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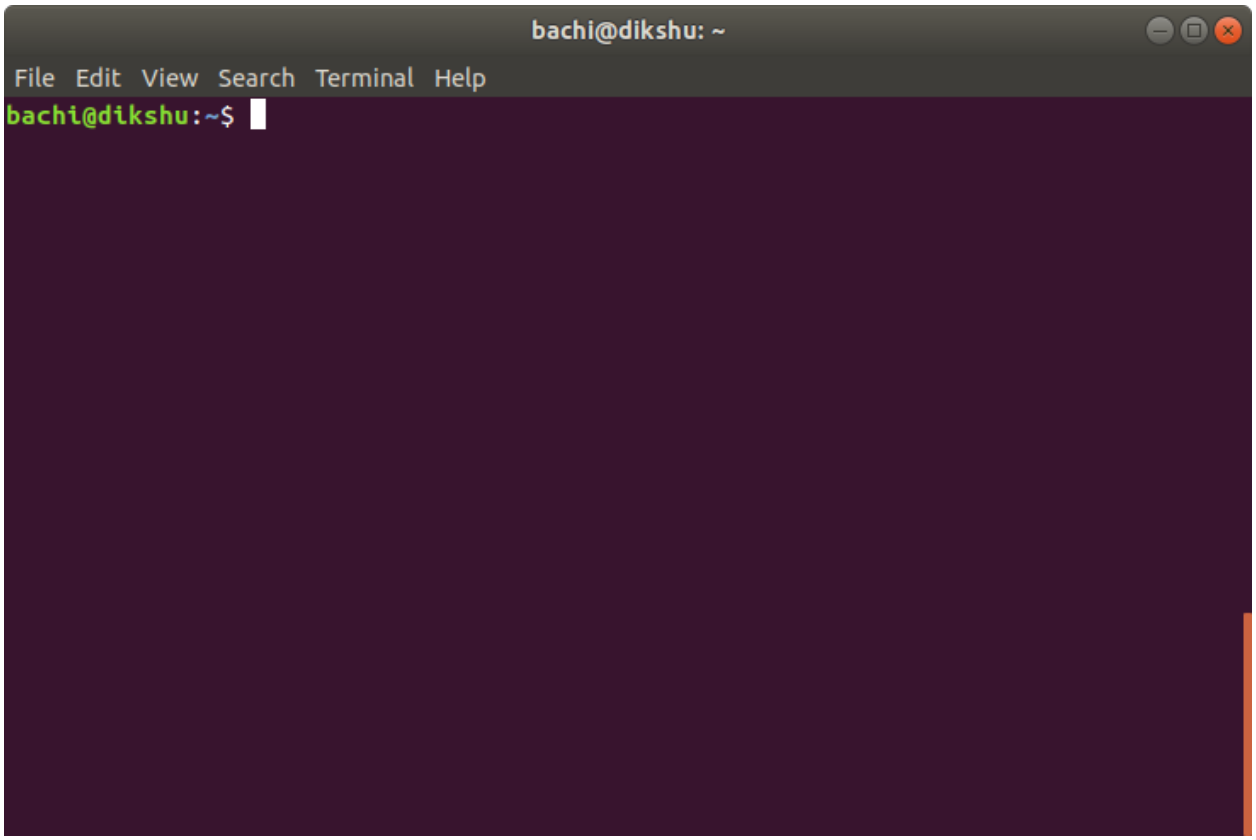
UNIX ASSIGNMENT -4

EXERCISE 1

1. Launch a terminal.



2. Use the cat command to create a file containing the following data. Name it Ch6S1F1.

Description: cat command with the redirection symbol is used to take the inputs from the standard input and copy it in the file name specified.

```
bachi@dikshu:~/Uassig$ cat>Ch6S1F1
1425    Juan    14.25
1451    Ben    21.77
2277    Tuan    18.77
4321    George    21.11
6781    Anna    16.77
```

3.Use the cat command to display the file and check for accuracy

Description: cat command is used to display the file contents.

bachi@dikshu:~/Uassig$ cat Ch6S1F1
1425 Juan 14.25
1451 Ben 21.77
2277 Tuan 18.77
4321 George 21.11
6781 Anna 16.77

4.Use the sort command to sort the file Ch6SlFl according to the first field. Call the sorted file Ch6S1F1(same name).

