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**Exercise #2**

Create the following program using system calls learnt in class such as fork, exec, wait, etc.

1. Create a global array with values [1, 6, 2, 4, 5, 8, 9, 0]. Sort the same withinthe child process, and display the values in the parent process. Are thedisplayed values in the sorted order? If not, why?

*Program:*

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

int main() {
    int arr[] = {1, 6, 2, 4, 5, 8, 9, 0};
    int size = sizeof(arr) / sizeof(arr[0]);


    pid_t pid = fork();

    if (pid == -1) {
        perror("Fork failed");
        exit(EXIT_FAILURE);
    }

    if (pid == 0) {

        printf("Child process sorting the array...\n");
        for (int i = 0; i < size - 1; i++) {
            for (int j = 0; j < size - i - 1; j++) {
                if (arr[j] > arr[j + 1]) {

                    int temp = arr[j];
                    arr[j] = arr[j + 1];
                    arr[j + 1] = temp;
                }
            }
        }
        printf("Child process sorted the array.\n");
    } else {

        wait(NULL);

        printf("Parent process displaying the sorted array: ");
        for (int i = 0; i < size; i++) {
            printf("%d ", arr[i]);
        }
        printf("\n");
    }

    return 0;
}
```

Output:

```
siri@DESKTOP-F9UMPJU:~$ gcc Q2.c
siri@DESKTOP-F9UMPJU:~$ ./a.out
Child process sorting the array...
Child process sorted the array.
Parent process displaying the sorted array: 1 6 2 4 5 8 9 0
```