Assignment :1

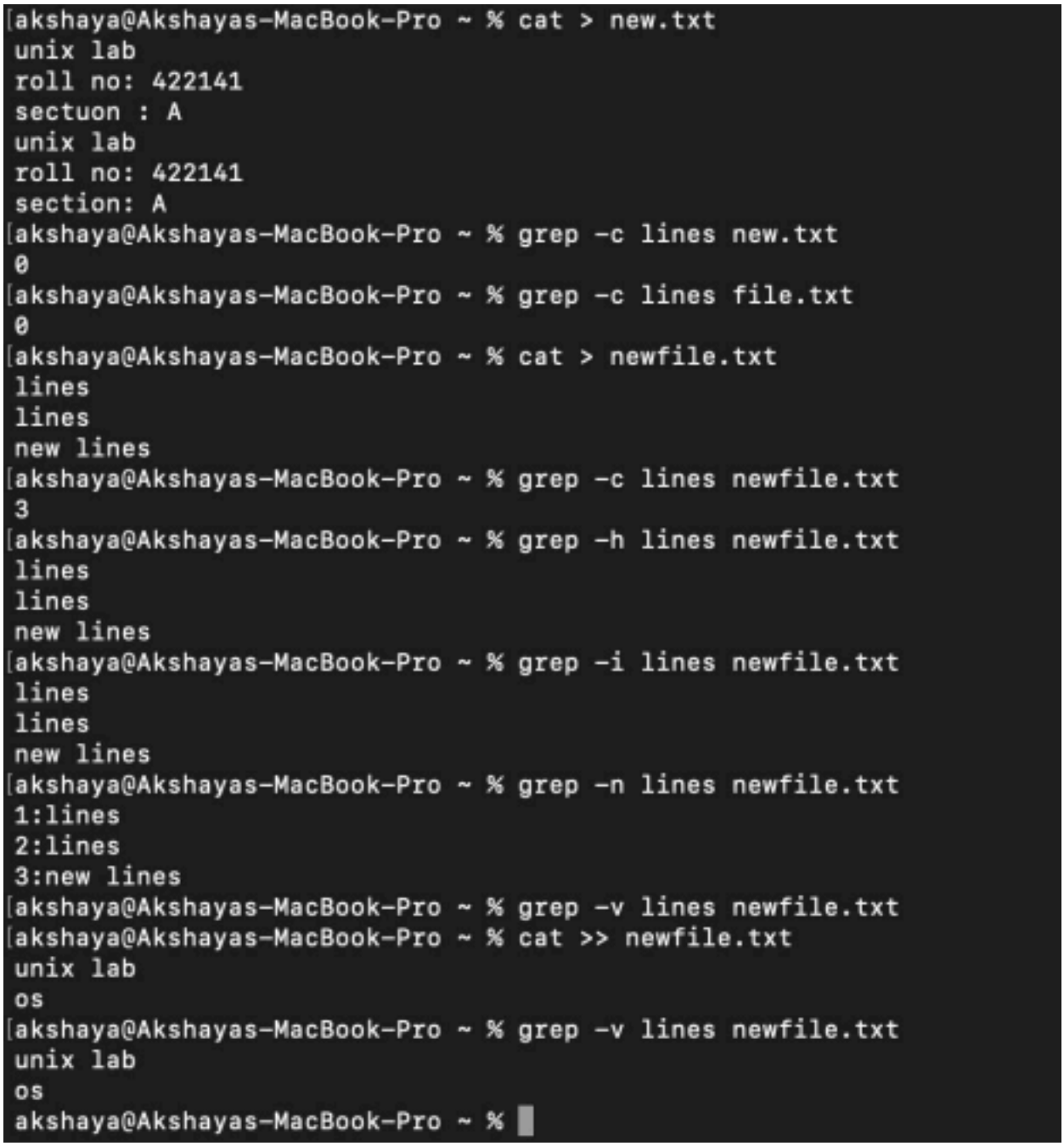
Section : A Roll no : 422141

1)grep:

1>grep -c pattern filename~ this prints only a count of the lines that match the pattern(words,nums,charcs).

2>grep -h pattern filename ~ display the matched lines, but do not display the filenames . 3>grep -i pattern filename ~ ignores case for matching.

4>grep -n pattern filename ~ display the matched lines and their line numbers. 5>grep -v pattern filename ~ this prints out all the lines that do not matches the pattern.



2. uniq command:

1>uniq -c filename~ it tells how many times a line was repeated by displaying a number asaprefix with the line

2>uniq -d filename ~ it only prints the repeated lines and not the lines which arent repeated

3>uniq -f N - ~ -skip fields(N) : it allows you to skip N fields (a field is a group of characters,delimited by whitespace) of a line before determining the uniqueness of a line

. 4>uniq -i - ~ -ignore case :By default , comparisons done are case sensitive but with option(i) case insensitive comparisons can be made

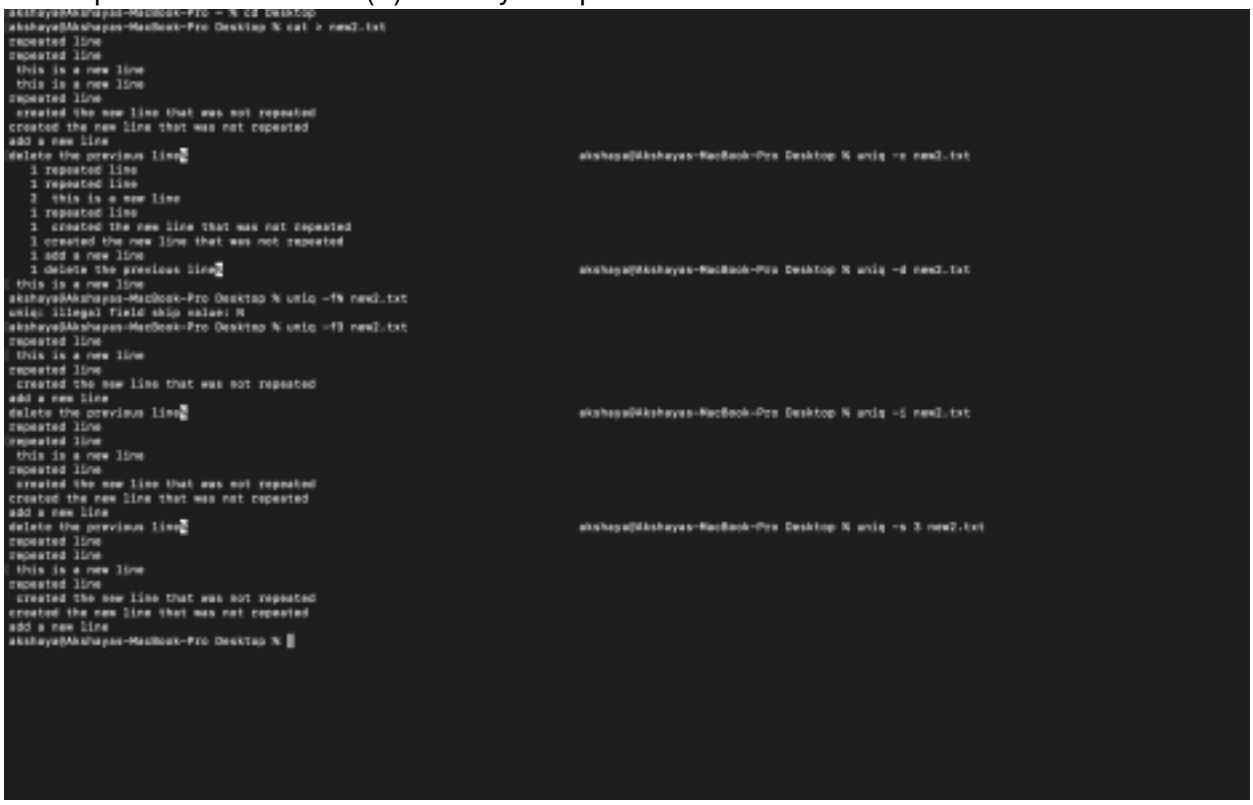
5>uniq -s N - ~ skip chars(N) : it doesnt compare the first N characters of each line while determining

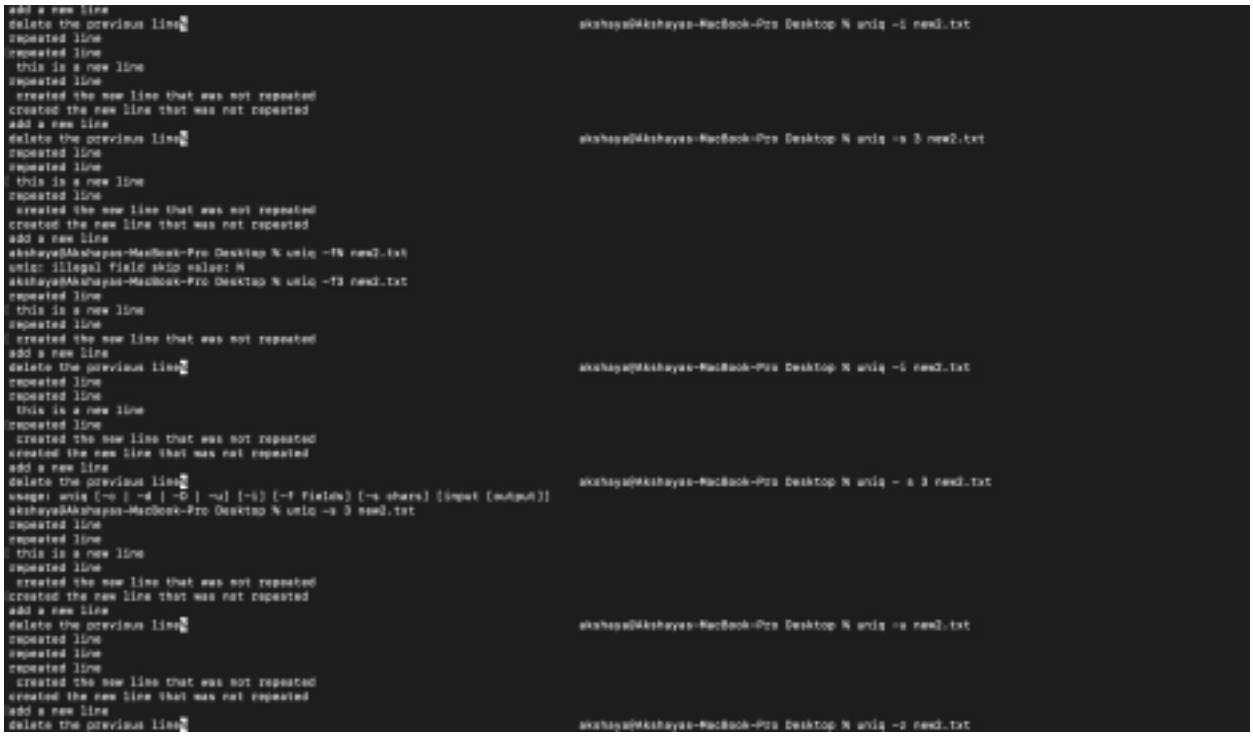
uniqueness.this is like the -f option but it skips the individual characters rather thanfields

6>uniq -u ~ -unique : it allows you to print only unique lines

7>uniq -z ~ -zero terminated: it will make a line end with 0 bytes(NULL),instead of a newline

8>uniq -w N ~ check chars(N) ~iit only compares N characters in line x`





3)tr command

1>cat filename | tr [a-z] [A-Z] ~ converts lower case characters to upper case characters

2>cat filename |tr [:lower:] [:upper:] ~ converts lower case characters to upper case characters 3>echo “sentence” | tr [:space:] ‘\t’ ~ translates white-space characters to tabs 4>$ tr “{}” “()” newfile.txt~ translates braces into parenthesis.

5>echo “sentence” | tr -s “ “~ to squeeze a sequence of repetitive characters using -s option

6>tr -s “ “ <<< “sentence” ~to squeeze a sequence of repetitive characters using -s optionbut using a string here

7>echo “sentence” | tr -d W~ to delete specified characters using -d option. 8>tr -d W <<< “sentence” ~ to delete specified characters using -d option using a string here. 9>echo “ sentence containing digits” | tr -d [:digit:]~to remove all the digits from string. 10>tr -d [:digit:] <<< “sentence contaning digits” ~ to remove all the digits from string . 11>echo “sentence containing digits” | tr -cd [:digit:]~complement the sets using -c option . 12>tr -cd [:digit:] <<< “sentence containing digits” ~complement the sets using -c option

output:

```
akshaya@Akshayas-MacBook-Pro ~ % cat > file3.txt we were lab that is unix lab
assignment we are doing
working on system
{}
{}{}{}{}{}{}{}{}{}{}{}{}%
                akshaya@Akshayas-MacBook-Pro ~ % cat file3.txt | tr [a-z][A-Z]
zsh: no matches found: [a-z]
akshaya@Akshayas-MacBook-Pro ~ % cat file3.txt | tr [a-z] [A-Z]zsh: no matches found: [a-z]
akshaya@Akshayas-MacBook-Pro ~ % cat file3.txt | tr '[:lower:]"[:upper:]'

WE WERE LAB THAT IS UNIX LAB
ASSIGNMENT WE ARE DOING
WORKING ON SYSTEM
{}
{}{}{}{}{}{}{}{}{}{}{}{}%
                akshaya@Akshayas-MacBook-Pro ~ % echo " welcome to unixlab"| tr ' ' '\n'


welcome
to
unix
lab
akshaya@Akshayas-MacBook-Pro ~ % tr '[' '[]' < file3.txt > file4.txtakshaya@Akshayas-MacBook-Pro ~

% tr '[' '[]' < file3.txt > file4.txt
```

akshaya@Akshayas-MacBook-Pro ~ % cat file4.txt we were lab that is unix lab
assignment we are doing
working on system
{}
{}{}{}{}{}{}{}{}{}{}{}{}%
akshaya@Akshayas-MacBook-Pro ~ % echo "welcome to unixlab"| tr -s " "
welcome to unix lab
akshaya@Akshayas-MacBook-Pro ~ % echo "welcome to unix lab" | tr-d""
welcometounixlab
akshaya@Akshayas-MacBook-Pro ~ % echo "welcome to unix 422141" |tr-d" "
welcometounix422141
akshaya@Akshayas-MacBook-Pro ~ % echo " welcome to unix 422141"|tr-cd [:digit:]
zsh: no matches found: [:digit:]
akshaya@Akshayas-MacBook-Pro ~ % echo " welcome to unix 422141"|tr-cd '[:digit:]'

akshaya@Akshayas-MacBook-Pro ~ %

4)pr command:

1>pr -k filename ~ we can print the content in k columns .

2>pr -d filename ~ to double paces input,reduces clutter -d option is used.

3>pr -n filename ~ to provide the number lines which helpps in debugging the code -noption is used
.4>pr - -help ~it gives the detail of all options of pr.

5>pr - -version ~ to print the version number of command pr

output:
akshaya@Akshayas-MacBook-Pro ~ % ls -l example.txt

-rw-r--r-- 1 akshaya staff 48 Feb 18 21:53 example.txt akshaya@Akshayas-MacBook-Pro ~ % echo "This is line 1. This is line2.This is line 3." > example.txt
fold -w 20 example.txt

This is line 1. This
is line 2. This is
line 3.
akshaya@Akshayas-MacBook-Pro ~ % awk '1; {print ""}' example.txtThis is line 1. This is line 2.

This is line 3.

5)paste command:

1>paste file1 file2 file 3 ~ without any option paste merges the files in parallel. The pastecommand writes corresponding lines from the files with tab as a deliminator on the terminal .

2>paste -d “|” file1 file2 file3 ~ it prints even if any character is specified. 3>paste -d “|,”

file1 file2 file3 ~ it prints even multi characters are specified.

4>paste -s file1 file2 file3 AND paste -s -d ":" file1 file2 file3 ~ we can merge the file in sequentially manner using the -s option. It reads all the lines from a single file and mergesall these lines into a single line with each line separated by tab . and these single lines are separated by newline.

5>cat file1 | paste - - (or) paste - - - < file~ the paste command can also be used to merge Nconsecutive lines from file into a single line.here N can be specified by specifying number hyphens(-) after paste.