Description: sort command is used to sort the files in the specified format.
The 2 numbers after sort command are the ones which specify the starting and the ending column with respect to which sorting is done. The option -o is used to copy the contents of the sorted file into the second argument (file name is given) instead of the standard output.
bachi@dikshu:~/Uassig$ sort +0 -1 -o Ch6S1F1 Ch6S1F1

5. Display the file Ch6S1F1

Description: cat command is used to display the file contents.

bachi@dikshu:~/Uassig$ cat Ch6S1F1
1425 Juan 14.25
1451 Ben 21.77
2277 Tuan 18.77
4321 George 21.11
6781 Anna 16.77

6.Use the cut and paste commands to swap fields 2 and 3 of Ch6S1F1. Call it Ch6S1F1

Description: The cut command is used to cut specific fields from the given file and displays it to the standard output. Similarly the paste command copies the contents of the given files to the standard output horizontally. If the redirection operator is used after the cut and paste command it copies it to the given file name instead of the standard input.

bachi@dikshu:~/Uassig$ cut -f1,3 Ch6S1F1>file1 && cut -f2 Ch6S1F1>file2 && paste file1 file2>Ch6S1F1

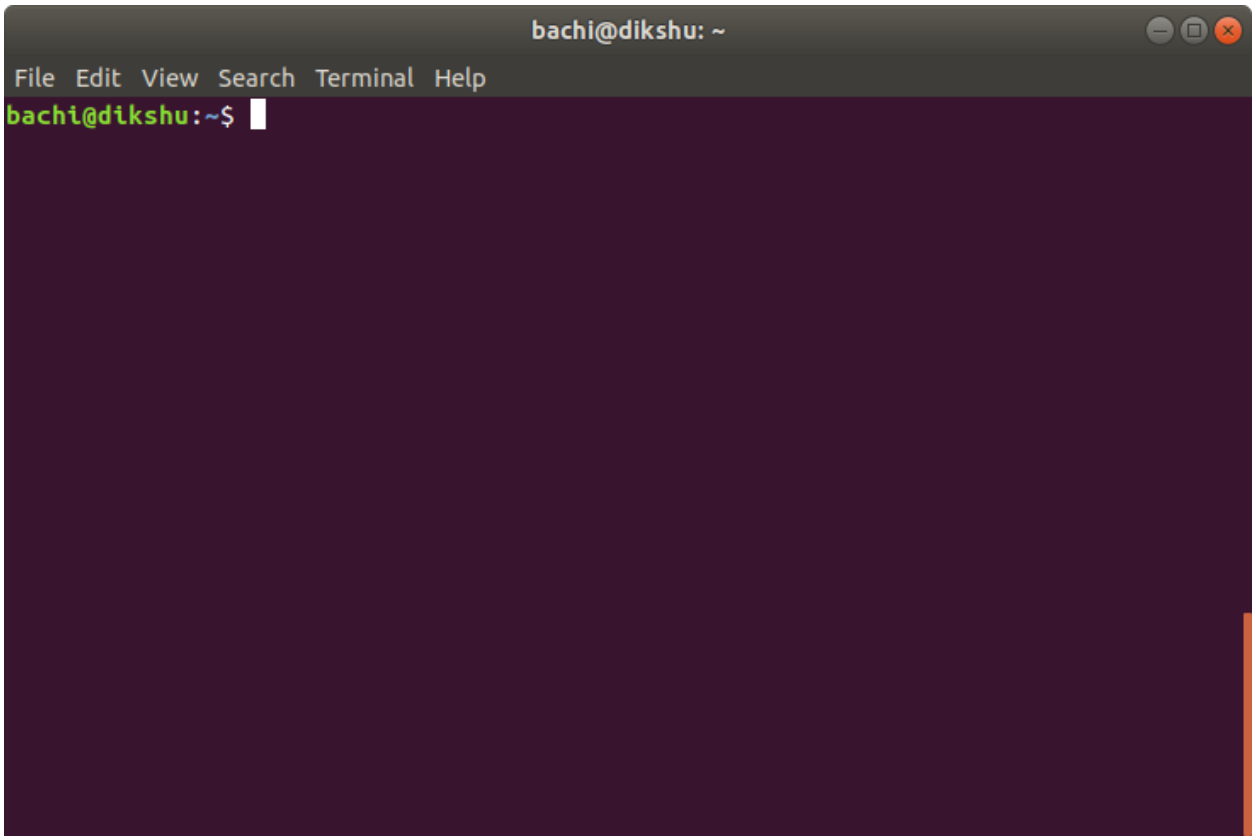
7. Display the file Ch6S1F1.

bachi@dikshu:~/Uassig$ cat Ch6S1F1

1425 14.25 Juan
1451 21.77 Ben
2277 18.77 Tuan
4321 21.11 George
6781 16.77 Anna

EXERCISE 2

1.Launch terminal



2.Use the tail command to create and save the following file

PASSES ALL DATA FROM INPUT TO OUTPUT
PASSES ONLY SPECIFIED COLUMNS
PASSES NUMBER OF SPECIFIED LINES AT BEGINNING
COMBINES COLUMNS
ARRANGES DATA IN SEQUENCE
PASSES NUMBER OF SPECIFIED LINES AT THE END OF DATA
TRANSLATES ONE OR MORE CHARACTERS
DELETES DUPLICATE LINES
COUNTS CHARACTERS} WORDS, OR'LINES

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Description: The tail command with the redirection operator here is used to get the lines from the standard input and copy it to the file name specified.

