

CS 551 Project 1 Report

Group 20

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September 14, 2013

1 Basic Operation

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1 # ./shell
2 Oldenv:/root/bin:/usr/local/bin:/bin:/sbin:/usr/bin:/usr/sbin:/usr/pkg/bin:/usr/pkg/sbin:/usr/pkg/X11R6/bin
3 Newenv:/root:/usr/bin:/bin:
4 $
5 $pwd
6 /root
7 $
8 $cd project1
9 $
10 $pwd
11 /root/project1
12 $
13 $ls -alh
14 total 146K
15 drwxr-xr-x  2 root  operator  576B Sep 14 21:17 .
16 drwxr-xr-x  4 root  operator  768B Sep 14 19:36 ..
17 -rw-r--r--  1 root  operator  297B Sep 14 19:36 Makefile
18 -rw-r--r--  1 root  operator   70B Sep 14 19:37 profile.txt
19 -rwxr-xr-x  1 root  operator   60K Sep 14 20:08 shell
20 -rw-r--r--  1 root  operator   24K Sep 14 20:08 shell.c
21 -rw-r--r--  1 root  operator   60K Sep 14 20:08 shell.o
22 $
23 $cat profile.txt
24 PROMPT=$
25 HOME_DIRECTORY=/root
26 ALARM=ON
27 ALARM_TIME=5
28 MAX_ARGUMENTS=128
29 $
30 $ls -l > output.txt
31 $
32 $ls
33 Makefile  Report      output.txt  profile.txt  shell      shell.c    shell.o
34 $cat output.txt
35 total 146K
36 drwxr-xr-x  2 root  operator  576B Sep 14 21:17 .
37 drwxr-xr-x  4 root  operator  768B Sep 14 19:36 ..
38 -rw-r--r--  1 root  operator  297B Sep 14 19:36 Makefile
39 -rwxr-xr-x  1 root  operator    0B Sep 14 21:17 output.txt
40 -rw-r--r--  1 root  operator   70B Sep 14 19:37 profile.txt
41 -rwxr-xr-x  1 root  operator   60K Sep 14 20:08 shell
42 -rw-r--r--  1 root  operator   24K Sep 14 20:08 shell.c
43 -rw-r--r--  1 root  operator   60K Sep 14 20:08 shell.o
44 $
45 $cat output.txt | wc
46      10      83      511
47 $
48 $wc output.txt
49      10      83      511 output.txt
50 $
51 $sleep 10
52 Child process (pid: 15098) has been running longer than 5 seconds, terminate? (y/n): y
53 Pid 15098 killed.
54 $
55 $sleep 10
56 Child process (pid: 15100) has been running longer than 5 seconds, terminate? (y/n): n
57 $
58 $sleep 10 | sleep 10
59 Child processes (pids: 15101, 15102) have been running longer than 5 seconds, terminate them
   ? (y/n): y
60 Pid 15101 killed.
```

```

61 | Pid 15102 killed.
62 | $
63 | $if 10 -eq 10 then echo "true" else echo "false" fi
64 | "true"
65 | $
66 | $quit
67 | ERROR: command: quit FAILED
68 | $
69 | $cd /
70 | $Alias listcontent="ls -l | grep '^d'"
71 | $listcontent
72 | drwxr-xr-x 2 root operator 3328 Feb 15 2013 bin
73 | drwxr-xr-x 4 root operator 320 Aug 26 20:47 boot
74 | drwxr-xr-x 2 root operator 29184 Aug 25 19:35 dev
75 | drwxr-xr-x 6 root operator 2688 Sep 14 04:25 etc
76 | drwxr-xr-x 4 root operator 256 Aug 26 00:31 home
77 | drwxr-xr-x 2 root operator 192 Feb 15 2013 lib
78 | drwxr-xr-x 2 root operator 256 Feb 15 2013 libexec
79 | drwxr-xr-x 2 root operator 128 Aug 26 00:31 mnt
80 | dr-xr-xr-x 1 root operator 0 Sep 14 22:59 proc
81 | drwxr-xr-x 6 root operator 2304 Sep 14 22:22 root
82 | drwxr-xr-x 2 root operator 1536 Aug 26 20:47 sbin
83 | dr--r--r-- 1 root operator 0 Sep 14 22:59 sys
84 | drwxrwxrwt 2 root operator 384 Sep 14 04:56 tmp
85 | drwxr-xr-x 21 root operator 1408 Aug 26 00:31 usr
86 | drwxr-xr-x 4 root operator 384 Aug 26 00:31 var
87 | $
88 | $exit
89 | #

```

2 Caveats

- Only one pipe allowed
- if CMD then CMD1 else CMD3 fi
- No semicolon delimited command support
- No nested ifs

3 Exception Handling

- CTRL+C is handled by the SIGINT handler
- CTRL+Z is handled by the SIGTSTP handler
- SIGQUIT is handled by the SIGQUIT handler
- SIGALRM is handled by the SIGALRM handler
- CTRL+D signifies end of pipe. This closes the file descriptor handle for stdin, and can't easily be handled
- Execution Errors: since errors in child processes happen in completely separate processes, the error messages simply print to the screen (due to redirection of stderr to stdout during initialization)