



Faculty of Engineering & Technology

Electrical & Computer Engineering Department

Linux Laboratory- ENCS3130

**Project 1: Automated Linux/Unix Command Manual
Generation**

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Table of Contents

File of Commands:	3
Main menu:	3
Part 1: Generate Linux/Unix Command Manual	4
Part 2: Verification	5
Part 3: Continuous Improvement and Extension	6
Commands Index:	6
Search Functionality and Command Recommendation	7

Table of Figures:

Figure 1: Commands File.....	3
Figure 2: Main menu output.....	3
Figure 3: grep command manual templet	4
Figure 4: case1: the commands were verified.....	5
Figure 5: case2: the commands were not verified.....	5
Figure 6: Commands Index.....	6
Figure 7: Search and Command Recommendation exist case	7
Figure 8: Search and Command Recommendation not exist but with related commands case	7
Figure 9: Search and Command Recommendation not exist without related commands case 3	8

File of Commands:

Commands file: commands.txt

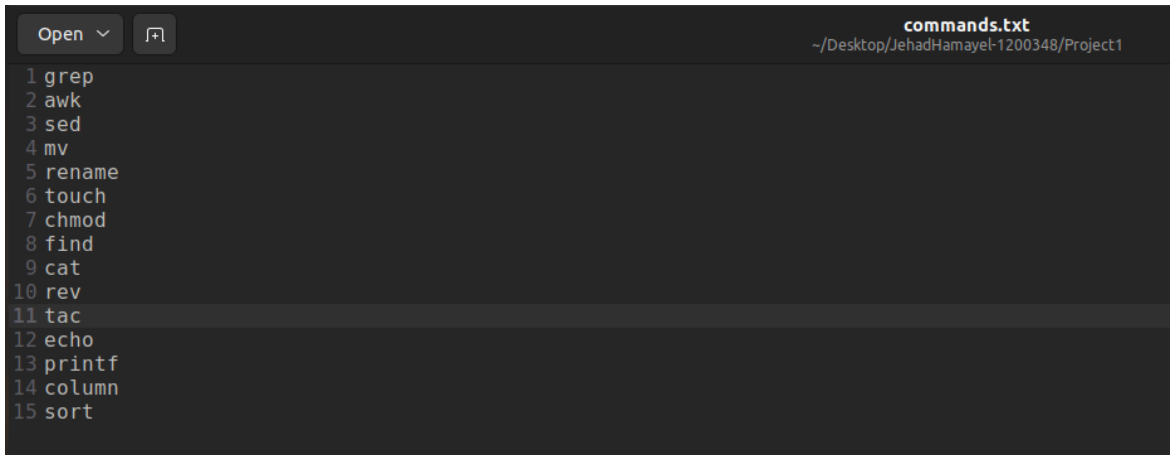


Figure 1: Commands File

These commands I made are Automated Linux/Unix Command Manual Generation.

Main menu:

the options that appear for the user.

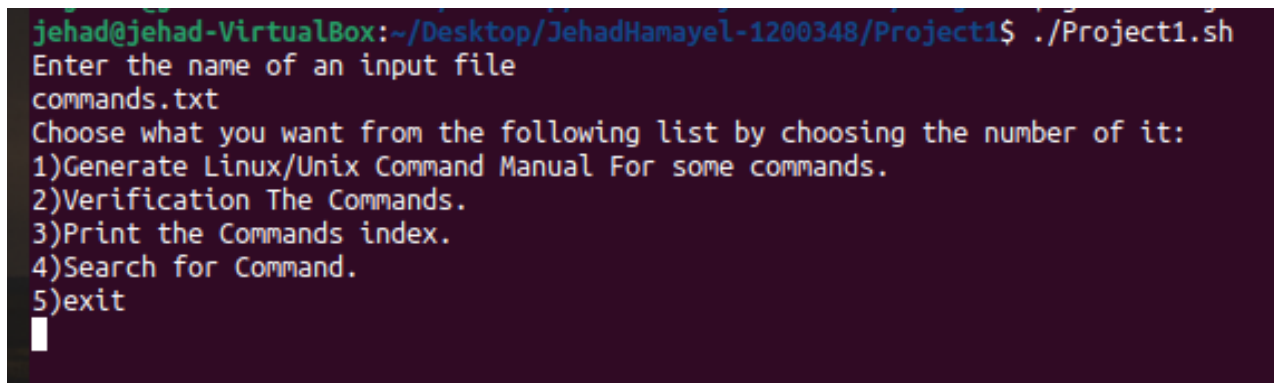


Figure 2: Main menu output

Part 1: Generate Linux/Unix Command Manual

As we were asked to do in the Generate Linux/Unix Command Manual, a group of functions was created that creates cells in the Command Manual file. These are some results according to the CISCO template, as it contains the name as the title, followed by Command Description: The name of the command and information about it, then Version History of the Command: Extracted using the version command and an example of the command and how it is used with the special output in the command.

