# Lab 9

**Instructions:** Implement a function to randomly sort an array of integers.

**Objectives:**

- Continued practice with integer arrays.
- Continued practice with functions/function calls.
- Continued practice with loops.

**Task 1:** Download the source file `Lab9a.c`. This file contains an incomplete `main` function which initializes an array `arr`. In the `main` function, add code to perform the following:

- Declare an array of integer pointers `arrOfPointers`.
- Initialize `arrOfPointers` such that its elements point back to the original `arr` *in reverse* following Figure 1.

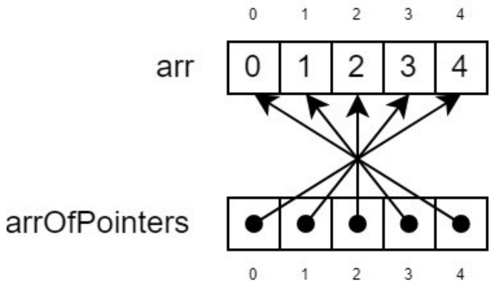
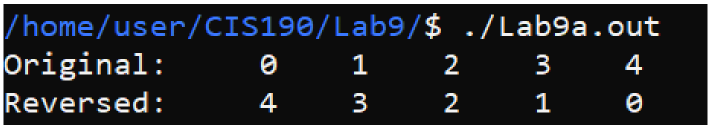


**Figure 1.** Desired behavior for `arrOfPointers` in `Lab9a.c`.

- Print arr in reverse by looping through the pointers in arrOfPointers. When completed, the program should behave as shown in Figure 2.



```
/home/user/CIS190/Lab9/$ ./Lab9a.out
Original:     0     1     2     3     4
Reversed:     4     3     2     1     0
```

**Figure 2.** Correct output for Lab9a.c.

**Task 2:** Download the source file `Lab9b.c`. This file contains an incomplete main function which randomly initializes `arr`. In the main function, add code to perform the following:

- Declare an array of integer pointers `arrOfPointers`.
- Initialize `arrOfPointers` such that its elements point back to the original `arr` *in increasing order* following Figure 3, **without modifying the original `arr`**.

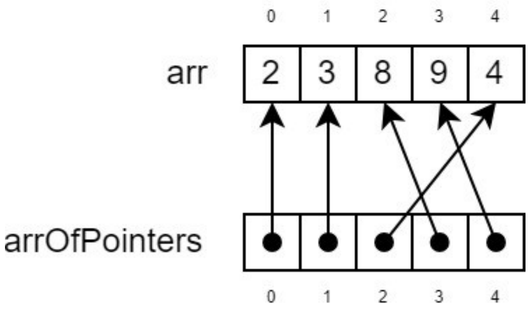
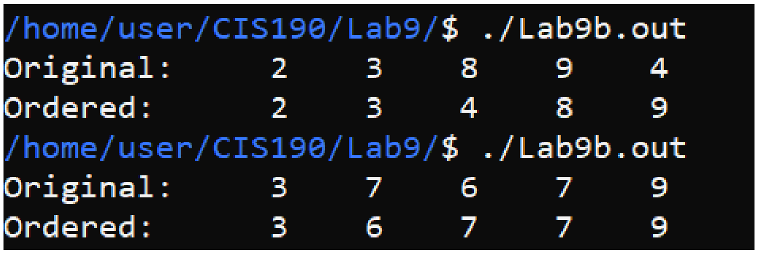


**Figure 3.** Desired behavior for `arrOfPointers` in `Lab9b.c`.

- Print `arr` in order by looping through the pointers in `arrOfPointers`. When completed, the program should behave as shown in Figure 4.



```
/home/user/CIS190/Lab9/$ ./Lab9b.out
Original:     2    3    8    9    4
Ordered:      2    3    4    8    9
/home/user/CIS190/Lab9/$ ./Lab9b.out
Original:     3    7    6    7    9
Ordered:      3    6    7    7    9
```

**Figure 4.** Example correct outputs for Lab9b.c.

- **Hint:** Think of how the procedure for `getMax` from previous assignments can be adapted and used to find the smallest elements.
- **Hint:** Make sure your approach is robust to arrays with repeated values.

**Submission details:**

- Upload a compressed archive (e.g., .zip) containing `Lab9.c`.
- The archive should be named `Lab9_LastName`, where `LastName` is your last name.
- If you're on Linux, you can use the following command to create a .tar.gz archive from the terminal:

  ```
  $ tar -czvf Lab9_LastName.tar.gz Lab9.c
  ```

  where `LastName` is your last name.