

UNIX LAB ASSIGNMENTS

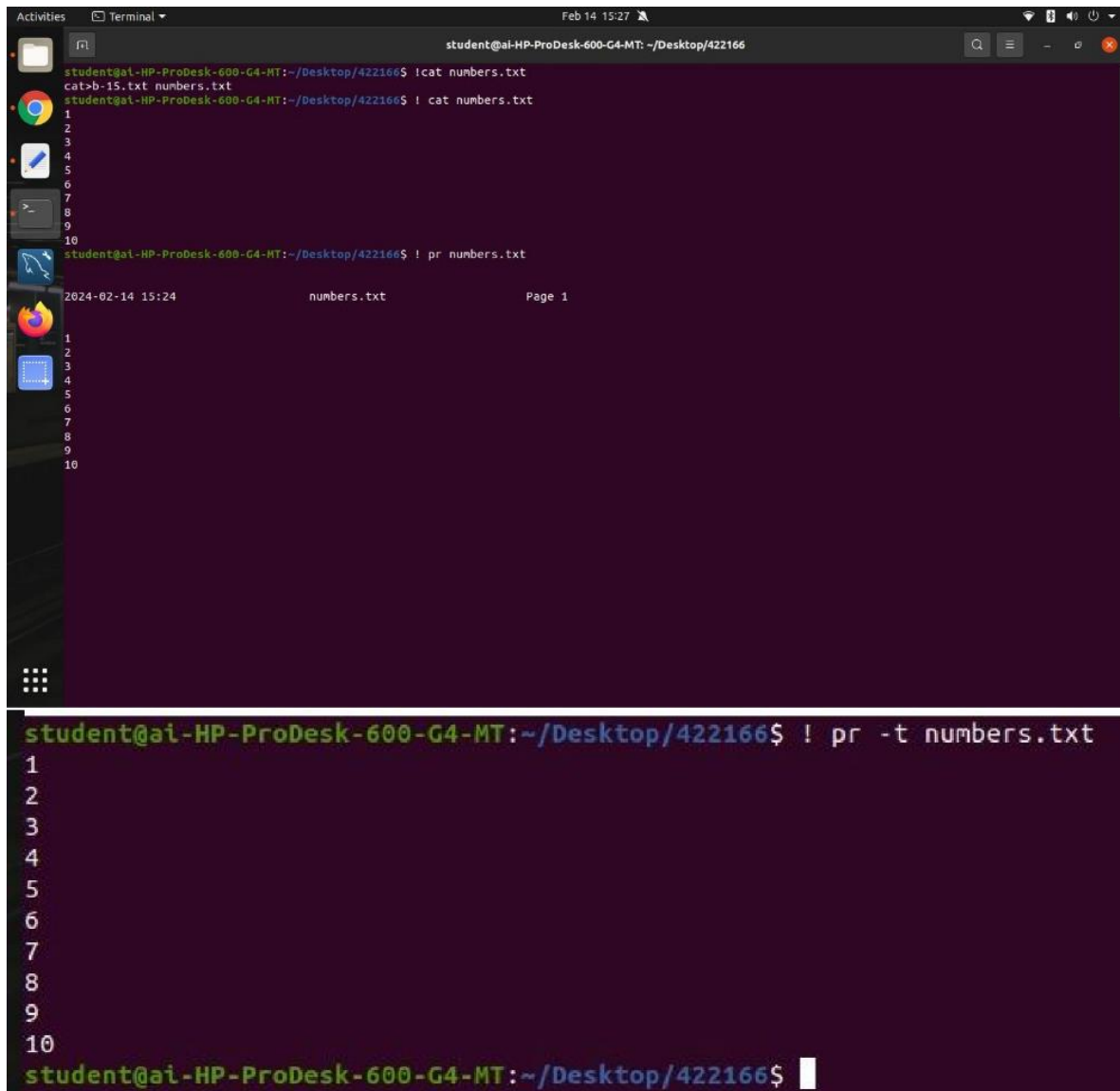
NAME : K.MOHAN SAI

ROLL NO : 422166

SECTION : A

WEEK 1 :

Write shell script for searching for various pattern using grep, pr, head, tail, cut,sort, uniq and tr.



```
student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
cat > b-15.txt numbers.txt
student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166$ ! cat numbers.txt
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166$ ! pr numbers.txt
2024-02-14 15:24      numbers.txt      Page 1
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166$ ! pr -t numbers.txt
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166$
```

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr -d numbers.txt
```

2024-02-14 15:24

numbers.txt

Page 1

1
2
3
4
5
6
7
8
9
10

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr --version
```

pr (GNU coreutils) 8.30

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This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law.

Written by Pete TerMaat and Roland Huebner.

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr -3 numbers.txt
```

2024-02-14 15:24

numbers.txt

Page 1

1	5	8
2	6	9
3	7	10
4		

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
```

gdfgfh
gdgrh
gfhfh
ruytyj
tryuw
weywry
rtyry
weywe45y
3y45u6
fshgfr

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head list.txt
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -n 2 list.txt
gdfgfh
gdgrh
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -c 20 list.txt
gdfgfh
gdgrh
gfhfh
```

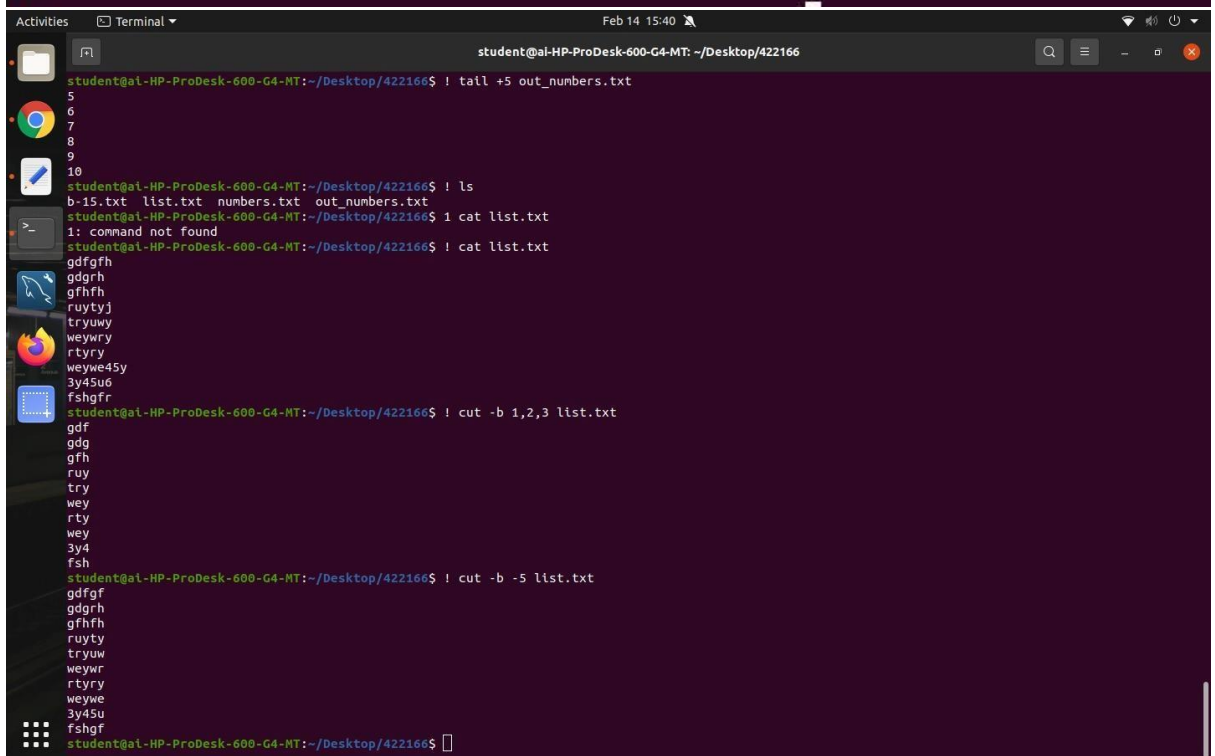
```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -v list.txt
==> list.txt <==
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head list.txt numbers.txt
==> list.txt <==
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
==> numbers.txt <==
1
2
3
4
5
6
7
8
9
10
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head numbers.txt > out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ 1 cat out_numbers.txt
1: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat out_numbers.txt
1
2
3
4
5
6
7
8
9
10

