كليـــــة الحاسبات والذكاء الإصطناعى

كنترول الفرقة الأولى

العـــام الجامعـــى 2019 / 2020 – دور مايـــو

الغلاف الخارجى للبحث

أولاً: البيانات الخاصة بالطالب			
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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 <string.h>
#define Size 10
typedef struct book{char name[50]; int id; int qnty;}Bk;
Bk books[ ]={{"Blink",9734408,260},{"The Alchemist",6204977,75},{"Prince Caspian",31415,110},{}};
Bk chars[Size],book;
char c[50]; int i,nom,id;
FILE *fpt;
int linearSearch(  Bk array[ ] , int k ,int low,int size);
int binarySearch( const Bk b[ ], char key[ ], int low, int high );
void bubbleSort ( Bk a[], int size);
void Initialization();
void Insert();
void Delete();
void SearchID();
void SearchName();
void DisplaySorted();
void DisplayUnsorted();
int main()
{
    int oper;
    Initialization();
   do{
          printf("\n           ' LIBRARY '              \n");
```

```
printf("\n\t1- Insert a book (id, name, quantity)\n\t2- Delete a book by id\n\t3- Search a book by id and display its name and quantity\n\t4- Search a book by name and display its id and quantity\n\t5- Display all books sorted by name\n\t6- Display all books unsorted\n");

printf("\n    Choose the number of the operation you want:");
scanf("%d",&oper);
if(oper<1||oper>6)
{
    printf("\n\t\t    ' Sorry! Your choice doesn't exist in the menu '\n");
    printf("\n\n\tDo you want to try again ? ( yes/no ) :");
    scanf("%s",c);
    if(strcmp(c,"no")==0)
       printf("\n\t    'Thank you!'  ,    Goodbye...\n");
}
switch(oper)
{
    case 1: Insert(); break;
    case 2: Delete(); break;
    case 3: SearchID(); break;
    case 4: SearchName(); break;
    case 5: DisplaySorted(); break;
    case 6: DisplayUnsorted(); break;
}
if(oper>=1&&oper<=6)
{
    printf("\n\n\tDo you want to continue ? ( yes/no ) :");
    scanf("%s",c);
```

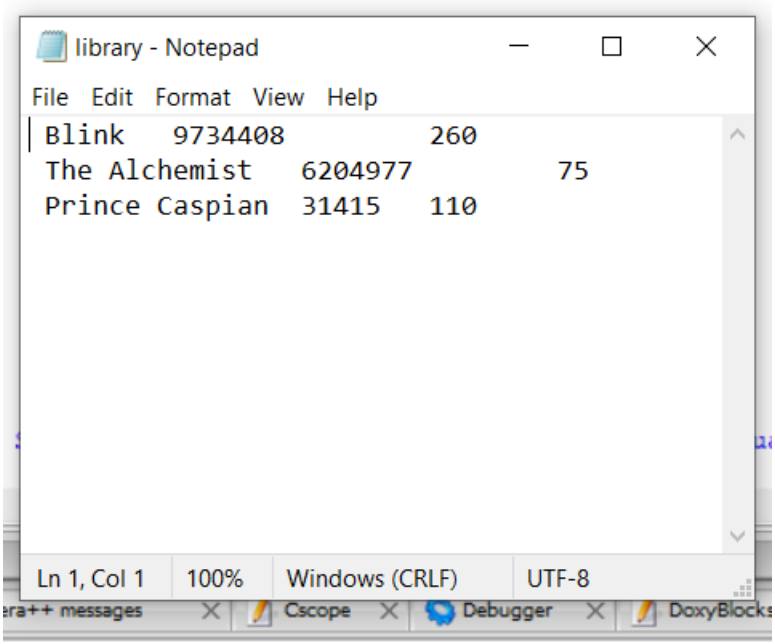
```
            if(strcmp(c,"no")==0)
                printf("\n\t   'Thank you!'  ,   Goodbye...\n");
        }
    }while(strcmp(c,"yes")==0);
  return 0;
}
```

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)

