

## Example 2

This is a function for sorting an array in ascending order. is it correct?

```
void sort(int A[], int n) {
    int i, temp;

    for (i=0 ; i<n; i++) {
        if (A[i] > A[i+1]) {
            temp = A[i];
            A[i] = A[i+1];
            A[i+1] = temp;
        }
    }
}
```

**Answer:** The program you provided has some issues and won't work correctly for sorting an array. Here are the problems:

1. Out of Bounds Access: In the loop, when  $i$  reaches the last index ( $n-1$ ), the comparison  $A[i] > A[i+1]$  will result in accessing  $A[n]$ , which is out of bounds. This will lead to undefined behavior and may cause a crash or incorrect results.
2. Single Iteration: The provided code only performs a single pass through the array. Sorting an array typically requires multiple iterations until the array is fully sorted.

To fix these issues, you can modify the code to implement a common sorting algorithm like bubble sort, insertion sort, or selection sort. Here's an example of the bubble sort algorithm applied to your code:

```
void sort(int A[], int n) {
    int i, j, temp;

    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - i - 1; j++) {
            if (A[j] > A[j + 1]) {
                temp = A[j];
                A[j] = A[j + 1];
                A[j + 1] = temp;
            }
        }
    }
}
```