

## الغلاف الخارجي للبحث

أولاً: البيانات الخاصة بالطالب				
الفرقة الدراسية	الأولى	التخصص	عام	
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ثانياً: البيانات الخاصة بالبحث				
Library Research Project Application				عنوان البحث
<input type="checkbox"/> بحث جماعي <input checked="" type="checkbox"/> بحث فردي				طبيعة المشاركة
بواسطة البريد الالكتروني				ارسال البحث
م	الاسم رباعي	رقم الجلوس	الرقم القومي	اسماء الطلاب المشاركين في البحث (يكتب الاسم رباعياً)
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ثالثاً: البيانات الخاصة بالمتنوع				
النتيجة		ناجح	راسب	
أعضاء لجنة		الاسماء		
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في حالة عدم قبول البحث يرجى ذكر الأسباب				

# 1.Implementation Code

## (Main function)

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

FILE *fptr;

struct info{
    int id;
    char name[50];
    int quantity;
};

void add(struct info book[50]);
void del(struct info book[50]);
int search1(const struct info book[50],int n,int start);
void unsort(const struct info book[50]);
void sort(struct info book[50]);
int search2(struct info book[50],int start ,int size);

int main()
{
    char c;
    int menu;
    struct info book[50];

    fptr=fopen("file.txt","r");
    if(fptr==NULL)
        printf( "File could not be opened\n" );
    else
    {

        for(int i=0;i<3;i++)
        {
            fscanf( fptr,"%d%s%d",&book[i].id,book[i].name,&book[i].quantity);
        }
        fclose(fptr);
    }
    do{
```

```
printf ("\nChoose an operation\n1 to insert a book\n2 to delete a book by id\n3 to search a  
book by id\n4 to search a book by name\n5 to display all books sorted by name\n6 to  
display all books unsorted\n");
```

```
scanf ("%d",&menu);
```

```
if(menu==1)  
    add(book);
```

```
else if(menu==2)  
    del(book);
```

```
else if(menu==3)  
{  
    int n;  
    printf("enter the id for search \n");  
    scanf("%d",&n);  
    search1(book,n,0);  
}
```

```
else if(menu==4)  
{  
    search2(book,0,3);  
}
```

```
else if(menu==5)  
    sort(book);
```

```
else if(menu==6)  
    unsort(book);
```

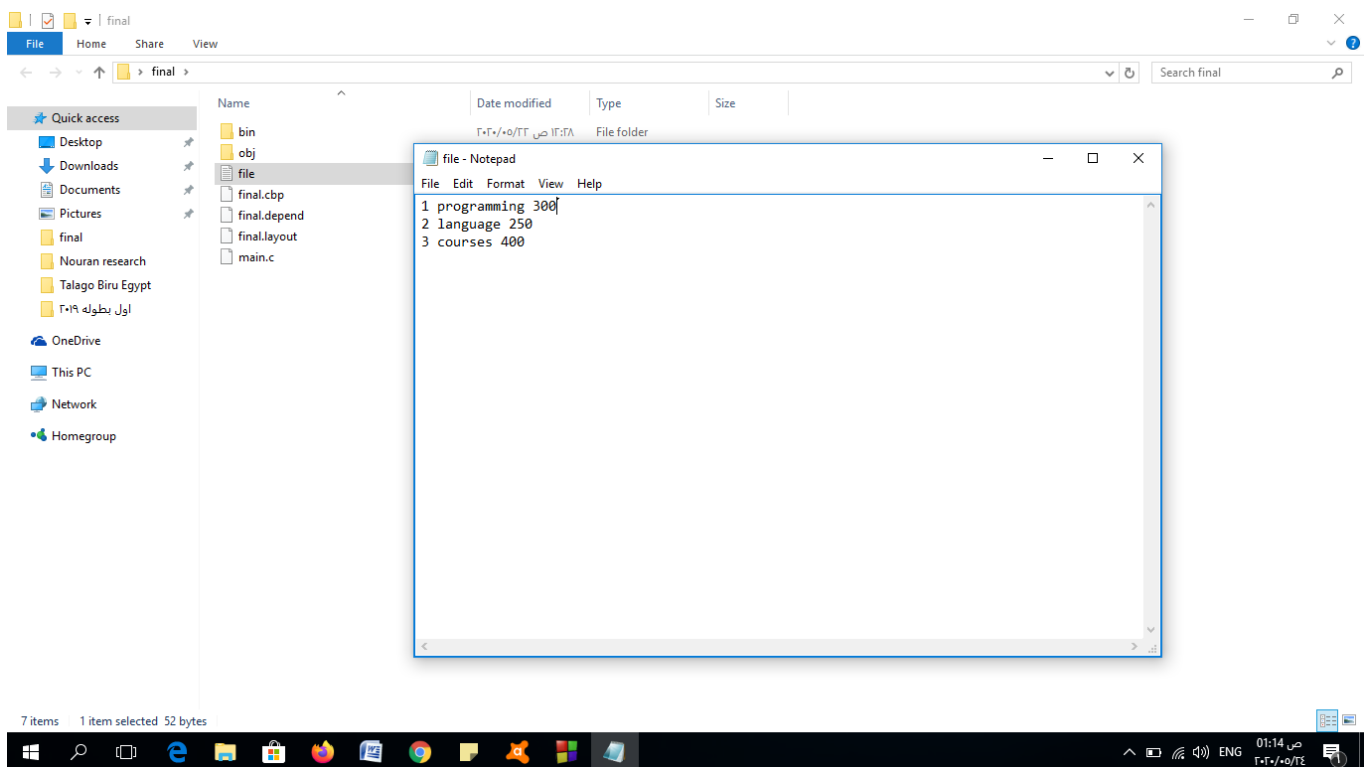
```
printf("\n any additional operators?if yes enter y,if no enter n\n");  
scanf(" %c",&c);  
}while(c=='y');
```