```
void Initialization()
{
  if((fpt=fopen("library.txt","w"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
         for(i=0;i<3;i++)
            fprintf(fpt," %s\t %d\t %d\n",books[i].name,books[i].id,books[i].qnty);
         }
   fclose(fpt);
}
```

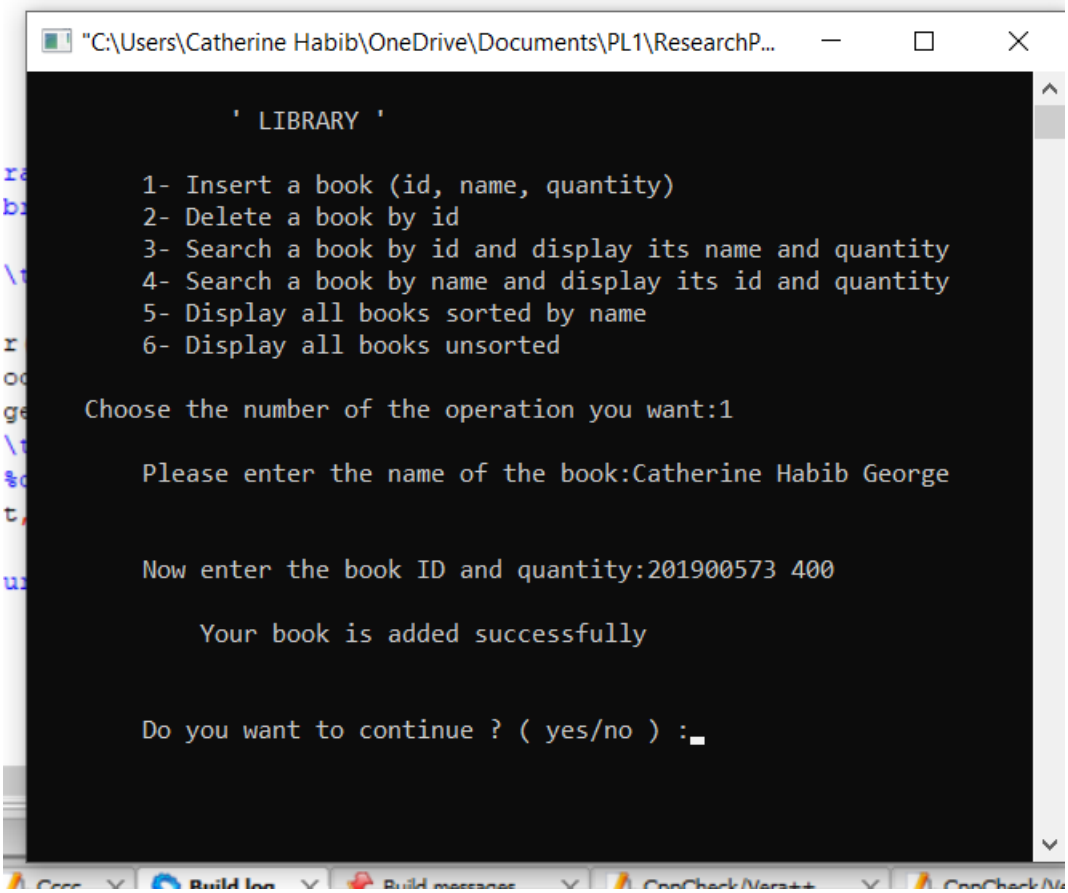


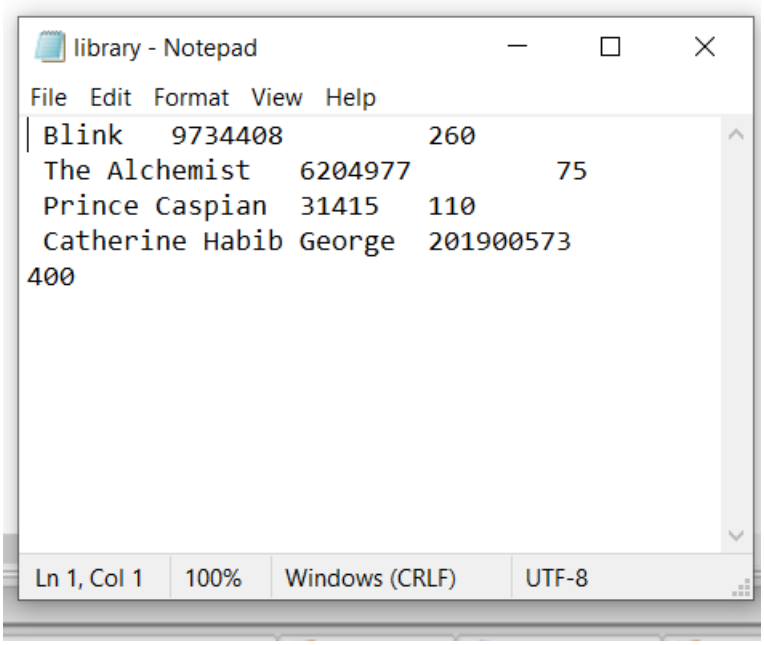
b. Insert a book

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