An example of the result in the following figure: Find the output of the Command Manual for the `grep` command:

```
Enter the name of an input file
commands.txt
Choose what you want from the following list by choosing the number of it:
1)Generate Linux/Unix Command Manual For some commands.
2)Verification The Commands.
3)Print the Commands Index.
4)Search for Command.
5)exit
1
Please wait for the files of the Commands Manual to be created
*****
grep Command:
NAME                grep, egrep, fgrep, rgrep - print lines that match patterns
DESCRIPTION          grep searches for PATTERNS in each FILE. PATTERNS is one or more patterns separated by newline characters, and grep prints each line that matches a pattern. Typically PATTERNS should
                     A FILE of "-" stands for standard input. If no FILE is given, recursive searches examine the working directory, and nonrecursive searches read standard input.
                     In addition, the variant programs egrep, fgrep and rgrep are the same as grep -E, grep -F, and grep -r, respectively. These variants are deprecated, but are provided for
                     backward compatibility.
VERSION              grep (GNU grep) 3.7
EXAMPLE              echo -e "The Israeli occupation is a brutal occupation\nJerusalem is Palestines capital\nIsrael is a war criminal" > Data1.txt
                     grep "Israel" Data1.txt
OUTPUT              Israel:
                     The Israeli occupation is a brutal occupation
                     Israel is a war crimnal
Related Commands     awk, cmp, diff, find, perl, sed, sort, xargs, read,
                     pcre, pcreyntax, pcrepattern, terminfo, glob, regex
```

Figure 3: *grep* command manual templet

The same applies to all commands that you have previously selected.

Part 2: Verification

The goal of this part is to verify the content that has been created. The existing document was read and its authenticity was verified by running the command, checking the example, and verifying information such as the name, description, version, and related commands.

In the first case, if the files match, the following Output is printed:

```
Choose what you want from the following list by choosing the number of it:
1)Generate Linux/Unix Command Manual For some commands.
2)Verification The Commands.
3)Print the Commands Table.
4)Search For Command by Name.
5)Exit
Please wait for the files of the Verification Commands Manual to be created
The generation of the Verification Command Manual Done
The Verification results:

Verified ./commands/rm_command.txt with ./verifications/rm_Verification.txt

Verified ./commands/cat_command.txt with ./verifications/cat_Verification.txt

Verified ./commands/cd_command.txt with ./verifications/cd_Verification.txt

Verified ./commands/cwd_command.txt with ./verifications/cwd_Verification.txt

Verified ./commands/cut_command.txt with ./verifications/cut_Verification.txt

Verified ./commands/echo_command.txt with ./verifications/echo_Verification.txt

Verified ./commands/find_command.txt with ./verifications/find_Verification.txt

Verified ./commands/grep_command.txt with ./verifications/grep_Verification.txt

Verified ./commands/mv_command.txt with ./verifications/mv_Verification.txt
```

Figure 4: case1: the commands were verified

In the second case, if there is a change in the content of the Command Manual file, the location of the difference is displayed for each file with different content, and it is displayed before and after the change as follows:

An example of this is changing the content of the cat command:

```
Not Verified ./commands/cat_command.txt with ./verifications/cat_Verification.txt in:
Not verified in NAME:
The NAME Before: cat - concatenate files and print on the standard output
The NAME After: cat - concatenate files and print on the standard output

Not verified in DESCRIPTION:
The DESCRIPTION Before: Concatenate FILE(s) to standard output.
With FILE, or when FILE is -, read standard input.
The DESCRIPTION After: Concatenate FILE(s) to standard output.
With FILE, or when FILE is -, read standard input.

Not verified in VERSION:
The VERSION Before: cat (GNU coreutils) 8.33
The VERSION After: cat (GNU coreutils) 8.32

Not verified in OUTPUT:
The EXAMPLE: echo "Hello World" > test.txt
cat test.txt
The OUTPUT Before: Hello World
The OUTPUT After: Hello World

Not verified in Related Commands:
The Related Commands Before: tac cataw
Related Commands
The Related Commands After: tac
Related Commands
```

Figure 5: case2: the commands were not verified

Part 3: Continuous Improvement and Extension

In this part, the current project was improved by incorporating additional features, improving ease of use, and expanding functions.