6>cut -d " " -f 1 file1 | file2 file3 ~cut command is used with -f option for cutting out first field of state and output is piipelined with paste command having one filename and insteadof second file name hyphen is specified (if hyphen is not specified the input fromshell is not pasted)

7>cut -d " " -f 1 file1 | paste - file2 ~ ordering of pasting can be changed by altering thelocation of hyphen

output:

```
akshaya@Akshayas-MacBook-Pro ~ % clear

akshaya@Akshayas-MacBook-Pro ~ % cat > file6.txt a
b
c
d
e
f
g
h
akshaya@Akshayas-MacBook-Pro ~ % cat > file7.txt A
B
C
D
E
F
G
H%
                akshaya@Akshayas-MacBook-Pro ~ % cat number cat: number: No such file or
directory akshaya@Akshayas-MacBook-Pro ~ % cat > number 1
2
3
4
5
6
7
8%
                akshaya@Akshayas-MacBook-Pro ~ % paste number file6.txtfile7.txt
1 a A
2 b B
3 c C
4 d D
5 e E
6 f F
7 g G
8 h H
akshaya@Akshayas-MacBook-Pro ~ % paste -d "|," number file6.txtfile7.txt
1|a,A
```

```
2|b,B
3|c,C
4|d,D
5|e,E
6|f,F
7|g,G
8|h,H
akshaya@Akshayas-MacBook-Pro ~ % paste -d "|," number file6.txtfile7.txt
1|a,A
2|b,B
3|c,C
4|d,D
5|e,E
6|f,F
7|g,G
8|h,H
akshaya@Akshayas-MacBook-Pro ~ % paste -s "|," number file6.txtfile7.txt
paste: |,: No such file or directory
1 2 3 4 5 6 7 8a b c h
A                    % akshaya@Akshayas-MacBook-Pro~%paste < file6.txt
usage: paste [-s] [-d delimiters] file ... akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste
usage: paste [-s] [-d delimiters] file ... akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt

A
B
C
D
E
F
G
H%
                akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste--A B
C D
E F
G H
akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste - - A B
C D
E F
G H
akshaya@Akshayas-MacBook-Pro ~ % cut -d " " -f 1 file7.txt | pastenumber
1
2
3
4
5
6
7
8
akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste - - A B
C D
E F
G H
akshaya@Akshayas-MacBook-Pro ~ %
```

7. head command:

• Displays the first few lines of a file. Command used: head filename • Display a specific number of lines: Command used: head -n 10 filename

output:

```
G H
akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste - - A B
C D
E F
G H
akshaya@Akshayas-MacBook-Pro ~ % cut -d " " -f 1 file7.txt | pastenumber
1
2
3
4
5
6
7
8
akshaya@Akshayas-MacBook-Pro ~ % cat file7.txt | paste - - A B
C D
E F
G H
akshaya@Akshayas-MacBook-Pro ~ % lear
zsh: command not found: lear
akshaya@Akshayas-MacBook-Pro ~ % clear

akshaya@Akshayas-MacBook-Pro ~ % head file2.txt head: file2.txt: No such file or
directory akshaya@Akshayas-MacBook-Pro ~ % head file6.txt a
b
c
d
e
f
g
h
akshaya@Akshayas-MacBook-Pro ~ % head new.txt unix lab
 roll no: 422141
sectuon : A
unix lab
 roll no: 422141
section: A
akshaya@Akshayas-MacBook-Pro ~ % head -n 2 new.txt unix lab
 roll no: 422141
akshaya@Akshayas-MacBook-Pro ~ %
```

8.Tail

• Displays the last few lines of a file. Command used: tail filename

• Display a specific number of lines: Command used: tail -n 10 filename Follow the growth of a file (similar to tail -f): Command used: tail -f filename

output:

akshaya@Akshayas-MacBook-Pro ~ % head file2.txt head: file2.txt: No such file or directory akshaya@Akshayas-MacBook-Pro ~ % head file6.txt a
b
c
d
e
f
g
h
akshaya@Akshayas-MacBook-Pro ~ % head new.txt unix lab
roll no: 422141
sectuon : A
unix lab
roll no: 422141
section: A
akshaya@Akshayas-MacBook-Pro ~ % head -n 2 new.txt unix lab
roll no: 422141
akshaya@Akshayas-MacBook-Pro ~ % clear

akshaya@Akshayas-MacBook-Pro ~ % tail new.txt unix lab
roll no: 422141
sectuon : A
unix lab
roll no: 422141
section: A
akshaya@Akshayas-MacBook-Pro ~ % tail -n 2 new.txt roll no: 422141
section: A
akshaya@Akshayas-MacBook-Pro ~ % tail -f new.txt unix lab
roll no: 422141
sectuon : A
unix lab
roll no: 422141
section: A

9.Sort

• Sort a file alphabetically: Command used: sort filename

• Sort a file numerically: Command used: sort -n filename

• Sort a file in reverse order: Command used: sort -r filename Sort a file and remove duplicate lines: Command used: sort -u filename

Sort a file based on a specific column (using space as the delimiter): Command used: sort -k filename

• Sort a file in a case-insensitive manner: Command used: sort -f filename • Sort lines in memory for faster sorting: Command used: sort -S filename • Sort based on the month abbreviation (e.g., Jan, Feb, Mar): Command used: sort -Mfilename

output:

```
Last login: Sun Feb 18 21:55:40 on ttys000 akshaya@Akshayas-MacBook-Pro ~ %
sort new.txt roll no: 422141
 roll no: 422141
section: A
sectuon : A
unix lab
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -n new.txt roll no: 422141
 roll no: 422141
section: A
sectuon : A
unix lab
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -r new.txt unix lab
unix lab
sectuon : A
section: A
 roll no: 422141
 roll no: 422141
akshaya@Akshayas-MacBook-Pro ~ % sort -u new.txt roll no: 422141
section: A
sectuon : A
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -k new.txt sort: -k new.txt: Invalid argument
akshaya@Akshayas-MacBook-Pro ~ % sort -k 1 new.txt roll no: 422141
 roll no: 422141
section: A
sectuon : A
unix lab
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -k 10 new.txt roll no: 422141
 roll no: 422141
section: A
```

sectuon : A
unix lab
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -f new.txt roll no: 422141
roll no: 422141
section: A
sectuon : A
unix lab
unix lab
akshaya@Akshayas-MacBook-Pro ~ % sort -m new.txt unix lab
roll no: 422141
sectuon : A
unix lab
roll no: 422141
section: A

Name:Akshay chinnu
Roll number:422141
Sec:A

ASSIGNMENT:2

tar_output.txt:

```
awk.sh
sed.sh
tar.sh
awk.sh
sed.sh
tar.sh
awk_out.txt
file1.txt
file2.txt
sed_out.txt
```

tar code:

```
tar cvf file.tar *.sh

tar xvf file.tar

tar cvzf file.tar.gz *.txt

tar xvzf file.tar.gz

tar cvfj file.tar.tbz example.cpp

tar xvfj file.tar

tar xvf file.tar "file1" "file2"

tar czf file.tar | wc -c

tar tf file.tar

tar tvf file.tar | grep "text to find"
```

```
tar tvf file.tar filename

tar tvf file.tar
```

cpio_ouput.txt:

#create a cpio file

#extract a cpio file

#creating tar using cpio

#extract tar using cpio

#To create a *.tar archive with selected files
./hello1.txt
./tar_out.txt
./cpio_out.txt
./hello2.txt
./hello3.txt

#To only view *.tar archive file
./hello1.txt
./tar_out.txt
./cpio_out.txt
./hello2.txt
./hello3.txt

cpio code:

```
#!/bin/bash

echo "#create a cpio file"
ls | cpio -ov > one.cpio

echo ""
echo ""
```

```
echo "#extract a cpio file"
ls | cpio -iv < one.cpio

echo ""
echo ""

echo "#creating tar using cpio"
ls | cpio -ov -H tar > one.tar

echo ""
echo ""

echo "#extract tar using cpio"
cpio -iv -F  one.tar

echo ""
echo ""

echo "#To create a *.tar archive with selected files"
find . -name "*.txt" | tar -cvf one.tar -T -

echo ""
echo ""

echo "#To only view *.tar archive file "
cpio -it < one.tar
```

sed_out.txt:

```
cat > file3.txt
s01 em1 10000 25
s02 em2 12000 24
s03 em3 11020 22
s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 25
s07 em7 25000 27
s08 em8 32000 28

cat > file3.txt
01 em1 10000 25
s02 em2 12000 24
s03 em3 11020 22
s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 25
s07 em7 25000 27
s08 em8 32000 28

cat > file3.txt
s01 em1 10000 21
s02 em2 12000 24
s03 em3 11020 22
```

s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 21
s07 em7 21000 27
s08 em8 32000 28

cat > file3.txt
s02 em2 12000 24
s03 em3 11020 22
s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 25
s07 em7 25000 27
s08 em8 32000 28

cat > file3.txt
s01 em1 10000 25
s02 em2 12000 24
s03 em3 11020 22
s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 25
s07 em7 25000 27
s08 em8 32000 28
cat > file3.txt
s01 em1 10000 25
s02 em2 12000 24

sed code:

cat file3.txt
sed 's/s01/01/' file3.txt
sed 's/25/21/g' file3.txt
sed '2d' file3.txt
sed '$d' file3.txt
sed '1,4d'file3.txt
sed '4,$d' file3.txt

awk_out.txt:

cat > file3.txt
s01 em1 10000 25
s02 em2 12000 24
s03 em3 11020 22
s04 em4 13000 23
s05 em5 19000 26
s06 em6 20000 25
s07 em7 25000 27
s08 em8 32000 28

cat file3.txt
s01 10000
s02 12000
s03 11020
s04 13000
s05 19000
s06 20000
s07 25000
s08 32000

142020
14202
at
01
02
03
04

05
06
07
08

file3.txt
25
24
22
23
26
25
27
28

senior
junior
junior
junior
junior
senior
senior
senior
senior
junior
0
625
576
484
529
676
625
729
784
0

awk code:

```
cat file3.txt
awk '{printf}' file3.txt
awk '{print $1,$3}' file3.txt
awk '{sum +=$3} END {print sum}' file3.txt
awk '{sum +=$3} END {print sum /NR}' file3.txt
awk '{print substr($1,2,3)}' file3.txt
awk '{print $NF}' file3.txt
awk '{ if ($3 > 15000) { print "senior"} else {print "junior"}}' file3.txt
awk 'function square(x) {return x*x} {print square($4) }' file3.txt
```

Assignment_3

Name:Akshay chinnu
Sec:A
Roll number:422141

N_Queens.txt:

STATIC AND DYNAMIC LINKING

ROLL NUMBERS : 422148 & 422141

SEC : A

//Functions.h

```
#ifndef FUNCTIONS_H
#define FUNCTIONS_H
#define MAX_SIZE 10
struct Stack {
   int items[MAX_SIZE];
   int top;
};
void initialize(struct Stack *s);
int isFull(struct Stack *s);
int isEmpty(struct Stack *s);
void push(struct Stack *s, int value);
int pop(struct Stack *s);
void printBoard(int board[MAX_SIZE][MAX_SIZE], int n);
int isSafe(int board[MAX_SIZE][MAX_SIZE], int row, int col, int n);
void solveNQueens(int n);
#endif
```

//push_pop.c

```
#include <stdio.h>
#include <stdlib.h>
#include "Functions.h"

void initialize(struct Stack *s) {
   s->top = -1;
```

```
}

int isFull(struct Stack *s) {
   return s->top == MAX_SIZE - 1;
}

int isEmpty(struct Stack *s) {
   return s->top == -1;
}

void push(struct Stack *s, int value) {
   if (isFull(s)) {
      printf("Stack Overflow\n");
      return;
   }
   s->items[++(s->top)] = value;
}

int pop(struct Stack *s) {
   if (isEmpty(s)) {
      printf("Stack Underflow\n");
      exit(1);
   }
   return s->items[(s->top)--];
}

//NQueens.c

#include <stdbool.h>
#include <stdio.h>
#include "Functions.h"
void printBoard(int board[MAX_SIZE][MAX_SIZE], int n) {
   for (int i = 0; i < n; i++) {
      for (int j = 0; j < n; j++) {
         printf("%d ", board[i][j]);
      }
      printf("\n");
   }
   printf("\n");
}

int isSafe(int board[MAX_SIZE][MAX_SIZE], int row, int col, int n) {
   int i, j;
   for (i = 0; i < col; i++) {
```

```
        if (board[row][i]) {
            return 0;
        }
    }
    for (i = row, j = col; i >= 0 && j >= 0; i--, j--) {
        if (board[i][j]) {
            return 0;
        }
    }
    for (i = row, j = col; j >= 0 && i < n; i++, j--) {
        if (board[i][j]) {
            return 0;
        }
    }
    return 1;
}

void solveNQueens(int n) {
    int board[MAX_SIZE][MAX_SIZE] = {0};
    struct Stack positions;
    initialize(&positions);
    push(&positions, 0);
    while (!isEmpty(&positions)) {
        int col = pop(&positions);
        if (col == n) {
            printBoard(board, n);
            return;
        }
        bool placed = false;
        for (int i = 0; i < n; i++) {
            if (isSafe(board, i, col, n)) {
                board[i][col] = 1;
                push(&positions, col + 1);
                placed = true;
                break;
            }
        }
        if (!placed) {
            if (!isEmpty(&positions)) {
                int prev_col = pop(&positions);
                if (prev_col == n - 1) {
                    return;
                }
                for (int i = 0; i < n; i++) {
```

```
                if (board[i][prev_col] == 1) {
                    board[i][prev_col] = 0;
                    break;
                }
            }
            push(&positions, prev_col + 1);
        }
    }
    printf("Solution does not exist\n");
}

//main.c

#include <stdio.h>
#include "Functions.h"

int main() {
    int n;
    printf("Enter no.of Queens : ");
    scanf("%d",&n);
    solveNQueens(n);
    return 0;
}
```

BUILD_AND_RUSH.sh:

```
#!/bin/bash

# Compile source files into object files
gcc -c -fPIC push_pop.c NQueens.c

# Check if object files were created successfully
if [ $? -ne 0 ]; then
    echo "Error: Failed to compile source files into object files"
    exit 1
fi
```

```
# Create static library
ar rcs libFunctions.a push_pop.o NQueens.o

# Check if static library was created successfully
if [ $? -ne 0 ]; then
   echo "Error: Failed to create the static library"
   exit 1
fi

# Create dynamic library
gcc -shared -o libFunctions.so push_pop.o NQueens.o

# Check if dynamic library was created successfully
if [ $? -ne 0 ]; then
   echo "Error: Failed to create the dynamic library"
   exit 1
fi

# Set LD_LIBRARY_PATH to include current directory
export LD_LIBRARY_PATH=$(pwd):$LD_LIBRARY_PATH

# Compile main program with static library
gcc main.c -L. -lFunctions -o main_static

# Check if main program with static library was compiled successfully
if [ $? -ne 0 ]; then
   echo "Error: Failed to compile the main program with static library"
   exit 1
fi

# Compile main program with dynamic library
gcc main.c -L. -lFunctions -o main_dynamic

# Check if main program with dynamic library was compiled
successfully
if [ $? -ne 0 ]; then
   echo "Error: Failed to compile the main program with dynamic library"
   exit 1
fi
# Execute main programs
echo "Executing main program with static library..."
./main_static
```

```
echo "Executing main program with dynamic library..."
./main_dynamic


echo "Compilation successful"
```

```
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ chmod +x Build_And_Run.sh
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ ./Build_And_Run.sh
Executing main program with static library...
Enter no.of Queens : 5
1 0 0 0 0
0 0 0 1 0
0 1 0 0 0
0 0 0 0 1
0 0 1 0 0

Executing main program with dynamic library...
Enter no.of Queens : 5
1 0 0 0 0
0 0 0 1 0
0 1 0 0 0
0 0 0 0 1
0 0 1 0 0

Compilation successful
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ ls
Build_And_Run.sh  libFunctions.a   main.c        main_static  NQueens.o   push_pop.o  week_6
Functions.h       libFunctions.so  main_dynamic  NQueens.c    push_pop.c  week_5
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$
```

UNIX ASSIGNMENT:4
NAME: AKSHAY CHINNU
SECTION:A
ROLL NUMBER :422141

CODE:

DOUBLY_LINKED.H:

```
#include <stdio.h>


struct
node{ int
data;
struct node *prev;
 struct node *next;
};


int init(struct node **head, struct node **tail);
int insert(struct node **head, struct node **tail, int data, int pos); int deletenode(struct
node **head, struct node **tail, int pos, int *data); int search(struct node **head, int
key, int*pos);

int traverseforward(struct node **head);
int traversebackward(struct node **tail);
int findsmallbig(struct node** head, int *big, int *small); }
```

DOUBLY_LINKED LIST.C

```
#include <stdio.h>
 #include <stdlib.h>
#include "DOUBLY_LINKED.h"



int init(struct node **head,struct node **tail){
*head=NULL;
*tail=NULL;
 return 1;
}


int insert(struct node **head, struct node **tail, int data, int pos){ struct node
*newnode=(struct node*)malloc(sizeof(struct node)); if (!newnode || pos<1)
 return 0;
newnode->data=data;
if(*head==NULL){
if (pos==1){
newnode->next=NULL; newnode->prev=NULL;
*head=newnode
*tail=newnode;
 return 1;
}
```

```
else return 0;
}
if (pos==1){
(*head)->prev=newnode;
newnode->next=*head;
*head=newnode;
newnode->prev=NULL;
return 1;
}
struct node *ptr=NULL;
ptr=*head;
for(int i=1;i<pos-1 &&
ptr!=NULL;i++){ ptr=ptr->next;
}
if (!ptr) return 0;
newnode->next=ptr->next;
newnode->prev=ptr;
ptr->next=newnode;
if ((newnode->next)==NULL) *tail=newnode;
else (newnode->next)->prev=newnode;
return 1;
}

int deletenode(struct node **head, struct node **tail, intpos, int *key) {
if (*head==NULL || pos<1)
 return 0;

struct node *iter=*head;
int i=1;
while (iter!=NULL &&
 i<pos){ iter=iter->next;
i+=1;
}

if (!iter) return 0;
*key=iter->data;
 if (iter==*head){
*head=(*head)->next;
(*head)->prev=NULL;
free(iter);
return 1;
}
if (iter==*tail){
*tail=(*tail)->prev;
(*tail)->next=NULL;
free(iter);
return 1;
}
(iter->next)->prev=iter->prev;
(iter->prev)->next=iter->next;
free(iter);
return 1; }
int search(struct node **head, int key, int *pos){ if

 (*head==NULL) return 0;

struct node *iter=*head;
```

```
int i=1;
while (iter!=NULL && iter- >data!=key){
iter=iter->next;

i+=1;

if (iter==NULL) return 0;
*pos=i;
return 1;
}
int traverseforward(struct node **head){ if
 (*head==NULL){
printf("NULL \n");
return 0;
}
struct node *iter=*head;
while (iter){
printf("%d-->",(iter->data));
iter=iter->next;
}
printf("NULL \n"); return 1;
}


int traversebackward(struct node **tail){ if (*tail==NULL){
printf("NULL \n"); return 0;
}
struct node *iter=*tail; while (iter){
printf("%d-->",(iter->data)); iter=iter- >prev;
}
printf("NULL \n"); return 1;
}

int findsmallbig(struct node **head, int *big, int*small){ if
 (*head==NULL)
return 0;

struct node *iter=*head;
int tempsmall=(*head)->data;
 int tempbig=tempsmall;

while (iter!=NULL){
if (tempbig<(iter->data)) tempbig=iter->data; if
 (tempsmall>(iter->data))
tempsmall=iter->data;
iter=iter->next;

}
*big=tempbig;{
*small=tempsmall; return 1;
}


int main(){
struct node *head=NULL; struct node *tail=NULL; init(&head, &tail);

int length;
printf("Enter no of elements to insert in Doubly LL: ");
```

```
 scanf("%d",&length);
for(int i=1;
 i<=length;i++){ int elem;
printf("Enter element: ");
scanf("%d",&elem);
insert(&head,&tail,elem,i);
}


printf("The current linked list: \n"); traverseforward(&head);

int elem,pos;
printf("Enter element to insert at specific position: "); scanf("%d %d",&elem,&pos);
insert(&head,&tail,elem,pos);
printf("The current linked list: \n"); traverseforward(&head); printf("Traversing in

backward direction: \n"); traversebackward(&tail); printf("Deleting element: \n");




printf("Enter position of element to delete: "); scanf("%d",&pos); deletenode(&head,
&tail,pos,&elem); printf("The current linked list: \n"); traverseforward(&head);
printf("Deleted element: %d \n",elem);

printf("Enter element to search: ");
scanf("%d",&elem);
search(&head, elem, &pos);
printf("Position of element: %d \n", pos);


int big,small;
findsmallbig(&head,&big,&small);
printf("The larget and smallest elements are: %d %d \n", big, small); return 0;

}
```
Output:

