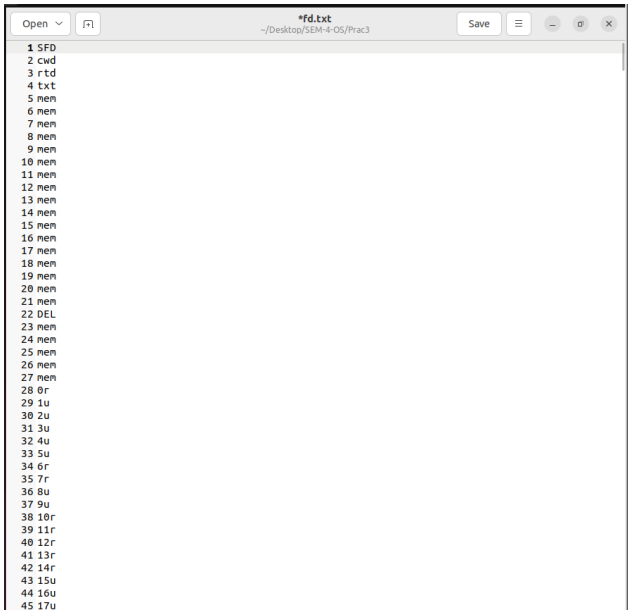
1. Find Out how many file descriptors are being Used by your Linux system as of now? Demonstrate step by step command and O/P. Also design program to check and report file descriptors of all the opened files.

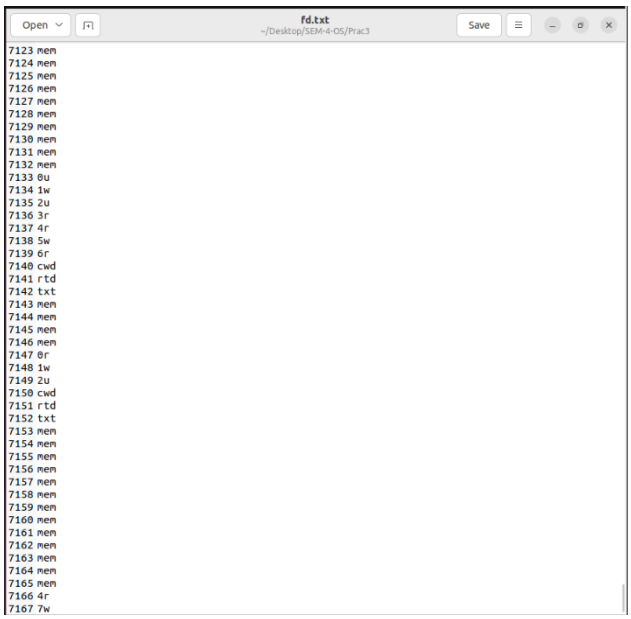
Step 1: Getting the list of all the open file using “lsof” for user “nityam” & Extracting 4th Column of open file that is file Descriptors.

Command:

```
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ lsof -u nityam | awk '{print $4}'>fd.txt
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$
```

Screenshot:





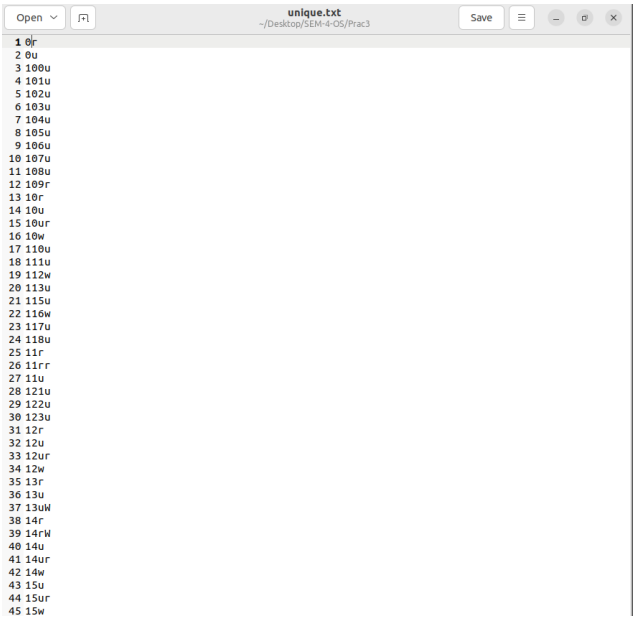
Contains 7167 open files.