```
void Insert()
{
  if((fpt=fopen("library.txt","a"))==NULL)
     printf("The library do not exist!\n");
  else{
        printf("\n\tPlease enter the name of the book:");
        do{
           getchar();
           gets(books[3].name);
         }while(getchar()!='\n');
        printf("\n\tNow enter the book ID and quantity:");
        scanf("%d %d",&books[3].id,&books[3].qnty);
        fprintf(fpt," %s\t %d\t %d\n",books[3].name,books[3].id,books[3].qnty);
     }
  printf("\n\t    Your book is added successfully\n ");

  fclose(fpt);
}
```



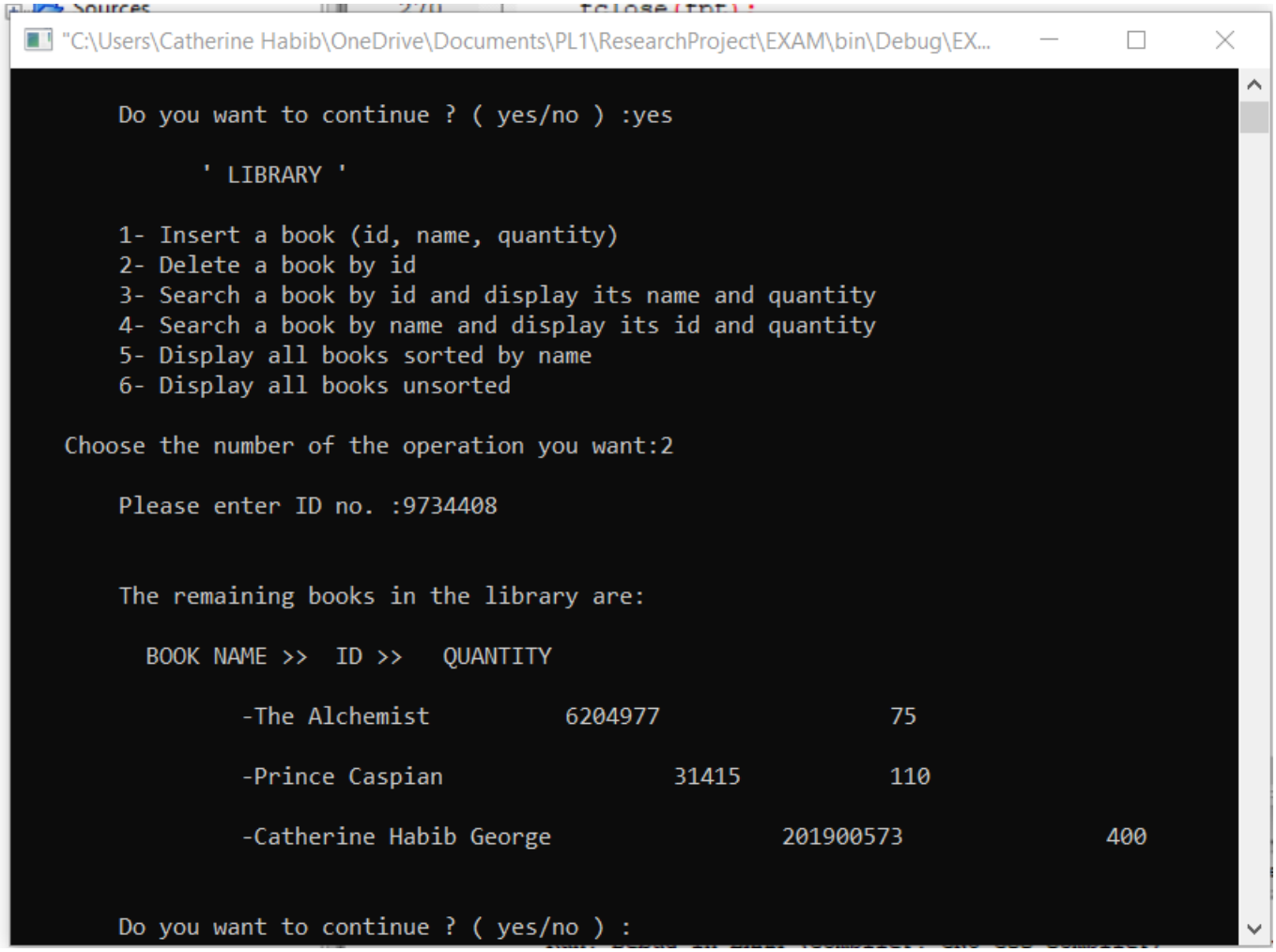


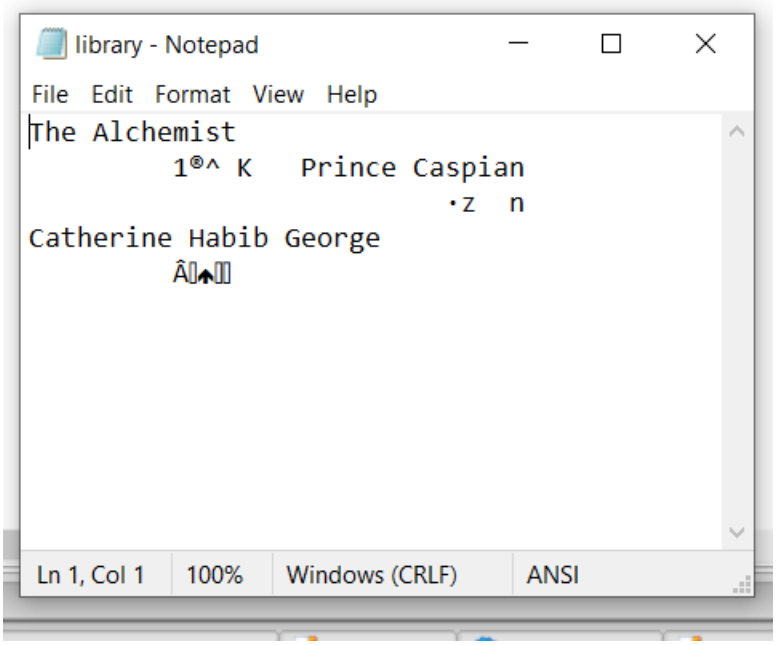
c. Delete a book by id

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

