الغلاف الخارجى للبحث

أولاً: البيانات الخاصة بالطالب			
الفرقة الدراسية	الاولى	التخصص	عام
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ثانياً: البيانات الخاصة بالبحث			
عنوان البحث	Library Research Project Application		
طبيعة المشاركة	بحث فردى [x]	بحث جماعى [ ]	
ارسال البحث	بواسطة البريد الالكتروني		

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ثالثاً: البيانات الخاصة بالكنترول			
النتيجة	ناجح [ ]	راسب [ ]	

		الاسماء	التوقيع
أعضاء لجنة تقييم البحث	1		
	2		
	3		

فى حالة عدم قبول البحث يرجى ذكر الأسباب	- ..... - ..... - ..... - .....

1.Implementation Code

(Main function)

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

struct books{
       int id;
int quantity;
 char name[20];
                      };
  struct books b[3];

int main()

{

int i =0;

char j;

FILE *fpointer;

fpointer = fopen("library.txt","r");

if(fpointer == NULL)

    printf("file cannot be opened");

else

{

    while((!feof(fpointer)) && (i<4) )

    {

     fscanf(fpointer,"%d",&b[i].id);

     fscanf(fpointer,"%d",&b[i].quantity);

     fscanf(fpointer,"%s",b[i].name);

     printf("%d\t%d\t%s\n",b[i].id,b[i].quantity,b[i].name);

     i++;

    }

    fclose(fpointer);

}
```

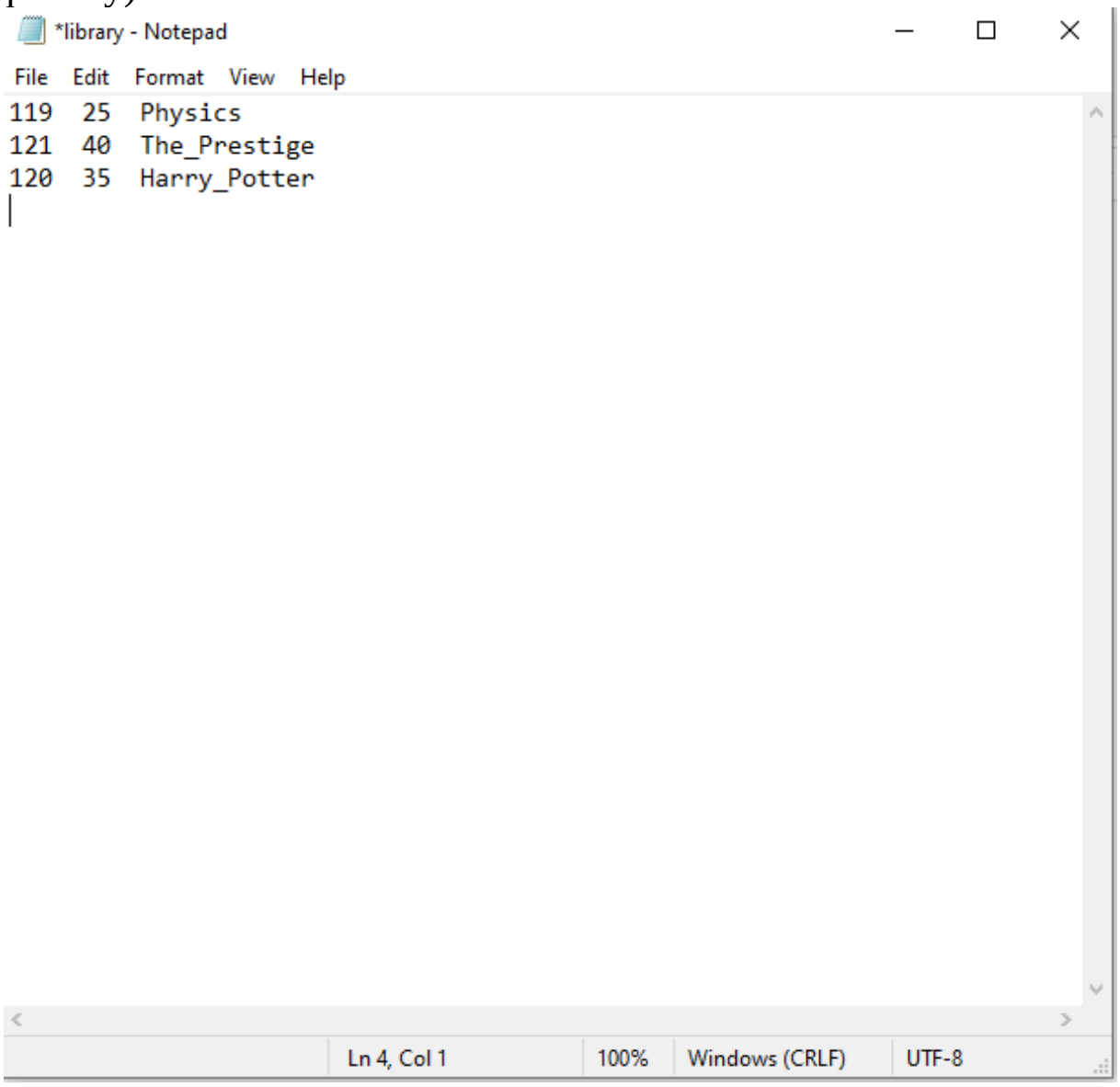
```
do{
    int number,k,x;
    char nme[20];
    printf("\n Welcome, Please choose ur operation \n Type (1) to add a book \n Type (2) to delete a book \n Type (3) to search by ID  \n Type (4) to search by name \n Type (5) to display the books sorted by name \n Type (6) to display the books unsorted \n :");
    scanf("%d",&number);
 switch(number){
 case 1:
    Add_a_book();
    break;
 case 2:
    printf("Please enter the ID of the book u want to delete \n");
    scanf("%d",&k);
    delete_a_book(k);
    break;
 case 3:
     printf("please enter the ID of the book u want to search about \n");
     scanf("%d",&x);
     linear_IDsearch(b,3,x,0);
     break;
 case 4:
    printf("Please enter the book name \n ");
    scanf("%s",nme);
    srch_byname(nme);
    break;
 case 5:
    display_Sbooks();
    break;
```

```
 case 6:
    display_ubooks();
    break;
 default:
    printf("ERROR, invalid operation \n");
    break;
 }
 printf("Do you want to do another operation? \n ");
 printf("Type (y) for another operation Or Type (n) to exit \n");
 scanf("%s",&j);

