C Practice Questions with Errors

Q1. Why does this array not reset to all zeros as expected after calling the function?

```c
#include <stdio.h>
#define SIZE 5

void reset_array(int arr[]) {
    for (int i = 0; i < SIZE; i++) {
        arr[i] = 0;
    }
}

int main(void) {
    int scores[SIZE] = { 1, 2, 3, 4, 5 };
    reset_array(scores);
    for (int i = 0; i < SIZE; i++)
        printf("%d ", scores[i]);
    return 0;
}
```

Q2. The `counter` variable is meant to count how many times the function is called. Why does it not work as

```c
#include <stdio.h>

void track_calls() {
    int counter = 0;
    counter++;
    printf("This function was called %d times\n", counter);
}

int main(void) {
    track_calls();
    track_calls();
    track_calls();
    return 0;
}
```

Q3. Why does this program print garbage values from the array `temps[]`?

```c
#include <stdio.h>
#define SIZE 5

int main(void) {
    int temps[SIZE]; // not initialized
    for (int i = 0; i < SIZE; i++) {
        printf("temps[%d] = %d\n", i, temps[i]);
    }
    return 0;
}
```

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Q4. This program prints a value, but is it what you'd expect? Why does it behave that way?

```c
#include <stdio.h>

int value = 10;

void print() {
    int value = 20;
    printf("Value = %d\n", value);
}

int main(void) {
    print();
    return 0;
}
```

Q5. The program tries to print all elements in the array, but crashes. What's the problem?

```c
#include <stdio.h>

void print_array(int arr[], int size) {
    for (int i = 0; i <= size; i++) {
        printf("%d ", arr[i]);
    }
}

int main(void) {
    int data[5] = {1, 2, 3, 4, 5};
    print_array(data, 5);
    return 0;
}
```

Q6. This recursive function is supposed to return the sum of all elements in an array. Why doesn't it work co

```c
#include <stdio.h>
#define SIZE 5

int sum_recursive(int arr[], int size) {
    if (size == 0)
        return 0;
    return arr[size] + sum_recursive(arr, size - 1);
}

int main(void) {
    int numbers[SIZE] = {1, 2, 3, 4, 5};
    printf("Sum = %d\n", sum_recursive(numbers, SIZE));
    return 0;
}
```

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Q7. Why does the `balance` variable not hold its value between calls?

```c
#include <stdio.h>

void deposit(int amount) {
    long balance = 0;
    balance += amount;
    printf("Balance = %ld\n", balance);
}

int main(void) {
    deposit(1000);
    deposit(2000);
    deposit(3000);
    return 0;
}
```

Q8. This code is trying to sort an array, but the output is wrong. What's the logic error here?

```c
#include <stdio.h>
#define SIZE 5

void sort(int arr[]) {
    for (int i = 0; i < SIZE - 1; i++) {
        for (int j = i + 1; j < SIZE; j++) {
            if (arr[i] > arr[j]) {
                arr[i] = arr[j];
                arr[j] = arr[i];
            }
        }
    }
}

int main(void) {
    int a[SIZE] = {5, 2, 4, 3, 1};
    sort(a);
    for (int i = 0; i < SIZE; i++)
        printf("%d ", a[i]);
    return 0;
}
```