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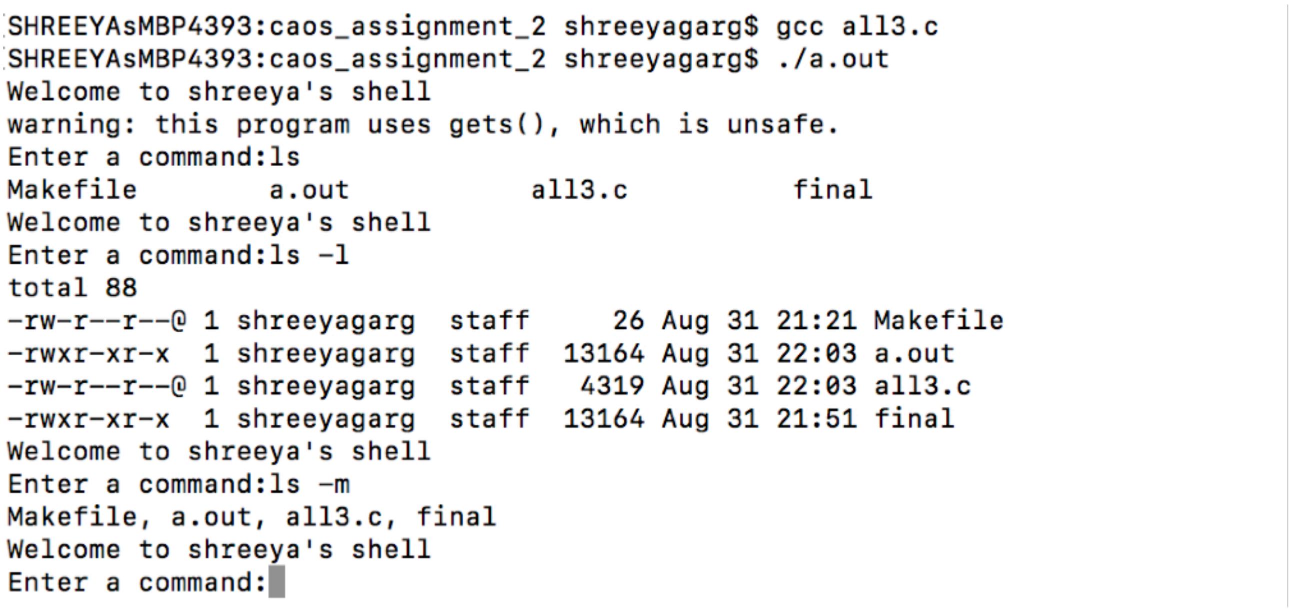
CAOS ASSIGNMENT 2

I made my own terminal and wrote codes for the following 5 external and 5 internal commands-

EXTERNAL COMMANDS-

1)ls-This command lists all the files present in the directory you are working in.I extracted this command from bin using command execlp() of execl() family.I also implemented two functionalities of this command namely-a)ls -l and b)ls -la

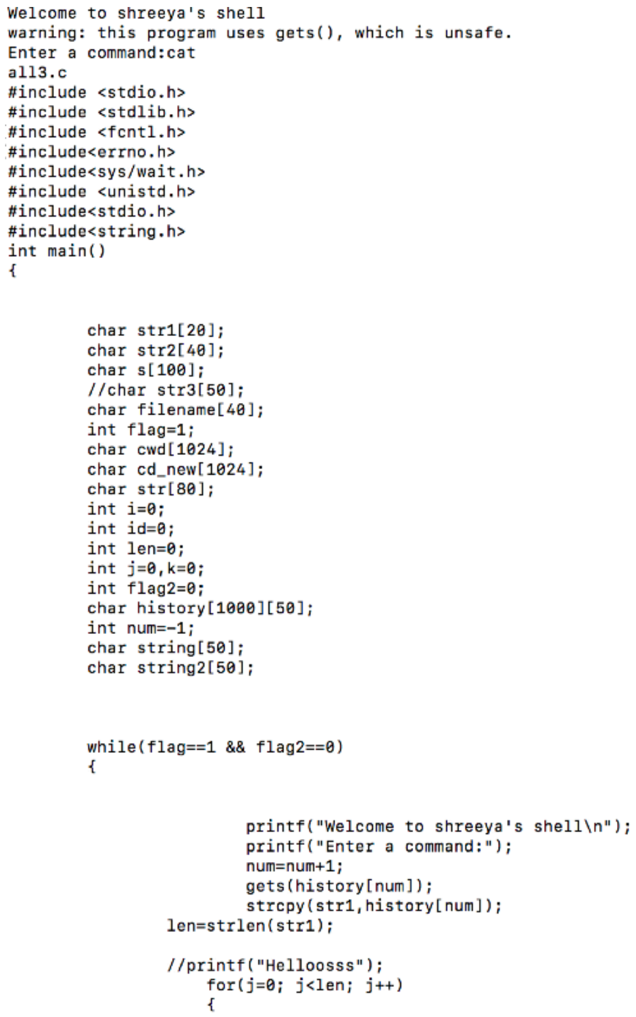
a)ls -l-:this command lists in long format.If the **-l** option is given, the following information is displayed foreach file: file mode, number of links, owner name, group name, number of bytes in the file, abbreviated month, day-of-month file was last modified, hour file last modified, minute file last modified, and the pathname.
b)ls -m-:It lists files across the page separated by commas.It is called Stream output format.
OUTPUT-



