Lab 4

Deadline: on the learning hub

Write a C program that performs basic text encryption using a substitution cipher. Create a main function that interacts with command line arguments (details to follow).

Requirements

- Create a function named **encrypt_text** that takes an input text file path, output text file path and a number shift as arguments.
- Read the contents of the input text file.
- Implement a substitution cipher to encrypt the text. You can use a basic letter shift (e.g., shifting each letter by 3 positions).
- In said encryption 'a' will be shifted with 'd' and 'z' with 'c' (case sensitive).
- Any special characters in the input will remain the same.
- Write the encrypted text to the output file.
- The main function reads the command line arguments for input, output files and shift number etc.

Restrictions

- You are not allowed to write any **printf** statement throughout your code.
- Before using any standard library functions other than stdio.h and stdlib.h you must consult with me prior to using it.
- If you have any doubts, ask during the lab session.

Example

Here is an example of the input:

```
>> input.txt
```

```
Hello, World!
```

```
>><executable> input.txt output.txt 3
```

Here is the output of running the input file through your program when it is encrypted:

```
>> encrypt output.txt
```

```
Khoor, Zruog!
```

Detailed Specification

- You will write main function as well as other helper functions.
- You are guaranteed to have no numbers in the input file.

How to Compile and Run

- The Makefile for lab4 is provided.
- The Makefile is supposed to work with lab4.c, input.txt and output.txt files so, make sure to save your files accordingly.
- Run the following command in vs code Terminal.

  ```
  make
  ```

  It should compile the code without any errors.

  ```
  make convert_input
  ```

  It should convert the input.txt file to unix encoding.

  ```
  make run
  ```

  It should run the compiled code.
- Run the following command to delete the out file.

  ```
  make clean
  ```

  It will delete the specified file.

  ```
  make convert_output
  ```

  It should convert the output.txt file to unix encoding.
- Run the following command to test your output with provided reference output.

  ```
  make check
  ```
- You are not supposed to make any changes in the Makefile.
- Make sure to install dos2unix utility using the following command:

  ```
  sudo apt-get install dos2unix
  ```

  For Mac

  ```
  brew install dos2unix
  ```

Grading

Any grading failure due to not following instructions will result in 0.

- (1 point) All files are submitted correctly using the instructions below.
- (6 point) Generate a correct solution to the problem(s) in this lab.

Submission

- You must push only one .c file named: lab4.c (case sensitive) & 2 screenshots of sample runs.
- Submit a PDF version of the code (lab4.pdf) to learning hub.
- Make sure to add your A number at the top of lab4.c as comments. Write your A number including leading 0's. e.g //A012345
- Please **do not submit ZIP files**. Instead, upload each file **individually** as part of your assignment submission.