

CMPT125, Spring 2022
Lab exam - D103-D104

Thursday, March 17, 2022, 10:30am-11:20am
You need to implement the functions in **labexam.c**.

Submit only the .c file to Coursys
Coursys Assignment - Lab Exam 10:30-11:20

You have 50 minutes to solve all 3 problems.
The maximal score is 20 points.

The exam will be graded both **automatically** and by **reading your code**.

You can run your code using

```
>> make  
>> ./run_test
```

Submit only labexam.c: Please make sure to submit the file to the *correct section* in Coursys.

Correctness: Your file must compile without warnings/errors, and work as expected.

Readability: Your code should be readable. Add comments wherever necessary.
If needed, write helper functions to break the code into small, readable chunks.

Compilation: 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.

Helper functions: If necessary, you may add helper functions to the *labexam.c* file.

main() function: do not add main() to labexam.c. Adding main() will cause compilation errors, as the main() function is already in the test file.

Using printf()/scanf(): Your function should have no unnecessary printf() statements. They may interfere with the automatic graders.

Warnings: Warnings during compilation will reduce points.
More importantly, they indicate that something is probably wrong with the code.

Testing: An example of a test file is included.

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

You are *strongly encouraged to write more tests* to check your solution is correct, but you don't need to submit them.

Question 1 [6 points]

Write a function that gets two strings and checks if one is the reverse of the other.

For example:

- `is_reverse("Hi", "iH")` returns true.
- `is_reverse("123", "321")` returns true.
- `is_reverse("121", "222")` returns false.
- `is_reverse("ABCD", "ABCD")` returns false.

```
// the function gets two strings and checks if one is reverse of the other  
// it returns true if one is the reverse of the other  
// and returns false otherwise  
bool is_reverse(const char* str1, const char* str2);
```

Question 2 [7 points]

Write a function that gets an array of ints of length *n*, and returns a linked list containing the values from the array in the same order. For example:

- `arra_to_LL([1,4,3,-2], n=4)` returns a linked list with values head->1->4->3->-2.

See `lib/LL.c` and `lib/LL.h` for details.

```
// gets an array of ints of length n, and returns  
// a Linked List containing the values from the array in the same order  
LL_t* array_to_LL(int* ar, int n);
```

Question 3 [7 points]

Write a function that gets a stack *s* of ints and a positive int *k*.

The function modifies the stack removing the *k* elements at the bottom of the stack.

If the stack has less than *k* elements, all of them are removed

The function returns the number of elements removed

See `lib/stack.c` and `lib/stack.h` for details.

```
// gets a stack s and a positive int k  
// the function modifies the stack  
// removing the k elements at the bottom of the stack  
// if the stack has less than k elements, all of them are removed  
// the function returns the number of elements removed  
int stack_forget(stack_t* s, int k);
```