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! tail +5 out_numbers.txt
5
6
7
8
9
10
```



```
Activities Terminal Feb 14 15:40 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! tail +5 out_numbers.txt
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! ls
b-15.txt list.txt numbers.txt out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ 1 cat list.txt
1: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgrh
gdgrh
grhfh
rutyj
tryuw
weywr
rtyr
weywe45y
3y4Su6
fshgr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -b 1,2,3 list.txt
gdf
gdg
gfh
rui
try
wey
rty
wey
3y4
fsh
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -b -5 list.txt
gdfgf
gdgrh
grhfh
rutyj
tryuw
weywr
rtyr
weywe
3y4Su
fshgr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

```

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -c 3-7 list.txt
fgfh
grh
hfh
ytyj
yuwy
ywry
ryr
ywe45
45u6
hgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste list.txt numbers.txt
gdfgfh 1
gdgrh 2
gfhfh 3
ruytyj 4
tryuwy 5
weywry 6
rtyry 7
weywe45y 8
3y45u6 9
fshgfr 10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste -d "|" list.txt numbers.txt numbers.txt
gdfgfh|1,1
gdgrh|2,2
gfhfh|3,3
ruytyj|4,4
tryuwy|5,5
weywry|6,6
rtyry|7,7
weywe45y|8,8
3y45u6|9,9
fshgfr|10,10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste -s -d ":" list.txt numbers.txt numbers.txt
gdfgfh:gdgrh:gfhfh:ruytyj:tryuwy:weywry:rtyry:weywe45y:3y45u6:fshgfr
1:2:3:4:5:6:7:8:9:10
1:2:3:4:5:6:7:8:9:10

```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! sort list.txt
```

```
3y45u6  
fshgfr  
gdfgfh  
gdgrh  
gfhfh  
rtyry  
ruytyj  
tryuwy  
weywe45y  
weywry
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
```

```
gdfgfh  
gdgrh  
gfhfh  
ruytyj  
tryuwy  
weywry  
rtyry  
weywe45y  
3y45u6  
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! sort -r list.txt
```

```
weywry  
weywe45y  
tryuwy  
ruytyj  
rtyry  
gfhfh  
gdgrh  
gdfgfh  
fshgfr  
3y45u6
```

```
Activities Terminal Feb 14 15:46 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166

gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq list.txt
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -c list.txt
1 gdfgfh
1 gdgrh
1 gfhfh
1 rutytyj
1 tryuwy
1 weywry
1 rtyry
1 weywe45y
1 3y45u6
1 fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -d list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -u list.txt
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -d list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -u list.txt
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! ls
b-15.txt list.txt numbers.txt out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgfh
gdgrh
gfhfh
rutytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```



```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt | tr [a-z] [A-Z]
GDFGFH
GDGRH
GFHFH
RUYTYJ
TRYUWY
WEYWRY
RTYRY
WEYWE45Y
3Y45U6
FSHGFR

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "welcome to geeksforgeeks" | tr -d w
elcome to geeksforgeeks
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
1: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
my ID is
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "welcome to geeksforgeeks" | tr -d w
elcome to geeksforgeeks
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
my ID is
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgfh
gdgrh
gfhhf
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -i "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -w "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -0 "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -i "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -i "connect" list.txt
connecticut: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -i "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -w "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -0 "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -n "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep --help
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

WEEK 2 :

Write shell script for pattern matching using awk, sed utilities, tar , cpio.

TEXT22TXT :

```
1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
5 n5 500 22 account
6 n6 600 23 sales
```

AWK.TXT :

awk '{print}' Text1.txt OUTPUT:

```
1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
5 n5 500 22 account
6 n6 600 23 sales
```

awk '/manager/{print}' Text22.txt OUTPUT:


```
1 n1 100 18 manager
3 n3 300 20 manager
```

```
awk '{print ,}' Text22.txt OUTPUT:
```

```
n1 manager
n2 clerk
n3 manager
n4 sales
n5 account
n6 sales
```

```
awk '{sum +=  } END { print sum }' Text22.txt OUTPUT:
```

```
2100
```

```
awk '{sum +=  } END { print sum / NR }' Text22.txt OUTPUT:
```

```
350
```

```
awk '{ print substr(,2,4) }' Text22.txt OUTPUT:
```

```
1
2
3
4
5
6
```

```
awk '{ print  }' Text22.txt OUTPUT:
```

```
manager
clerk
manager
sales
account
sales
```

```
awk '{ if ( > 500) { print senior } else { print junior} }' Text22.txt
OUTPUT:
```

```
junior
junior
junior
junior
junior
senior
```

```
awk 'function cube(x) { return x*x*x } {print cube() }' Text22.txt
OUTPUT:
```

```
1000000
8000000
27000000
64000000
125000000
216000000
```

AWK.SH :

```
#!/bin/bash
echo -e "awk '{print}' Text1.txt OUTPUT: \n";
```

```

awk '{print}' Text22.txt;
echo -e "\nawk '/manager/{print}' Text22.txt OUTPUT: \n";
awk '/manager/{print}' Text22.txt;
echo -e "\nawk '{print $2,$5}' Text22.txt OUTPUT: \n";
awk '{print $2,$5}' Text22.txt;
echo -e "\nawk '{sum += $3 } END { print sum }' Text22.txt OUTPUT: \n";
awk '{sum += $3 } END { print sum }' Text22.txt;
echo -e "\nawk '{sum += $3 } END { print sum / NR }' Text22.txt OUTPUT: \n";
awk '{sum += $3 } END { print sum / NR }' Text22.txt;
echo -e "\nawk '{ print substr($2,2,4) }' Text22.txt OUTPUT: \n";
awk '{ print substr($2,2,4) }' Text22.txt;
echo -e "\nawk '{ print $NF }' Text22.txt OUTPUT: \n";
awk '{ print $NF }' Text22.txt;
echo -e "\nawk '{ if ($3 > 500) { print \"senior\" } else { print \"junior\"} }' Text22.txt OUTPUT: \n";
awk '{ if ($3 > 500) { print \"senior\" } else { print \"junior\"} }' Text22.txt;
echo -e "\nawk 'function cube(x) { return x*x*x } {print cube($3) }' Text22.txt OUTPUT: \n";
awk 'function cube(x) { return x*x*x } { print cube($3) }' Text22.txt;

```

SED.TXT :

```
sed 's/sales/accountant/' Text2.txt OUTPUT:
```

```

1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 accountant
5 n5 500 22 account
6 n6 600 23 accountant

```

```
sed 's/sales/accountant/g' Text22.txt OUTPUT:
```

```

1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 accountant
5 n5 500 22 account
6 n6 600 23 accountant

```

```
sed '8s/sales/accountant/' Text22.txt OUTPUT:
```

```

1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
5 n5 500 22 account
6 n6 600 23 sales

```

```
sed '8s/sales/accountant/p' Text22.txt OUTPUT:
```

```

1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
5 n5 500 22 account
6 n6 600 23 sales

```

```
sed -n '8s/sales/accountant/' Text22.txt OUTPUT:
```

```
sed '5d' Text22.txt OUTPUT :
```

```
1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
6 n6 600 23 sales
```

```
sed '' Text22.txt OUTPUT :
```

```
1 n1 100 18 manager
2 n2 200 19 clerk
3 n3 300 20 manager
4 n4 400 21 sales
5 n5 500 22 account
```