```
void Delete()
{
   if((fpt=fopen("library.txt","w"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
         for(i=0;i<4;i++)
            fwrite(&books[i],sizeof( Bk ) , 1 , fpt );
         }
   fclose(fpt);
   if((fpt=fopen("library.txt","r"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
         printf("\n\tPlease enter ID no. :");
         scanf("%d",&id);
         while(!feof(fpt))
         {
            for(i=0;i<4;i++)
            {
              fread(&chars[i],sizeof( Bk ) , 1 , fpt );
            }
         }
```

```
        for(i=0;i<4;i++)
        {
           if(chars[i].id==id)
              nom=i;
        }
     }
   if((fpt=fopen("library.txt","w"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
        printf("\n\n\tThe remaining books in the library are:");
        printf("\n\n\t  BOOK NAME >>\tID >>\tQUANTITY\n");
        for(i=0;i<4;i++)
        {
           if(i!=nom)
           {
              fwrite(&books[i],sizeof( Bk ) , 1 , fpt );
              printf("\n\t\t -%s\t\t %d\t\t
%d\n",chars[i].name,chars[i].id,chars[i].qnty);
           }
        }
     }
   fclose(fpt);
 }
```


"C:\Users\Catherine Habib\OneDrive\Documents\PL1\ResearchProject\EXAM\bin\Debug\EX...
Do you want to continue ? (yes/no) :yes
' LIBRARY '
1- Insert a book (id, name, quantity)
2- Delete a book by id
3- Search a book by id and display its name and quantity
4- Search a book by name and display its id and quantity
5- Display all books sorted by name
6- Display all books unsorted
Choose the number of the operation you want:2
Please enter ID no. :9734408
The remaining books in the library are:
BOOK NAME >> ID >> QUANTITY
-The Alchemist 6204977 75
-Prince Caspian 31415 110
-Catherine Habib George 201900573 400
Do you want to continue ? (yes/no) :


library - Notepad
File Edit Format View Help
The Alchemist
1®^ K Prince Caspian
·z n
Catherine Habib George
Ln 1, Col 1
100%
Windows (CRLF)
ANSI

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

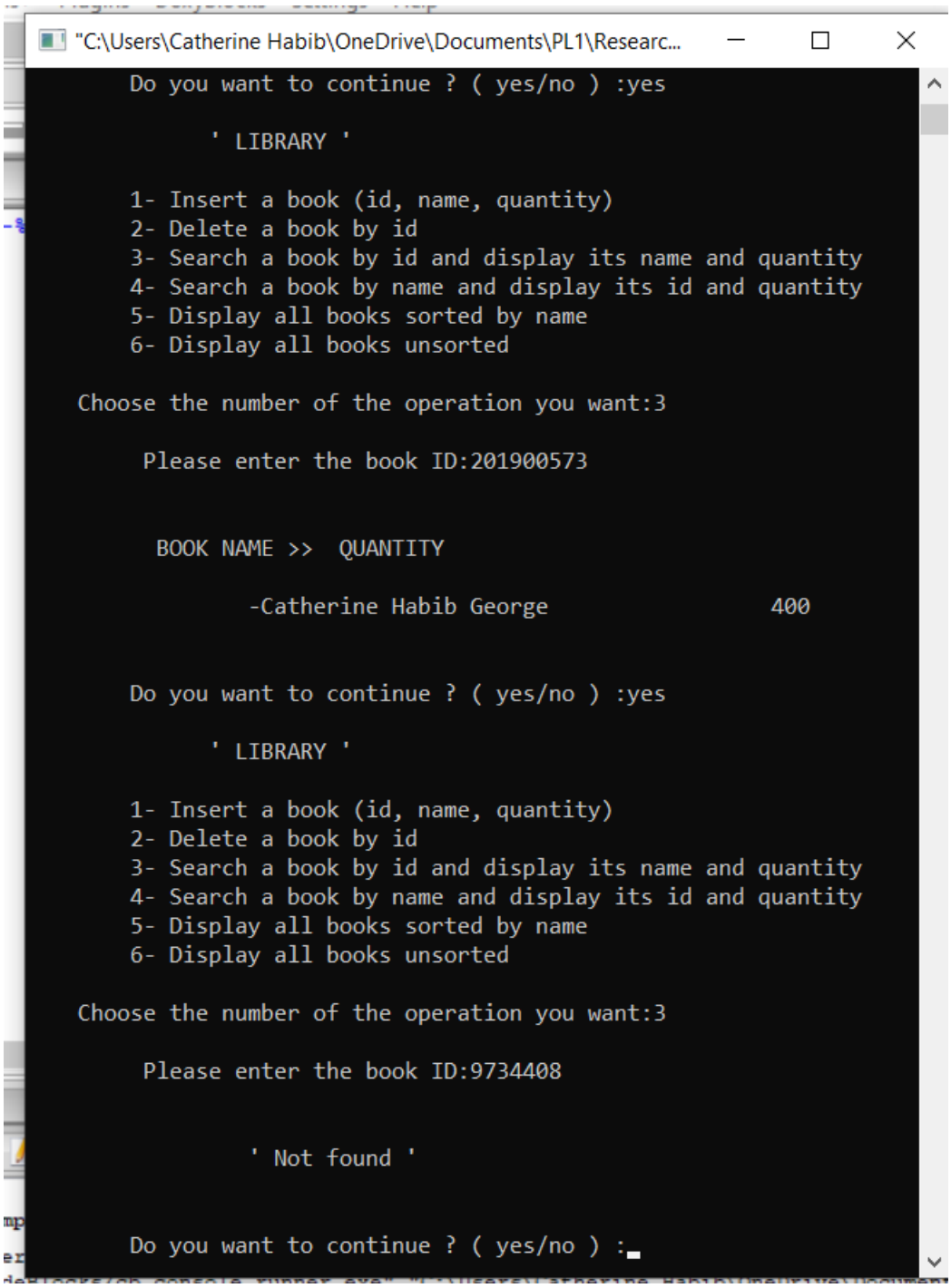
- Choose ***your id*** to display.
- Choose an ***id that doesn't exist*** in your file.