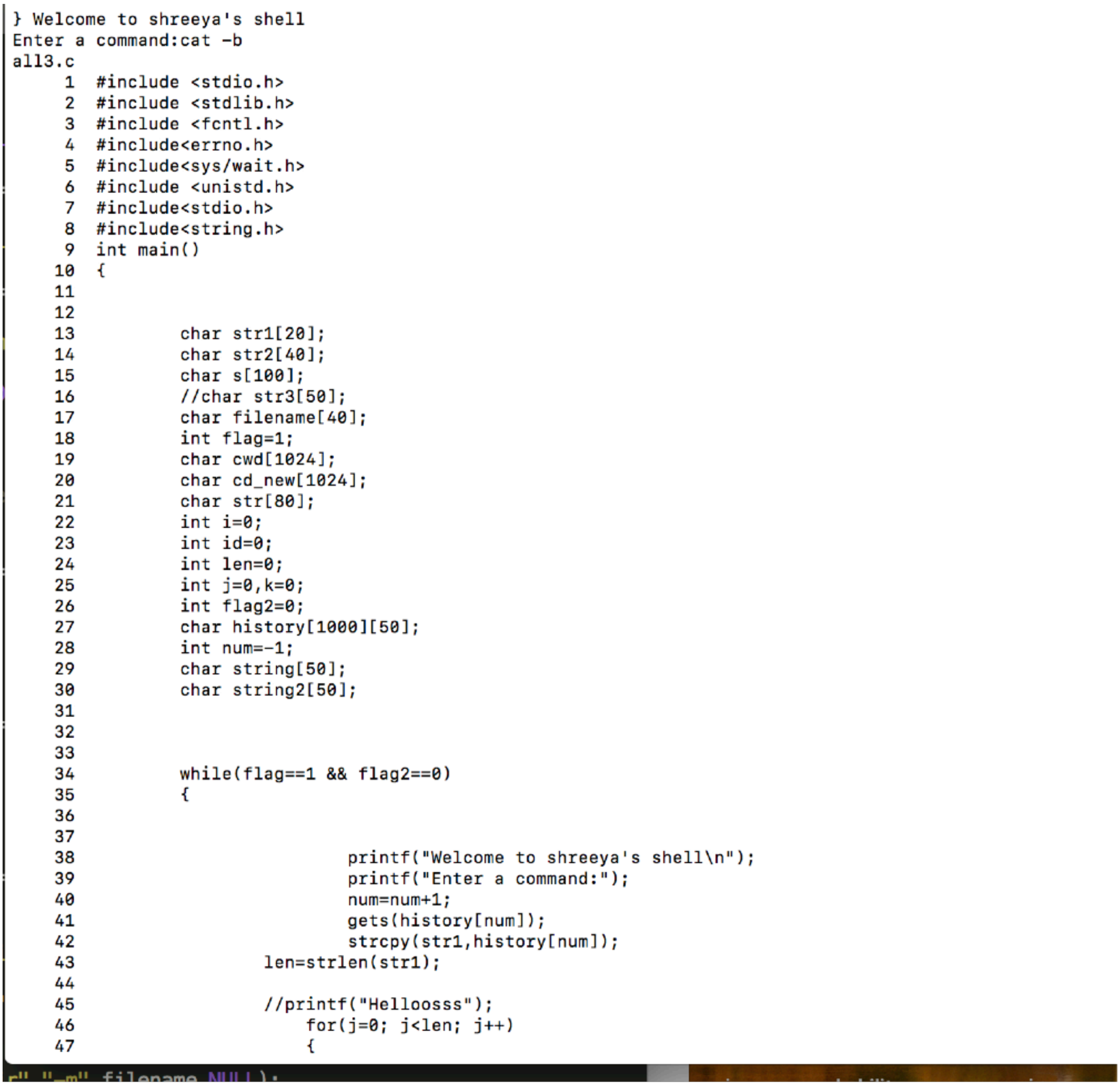
```
SHREEYAsMBP4393:caos_assignment_2 shreeyagarg$ gcc all3.c
SHREEYAsMBP4393:caos_assignment_2 shreeyagarg$ ./a.out
Welcome to shreeya's shell
warning: this program uses gets(), which is unsafe.
Enter a command:ls
Makefile        a.out           all3.c          final
Welcome to shreeya's shell
Enter a command:ls -l
total 88
-rw-r--r--@ 1 shreeyagarg  staff     26 Aug 31 21:21 Makefile
-rwxr-xr-x  1 shreeyagarg  staff  13164 Aug 31 22:03 a.out
-rw-r--r--@ 1 shreeyagarg  staff   4319 Aug 31 22:03 all3.c
-rwxr-xr-x  1 shreeyagarg  staff  13164 Aug 31 21:51 final
Welcome to shreeya's shell
Enter a command:ls -m
Makefile, a.out, all3.c, final
Welcome to shreeya's shell
Enter a command:
```

