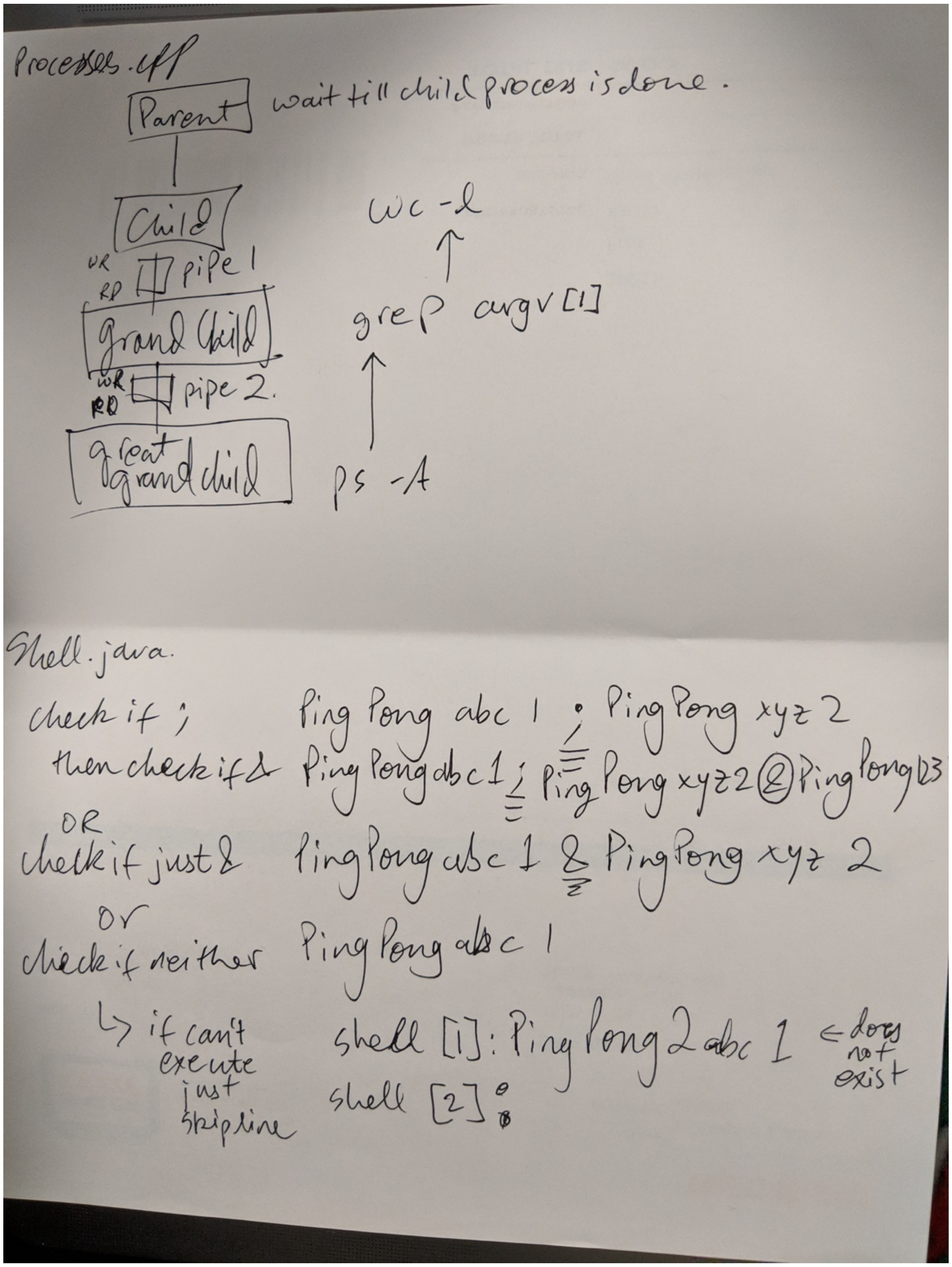


Shell.java.

check if ; Ping Pong abc 1 ; Ping Pong xyz 2

then check if & Ping Pong abc 1 ; Ping Pong xyz 2 & Ping Pong 123

OR

check if just & Ping Pong abc 1 & Ping Pong xyz 2

or

check if neither Ping Pong abc 1

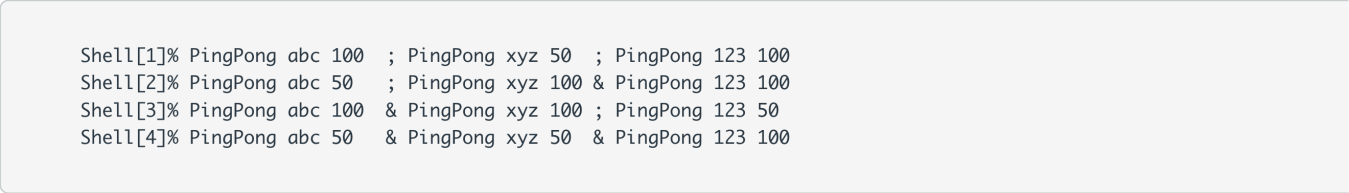
↳ if can't execute just skip line

shell [1]: Ping Pong 2 abc 1 ← does not exist

shell [2]:

Process.cpp creates 4 processes: parent, child, grandchild, and great-grandchild. The latter 3 of the 4 each execute a shell command. They do so by using the execlp function. Greatgrandchild runs the ps command, the grand child then runs grep command and uses the argument given by the user to look for that specific process. Child then runs word count. The parent waits till everything is done.

Shell.java essentially executes Thread OS programs concurrently or sequentially. It does so by finding either ; or & in the command. It then appropriately, by string manipulation; determines how to run the command. Shell.java can be tested by using the commands provided in the P1 program description page.



```
Shell[1]% PingPong abc 100  ; PingPong xyz 50  ; PingPong 123 100
Shell[2]% PingPong abc 50   ; PingPong xyz 100 & PingPong 123 100
Shell[3]% PingPong abc 100  & PingPong xyz 100 ; PingPong 123 50
Shell[4]% PingPong abc 50   & PingPong xyz 50  & PingPong 123 100
```