```
int linearSearch( Bk array[], int key, int low,int size)
{
   if(low>size)
      return -1;
   else if(array[low].id==key)
      return low;
   else
      {
         low++;
         return linearSearch(array,key,low,size);
      }
}

void SearchID()
{
   if((fpt=fopen("library.txt","r"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
         printf("\n\t Please enter the book ID:");
         scanf("%d",&id);
         while(!feof(fpt))
         {
            for(i=0;i<3;i++)
            {
              fread(&chars[i],sizeof( Bk ) , 1 , fpt );
            }
         }
         nom=linearSearch(chars,id,0,2);
         if(nom>=0)
         {
            printf("\n\n\t  BOOK NAME >>\tQUANTITY\n");
            printf("\n\t\t -%s\t\t %d\n",chars[nom].name,chars[nom].qnty);
         }
         else
```

```
            printf("\n\n\t\t ' Not found '\n");
        }

    fclose(fpt);
}
```



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.

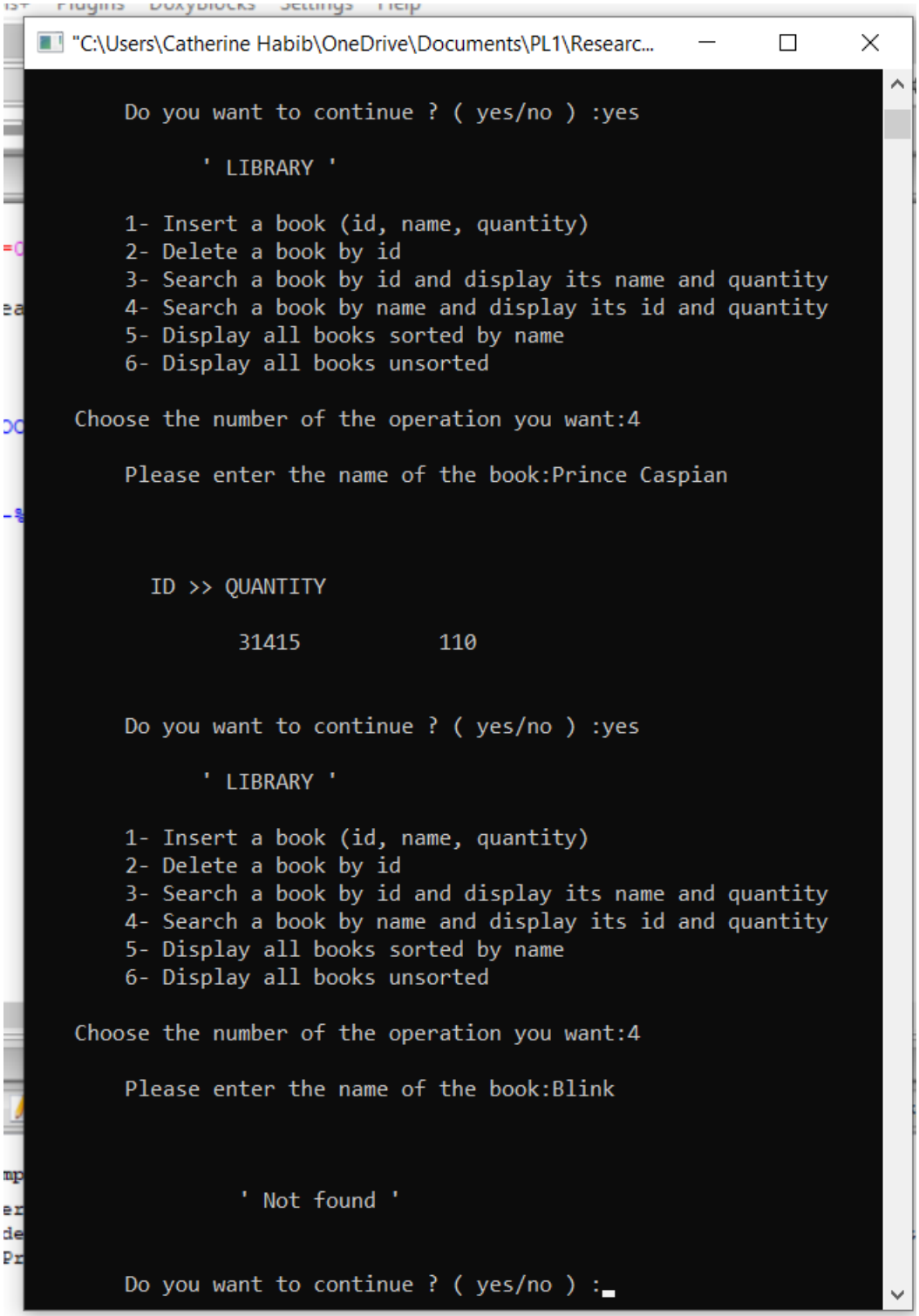
```
void bubbleSort (Bk a[], int size)
{
   unsigned int pass;
   int i;
   Bk hold;
   for ( pass = 1; pass < size; pass++ )
      { for ( i = 0; i < size - pass; i++ )
         { if ( strcmp(a[i].name,a[i+1].name)>0 )