}
 while (j!='n');{

    return 0;
}
}
```

2. Function Codes and their corresponding Screenshots of Output Screen

a. Create a text file

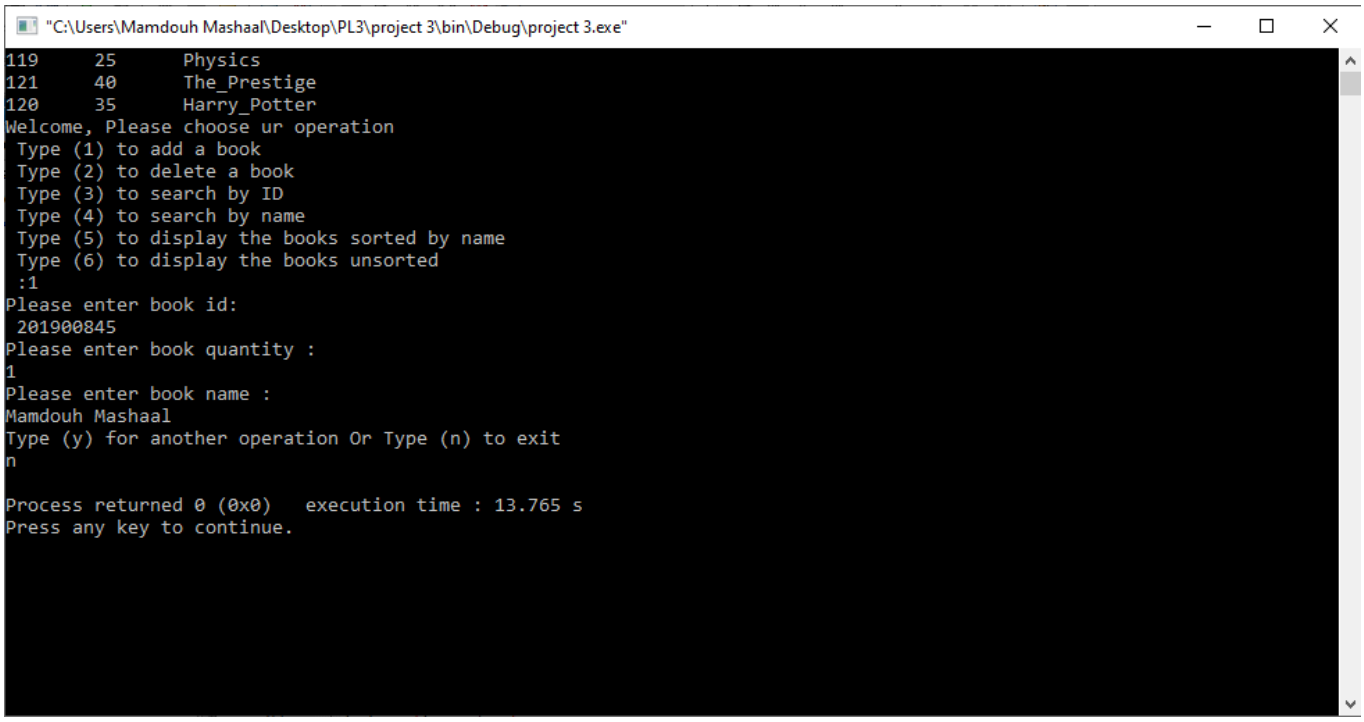
Screenshot of the text file including some books with their ids, name, and quantity)

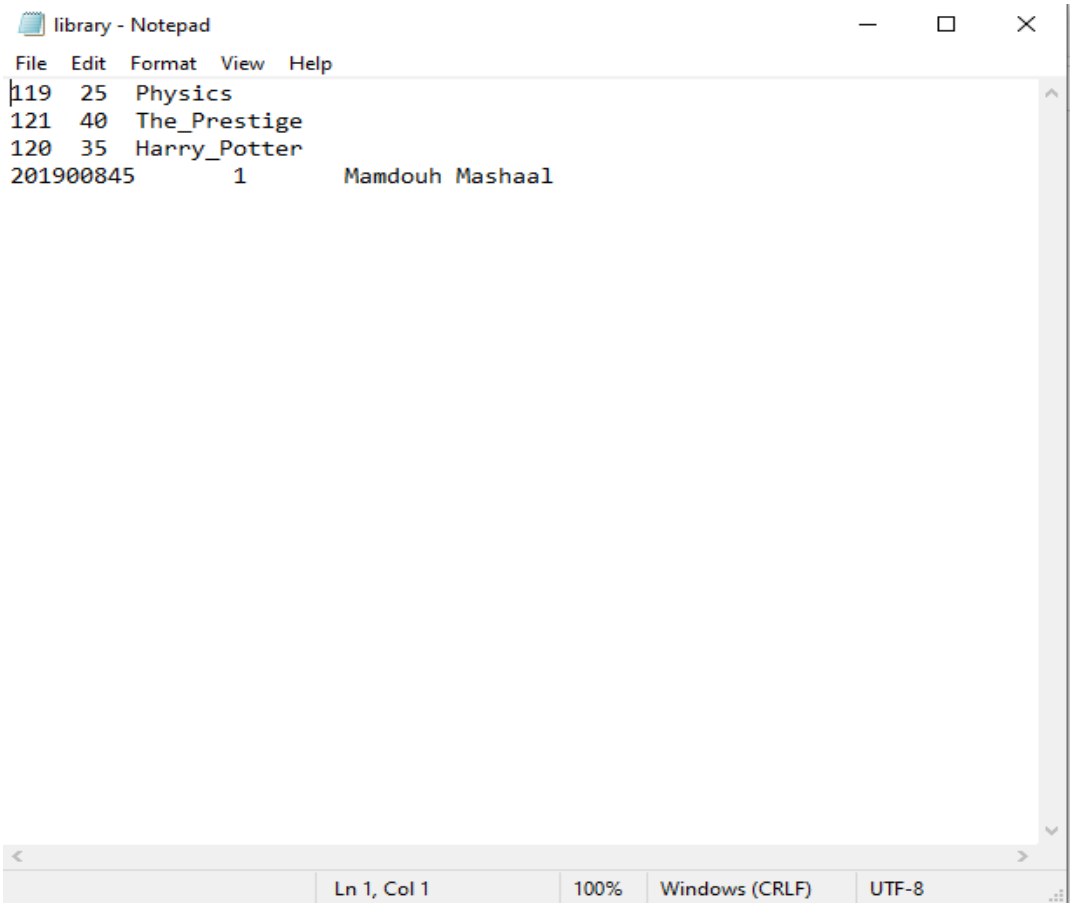


b. Insert a book

The function and the screenshot of output screen (Insert your id, complete name, any grade as a book), text file after insertion.