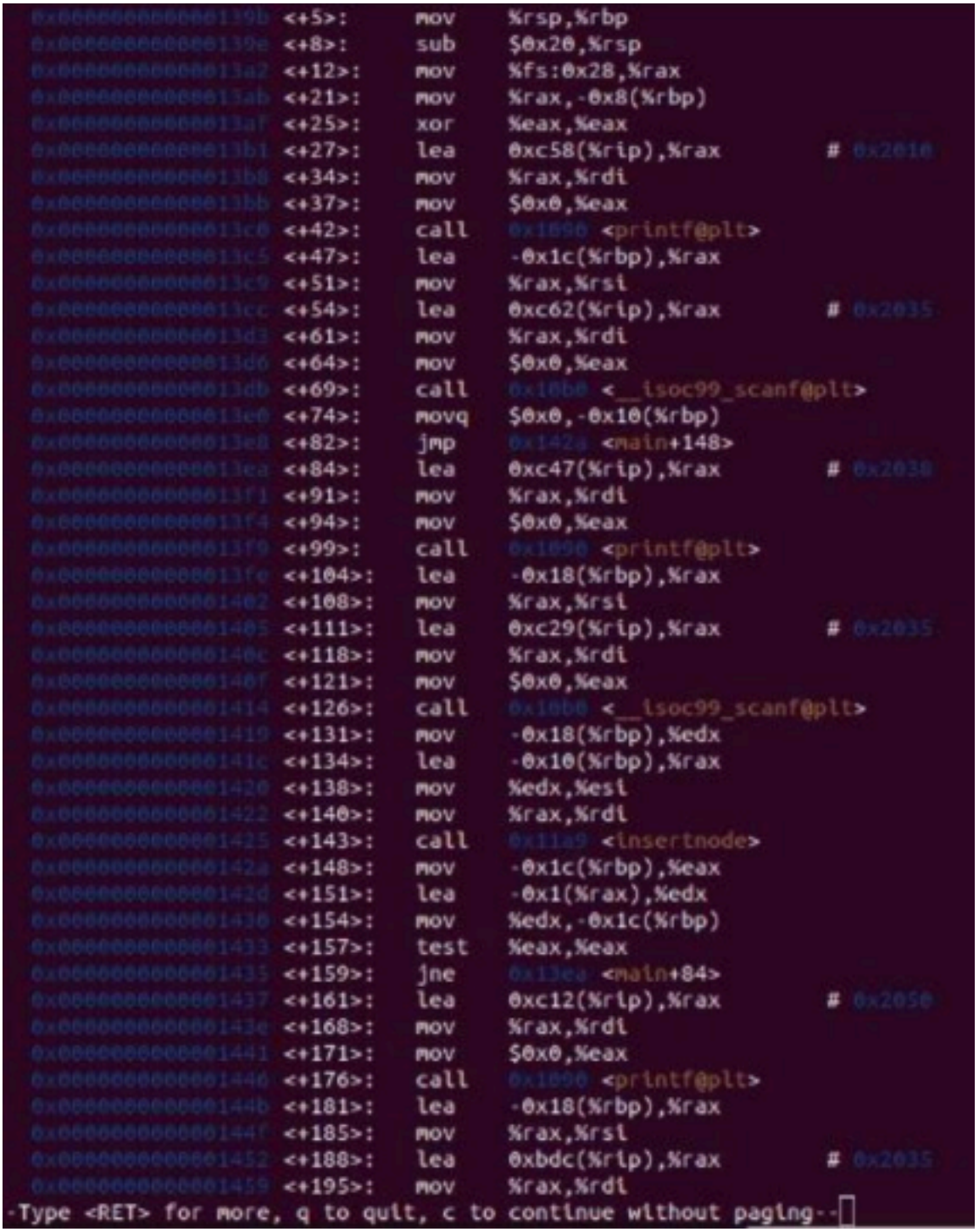
```
student@at-HP-ProDesk-600-G4-MT:~/422141$ gcc -g double.c
student@al-HP-ProDesk-600-G4-MT: ~/422141$gdb */a.out
GNU gdb (Ubuntu 9.2-0ubuntu1~20.04.1) 9.2
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: 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 d
For bug reporting instructions, please see: chttp://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
chttp://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) run
Starting program: /home/student/422141/a.out
Enter no of elements to insert in Doubly LL: 3
Enter element: 1
Enter element: 2
Enter element: 3
```

Follow link (cmd + click)

```
The current linked list:

Program received signal SIGSEGV, Segmentation fault.
0x0000555555555559a in traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) list
84      printf("NULL \n");
85      return 0;
86      }
87      struct node *iter=*head;
88      while (iter || iter==NULL){
89      printf("%d-->",(iter->data));
90      iter=iter->next;
91      }
92      printf("NULL \n");
93      return 1;
(gdb) break 88
Breakpoint 1 at 0x555555555594: file double.c, line 88.
(gdb) break 89
Breakpoint 2 at 0x555555555596: file double.c, line 89.
(gdb) break 90
```

```
Enter no of elements to insert in Doubly LL: 3
Enter element: 1
Enter element: 2
Enter element: 3
The current linked list:

Breakpoint 5, traverseforward (head=0x7fffffffde80) at double.c:82
82      int traverseforward(struct node **head){
(gdb) print traverseforward
$1 = {int (struct node **)} 0x55555555555a <traverseforward>
(gdb) next
83      if (*head==NULL){
(gdb) print head
$2 = (struct node **) 0x7fffffffde68
(gdb) next
87      struct node *iter=*head;
(gdb) print iter
$3 = (struct node *) 0x7fffffffdf70
(gdb) next

Breakpoint 1, traverseforward (head=0x7fffffffde68) at double.c:88
88      while (iter || iter==NULL){
(gdb) continue
Continuing.

Breakpoint 2, traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

Breakpoint 3, traverseforward (head=0x7fffffffde68) at double.c:90
90      iter=iter->next;
(gdb) next
88      while (iter || iter==NULL){
(gdb) print iter
$4 = (struct node *) 0x555555559ae0
(gdb) continue
```

```
Breakpoint 2, traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

Breakpoint 3, traverseforward (head=0x7fffffffde68) at double.c:90
90      iter=iter->next;
(gdb) next
88      while (iter || iter==NULL){
(gdb) print iter
$4 = (struct node *) 0x555555559ae0
(gdb) continue
Continuing.

Breakpoint 2, traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

Breakpoint 3, traverseforward (head=0x7fffffffde68) at double.c:90
90      iter=iter->next;
(gdb) next
88      while (iter || iter==NULL){
(gdb) next

Breakpoint 2, traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

Breakpoint 3, traverseforward (head=0x7fffffffde68) at double.c:90
90      iter=iter->next;
(gdb) next
88      while (iter || iter==NULL){
(gdb) next

Breakpoint 2, traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

Program received signal SIGSEGV, Segmentation fault.
0x000055555555559a in traverseforward (head=0x7fffffffde68) at double.c:89
89      printf("%d-->",(iter->data));
(gdb) next

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



Code:

```
#include <stdio.h>
#include <stdlib.h>

struct
node{ int
data;
struct node *next;

};
struct node *head;


int initList(struct node **head){
*head=NULL;
 return 1;
}
```

```
int search(struct node **head, int data, struct node
**ptrToKey, int *pos){
if (*head==NULL) return 0;
*pos=1;
struct node *ptr=*head;
for (;ptr!=NULL && ptr->data!=data;ptr=ptr->next){
*pos=(*pos)+1;

}
*ptrToKey=ptr;
if (!ptr) return 0;
return 1;
}
int insert(struct node **head, int position, int data){
struct node *newnode=(struct node*)malloc(sizeof(struct node));
if (newnode==NULL)
return 0;
newnode->data=data; if
(position==1){ newnode->next=*head;
*head = newnode;
 return 1;
}
```

//To ensure there are no duplicate insertions, we conduct a search to verify whether the provided data already exists within the linked list.

```
struct node *ptrToKey=NULL;
int pos=0;
if (!search(head, data,&ptrToKey, &pos))
{
struct node *ptr=*head;
for (int i=1; i<position-1 && ptr!=NULL;i++) ptr=ptr->next;

if (ptr==NULL)
return 0;
else{
newnode->next=ptr->next;
ptr->next=newnode;
return 1;
}
}
else{

printf("Element already present in address: %p
\n",ptrToKey);
return 0;

}
}

int traverse(struct node *head){ if
(!head){ printf("NULL \n"); return 1;
}
for (struct node *ptr=head;ptr!=NULL;ptr=ptr->next) printf("%d -->",ptr->data); printf("NULL
\n"); return 1;
}
int kFromLast(struct node *head, int k ,int *data)
```

```
{
 if(!head)
return 0;
struct node *fast=head; struct node *slow=NULL;
 int i=1;
while(fast!=NULL &&
i<=k){ fast=fast->next;
i++;
}
if(fast==NULL && i<k)
 return 0;
slow=head;
while(slow!=NULL){
slow=slow->next;
fast=fast->next;
}
*data=slow->data;
return 1;
}
int main(){
struct node *head; initList(&head);
int n;
printf("Enter no of nodes you want to enter data: ");
scanf("%d",&n);
int pos=1; while (n--
){ int data;
printf("\nEnter data: ");
scanf("%d",&data);
if (!insert(&head,pos++,data))
 return 0;
}
printf("\nThe current linked list is:\n"); traverse(head);
int k, data;
printf("Enter kth position from last to find node data: "); scanf("%d", &k);
kFromLast(head, k, &data); printf("Data: %d\n",data); return 0; }
```

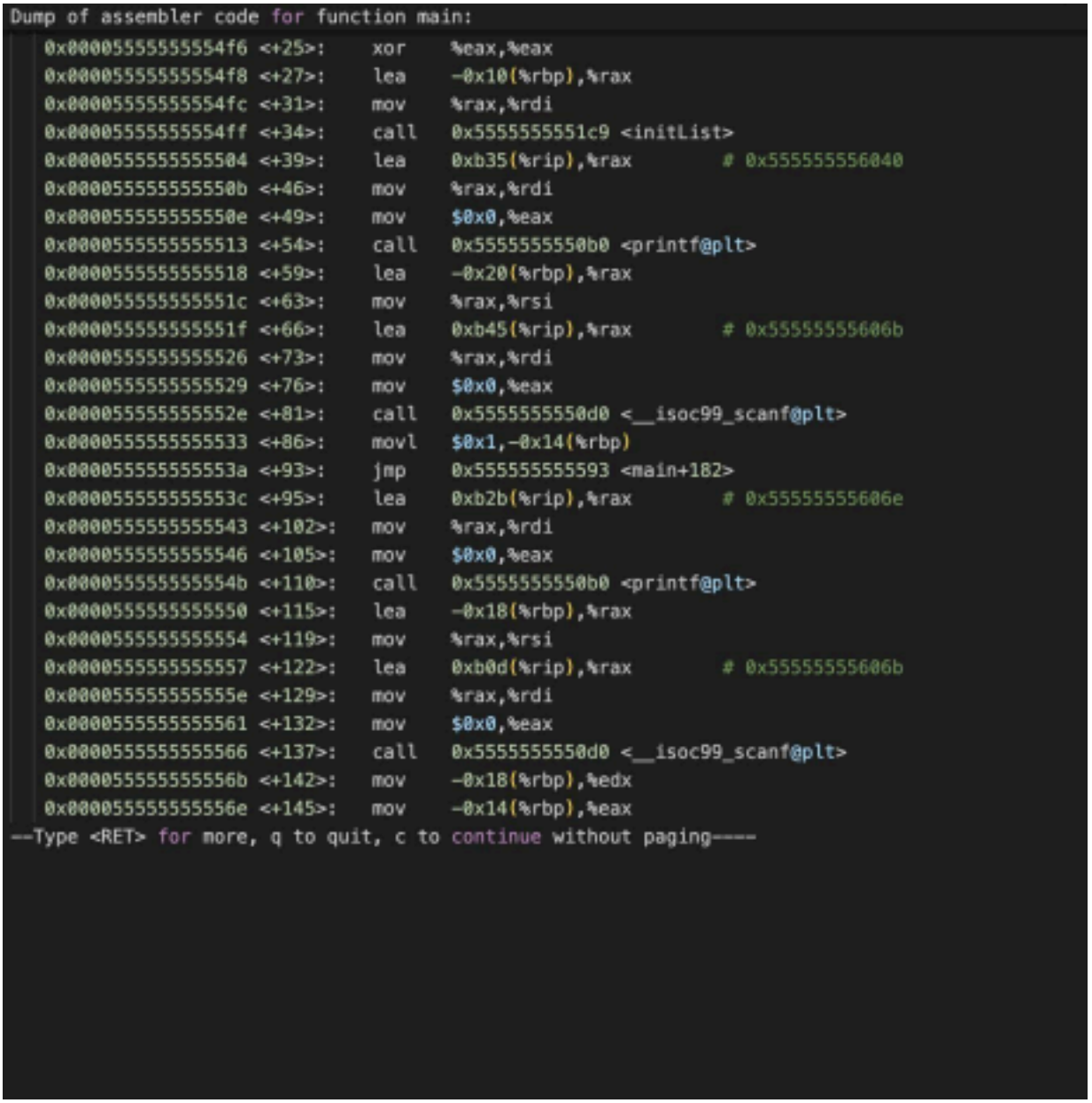
Output:

```
AKSHAY@AKSHAY:~/student$ gcc -g linked.c
AKSHAY@AKSHAY:~/student$ ./a.out
Enter no of nodes you want to enter data: 4

Enter data: 1

Enter data: 2

Enter data: 3

Enter data: 33

The current linked list is:
1 -->2 -->3 -->33 -->NULL
Enter kth position from last to find node data: 2
Segmentation fault

Enter no of nodes you want to enter data: 4

Enter data: 1

Enter data: 2

Enter data: 3

Enter data: 33

The current linked list is:
1 -->2 -->3 -->33 -->NULL
Enter kth position from last to find node data: 2

Program received signal SIGSEGV, Segmentation fault.
0x00005555555554bb in kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:89
89                      fast=fast->next;
(gdb) break 76
Breakpoint 1 at 0x555555555442: file linked.c, line 76.
(gdb) break 81
Breakpoint 2 at 0x55555555546a: file linked.c, line 81.
(gdb) break 87
```

```
Breakpoint 3 at 0x5555555554a9: file linked.c, line 87.
(gdb) break 88
Breakpoint 4 at 0x5555555554ab: file linked.c, line 88.
(gdb) break 89
Breakpoint 5 at 0x5555555554b7: file linked.c, line 89.
(gdb) break 117
Breakpoint 6 at 0x5555555555ea: file linked.c, line 117.
(gdb) run
The program being debugged has been started already.
Start it from the beginning? (y or n) y
Starting program: /home/AKSHAY/student/a.out
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Enter no of nodes you want to enter data: 4

Enter data: 1

Enter data: 2

Enter data: 3

Enter data: 33

The current linked list is:
1 -->2 -->3 -->33 -->NULL
Enter kth position from last to find node data: 2

Breakpoint 6, main () at linked.c:117
117             kFromLast(head, k, &data);
(gdb) print head
$1 = (struct node *) 0x555555559ac0
(gdb) print k
$2 = 2
(gdb) print data
$3 = 33
(gdb) next

Breakpoint 1, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:76
76              if(!head) return 0;
```

```
(gdb) next
77              struct node *fast=head;
(gdb) print fast
$4 = (struct node *) 0x7fffffffe288
(gdb) print head
$5 = (struct node *) 0x555555559ac0
(gdb) next
78              struct node *slow=NULL;
(gdb) next
79              int i=1;
(gdb) next

Breakpoint 2, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:81
81              while(fast!=NULL && i<=k){
(gdb) next\
82                      fast=fast->next;
(gdb) next
83                      i++;
(gdb) next
81              while(fast!=NULL && i<=k){
(gdb) next
82                      fast=fast->next;
(gdb) next
83                      i++;
(gdb) next
81              while(fast!=NULL && i<=k){
(gdb) next
85              if(fast==NULL && i<k) return 0;
(gdb) next
86              slow=head;
(gdb) next

Breakpoint 3, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:87
87              while(slow!=NULL){
(gdb) next

Breakpoint 4, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:88
88                      slow=slow->next;
(gdb) next
```

```
Breakpoint 5, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:89
89                      fast=fast->next;
(gdb) next
87              while(slow!=NULL){
(gdb) next

Breakpoint 4, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:88
88                      slow=slow->next;
(gdb) next

Breakpoint 5, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:89
89                      fast=fast->next;
(gdb) next
87              while(slow!=NULL){
(gdb) next

Breakpoint 4, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:88
88                      slow=slow->next;
(gdb) next

Breakpoint 5, kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:89
89                      fast=fast->next;
(gdb) next

Program received signal SIGSEGV, Segmentation fault.
0x00005555555554bb in kFromLast (head=0x555555559ac0, k=2, data=0x7fffffffe158) at linked.c:89
89                      fast=fast->next;
(gdb) next

