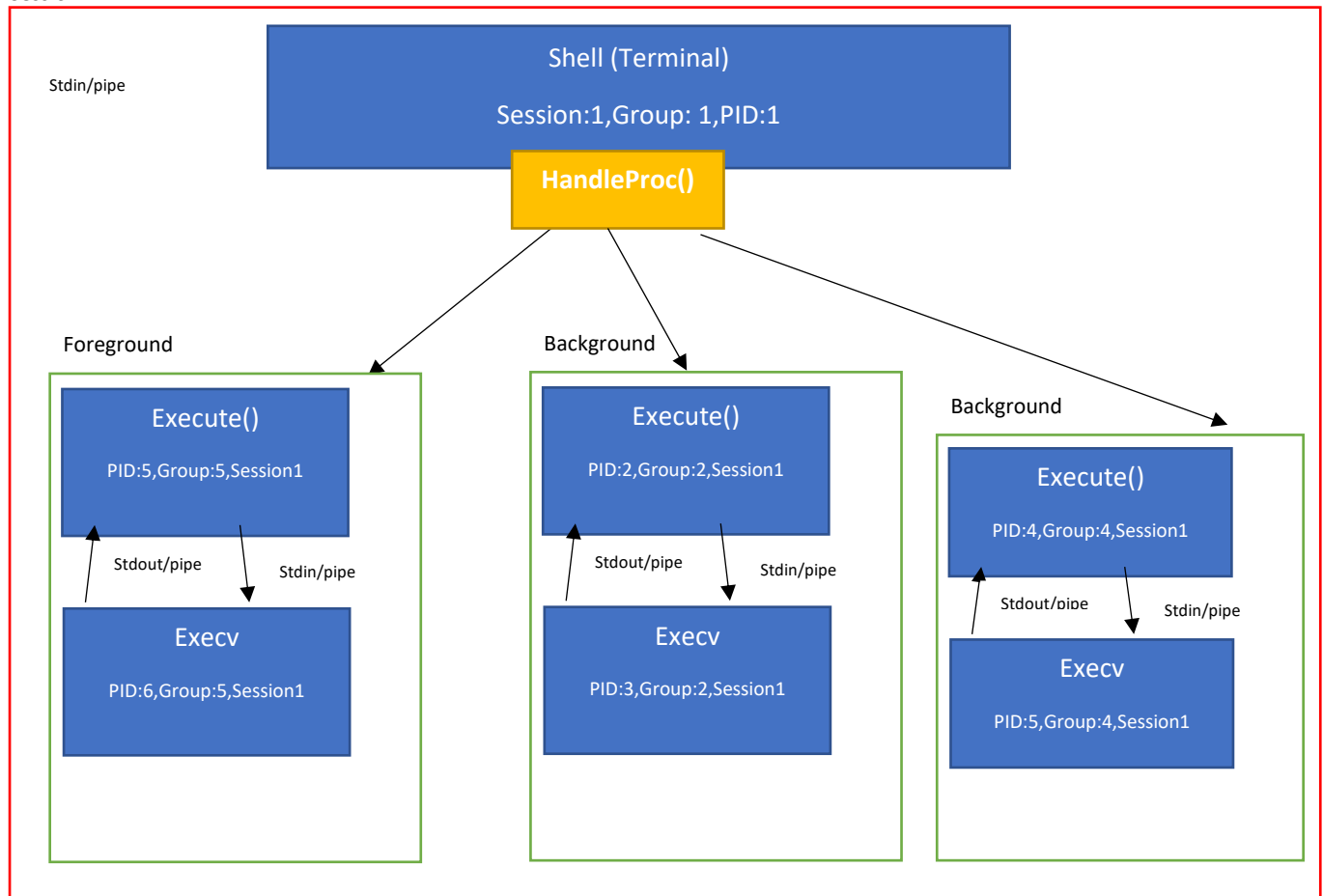# NETWORK PROGRAMMING (IS F462)

Assignment – 1

P1. [contains README at end]