```
void Add_a_book (void)
      { FILE *fpointer;
      int i=3;
      fpointer=fopen("library.txt","a");
      if (fpointer==NULL)
       printf("file could not be opened");
      else{
       printf("Please enter book id: \n ");
       scanf("%d",&b[i].id);
       fflush(stdin);
       printf("Please enter book quantity : \n");
       scanf("%d",&b[i].quantity);
       fflush(stdin);
       printf("Please enter book name :\n");
       gets(b[i].name);
       fprintf(fpointer,"%d\t",b[i].id);
       fprintf(fpointer,"%d\t",b[i].quantity);
       fprintf(fpointer,"%s\t",b[i].name);
      }
      fclose(fpointer);
      }
```

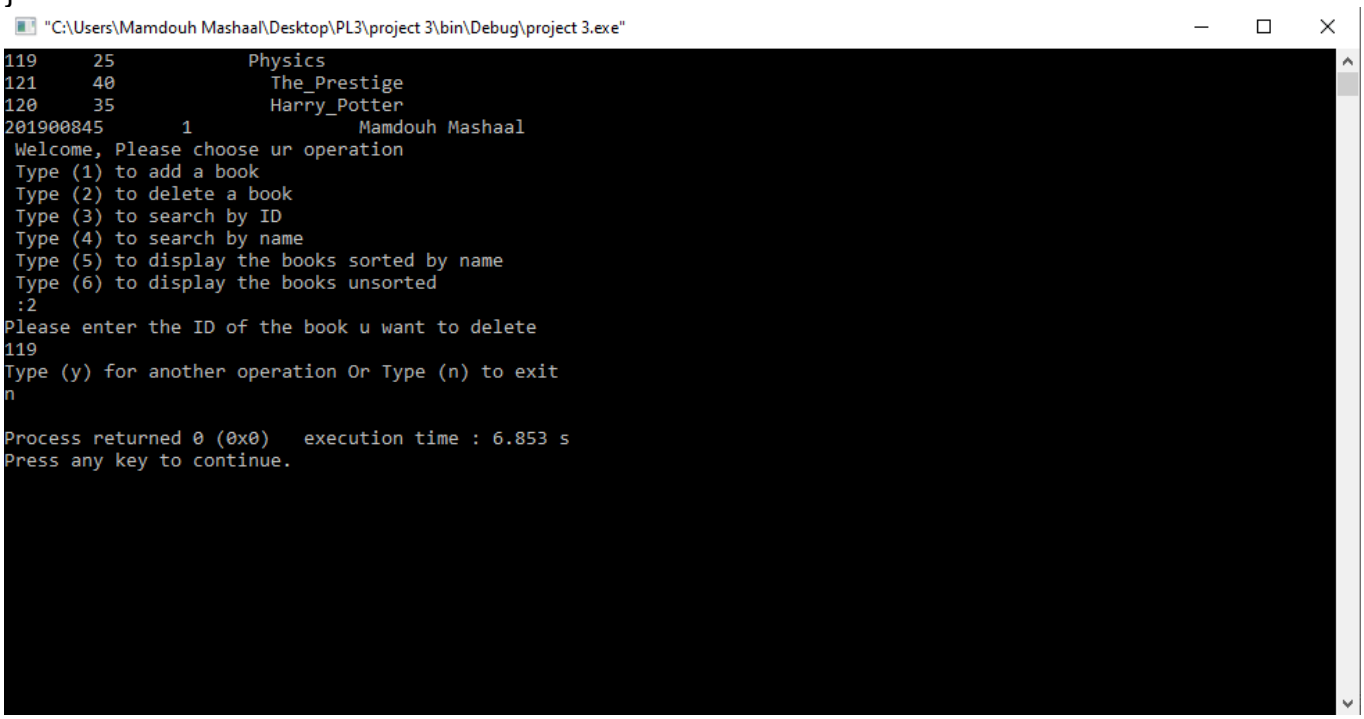


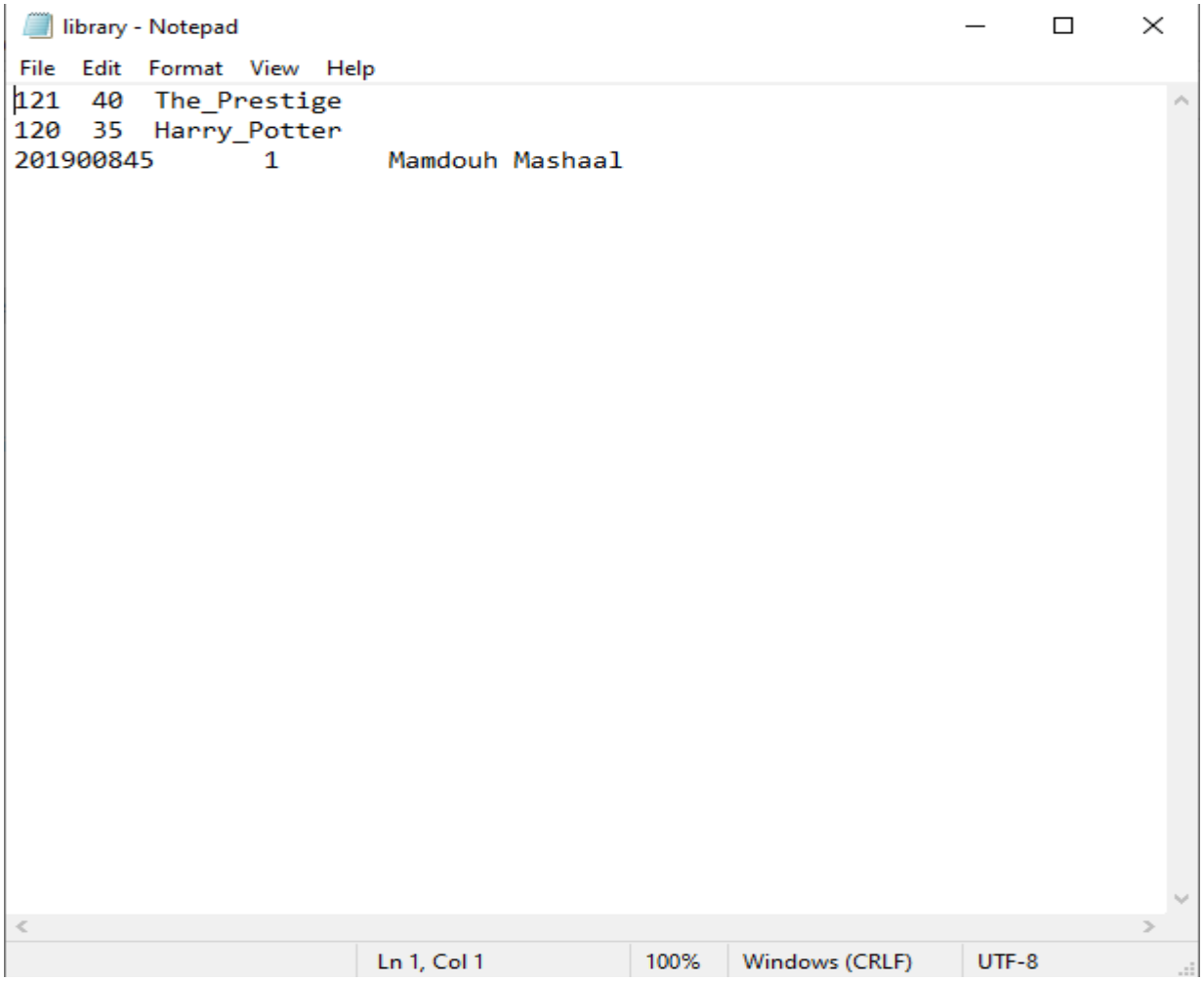

library - Notepad
File Edit Format View Help
119 25 Physics
121 40 The_Prestige
120 35 Harry_Potter
201900845 1 Mamdouh Mashaal
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

c. Delete a book by id

The function and the screenshot of output screen (choose an id to delete, but not your id), text file after deletion.