bachi@dikshu:~$ tail>Ch6S2F1
PASSES ALL DATA FROM INPUT TO OUTPUT
PASSES ONLY SPECIFIED COLUMNS
PASSES NUMBER OF SPECIFIED LINES AT BEGINNING
COMBINES COLUMNS
ARRANGES DATA IN SEQUENCE
PASSES NUMBER OF SPECIFIED LINES AT THE END OF DATA
TRANSLATES ONE OR MORE CHARACTERS
DELETES DUPLICATE LINES
COUNTS CHARACTERS} WORDS,OR'LINES
ABCDEFGHIJKLMNOPQRSTUVWXYZ

3.Use the cat command to view its contents

Description: cat command is used to display the file contents.

bachi@dikshu:~$ cat Ch6S2F1
PASSES ALL DATA FROM INPUT TO OUTPUT
PASSES ONLY SPECIFIED COLUMNS
PASSES NUMBER OF SPECIFIED LINES AT BEGINNING
COMBINES COLUMNS
ARRANGES DATA IN SEQUENCE
PASSES NUMBER OF SPECIFIED LINES AT THE END OF DATA
TRANSLATES ONE OR MORE CHARACTERS
DELETES DUPLICATE LINES
COUNTS CHARACTERS} WORDS,OR'LINES
ABCDEFGHIJKLMNOPQRSTUVWXYZ

4. Encrypt this file using the following steps: Reverse the file line by line (the last line becomes the first, the line before the last line becomes the second, and so on) and
5. Call the fileCh6S2F1Encr.

Description: tac is the reverse of cat command that is used to print the contents of the given file in reverse. And the redirection operator is used to copy the contents into the given file instead of the standard output.

bachi@dikshu:~$ tac Ch6S2F1>Ch6S2F1Encr

6. Use the cat command to view its contents.
7. Display the file.

bachi@dikshu:~$ cat Ch6S2F1Encr

Description: cat command is used to display the file contents.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
COUNTS CHARACTERS} WORDS,OR'LINES
DELETES DUPLICATE LINES
TRANSLATES ONE OR MORE CHARACTERS
PASSES NUMBER OF SPECIFIED LINES AT THE END OF DATA
ARRANGES DATA IN SEQUENCE
COMBINES COLUMNS
PASSES NUMBER OF SPECIFIED LINES AT BEGINNING
PASSES ONLY SPECIFIED COLUMNS
PASSES ALL DATA FROM INPUT TO OUTPUT

8. Decrypt the file (reverse the encryption Steps). Display the file Ch6S1F1.

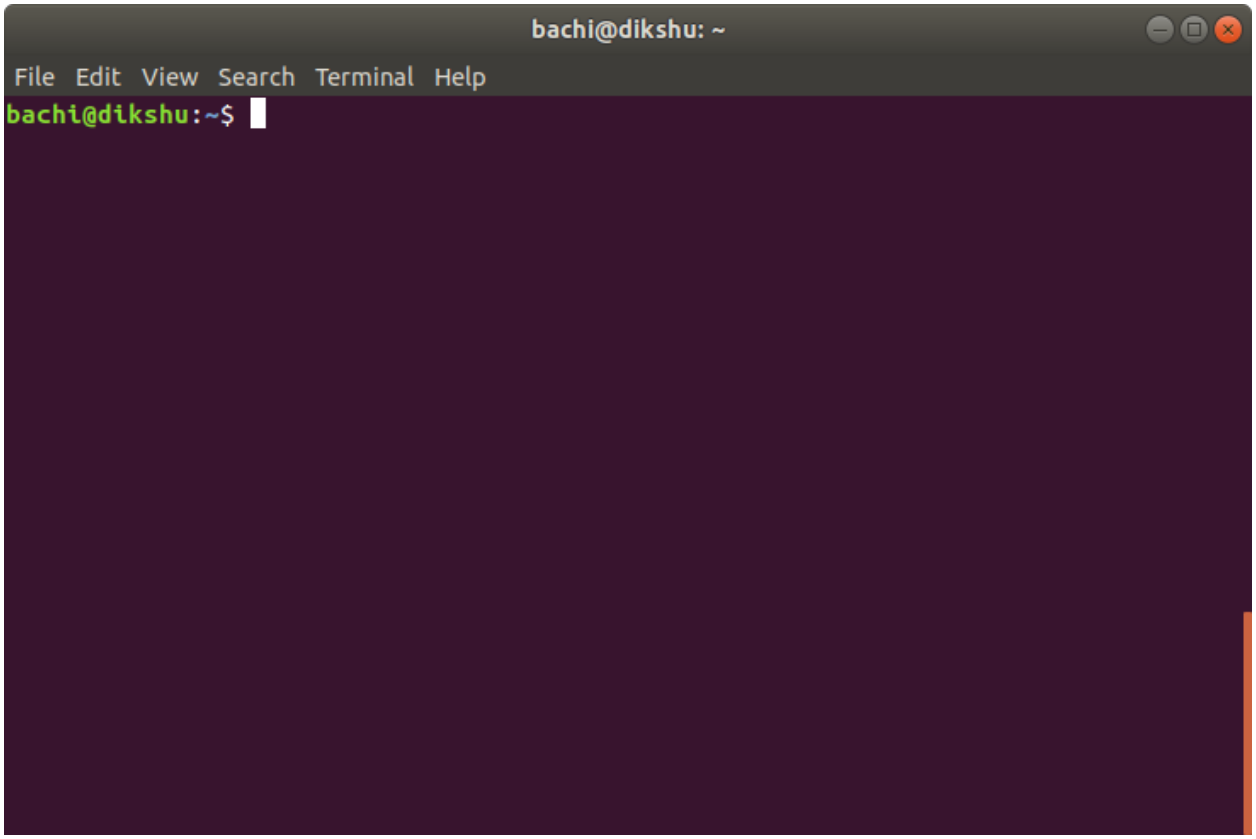
bachi@dikshu:~$ tac Ch6S2F1Encr>Ch6S2F1
bachi@dikshu:~$ cat Ch6S2F1