```
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

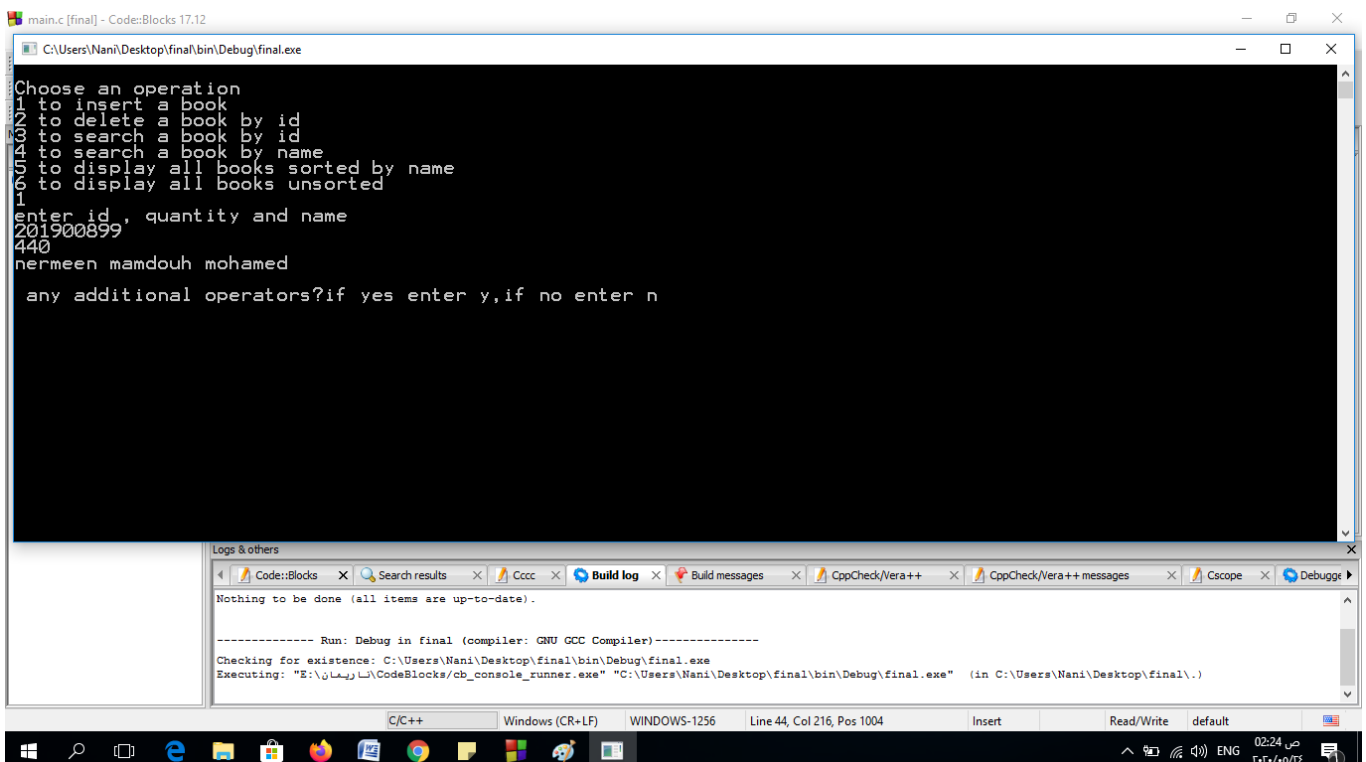
The function and the screenshot of output screen (Insert your id, complete name, any grade as a book), text file after insertion.

```
void add(struct info book[50])
{

    printf("enter id , quantity and name \n");
    scanf("%d%d",&book[3].id,&book[3].quantity);
    getchar();
    gets(book[3].name);

    fptr=fopen("file.txt","a");
    if(fptr==NULL)
        printf( "File could not be opened\n" );
    else
    {
        fprintf(fptr,"\n%d %s %d",book[3].id,book[3].name,book[3].quantity);

        fclose(fptr);
    }
}
```