Program terminated with signal SIGSEGV, Segmentation fault.
The program no longer exists.
(gdb) disassemble main
Dump of assembler code for function main:
   0x00005555555554dd <+0>:     endbr64
   0x00005555555554e1 <+4>:     push   %rbp
   0x00005555555554e2 <+5>:     mov    %rsp,%rbp
   0x00005555555554e5 <+8>:     sub    $0x20,%rsp
   0x00005555555554e9 <+12>:    mov    %fs:0x28,%rax
   0x00005555555554f2 <+21>:    mov    %rax,-0x8(%rbp)
```


Dump of assembler code for function main:
0x000055555555554f6 <+25>: xor %eax,%eax
0x000055555555554f8 <+27>: lea -0x10(%rbp),%rax
0x000055555555554fc <+31>: mov %rax,%rdi
0x000055555555554ff <+34>: call 0x5555555551c9 <initList>
0x0000555555555504 <+39>: lea 0xb35(%rip),%rax # 0x555555556040
0x000055555555550b <+46>: mov %rax,%rdi
0x000055555555550e <+49>: mov $0x0,%eax
0x0000555555555513 <+54>: call 0x5555555550b0 <printf@plt>
0x0000555555555518 <+59>: lea -0x20(%rbp),%rax
0x000055555555551c <+63>: mov %rax,%rsi
0x000055555555551f <+66>: lea 0xb45(%rip),%rax # 0x55555555606b
0x0000555555555526 <+73>: mov %rax,%rdi
0x0000555555555529 <+76>: mov $0x0,%eax
0x000055555555552e <+81>: call 0x5555555550d0 <__isoc99_scanf@plt>
0x0000555555555533 <+86>: movl $0x1,-0x14(%rbp)
0x000055555555553a <+93>: jmp 0x555555555593 <main+182>
0x000055555555553c <+95>: lea 0xb2b(%rip),%rax # 0x55555555606e
0x0000555555555543 <+102>: mov %rax,%rdi
0x0000555555555546 <+105>: mov $0x0,%eax
0x000055555555554b <+110>: call 0x5555555550b0 <printf@plt>
0x0000555555555550 <+115>: lea -0x18(%rbp),%rax
0x0000555555555554 <+119>: mov %rax,%rsi
0x0000555555555557 <+122>: lea 0xb0d(%rip),%rax # 0x55555555606b
0x000055555555555e <+129>: mov %rax,%rdi
0x0000555555555561 <+132>: mov $0x0,%eax
0x0000555555555566 <+137>: call 0x5555555550d0 <__isoc99_scanf@plt>
0x000055555555556b <+142>: mov -0x18(%rbp),%edx
0x000055555555556e <+145>: mov -0x14(%rbp),%eax
--Type <RET> for more, q to quit, c to continue without paging--

UNIX ASSIGNMENT :5

NAME :AKSHAY CHINNU

SECTION:A

ROLL NUMBER:422141

QUESTIONS:

1. Using SSH command execute the three programs on two different machines.

code:

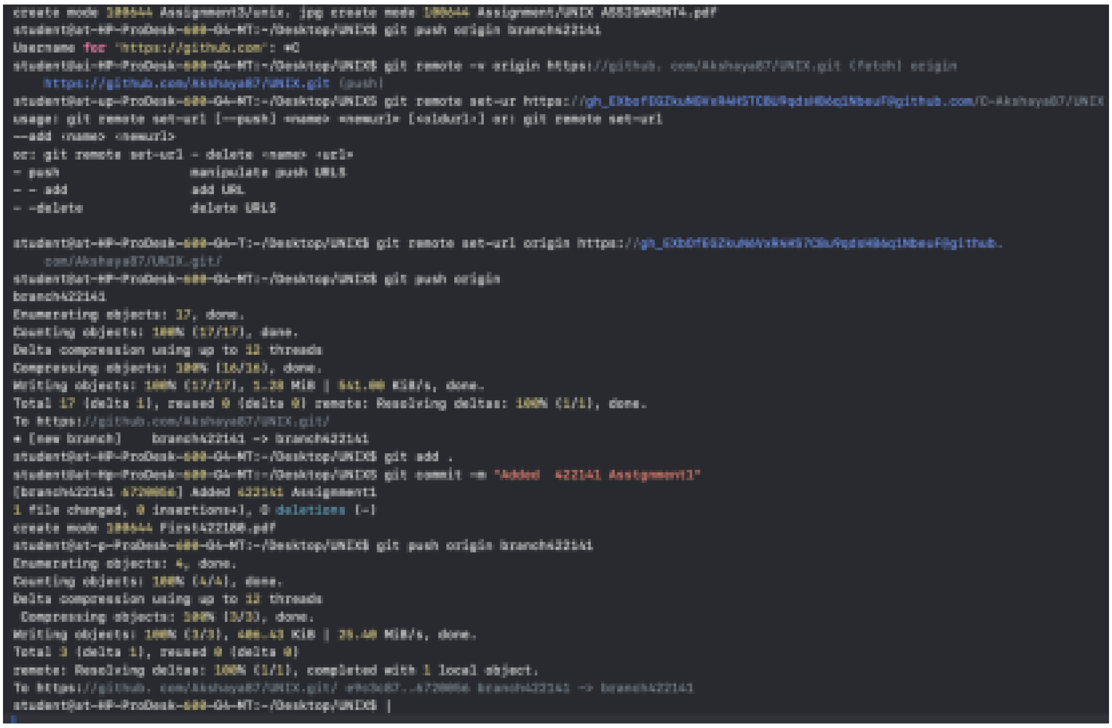
```
student@ai-HP-ProDesk-600-G4-MT: ~$
student@ai-HP-ProDesk-600-G4-MT:~$ ssh student@172.50.13.31
The authenticity of host '172.50.13.31 (172.50.13.31)' can't be established.
ECDSA key fingerprint is SHA256:HinIVM+WbQIQ419ZI3MHtHinIss4Iq/QTeEJTd1BXQEU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes Warning: Permanently added '172.50.13.31' (ECDSA) to the list of
    known hosts. student@172.50.13.31's password:
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.8.0-59- generic x86_64)
* Documentation:  https://help.ubuntu.com
* Management:     https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage

637 updates can be applied immediately.
496 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.
Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Wed Mar 20 15:56:01 2024 from 172.50.1.255
student@ai-HP-ProDesk-600-G4-MT:~$ cd student ~422141
student@ai-HP-ProDesk-600-G4-MT:~/student~422141$ gcc selectionsort.c student@ai-HP-ProDesk-600-G4-MT:~/student~422141$ ./a.out
2
4
6
7
32
46
783
student@ai-HP-ProDesk-600-G4-MT: ~/student~422141$ gcc hashtable.c hashtable.c: In function 'insert': hashtable.c: 13:24:
error: expected ')' before '{' token
13 | while(table[index].key! =- 1){
   |
   |
student@ai-P-ProDesk-600-G4-MT:~/student ~422141$ gcc hello.c student@ai-HP-ProDesk-600-G4-MT:~/student~422141$ ./a.out
Hello, world!
student@ai-HP-ProDesk-600-G4-MT: ~/student~422141$ gcc evenoroddd.c student@ai-HP-ProDesk-600-G4-MT:~/student~422141$ ./a.out
enter an integer: 6
the number 6 is evenstudent@ai-HP-ProDesk-600-G4-MT: ~/student~422141$
```

```
The authenticity of host '172.50.13.31 (172.50.13.31)'
can't be established.
ECDSA key fingerprint is SHA256:HinIVM+WbQIQ419ZI3MHtHinIss4Iq/QTeEJTd1BXQEU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes Warning: Permanently added '172.50.13.31' (ECDSA) to the list of known
    hosts.
se loves no tin
student@172.50.13.31's password:
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.8.0-59-generic x86_64)
* Documentation: https://help.ubuntu.com
* Management:
https://landscape.canonical.com
* Support:
https://ubuntu.com/advantage
637 updates can be applied immediately.
496 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.
Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Wed Mar 20 16:33:34 2024 from 172.50.1.256
student@ai-HP-ProDesk-600-G4-MT:~$ ls
01. PY
422141-unix
Client_arp.class
Client_arp. java
'421289
question 7.py"
Clientarp. java
'421289 question8.py"
Clientrarp
422268
Clientrarp.class
8_puzzle.py
Clientrarp. java
abc. py
code
add.pl
convio.h
AI_assign_4.py
convtoinum.pl
AIlab3_Q1.py
crc.class
anaconda3
crc. java
a.out append.pl
CRC. PY
dbms_lab3.
_91.sql
arne.py
dbms_lab3_q3.sql
assign_5
Desktop
assign_5.ni
```

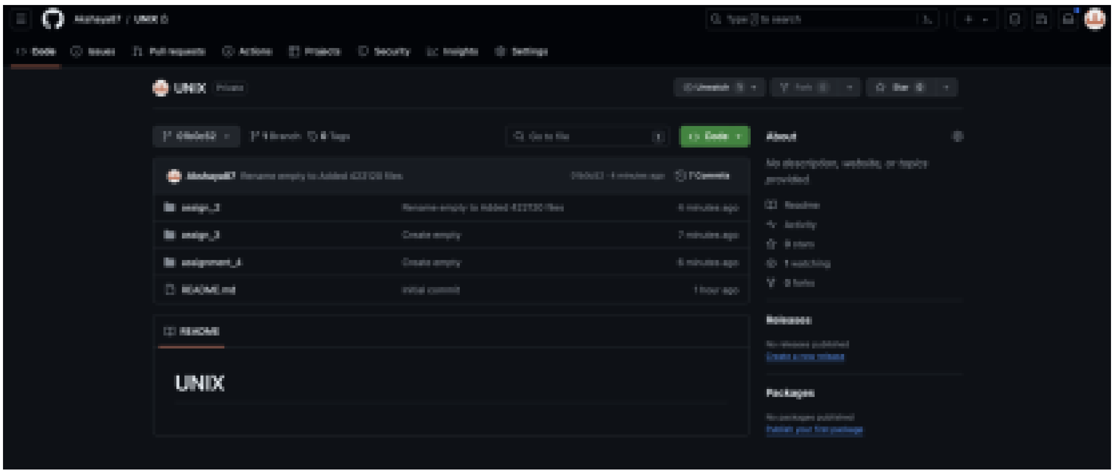
2.Create a project under CVS/git repository and record multiple versions/branchesand practice merging of branches (with a batch of 2 members) using gitbash commands and upload all your previous lab tasks to this repository .

code:

```
student@ai-HP-ProDesk-600-G4-MT:~$ cd Desktop student@at-HP-ProDesk-600-G4-MT: ~/Desktop$ ls
422141-py BitStuffing. java
UNIX
student@at-HP-ProDesk-600-G4-MT:~/Desktop$ cd UNIX
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git status

On branch master

No commits yet

nothing to commit (create/copy files and use "git add" to track)
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git checkout -b "branch422141"
Switched to a new branch 'branch422141'
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git status
On branch branch422141

No commits yet

Untracked files:
(use "git add <file>..." to include in what will be committed)
Assignennt2/
Assignment3/
Assignment 4/
nothing added to commit but untracked files present (use "git add" to track)
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git add .
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git commit - m "Added 422141 files"
[branch422141 (root-commit) e9c387] Added 422141 files
12 files changed, 429 insertions(+)
create mode 100644 Assignemnt2/awk.sh
create mode 100644 Assignemnt2/awk.txt
create mode 100644 Assignemnt2/cpio.sh
create mode 100644 Assignemnt2/cpio_out.txt
create mode 100644 Assignemnt2/sed.sh
create mode 100644 Assignemnt2/sed.txt
create mode 100644 Assignemnt2/tar.sh
create mode 100644 Assignemnt2/tarout. txt
create mode 100644 Assignment3/Butld _And Run.sh
create mode 100644 Assignment/Queens2. txt
create mode 100644 Assignment3/unix. jpg
create mode 100644 Assignment/UNIX ASSIGNMENT.pdf
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git push origin branch422141
Username for 'https://github.com': ^C
student@at-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git remote - v origin
https://github.com//UNIX.git (fetch)
origin https://github.com/Akshaya87/UNIX (push)
```



```
create mode 100644 Assignment3/unix. jpg create mode 100644 Assignment/UNIX ASSIGNMENT4.pdf
student@st-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git push origin branch422141
Username for 'https://github.com': ^C
student@ai-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git remote -v origin https://github. com/Akshaya87/UNIX.git (fetch) origin
    https://github.com/Akshaya87/UNIX.git (push)
student@st-up-ProDesk-600-G4-MT:~/Desktop/UNIX$ git remote set-ur https://gh_EXbofDGZkuNGWx9WHSTCBU9qdsHBdq1NbeuF@github.com/C-Akshaya87/UNIX
usage: git remote set-url [--push] <name> <newurl> [<oldurl>] or: git remote set-url
--add <name> <newurl>
or: git remote set-url - delete <name> <url>
- push                  manipulate push URLS
- - add                 add URL
- -delete               delete URLS