2)cat-The **cat** utility reads files sequentially and writes them to the standard output.It displays all the content fo the file.The two functionalities of cat are-:
a)cat -b-:Displays the number the non-blank output lines starting from 1.
b)cat -e-:Displays non-printing characters and display a dollar sign (`$') at the end of each line.
OUTPUT-

cat-:

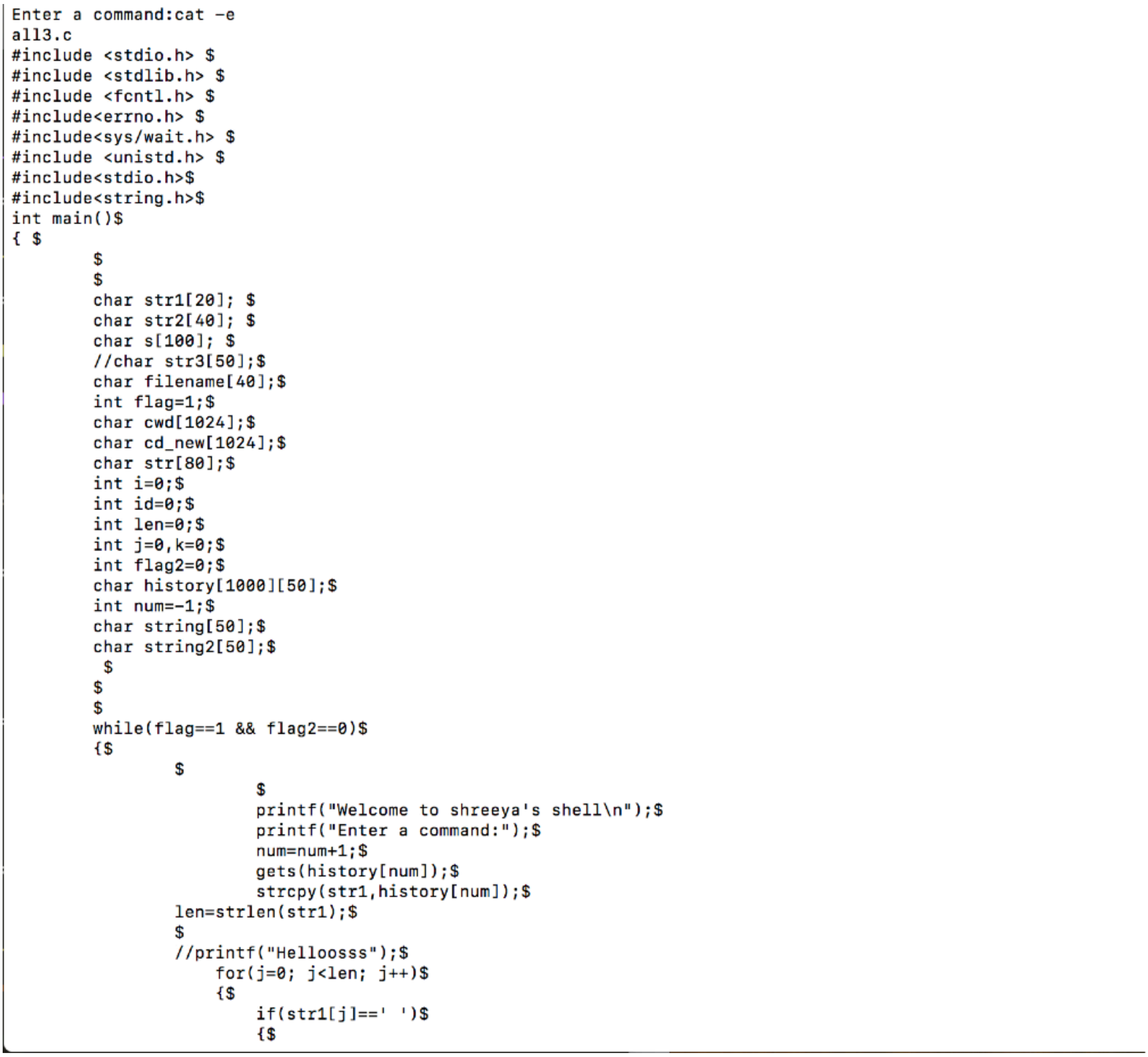


```
Welcome to shreeya's shell
warning: this program uses gets(), which is unsafe.
Enter a command:cat
all3.c
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include<errno.h>
#include<sys/wait.h>
#include <unistd.h>
#include<stdio.h>
#include<string.h>
int main()
{


        char str1[20];
        char str2[40];
        char s[100];
        //char str3[50];
        char filename[40];
        int flag=1;
        char cwd[1024];
        char cd_new[1024];
        char str[80];
        int i=0;
        int id=0;
        int len=0;
        int j=0,k=0;
        int flag2=0;
        char history[1000][50];
        int num=-1;
        char string[50];
        char string2[50];



        while(flag==1 && flag2==0)
        {


                        printf("Welcome to shreeya's shell\n");
                        printf("Enter a command:");
                        num=num+1;
                        gets(history[num]);
                        strcpy(str1,history[num]);
                len=strlen(str1);

                //printf("Helloosss");
                    for(j=0; j<len; j++)
                    {
```