```
void delete_a_book(int y){
FILE *fpointer;
fpointer=fopen("library.txt","w");
if(fpointer == NULL)
   printf("file cannot be opened");
   else{
         int length=4;
      for(int i=0;i<length;i++){
         if(b[i].id==y){
               char h[20];
            for(int x=i;x<length;x++){
               b[x].id=b[x+1].id;
               b[x].quantity=b[x+1].quantity;
               strcpy(h,b[x].name);
               strcpy(b[x].name,b[x+1].name);
               strcpy(b[x+1].name,h);

            }
            length--;
         }
      }
      for(int i=0;i<length;i++){
      fprintf(fpointer,"%d\t%d\t%s\n",b[i].id,b[i].quantity,b[i].name);
      }
}
fclose(fpointer);
}
```



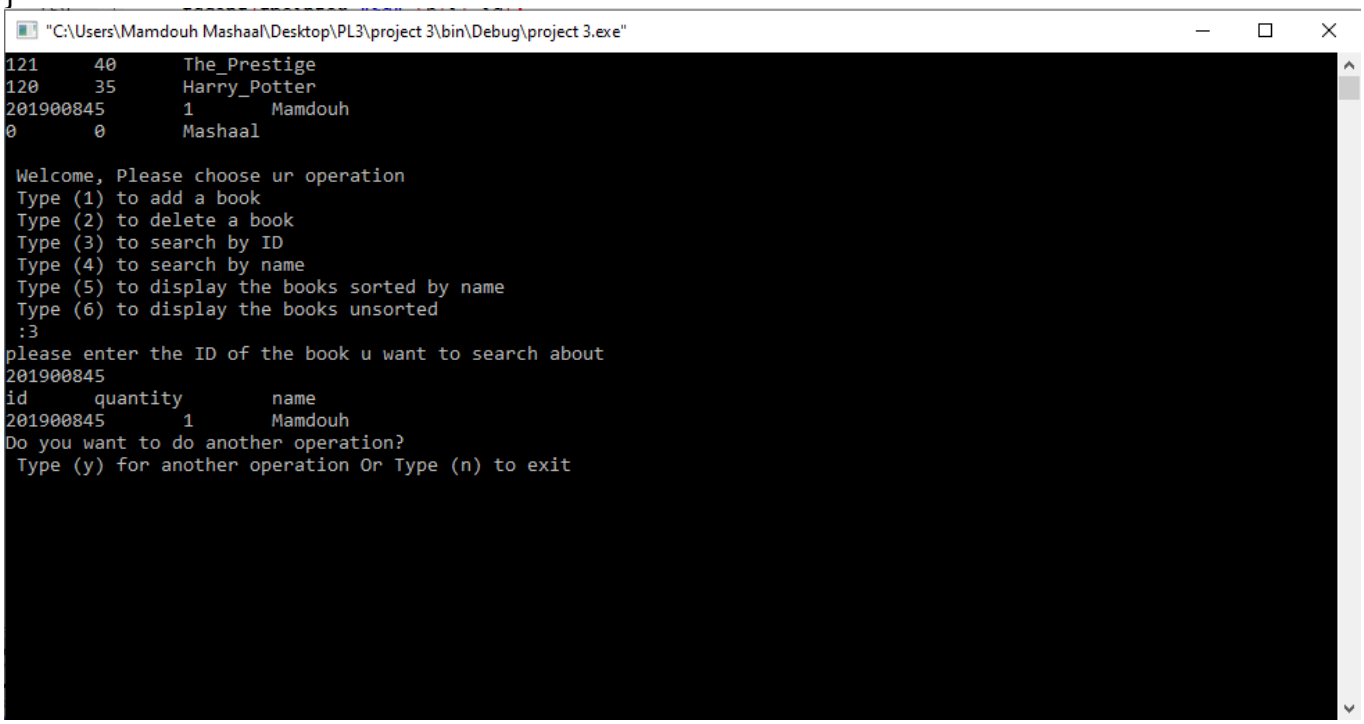

library - Notepad
File Edit Format View Help
121 40 The_Prestige
120 35 Harry_Potter
201900845 1 Mamdouh Mashaal
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

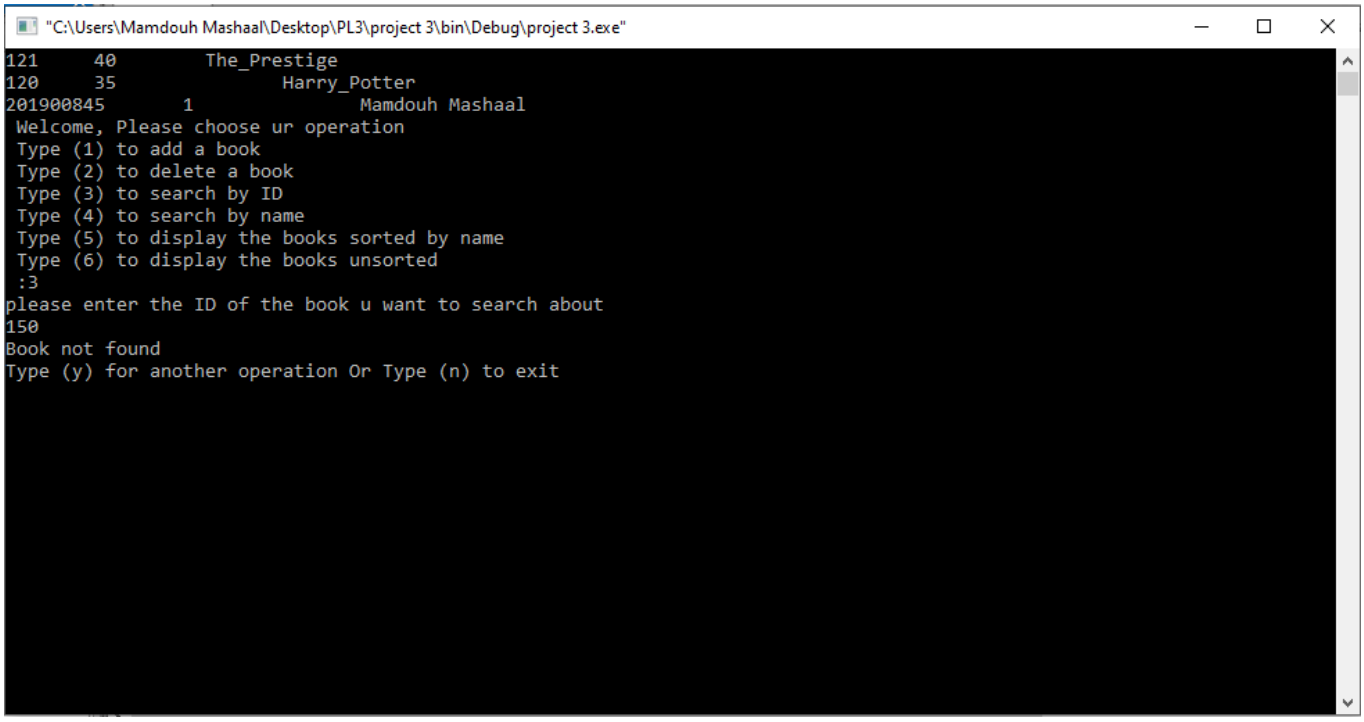
d. Search a book by id and display its name and quantity using linear search recursively. If not exist, display "Not found".

The function and the screenshot of output screen

- Choose ***your id*** to display.
- Choose an ***id that doesn't exist*** in your file.