```
sed '3,7d' Text22.txt OUTPUT :
```

```
1 n1 100 18 manager
2 n2 200 19 clerk
```

```
sed '3,' Text22.txt OUTPUT :
```

```
1 n1 100 18 manager
2 n2 200 19 clerk
```

```
sed '/manager/d' Text22.txt OUTPUT :
```

```
2 n2 200 19 clerk
4 n4 400 21 sales
5 n5 500 22 account
6 n6 600 23 sales
```

SED.SH :

```
#!/bin/bash
echo -e "sed 's/sales/accountant/' Text22.txt OUTPUT: \n";
sed 's/sales/accountant/' Text22.txt;
echo -e "\nsed 's/sales/accountant/g' Text22.txt OUTPUT: \n";
sed 's/sales/accountant/g' Text22.txt;
echo -e "\nsed '8s/sales/accountant/' Text22.txt OUTPUT: \n";
sed '8s/sales/accountant/' Text22.txt;
echo -e "\nsed '8s/sales/accountant/p' Text22.txt OUTPUT: \n";
sed '8s/sales/accountant/p' Text22.txt;
echo -e "\nsed -n '8s/sales/accountant/' Text22.txt OUTPUT: \n";
sed -n '8s/sales/accountant/p' Text22.txt;
echo -e "\nsed '5d' Text22.txt OUTPUT : \n";
sed '5d' Text22.txt;
echo -e "\nsed '$d' Text22.txt OUTPUT : \n";
sed '$d' Text22.txt;
echo -e "\nsed '3,7d' Text22.txt OUTPUT : \n";
sed '3,7d' Text22.txt;
echo -e "\nsed '3,$d' Text22.txt OUTPUT : \n";
sed '3,$d' Text22.txt;
echo -e "\nsed '/manager/d' Text22.txt OUTPUT : \n";
sed '/manager/d' Text22.txt;
```

TAR.TXT :

```
tar cvf file.tar *.txt OUTPUT:
```

```
awk.txt
sed.txt
tar.txt
Text22.txt
```

```
tar xvf file.tar OUTPUT:
```

```
awk.txt
sed.txt
tar.txt
Text22.txt
```

```
tar cvzf file.tar.gz *.txt OUTPUT:
```

```
awk.txt
sed.txt
tar.txt
Text22.txt
```

```
tar -czf - file.tar | wc -c OUTPUT:
```

```
680
```

```
tar -tvf file.tar OUTPUT:
```

```
-rw-rw-r-- student/student 859 2024-03-04 12:06 awk.txt
-rw-rw-r-- student/student 1230 2024-03-04 12:07 sed.txt
-rw-rw-r-- student/student  49 2024-03-04 12:08 tar.txt
-rw----- student/student  114 2024-03-04 12:04 Text22.txt
```

```
tar tvf file.tar Text1.txt OUTPUT:
```

```
-rw----- student/student 114 2024-03-04 12:04 Text22.txt
```

TAR.SH :

```
#!/bin/bash
echo -e "tar cvf file.tar *.txt OUTPUT: \n";
tar cvf file.tar *.txt;
echo -e "\ntar xvf file.tar OUTPUT: \n";
tar xvf file.tar;
echo -e "\ntar cvzf file.tar.gz *.txt OUTPUT: \n";
tar cvzf file.tar.gz *.txt;
echo -e "\ntar -czf - file.tar | wc -c OUTPUT: \n";
tar -czf - file.tar | wc -c;
echo -e "\ntar -tvf file.tar OUTPUT: \n";
tar -tvf file.tar;
echo -e "\ntar tvf file.tar Text1.txt OUTPUT: \n";
tar tvf file.tar Text22.txt;
```

CPIO.TXT :

```
cpio: 1 n1 100 18 manager: Cannot stat: No such file or directory
cpio: 2 n2 200 19 clerk: Cannot stat: No such file or directory
cpio: 3 n3 300 20 manager: Cannot stat: No such file or directory
cpio: 4 n4 400 21 sales: Cannot stat: No such file or directory
cpio: 5 n5 500 22 account: Cannot stat: No such file or directory
cpio: 6 n6 600 23 sales: Cannot stat: No such file or directory
1 block
1 block
```

CPIO.SH :

```
#!/bin/bash
echo -e "cpio -ov < Text1.txt > archive OUTPUT: \n";
cpio -ov < Text22.txt > archive;
echo -e "\ncpio -iv < archive OUTPUT: \n";
cpio -iv < archive;
```

WEEK 3 :

Create shell scripts for generating static and dynamic libraries. Utilize an example of your preference. Ensure that the program is not a simple calculator task and also from the provided tutorial material. Each program should incorporate a minimum of two functions based on the selected task.

```
//main

#include <stdio.h>
#include "Head.h"
int main() {
    float radius;
    int number;
    printf("Enter the radius of the circle: ");
    scanf("%f", &radius);
    float area = calculateArea(radius);
    printf("Area of the circle: %.2f\n", area);
    printf("Enter a number: ");
    scanf("%d", &number);
    if (isEven(number)) {
        printf("%d is even.\n", number);
    } else {
        printf("%d is odd.\n", number);
    }

    return 0;
}

//calculateArea

#include <stdio.h>

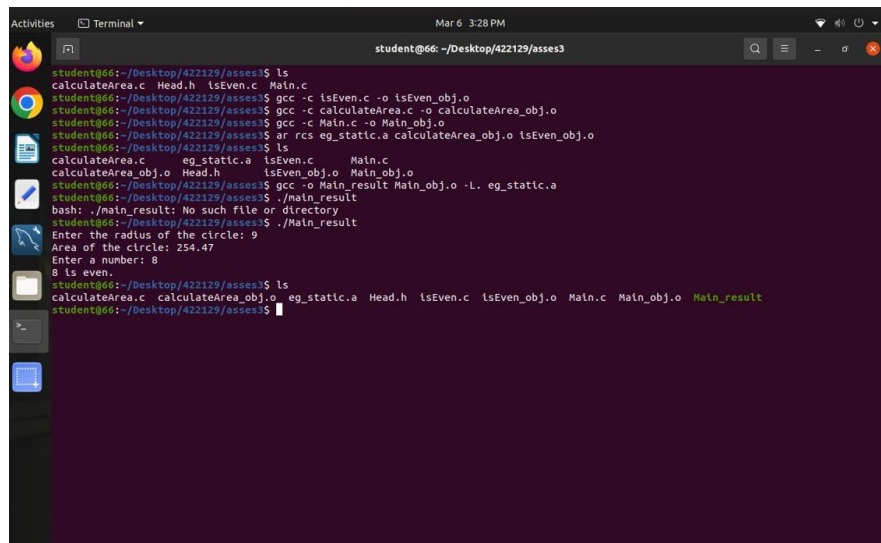
float calculateArea(float radius) {
    const float PI = 3.14159;
    return PI * radius * radius;
}

//isEven
#include <stdio.h>

int isEven(int num) {
    return num % 2 == 0;
}

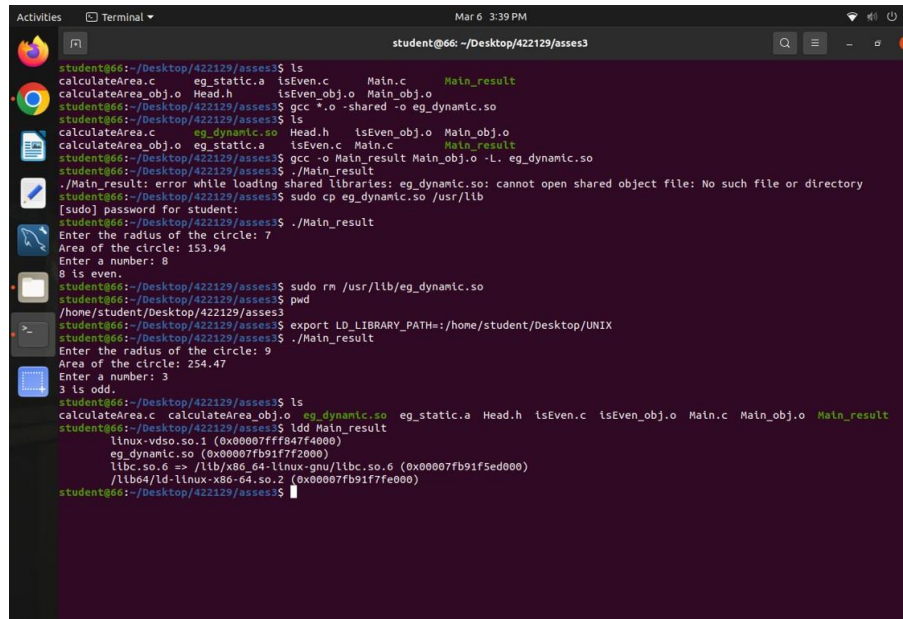
//Head
float calculateArea(float radius);
int isEven(int num);
```

Static linking:



```
student@66: ~/Desktop/422129/asses3$ ls
calculateArea.c  Head.h  isEven.c  Main.c
student@66:~/Desktop/422129/asses3$ gcc -c isEven.c -o isEven_obj.o
student@66:~/Desktop/422129/asses3$ gcc -c calculateArea.c -o calculateArea_obj.o
student@66:~/Desktop/422129/asses3$ gcc -c Main.c -o Main_obj.o
student@66:~/Desktop/422129/asses3$ ar rcs eg_static.a calculateArea_obj.o isEven_obj.o
student@66:~/Desktop/422129/asses3$ ls
calculateArea.c  eg_static.a  isEven.c  Main.c
calculateArea_obj.o  Head.h  isEven_obj.o  Main_obj.o
student@66:~/Desktop/422129/asses3$ gcc -o Main_result Main_obj.o -L. eg_static.a
student@66:~/Desktop/422129/asses3$ ./Main_result
bash: ./Main_result: No such file or directory
student@66:~/Desktop/422129/asses3$ ./Main_result
Enter the radius of the circle: 9
Area of the circle: 254.47
Enter a number: 8
8 is even.
student@66:~/Desktop/422129/asses3$ ls
calculateArea.c  calculateArea_obj.o  eg_static.a  Head.h  isEven.c  isEven_obj.o  Main.c  Main_obj.o  Main_result
student@66:~/Desktop/422129/asses3$
```


Dynamic Linking:



```
student@66: ~/Desktop/422129/asses3
student@66:~/Desktop/422129/asses3$ ls
calculateArea.c  eg_static.o  isEven.c  Main.c  Main_result
calculateArea_obj.o  Head.h  isEven_obj.o  Main_obj.o
student@66:~/Desktop/422129/asses3$ gcc *.o -shared -o eg_dynamic.so
student@66:~/Desktop/422129/asses3$ ls
calculateArea.c  eg_dynamic.so  Head.h  isEven_obj.o  Main_obj.o
calculateArea_obj.o  eg_static.o  isEven.c  Main.c  Main_result
student@66:~/Desktop/422129/asses3$ gcc -o Main_result Main_obj.o -L. eg_dynamic.so
student@66:~/Desktop/422129/asses3$ ./Main_result
./Main_result: error while loading shared libraries: eg_dynamic.so: cannot open shared object file: No such file or directory
student@66:~/Desktop/422129/asses3$ sudo cp eg_dynamic.so /usr/lib
[sudo] password for student:
student@66:~/Desktop/422129/asses3$ ./Main_result
Enter the radius of the circle: 7
Area of the circle: 153.94
Enter a number: 8
8 is even.
student@66:~/Desktop/422129/asses3$ sudo rm /usr/lib/eg_dynamic.so
student@66:~/Desktop/422129/asses3$ pwd
/home/student/Desktop/422129/asses3
student@66:~/Desktop/422129/asses3$ export LD_LIBRARY_PATH=/home/student/Desktop/UNIX
student@66:~/Desktop/422129/asses3$ ./Main_result
Enter the radius of the circle: 9
Area of the circle: 254.47
Enter a number: 3
3 is odd.
student@66:~/Desktop/422129/asses3$ ls
calculateArea.c  calculateArea_obj.o  eg_dynamic.so  eg_static.o  Head.h  isEven.c  isEven_obj.o  Main.c  Main_obj.o  Main_result
student@66:~/Desktop/422129/asses3$ ldd Main_result
linux-vdso.so.1 (0x00007ffffb47f400)
eg_dynamic.so (0x00007fb91f7f2000)
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007fb91f5ed000)
/lib64/ld-linux-x86-64.so.2 (0x00007fb91f7fe000)
student@66:~/Desktop/422129/asses3$
```

WEEK 4 :

Generate different C programs that induce a segmentation fault error, select these examples of your choice, and employ the GDB utility for debugging IN LINUX

Code : #include <stdio.h>

```
int main() {
```

```
int *ptr = NULL; // Pointing to NULL, accessing it will cause
segmentation fault
```

```
int result = 0;
```

```
for (int i = 0; i < 100; i++) {
```

```
result += ptr[i]; // Addition operation (will cause segmentation fault)
```

```
result -= ptr[i]; // Subtraction operation (will cause segmentation fault)
```

```
result *= ptr[i]; // Multiplication operation (will cause segmentation fault)
```

```
}
```

```
printf("Result: %d\n", result); // This won't be reached due to the
segmentation fault
```

```
return 0;
```

```
}
```

Output :

```
student@system62:~/Desktop/422166$ gcc seg.c
student@system62:~/Desktop/422166$ ./a.out
Segmentation fault (core dumped)
student@system62:~/Desktop/422166$ gcc -g seg.c
student@system62:~/Desktop/422166$ gdb ./a.out
GNU gdb (Ubuntu 9.2-0ubuntu1-20.04.1) 9.2
Copyright (c) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software; you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./a.out...
(gdb) list
1
2      #include <stdio.h>
3
4      int main() {
5          int *ptr = NULL; // Pointing to NULL, accessing it will cause segmentation fault
6          int result = 0;
7
8          for (int i = 0; i < 100; i++) {
9              result += ptr[i]; // Addition operation (will cause segmentation fault)
10             result -= ptr[i]; // Subtraction operation (will cause segmentation fault)
(gdb) list
11             result *= ptr[i]; // Multiplication operation (will cause segmentation fault)
12         }
13         printf("Result: %d\n", result); // This won't be reached due to the segmentation fault
14         return 0;
15     }
(gdb) list
Line number 17 out of range; seg.c has 16 lines.
(gdb) run
Starting program: /home/student/Desktop/422166/a.out

Program received signal SIGSEGV, Segmentation fault.
0x0000555555555181 in main () at seg.c:9
```

```
0x0000555555555181 in main () at seg.c:9
9      result += ptr[i]; // Addition operation (will cause segmentation fault)
(gdb) break 5
Breakpoint 1 at 0x555555555155: file seg.c, line 5.
(gdb) next

Program terminated with signal SIGSEGV, Segmentation fault.
The program no longer exists.
(gdb) □
```

WEEK 5 :

1. Using SSH command execute the three programs on two different machines.
2. Create a project under CVS/git repository and record multiple versions/branches and practice merging of branches (with a batch of 2 members) using gitbash commands and upload all your previous lab tasks to this repository .

PROGRAM.SH :

```
#!/bin/bash

# Define SSH login credentials for both machines
username="student"

ip_machine1="172.50.10.228" # Replace with the actual IP address of machine1
ip_machine2="172.50.10.69" # Replace with the actual IP address of machine2

# Define paths to the programs on each machine
program1_path_machine1="/home/student/Desktop/program1.sh"
program2_path_machine1="/home/student/Desktop/program2.sh"
program3_path_machine2="/home/student/Desktop/program3.sh"

# Execute program1 on machine1
ssh $username@$ip_machine1 "$program1_path_machine1"

# Execute program2 on machine1
ssh $username@$ip_machine1 "$program2_path_machine1"

# Execute program3 on machine2
ssh $username@$ip_machine2 "$program3_path_machine2"
```

PROGRAM1.SH :

```
#!/bin/bash

echo "Hello from program1 running on machine1"
```

PROGRAM2.SH :