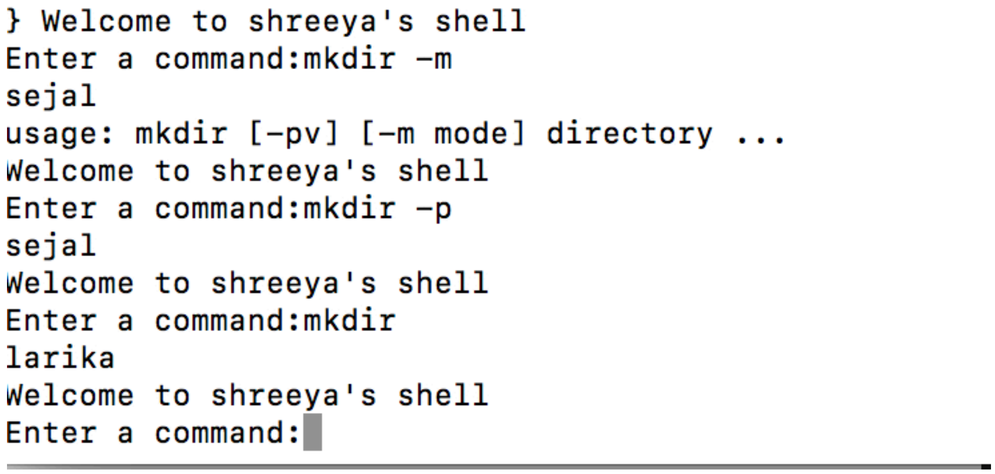
```
} Welcome to shreeya's shell
Enter a command:cat -b
all3.c
     1  #include <stdio.h>
     2  #include <stdlib.h>
     3  #include <fcntl.h>
     4  #include<errno.h>
     5  #include<sys/wait.h>
     6  #include <unistd.h>
     7  #include<stdio.h>
     8  #include<string.h>
     9  int main()
    10  {
    11
    12
    13          char str1[20];
    14          char str2[40];
    15          char s[100];
    16          //char str3[50];
    17          char filename[40];
    18          int flag=1;
    19          char cwd[1024];
    20          char cd_new[1024];
    21          char str[80];
    22          int i=0;
    23          int id=0;
    24          int len=0;
    25          int j=0,k=0;
    26          int flag2=0;
    27          char history[1000][50];
    28          int num=-1;
    29          char string[50];
    30          char string2[50];
    31
    32
    33
    34          while(flag==1 && flag2==0)
    35          {
    36
    37
    38                          printf("Welcome to shreeya's shell\n");
    39                          printf("Enter a command:");
    40                          num=num+1;
    41                          gets(history[num]);
    42                          strcpy(str1,history[num]);
    43                  len=strlen(str1);
    44
    45                  //printf("Helloosss");
    46                      for(j=0; j<len; j++)
    47                      {
r" "-m" filename NULL);
```