Description: tac is the reverse of cat command that is used to print the contents of the given file in reverse. And the redirection operator is used to copy the contents into the given file instead of the standard output.
Cat command is used to display the contents of the given file.

PASSES ALL DATA FROM INPUT TO OUTPUT
PASSES ONLY SPECIFIED COLUMNS
PASSES NUMBER OF SPECIFIED LINES AT BEGINNING
COMBINES COLUMNS
ARRANGES DATA IN SEQUENCE
PASSES NUMBER OF SPECIFIED LINES AT THE END OF DATA
TRANSLATES ONE OR MORE CHARACTERS
DELETES DUPLICATE LINES
COUNTS CHARACTERS} WORDS,OR'LINES
ABCDEFGHIJKLMNOPQRSTUVWXYZ

EXERCISE 3

1.Launch the terminal



2.Use the cat command to create and save the following file. Call it Ch6S3F1.
ALPHABETICAL FACTS. THE FIRST THREE LETTERS ARE ABC. THE MEDIAN LETTERS ARE MN.
THE LAST THREE LETTERS ARE XYZ.
THE FIRST WORD IN MY DICTIONARY IS AAL.
THE LAST WORD IN MY DICTIONARY ISZYTHUM.
THE QUICK BROWN FOX JUMPED OVER THE LAZYDOG.
THE LAST LETTER MAY BE PRONOUNCED ZEE ORZED.
THE FIRST GREEK LETTER IS ALPHA.
THE LAST GREEK LETTER IS OMEGA

Description: cat command with the redirection symbol is used to take the inputs from the standard input and copy it in the file name specified.

bachi@dikshu:~$ cat>Ch6S3F1
ALPHABETICAL FACTS. THE FIRST THREE LETTERS ARE ABC. THE MEDIAN

LETTERS ARE MN.
THE LAST THREE LETTERS ARE XYZ.
THE FIRST WORD IN MY DICTIONARY IS AAL.
THE LAST WORD IN MY DICTIONARY ISZYTHUM.
THE QUICK BROWN FOX JUMPED OVER THE LAZYDOG.
THE LAST LETTER MAY BE PRONOUNCED ZEE ORZED.
THE FIRST GREEK LETTER IS ALPHA.
THE LAST GREEK LETTER IS OMEGA

3. Use the cat command to check the contents.
4. Display the file.

Description:cat command is used to display the contents of the given file.

bachi@dikshu:~$ cat Ch6S3F1
ALPHABETICAL FACTS. THE FIRST THREE LETTERS ARE ABC. THE MEDIAN LETTERS ARE MN.
THE LAST THREE LETTERS ARE XYZ.
THE FIRST WORD IN MY DICTIONARY IS AAL.
THE LAST WORD IN MY DICTIONARY ISZYTHUM.
THE QUICK BROWN FOX JUMPED OVER THE LAZYDOG.
THE LAST LETTER MAY BE PRONOUNCED ZEE ORZED.
THE FIRST GREEK LETTER IS ALPHA.
THE LAST GREEK LETTER IS OMEGA

5. Using the tr command, encrypt this file by shifting each letter five characters to the end of the character set. Spaces and newlines would be preserved. This is called Caesarian encryption because it was invented by Julius Caesar. Call the encrypted file Ch6S3F1Encr.

Description: tr stands for "translate" and it converts the characters in the first string to the corresponding characters in the second string. "<" operator is used to specify that the translation of characters must be applied to the given file and not the contents typed in the standard input.
">" is used to redirect the translated file into the given file instead of the standard output.

bachi@dikshu:~$ tr "A-Za-z" "F-ZA-Ef-za-e"<Ch6S3F1>Ch6S3F1Encr

6. Use the cat command to check the contents of the encrypted file.
7. Display the file.

Description:cat command is used to display the contents of the given file.