```
int linear_IDsearch(const struct books b[],int size,int ID,int strt ){

    FILE *fpointer;
    fpointer=fopen("library.txt","r");
    if (fpointer==NULL){
        printf("Book not found \n");
    }
    else{
    if (strt<size&&b[strt].id==ID){
        printf("%s\t%s\t%s\n","id","quantity","name");
        printf("%d\t%d\t%s\n",b[strt].id,b[strt].quantity,b[strt].name);
        return 1;
    }
    else{
        linear_IDsearch(b,size,ID,strt+1);
    }
}
fclose(fpointer);
}
```





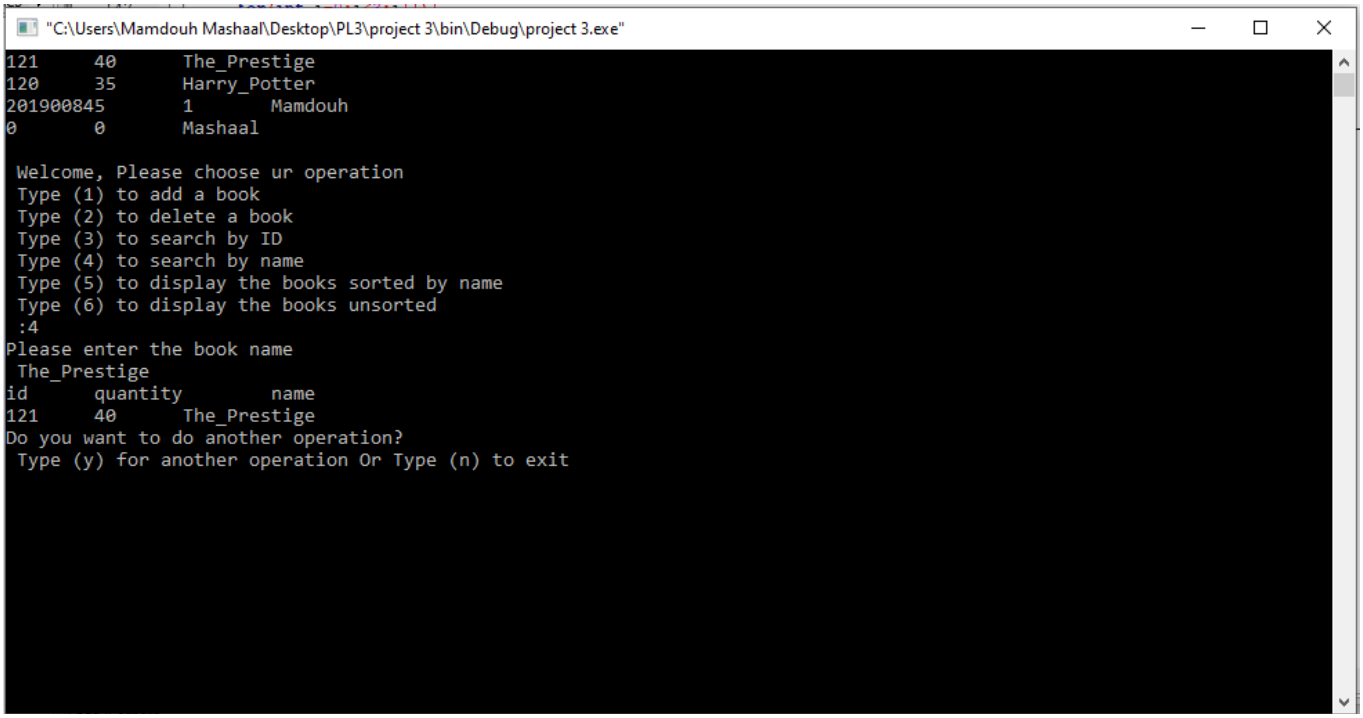
e. Search a book by name and display its id and quantity using binary search. If not exist, display "Not found".

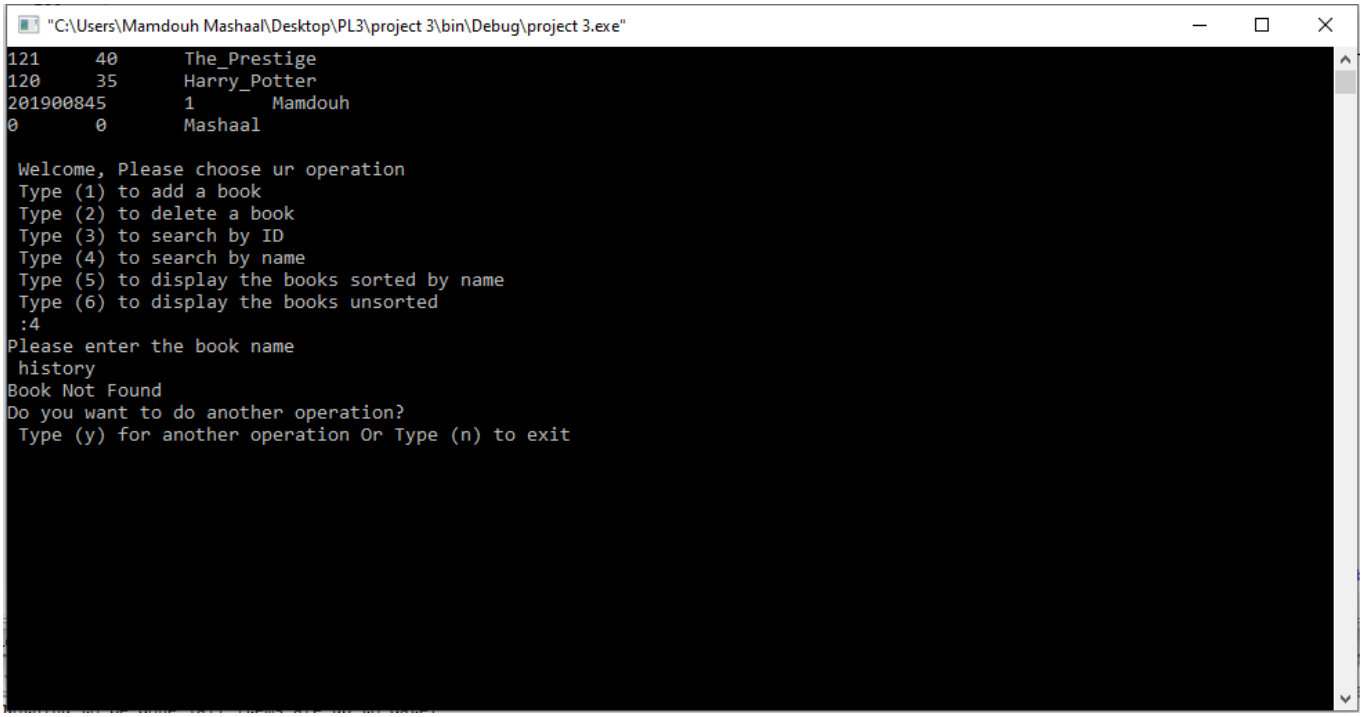
The function and the screenshot of output screen

- Choose an ***id that exist*** to display.
- Choose an ***id that doesn't exist*** in your file.

