

LAB EXERCISES:

1. Write a program to print the lines of a file that contain a word given as the program argument (a simple version of grep UNIX utility)

Program:

```
#include <stdio.h>
#include <unistd.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <stdlib.h>
#include <string.h>
int main(int argc, char *argv[])
{
    int file, i = 0, j = 0;
    char s[100], c;
    if(argc != 3)
    {
        printf("Insufficient arguments\n");
        exit(1);
    }
    if((file = open(argv[2], O_RDONLY)) == -1)
    {
        printf("No such file found...\n");
        exit(1);
    }
    while((read(file, &c, 1)) > 0)
    {
```

```

    if(c != '\n')
    {
        s[i] = c;
        i++;
    }
    else
    {
        j++;
        s[i] = '\0';
        i = 0;
        if(strstr(s, argv[1]) != NULL)
            printf("Line:%d '%s' \n", j, s);
    }
}
exit(0);
}

```

Output:

```

student@V310Z-000: ~/Documents/190905513/Lab-1$ gcc q1.c -o q1
student@V310Z-000: ~/Documents/190905513/Lab-1$ cat sample.txt
Name: Mohammad Danish Eqbal
Registration Number: 190905513
Course: B.Tech Lateral Entry
Department: CSE
College: MIT
University: MAHE
student@V310Z-000: ~/Documents/190905513/Lab-1$ ./q1 Eqbal sample.txt
Line:1 'Name: Mohammad Danish Eqbal'
student@V310Z-000: ~/Documents/190905513/Lab-1$ ./q1 MIT sample.txt
Line:5 'College: MIT'
student@V310Z-000: ~/Documents/190905513/Lab-1$

```

2. Write a program to list the files given as arguments, stopping every 20 lines until a key is hit. (a simple version of more UNIX utility)

Program:

```
#include <stdio.h>
#include <unistd.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <stdlib.h>
#include <string.h>
int main(int argc, char *argv[])
{
    int sfd, sfd2, i = 0, j = 0, k = 0;
    char s[100], s2[100], c;
    if(argc != 3)
    {
        printf("Insufficient arguments\n");
        exit(1);
    }
    if((sfd = open(argv[1], O_RDONLY)) == -1)
    {
        printf("No such file found...\n");
        exit(1);
    }
    while((read(sfd,&c,1)) > 0)
    {
        if(c != '\n')
        {
            s[i] = c;
            i++;
        }
        else
        {
            j++;
            k++;
            s[i] = '\0';
            i = 0;
            printf("Line: %d \t %s \n", k, s);
        }
    }
}
```