student@st-HP-ProDesk-600-G4-T:~/Desktop/UNIX$ git remote set-url origin https://gh_EXbDfEGZkuNWVx9W4S7CBu9qdsHBdq1NbeuF@github.
    com/Akshaya87/UNIX.git/
student@st-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git push origin
branch422141
Enumerating objects: 17, done.
Counting objects: 100% (17/17), done.
Delta compression using up to 12 threads
Compressing objects: 100% (16/16), done.
Writing objects: 100% (17/17), 1.28 MiB | 541.00 KiB/s, done.
Total 17 (delta 1), reused 0 (delta 0) remote: Resolving deltas: 100% (1/1), done.
To https://github.com/Akshaya87/UNIX.git/
* [new branch]    branch422141 -> branch422141
student@st-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ git add .
student@st-Hp-ProDesk-600-G4-MT:~/Desktop/UNIX$ git commit -m "Added  422141 Assignment1"
[branch422141 6720056] Added 422141 Assignment1
1 file changed, 0 insertions(+), 0 deletions (-)
create mode 100644 First422108.pdf
student@st-p-ProDesk-600-G4-MT:~/Desktop/UNIX$ git push origin branch422141
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
 Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 406.43 KiB | 25.40 MiB/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github. com/Akshaya87/UNIX.git/ e9c3c87..6720056 branch422141 -> branch422141
student@st-HP-ProDesk-600-G4-MT:~/Desktop/UNIX$ |
```



Name:Akshay chinnu

Sec: A

Roll number:422141

Assignment:6

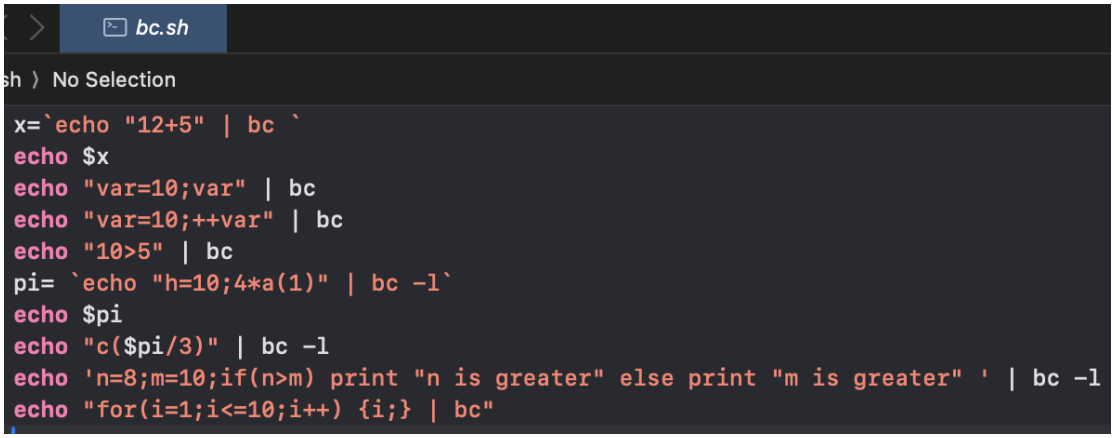
Question:

Write shell script for

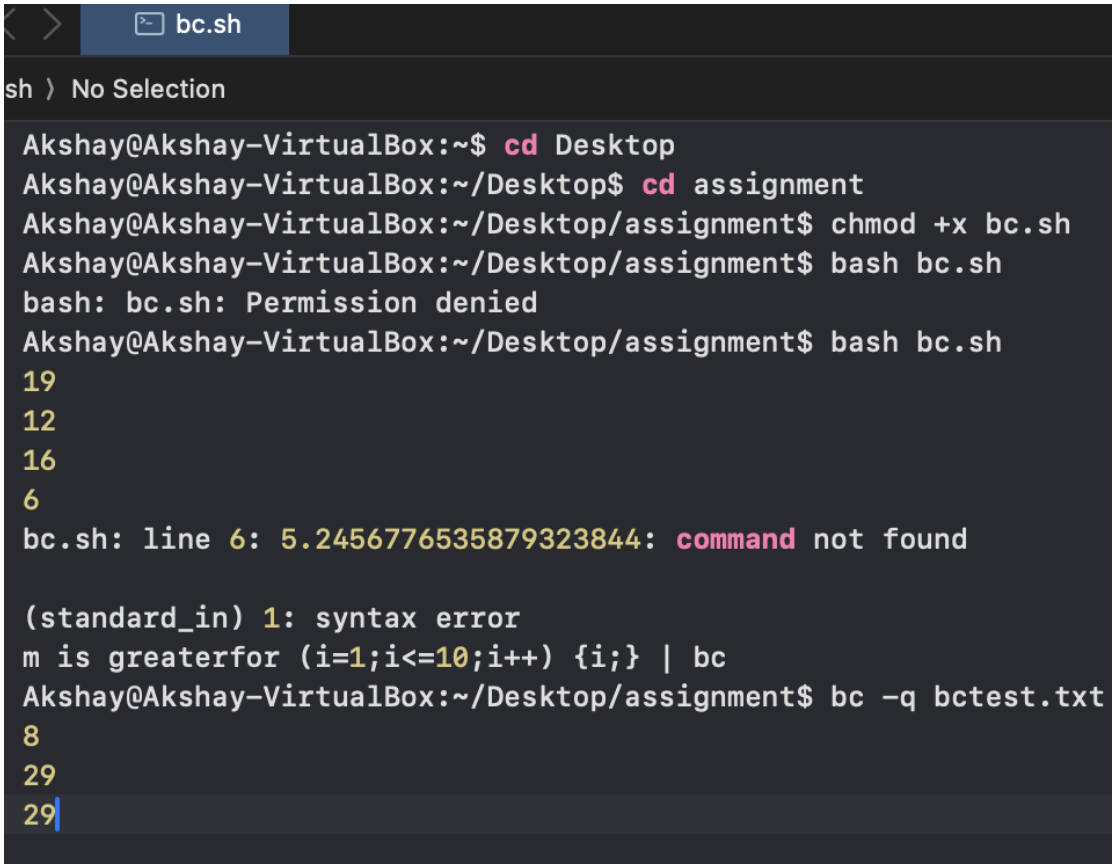
commands : bc,comm,chown,chgrp,cron,dd,diff,finger,find,ftp,lock,ln,lp,lpstat,mesg .

1) bc

Code:

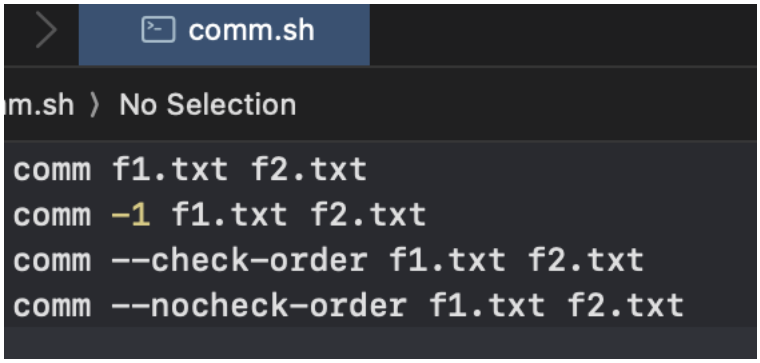


Output:

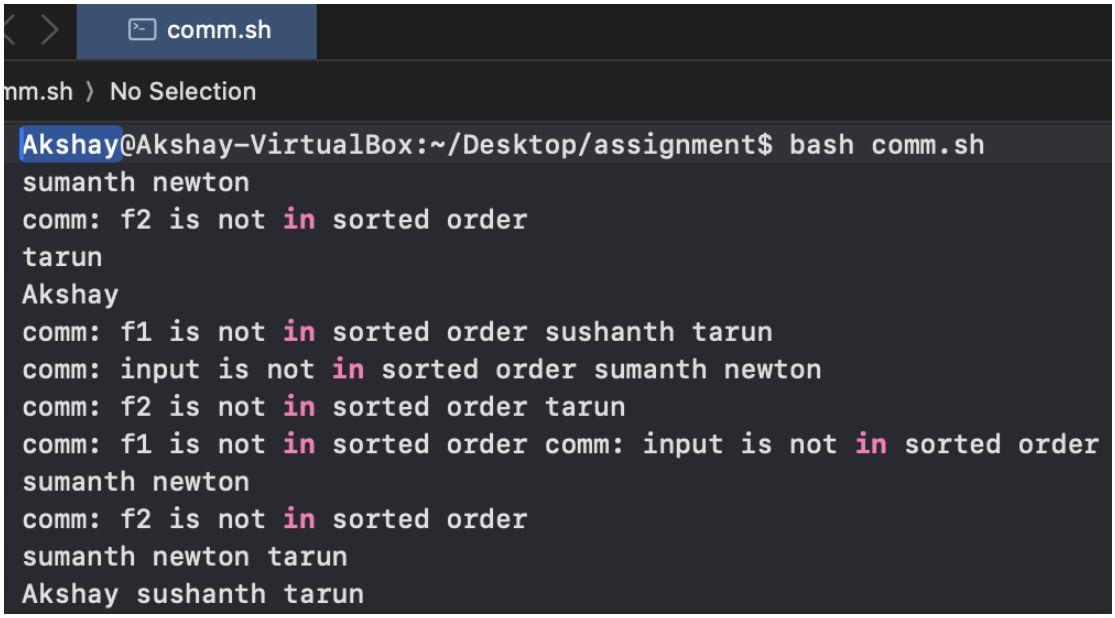


2) comm

code:



output:



f1.txt:

Akshay

sushanth

tarun

f2.txt:

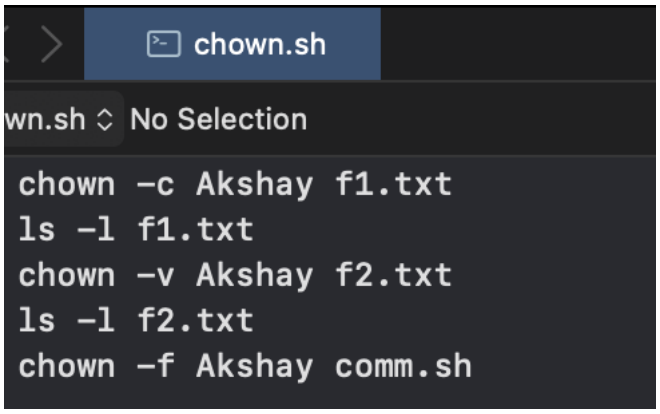
sumanth

newton

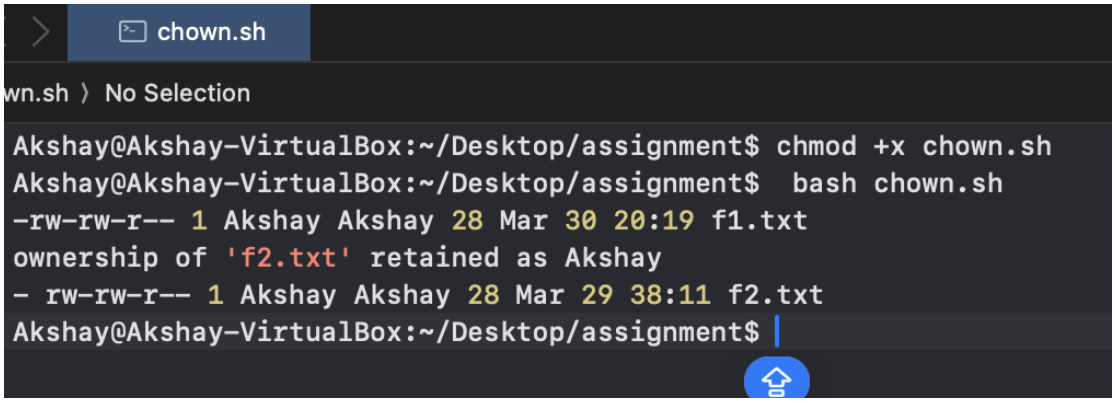
tarun

3) chown

code:

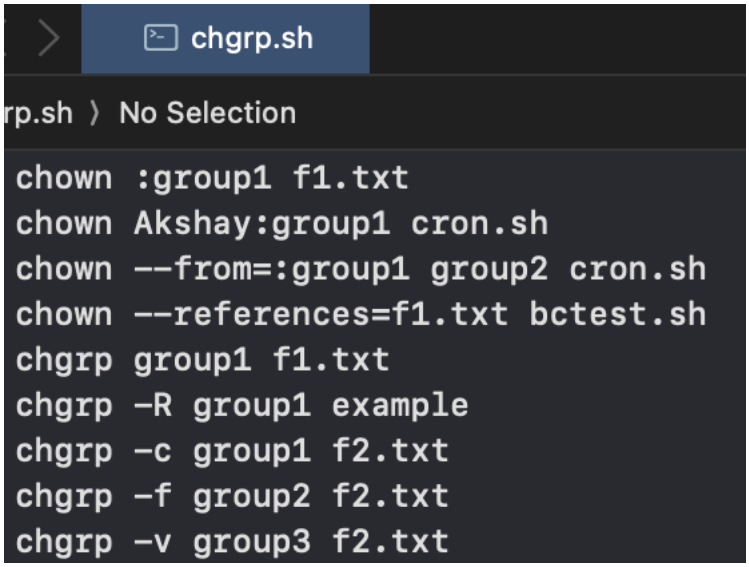


OUTPUT:

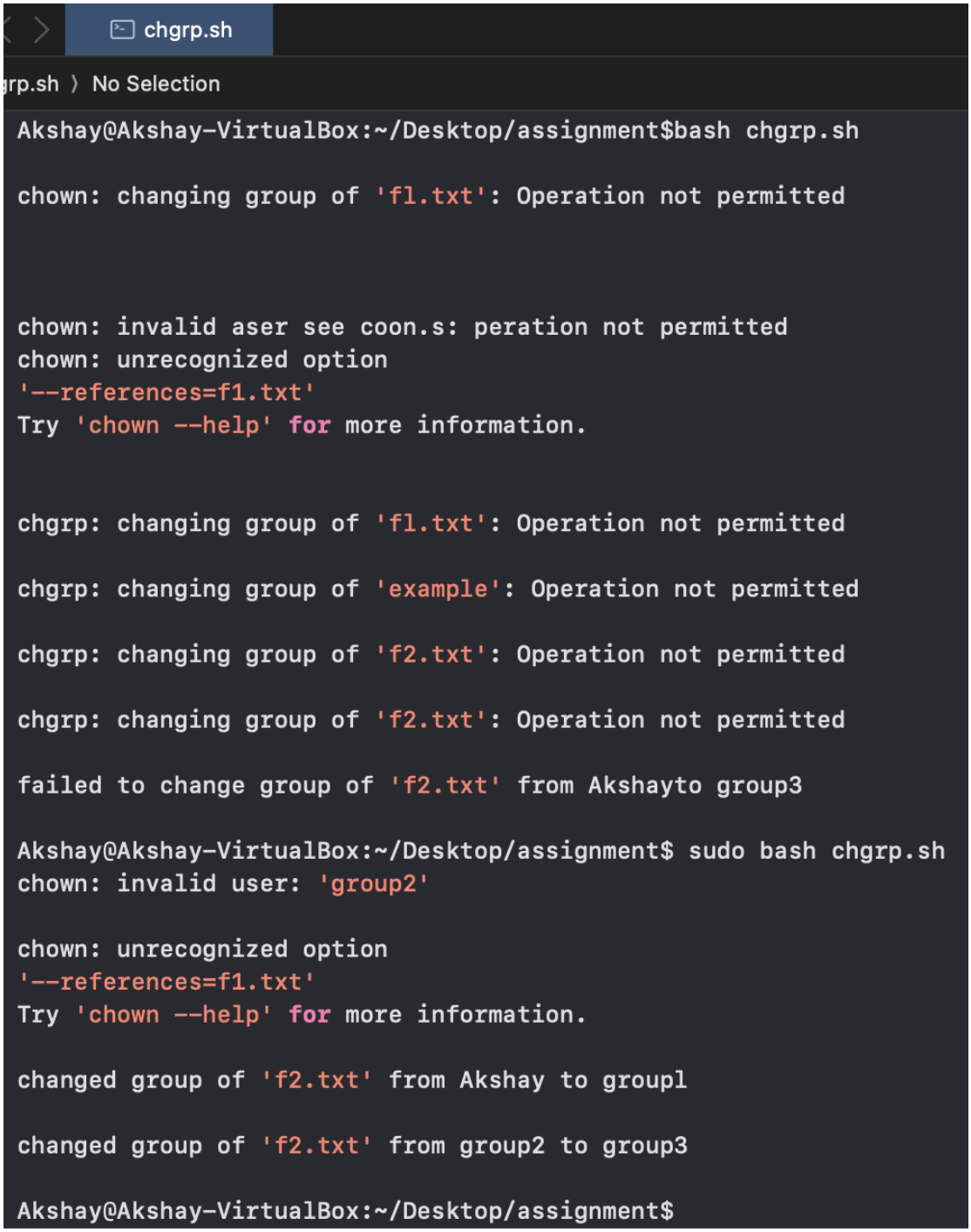


4) chgrp

code:



output:


chgrp.sh
grp.sh 〉 No Selection
Akshay@Akshay-VirtualBox:~/Desktop/assignment$bash chgrp.sh
chown: changing group of 'f1.txt': Operation not permitted
chown: invalid aser see coon.s: peration not permitted
chown: unrecognized option
'--references=f1.txt'
Try 'chown --help' for more information.
chgrp: changing group of 'f1.txt': Operation not permitted
chgrp: changing group of 'example': Operation not permitted
chgrp: changing group of 'f2.txt': Operation not permitted
chgrp: changing group of 'f2.txt': Operation not permitted
failed to change group of 'f2.txt' from Akshayto group3
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ sudo bash chgrp.sh
chown: invalid user: 'group2'
chown: unrecognized option
'--references=f1.txt'
Try 'chown --help' for more information.
changed group of 'f2.txt' from Akshay to groupl
changed group of 'f2.txt' from group2 to group3
Akshay@Akshay-VirtualBox:~/Desktop/assignment$

5) cron

code:

```
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ crontab -e
no crontab for Akshay - using an empty one
Select an editor. To change later, run 'select-editor'.
1. /bin/nano
--- easiest
2. /usr/bin/vim.tiny
3. /bin/ed
Choose 1-3 [1]: 1
crontab: installing new crontab
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ crontab -e
No modification made
Akshay@Akshay-VirtualBox:~/Desktop/assignment$
```

output:

```
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# and day of week (dow) or use '*' in these fields (for
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
For example, you can run a backup of all your user accounts
#
at 5 a.m every week with:
#05 * * 1 tar -zcf /var/backups/home.tgz /home/
# For more information see the manual pages of crontab(5) and cron(8)
#
#mh
dom mon dow
command
00 09 * * * /Akshay/Desktop/assignment/bc.sh
```

6) dd

code and output:

dd.sh

sh 〉 No Selection