```
int srch_byname(char src_name[20]){
   int o=0;
   for (int p=1;p<3;p++){
   for( int i=0;i<3-p;i++){
          int temp;
          char x[20];
         if(strcmp(b[i].name,b[i+1].name)>0){
                temp=b[i].id;
                b[i].id=b[i+1].id;
                b[i+1].id=temp;
                temp=b[i].quantity;
                b[i].quantity=b[i+1].quantity;
                b[i+1].quantity=temp;
                strcpy(x,b[i].name);
                strcpy(b[i].name,b[i+1].name);
                strcpy(b[i+1].name,x);
         }
   }
}
     int low=0;
     int mid;
```

```
  int high=2;
 while (low<=high){
    mid=(low+high)/2;
    if (strcmp(src_name,b[mid].name)==0){
            o++;
        printf("%s\t%s\t%s\n","id","quantity","name");
        printf("%d\t%d\t%s\n",b[mid].id,b[mid].quantity,b[mid].name);
        return 1;
    }
    else if (strcmp(src_name,b[mid].name)==1){
        low=mid+1;
    }
    else{
        high=mid-1;
    }
 } if(o==0)
 {
    printf("Book Not Found \n");
 }

  return 0;
}
```



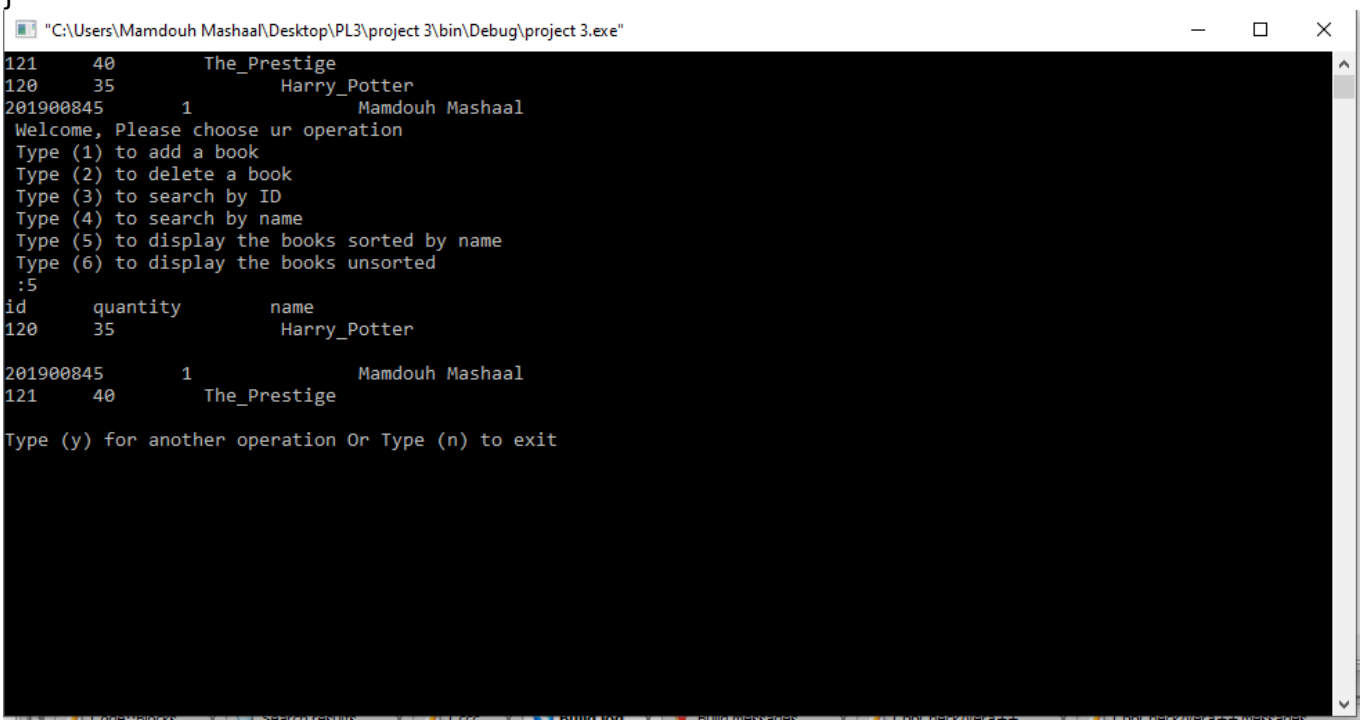


f. Display all books sorted by name, and their corresponding ids and quantity.

The function and the screenshot of output screen of all sorted books including your name.

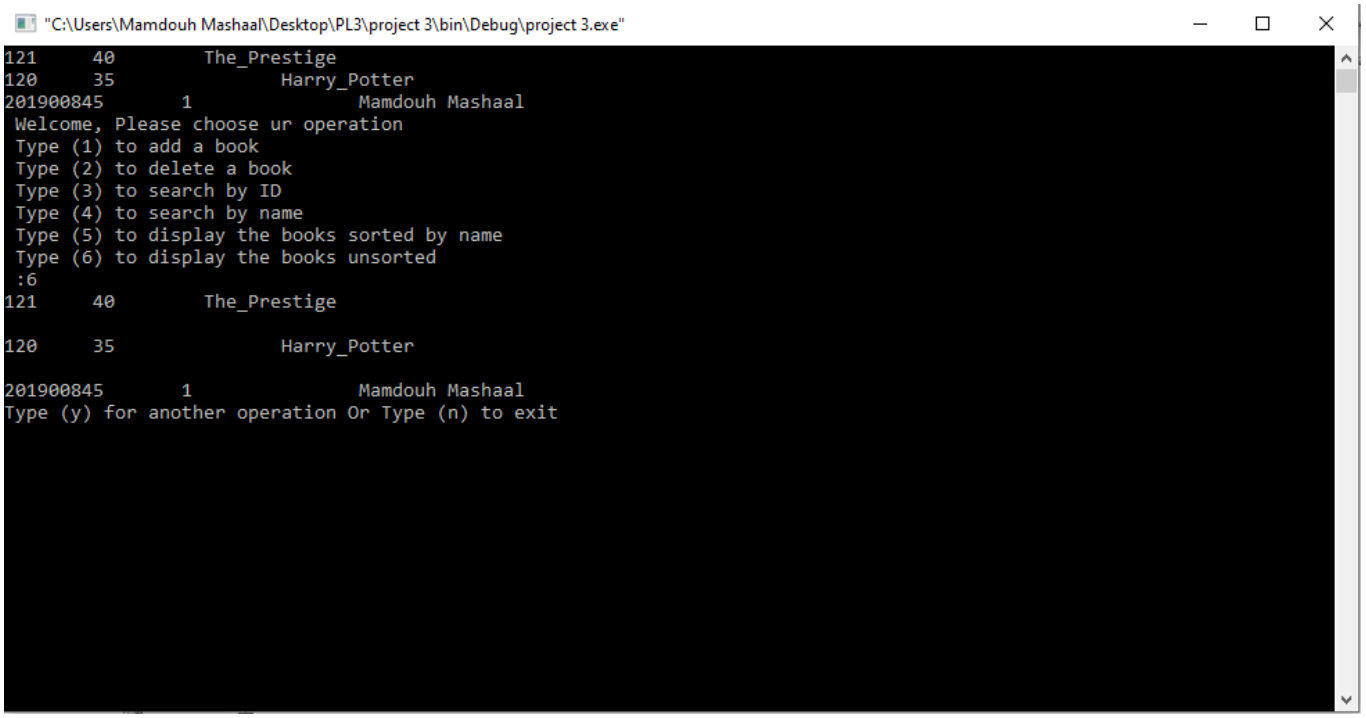
```
void display_Sbooks(void){
  printf("%s\t%s\t%s\n","id","quantity","name");
  for (int p=1;p<3;p++){
 for( int i=0;i<3-p;i++){
            int temp;
            char x[20];
           if(strcmp(b[i].name,b[i+1].name)>0){
                  temp=b[i].id;
                  b[i].id=b[i+1].id;
                  b[i+1].id=temp;
                  temp=b[i].quantity;
                  b[i].quantity=b[i+1].quantity;
                  b[i+1].quantity=temp;
                  strcpy(x,b[i].name);
                  strcpy(b[i].name,b[i+1].name);
```