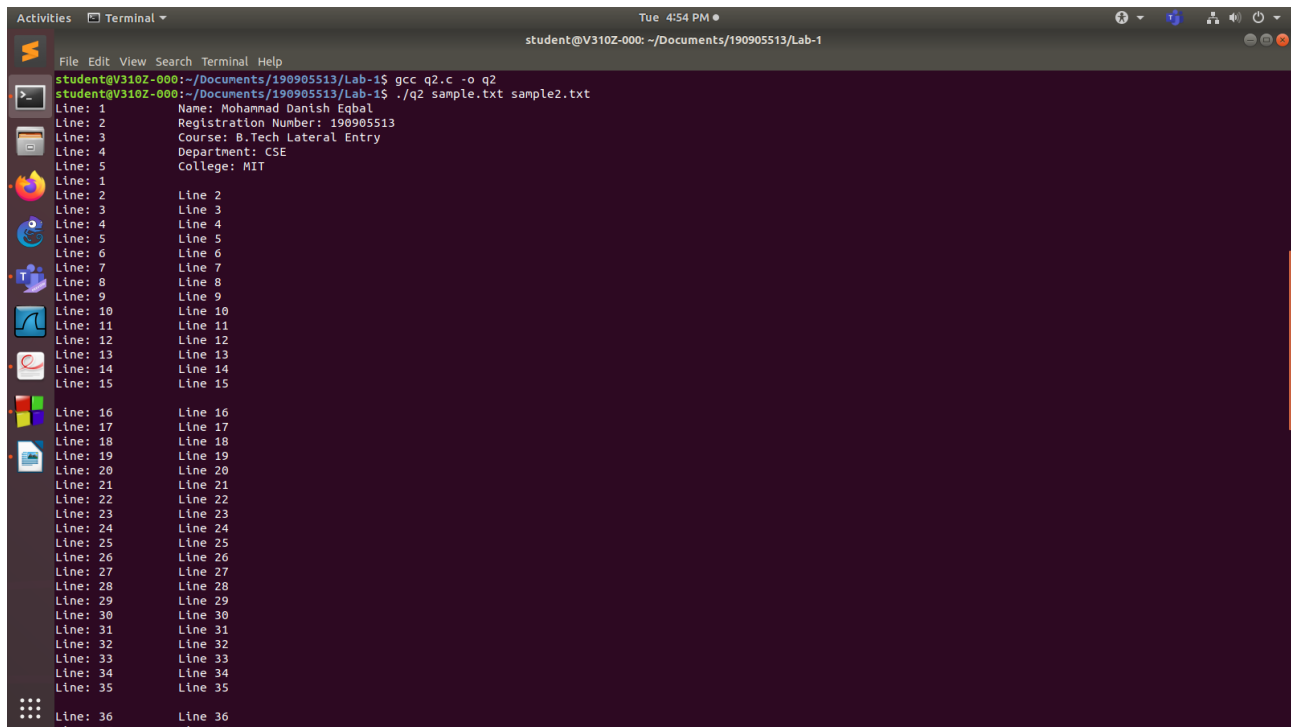
```

        if(j == 20)
        {
            fgetc(stdin);
            j = 0;
        }
    }
}
close(sfd);
if((sfd2 = open(argv[2], O_RDONLY)) == -1)
{
    printf("No such file found...\n");
    exit(1);
}
k = 0;
while((read(sfd, &c, 1))>0)
{
    if(c != '\n')
    {
        s2[i] = c;
        i++;
    }
    else
    {
        j++;
        k++;
        s[i] = '\0';
        i = 0;
        printf("Line: %d \t %s \n", k, s2);
        if(j == 20)
        {
            fgetc(stdin);
            j = 0;
        }
    }
}
}

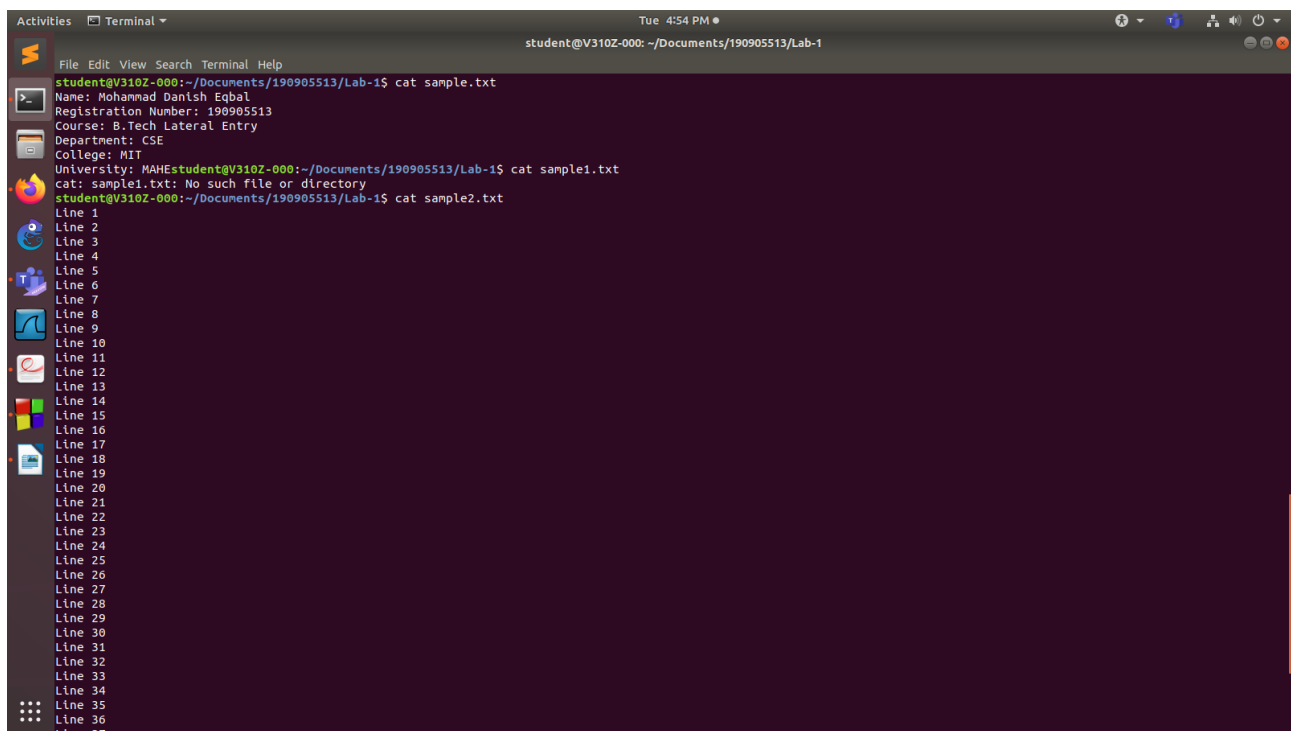
```

```
    exit(0);  
}
```