            {   hold = a[ i ];
               a[ i ] = a[ i + 1 ];
               a[ i + 1 ] = hold;
            }
         }
      }
}

int binarySearch( const Bk b[], char key[], int low, int high )
{
   if ( low > high ) return -1;
   int middle = ( low + high ) / 2;
   if (strcmp(b[middle].name,key)==0)
      return    middle;
   else if ( strcmp(b[middle].name,key)>0 )
      return binarySearch(b,key, low, middle - 1);
   else
      return binarySearch(b,key, middle+1, high);
}

void SearchName()
{
   printf("\n\tPlease enter the name of the book:");
   do{
      getchar();
      gets(c);
```

```
  }while(getchar()!='\n');
  if((fpt=fopen("library.txt","r"))==NULL)
     printf("\n\tThe library do not exist!\n");
  else{
        while(!feof(fpt))
        {
           for(i=0;i<3;i++)
           {
             fread(&chars[i],sizeof( Bk ) , 1 , fpt );
           }
        }
        bubbleSort ( chars, 3 );
        nom=binarySearch( chars,c,0,2);
        if(nom>=0)
        {
           printf("\n\n\t  ID >>\tQUANTITY\n");
           printf("\n\t\t %d\t\t %d\n",chars[nom].id,chars[nom].qnty);
        }
        else
           printf("\n\n\t\t ' Not found '\n");
      }