bachi@dikshu:~$ cat Ch6S3F1Encr

FQUMFGJYNHFQ KFHYX. YMJ KNWXY YMWJJ QJYYJWX FWJ FGH. YMJ RJINFS
QJYYJWX FWJ RS.
YMJ QFXY YMWJJ QJYYJWX FWJ CDE.
YMJ KNWXY BTWI NS RD INHYNTSFWD NX FFQ.
YMJ QFXY BTWI NS RD INHYNTSFWD NXEDYMZR.
YMJ VZNHP GWTBS KTC OZRUJI TAJW YMJ QFEDITL.
YMJ QFXY QJYYJW RFD GJ UWTSTZSHJI EJJ TWEJI.
YMJ KNWXY LWJJP QJYYJW NX FQUMF.
YMJ QFXY LWJJP QJYYJW NX TRJLF

8. Now use decryption (reverse strategy) to decrypt the file. Call the new fileCh6S3F1(originalname).

Description: tr stands for "translate" and it converts the characters in the first string to the corresponding characters in the second string. "<" operator is used to specify that the translation of characters must be applied to the given file and not the contents typed in the standard input.
">" is used to redirect the translated file into the given file instead of the standard output.

bachi@dikshu:~$ tr "F-ZA-Ef-za-e" "A-Za-z"<Ch6S3F1Encr>Ch6S3F1

9. Use the cat command to look at the contents of the file .Is it the same as the original file?

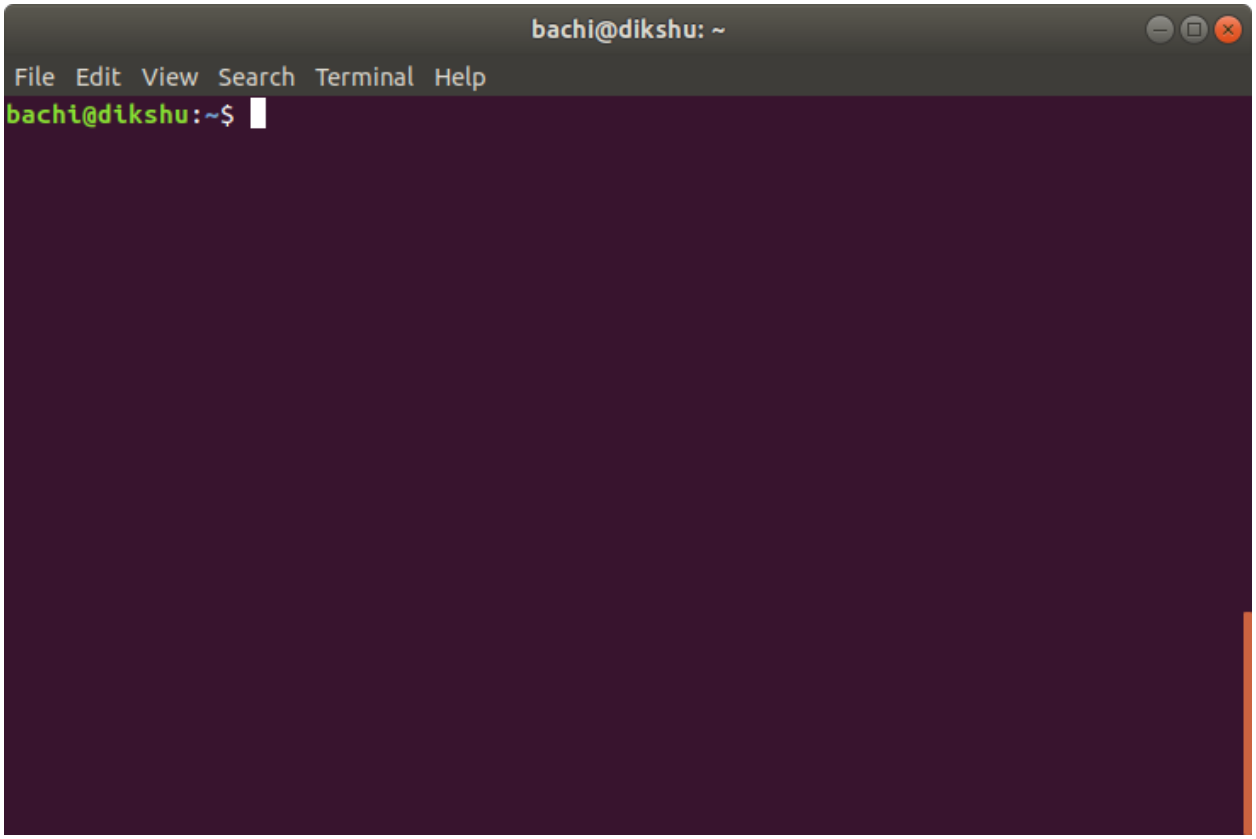
Description:cat command is used to display the contents of the given file.

bachi@dikshu:~$ cat Ch6S3F1

ALPHABETICAL FACTS. THE FIRST THREE LETTERS ARE ABC. THE MEDIAN LETTERS ARE MN.
THE LAST THREE LETTERS ARE XYZ.
THE FIRST WORD IN MY DICTIONARY IS AAL.
THE LAST WORD IN MY DICTIONARY ISZYTHUM.
THE QUICK BROWN FOX JUMPED OVER THE LAZYDOG.
THE LAST LETTER MAY BE PRONOUNCED ZEE ORZED.
THE FIRST GREEK LETTER IS ALPHA.
THE LAST GREEK LETTER IS OMEGA

