

CPSC 3125, Operating Systems Lab Assignment

Lab 05

1 Instructions

Write a C program that does the following:

1. declares a `student` struct with three elements: (1) `firstName`, (2) `lastName`, and (3) a student ID
2. declares a typedef to use your `student` to a new type of `Student`
3. declares an array of type `Student` to add n persons
4. declares a function to initialize the array: `void initArray(size_t, Student*);`
5. declares a function to initialize a Person: `Student* initStudent();`
6. declares a function to add a Person: `int addStudent(size_t, Student*, Student);`
7. declares a function to print the elements of the array: `void printStudents(size_t, Student*);`

Note that the student's ID will reflect the index the student occupies in the array. You may skip element 0 if you wish. I did.

2 Main function

Here is my `main()`.

```

1  int main(int argc, char *argv[])
2  {
3      printf("This is lab 05\n");
4      Student students[nstudents];
5
6      //init student array, set all elements to NULL
7      initArray(nstudents, students);
8
9      for(int i = 0; i < nstudents; i++)
10     {
11         //init a new student
12         Student *newStudent = initStudent();
13
14         //add new student
15         int rc = addStudent(nstudents, students, *newStudent);
16     }
17
18     //print students
19     printStudents(nstudents, students);
20
21     return 0;
22 }
```

3 Output

Your program should produce the following output:

```
This is lab 05
Enter student's first name and last name separated by a space: Donald Duck
Enter student's first name and last name separated by a space: Daisy Duck
Enter student's first name and last name separated by a space: Huey Duck
Enter student's first name and last name separated by a space: Dewey Duck
Enter student's first name and last name separated by a space: Louie Duck
Enter student's first name and last name separated by a space: Scrooge McDuck
Enter student's first name and last name separated by a space: Bugs Bunny
Enter student's first name and last name separated by a space: Roger Rabbit
Enter student's first name and last name separated by a space: Peter Rabbit
Enter student's first name and last name separated by a space: Energizer Bunny
Student cannot be added, not enough room
Student: 00001, Donald Duck
Student: 00002, Daisy Duck
Student: 00003, Huey Duck
Student: 00004, Dewey Duck
Student: 00005, Louie Duck
Student: 00006, Scrooge McDuck
Student: 00007, Bugs Bunny
Student: 00008, Roger Rabbit
Student: 00009, Peter Rabbit
```

4 Lab deliverable

Your deliverable consists of (1) the C source code, and (2) a text document showing the output of the program.