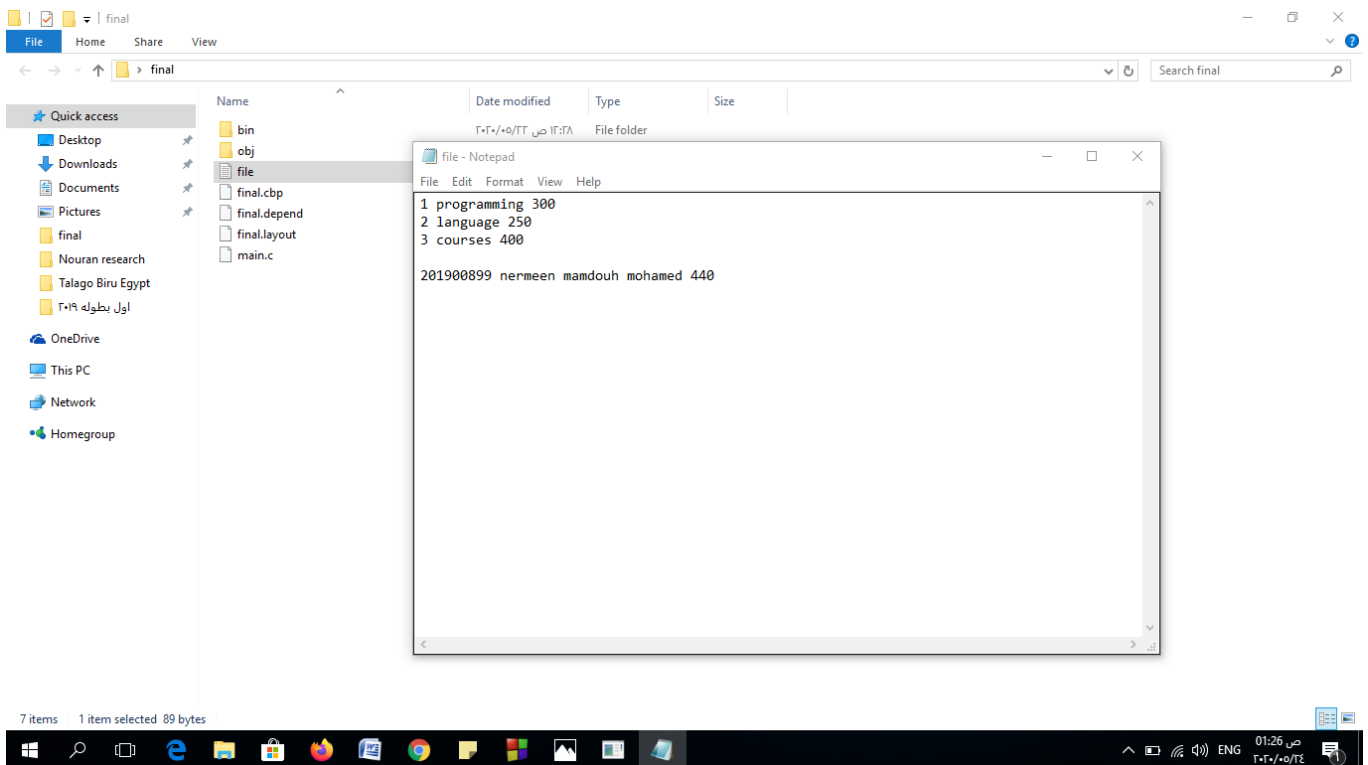


```
main.c [final] - Code::Blocks 17.12
C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Choose an operation
1- to insert a book
2- to delete a book by id
3- to search a book by id
4- to search a book by name
5- to display all books sorted by name
6- to display all books unsorted
Enter id , quantity and name
201900899
440
nermeen mamdouh mohamed
any additional operators?if yes enter y,if no enter n

Logs & others
Code::Blocks X Search results X Cccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X Cscope X Debugge
Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)

C/C++ Windows (CR+LF) WINDOWS-1256 Line 44, Col 216, Pos 1004 Insert Read/Write default 02:24 ص ٢٠٢٠/٠٥/٢٤
```



### 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 del(struct info book[50])
{
    int id,size=4;
    printf("enter id to delete the book \n");
    scanf("%d",&id);
    fptr=fopen("file.txt","w");
    if(fptr==NULL)
        printf( "File could not be opened\n" );
    else
    {
        for(int i=0;i<size;i++)
        {
            if(book[i].id==id)
            {
                char tmp[50];
```

```

        for(int j=i ;j<size; j++)
        {
            book[j].id = book[j+1].id;
            strcpy(tmp, book[j].name);
            strcpy(book[j].name , book[j+1].name);
            strcpy(book[j+1].name , tmp);
            book[j].quantity= book[j+1].quantity;
        }
        size--;
    }
}

for(int c=0; c<size ;c++)
{
    fprintf(fptr,"%d %s %d\n",book[c].id,book[c].name,book[c].quantity);
}

fclose(fptr);
}

}

```

The screenshot shows the Code::Blocks IDE with the following components:

- Console Window:** Displays the program's output. It starts with a menu:
 

