Department table (even ones with no current employees).
Sort the results by descending order of the number of employees; if two or more departments have the same number of employees, then sort those departments alphabetically by department name.

Each row of the resulting output must contain the following respective attributes for a department:
1. The name of the department.
2. The number of employees in the department.

DEPARTMENT.NAME COUNT_OF_EMPLOYEES_IN_THE_DEPARTMENT



Schema

Table content examples :

EMPLOYEE

ID	NAME	SALARY	DEPT_ID
1	Candice	4685	1
2	Julia	2559	2
3	Bob	4405	4
4	Scarlet	2350	1
5	Ileana	1151	4

DEPARTMENT

ID	NAME	LOCATION
1	Executive	Sydney
2	Production	Sydney
3	Resources	Cape Town
4	Technical	Texas
5	Management	Paris