

Assignment 2

File I/O and Standard I/O Library

Most UNIX file I/O can be performed using only five functions: *open*, *read*, *write*, *lseek* and *close*. This assignment is to understand how these work and implement the same functionality with your own code without using the standard I/O library.

Problem Statement: Write a C program that takes as command line input a file name and opens the file (or create it if it does not exist) in write mode. The user is prompted to write anything on the file from standard input (console). The file is then to be closed and reopened in read mode and print the contents of the file in the console. Report error, if any.

Part 1: Implement first using standard IO library

You may use *fopen*, *fgets*, *fputs*, *fclose*, *ferror*

- 1a: Open <filename>, write in the file from console, close file, report any error
- 1b: Open <filename>, read from the file and print in console, report any error

Part 2: Implement the same without using #include<stdio.h>

- 2a: Copy standard input to standard output without using *scanf*
- 2b: Print in the standard output from file without using *printf*
- 2c: Open <filename>, write in the file from console without using *fgets*, close file, report any error
- 2d: Open <filename>, read from the file and print in console without using *fputs*, report any error

Tips:

1. Explore the functionalities of the system calls *open*, *read*, *write*, *lseek* and *close* using *man* command

Example: A file is opened or created by calling the *open* function:

*int open (const char *pathname, int oflag, ...)*

The third argument is ANSI C way to specify that the number and types of the remaining arguments may vary. It returns file descriptor if OK, -1 on error.

2. Explore <unistd.h> and <sys/types.h>

Advanced:

1. Write your own customized header (.h) file to include these system headers, global constants (if any) and function prototypes that you will be using throughout the semester.
2. Write your own error/exception handling function in the .h file you have created and call that

function here to report error and exit on error.