```

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted

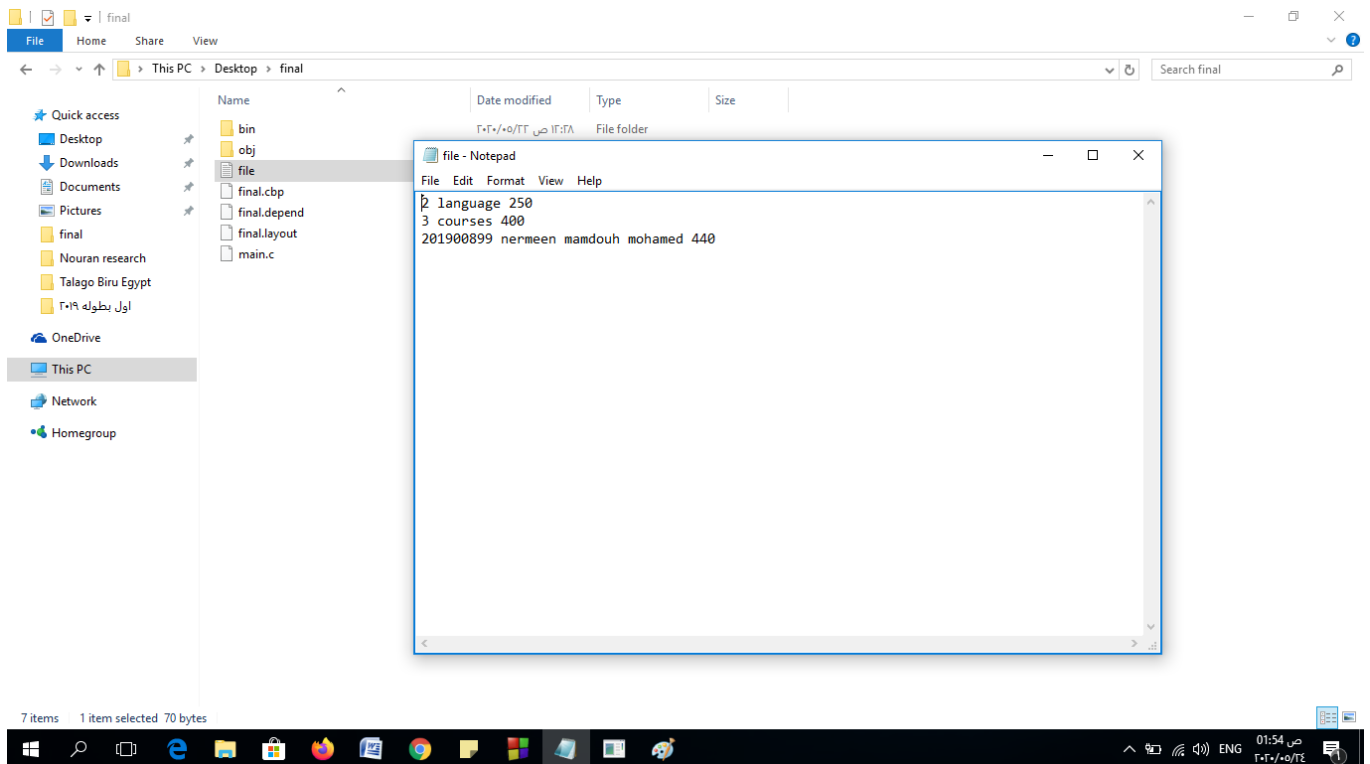
```

 The user has entered '2' to delete a book. Then, it prompts "enter id to delete the book" and the user has entered '1'. Finally, it asks "any additional operators?if yes enter y,if no enter n".
- Run Output Panel:** Shows the execution details:
 

```

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\..)

```
- Taskbar:** Shows the Windows taskbar with various application icons and the system clock indicating 02:25 on 12/10/2023.



**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 search1(const struct info book[50],int n,int start)
{
```

```
    int c=0;
    for(int i=0; i<3 ; i++)
    {
        if(n==book[i].id)
            c++;
    }
    if(c==0)
        printf("not found");
```



```

else
{
    if(start<3 && book[start].id==n)
    {
        printf("the name is \t");
        puts(book[start].name);
        printf("the quantity is %d\n",book[start].quantity);
        return 1;
    }
else
{
    search1(book,n,start+1);
}

}

return 0;
}

```

The screenshot shows a Windows IDE with the following components:

- Console Window:** Displays the program's output and user input.
 

```

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
enter the id for search
201900899
the name is      nermeen mamdouh mohamed
the quantity is 440
any additional operators?if yes enter y,if no enter n
      
```
- Logs & others Window:** Shows build and debug messages.
 

```

Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)
      
```
- IDE Interface:** The top bar shows the file path 'C:\Users\Nani\Desktop\final\bin\Debug\final.exe'. The bottom status bar indicates the current file is 'C/C++', the window is 'Windows (CR+LF)', the window ID is 'WINDOWS-1256', and the cursor is at 'Line 44, Col 216, Pos 1004'. The bottom right corner shows the system clock as '02:26' and the date '٢٠٢٠/٠٥/٢٤'.

