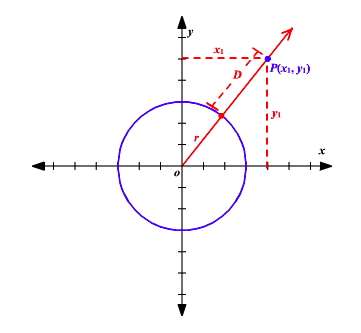
## Interview Quiz

(Lanjutan Soal Quiz)

1. Buat sebuah fungsi dengan parameter String, fungsi ini akan melakukan hal berikut:  
   a. Cetak semua karakter (case insensitive) kecuali spasi yang digunakan dan jumlah masing-masing karakter tersebut  
    e.g. parameter = ‘The sun shines”  
    Output:  
    T 1  
    H 2  
    E 2  
    S 3  
    U 1  
    N 2  
    H 1  
    I 1  
   b. Kumpulkan karakter pertama dari setiap kata dan dari karakter-karakter yang didapatkan lakukan langkah a  
   e.g. parameter = ‘The sun shines everyday”  
    Output:  
    T 1  
    S 2  
    E 1
2. Buat fungsi yang mencari n titik terdekat dari titik-titik yang diberikan, di mana:  
   - Parameter input: (n) : integer yang menunjukkan jumlah titik yang ingin dikeluarkan  
   - Parameter input: (data) : tipe/struktur data untuk menyimpan parameter titik boleh ditentukan sendiri  
   - Output dari fungsi ini berupa titik-titik yang disimpan di struktur data yang sama yang digunakan untuk menampung parameter input

  
Untuk menghitung jarak suatu titik ke pusat, rumus yang digunakan

../../Desktop/Screen%20Shot%202017-12-05%20at%2014.48.57.png

Contoh:

|  |  |  |
| --- | --- | --- |
| **x** | **y** | **Jarak** |
| 4 | 5 | 6,40 |
| 3 | 3 | 4,24 |
| -1 | -7 | 7,07 |
| 3 | -5 | 5,83 |

Hasil:   
Titik terdekat (x,y) adalah (3,3)

Next Interview Quiz

2 test questions. No restriction on language. Submit source code with instructions how to execute it, test code, time and memory complexity analysis.  
  
*Question 1. Data Store and Load*  
A program uses an array 𝑎 of map(dictionary). The keys and values of each map(dictionary) are both strings. In different languages, the corresponding type of map is: PHP array, Java HashMap, C++ std::map, Objective-C NSDictionary, Swift Dictionary, Python dict, JavaScript object, etc. For example:  
  
a[0]["key1"]="value1" a[0]["key2"]="value2" a[1]["keyA"]="valueA" ...  
  
In order to store and load array 𝑎, we use a string-based format where each line corresponds to each element of array 𝑎:  
  
text="key1=value1;key2=value2\nkeyA=valueA\n..."  
  
Please implement a store function and a load function.  
  
text=store(a); //store 𝑎 in a string-type variable 𝑡𝑒𝑥𝑡 a=load(text); //load array 𝑎 from variable 𝑡𝑒𝑥𝑡  
You must follow the format:  
key/value pairs are separated by '=' and ';' key/value may contain any character  
  
items are separated by '\n’.

———————————————————————————————————————

*Question 2. Finding Optimal Path*  
Assume there is a directed acyclic graph, where every vertex has a positive weight. We need to find a path such that the sum of the weights of all vertices on the path is maximized.  
  
Input: n vertices, m edges, origin vertex Output: sum of the optimal path  
For example, 3 vertices with weights: A1  
B2  
C2  
and 3 edges:  
A->B  
B->C  
A->C  
  
With origin vertex A, the output is 5, where optimal path is A → B → C with total weight 1 + 2 + 2 = 5.  
Note: The assumption here is directed acyclic graph. What if the graph may not be acyclic, how to avoid infinite loop caused by cycles?

*Question 3.*

On a retail website, the following discounts apply:

1. If the user is an employee of the store, he gets a 30% discount

2. If the user is an affiliate of the store, he gets a 10% discount

3. If the user has been a customer for over 2 years, he gets a 5% discount.

4. For every $100 on the bill, there would be a $ 5 discount (e.g. for $ 990, you get $ 45 as a discount).

5. The percentage based discounts do not apply on groceries.

6. A user can get only one of the percentage based discounts on a bill.

Write a program with test cases such that given a bill, it finds the net payable amount.

Please note the stress is on object oriented approach and test coverage.

What we care about:

> object oriented programming approach

> test coverage

> code to be generic and simple

> leverage today's best coding practices

Getting Started

1. To start with, you can create one GitHub Repository and share it with us. While picking a name for the repo do not include, name of the company, purpose or anything that might potentially revel the nature of the repo, or you can share it as compressed file via email.
2. You can be in constant sync with the application's progress via the GitHub repository and we can provide regular feedback, if required.
3. We request you to delete the repo after your final interview.