a)cat -b-:



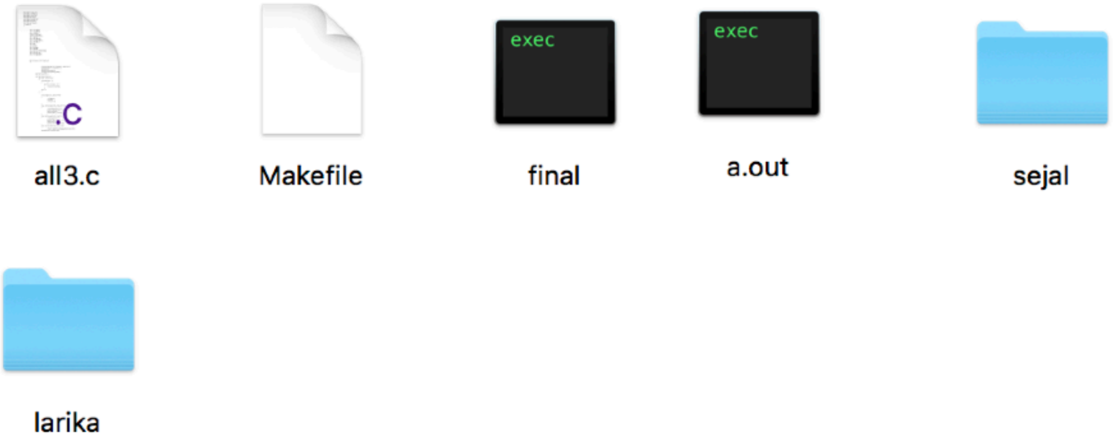
```
Enter a command:cat -e
all3.c
#include <stdio.h> $
#include <stdlib.h> $
#include <fcntl.h> $
#include<errno.h> $
#include<sys/wait.h> $
#include <unistd.h> $
#include<stdio.h>$
#include<string.h>$
int main()$
{ $
        $
        $
        char str1[20]; $
        char str2[40]; $
        char s[100]; $
        //char str3[50];$
        char filename[40];$
        int flag=1;$
        char cwd[1024];$
        char cd_new[1024];$
        char str[80];$
        int i=0;$
        int id=0;$
        int len=0;$
        int j=0,k=0;$
        int flag2=0;$
        char history[1000][50];$
        int num=-1;$
        char string[50];$
        char string2[50];$
         $
        $
        $
        while(flag==1 && flag2==0)$
        {$
                $
                        $
                        printf("Welcome to shreeya's shell\n");$
                        printf("Enter a command:");$
                        num=num+1;$
                        gets(history[num]);$
                        strcpy(str1,history[num]);$
                len=strlen(str1);$
                $
                //printf("Helloosss");$
                    for(j=0; j<len; j++)$
                    {$
                        if(str1[j]==' ')$
                        {$
```

b)cat -e-:
3)mkdir-This function helps to make a new directory within the print working directory.I implemented -m and -p functionalities for it.
a)-m-:It sets the file permission bits of the final created directory to the specified mode.
b)-p-: It is to create intermediate directories as required. If this option is not specified, the full path prefix of each operand must already exist.
OUTPUT-