  fclose(fpt);
}
```

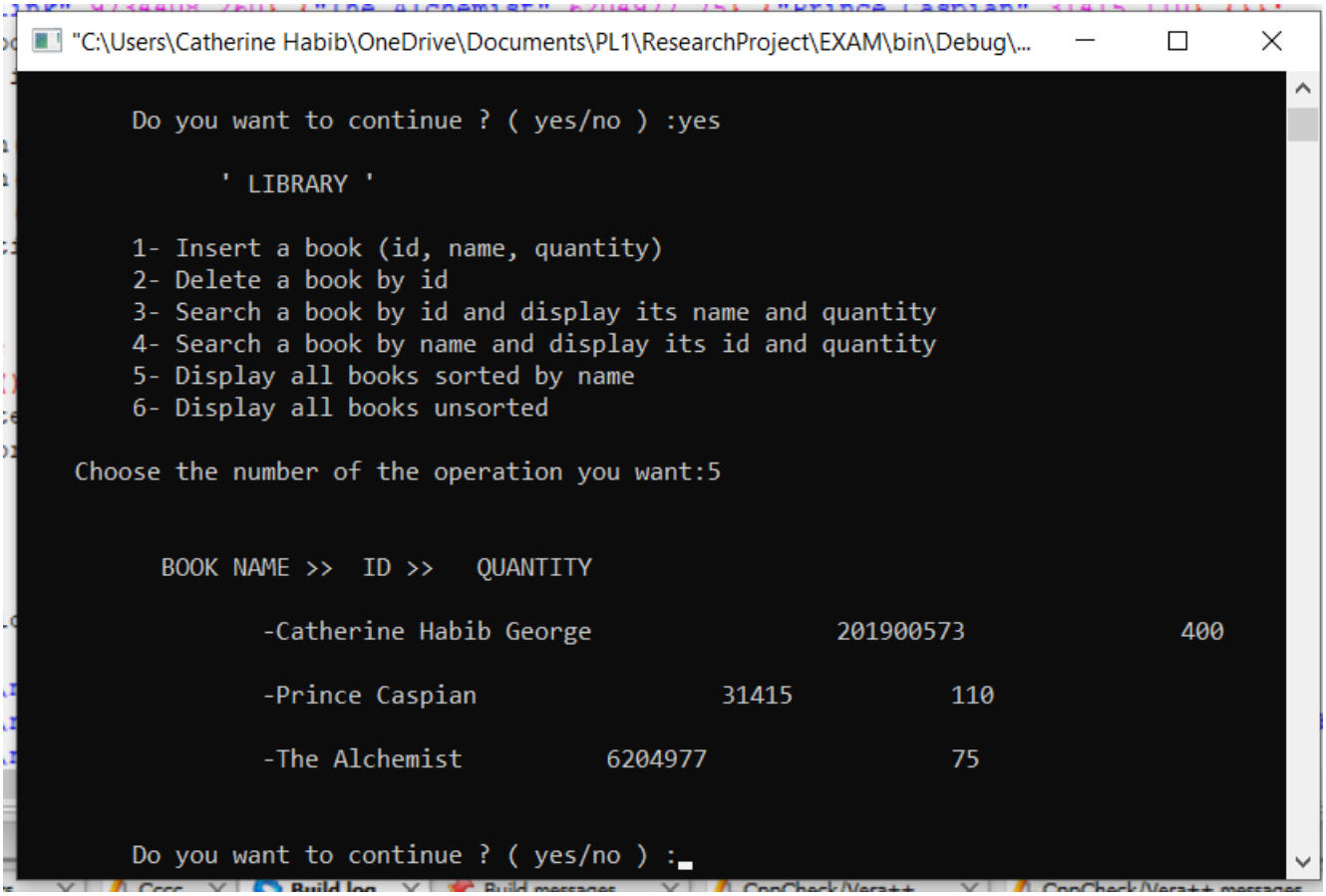

"C:\Users\Catherine Habib\OneDrive\Documents\PL1\Researc...
Do you want to continue ? (yes/no) :yes
' LIBRARY '
1- Insert a book (id, name, quantity)
2- Delete a book by id
3- Search a book by id and display its name and quantity
4- Search a book by name and display its id and quantity
5- Display all books sorted by name
6- Display all books unsorted
Choose the number of the operation you want:4
Please enter the name of the book:Prince Caspian
ID >> QUANTITY
31415 110
Do you want to continue ? (yes/no) :yes
' LIBRARY '
1- Insert a book (id, name, quantity)
2- Delete a book by id
3- Search a book by id and display its name and quantity
4- Search a book by name and display its id and quantity
5- Display all books sorted by name
6- Display all books unsorted
Choose the number of the operation you want:4
Please enter the name of the book:Blink
' Not found '
Do you want to continue ? (yes/no) :

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 bubbleSort (Bk a[], int size)
{
   unsigned int pass;
   int i;
   Bk hold;
   for ( pass = 1; pass < size; pass++ )
      { for ( i = 0; i < size - pass; i++ )
         { if ( strcmp(a[i].name,a[i+1].name)>0 )
            {   hold = a[ i ];
               a[ i ] = a[ i + 1 ];
               a[ i + 1 ] = hold;
            }
         }
      }
}

void DisplaySorted()
{
   if((fpt=fopen("library.txt","r"))==NULL)
      printf("\n\tThe library do not exist!\n");
   else{
         while(!feof(fpt))
         {
            for(i=0;i<3;i++)
            {
              fread(&chars[i],sizeof( Bk ) , 1 , fpt );
            }
         }
         bubbleSort ( chars, 3 );
         printf("\n\n\t  BOOK NAME >>\tID >>\tQUANTITY\n");
         for(i=0;i<3;i++)
            printf("\n\t\t -%s\t\t %d\t\t %d\n",chars[i].name,chars[i].id,chars[i].qnty);
       }
   fclose(fpt);
}
```

