COSC 350 System Software
Lab #4

How to submit

- For each program, you need write detailed comments for each statement.
- You need demonstrate each task in front of instructor during the next lab hours.

Task #1: Write a C main function that takes one command-line argument, the name of an input file. The input file contains exactly one integer spread out over a single line of up to 80 characters. For example, the integer 3579 is embedded in the line az3mqrm5t?7!z*&gqmzt9v. Your program uses system calls to do the following:

a. open and read the input file, accumulating the discovered digit characters into a character array (string).
b. Convert the string to an integer./taskdr (do not use atoi function).
c. Add 10 to the integer
d. convert the sum back to a string (using function convIntToStr)
e. make a system call to write the string to standard output.

```
/************************************************
  Convert integer to string
  Params: x is the int to be converted,
          str is the string into which to write
  Returns: length of the string
**************************************************/

int convIntToStr(char * str, int x)
{
    sprintf(str, "%d", x);
    return (strlen(str));
}
```

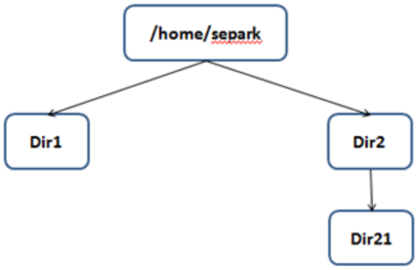
/* Returns a non-zero value if character c is a digit, zero otherwise. */
int isdigit(int c)
You need include five headers <unistd.h>, <fcntl.h>, <ctype.h>, <stdio.h> and <string.h> for read write open system calls and sprint return strlen library functions.

Task #2. In Task#8 in Lab3, you wrote a program to encode a file with character to a file with ASCII code number. Write decoding program which covert output of Task#8 in Lab3 to original input file.

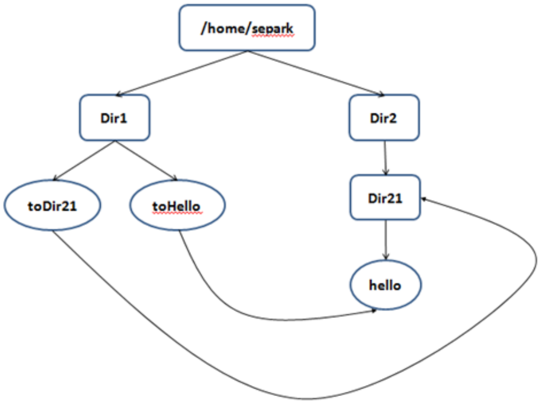
Task #3.1. Write a simple program called hello.c and compile it and create executable file named hello.

Write a C program for sequence of following task.

- By using system call, build following directory structure



- By using system calls, copy hello file under ~/Dir2/Dir12/
- By using system calls, make a symbolic link named toDir12 to directory Dir12
- By using system calls, make a symbolic link named toHello to executable file ~/Dir12/hello



Task#3.2. (Test for Task #5.1) Execute hello by using symbolic link toHello. Try to delete a file, make directory by using symbolic link toDir21.

Task 4. Write your own mv named MyMv
By using bash command mv, you can move a file from current directory to another directory. Write your own mv called MyMv **by using system calls link() and unlink()**. Your program named **MyMv** can move a file from a current directory to a directory. Your program receives two arguments: **file name and path to a directory where the file need to move**, **or file name and path to directory with a file name.**
If the second argument is a directory, move a file to the directory. If the second argument is not a directory, move file to directory as a file name.

Ex)

- Move a file **foo** to under directory **~/separk/cosc350**
  - ./MyMv foo ~/separk/cosc350
- Move a file **foo** to under directory **~/separk/cosc350** named **abc** if there is no directory named abc
  - ./MyMv foo ~/separk/cosc350/abc
- Move a file foo to under directory **~/separk/cosc350** named **foo** if there is no directory named foo
  - ./MyMv foo ~/separk/cosc350/foo