```
dd if=/dev/sda of=/dev/sdb
dd if=/dev/sda of=/dev/sdb conv=noerror, sync
dd =f=/dev/hda1 of=~/partition.img
dd if=/dev/hda of=~/hdadisk.img
dd if=hdadisk.img of=/dev/hdb
dd if=/dev/cdrom of=tgsservice.iso bs=2048
```

7) diff

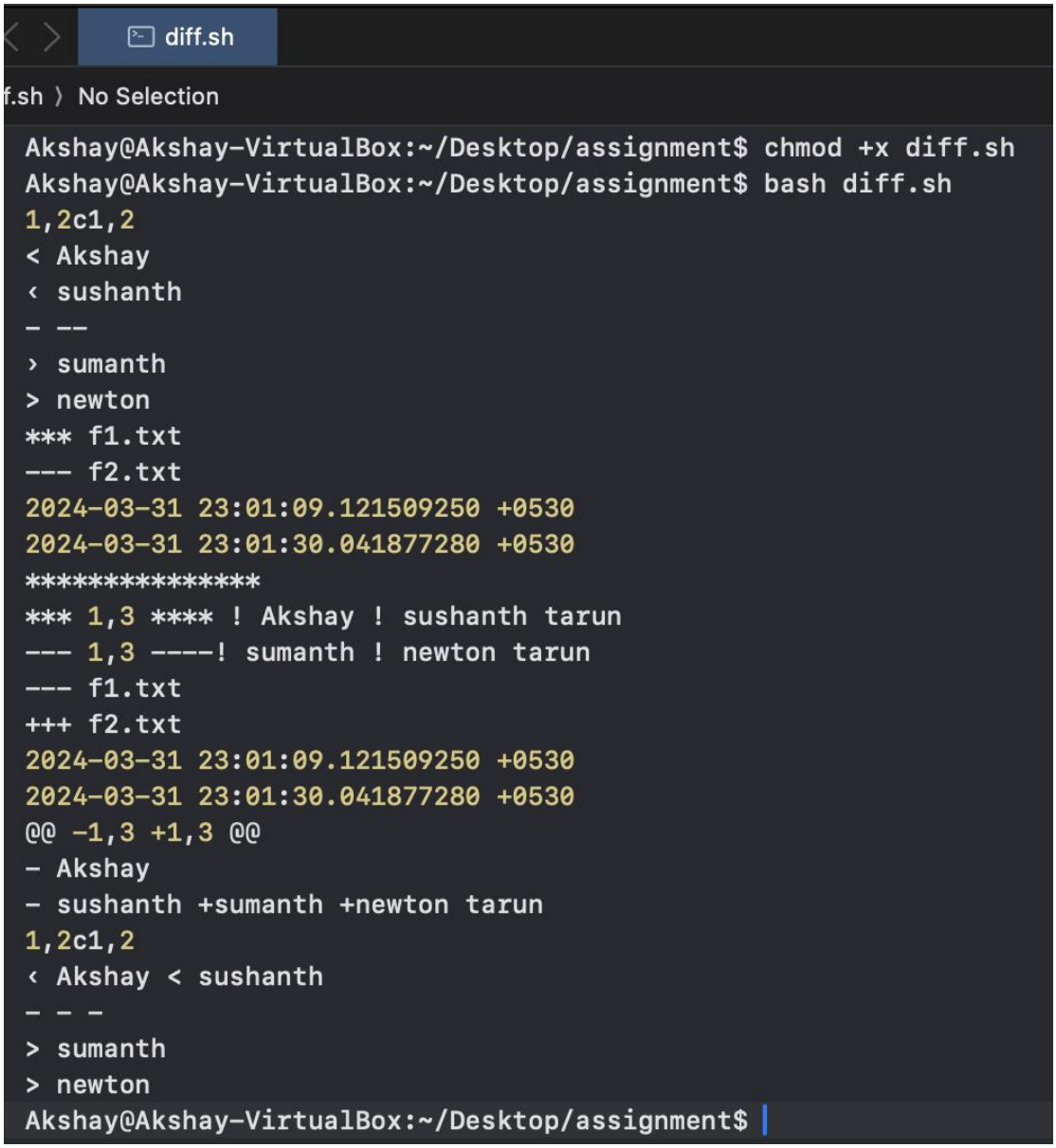
code:

diff.sh

sh 〉 No Selection

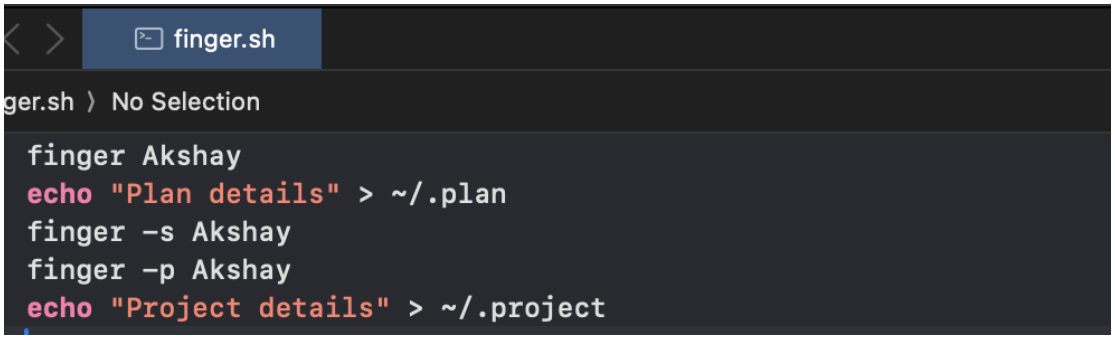
```
diff f1.txt f2.txt
diff -c f1.txt f2.txt
diff -u f1.txt f2.txt
diff -i f1.txt f2.txt
```

output:

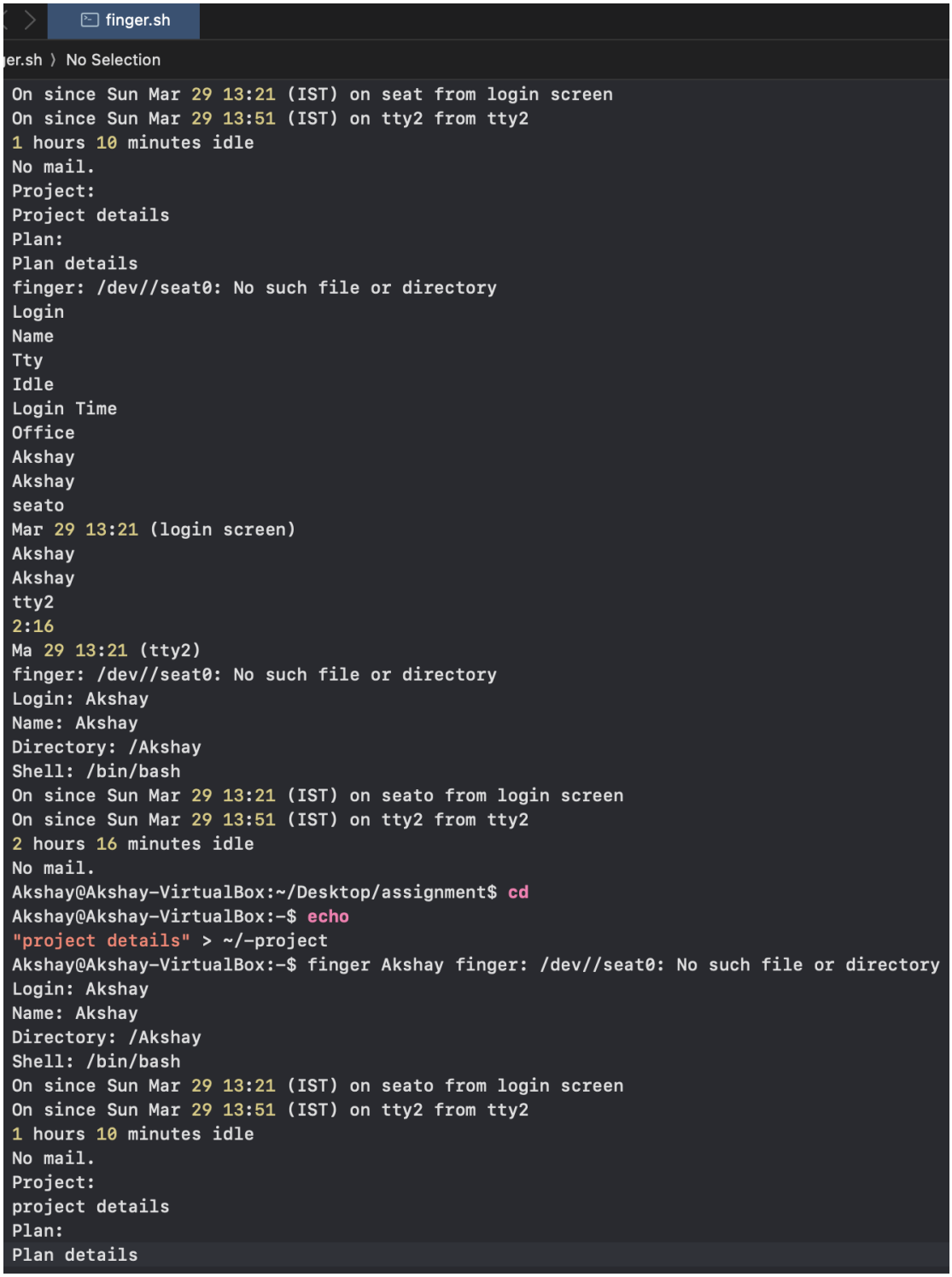


7)finger

code and output:

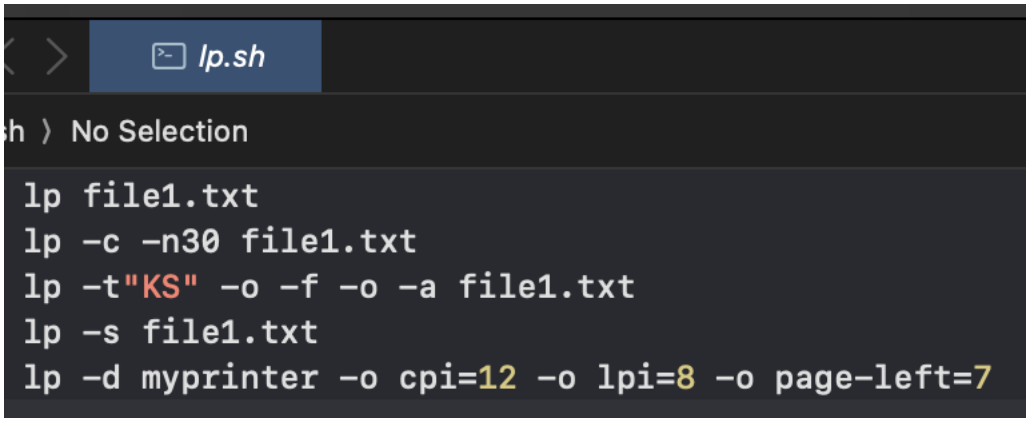

finger.sh
ger.sh 〉 No Selection
finger Akshay
echo "Plan details" > ~/.plan
finger -s Akshay
finger -p Akshay
echo "Project details" > ~/.project


finger.sh
er.sh 〉 No Selection
Akshay@Akshay-VirtualBox:~$ cd Desktop
Akshay@Akshay-VirtualBox:~/Desktop/assignment$
Akshay@Akshay-VirtualBox:~/Desktop/assignment$bash finger.sh
finger: /dev//seat0: No such file or directory
Login: Akshay
Name: Akshay
Directory: /Akshay
Shell: /bin/bash
On since Sun Mar 29 13:21 (IST) on seato from login screen
On since Sun Mar 29 13:51 (IST) on tty2 from tty2
1 hours 10 minutes idle
No mail.
Project:
Project details
Plan:
Plan details
finger: /dev//seat0: No such file or directory
Login
Name
Tty
Idle Login Time
Office
Office Phone
Akshay Akshay
seato
Mar 29 13:21 (login screen)
Akshay Akshay
tty2
2:16 Mar 29 13:21 (tty2)
finger: /dev//seat0: No such file or directory
Login: Akshay
Name: Akshay
Directory: /Akshay
Shell: /bin/bash
On since Sun Mar 31 22:21 (IST) on seato from login screen
On since Sun Mar 31 22:21 (IST) on tty2 from tty2
1 hours 10minutes idle
No mail.
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ cd
Akshay@Akshay-VirtualBox:~$ echo "project details" > ~/-project
Akshay@Akshay-VirtualBox:~:~$ finger Akshay finger: /dev//seat0: No such file or directory
Login: Akshay
Name: Akshay
Directory: /Akshay
Shell: /bin/bash
On since Sun Mar 29 13:21 (IST) on seato from login screen
On since Sun Mar 29 13:51 (IST) on tty2 from tty2


finger.sh
er.sh 〉 No Selection
On since Sun Mar 29 13:21 (IST) on seat from login screen
On since Sun Mar 29 13:51 (IST) on tty2 from tty2
1 hours 10 minutes idle
No mail.
Project:
Project details
Plan:
Plan details
finger: /dev//seat0: No such file or directory
Login
Name
Tty
Idle
Login Time
Office
Akshay
Akshay
seato
Mar 29 13:21 (login screen)
Akshay
Akshay
tty2
2:16
Ma 29 13:21 (tty2)
finger: /dev//seat0: No such file or directory
Login: Akshay
Name: Akshay
Directory: /Akshay
Shell: /bin/bash
On since Sun Mar 29 13:21 (IST) on seato from login screen
On since Sun Mar 29 13:51 (IST) on tty2 from tty2
2 hours 16 minutes idle
No mail.
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ cd
Akshay@Akshay-VirtualBox:-$ echo
"project details" > ~/-project
Akshay@Akshay-VirtualBox:-$ finger Akshay finger: /dev//seat0: No such file or directory
Login: Akshay
Name: Akshay
Directory: /Akshay
Shell: /bin/bash
On since Sun Mar 29 13:21 (IST) on seato from login screen
On since Sun Mar 29 13:51 (IST) on tty2 from tty2
1 hours 10 minutes idle
No mail.
Project:
project details
Plan:
Plan details

8) lp

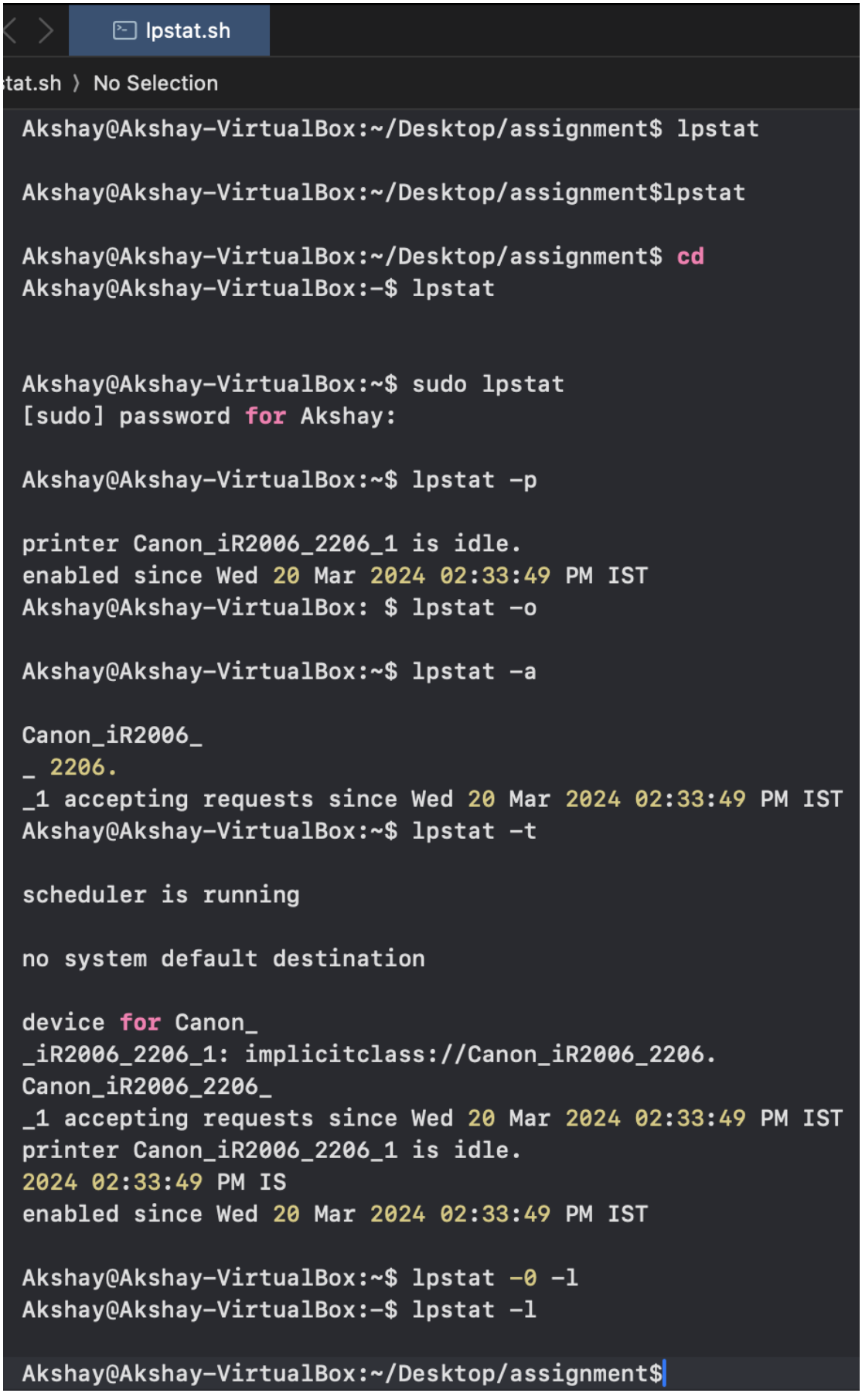
code:



9) ipstat:

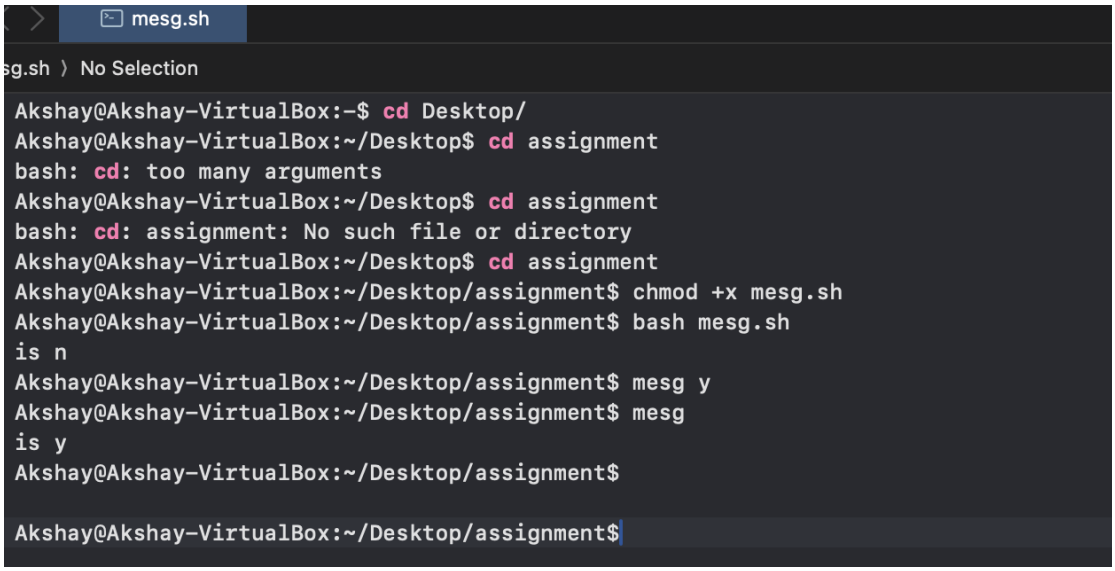
code:

code:


lpstat.sh
tat.sh 〉 No Selection
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ lpstat
Akshay@Akshay-VirtualBox:~/Desktop/assignment$lpstat
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ cd
Akshay@Akshay-VirtualBox:-$ lpstat
Akshay@Akshay-VirtualBox:~$ sudo lpstat
[sudo] password for Akshay:
Akshay@Akshay-VirtualBox:~$ lpstat -p
printer Canon_iR2006_2206_1 is idle.
enabled since Wed 20 Mar 2024 02:33:49 PM IST
Akshay@Akshay-VirtualBox: $ lpstat -o
Akshay@Akshay-VirtualBox:~$ lpstat -a
Canon_iR2006_
_ 2206.
_1 accepting requests since Wed 20 Mar 2024 02:33:49 PM IST
Akshay@Akshay-VirtualBox:~$ lpstat -t
scheduler is running
no system default destination
device for Canon_
_iR2006_2206_1: implicitclass://Canon_iR2006_2206.
Canon_iR2006_2206_
_1 accepting requests since Wed 20 Mar 2024 02:33:49 PM IST
printer Canon_iR2006_2206_1 is idle.
2024 02:33:49 PM IS
enabled since Wed 20 Mar 2024 02:33:49 PM IST
Akshay@Akshay-VirtualBox:~$ lpstat -0 -l
Akshay@Akshay-VirtualBox:-$ lpstat -l
Akshay@Akshay-VirtualBox:~/Desktop/assignment$

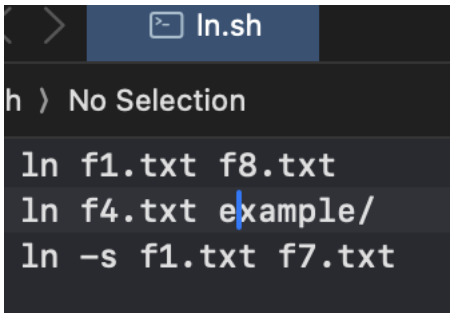
10) mesg

code and output:

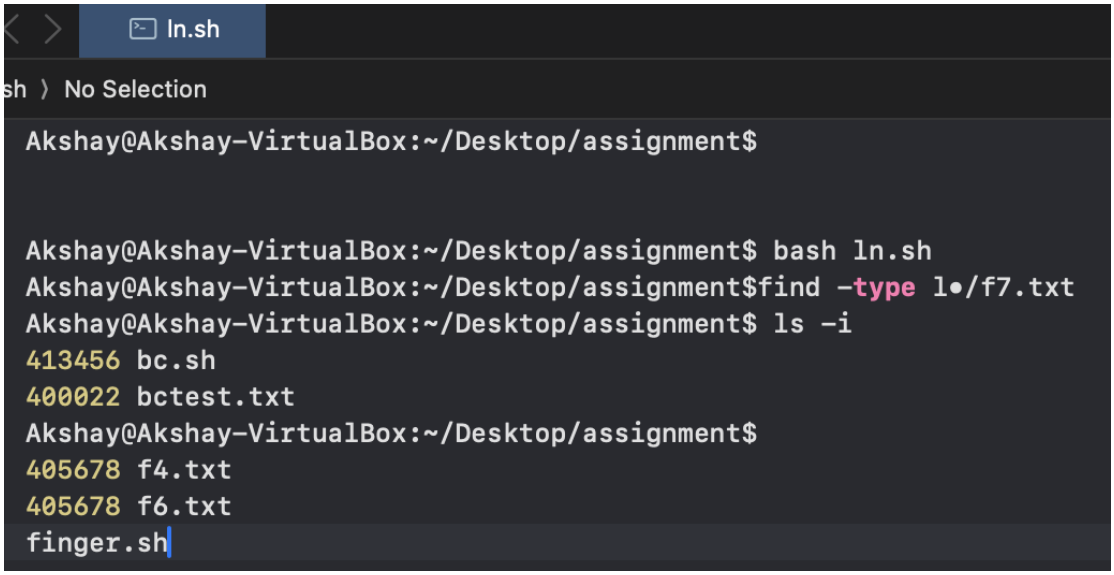


11) ln

code and output:



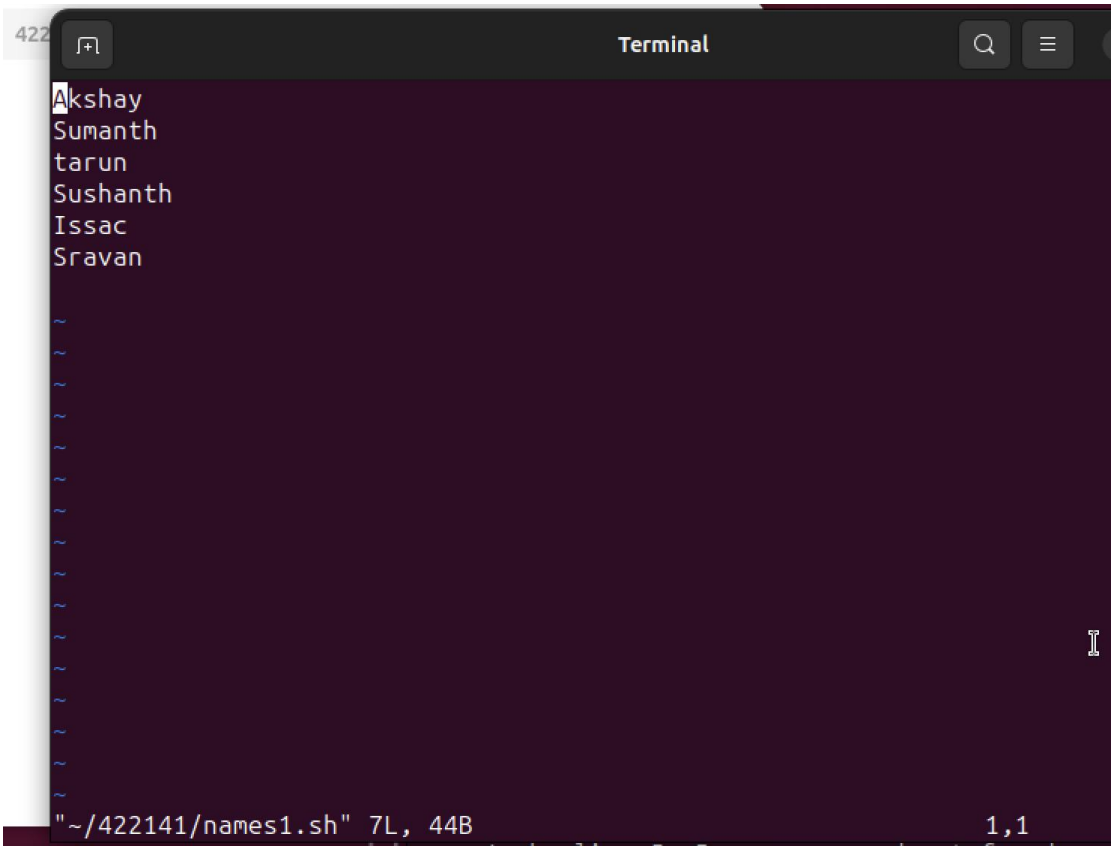

Akshay@Akshay-VirtualBox:~/Desktop/assignment$ bash ln.sh
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ ls
bc. sh
chgrp.sh comm.sh
dd.txt
example
f2.txt
bctest.txt chown.sh cron.sh diff.sh f1.txt f3.txt
f4.txt
f6.txt
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ ls -v
bc. sh
chgrp.sh comm.sh dd.txt
example f2.txt
f4.txt
bctest.txt
chown.sh cron.sh
diff.sh f1.tt f3.txt
f6.txt
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ ln -v f1.txt
In: failed to create hard link '/f1.txt': File exists
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.
Mandatory arguments to long options are mandatory for short options too.
-a, --all
-A, --almost-all
- - author
-b,
-- escape
--block-size=SIZE
do not ignore entries starting with . do not list implied. and ..
with -l, print the author of each file print C-style escapes for nongraphic characters with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below
- B,
-- ignore-backups
- C
do not list implied entries ending with ~ with -lt: sort by, and show, ctime (time of last modification of file status information); with -l: show ctime and sort by name; otherwise: sort by ctime, newest first
- C
- - color[=WHEN]
-d, --directory
-D, - -dired
- f
-F, --classify[=WHEN]
list entries by columns
color the output WHEN; more info below list directories themselves, not their contents generate output designed for Emacs' dired mode list all entries in directory order append indicator (one of */=>@|) to entries WHEN
find.sh finger.sh
find.sh finger.sh
In.sh
In.sh
Akshay@Akshay-VirtualBox:~/Desktop/assignment$

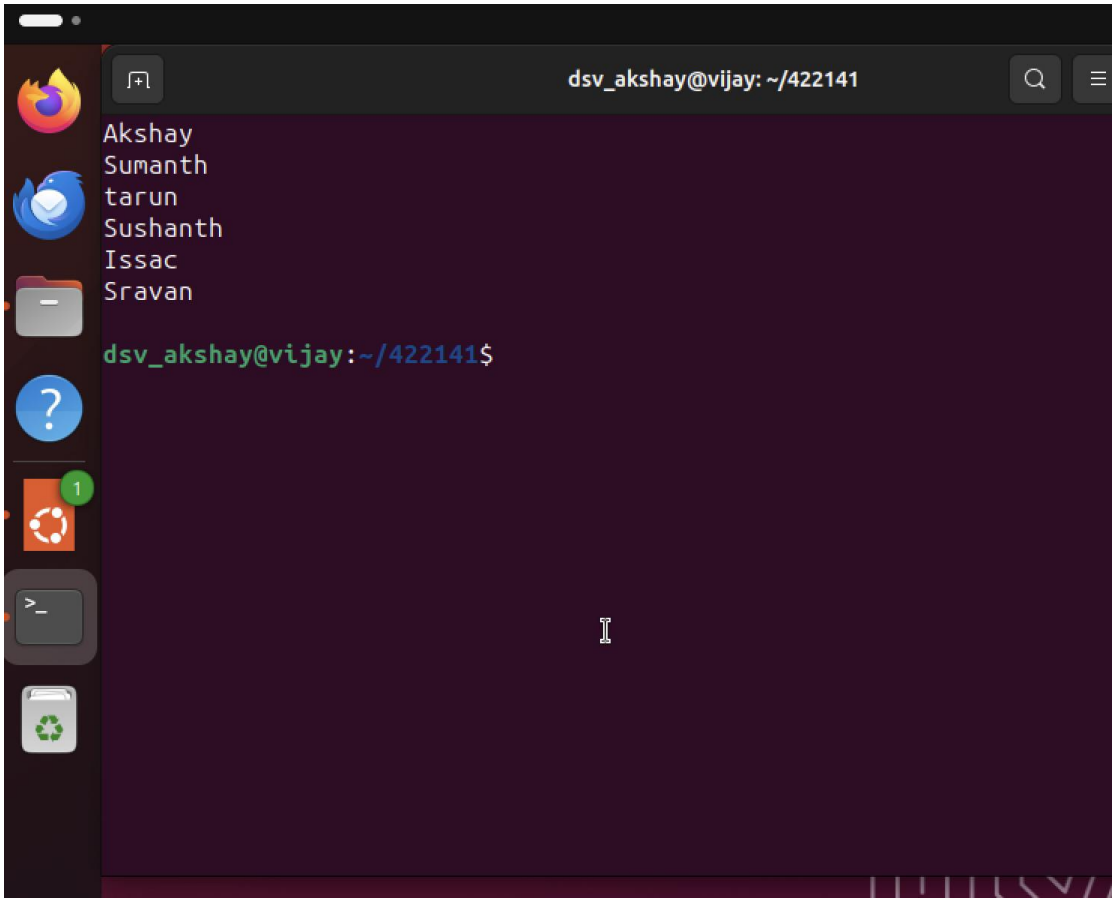

ln.sh
sh 〉 No Selection
Akshay@Akshay-VirtualBox:~/Desktop/assignment$
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ bash ln.sh
Akshay@Akshay-VirtualBox:~/Desktop/assignment$find -type l•/f7.txt
Akshay@Akshay-VirtualBox:~/Desktop/assignment$ ls -i
413456 bc.sh
400022 bctest.txt
Akshay@Akshay-VirtualBox:~/Desktop/assignment$
405678 f4.txt
405678 f6.txt
finger.sh

Name:Akshay chinnu
Sec:A
Roll Number:422141

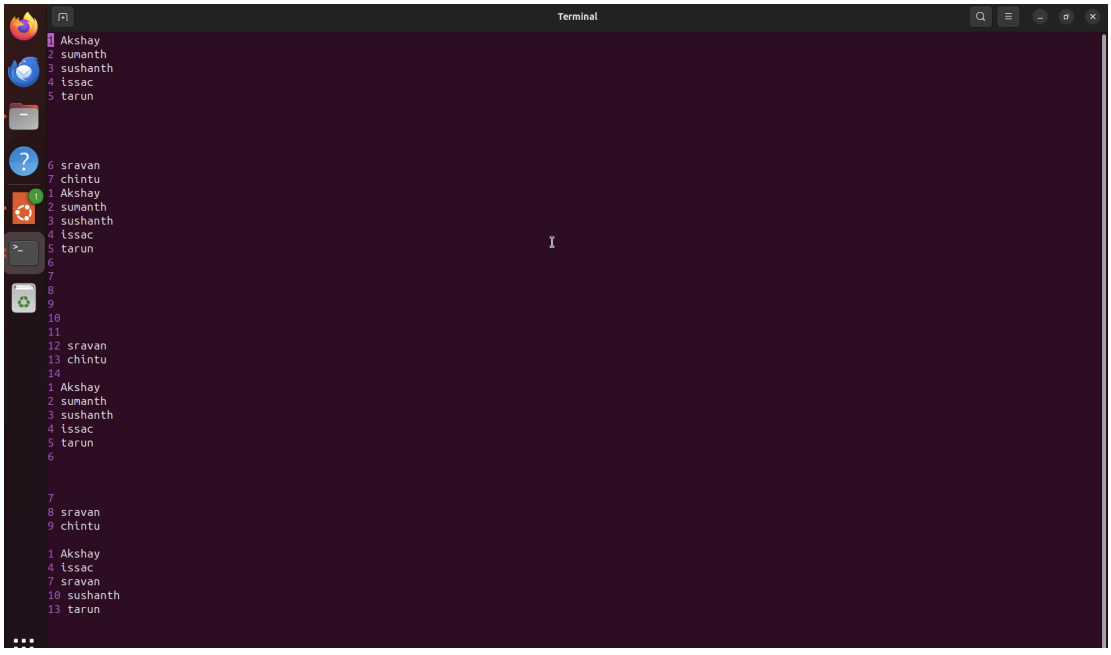
Unix Assignment:7

1) More Command

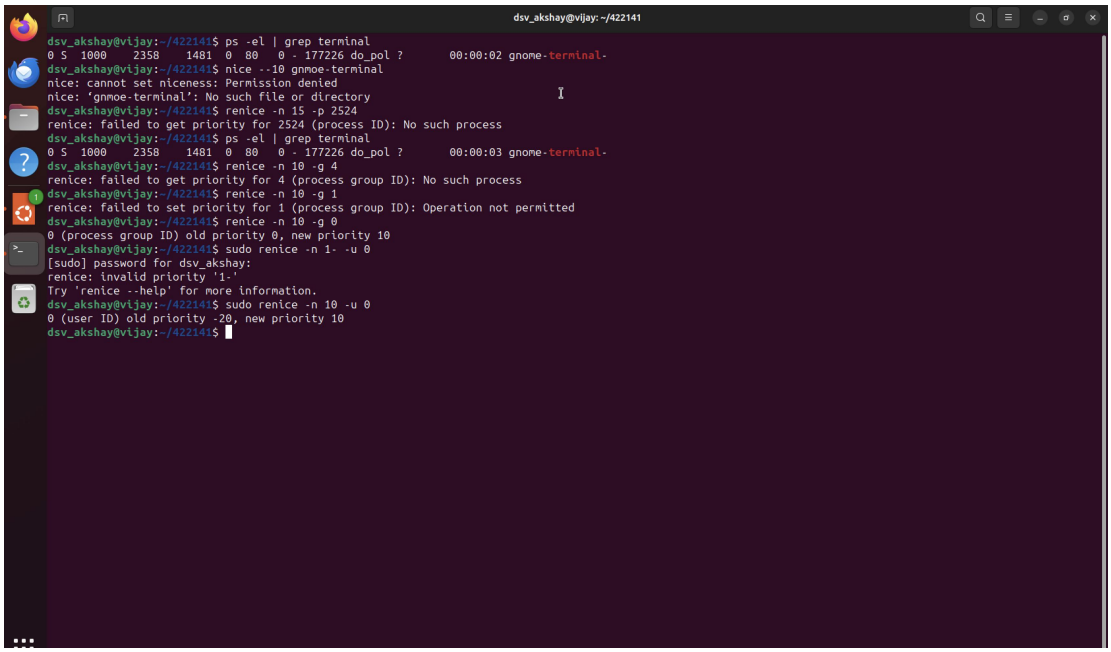



dsv_akshay@vijay: ~/422141
Akshay
Sumanth
tarun
Sushanth
Issac
Sravan
dsv_akshay@vijay:~/422141$

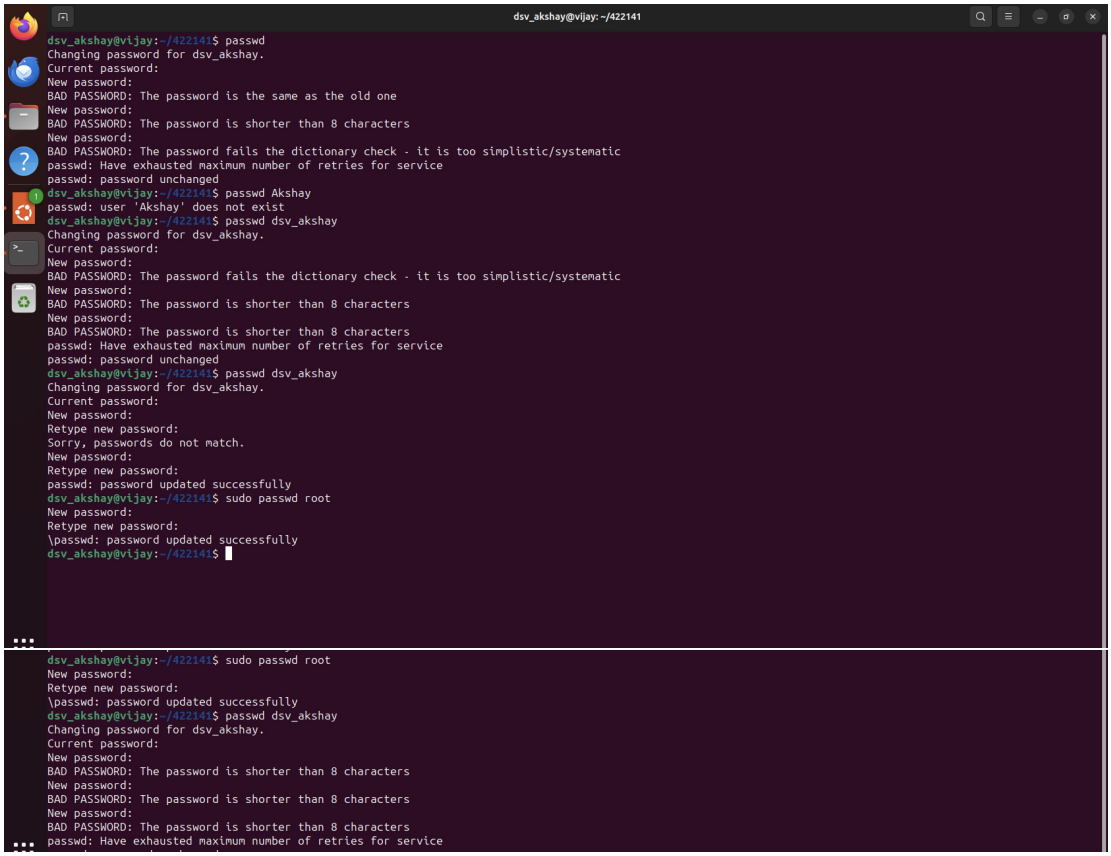
2) Nl command


Terminal
1 Akshay
2 sumanth
3 sushanth
4 issac
5 tarun
6 sravan
7 chintu
1 Akshay
2 sumanth
3 sushanth
4 issac
5 tarun
12 sravan
13 chintu
1 Akshay
2 sumanth
3 sushanth
4 issac
5 tarun
8 sravan
9 chintu
1 Akshay
4 issac
7 sravan
10 sushanth
13 tarun

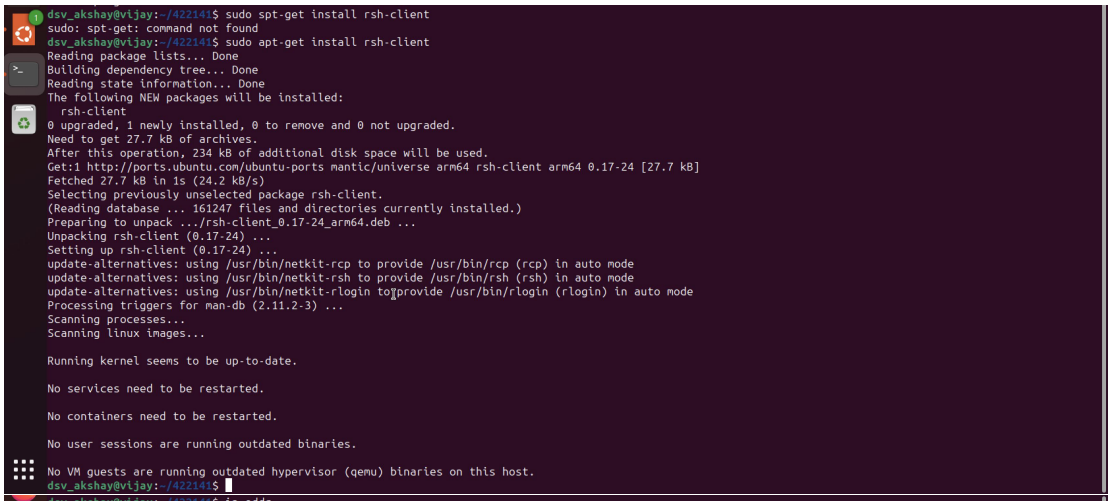
Nice command



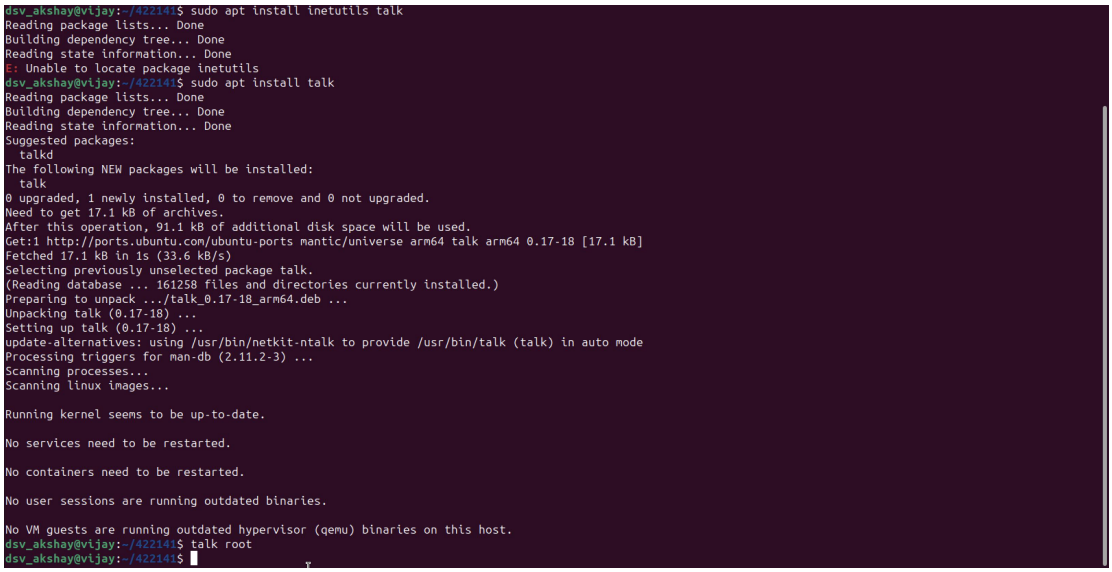
passwd command



rlogin command

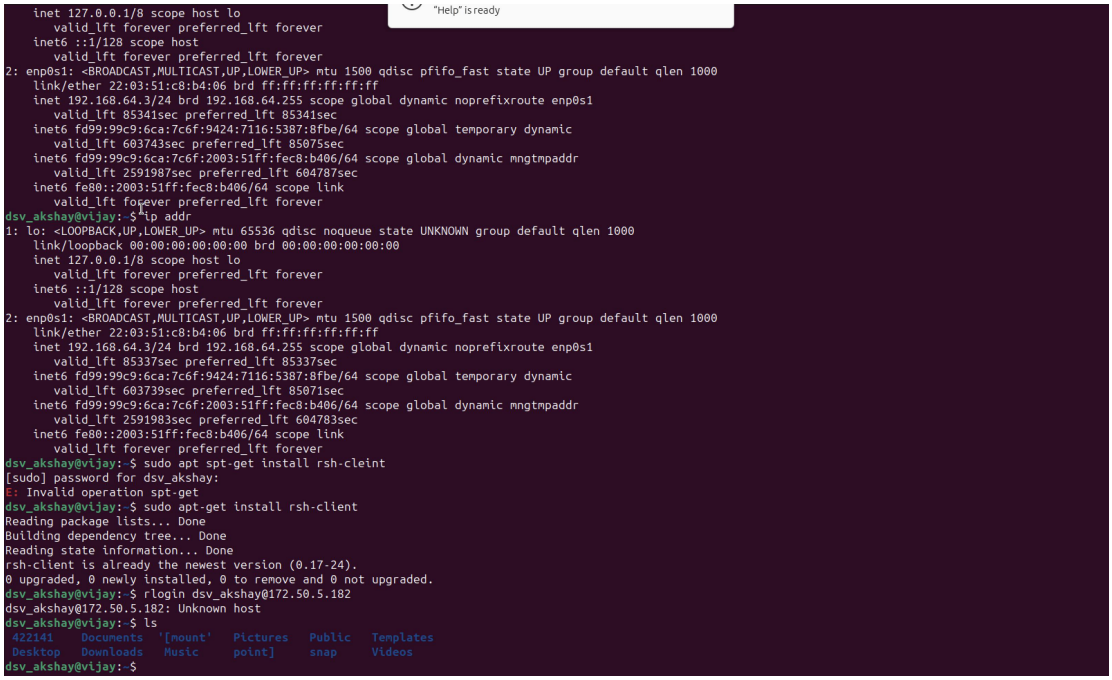


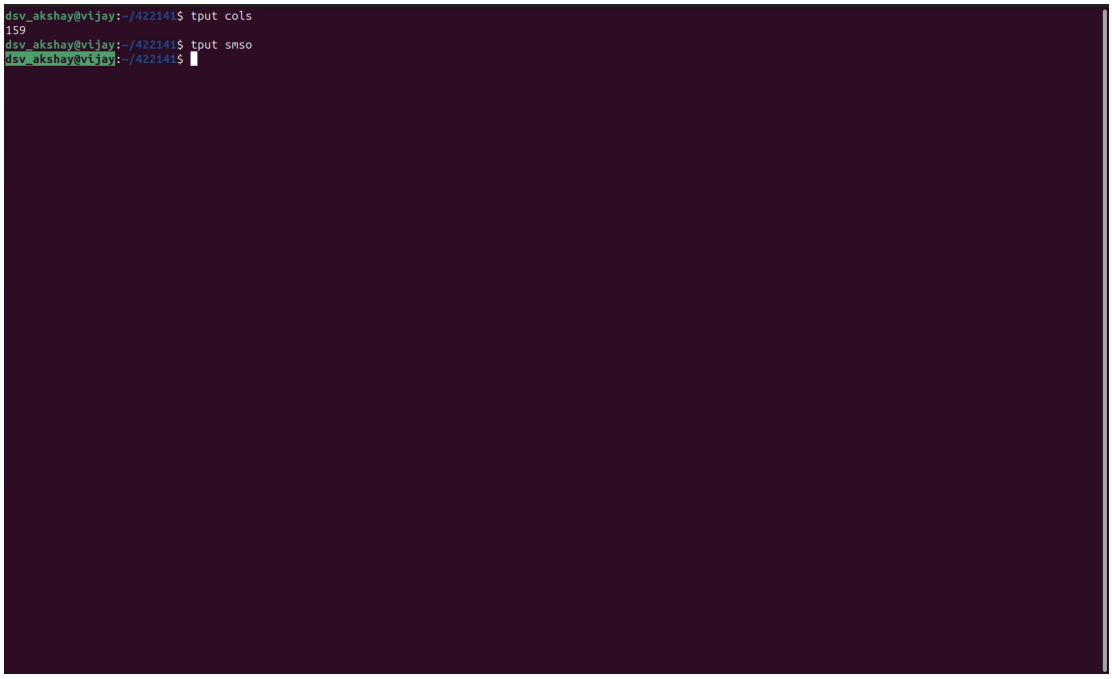
talk command



rlogin