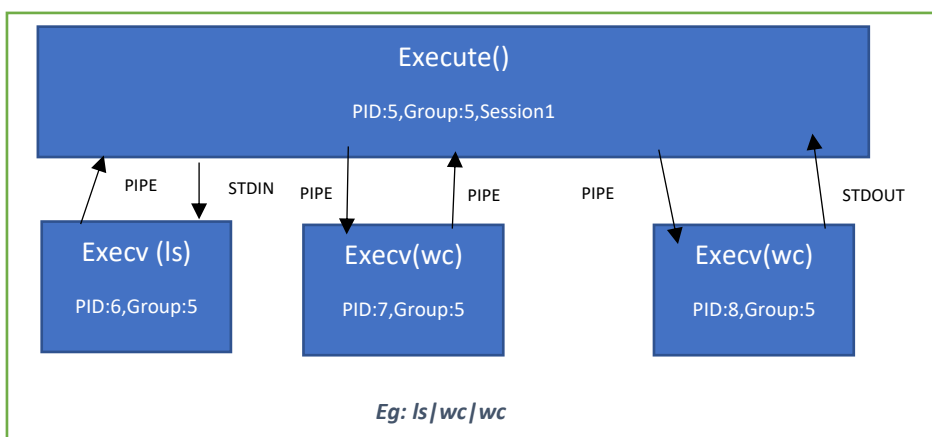## Basic Shell Structure

Session: 1

Shell allows for 1 foreground and any number of background process.

Once a foreground process is forked, shell releases its control over terminal input via tcsetpgrp() call. This is taken back when SIGCHLD from the group leader is received. Shell waits for foreground process to exit.

Handling PIPE (|):

Pipe chaining is handled by

piping i/p and o/p to the group

that coordinates like co-process.

Eg: ls|wc|wc

Redirection is handled via dup2 calls where ever necessary. **Note: Redirection has preference over pipining**, i.e. if ls|wc>a.txt|wc -l is the command, the pipe to last wc would be closed.

Handling PIPE2 (||) and PIPE3 (|||):

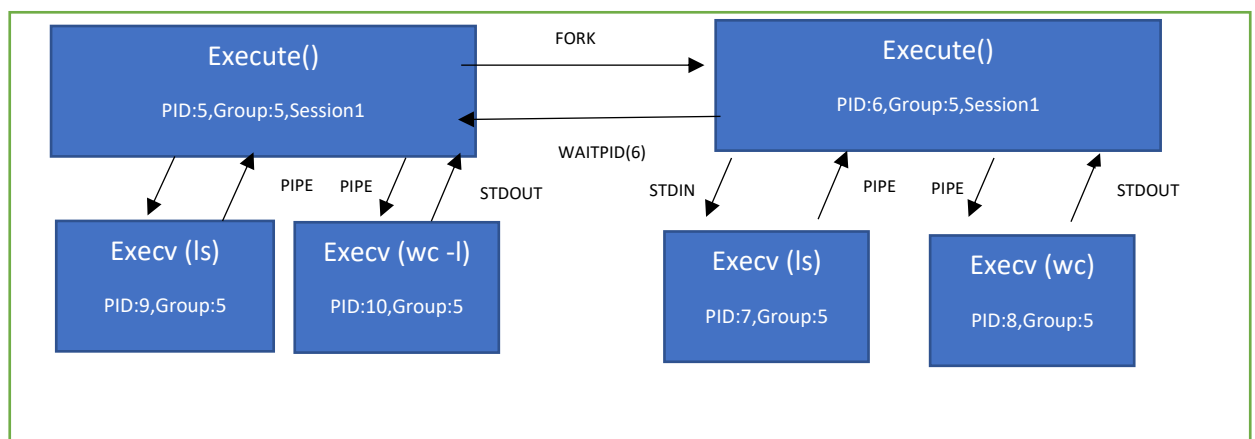**[Note:** Can be used in association to pipe chains i.e. ls|wc||wc,wc or ls|wc|||wc,wc-c ,wc-l

However, commands can internally have only pipes(single or PIPE1), i.e. ls||wc|wc|wc, wc|wc-l , wc>a.txt

]

Ex: ls || wc , wc -l

Is broken down into 2 pipes: ls|wc (runs first in a separate process forked from execute) followed by ls|wc -l in execute itself after the freshly created execute copy exits.

Foreground/Background

Similarly, PIPE 3 can be visualized as PIPE followed by PIPE 2.

README:

- If any command has cd, eg: ls|cd /dir | wc, only cd will be performed.
- cd ignores all other inputs past one argument
- Options (like ^d or -al) must be followed by a space in order to differentiate an option from next input.
- sc command works as a toggle for Shortcut Mode, i.e. one sc will turn on and sc again would turn off toggle mode.[$ sc]
- Shortcut mode terminal is marked by > before the prompt.
- Shortcut mode can also be turned off by Cntrl+C and entering -1.
- sc -i <index> <cmd>, supports only one command like ls or wc etc. without options.
- Index range is limited to maximum of 50 commands[0-49]. Can be changed via the MAX_SHORTCUTS.
- sc -i <index> <cmd> and sc -d <index> <cmd> cannot be chained with other commands
- Character set identified: **[a-zA-Z]*   [0-9]* | || || ,   &   >   >>   <   /   -   ^**

FOR COMPILING:

-     gcc -o shell shell.c

or

-      make compile

For Running:

-      ./shell