Documentation for OS Assignment 1

Ques1.

Part1. We use the fork call to create a child process and then use the wait system call after the parent process prints its first command inorder to make the parent process wait for its child to complete its working and thus achieving the desired order of statements to be printed.

Part 2. We have written the functions for calculating the factorial and fibonacci series. We have used the vfork system call, which makes the child execute first and the parent has to wait for the child to complete its execution. The child prints the factorial and the parent prints the fibonacci.

Bonus. Inorder to make the child process wait for the parent, we use the sleep command. In sleep command, we can pause or delay in the execution of the calling process. It accepts a time argument which in this case is in seconds. It makes the child process wait for that amount of time, while the parent continues its execution.

Ques2.

We have made a custom unix shell system, with three commands word dir and date. We have run a while loop and then repeatedly taken input from the user to simulate a shell. We use the fgets function to take the input and then tokenize it and store it in an array called argv. Which we later also pass into the execvp command as command line arguments. We use the strcmp function from the string library to check which command is actually, and then proceed accordingly. Since word is an internal command we have included it as a function within the source code, and for dir and date we have used the fork and execvp commands to execute the code written for dir and date commands.

In date command, we have used the stat and time related functions inorder to determine the the latest modified time for the files. The references have been attached below, which we utilised to understand the working of these commands. We also used the strftime command to store the format of the time that we wanted to print as output. We have also assumed the format of the command would be strictly in the form : **Syntax: date [-option] [file\_name]**

References:

sys/stat and time.h

<https://linux.die.net/man/2/stat>

<https://www.tutorialspoint.com/c_standard_library/c_function_localtime.htm>

<https://www.geeksforgeeks.org/strftime-function-in-c/>

In dir command, we make use of the mkdir, chdir, rmdir functions, from the c libraries, to accomplish what is mentioned in the question. We have also checked the command line arguments for different options that could be supplied and written the code accordingly

Ques3. We have made a arithmetic calculator which reads from a text file which has two numbers and one operation, store them accordingly into 3 variables then using if , else conditions we have checked the operation which we have to calculate and then we store the result in output.txt file and it throws an error message if the input format is not valid. We have also used bc or the basic calculator inorder to make the arithmetic of floating point integers possible.

We also create a new directory incase it doesnt exist already. To print the output in.