Indian Institute of Technology, Kharagpur

CS19001 Programming and Data Structures Laboratory, Autumn 2019

Assignment for Week 8 (October 21, 2019)

Total Marks: 40 **Submission Deadline:** 17:45

INSTRUCTIONS

1. Submit a separate C file for each of the problems. The solution for problem i should be named **[rollno]-prob$i$.c** where '[rollno]' is your roll number.
2. You may consult your notes, books or manual pages.

PROBLEMS

1. Write a program that takes two inputs – a filename and a word – as command-line arguments and outputs the number of occurrences of the word in the file. Note that you have to remove (or replace with white spaces) any punctuation marks read along with a word before comparing to the input word. Below is the sample input/ouput for a file named pale-blue-dot.txt (uploaded on Moodle).

   Suppose that your program is called `find.c`. Compile it with `-o` option to create an output file with the same name. That is run the command `gcc -o find find.c`. This creates an output file named `find.o`. You can run it as `./find.o` or `./find`.

   Sample 1

   ```
   $ ./find pale-blue-dot.txt that
   Number of occurrences of "that" in the file pale-blue-dot.txt: 8
   ```

   Sample 2

   ```
   $ ./find intervals.c int
   Number of occurrences of "int" in the file intervals.c: 14
   ```

   It is assumed that the two files are stored in the current directory. Note that in the second file, occurrences of "int" appearing as a substring of "intervals" or "printf" should not be counted.

   Marks: 20

2. Write a C program that takes as command-line arguments a filename, one of two characters 'e' or 'd' and an integer $k < 50$ and does the following:

   - if the input character is 'e', then encrypts the file using k as the key; here, encryption means adding k to each character of the file. The contents of the input file must be replaced with its encrypted contents.
   - if the input character is 'd', then decrypts the file using k as the key; decryption by k means subtracting k from each character. Again, the decrypted characters must replace the contents of the input file.

Sample Input/Output
Suppose the filename is `file` and I run the output file of the program as follows.

```
$ ./program file e 5
```

If the contexts of `file` are `attack at dawn`, then after running the above command, `file` should contain `fyyfhp%fy%if|s`

Marks: 20