EXERCISE 4

1. Launch a terminal.



2. Use the cat command to create and save the following file. Do not type the headings. Call it ChS4F1.

Id hourly Rate Hours worked
1420 12.56 45
3456 14.56 22
2341 45.12 34
1122 23.55 28
1443 23.23 19
2351 67.90 56
8001 7.00 14

Description: cat command with the redirection symbol is used to take the inputs from the standard input and copy it in the file name specified.

```
bachi@dikshu:~$ cat>ChS4f1
1420    12.56    45
3456    14.56    22
2341    45.12    34
1122    23.55    28
1443    23.23    19
2351    67.90    56
8001    7.00    14
```

3. Use the cat command to check the contents.
4. Display the file.

Description:cat command is used to display the contents of the given file.

```
bachi@dikshu:~$ cat ChS4F1
```
1420   12.56   45
3456   14.56   22
2341   45.12   34
1122   23.55   28
1443   23.23   19
2351   67.90   56
8001   7.00   14

5.Use Command To Show The Number Of Workers.

Description: cat command displays the contents of the file to the standard output. The wc command is used for counting and -l option specifies to count the number of lines.
The pipe operator is used to combine the effect of these two commands.

```
bachi@dikshu:~$ cat ChS4F1 | wc -l
```
7

6. Use command to sort the file-based on id.

Description: sort command is used to sort the file in a specified way. -n option is used to sort numeric data. When the field's starting and ending positions are not given, it sorts according to the first field by default.

bachi@dikshu:~$ sort -n ChS4F1

1122 23.55 28
1420 12.56 45
1443 23.23 19
2341 45.12 34
2351 67.90 56
3456 14.56 22
8001 7.00 14

7. Use one single command to show the worker who is paid the highest hourly rate.

Description: sort command is used to sort the files in the specified format. The -n option is used to sort according to numeric data and -r means it is sorted in descending order.
The 2 numbers after sort command are the ones which specify the starting and the ending column with respect to which sorting is done.
The head command with the option -1 is used to print the first line in the input.
The pipe operator is used to combine the sort and the head command.

bachi@dikshu:~$ sort -nr +1 -2 ChS4F1 | head -1

2351 67.90 56

8.Use one single command to show the worker who worked more than anybody else.

bachi@dikshu:~$ sort -nr +2 -3 ChS4F1 | head -1

2351 67.90 56

9. The command should show only the id of the worker.

Description: The cut command is used to cut the specified fields from the given file and copy it to the standard output.

bachi@dikshu:~$ cut -f1 ChS4F1

1420
3456
2341
1122
1443
2351
8001

10. Quit the terminal.

EXERCISE 5

1. Use the cat command to copy file ChS4F1 and name it Ch6S5F1.

```
bachi@dikshu:~$ cat ChS4F1>Ch6S5F1
```

2. Use the cat command to create and save the following file. Do not type the headings. Call it Ch6S5F2.

ID Hourly rate Hours worked
1420 12.56 45
2456 14.56 22
2341 45.12 34
1322 23.56 28
1443 23.23 19
2351 67.90 56
3467 56.90 14

Description: cat command with the redirection symbol is used to take the inputs from the standard input and copy it in the file name specified.

```
bachi@dikshu:~$ cat>Ch6S5F2
1420 12.56 45
2456 14.56 22
2341 45.12 34
1322 23.56 28
1443 23.23 19
2351 67.90 56
3467 56.90 14
```

4. Use the cat command to check the contents of both files and 5. Display both files.

Description: Multiple files can be displayed by using the cat command. It concatenates the files ie merges the files vertically.

```
bachi@dikshu:~$ cat Ch6S5F1 Ch6S5F2
1420 12.56 45
3456 14.56 22
2341 45.12 34
1122 23.55 28
1443 23.23 19
2351 67.90 56
```

8001 7.00 14
1420 12.56 45
2456 14.56 22
2341 45.12 34
1322 23.56 28
1443 23.23 19
2351 67.90 56
3467 56.90 14

6. Sort each file using the file id as the sort key.
7. Save the sorted files as separate files.

Description: the sort command is used to sort the file in the specified manner.
Sort -k 1 is used to sort the file according to the key 1. -o is used to write the output to the given file. "&&" is used to perform two commands in a single line.
Cat command is used to display the contents of the file.

bachi@dikshu:~$ sort -k 1 Ch6S5F1 -o sorted1 && sort -k 1 Ch6S5F2 -o sorted2

bachi@dikshu:~$ cat sorted1
1122 23.55 28
1420 12.56 45
1443 23.23 19
2341 45.12 34
2351 67.90 56
3456 14.56 22
8001 7.00 14

bachi@dikshu:~$ cat sorted2
1322 23.56 28
1420 12.56 45
1443 23.23 19
2341 45.12 34
2351 67.90 56
2456 14.56 22
3467 56.90 14