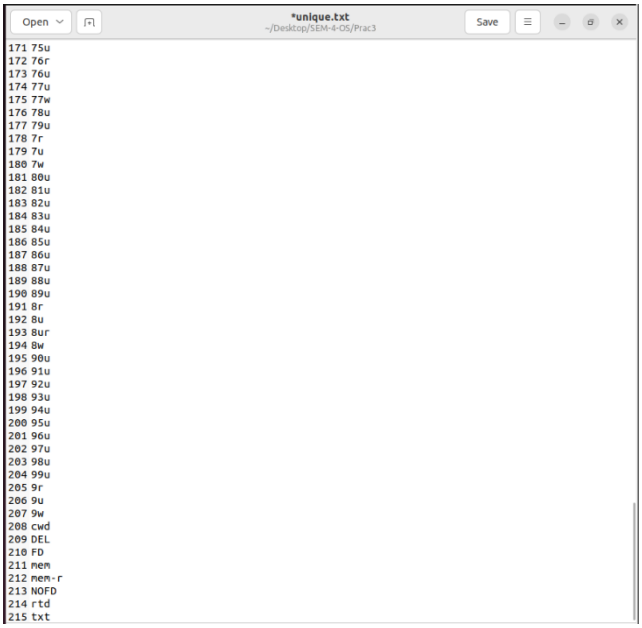
Step 2: Now Listing all the file descriptor got in fd.txt and keeping only unique descriptor in “unique.txt” file. Here “cat” will open the file “fd.txt” the “sort-u” will remove duplicate items and “> unique.txt” will save the output in the file.

Command:

```
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ cat fd.txt | sort -u > unique.txt
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$
```

Screenshot:





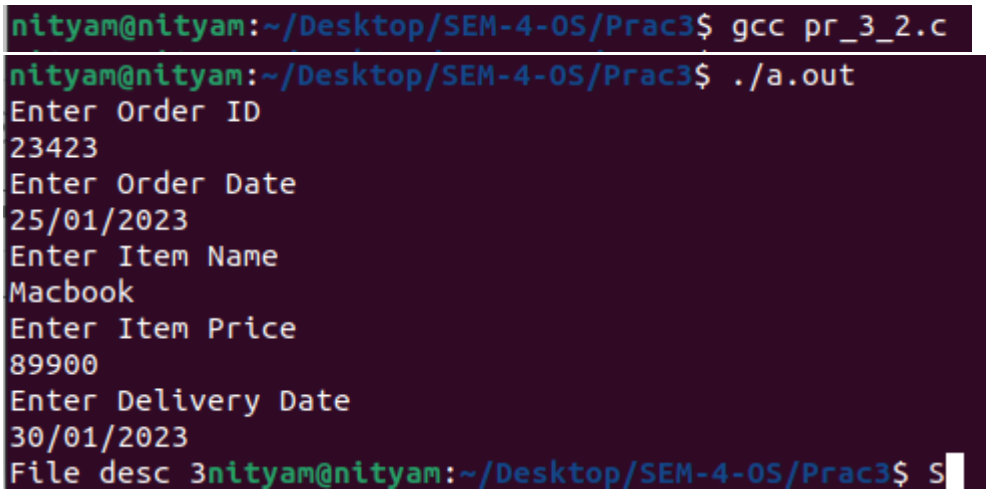
Contains 215 unique descriptors.

2. For your online order of any item from amazon, look at the invoice generated by Amazon. Store purchase order details like order_id, order_date, item_name, item_price, delivery_date in system using file handling system call in a file and print all details related to invoice.

Code:

```
#include <stdio.h>
#include <unistd.h>
#include <fcntl.h>
void main(){
        char orderid[50], itemprice[50] ,itemname [50], orderdate[50], deliverydate [50];
        printf("Enter Order ID\n");
        scanf("%s", orderid);
        printf("Enter Order Date\n");
        scanf("%s", orderdate);
        printf("Enter Item Name\n");
        scanf("%s",itemname);
        printf("Enter Item Price\n");
        scanf("%s", itemprice);
        printf("Enter Delivery Date\n");
        scanf("%s", deliverydate);
        int fd;
        fd = open("invoice.txt", O_CREAT | O_RDWR);
        printf("File desc %d", fd);
        if(fd!=-1){
                write(fd, orderdate,sizeof(orderdate));
                write(fd, itemname, sizeof(itemname));
                write(fd, orderid, sizeof(orderid));
                write(fd, deliverydate, sizeof(deliverydate));
                write(fd, itemprice,sizeof(itemprice));
        }
        close(fd);
}
```

Screenshot:


nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ gcc pr_3_2.c
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ ./a.out
Enter Order ID
23423
Enter Order Date
25/01/2023
Enter Item Name
Macbook
Enter Item Price
89900
Enter Delivery Date
30/01/2023
File desc 3nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ S

3. Implement program that can open the file "ICTGUNI.txt" in the current directory, and prints out the return value of the open() system call. If " ICTGUNI.txt " exists, open() will return a non-negative integer (three). If " ICTGUNI.txt " does not exist, then it will return-1.

Code:

```
#include <stdio.h>
#include <unistd.h>
#include <fcntl.h>
void main(){
        int fd;
        fd = open("ICT_GUNI.txt", O_RDWR);
        if(fd<0){
                printf("%d, File Don't Exists\n", fd);
                fd = open("ICT_GUNI.txt", O_CREAT | O_RDWR);
                printf("%d, File Now Created \n", fd);
        }
        else{
                printf("%d, File Exists \n", fd);
        }
}
```

Screenshot:

```
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ ./a.out
-1, File Don't Exists
3, File Now Created
```

```
nityam@nityam:~/Desktop/SEM-4-OS/Prac3$ ./a.out
3, File Exists
```