```
dsv_akshay@vijay:~$ ip add
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 22:03:51:c8:b4:06 brd ff:ff:ff:ff:ff:ff
    inet 192.168.64.3/24 brd 192.168.64.255 scope global dynamic noprefixroute enp0s1
       valid_lft 85341sec preferred_lft 85341sec
    inet6 fd99:99c9:6ca:7c6f:9424:7116:5387:8fbe/64 scope global temporary dynamic
       valid_lft 603743sec preferred_lft 85075sec
    inet6 fd99:99c9:6ca:7c6f:2003:51ff:fec8:b406/64 scope global dynamic mngtmpaddr
       valid_lft 2591987sec preferred_lft 604787sec
    inet6 fe80::2003:51ff:fec8:b406/64 scope link
       valid_lft forever preferred_lft forever
dsv_akshay@vijay:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 22:03:51:c8:b4:06 brd ff:ff:ff:ff:ff:ff
    inet 192.168.64.3/24 brd 192.168.64.255 scope global dynamic noprefixroute enp0s1
       valid_lft 85337sec preferred_lft 85337sec
    inet6 fd99:99c9:6ca:7c6f:9424:7116:5387:8fbe/64 scope global temporary dynamic
       valid_lft 603739sec preferred_lft 85071sec
    inet6 fd99:99c9:6ca:7c6f:2003:51ff:fec8:b406/64 scope global dynamic mngtmpaddr
       valid_lft 2591983sec preferred_lft 604783sec
    inet6 fe80::2003:51ff:fec8:b406/64 scope link
       valid_lft forever preferred_lft forever
dsv_akshay@vijay:~$ sudo apt spt-get install rsh-cleint
[sudo] password for dsv_akshay:
E: Invalid operation spt-get
dsv_akshay@vijay:~$ sudo apt-get install rsh-client
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
rsh-client is already the newest version (0.17-24).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
dsv_akshay@vijay:~$ rlogin dsv_akshay@172.50.5.182
dsv_akshay@172.50.5.182: Unknown host
dsv_akshay@vijay:~$ ls
```


"Help" is ready
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
link/ether 22:03:51:c8:b4:06 brd ff:ff:ff:ff:ff:ff
inet 192.168.64.3/24 brd 192.168.64.255 scope global dynamic noprefixroute enp0s1
valid_lft 85341sec preferred_lft 85341sec
inet6 fd99:99c9:6ca:7c6f:9424:7116:5387:8fbe/64 scope global temporary dynamic
valid_lft 603743sec preferred_lft 85075sec
inet6 fd99:99c9:6ca:7c6f:2003:51ff:fec8:b406/64 scope global dynamic mngtmpaddr
valid_lft 2591987sec preferred_lft 604787sec
inet6 fe80::2003:51ff:fec8:b406/64 scope link
valid_lft forever preferred_lft forever
dsv_akshay@vijay:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
link/ether 22:03:51:c8:b4:06 brd ff:ff:ff:ff:ff:ff
inet 192.168.64.3/24 brd 192.168.64.255 scope global dynamic noprefixroute enp0s1
valid_lft 85337sec preferred_lft 85337sec
inet6 fd99:99c9:6ca:7c6f:9424:7116:5387:8fbe/64 scope global temporary dynamic
valid_lft 603739sec preferred_lft 85071sec
inet6 fd99:99c9:6ca:7c6f:2003:51ff:fec8:b406/64 scope global dynamic mngtmpaddr
valid_lft 2591983sec preferred_lft 604783sec
inet6 fe80::2003:51ff:fec8:b406/64 scope link
valid_lft forever preferred_lft forever
dsv_akshay@vijay:~$ sudo apt spt-get install rsh-cleint
[sudo] password for dsv_akshay:
E: Invalid operation spt-get
dsv_akshay@vijay:~$ sudo apt-get install rsh-client
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
rsh-client is already the newest version (0.17-24).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
dsv_akshay@vijay:~$ rlogin dsv_akshay@172.50.5.182
dsv_akshay@172.50.5.182: Unknown host
dsv_akshay@vijay:~$ ls
422141 Desktop Documents Downloads 'mount' point] Music Pictures Public snap Templates Videos
dsv_akshay@vijay:~$



tty
command:

uname command

