Lab #4

CS-2050 - Section B

Week of February 15, 2021

1 Requirements

This lab is intended to test your ability to do pointer arithmetic and cast pointers. You will be provided with a main file in your starter code, but any testing code you produce will not be graded in this lab.

1.1 getArrayMax

```
int getArrayMax(double *array);
```

Info: This function takes an array of type **double**, and **retrieves the array max** which is stored in the *extraBytes* at the end of the array in the form of **an int**. You must correctly cast and offset the array pointer to access the *extraBytes* space without reading the last array element or reading past the end of the allocated block of memory.

1.2 findArrayMax

```
void findArrayMax(double *array);
```

Info: This function takes an array of type **double**, and **finds the array max**. The result of this function should be stored in the *extraBytes* at the end of the array in the form of **an int**. You must correctly cast and offset the array pointer to access the *extraBytes* space without writing over the last array element or reading past the end of the allocated block of memory.

1.3 createArray

```
void *createArray(int size, size_t elemSize, size_t extraBytes);
```

Info: This function will create a dynamically allocated array whose size is defined by the provided parameters. The function must allocate enough space to hold **the elements specified**, as well as enough space to hold the **integer size** *before* the array and the **extraBytes specified**.

1.4 getArraySize

```
int getArraySize(void *array);
```

Info: This function takes an array allocated using the **createArray** function and returns the integer size stored before the array.

1.5 freeArray

```
void freeArray(void *array);
```

Info: This function takes an array allocated using the **createArray** function and frees the array memory.

2 Notice

Grading:

1. Write required *getArrayMax* function
   * 4 points
2. Write required *findArrayMax* function
   * 6 points
3. Write required *create array* function
   * 4 points
4. Write required *get array size* function
   * 2 points
5. Write required *free array* function
   * 2 points

Notice:

1. All of your lab submissions must compile under GCC using the $-Wall$ and $-Werror$ flags to be considered for a grade.
2. You are expected to provide proper documentation in every lab submission, in the form of code comments. For an example of proper lab documentation and a clear description of our expectations, see the lab policy document.