The screenshot shows the Code::Blocks IDE. The main console window displays the following text:

```

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
7 to exit
Enter the id for search
5
not found
any additional operators?if yes enter y,if no enter n

```

The debug console window at the bottom shows the following logs:

```

Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\ناني\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)

```

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 search2(struct info book[50],int start ,int size)
{
    for (int i = 0; i < 3; i++) {
        for (int j = i+1; j < 3; j++)
            if (strcmp(book[i].name, book[j].name) > 0)
            {
                struct info temp = book[i];
                book[i] = book[j];
                book[j] = temp;
            }
    }
}

```

```

char x[20];
printf("enter the name to search \n");
getchar();
gets(x);

```

```

    int mid , low=start, high=size-1;

int c=0;
for(int z=0; z<3 ; z++)
{
    if(strcmp(x,book[z].name)==0)
        c++;
}
if(c==0)
    printf("not found");
else
{

while(low<=high)
{

    mid=(low+high)/2;
    if(strcmp(x,book[mid].name)==0)
    {
        printf("\nthe id is %d\nthe quantity is %d",book[mid].id,book[mid].quantity);
        return 1;
    }
    else if(strcmp(x,book[mid].name)==-1)
    {
        high = mid-1;
    }
    else
    {
        low = mid+1;
    }

}

}

return 0;

}

```

```
main.c [final] - Code::Blocks 17.12
C:\Users\Nani\Desktop\final\bin\Debug\final.exe

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
4
enter the name to search
courses

the id is 3
the quantity is 400
any additional operators?if yes enter y,if no enter n
_

Logs & others
Code::Blocks Search results Cccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages Cscope Debugge
Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)

C/C++ Windows (CR+LF) WINDOWS-1256 Line 44, Col 216, Pos 1004 Insert Read/Write default 02:28 ص ٢٠٢٠/٠٩/٢٤
```

```
main.c [final] - Code::Blocks 17.12
C:\Users\Nani\Desktop\final\bin\Debug\final.exe

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
4
enter the name to search
programming
not found
any additional operators?if yes enter y,if no enter n
_

Logs & others
Code::Blocks Search results Cccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages Cscope Debugge
Nothing to be done (all items are up-to-date).

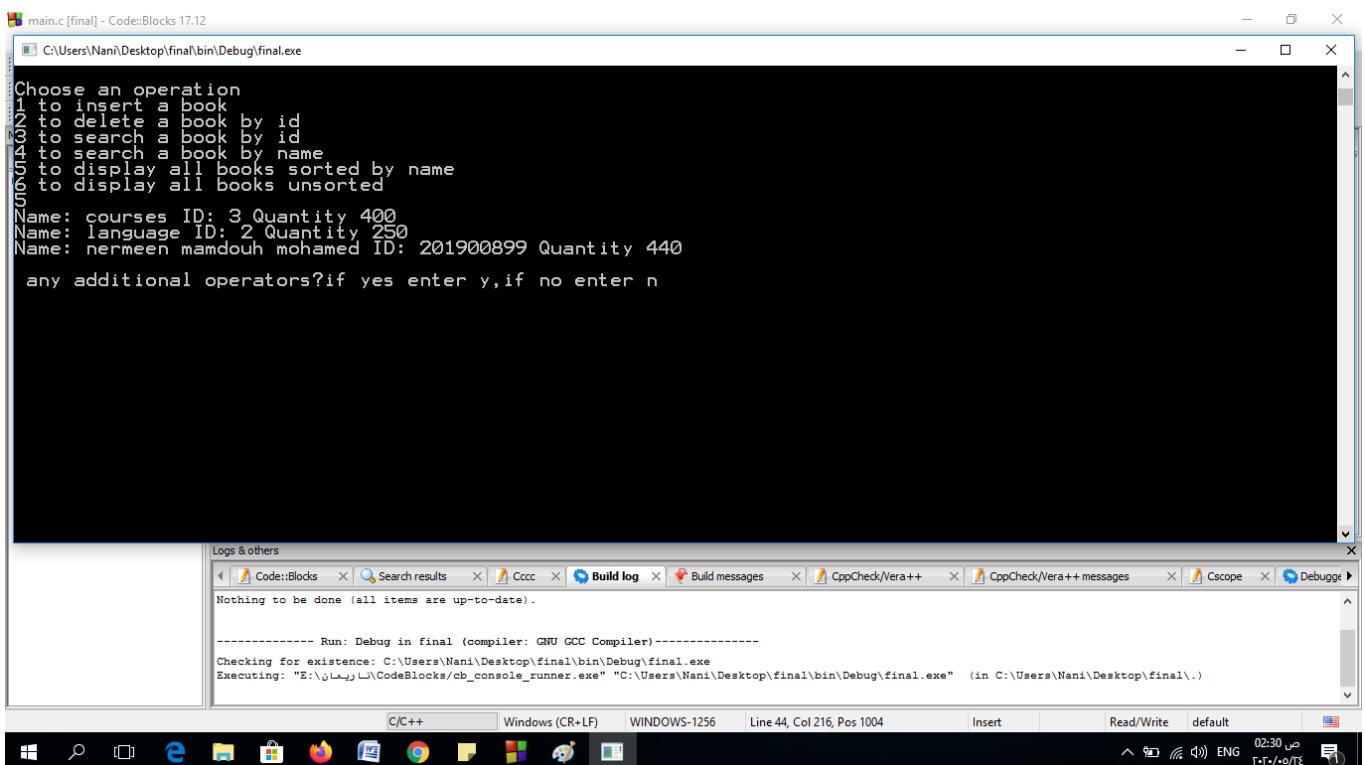
----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)