8. Use a command to merge two files created in step 7 on the id field. Call the new file Ch6S5F3.
Description : sort -m takes two sorted lists and merges them, > is used with the same file name to write the output to the given file.
bachi@dikshu:~$ sort -m sorted1 sorted2>Ch6S5F3

bachi@dikshu:~$ cat Ch6S5F3
1122 23.55 28
1322 23.56 28
1420 12.56 45
1443 23.23 19
2341 45.12 34
2351 67.90 56
2456 14.56 22
3456 14.56 22
3467 56.90 14
8001 7.00 14

9.Use a command to remove the duplicate from the file and Save it without renaming it.

Description: sort -u is used to display the file contents whose first field is unique.

bachi@dikshu:~$ sort -u Ch6S5F3 -o Ch6S5F3

10. Display the file.
bachi@dikshu:~$ cat Ch6S5F3
1122 23.55 28
1322 23.56 28
1420 12.56 45
1443 23.23 19
2341 45.12 34
2351 67.90 56
2456 14.56 22
3456 14.56 22
3467 56.90 14
8001 7.00 14

11. Quit the terminal.

EXERCISE 6

1. Launch a terminal.

2. Use the cat command to create and save the following file. Do not type the headings. Call it C6S6F1.

```
Department Course Session Enrollment
CIS 15 1 45
CIS 54 1 20
BUS 34 2 20
ENG 11 2 89
CIS 45 1 38
MTH 35 1 56
MTH 35 2 41
PE 17 2 25
CIS 54 2 67

bachi@dikshu:~$ cat>C6S6F1
CIS   15    1    45
CIS    54    1    20
BUS    34    2    20
ENG    11    2    89
CIS    45    1    38
MTH    35    1    56
MTH    35    2    41
PE    17    2    25
CIS    54    2    67
```

3. Use the cat command to check the contents of the file.

```
bachi@dikshu:~$ cat C6S6F1
CIS    15   1   45
CIS   54   1   20
BUS   34   2   20
ENG   11   2   89
CIS   45   1   38
MTH   35   1   56
MTH   35   2   41
PE   17   2   25
CIS   54   2   67
```

4. Use one command to sort the file on department course and session. The resulting file should be ordered first by department; within equal departments, it should be ordered on course; and within equal courses, it should be ordered by session.
(Hint: use three field specifiers: department, course, and session.)

Description: sort command is used:
Option n -> to sort based on numeric data
-o-> to write the output to the given file.

