

CSE2005 OS – LAB 01

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Shell, Unix, and fork()

a) Shell Programming

1. Types of Shells available to the system

```
rupin@rupin:~/Desktop/CSE2005$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/bin/dash
/usr/bin/dash
```

2. Show where the bash file is located

```
rupin@rupin:~/Desktop/CSE2005$ which bash
/usr/bin/bash
```

3. Contrasting non-shell programs with shell programs

```
rupin@rupin:~/Desktop/CSE2005$ which cd
rupin@rupin:~/Desktop/CSE2005$ which ls
/usr/bin/ls
```

(cd is not shell, while ls is a shell program)

4. man (manual command), gives manual for the thing(eg. Bash manual page 1)

```
BASH(1)                                General Commands Manual                                BASH(1)

NAME
    bash - GNU Bourne-Again Shell

SYNOPSIS
    bash [options] [command_string | file]

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DESCRIPTION
    Bash is an sh-compatible command language interpreter that executes
    commands read from the standard input or from a file.  Bash also incor-
    porates useful features from the Korn and C shells (ksh and csh).

    Bash is intended to be a conformant implementation of the Shell and
    Utilities portion of the IEEE POSIX specification (IEEE Standard
    1003.1).  Bash can be configured to be POSIX-conformant by default.

OPTIONS
    All of the single-character shell options documented in the description
    of the set builtin command, including -o, can be used as options when
    Manual page bash(1) line 1 (press h for help or q to quit)
```

5. showcasing cd (change directory) command

```
rupin@rupin:~$ ls
add.sh          client4.c      killProcess.sh  process.sh      server1.c      stopwait.c
a.out           client.c       multiclient.c   Public          server4.c      Templates
arithmetic.sh   Desktop        multiserver.c   selrepclient.c  server.c       Videos
client          Documents      Music           selrep serv.c   snap
client1.c       Downloads     Pictures        server          stopwait
rupin@rupin:~$ cd Desktop
rupin@rupin:~/Desktop$ ls
CSE2005
rupin@rupin:~/Desktop$ cd CSE2005
rupin@rupin:~/Desktop/CSE2005$
```

6. echo (similar to print command)

```
rupin@rupin: ~/Desktop/CSE2005
rupin@rupin:~/Desktop/CSE2005$ echo Hello World
Hello World
rupin@rupin:~/Desktop/CSE2005$ echo "Hello World"
Hello World
rupin@rupin:~/Desktop/CSE2005$
```

7. touch command to create shell executable

```
rupin@rupin:~/Desktop/CSE2005$ touch helloworld.sh
rupin@rupin:~/Desktop/CSE2005$ ls
helloworld.sh
```

Running shell file

```
rupin@rupin:~/Desktop/CSE2005$ ./helloworld.sh
bash: ./helloworld.sh: Permission denied
rupin@rupin:~/Desktop/CSE2005$
```

(permission denied as creating with touch)

8. chmod to change file perms

```
rupin@rupin:~/Desktop/CSE2005$ ls -al
total 8
drwxrwxr-x 2 rupin rupin 4096 Mar 15 22:53 .
drwxr-xr-x 3 rupin rupin 4096 Mar 15 22:48 ..
-rw-rw-r-- 1 rupin rupin   0 Mar 15 22:53 helloworld.sh
rupin@rupin:~/Desktop/CSE2005$ chmod +x helloworld.sh
rupin@rupin:~/Desktop/CSE2005$ ls -al
total 8
drwxrwxr-x 2 rupin rupin 4096 Mar 15 22:53 .
drwxr-xr-x 3 rupin rupin 4096 Mar 15 22:48 ..
-rwxrwxr-x 1 rupin rupin   0 Mar 15 22:53 helloworld.sh
rupin@rupin:~/Desktop/CSE2005$
```

(notice the change in helloworld.sh in first and second execution of ls -al)

```
rupin@rupin:~/Desktop/CSE2005$ ./helloworld.sh
Hello World
rupin@rupin:~/Desktop/CSE2005$
```

9. set \$variable

```
1 echo Hello World
2
3 echo $PWD
4 echo $HOME
5
```

```
rupin@rupin:~/Desktop/CSE2005$ ./helloworld.sh
Hello World
Today's date is 09-01-2022
/home/rupin
```

10. # (pound/hash) comments the text preceded by only # is not taken into account

11.read

```

1 echo Hello World
2
3 date=09-01-2022
4 echo "Todays date is $date"
5
6 #echo $PWD
7 #echo $HOME
8 read name
9
10 echo 'My name is : ' $name

```

```

rupin@rupin:~$ cd Desktop
rupin@rupin:~/Desktop$ cd CSE2005
rupin@rupin:~/Desktop/CSE2005$ ./helloworld
bash: ./helloworld: No such file or directory
rupin@rupin:~/Desktop/CSE2005$ ./helloworld.sh
Hello World
Todays date is 09-01-2022
Rupin
My name is : Rupin

```

12. read -sp (read password silently)

```

read -sp 'Enter your name secretly : ' name

echo 'My name is : ' $name

```

```

rupin@rupin:~/Desktop/CSE2005$ ./helloworld.sh
Hello World
Todays date is 09-01-2022
Enter your name secretly : My name is : Myname is secret
rupin@rupin:~/Desktop/CSE2005$ █

```