```
#!/bin/bash

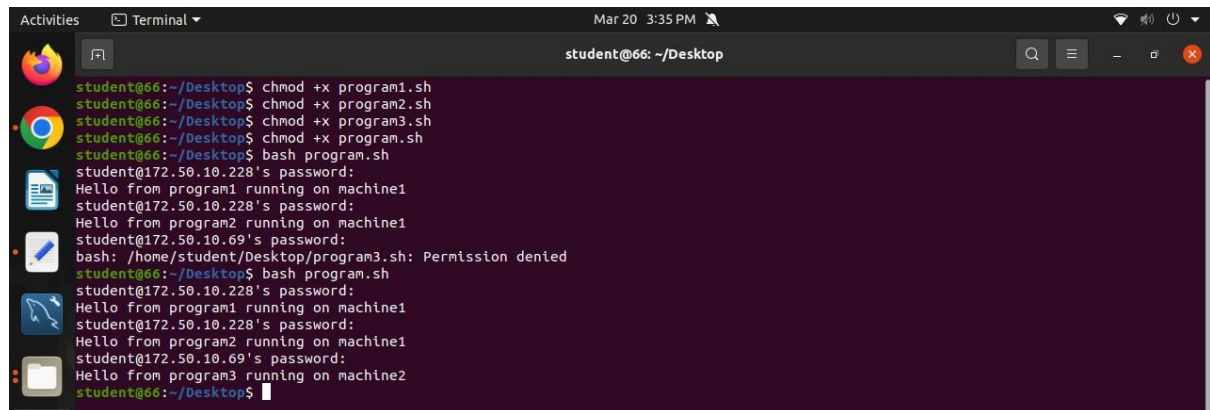
echo "Hello from program2 running on machine1"
```

PROGRAM3.SH :

```
#!/bin/bash

echo "Hello from program3 running on machine2"
```

OUTPUT :



```
student@66: ~/Desktop
student@66:~/Desktop$ chmod +x program1.sh
student@66:~/Desktop$ chmod +x program2.sh
student@66:~/Desktop$ chmod +x program3.sh
student@66:~/Desktop$ bash program.sh
student@172.50.10.228's password:
Hello from program1 running on machine1
student@172.50.10.228's password:
Hello from program2 running on machine1
student@172.50.10.69's password:
bash: /home/student/Desktop/program3.sh: Permission denied
student@66:~/Desktop$ bash program.sh
student@172.50.10.228's password:
Hello from program1 running on machine1
student@172.50.10.228's password:
Hello from program2 running on machine1
student@172.50.10.69's password:
Hello from program3 running on machine2
student@66:~/Desktop$
```

Link : _____

[GitHub - mohansai422166/UNIX_LAB](https://github.com/mohansai422166/UNIX_LAB)

https://github.com/mohansai422166/UNIX_LAB

WEEK 6 :

Write shell script for searching for various pattern using grep, pr, head, tail, cut, sort, uniq and tr

```
Activities Terminal Feb 14 15:27 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ !cat numbers.txt
cat>b-15.txt numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ !cat numbers.txt
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ !pr numbers.txt
2024-02-14 15:24 numbers.txt Page 1
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ !pr -t numbers.txt
1
2
3
4
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr -d numbers.txt
```

2024-02-14 15:24

numbers.txt

Page 1

1
2
3
4
5
6
7
8
9
10

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr --version
```

pr (GNU coreutils) 8.30

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License GPLv3+: GNU GPL version 3 or later <<https://gnu.org/licenses/gpl.html>>.

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law.

Written by Pete TerMaat and Roland Huebner.

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! pr -3 numbers.txt
```

2024-02-14 15:24

numbers.txt

Page 1

1	5	8
2	6	9
3	7	10
4		

```
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
```

gdfgfh
gdgrh
gfhfh
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr


```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head list.txt
gdfgfh
gdgrh
gfhfh
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -n 2 list.txt
gdfgfh
gdgrh
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -c 20 list.txt
gdfgfh
gdgrh
gfhfh
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head -v list.txt
==> list.txt <==
gdfgfh
gdgrh
gfhfh
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head list.txt numbers.txt
==> list.txt <==
gdfgfh
gdgrh
gfhfh
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
```

```
==> numbers.txt <==
1
2
3
4
5
6
7
8
9
10
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! head numbers.txt > out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ 1 cat out_numbers.txt
1: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat out_numbers.txt
```

```
1
2
3
4
5
6
7
8
9
10
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! tail +5 out_numbers.txt
```

```
5
6
7
8
9
10
```

```
Activities Terminal Feb 14 15:40 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! tail +5 out_numbers.txt
5
6
7
8
9
10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! ls
b-15.txt list.txt numbers.txt out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ 1 cat list.txt
1: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgrh
gdgrh
gfhfh
ruytyj
tryuw
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -b 1,2,3 list.txt
gdf
gdg
gfh
ruy
try
wey
rty
wey
3y4
fsh
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -b -5 list.txt
gdfgf
gdgrh
gfhfh
ruyty
tryuw
weywr
rtyry
weywe
3y45u
fshgf
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

```

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cut -c 3-7 list.txt
fgfh
grh
hfh
ytyj
yuwy
ywry
ryr
ywe45
45u6
hgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste list.txt numbers.txt
gdfgfh 1
gdgrh 2
gfhfh 3
ruytyj 4
tryuwy 5
weywry 6
rtyry 7
weywe45y 8
3y45u6 9
fshgfr 10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste -d "|" list.txt numbers.txt numbers.txt
gdfgfh|1,1
gdgrh|2,2
gfhfh|3,3
ruytyj|4,4
tryuwy|5,5
weywry|6,6
rtyry|7,7
weywe45y|8,8
3y45u6|9,9
fshgfr|10,10
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! paste -s -d ":" list.txt numbers.txt numbers.txt
gdfgfh:gdgrh:gfhfh:ruytyj:tryuwy:weywry:rtyry:weywe45y:3y45u6:fshgfr
1:2:3:4:5:6:7:8:9:10
1:2:3:4:5:6:7:8:9:10

```

```

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! sort list.txt
3y45u6
fshgfr
gdfgfh
gdgrh
gfhfh
rtyry
ruytyj
tryuwy
weywry
weywe45y
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgfh
gdgrh
gfhfh
ruytyj
tryuwy
weywry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! sort -r list.txt
weywry
weywe45y
tryuwy
ruytyj
rtyry
gfhfh
gdgrh
gdfgfh
fshgfr
3y45u6

```

```
Activities Terminal Feb 14 15:46 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
gdfgfh
gdgrh
gfhrh
rutytyj
tryuwy
weywyry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq list.txt
gdfgfh
gdgrh
gfhrh
rutytyj
tryuwy
weywyry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -c list.txt
1 gdfgfh
1 gdgrh
1 gfhrh
1 rutytyj
1 tryuwy
1 weywyry
1 rtyry
1 weywe45y
1 3y45u6
1 fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -d list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -u list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -d list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! uniq -u list.txt
gdfgfh
gdgrh
gfhrh
rutytyj
tryuwy
weywyry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! ls
b-15.txt list.txt numbers.txt out_numbers.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgfh
gdgrh
gfhrh
rutytyj
tryuwy
weywyry
rtyry
weywe45y
3y45u6
fshgfr
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt | tr [a-z] [A-Z]
GDFGFH
GDGRH
GFHRH
RUYTYJ
TRYUWY
WEYWRY
RTYRY
WEYWE45Y
3Y45U6
FSHGFR
Activities Terminal Feb 14 15:56 student@ai-HP-ProDesk-600-G4-MT: ~/Desktop/422166
TRYUWY
WEYWRY
RTYRY
WEYWE45Y
3Y45U6
FSHGFR
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "welcome to geeksforgeeks" | tr -d w
elcome to geeksforgeeks
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
! : command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
my ID is
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "welcome to geeksforgeeks" | tr -d w
elcome to geeksforgeeks
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! echo "my ID is 73535" | tr -d [:digit:]
my ID is
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! cat list.txt
gdfgfh
gdgrh
gfhrh
rutytyj
tryuwy
weywyry
rtyry
weywe45y
3y45u6
fshgfr
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -l "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -w "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -o "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -l "connect" list.txt
connecticut: command not found
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -i "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -c "connecticut" list.txt
0
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -w "connect" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -o "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep -n "connecticut" list.txt
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ! grep --help
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

WEEK 7 :

1. Write shell script for commands

: more,nl,nice,passwd,pr,rlogin,rcp,rsh,talk,telnet,tput,tty,uname,wc,who,write

EXAMPLE.TXT ;

This is line 1.

This is line 2.

This is line 3.

MORE.SH :

