

La4: C Pointers

General Instructions:

- 1- Create a C project in eclipse called Lab4
- 2- Download Lab4.zip files and extract it to a folder in your machine. Drag and drop the files to the Lab4 project.
- 3- Rename: "Lab4_template.txt" to "Lab4.c". Add your credentials on top of the file.
- 4- The file "Lab4.c" is the file you are going to edit and the file that you need to submit at the end.
- 5- There is no "Lab4_test.c" file. Testing is done within the file "Lab4.c".
- 6- Since the results will involve printing memory addresses, which is different from one machine to another, using the validator won't be very helpful. Compare the results using the file "Lab4_output.txt". All your outputs, other than memory addresses, should
- 7- d match the above output file.

Instructions:

The objective of this lab is to get more practice on C pointers. You will be writing a function that receives pointers and returns a pointer. Also, you will be practicing on using arrays as pointers and performing pointer arithmetic. Finally, you will practice dereferencing a pointer and double pointer.

Implement the function:

```
/**
 * Parameters:
 * array: a pointer to an integer array (int*)
 * size: size of given array (const int)
 * value: integer to be searched in the array (int)
 * last: a double pointer to reference a pointer to last element (int**)
 * returns:
```

```

* first: a pointer to reference to first element (int*)
*
* Description:
*     Searches given array for the occurrence of value
*     A pointer to the first occurrence of value in the array is returned
*     A pointer to the last occurrence of value in the array is assigned
*     to the last double pointer
*     If given array is NULL:
*         prints an error message and returns NULL pointer
*     If given size is invalid,
*         prints an error message and returns NULL pointer
*     If item is not found, returns NULL pointer.
*/
int* find_match(int *array, const int size, int value, int **last)

```

Then edit the following testing function.

```

/**
* Parameters:
*     array: a pointer to an integer array (int*)
*     size: size of given array (const int)
*     value: integer to be searched in the array (int)
* returns:
*     None
* Description:
*     Function to test find_match function
*     1- Prints contents of array
*     2- Print memory addresses of first and last item in array
*     3- Print values dereferenced by first and last pointers
*     4- Print memory addresses of first and last match
*     5- Print index of first and last match
*     6- Print value after first match
*     7- Print value before last match
*/
void test_find_match(int *array, const int size, int value)

```