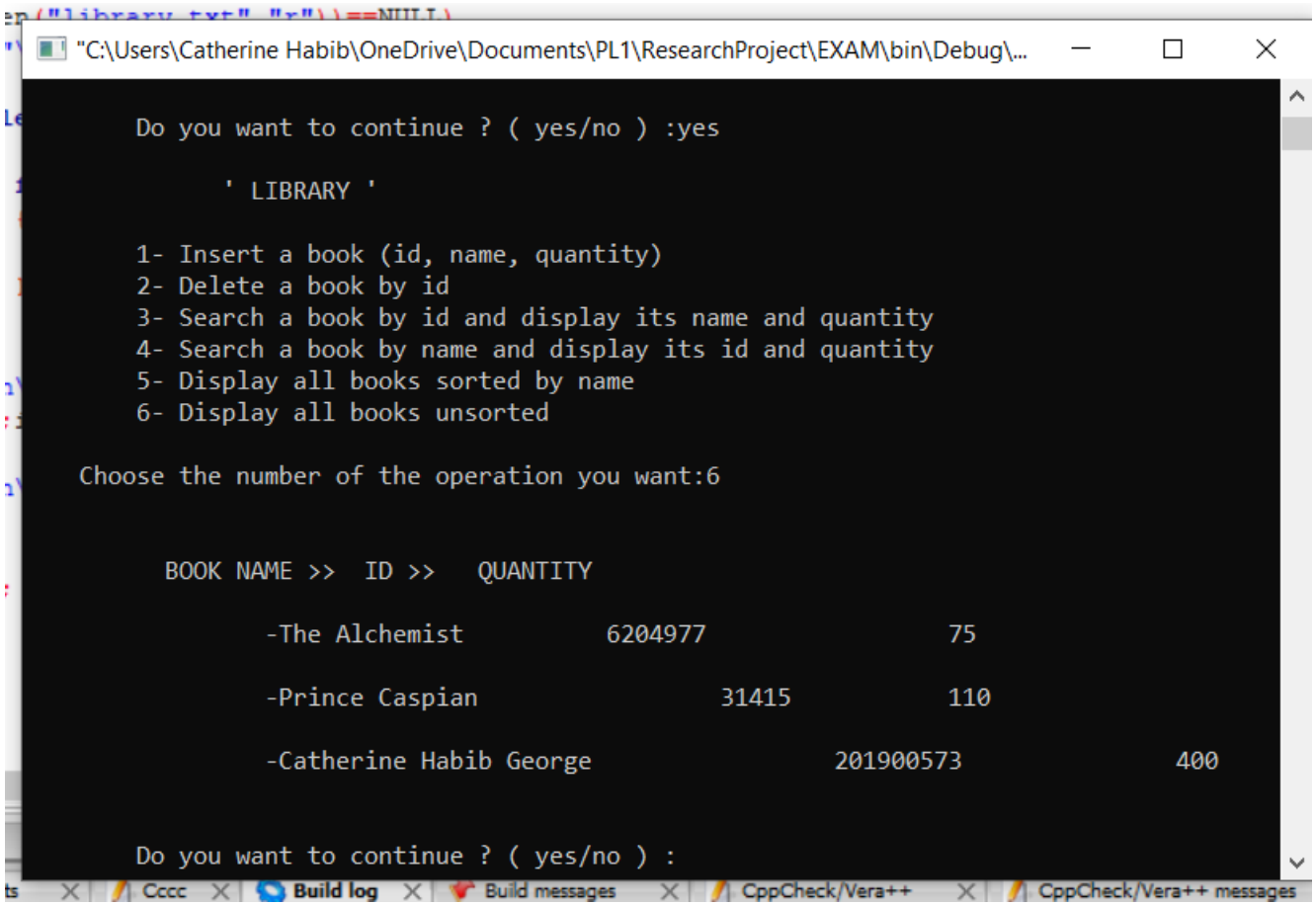


g. Display all books unsorted, their ids, names and quantity (as entered)
The function and the screenshot of output screen of all unsorted books including your name.

```
void DisplayUnsorted()
{
  if((fpt=fopen("library.txt","r"))==NULL)
     printf("\n\tThe library do not exist!\n");
  else{
       while(!feof(fpt))
       {
          for(i=0;i<3;i++)
          {
            fread(&chars[i],sizeof( Bk ) , 1 , fpt );
          }
       }
    }
  printf("\n\n\t  BOOK NAME >>\tID >>\tQUANTITY\n");
```

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

    fclose(fpt);
}
```



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’.