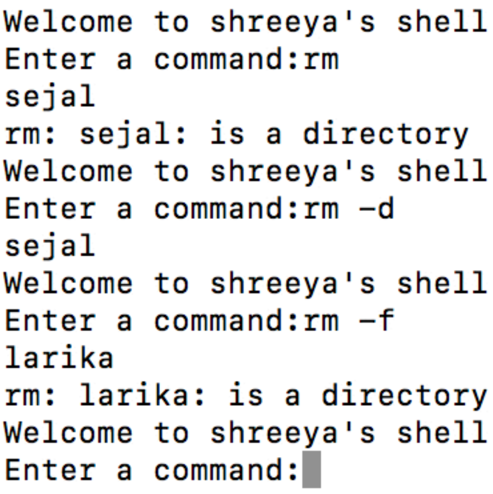
```
} Welcome to shreeya's shell
Enter a command:mkdir -m
sejal
usage: mkdir [-pv] [-m mode] directory ...
Welcome to shreeya's shell
Enter a command:mkdir -p
sejal
Welcome to shreeya's shell
Enter a command:mkdir
larika
Welcome to shreeya's shell
Enter a command:
```

The photo of the folder after the command got executed-

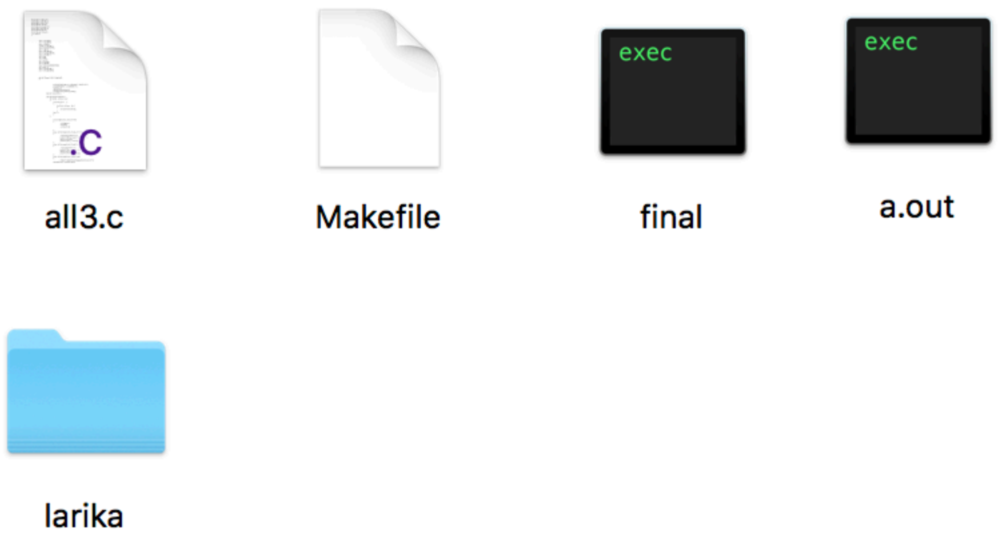


4)rm-It is to remove a file and not a directory.I have implemented two functions for it namely-a)rm -d and b)rm -f.
a)rm -d-:It removes directories as well as other type of files.
b)rm -f-:It removes the files without prompting for confirmation, regardless of the file's permissions.

OUTPUT-

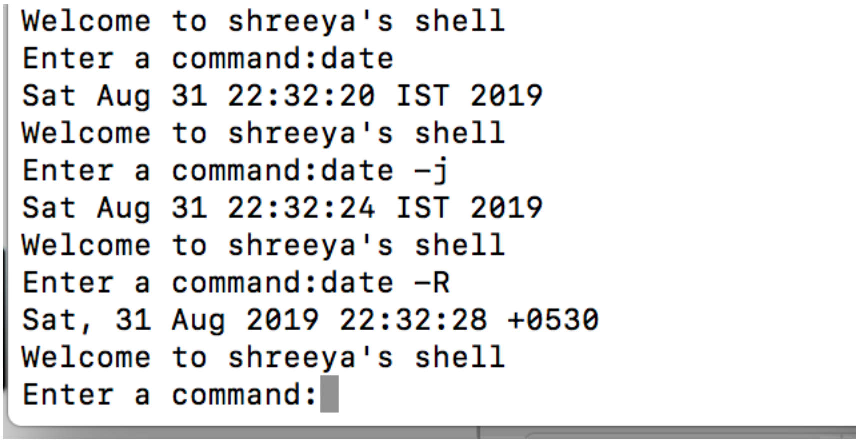


```
Welcome to shreeya's shell
Enter a command:rm
sejal
rm: sejal: is a directory
Welcome to shreeya's shell
Enter a command:rm -d
sejal
Welcome to shreeya's shell
Enter a command:rm -f
larika
rm: larika: is a directory
Welcome to shreeya's shell
Enter a command:
```



