

Exercise 1

Write a function:

```
class Solution {public int solution(int N);}
```

that, given an integer N , returns the number of distinct digits that occur in the decimal representation of N (without leading zeros for $N < 0$).

For example, given $N = 1410$ the function should return 3, because there are three distinct digits in the representation of N , namely 0, 1 and 4. Given $N = 0$ the function should return 1, because the only digit that occurs in the representation of N is 0. Similarly, given $N = 222$ the function should return 1, because the only digit that occurs in the representation of N is 2. Given $N = -1220$ the function should return 3.

Assume that:

- N is an integer within the range $[-2,147,483,648..2,147,483,647]$.

Add code:

```
class Solution{  
  
    public int solution(int N){ }  
  
}
```

Exercise 2

Compute number of integers divisible by k in range $[a..b]$.

Write a function:

```
class Solution { public int solution(int A, int B, int K); }
```

that, given three integers A , B and K , returns the number of integers within the range $[A..B]$ that are divisible by K , i.e.:

$$\{ i : A \leq i \leq B, i \bmod K = 0 \}$$

For example, for $A = 6$, $B = 11$ and $K = 2$, your function should return 3, because there are three numbers divisible by 2 within the range $[6..11]$, namely 6, 8 and 10.

Assume that:

A and B are integers within the range $[0..2,000,000,000]$;

K is an integer within the range $[1..2,000,000,000]$;

$A \leq B$.

Complexity:

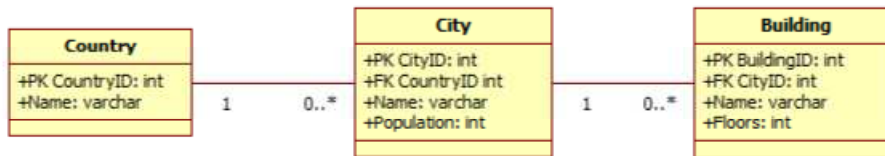
expected worst-case time complexity is $O(1)$;

expected worst-case space complexity is $O(1)$.

Exercise 3

SQL

Consider the following physical data model:



Write a SQL query that:

- I. Selects countries where a total number of inhabitants (population) in all the cities is greater than 400
- II. Selects names of countries that have no buildings at all.