

Assignment #1: C-Language Review

CS201 Fall 2019

10 points

due Wednesday, Sept. 4th, 11:59 pm

1 Part One

Write a function in C that takes two arguments:

- `n1` and `n2`, integers
- `sum` and `difference`, each a pointer to an integer

The function will look like this:

```
int addSubtract(int n1, int n2, int *sum, int *difference);
```

The function should compute $n1 + n2$ and put that value in `*sum`; and the difference $n1 - n2$ and put that in `*difference`. If $n1 > n2$, then return 1; if $n1 = n2$ then return 0; else return -1.

2 Part Two

Write a function in C that takes a `char*` and an `int` argument and mallocs and initializes a `StudentData**`:

```
int createRecord(int id, char *name, StudentData **record);
```

Use this struct:

```
typedef struct {  
    char name[32];  
    int id;  
} StudentData;
```

If the name is > 31 characters long or if the id is ≤ 0 , then return 1 from the function and pass a NULL through the record parameter.

Otherwise, malloc a new `StudentData` struct and assign the id parameter to the id field in the struct and do `strcpy()` from the name parameter to the name field in the struct, and return 0 from the function and pass a pointer to the memory you malloc'd.

The C function for checking the length of a string is `strlen()`:

```
strlen("hello") is 5  
strlen("") is 0
```

Here is an example of how you would call your function:

```
int id = 17;  
char *name = "Edsger_Dijkstra";  
StudentData *record;  
  
int rtnval = createRecord(id, name, &record);
```

Here's what you should submit to Blackboard

(1) a file warmup.netid.h

Use your UVM netid in the filename. This file should contain your declaration of StudentData and prototypes for the two functions that you write.

(2) a file warmup.netid.c

This will have your code. This file should include your .h file. Your .c file should have code only for your two functions—do not put a main() in the file that you submit.

Testing and development

You'll need to create a main() function as you develop and test this. In your main(), put in calls to your two functions with various inputs to test that your functions are working correctly. But when you're ready to submit, first strip out your main() function.