```
                strcpy(b[i+1].name,x);
            }

      }
    }
      for(int i=0;i<3;i++){
            printf("%d\t%d\t%s\n",b[i].id,b[i].quantity,b[i].name);
            }
}
```

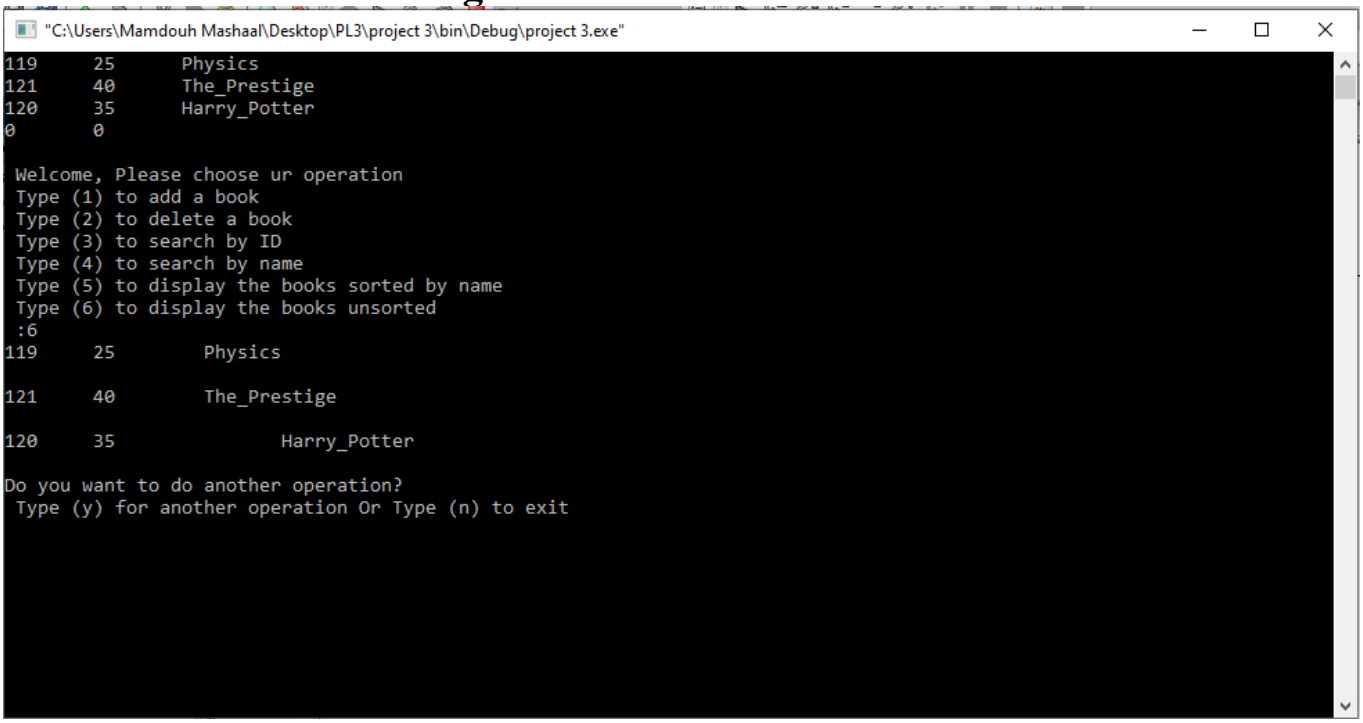


g. Display all books unsorted, their ids, names and quantity (as entered)
The function and the screenshot of output screen of all unsorted books including your name.

