Lab #6

CS-2050

October 14, 2022

1 Requirements

In this lab, you will cover working with structs and struct pointers. Additionally, you will be reviewing pointer arithmetic. You are provided the following struct definition to use with your starter code:

```
typedef struct {
        float gpa;
        int id;
} Student;
```

1.1 createArray

```
Student * createArray(int size);
```

Info: This function will take an integer representing the size of array to allocate. It will then allocate a Student array with the given size, and if successful, it returns a pointer to the array with the size hidden before the array as an integer. Otherwise it will return NULL.

1.2 getSize

```
int getSize(Student *array);
```

Info: This function will take a Student array with the size hidden before the array pointer, and return the size of the array.

1.3 getStudent

```
Student * getStudent(Student *array, int index);
```

Info: This function will take an array with the size hidden before the array, and return a pointer to the Student pointer at the given index.

1.4 getGPA

```
float getGPA(Student *s);
```

Info: This function will take a pointer to a Student struct, and return the value of the **gpa** member stored in the struct.

1.5 getID

```
int getID(Student *s);
```

Info: This function will take a pointer to a Student struct, and return the value of the **id** member stored in the struct.

1.6 getMaxGPA

```
Student * getMaxGPA(Student *array);
```

Info: This function will take a pointer to an array with the size hidden before the array, and return a pointer to the element in the array with the highest GPA. You may assume that the array contains no duplicate values.

1.7 freeArray

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

Info: This function will take a pointer to an array with the size hidden before the array pointer, and free the memory allocated to it.

Notice

Grading: 12 points

1. Write required *createArray* function
   * 3 points
2. Write required *getSize* function
   * 1 point
3. Write required *getStudent* function
   * 1 point
4. Write required *getGPA* function
   * 1 point
5. Write required *getID* function
   * 1 point
6. Write required *getMaxGPA* function
   * 4 points
7. Write required *free* function
   * 1 point