COMP304 PROJECT 1 REPORT

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The aim of this project is to familiarize us with the Unix system call interface and the shell implemented with several different features by us. This project has six different parts and all of them will be explained orderly.

In part I, the project wants us to implement the shell via using execv() instead of execvp() system call. The difference is execvp() will automatically resolve the path whereas execv() search the given path for the program. Therefore, we append "/bin/" string before our command name to search this program in the right directory. The snapshot below shows the implementation of execv() system call is done successfully. These are some commands for proving purposes.

In part II, the new command "shortdir" is expected to be implemented with five different options. Firstly, our code opens two txt files "files" and "filesTemporary" in read and append mode via "a+" to store the names and paths of the names. In this part of the project, all the data is stored on "files.txt", and "filesTemporary.txt" is created empty with remove("filesTemporary.txt") function used before. For the "set" mode, firstly we write all the name and directories associated with each other except the name matches with argument comes after "set" since we need to change this name's directory to the new one. Then, we write everything into "files.txt" we

wrote on "filesTemporary.txt"; and then at the end of the "files.txt", we append the new name and its directory which corresponds to the current directory. The "jump" option is done by pre-builtin chdir() code in c which is also implemented for "cd" command via COMP304 staff. In "del" option, we wrote all lines in "files.txt" to the "filesTemporary.txt" except the wanted argument given after "del" and then we wrote "files.txt" back. In "clear" option, we clear every association with remove("files.txt") function and lastly; in "list" option, we print every association written in "files.txt".

```
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir list
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir set king
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ cd ..
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304 seashell$ shortdir set serkan
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304 seashell$ cd ..
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm seashell$ shortdir set yarkın
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm seashell$ shortdir list
Name-Directory: king /home/abrakadabra/Desktop/LastTerm/COMP304/Project1
Name-Directory: serkan /home/abrakadabra/Desktop/LastTerm/COMP304
Name-Directory: yarkın /home/abrakadabra/Desktop/LastTerm
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm seashell$ shortdir jump king
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir del serkan
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir list
Name-Directory: king /home/abrakadabra/Desktop/LastTerm/COMP304/Project1
Name-Directory: yarkın /home/abrakadabra/Desktop/LastTerm
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir clear
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ shortdir list
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ 
```

In part III, "highlight" command is expected to be implemented to highlight specific words with a given color. We read the text file given as 3rd argument and get its lines one by one via fgets() function. Then, strtok() function is used to get tokens separated by spaces " ". if the token is same with the 1st argument which corresponds to highlighted word, it is printed with its colors via functions red(), green(), and blue(), accordingly. If it is not, the token is printed normally.

```
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ highlight man -b read1.txt
Rihanna just hit me on a text
 Last night I left hickeys on her neck
 Wait you just dissed me? I'm perplexed
 Insult me in a line compliment me on the next damn
 I'm really sorry you want me to have a heart attack
 Was watchin' 8 Mile on my NordicTrack
 Realized I forgot to call you back
 Here's that autograph for your daughter I wrote it on a Starter cap
 Stan Stan son listen man dad isn't mad
 But how you gonna name yourself after a damn gun and have a man bun?
 The giant's woke eyes open undeniable
 Supplyin' smoke got the fire…
```

In part IV, the "goodMorning" command is expected to be implemented. This part is implemented via writing arguments into the "morning.txt" and scheduling cron job via executing crontab command by child process via execlp() function. Instead of rhytymbox, we used audacious as sound player.

```
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ goodMorning 18.55 /home/abrakadabra/Downloads/lo.mp3
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ crobtab -l
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ crontab -e
No modification made
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ crontab -l
55 18 * * * env DISPLAY=:0.0 audacious /home/abrakadabra/deneme /home/abrakadabra/Downloads/lol.mp3
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$
```

In part V, the "kdiff" command is expected to be implemented. Firstly, it is checked whether the file names include ".txt" or not. Then, for "-a" argument, the text files are compared line by line and the different lines are printed with corresponding line numbers. Then, if one text file is larger than the other one, the remaining lines are also printed. For "-b" argument, the ".bin" files are read character by character via fgetc() since characters corresponds to 1 byte. After that, the total sum of different bytes are printed.

```
(base) abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:~/Desktop/LastTerm/COMP304/Project1$ ./project1
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ kdiff -a read1 read2
Invalid Text Names
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ kdiff -a read1.txt read2.txt
Line1 for 1st Text: Rihanna just hit me on a text

Line1 for 2nd Text: Britney just hit me on a text

Line12 for 1st Text: Supplyin' smoke, got the fire…

Line12 for 2nd Text: Supplyin' trees, got the fire…

2 different lines are found
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ kdiff -b slick.bin slack.bin
The two files are different in 9031 bytes
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$ kdiff -b slick.bin slick.bin
The two files are identical.
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTerm/COMP304/Project1 seashell$
```

Lastly, "myNetwork" command is implemented for part VI. Briefly, this command prints the name of the host and the IP address of the host.


```
abrakadabra@abrakadabra-ZenBook-UX435EG-UX435EG:/home/abrakadabra/Desktop/LastTe
rm/COMP304/Project1 seashell$ myNetwork
Hostname: abrakadabra-ZenBook-UX435EG-UX435EG
Host IP: 127.0.1.1
```