bachi@dikshu:~$ sort +0 -1 +1n +2n +3n +4 C6S6F1 -o C6S6F1

5. Display the file.

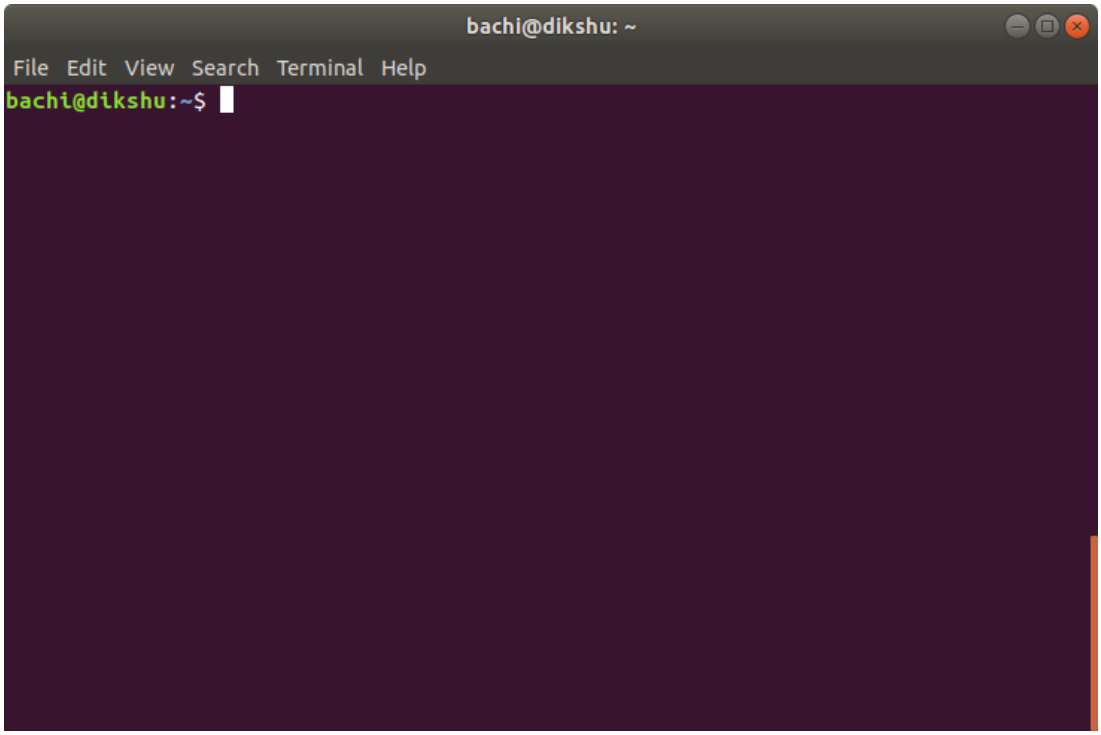
bachi@dikshu:~$ cat C6S6F1

BUS 34 2 20
CIS 15 1 45
CIS 45 1 38
CIS 54 1 20
CIS 54 2 67
ENG 11 2 89
MTH 35 1 56
MTH 35 2 41
PE 17 2 25

6. Quit the terminal.

EXERCISE 7

1.Launch a terminal.



2.Make a copy of /etc /passwd file and save it in a file called Ch6S7F1.

Description:cp command is used to copy one file into another file.

```
bachi@dikshu:~$ cp /etc/passwd Ch6S7F1
```

3.Use a command to count the number of users in this file. Make a note of it.

Description: cat command displays the contents of the file to the standard output. The wc command is used for counting and -l option specifies to count the number of lines.
The pipe operator is used to combine the effect of these two commands.

```
bachi@dikshu:~$ cat Ch6S7F1 | wc -l
42
```

4.Cut the file so that each line has only two columns: login name (column 1) and user id (column 3). Call the new fileCh6S7F2.
Description : -d option is used to change the default delimiter for fields.
-f used to cut the specific fields given

```
bachi@dikshu:~$ cut -d":" -f1,3 Ch6S7F1>Ch6S7F2
bachi@dikshu:~$ cat Ch6S7F2
root:0
daemon:1
bin:2
sys:3
sync:4
games:5
man:6
lp:7
mail:8
news:9
uucp:10
proxy:13
www-data:33
backup:34
list:38
irc:39
gnats:41
nobody:65534
```

systemd-network:100
systemd-resolve:101
syslog:102
messagebus:103
_apt:104
uuidd:105
avahi-autoipd:106
usbmux:107
dnsmasq:108
rtkit:109
cups-pk-helper:110
speech-dispatcher:111
whoopsie:112
kernoops:113
saned:114
avahi:115
colord:116
hplip:117
geoclue:118
pulse:119
gnome-initial-setup:120
gdm:121
dikshitha:1000
bachi:1001

5. Sort the file (Ch6S7F2) on the login name without renaming it. Save the file.
Description: The file is sorted and -o is used to write the output to the given file name.

bachi@dikshu:~$ sort -o Ch6S7F2 Ch6S7F2
bachi@dikshu:~$ cat Ch6S7F2
_apt:104
avahi:115
avahi-autoipd:106
bachi:1001
backup:34
bin:2
colord:116
cups-pk-helper:110

daemon:1
dikshitha:1000
dnsmasq:108
games:5
gdm:121
geoclue:118
gnats:41
gnome-initial-setup:120
hplip:117
irc:39
kernoops:113
list:38
lp:7
mail:8
man:6
messagebus:103
news:9
nobody:65534
proxy:13
pulse:119
root:0
rtkit:109
saned:114
speech-dispatcher:111
sync:4
sys:3
syslog:102
systemd-network:100
systemd-resolve:101
usbmux:107
uucp:10
uuidd:105
whoopsie:112
www-data:33

6. Use the commands you have learned so far to reorganize the file Ch6S7F2 into six columns using the following format: Name id Name id Name id
7. Note that you should divide the number of users by three to find out the number of lines in this new format. You should create three files and then paste them together

Description:
Head command is used to display the given number of lines from the starting of the file.
Tail command is used to display the given number of lines from the ending of the file.
Tail command is also used to skip the first N-1 lines from the top of the file and display the contents till the end.

```
bachi@dikshu:~$ head -14 Ch6S7F2>file1
bachi@dikshu:~$ tail +15 Ch6S7F2 | head -14>file2
bachi@dikshu:~$ tail -14 Ch6S7F2>file3
bachi@dikshu:~$ paste -d" " file1 file2 file3>Ch6S7F2

bachi@dikshu:~$ cat Ch6S7F2
```

_apt:104 gnats:41 root:0
avahi:115 gnome-initial-setup:120 rtkit:109
avahi-autoipd:106 hplip:117 saned:114
bachi:1001 irc:39 speech-dispatcher:111
backup:34 kernoops:113 sync:4
bin:2 list:38 sys:3
colord:116 lp:7 syslog:102
cups-pk-helper:110 mail:8 systemd-network:100
daemon:1 man:6 systemd-resolve:101
dikshitha:1000 messagebus:103 usbmux:107
dnsmasq:108 news:9 uucp:10
games:5 nobody:65534 uuidd:105
gdm:121 proxy:13 whoopsie:112
geoclue:118 pulse:119 www-data:33

8.Quit the terminal.