Output:



```
student@V310Z-000: ~/Documents/190905513/Lab-1  
student@V310Z-000:~/Documents/190905513/Lab-1$ gcc q2.c -o q2  
student@V310Z-000:~/Documents/190905513/Lab-1$ ./q2 sample.txt sample2.txt  
Line: 1      Name: Mohammad Danish Eqbal  
Line: 2      Registration Number: 190905513  
Line: 3      Course: B.Tech Lateral Entry  
Line: 4      Department: CSE  
Line: 5      College: MIT  
Line: 6  
Line: 7  
Line: 8  
Line: 9  
Line: 10  
Line: 11  
Line: 12  
Line: 13  
Line: 14  
Line: 15  
Line: 16  
Line: 17  
Line: 18  
Line: 19  
Line: 20  
Line: 21  
Line: 22  
Line: 23  
Line: 24  
Line: 25  
Line: 26  
Line: 27  
Line: 28  
Line: 29  
Line: 30  
Line: 31  
Line: 32  
Line: 33  
Line: 34  
Line: 35  
Line: 36  
Line: 37
```



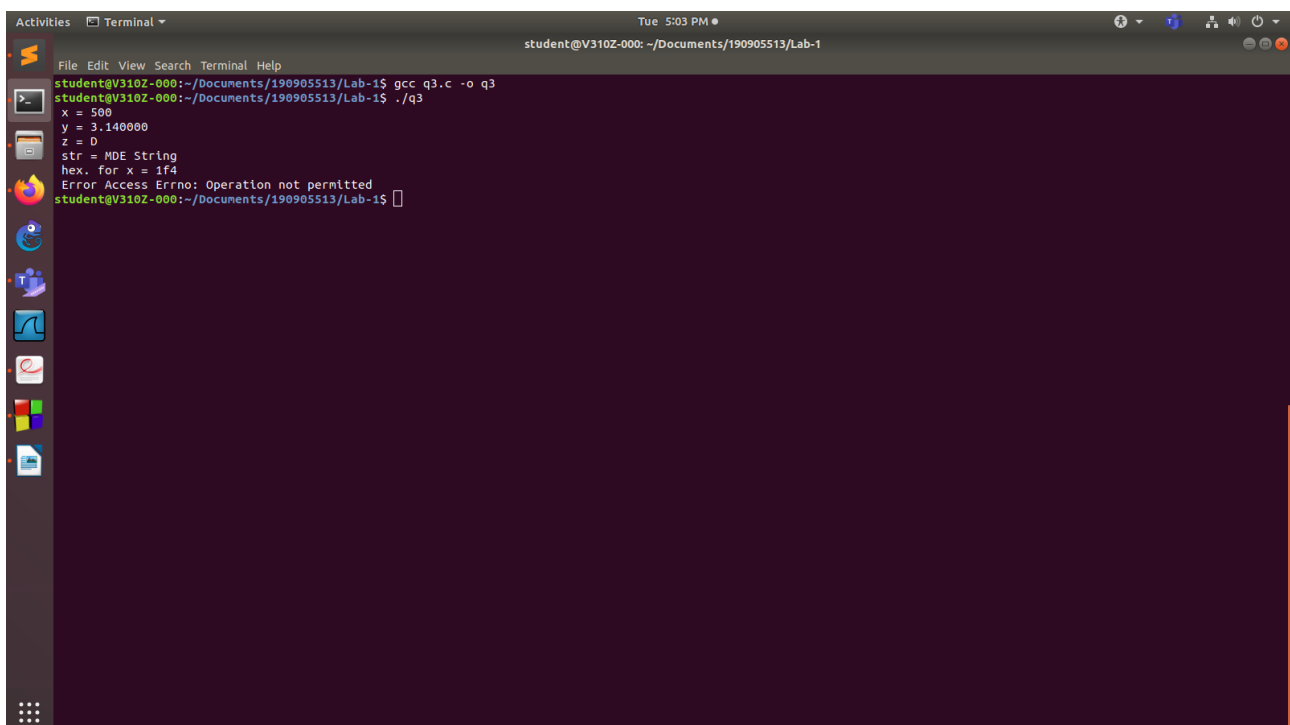
```
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample.txt  
Name: Mohammad Danish Eqbal  
Registration Number: 190905513  
Course: B.Tech Lateral Entry  
Department: CSE  
College: MIT  
University: MAHE  
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample1.txt  
cat: sample1.txt: No such file or directory  
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample2.txt  
Line: 1  
Line: 2  
Line: 3  
Line: 4  
Line: 5  
Line: 6  
Line: 7  
Line: 8  
Line: 9  
Line: 10  
Line: 11  
Line: 12  
Line: 13  
Line: 14  
Line: 15  
Line: 16  
Line: 17  
Line: 18  
Line: 19  
Line: 20  
Line: 21  
Line: 22  
Line: 23  
Line: 24  
Line: 25  
Line: 26  
Line: 27  
Line: 28  
Line: 29  
Line: 30  
Line: 31  
Line: 32  
Line: 33  
Line: 34  
Line: 35  
Line: 36  
Line: 37
```

