

Lab 5: Pointers in C

Reading: Chapter 7 - Pointers
Also, chapter 8 – C Characters and Strings is very helpful

1. **Create lab5.c. Copy the following code into your program, then fill in lines of code to implement the tasks described in the comments.**

```
#include <stdio.h>
#include <stdlib.h>

// write the prototype for a function called swap1 that accepts two
// integers as parameters. The function will swap the two parameters.
// The function will not return anything.

// write the prototype for a function called swap2 that accepts two
// integer pointers as parameters. The function will swap the contents
// of the two addresses. The function will not return anything.

// write the prototype for a function called maximum. The function will
// accept two parameters: a pointer to a float, and an integer.
// The integer represents the size of an array and the float pointer
// is the address of the first array element.
// The function will find and return the maximum value in the array.

// start the main function

// define an array of integers called values with 5 elements

// using a for loop, assign the even integers 2 to 10 to the
// array elements

// declare an integer named x and initialize it to 1

// declare an integer named y and initialize it to 2

// call the swap1 function using parameters values[x] and values[y]

// print a message "After the first swap:\n".
// using a for loop, print the contents of the array values,
// all on one line
// print a blank line

// define a pointer named aPtr that points to an object of type int
// assign the starting address of the array values to aPtr
```

```

// define a pointer named vPtr that points to an object of type int
// assign vPtr the address of values[1]

// define a pointer named wPtr that points to an object of type int
// assign wPtr the address of values[2]

// call the swap2 function using parameters vPtr and wPtr

// print a message "After the second swap:\n".
// using a for loop, print the contents of the array values,
// all on one line
// print a blank line

// print a message "Using Pointer/Offset Notation:\n"
// using a for loop and pointer/offset notation, print the contents
// of the array values, all on one line

// print a message "Using Pointer subscripting:\n"
// using a for loop and pointer subscripting, print the contents
// of the array values, all on one line

// print aPtr (with an informative message)

// print aPtr + 3 (with an informative message)

// print the value stored at aPtr + 3 (with an informative message)

// declare an array called list with 10 elements of type float
// using a for loop, input numbers from the user and store them
// in the array list

// call the maximum function with the array list and 10. Store the return
// value in a variable called max.
// print max (with an informative message)

// end the main function

// write the definition of the swap1 function (see the description
// above)

// write the definition of the swap2 function (see the description
// above)

// write the definition of the maximum function (see the description
// above)

```

2. Create a makefile to compile your program and produce an executable called lab5. Be sure to include the "all" and "clean" targets.
3. Compile, test, and debug your program as needed.
4. Get the handout with multiple choice questions entitled "Pointers in C". Create a file called lab5.txt and enter the question numbers and answers.
5. Submit 3 files:
 - 1) lab5.c file with the C source code
 - 2) makefile
 - 3) lab5.txt with answers to the handout