The look of the folder after executing the command-

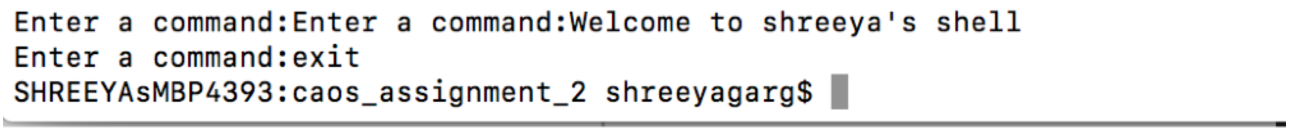
5)date-It displays the current date on the terminal.I implemented two functionalities for it namely a)-j and b)-R.
a)-j-:This allows you to use the **-f** flag.It also allows you to use the + option to convert one date format another.
b)-R-: Use RFC 2822 date and time output format.
OUTPUT-



```
Welcome to shreeya's shell
Enter a command:date
Sat Aug 31 22:32:20 IST 2019
Welcome to shreeya's shell
Enter a command:date -j
Sat Aug 31 22:32:24 IST 2019
Welcome to shreeya's shell
Enter a command:date -R
Sat, 31 Aug 2019 22:32:28 +0530
Welcome to shreeya's shell
Enter a command:
```

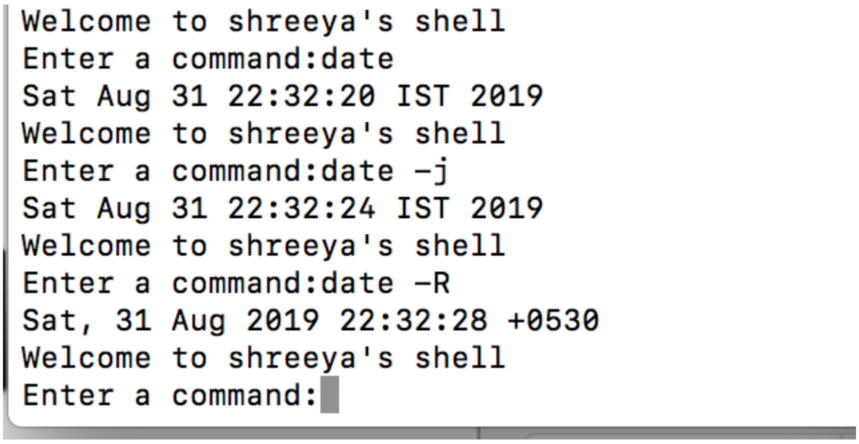
INTERNAL COMMANDS-

1)exit-It terminates the program.It has no additional functionalities.
OUTPUT-



```
Enter a command:Enter a command:Welcome to shreeya's shell
Enter a command:exit
SHREEYAsMBP4393:caos_assignment_2 shreeyagarg$
```

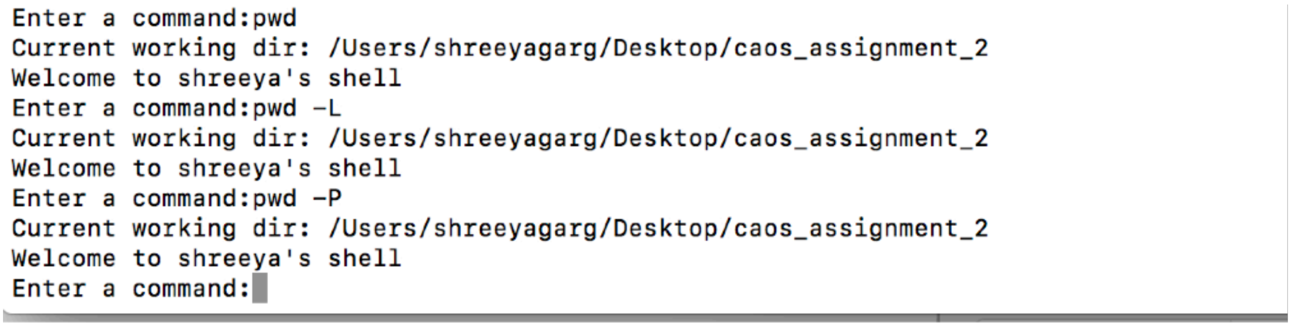
2)history-It displays all the commands wrote on the terminal so far.It has no additional functionalities.
OUTPUT-



```
Welcome to shreeya's shell
Enter a command:date
Sat Aug 31 22:32:20 IST 2019
Welcome to shreeya's shell
Enter a command:date -j
Sat Aug 31 22:32:24 IST 2019
Welcome to shreeya's shell
Enter a command:date -R
Sat, 31 Aug 2019 22:32:28 +0530
Welcome to shreeya's shell
Enter a command:
```