```
void display_ubooks(void){

FILE *fpointer;
fpointer = fopen("library.txt","r");
   int i=0;
   while((!feof(fpointer)) && (i<3) )
   {
    fscanf(fpointer,"%d",&b[i].id);
    fscanf(fpointer,"%d",&b[i].quantity);
    fgets(b[i].name,20,fpointer);
    printf("%d\t%d\t%s\n",b[i].id,b[i].quantity,b[i].name);
    i++;
   }
   fclose(fpointer);

}
```



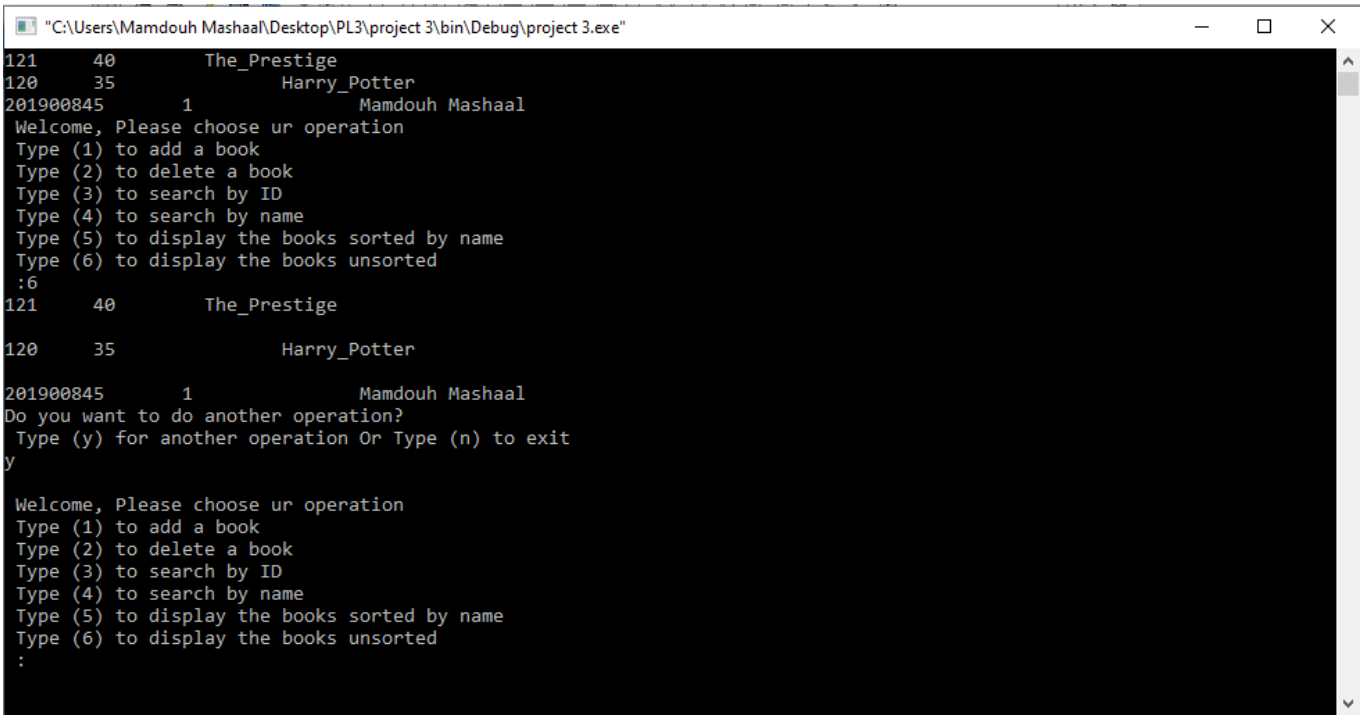
“As entered before adding book “



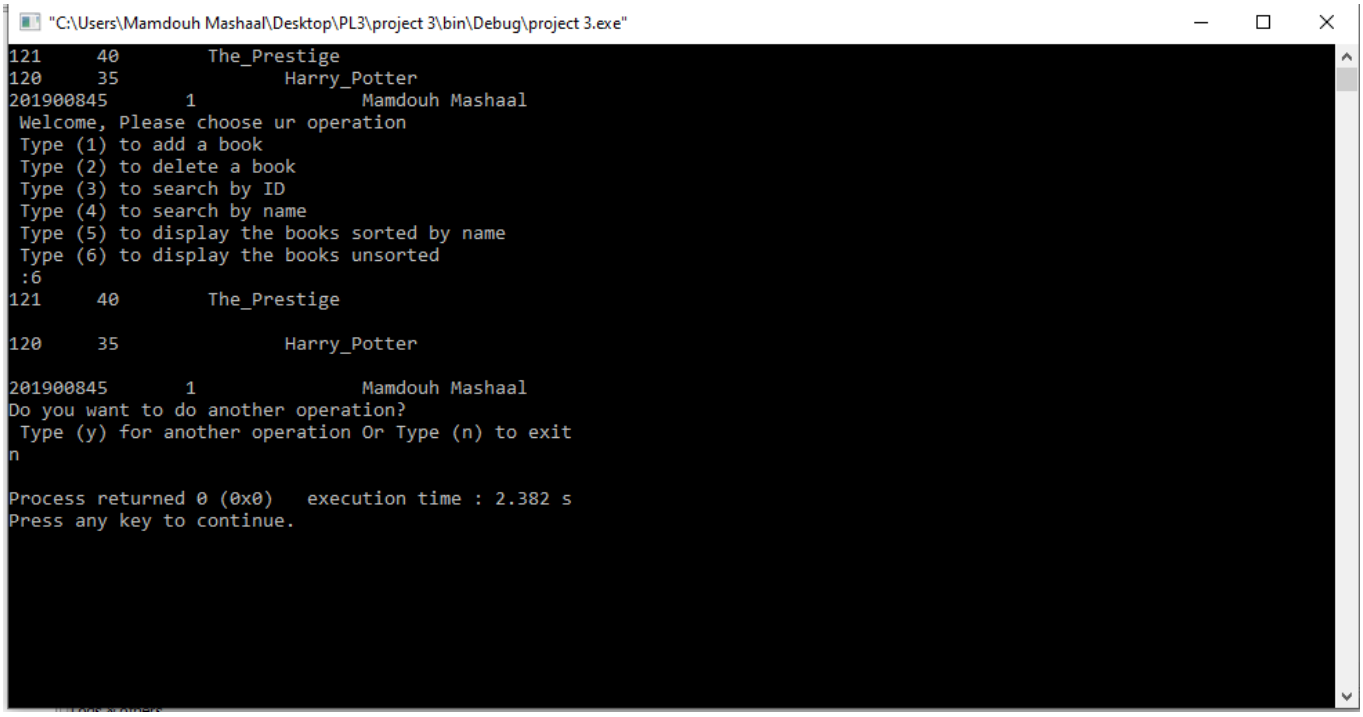
h. Ask if you want another operation

The screenshot of output screen when you ask the user if he wants another operation, reply one time by ‘yes’ and another time by ‘no’.

“**YES**”



“**NO**”


"C:\Users\Mamdouh Mashaal\Desktop\PL3\project 3\bin\Debug\project 3.exe"
121 40 The_Prestige
120 35 Harry_Potter
201900845 1 Mamdouh Mashaal
Welcome, Please choose ur operation
Type (1) to add a book
Type (2) to delete a book
Type (3) to search by ID
Type (4) to search by name
Type (5) to display the books sorted by name
Type (6) to display the books unsorted
:6
121 40 The_Prestige
120 35 Harry_Potter
201900845 1 Mamdouh Mashaal
Do you want to do another operation?
Type (y) for another operation Or Type (n) to exit
n
Process returned 0 (0x0) execution time : 2.382 s
Press any key to continue.