

Angles - Hackerearth

Monday, March 16, 2020 10:38 PM

The Problem:

Raju and Rani are playing games in the school. Raju has recently learned how to draw angles. He knows how to draw some angles. He also can add/subtract any of the two angles he draws. Rani now wants to test Raju.

Input:

First line contains N and K , denoting number of angles Raju knows how to draw and K the number of angles Rani will tell Raju to draw.

Next line contains, N space separated integers denoting the angles which Raju knows how to draw. Next line contains K space separated numbers denoting the angles Rani wants Raju to draw.

Output:

For each of the K angles Rani wants Raju to draw, output "YES" or "NO" (quotes for clarity) if he can draw those angles or not respectively.

Constraints:

$1 \leq N, K \leq 10$

$0 \leq \text{All angles} \leq 360$

SAMPLE INPUT

```
1 2
100
60 70
```

SAMPLE OUTPUT

```
YES
NO
```

Explanation

Adding 100 fifteen times gives 1500 degrees, which is same as 60. 70 cannot be drawn any way. (1500 % 360 = 60)

The Code:

```
/*
 * For every angle, check if it can form an angle between 1 to 360 by:
 * 1: Adding with or
 * 2: Subtracting from another angle.
 * 3: Or by itself.
 */

#include <stdio.h>
int comp(const void* elem1, const void* elem2) {
```

```

    int a = *((int*)elem1);
    int b = *((int*)elem1);
    return (a > b) - (a < b);
}
int isPossible(int angle, int target) {
    int i;
    long int remainder;
    for(i=0; i<=360; i++) {
        remainder = (i * 360 + target) % angle;
        if(!remainder)
            break;
    }

    return !remainder; // return true only if remainder == 0.
}
int main(){
    int N, K, angle, i, j;
    scanf("%d %d", &N, &K);
    int* angles = (int*)calloc(N, sizeof(int));
    int* possible = (int*)calloc(361, sizeof(int));
    possible[0] = 1;
    for(i=0; i<N; i++) {
        scanf("%d", &angles[i]);
        possible[angles[i]] = 1;
    }
    qsort(angles, N, sizeof(int), comp);
    for(i=0; i<N; i++) {
        angle = angles[i];
        for(j=1; j<=360; j++) {
            if(!possible[j]) {
                if((angle + j) <= 360) { possible[j] = possible[j] ||
possible[angle+j]; }
                if(j > angle) { possible[j] = possible[j] || possible[j-angle]; }
                if(!possible[j]) { possible[j] = possible[j] || isPossible(angle,
j); }
            }
        }
    }
    for(i=0; i<K; i++) {
        scanf("%d", &angle);
        if(possible[angle]) {
            printf("YES\n");
        } else {
            printf("NO\n");
        }
    }
}

```

The Stats:

Score
30.0

Time (sec)

1.01666

Memory (KiB)

64

Language

C

Note: The Editorial has a mathematical solution that is simple and superb. Check it out.