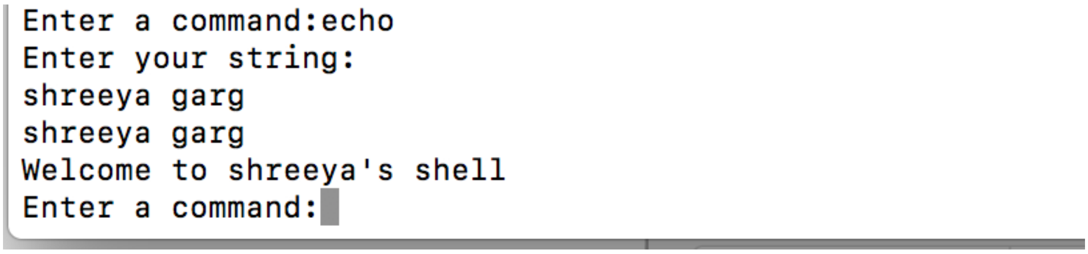
3)pwd-It displays the present working directory on the terminal.It ha two functionalities of a)pwd -L and b)pwd -P.
a)pwd -L-:Display the logical current working directory.
b)pwd -P-:Display the physical current working directory.

OUTPUT-



```
Enter a command:pwd
Current working dir: /Users/shreeyagarg/Desktop/caos_assignment_2
Welcome to shreeya's shell
Enter a command:pwd -L
Current working dir: /Users/shreeyagarg/Desktop/caos_assignment_2
Welcome to shreeya's shell
Enter a command:pwd -P
Current working dir: /Users/shreeyagarg/Desktop/caos_assignment_2
Welcome to shreeya's shell
Enter a command:
```

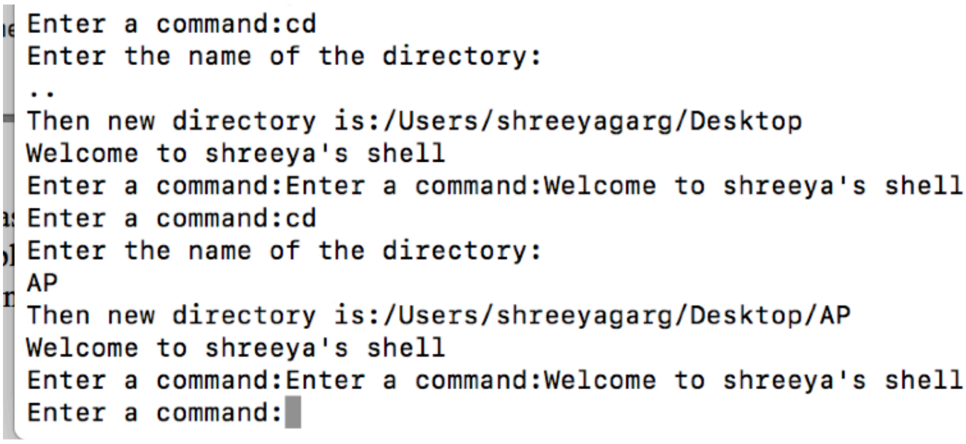
4)Echo-It displays the string given to it as an input on the terminal.It has not unique functionalities as it just displays the input string.One functionality is -n in which it displays the string without giving the “\n” operator in the output string while displaying.I have just implemented echo as “-n” is not a big functionality.
OUTPUT-



```
Enter a command:echo
Enter your string:
shreeya garg
shreeya garg
Welcome to shreeya's shell
Enter a command:
```

5)cd-It is use to change the directory.

OUTPUT-



```
Enter a command:cd
Enter the name of the directory:
..
Then new directory is:/Users/shreeyagarg/Desktop
Welcome to shreeya's shell
Enter a command:Enter a command:Welcome to shreeya's shell
Enter a command:cd
Enter the name of the directory:
AP
Then new directory is:/Users/shreeyagarg/Desktop/AP
Welcome to shreeya's shell
Enter a command:Enter a command:Welcome to shreeya's shell
Enter a command:
```

I made a Makefile which will produce a executable file with the name final by implementing the given all3.c file.