```
dsv_akshay@vijay:~/422141$ uname
Linux
dsv_akshay@vijay:~/422141$ uname -a
Linux vijay 6.5.0-27-generic #28-Ubuntu SMP PREEMPT_DYNAMIC Fri Mar  8 00:42:16 UTC 2024 aarch64 aarch64 aarch64 GNU/Linux
dsv_akshay@vijay:~/422141$ uname -s
Linux
dsv_akshay@vijay:~/422141$ uname -n
vijay
dsv_akshay@vijay:~/422141$ uname -r
6.5.0-27-generic
dsv_akshay@vijay:~/422141$ uname -v
#28-Ubuntu SMP PREEMPT_DYNAMIC Fri Mar  8 00:42:16 UTC 2024
dsv_akshay@vijay:~/422141$ uname -m
aarch64
dsv_akshay@vijay:~/422141$ uname -o
GNU/Linux
dsv_akshay@vijay:~/422141$
dsv_akshay@vijay:~/422141$
```

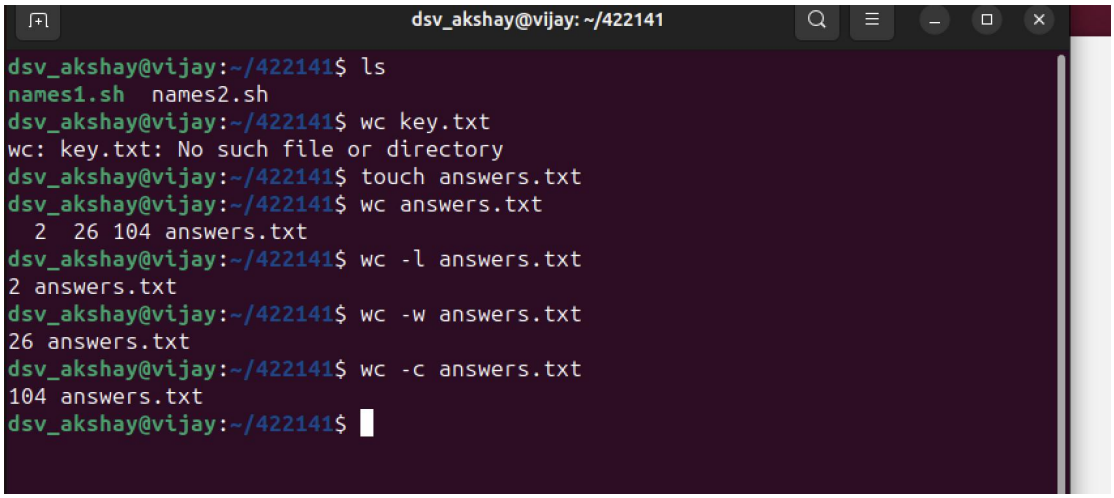
who command
:

```
dsv_akshay@vijay:~/422141$ who
dsv_akshay seat0        2024-04-11 15:56 (login screen)
dsv_akshay tty2         2024-04-11 15:56 (tty2)
dsv_akshay@vijay:~/422141$ who -H
NAME     LINE         TIME             COMMENT
dsv_akshay seat0        2024-04-11 15:56 (login screen)
dsv_akshay tty2         2024-04-11 15:56 (tty2)
dsv_akshay@vijay:~/422141$ who -a
          system boot  2024-04-11 15:56
          run-level 5  2024-04-11 15:56
LOGIN     ttyAMA0      2024-04-11 15:56              954 id=AMA0
dsv_akshay ? seat0       2024-04-11 15:56   ?          1538 (login screen)
dsv_akshay + tty2        2024-04-11 15:56  old         1538 (tty2)
          pts/1        2024-04-11 16:42             3774 id=ts/1  term=0 exit=0
dsv_akshay@vijay:~/422141$
```

write command:

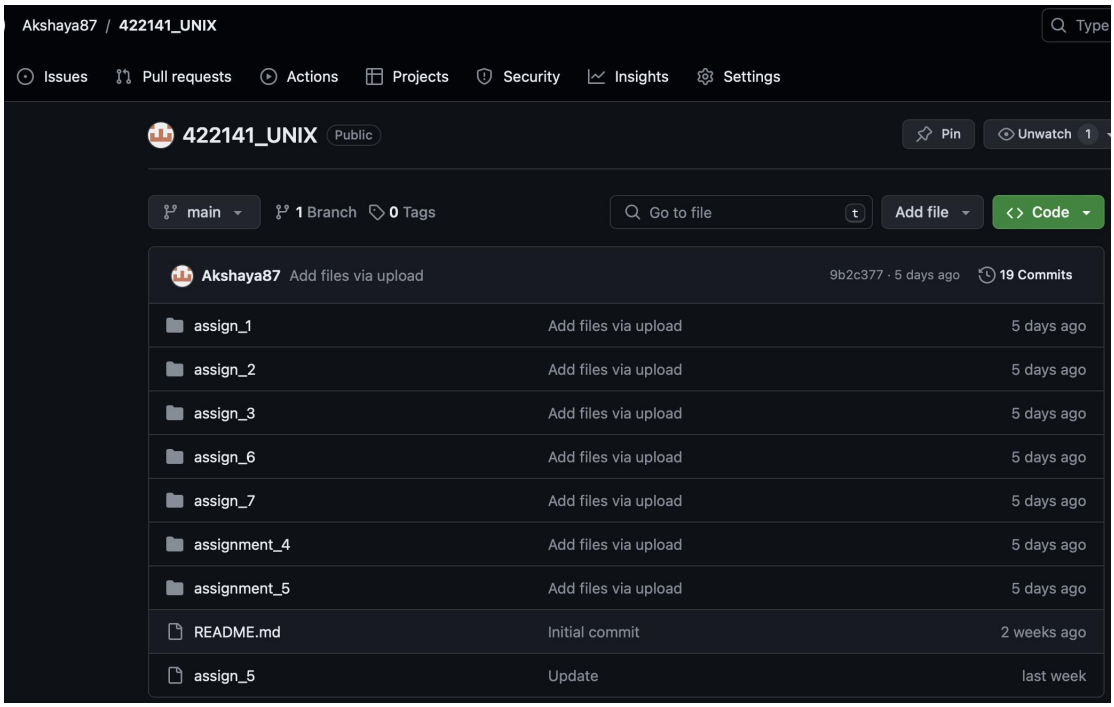
```
dsv_akshay@vijay:~/422141$ who
 dsv_akshay seato    2024-04-11 15:56 (login screen)
dsv_akshay tty       22024-04-11 15:56 (tty2)
dsv_akshay@vijay:~/422141$ write dsv_akshay
Hi this is dsv_akshay2 user
```

wc command



Memory and cpu usage

Name:Akshay chinnu
Sec:A
Roll number: 422141
Assignment:8



https://github.com/Akshaya87/422141_UNIX