# MultiProcessingAssignments - 3

**ExecXX() calls**

1. Refer the codesnippet below and answer the queries

/\* creates a child process which is executing “ls” executable

int create(char \*pgm, char \*argv[])

{

int pid;

pid = fork();

If (0 == pid)

{

execvp(pgm,argv);/\* executes pgm searching for the path in “PATH” environment variable \*/

perror(“execvp”); /\* the execvp function returns only if an error occurs \*/

exit(0);

}

else

{

wait(NULL);

printf(“Inside parent process\n”);

}

}

int main()

{

char \*argv[]={“ls”,”-l”,NULL}; /\*List of NULL terminated arguments \*/

create(“ls”,argv);

return 0;

}

Queries:

1. What is the output of parent process and child process?

Output of the child process-list all the files present in the directory

Output of the parent process-Inside the parent process

1. How does execvp call work?

Int execvp (const char \*file, char \*const argv[]);

1. What would be the output if execvp() call is invoked just after *pid=fork()* statement.

The system call execvp() would have been called twice one for the parent process,

And another for the child process.

Hence, listing of the files in the directory would have been printed twice on the terminal.

1. How many processes would be created and what would be the output if execvp() is invoked before *pid =fork*?

Two process will be created as fork() system call is being used, one parent process and another child process.

If execvp() system call is invoked before pid=fork, then only one time the list of files in the directory is printed,

under the parent process.

1. When would you use execXX() ?
2. Write a program that received a program name and uses an exec() system call to execute a program.

For example if the name of your executable is myexecutable, then if you invoke as follows:

***myexecutable mycmd a b***

then, mycmd will be executed with command line parameters a & b by the program myexecutable

(Note: mycmd is a user defined program)

1. Implement a function below to use system call sendfile() to copy from input file descriptor to output file descriptor

size\_t sendfile\_copy(<destination fd>, <source fd>, <offset position in input buffer source>, <number of bytes to copy>)

1. Calculate the execution time for the above step b)
2. Implement a function below to use system call read() and write() to copy from input file descriptor to output file descriptor

size\_t read\_write\_copy(<buffer containing data to be written>, <input buffer source>, <offset position in input buffer source>, <number of bytes to copy>)

1. Calculate the execution time for the above stepd)
2. Compare execution time in c) and e). Which one is better?
3. Run program at console, verify if the “fout.txt” is same as “fin.txt”
4. Run command below and capture and view the internal system calls

Strace <prgname>

1. Try the above program using a non-existing input file name. Capture the errors thrown and display using strerror(), perror()