C/C++ Windows (CR+LF) WINDOWS-1256 Line 44, Col 216, Pos 1004 Insert Read/Write default 02:29 ص ٢٠٢٠/٠٩/٢٤
```

**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 sort(struct info book[50])
{
    for (int i = 0; i < 3; i++) {
        for (int j = i+1; j < 3; j++)
            if (strcmp(book[i].name, book[j].name) > 0) {
                struct info temp = book[i];
                book[i] = book[j];
                book[j] = temp;
            }
    }
    for(int i=0;i<3;++i)
        printf("Name: %s ID: %d Quantity %d\n",book[i].name,
        book[i].id,book[i].quantity);
}
```



```
main.c [final] - Code::Blocks 17.12
C:\Users\Nani\Desktop\final\bin\Debug\final.exe

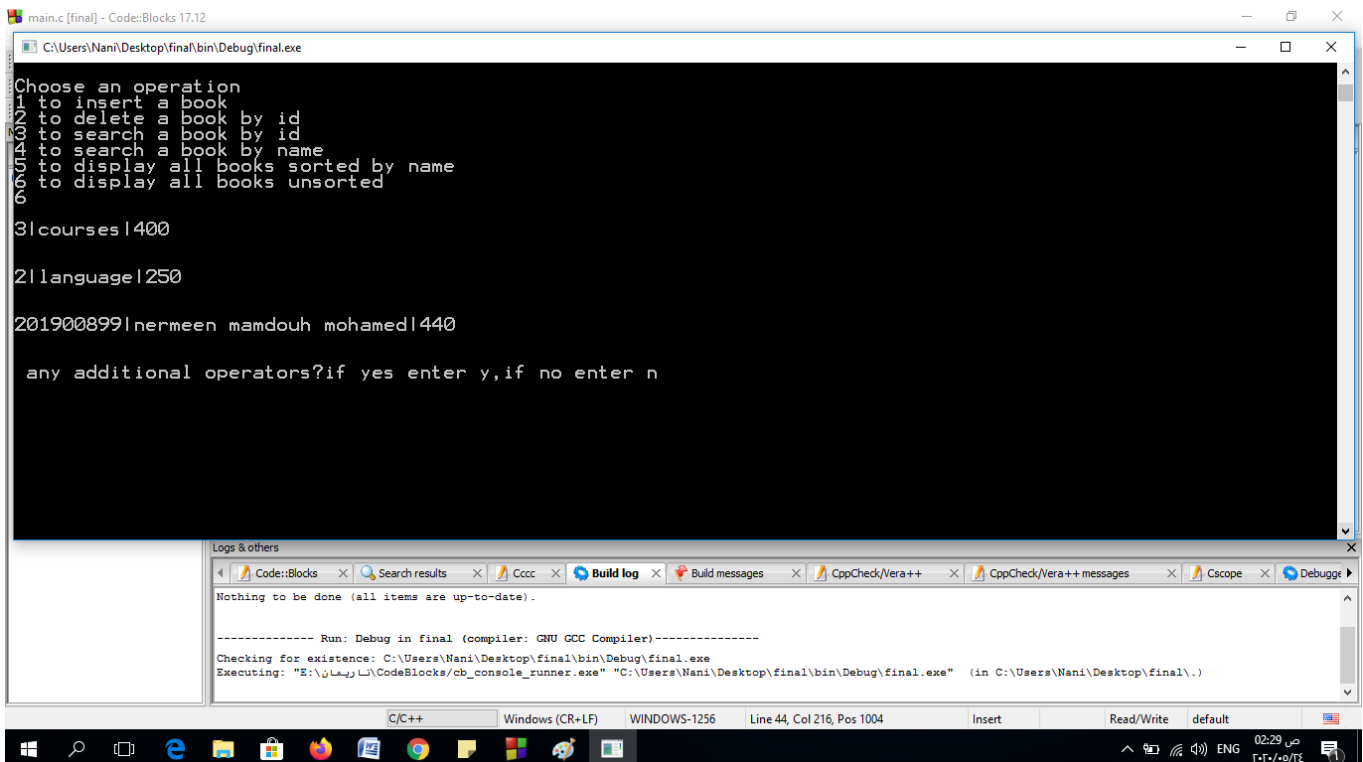
Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
7 to exit
Enter your choice: 5
Name: courses ID: 3 Quantity 400
Name: language ID: 2 Quantity 250
Name: nermeen mamdouh mohamed ID: 201900899 Quantity 440
any additional operators?if yes enter y,if no enter n
n

Logs & others
Code::Blocks Search results Cccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages Cscope Debugger
Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)
```

