COMPETITIVE PROGRAMMING

PROBLEM 6:
PAIR WITH DIFFERENCE -O(N) TIME COMPLEXITY,O(1) SPACE COMPLEXITY

AIM:
Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that A[j] - A[i] = k, i != j.

CODE:
```c
#include <stdio.h>


int existsPairWithDifference(int arr[], int n, int k) {
    int i = 0, j = 1;


    while (i < n && j < n) {
        int diff = arr[j] - arr[i];


        if (diff == k && i != j) {
            return 1;
        } else if (diff < k) {
            j++;
        } else {
            i++;
        }
    }


    return 0;
}
```

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

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

    scanf("%d", &k);

    printf("%d\n", existsPairWithDifference(arr, n, k));
    return 0;
}
```

INPUT AND 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	✔