**Apartment Hunting Solution**

Explaining approach below:

Inputs:

blocks = [

{

"gym": false,

"school": true,

"store": false,

},

{

"gym": true,

"school": false,

"store": false,

},

{

"gym": true,

"school": true,

"store": false,

},

{

"gym": false,

"school": true,

"store": false,

},

{

"gym": false,

"school": true,

"store": true,

}

]

reqs = ["gym", "school", "store"]

Functions used and their representations:

1. For above block Jason, I have converted to below table representation using createStructure() function:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| GYM | F | T | T | F | F |
| SCHOOL | T | F | T | T | T |
| STORE | F | F | F | F | T |

1. Fetching all the minimum distance from the block for each requests using getDistance() function:

It shows below table representation:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| GYM | 1 | 0 | 0 | 1 | 2 |
| SCHOOL | 0 | 1 | 0 | 0 | 0 |
| STORE | 4 | 3 | 2 | 1 | 0 |

Eg: for block 1:

1. Gym is 1 unit far
2. School resides inside it
3. Store is 4 unit far
4. Below table representation using sumDistance() function, which calculates sum of distance to each reqs for each block:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| GYM | 1 | 0 | 0 | 1 | 2 |
| SCHOOL | 0 | 1 | 0 | 0 | 0 |
| STORE | 4 | 3 | 2 | 1 | 0 |
| Distance Sum | **5** | **4** | **2** | **2** | **2** |

1. Finding minimum distance and indexes:

Minimum distance = 2

Indexes of min. distance blocks = [2,3,4]

1. Now we have 3 minimum distances, now we will find the relative distance from one request to other.

Showing table representation below using min\_dist() function:

|  |  |  |  |
| --- | --- | --- | --- |
| GYM | 0 | 1 | 2 |
| SCHOOL | 0 | 0 | 0 |
| STORE | 2 | 1 | 0 |
| Relative Distance | **4** | **1** | **4** |

FORMULA:

Sum = absolute(x – y)

For first block:

Sum1 = absolute(gym - school) = absolute(0-2) = 2

Sum2 = absolute(gym – store) = absolute(0-2) = 2

Total sum = sum1 + sum2 = 4

For second block:

Sum1 = absolute(gym - school) = absolute(1-0) = 1

Sum2 = absolute(gym – store) = absolute(1-1) = 0

Total sum = sum1 + sum2 = 1

For third block:

Sum1 = absolute(gym - school) = absolute(2-0) = 2

Sum2 = absolute(gym – store) = absolute(2-0) = 2

Total sum = sum1 + sum2 = 4

If we have n requests, it will work for them.

From above example, we can deduce that index 3 has the minimum relative distance.

Therefore, answer is 3.

**Time Complexity : O(reqs \* Blocks)**