```
#!/bin/bash

# Create a text file named example.txt and add content to it
echo "This is line 1." > example.txt
echo "This is line 2." >> example.txt
echo "This is line 3." >> example.txt

# Display the contents of the text file using the more command
more example.txt
```

NICE.SH :

```
#!/bin/bash

# Check if command is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <command>"
    exit 1
fi

# Run the specified command with a priority level of 10
nice -n 10 "$@"
```

NL.SH :

```
#!/bin/bash

# Create a text file named example.txt and add content to it
echo "This is line 1." > example.txt
echo "This is line 2." >> example.txt
echo "This is line 3." >> example.txt

# Add line numbers to the text file using the nl command
nl example.txt
```

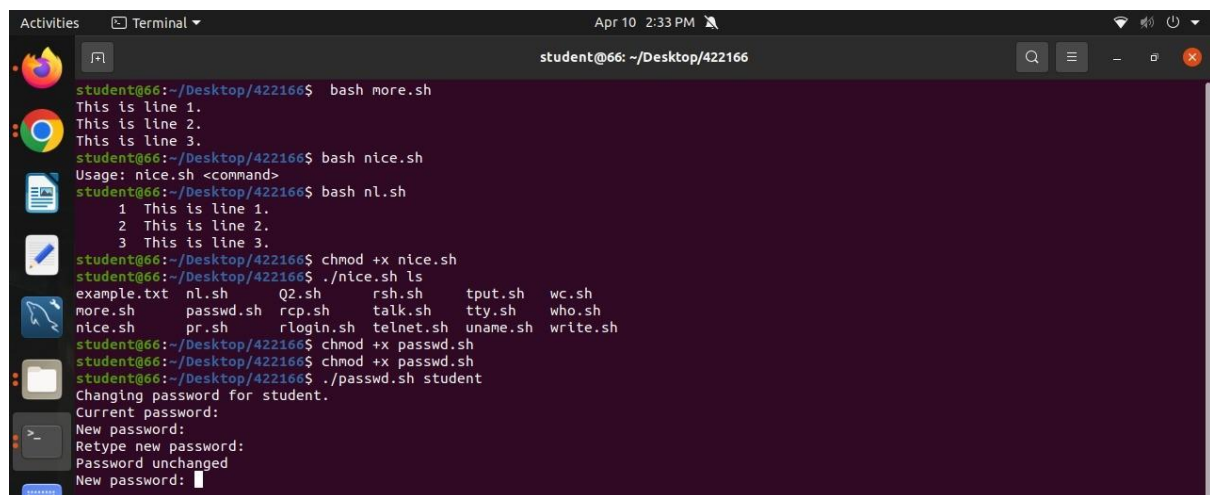
PASSWD.SH :

```
#!/bin/bash

# Check if username is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <username>"
    exit 1
fi

# Run the passwd command for the specified username
passwd "$1"
```

OUTPUT :

A terminal window titled 'Terminal' with a dark purple background. The prompt is 'student@66: ~/Desktop/422166'. The user has executed several commands: 'bash more.sh' (output: 'This is line 1.', 'This is line 2.', 'This is line 3.'), 'bash nice.sh' (output: 'Usage: nice.sh <command>'), 'bash nl.sh' (output: '1 This is line 1.', '2 This is line 2.', '3 This is line 3.'), 'chmod +x nice.sh', './nice.sh ls' (output: a list of files including example.txt, more.sh, nice.sh, nl.sh, passwd.sh, pr.sh, Q2.sh, rcp.sh, rlogin.sh, rsh.sh, talk.sh, telnet.sh, tput.sh, tty.sh, uname.sh, wc.sh, who.sh, write.sh), 'chmod +x passwd.sh', 'chmod +x passwd.sh', and './passwd.sh student' (output: 'Changing password for student.', 'Current password:', 'New password:', 'Retype new password:', 'Password unchanged', 'New password:').

```
student@66:~/Desktop/422166$ bash more.sh
This is line 1.
This is line 2.
This is line 3.
student@66:~/Desktop/422166$ bash nice.sh
Usage: nice.sh <command>
student@66:~/Desktop/422166$ bash nl.sh
1 This is line 1.
2 This is line 2.
3 This is line 3.
student@66:~/Desktop/422166$ chmod +x nice.sh
student@66:~/Desktop/422166$ ./nice.sh ls
example.txt  nl.sh      Q2.sh      rsh.sh      tput.sh     wc.sh
more.sh      passwd.sh  rcp.sh     talk.sh     tty.sh      who.sh
nice.sh      pr.sh     rlogin.sh  telnet.sh   uname.sh    write.sh
student@66:~/Desktop/422166$ chmod +x passwd.sh
student@66:~/Desktop/422166$ chmod +x passwd.sh
student@66:~/Desktop/422166$ ./passwd.sh student
Changing password for student.
Current password:
New password:
Retype new password:
Password unchanged
New password:
```

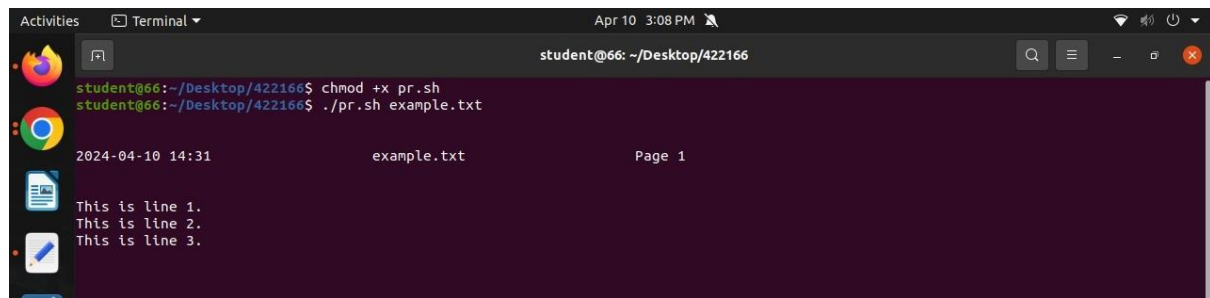
PR.SH :

```
#!/bin/bash

# Check if filename is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <filename>"
    exit 1
fi

# Run the pr command for the specified file
pr "$1"
```

OUTPUT :



RCP.SH :

```
#!/bin/bash

# Create a directory
mkdir example_directory

# Create files
touch example_directory/file1.txt
touch example_directory/file2.txt

# Display directory contents
echo "Directory contents:"
ls -l example_directory

# Copy file1.txt to a new location
cp example_directory/file1.txt example_directory/copied_file.txt

# Display updated directory contents
echo "Updated directory contents:"
ls -l example_directory

# Move file2.txt to a new location
mv example_directory/file2.txt example_directory/moved_file.txt

# Display updated directory contents
echo "Updated directory contents after moving file2.txt:"
ls -l example_directory

# Use rcp to copy file1.txt to a remote host
echo "Copying file1.txt to a remote host..."
rcp example_directory/file1.txt remote.example.com:/tmp/file1.txt

# Remove the created files and directory
rm example_directory/copied_file.txt
rm example_directory/moved_file.txt
rmdir example_directory

