

CMPT125, Fall 2019

Homework Assignment 1

Due date: Wednesday, October 2, 2019, 23:59

You need to implement the functions in ***assignment1.c***.
Submit only the ***assignment1.c*** file to CourSys.

Solve all 4 problems in the assignment.

The assignment will be graded automatically.

Make sure that your code compiles without warnings/errors, and returns the required output.

Your code MUST compile in CSIL with the Makefile provided.

If the code does not compile in CSIL the grade on the assignment is 0 (zero).

Even if you can't solve a problem, make sure it compiles

Warning during compilation will reduce points.

More importantly, they indicate that something is probably wrong with the code.

An example of a test file is included.

Your code will be tested using the provided tests as well as additional tests.

Question 1 [15 points].

Write a function that gets 4 ints and outputs the largest one.

```
int max4(int n1, int n2, int n3, int n4)
```

For example, the call `max4(1, 5, 3, -4)` should return 5.

Question 2 [20 points].

Write a function that gets 3 pointers `int a`, `int* b`, `int* c`, and sorts the values in their addresses in the non-decreasing order. When the function returns, the values in the corresponding addresses should satisfy `*a <= *b <= *c`.*

```
void sort3(int* a, int* b, int* c)
```

For example, if we have variables `int x = 10`, `y = 2`, `z = 6`, then after the call `sort3(&x, &y, &z)` we'll should have `x = 2`, `y = 6`, and `z = 10`.

Question 3 [30 points].

Write a function that gets a 2-d array of given dimensions of ints.

It returns `true` if the array contains two rows with exactly the same values in the same order, and returns `false` otherwise.

```
bool contains_equal_rows(int height, int width, const int
ar[height][width])
```

Examples:

On input

```
{ {1, 2, 3, 4},
  {2, 3, 4, 1},
  {1, 2, 3, 4} }
```

it returns `true`.

On input

```
{ {1, 2, 3, 4},
  {2, 3, 4, 5},
  {3, 4, 5, 6} }
```

it returns `false`.

On input

```
{ {1, 1, 1, 1},
  {2, 2, 2, 2},
  {1, 1, 1, 6} }
```

it returns `false`.

Question 4 [35 points].

Write a function that two strings containing positive integers, and outputs a new string containing their sum.

```
char* str_compute_sum(const char* num1, const char* num2)
```

For example, `str_compute_sum("123456789", "987654321")` returns `"1111111110"`.

1. You may assume that the input is always legal, i.e., both strings are positive numbers
2. Note that the numbers may be larger than the maximum of `int` or `long`.
3. Also make sure that the returned string is created on the heap (and not as a local variable).