These functions include:

1. Command recommendation:

An order recommendation system has been implemented based on the suggestion of orders associated with previous searches.

2. Search function:

A search function was added to the created directory, allowing users to quickly find information about commands, and an index was created in the commands used, divided according to function, which the user can request and print in order to facilitate the search process.

Commands Index:

When you request the Commands Index, the commands are printed, which are divided according to function as follows:

```
Choose what you want from the following list by choosing the number of it:
1)Generate Linux/Unix Command Manual For some commands.
2)Verification The Commands.
3)Print the Commands Index.
4)Search for Command by Name.
5)Exit
3

(Commands Index)
-----
--> Special commands for printing, display, and standard output:
1) cat_command
2) echo_command
3) find_command
4) grep_command
5) printf_command
6) rev_command
7) sort_command
8) tac_command

--> Special commands in sorting and printing in specific way:
1) column_command
2) grep_command
3) sort_command

--> Special commands for creating files and changing the file mode:
1) chmod_command
2) touch_command

--> Special commands in filtering, searching, and scanning:
1) awk_command
2) find_command
3) grep_command
4) sed_command

--> Special commands in renaming and moving the file location:
1) mv_command
2) rename_command
```

Figure 6: Commands Index

Search Functionality and Command Recommendation

When requesting the search feature, there are three possible cases that may occur, which are as follows:

The first case: is when searching and finding the command among the created files, it is shown and then the Command Recommendation for this command is shown as follows:

```
5)exit
4
Enter The name of the command that you want to Find:
grep

grep Command:
NAME                grep, egrep, fgrep, rgrep - print lines that match patterns
DESCRIPTION          grep searches for PATTERNS in each FILE. PATTERNS is one or more patterns separated by newline characters, and grep prints each line that matches a pattern. Typically PATTERNS should
                     A FILE of "-" stands for standard input. If no FILE is given, recursive searches examine the working directory, and nonrecursive searches read standard input.
                     In addition, the variant programs egrep, fgrep and rgrep are the same as grep -E, grep -F, and grep -r, respectively. These variants are deprecated, but are provided for
                     backward compatibility.
VERSION              grep (GNU grep) 3.7
EXAMPLE              echo -e "The Israeli occupation is a brutal occupation\nJerusalem is Palestines capital\nIsrael is a war criminal" > Data1.txt
                     grep "Israel" Data1.txt
OUTPUT              Israel:
                     The Israeli occupation is a brutal occupation
                     Israel is a war criminal
Related Commands      awk, cmp, diff, find, perl, sed, sort, xargs, read,
                     pcre, pcreyntax, pcrepattern, terminfo, glob, regex

The Recommended Command:
-----
Special commands in filtering, searching, and scanning:
awk_command
find_command
grep_command
sed_command

From the Special commands in sorting and printing in specific way:
column_command
grep_command
sort_command

From the Special commands for printing, display, and standard output:
cat_command
echo_command
find_command
grep_command
printf_command
rev_command
sort_command
tac_command
```

Figure 7: Search and Command Recommendation exist case

The second case: If there is no file for the command that was searched for, the system will search among the existing files if the command was present in their Related Commands, and if it is present, this command will be suggested as the following example:

```
Choose what you want from the following list by choosing the number of it:
1)Generate Linux/Unix Command Manual For some commands.
2)Verification The Commands.
3)Print the Commands index.
4)Search for Command by Name.
5)exit
4
Enter The name of the command that you want to find:
ls

The File NOT exist

But This some Related Commands to the Searched Command:
column_command
find_command

Choose what you want from the following list by choosing the number of it:
```

Figure 8: Search and Command Recommendation not exist but with related commands case

Third case: If the command is not present, it is printed as Search and Command Recommendation exist as the following example:

```
Choose what you want from the following list by choosing the number of it:
1)Generate Linux/Unix Command Manual For some commands.
2)Verification The Commands.
3)Print the Commands index.
4)Search for Command.
5)exit
4
Enter The name of the command that you want to find:
name
_____
The File NOT exist
_____
Please Enter the Command From the Following List to find the Command File
```

Figure 9: Search and Command Recommendation not exist without related commands case 3