# Display confirmation message
echo "Files and directory removed."
```

OUTPUT :

```
Activities Terminal Apr 10 2:46 PM student@66: ~/Desktop/422166
student@66:~/Desktop/422166$ bash rcp.sh
Directory contents:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:46 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:46 file2.txt
Updated directory contents:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:46 copied_file.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:46 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:46 file2.txt
Updated directory contents after moving file2.txt:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:46 copied_file.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:46 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:46 moved_file.txt
Copying file1.txt to a remote host...
ssh: Could not resolve hostname remote.example.com: Name or service not known
lost connection
rmdir: failed to remove 'example_directory': Directory not empty
Files and directory removed.
student@66:~/Desktop/422166$
```

RLOGIN.SH :

```
#!/bin/bash

# Check if hostname is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <hostname>"
    exit 1
fi

# Run the rlogin command to login to the specified hostname
rlogin "$1"
```

OUTPUT :

```
Activities Terminal Apr 10 3:15 PM
Terminal
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ chmod +x rlogin.sh
student@a1-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ./rlogin.sh 172.50.3.255
The authenticity of host '172.50.3.255 (172.50.3.255)' can't be established.
ECDSA key fingerprint is SHA256:TPd130LegyhvtyoUNARcrIAC8h3auezKk5cNLebTEDE.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.50.3.255' (ECDSA) to the list of known hosts.
student@172.50.3.255's password:
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.15.0-56-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

540 updates can be applied immediately.
420 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

2 updates could not be installed automatically. For more details,
see /var/log/unattended-upgrades/unattended-upgrades.log
Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Wed Mar 20 16:42:19 2024 from 172.50.2.48
student@a1-HP-ProDesk-600-G4-MT:~$
```

RSH.SH :

```
#!/bin/bash

# Create a directory
```

```
mkdir example_directory

# Create files
touch example_directory/file1.txt
touch example_directory/file2.txt

# Display directory contents
echo "Directory contents:"
ls -l example_directory

# Copy file1.txt to a new location
cp example_directory/file1.txt example_directory/copied_file.txt

# Display updated directory contents
echo "Updated directory contents:"
ls -l example_directory

# Move file2.txt to a new location
mv example_directory/file2.txt example_directory/moved_file.txt

# Display updated directory contents
echo "Updated directory contents after moving file2.txt:"
ls -l example_directory

# Attempt to execute a command remotely using rsh
echo "Executing 'ls' command remotely..."
rsh localhost ls

# Remove the created files and directory
rm example_directory/copied_file.txt
rm example_directory/moved_file.txt
rmdir example_directory

# Display confirmation message
echo "Files and directory removed."
```

OUTPUT :

```
Activities Terminal Apr 10 2:49 PM student@66: ~/Desktop/422166
student@66:~/Desktop/422166$ bash rah.sh
mkdir: cannot create directory 'example_directory': File exists
Directory contents:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:48 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:48 file2.txt
Updated directory contents:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:48 copied_file.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:48 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:48 file2.txt
Updated directory contents after moving file2.txt:
total 0
-rw-rw-r-- 1 student student 0 Apr 10 14:48 copied_file.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:48 file1.txt
-rw-rw-r-- 1 student student 0 Apr 10 14:48 moved_file.txt
Executing 'ls' command remotely...
student@localhost's password:
1.sql
2.sql
411964
420119
420119 Oslab
421170.xml
422229hell
622147
anaconda3
asee3.txt
bc.sh
bhaskar
bnduak.c
checksum.java
CIRCULAR_QUEUE.py
COP_350_Lab3
Desktop
DSOP.py
Documents
Downloads
er Commands
exam.pl
file1.txt
file2.txt
file3.txt
infix and postfix.py
m4q.c
mk.py
Music
new
num1.c
ODP
Pictures
prims.py
Public
py1.py
py2.py
pycache_
Q.PY
reactgame.html
snap
something
sql1week1.sql
SQL1WEEK2.sql
sql2week1.sql
sql2week2.sql
sql3week1.sql
sql3week2.sql
sql4week1.sql
SQLP807WEEK3.sql
stack_622147.py
TABLES
Templates
text1.txt
Untitled Document 1
untitled.yo
v4gdb.c
Videos
wekafiles
rmdir: failed to remove 'example_directory': Directory not empty
Files and directory removed.
student@66:~/Desktop/422166$
```

TALK.SH :

```
#!/bin/bash

# Check if username is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <username>"
    exit 1
fi

# Run the talk command to establish a communication session with the specified user
talk "$1"
```

TELNET.SH :

```
#!/bin/bash

# Check if hostname and port are provided as arguments
if [ -z "$1" ] || [ -z "$2" ]; then
    echo "Usage: $0 <hostname> <port>"
    exit 1
fi
```

```
# Run the telnet command to connect to the specified hostname and port
telnet "$1" "$2"
```

OUTPUT :

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ chmod +x telnet.sh
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ ./telnet.sh 172.50.3.255 20
Trying 172.50.3.255...
telnet: Unable to connect to remote host: Connection refused
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

TPUT.SH :

```
#!/bin/bash

# Clear the screen
tput clear

# Get the size of the terminal
rows=$(tput lines)
cols=$(tput cols)

echo "Terminal size: $rows rows x $cols columns"

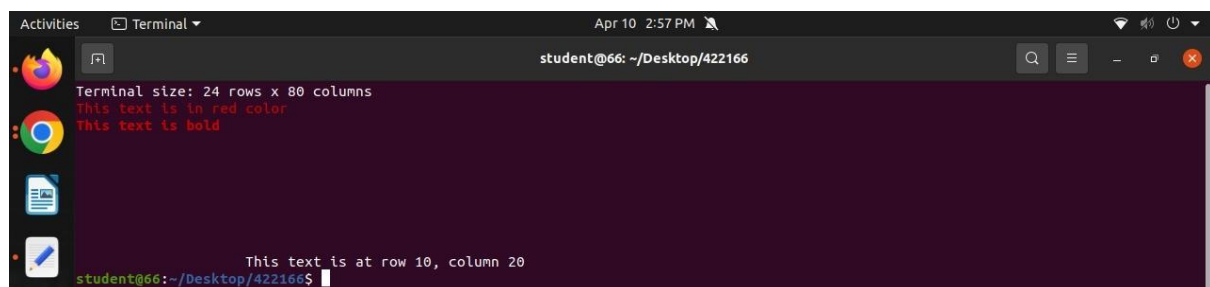
# Set text color to red
tput setaf 1
echo "This text is in red color"

# Set text style to bold
tput bold
echo "This text is bold"

# Reset text attributes
tput sgr0

# Move cursor to row 10, column 20
tput cup 10 20
echo "This text is at row 10, column 20"
```

OUTPUT :

A screenshot of a Linux terminal window titled "Terminal" with a search icon and a menu icon. The window shows the output of the tput.sh script. The first line is "Terminal size: 24 rows x 80 columns". The second line is "This text is in red color" in red. The third line is "This text is bold" in bold. The fourth line is "This text is at row 10, column 20" in red and bold. The prompt "student@66: ~/Desktop/422166\$" is visible at the bottom.

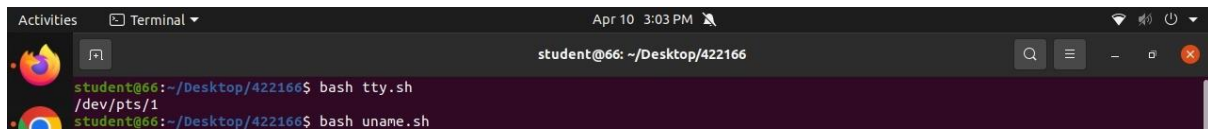
```
Activities  Terminal  Apr 10 2:57 PM  student@66: ~/Desktop/422166
Terminal size: 24 rows x 80 columns
This text is in red color
This text is bold
This text is at row 10, column 20
student@66: ~/Desktop/422166$
```

TTY.SH :

```
#!/bin/bash

# Print the file name of the terminal connected to standard input
tty
```

OUTPUT :

A terminal window titled 'Terminal' with a dark background. The prompt is 'student@66: ~/Desktop/422166'. The command 'bash tty.sh' has been executed, and the output is '/dev/pts/1'.