3. Demonstrate the use of different conversion specifiers and resulting output to allow the items to be printed.

Program:

```
#include<stdio.h>
#include<stdlib.h>
#include<errno.h>
int main()
{
    int x = 500;
    float y = 3.14;
    char z = 'D';
    char str[] = "MDE String";
    printf(" x = %d\n y = %f\n z = %c\n str = %s\n hex. for x = %x\n", x, y, z, s, x);
    errno = EPERM;
    printf(" Error Access Errno: %m\n");
}
```

Output:



```
Activities Terminal
Tue 5:03 PM
student@V310Z-000: ~/Documents/190905513/Lab-1
File Edit View Search Terminal Help
student@V310Z-000:~/Documents/190905513/Lab-1$ gcc q3.c -o q3
student@V310Z-000:~/Documents/190905513/Lab-1$ ./q3
x = 500
y = 3.140000
z = D
str = MDE String
hex. for x = 1f4
Error Access Errno: Operation not permitted
student@V310Z-000:~/Documents/190905513/Lab-1$
```

4. Write a program to copy character-by character copy is accomplished using calls to the functions referenced in stdio.h.

Program:

```
#include<stdio.h>
#include <unistd.h>
#include<sys/stat.h>
#include<fcntl.h>
#include<stdlib.h>
int main(int argc, char *argv[])
{
    char c;
    int input, output;
    if(argc != 3)
    {
        printf("Insufficient arguments\n");
        exit(1);
    }
    input = open(argv[1], O_RDWR);
    output = open(argv[2], O_WRONLY|O_CREAT, S_IRUSR|S_IWUSR);
    if(input == -1 || output == -1)
    {
        printf("No such file exists...\n");
        exit(1);
    }
    while(read(input, &c, 1) == 1)
        write(output, &c, 1);
    printf("Copied Successfully...\n");
    exit(0);
}
```

Output:

```
Activities Terminal Tue 5:14 PM student@V310Z-000: ~/Documents/190905513/Lab-1
File Edit View Search Terminal Help
student@V310Z-000:~/Documents/190905513/Lab-1$ gcc q4.c -o q4
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample.txt
Name: Mohammad Danish Egbal
Registration Number: 190905513
Course: B.Tech Lateral Entry
Department: CSE
College: MIT
University: MAHE
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample3.txt
SEM: 5TH
Subjects: Operating System 3 Credits
          Computer Networks 3 Credits
          Software Engineering 3 Credits
          Compiler Design 3 Credits
          Essence of Management 3 Credits
          Open Elective 3 Credits
          Operating System Lab 2 Credits
          Computer Networks Lab 2 Credits
          Compiler Design Lab 2 Credits
5th Sem Total Credits: 24
student@V310Z-000:~/Documents/190905513/Lab-1$ ./q4 sample.txt sample3.txt
Copied Successfully...
student@V310Z-000:~/Documents/190905513/Lab-1$ cat sample3.txt
Name: Mohammad Danish Egbal
Registration Number: 190905513
Course: B.Tech Lateral Entry
Department: CSE
College: MIT
University: MAHE
3 Credits
          Essence of Management 3 Credits
          Open Elective 3 Credits
          Operating System Lab 2 Credits
          Computer Networks Lab 2 Credits
          Compiler Design Lab 2 Credits
5th Sem Total Credits: 24
student@V310Z-000:~/Documents/190905513/Lab-1$
```