Competitive Programming

Program – 5

Aim:

Given a sorted array AAA of integers and a non-negative integer kkk, the goal is to check if there exist two indices iii and jjj such that A[j]−A[i]=kA[j] - A[i] = kA[j]−A[i]=k where i≠ji \neq ji□=j. If such a pair exists, return 1; otherwise, return 0.

Input:

- The first line contains an integer nnn, the number of elements in the array.
- The next nnn lines contain the nnn elements of the array AAA.
- The last line contains the integer kkk, the non-negative integer.

Code:

```
#include <stdio.h>



int find_pair_with_difference(int* arr, int n, int k) {

   int i = 0, j = 1;



   while (j < n) {

      int diff = arr[j] - arr[i];



      if (diff == k) {

         return 1;

      }

      else if (diff < k) {

         j++;

      } else {

         i++;

         if (i == j) {
```

```
            j++;
        }
    }
}

return 0;
}

int main() {
    int n;
    scanf("%d", &n);

    int arr[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    int k;
    scanf("%d", &k);

    printf("%d\n", find_pair_with_difference(arr, n, k));

    return 0;
}
```

Output:

	Input	Expected	Got	
✔	3 1 3 5 4	1	1	✔
✔	10 1 4 6 8 12 14 15 20 21 25 1	1	1	✔
✔	10 1 2 3 5 11 14 16 24 28 29 0	0	0	✔
✔	10 0 2 3 7 13 14 15 20 24 25 10	1	1	✔

Passed all tests! ✔