- 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 unsort(const struct info book[50])
{
    for(int j=0;j<3;j++)
    {
        printf("\n%d|%s|%d\n\n",book[j].id,book[j].name,book[j].quantity);
    }
}
```



The screenshot shows the Code::Blocks IDE with a C++ project named 'final'. The main window displays the output of the program, which is a menu-driven application. The menu options are: 1 to insert a book, 2 to delete a book by id, 3 to search a book by id, 4 to search a book by name, 5 to display all books sorted by name, and 6 to display all books unsorted. The user has entered '3' to display all books unsorted, and the program has outputted three lines of data: '3|courses|400', '2|language|250', and '201900899|nermeen mamdouh mohamed|440'. The user has also entered 'y' for 'any additional operators?if yes enter y,if no enter n'. The bottom panel shows the 'Logs & others' window, which contains the debug output of the program, including the compiler (GNU GCC Compiler) and the execution path.

```
main.c [final] - Code::Blocks 17.12
C:\Users\Nani\Desktop\final\bin\Debug\final.exe

Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
> 3
3|courses|400

2|language|250

201900899|nermeen mamdouh mohamed|440

any additional operators?if yes enter y,if no enter n
> y
```

Logs & others

Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cscope x Debugger

Nothing to be done (all items are up-to-date).

----- Run: Debug in final (compiler: GNU GCC Compiler)-----

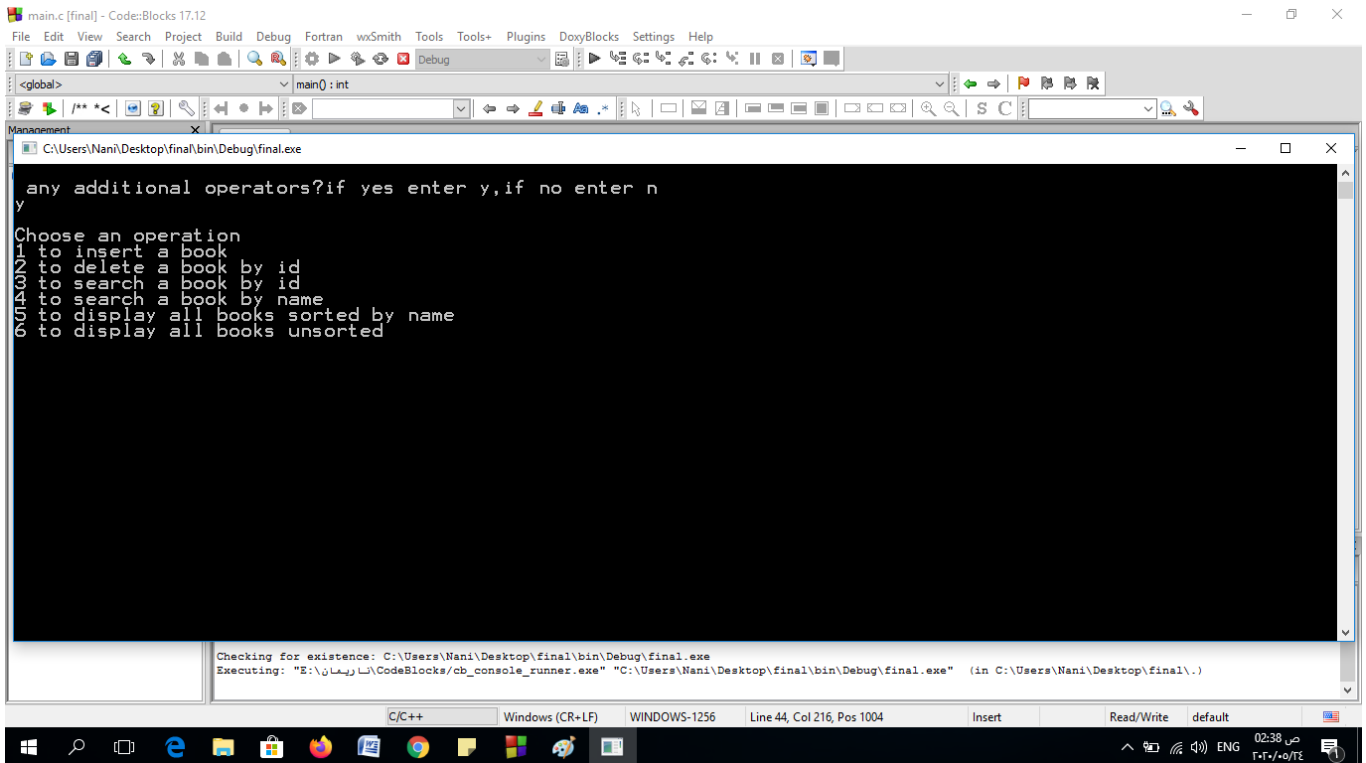
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe

Executing: "E:\رمضان\CodeBlocks\cb\_console\_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)

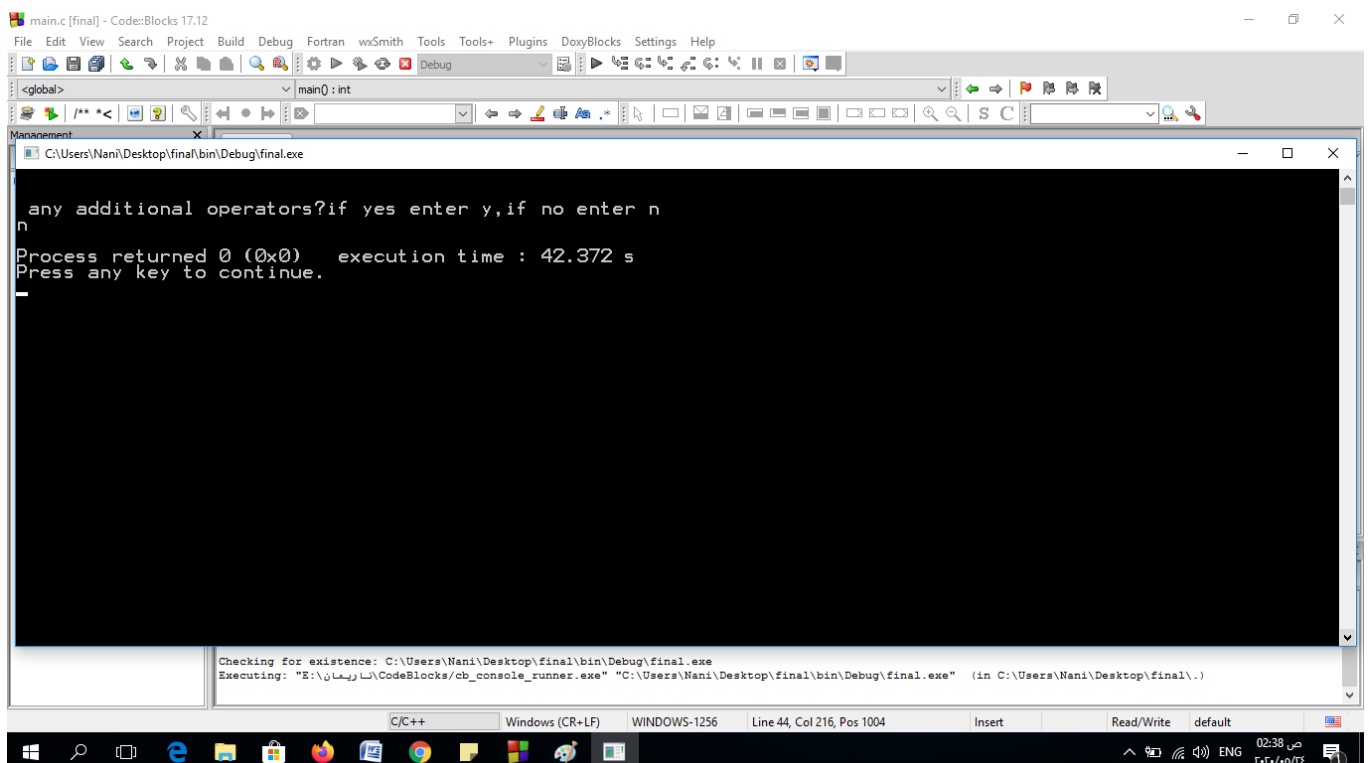
C/C++ Windows (CR+LF) WINDOWS-1256 Line 44, Col 216, Pos 1004 Insert Read/Write default 02:29 ص 10/10/13

## 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'.



```
main.c [final] - Code::Blocks 17.12
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
<global> main():int
C:\Users\Nani\Desktop\final\bin\Debug\final.exe
any additional operators?if yes enter y,if no enter n
y
Choose an operation
1 to insert a book
2 to delete a book by id
3 to search a book by id
4 to search a book by name
5 to display all books sorted by name
6 to display all books unsorted
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)
```



```
main.c [final] - Code::Blocks 17.12
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
<global> main():int
C:\Users\Nani\Desktop\final\bin\Debug\final.exe
any additional operators?if yes enter y,if no enter n
n
Process returned 0 (0x0) execution time : 42.372 s
Press any key to continue.
Checking for existence: C:\Users\Nani\Desktop\final\bin\Debug\final.exe
Executing: "E:\CodeBlocks\cb_console_runner.exe" "C:\Users\Nani\Desktop\final\bin\Debug\final.exe" (in C:\Users\Nani\Desktop\final\.)
```