```
student@66:~/Desktop/422166$ bash tty.sh
/dev/pts/1
student@66:~/Desktop/422166$ bash
```

UNAME.SH :

```
#!/bin/bash

# Print system information
echo "Operating system name:"
uname -s

echo "Kernel name:"
uname -n

echo "Kernel release:"
uname -r

echo "Kernel version:"
uname -v

echo "Machine hardware name:"
uname -m

echo "Processor architecture:"
uname -p

echo "Operating system version:"
uname -o
```

OUTPUT :

A terminal window titled 'Terminal' with a dark background. The prompt is 'student@66:~/Desktop/422166'. The command 'bash uname.sh' has been executed, and the output displays various system information.

```
student@66:~/Desktop/422166$ bash uname.sh
Operating system name:
Linux
Kernel name:
66
Kernel release:
5.15.0-46-generic
Kernel version:
#49~20.04.1-Ubuntu SMP Thu Aug 4 19:15:44 UTC 2022
Machine hardware name:
x86_64
Processor architecture:
x86_64
Operating system version:
GNU/Linux
student@66:~/Desktop/422166$ bash
```

WC.SH :

```
#!/bin/bash
```



```
# Check if filename is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <filename>"
    exit 1
fi

# Print line, word, and character count of the specified file
wc "$1"
```

WHO.SH :

```
#!/bin/bash

# Print information about currently logged in users
who
```


WRITE.SH

```
#!/bin/bash

# Check if username is provided as argument
if [ -z "$1" ]; then
    echo "Usage: $0 <username>"
    exit 1
fi

# Run the write command to send a message to the specified user
write "$1" || echo "User has messages disabled. Consider using an alternative communication method."
```

OUTPUT :



```
student@66:~/Desktop/422166$ chmod +x wc.sh
student@66:~/Desktop/422166$ ./wc.sh example.txt
3 12 48 example.txt
student@66:~/Desktop/422166$ bash who.sh
student :0 2024-04-10 11:02 (:0)
student@66:~/Desktop/422166$ chmod +x write.sh
student@66:~/Desktop/422166$ ./ write.sh
bash: ./: Is a directory
student@66:~/Desktop/422166$
```

2. Write a shell script that list the memory usage and cpu usage of multiple machines.

```
#!/bin/bash

# Define the list of machines' IP addresses
machines=("172.50.11.125" "172.50.11.151")

# Function to get memory usage
get_memory_usage() {
    ssh "$1" free -m | awk 'NR==2 {printf "Memory Usage: %s/%sMB (%.2f%%)\n",
$3, $2, $3*100/$2}'
}
```

```

# Function to get CPU usage
get_cpu_usage() {
    ssh "$1" top -bn1 | grep "Cpu(s)" | sed "s/.*, *\[0-9.\]* id.*\/1/" |
    awk '{print "CPU Usage: " 100 - $1"%"}'
}

# Loop through each machine
for machine in "${machines[@]}; do
    echo "Machine: $machine"
    get_memory_usage "$machine"
    get_cpu_usage "$machine"
    echo ""
done

```

OUTPUT:

```

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ bash Q2.sh
Machine: 172.50.11.125
ssh: connect to host 172.50.11.125 port 22: Connection refused
ssh: connect to host 172.50.11.125 port 22: Connection refused

Machine: 172.50.11.151
ssh: connect to host 172.50.11.151 port 22: No route to host
ssh: connect to host 172.50.11.151 port 22: No route to host

student@ai-HP-ProDesk-600-G4-MT:~/Desktop/422166$ █

```

Week 8 :

All the 7 previous lab assignments push to the GitHub repository which has been created earlier with git commands.

Upload the git commands as .sh file and screenshot of GitHub repository and share link of your GitHub repository.

```

#!/bin/bash
git init;
git remote add origin "https://github.com/mohansai422166/UNIX.git";
git remote -v;
git add . ;
git commit -m "FIRST COMMIT";
git push origin master;

```

```
Activities Terminal Apr 10 4:33 PM
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git init
Initialized empty Git repository in /home/student/Desktop/422166/.git/
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git remote add origin "https://github.com/mohansai422166/UNIX.git"
origin https://github.com/mohansai422166/UNIX.git (fetch)
origin https://github.com/mohansai422166/UNIX.git (push)
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git add
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git commit -m "COMMIT"

*** Please tell me who you are.

Run

git config --global user.email "you@example.com"
git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: unable to auto-detect email address (got 'student@HP-ProDesk-600-G4-MT.(none)')
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git config --global user.email "422166@student.ntandhra.ac.in"
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git config --global user.name "mohansai422166"
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git commit -m "COMMIT"
[master (root-commit) 01e6b87] COMMIT
43 files changed, 516 insertions(+)
create mode 100644 UNIX/lab 1/422166.pdf
create mode 100644 UNIX/lab 2/Text22.txt
create mode 100644 UNIX/lab 2/awk.sh
create mode 100644 UNIX/lab 2/awk.txt
create mode 100644 UNIX/lab 2/cpio-1.sh
create mode 100644 UNIX/lab 2/cpio-1.txt
create mode 100644 UNIX/lab 2/sed.sh
create mode 100644 UNIX/lab 2/sed.txt
create mode 100644 UNIX/lab 2/tar-1.sh
create mode 100644 UNIX/lab 2/tar.txt
create mode 100644 UNIX/lab 3/422129866asses3.pdf
create mode 100644 UNIX/lab 4/422166.pdf
create mode 100644 UNIX/lab 6/422166-1.pdf
create mode 100644 UNIX/lab 7/02.sh
create mode 100644 UNIX/lab 7/0266.png
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.35 PM (1).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.35 PM (2).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.35 PM.jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM (1).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM (2).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM.jpeg
```

```
Activities Terminal Apr 10 4:33 PM
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM (1).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM (2).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.10.36 PM.jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.28.05 PM (1).jpeg
create mode 100644 UNIX/lab 7/WhatsApp Image 2024-04-10 at 3.31.10 PM.jpeg
create mode 100644 UNIX/lab 7/example.txt
create mode 100644 UNIX/lab 7/more.sh
create mode 100644 UNIX/lab 7/nice.sh
create mode 100644 UNIX/lab 7/nl.sh
create mode 100644 UNIX/lab 7/passwd.sh
create mode 100644 UNIX/lab 7/pr.sh
create mode 100644 UNIX/lab 7/rcp.sh
create mode 100755 UNIX/lab 7/rlogin.sh
create mode 100644 UNIX/lab 7/rlogin66.png
create mode 100644 UNIX/lab 7/rsh.sh
create mode 100644 UNIX/lab 7/talk.sh
create mode 100755 UNIX/lab 7/telnet.sh
create mode 100644 UNIX/lab 7/telnet66.png
create mode 100644 UNIX/lab 7/tput.sh
create mode 100644 UNIX/lab 7/tty.sh
create mode 100644 UNIX/lab 7/uname.sh
create mode 100644 UNIX/lab 7/wc.sh
create mode 100644 UNIX/lab 7/who.sh
create mode 100644 UNIX/lab 7/write.sh
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git push origin master
Username for 'https://github.com': mohansai422166
Password for 'https://mohansai422166@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/mohansai422166/UNIX.git/'
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$ git push origin master
Username for 'https://github.com': mohansai422166
Password for 'https://mohansai422166@github.com':
Enumerating objects: 52, done.
Counting objects: 100% (52/52), done.
Delta compression using up to 12 threads
Compressing objects: 100% (46/46), done.
Writing objects: 100% (52/52), 3.51 MiB | 1.45 MiB/s, done.
Total 52 (delta 5), reused 0 (delta 0)
remote: Resolving deltas: 100% (5/5), done.
To https://github.com/mohansai422166/UNIX.git
 * [new branch] master -> master
student@HP-ProDesk-600-G4-MT:~/Desktop/422166$
```

Link :
GitHub - mohansai422166/UNIX
<https://github.com/mohansai422166/UNIX>
