

Program 1 OS Assignment

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Section G

Code:

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>

#define SIZE 5

int arr[SIZE];

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

int main() {
    pid_t pid;

    printf("Enter %d integers:\n", SIZE);
    for (int i = 0; i < SIZE; i++) {
        scanf("%d", &arr[i]);
    }

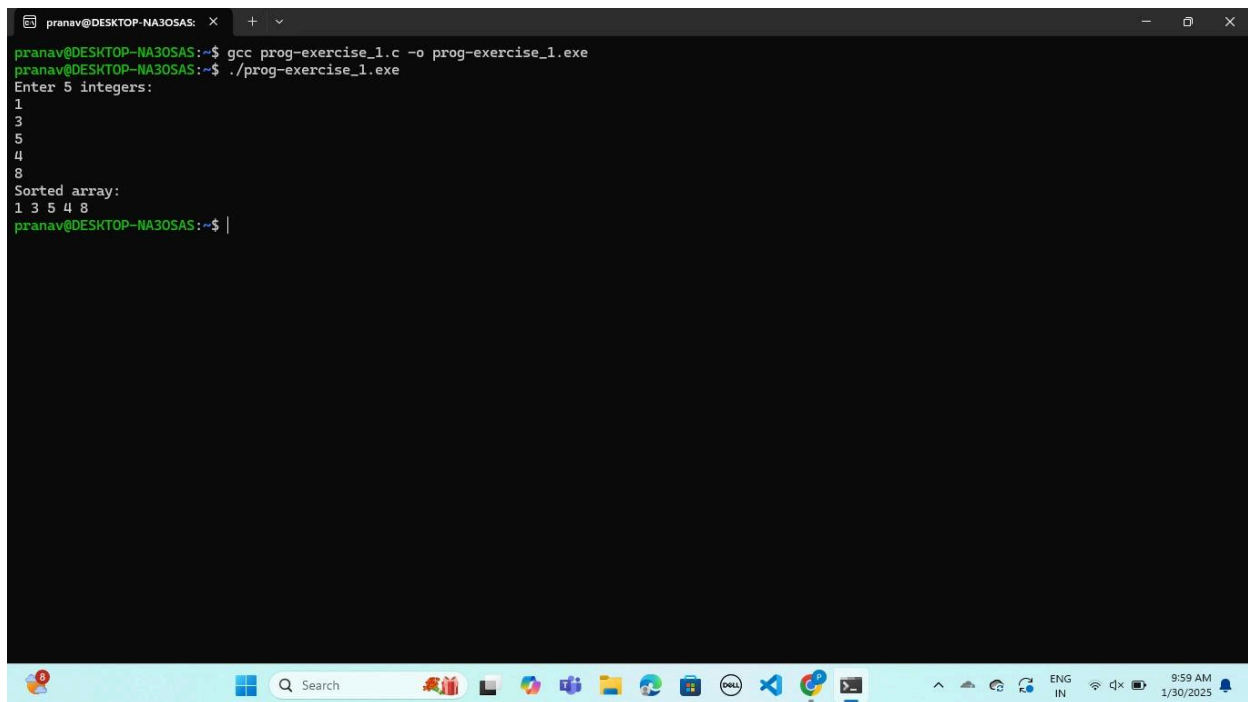
    pid = fork();

    if (pid < 0) {
        perror("fork failed");
        exit(1);
    } else if (pid == 0) {
```

```
    sort(arr, SIZE);
    exit(0);
} else {
    wait(NULL);
    printf("Sorted array:\n");
    for (int i = 0; i < SIZE; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
}

return 0;
}
```

Execution Screenshot:

A terminal window titled 'pranav@DESKTOP-NA30SAS' shows the compilation and execution of a C program. The user enters 'gcc prog-exercise_1.c -o prog-exercise_1.exe' and then './prog-exercise_1.exe'. The program prompts 'Enter 5 integers:' and the user enters '1', '3', '5', '4', and '8' on separate lines. The program then outputs 'Sorted array:' followed by '1 3 5 4 8' on the same line. The terminal window has a standard Windows taskbar at the bottom with various icons and a system clock showing 9:59 AM on 1/30/2025.

```
pranav@DESKTOP-NA30SAS:~$ gcc prog-exercise_1.c -o prog-exercise_1.exe
pranav@DESKTOP-NA30SAS:~$ ./prog-exercise_1.exe
Enter 5 integers:
1
3
5
4
8
Sorted array:
1 3 5 4 8
pranav@DESKTOP-NA30SAS:~$
```

The array is not sorting. This is because if the child modifies the array (sorting it), the changes are not reflected in the parent, because they do not share memory by default.