Department of Information Technology And Communication

Subject: Algorithms and Programming II

Lecture: BOU CHANNA

Project: Final-Algo.project

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Contents

1. Main Menu
- Code

```
main(){
    string n;
    while(n!="0"){
        mainMenu();

        cout<<"\n\t==>Enter Options: ";
        cin>>n;
        cout<<"\t-------------------"<<endl;

        if(n=="1"){
            system("pause");
            system("cls");
            His_Basic_Math();
            condition_Basic_math();
        }else if(n=="2"){
            system("pause");
            system("cls");

            His_Math_Suit();
            condition_Math_suit();
        }else if(n=="3"){
            system("pause");
            system("cls");

            His_Num_Conversion();
            condition_Number_Conversion();
        }else if(n=="4"){//number testing
            system("pause");
            system("cls");

            His_Num_Testing();
            condition_Number_Testing();
        }else if(n=="5"){//book
            system("pause");
            system("cls");

            His_Book_store();
            condition_BooK_store();
        }else if(n=="6"){// product
            system("pause");
            system("cls");
```

```
        His_Product();
        condition_product();
    }else  if(n=="7"){// show history
        system("pause");
        system("cls");

        His_HistoryF();
        Display_history();
        system("pause");
        system("cls");

    }
    else if(n=="8"){
            His_Exit_program();
        system("pause");
        system("cls");
        cout<<"\t\t>>>This program is Exited.";
        cout<<"\n\t==========================================================="<<endl;
      break;
    }
    else {
        cout<<"\n\t\tThe program have no this option."<<endl;
        cout<<"\t-----------------------------------------------------------"<<endl;
    }

    }

}
```

- **Output**

```
-----------------------------------------------------------
                        MENU
_____
|        1. Basic Math.                                   |
|        2. Math suit Computation.                        |
|        3. Number convertion.                            |
|        4. Number Testing.                               |
|        5. Book Store Management.                         |
|        6. Product management.                           |
|        7. See History.                                  |
|                                                          |
|_____|

==>Enter Options:
```

2. Basic Math

- **Code**
  i. Summation

```
void summation(int a, int b){
    int sum=0;
    sum=a+b;
    cout<<"\t\t===>The summation of  "<<a<<" and "<<b<<" is "<<sum<<endl;
}
```

ii. Subtraction

```
  }
void subtraction(int a, int b){
    int sub;
    sub= a-b;
    cout<<"\t\t===>The subtraction of  "<<a<<" and "<<b<<" is "<<sub<<endl;
  }
```

iii. Multiplication

```
void Multiplication(float a, float b){
    float Mul=1;
    Mul=a*b;
    cout<<"\t\t===>The multiplication of  "<<a<<" and "<<b<<" is "<<Mul<<endl;
  }
```

iv. Division

```
void Division(float a, float b){
    float Div;
    Div=a/b;
    cout<<"\t\t==>The division of  "<<a<<" and "<<b<<" is "<<Div<<endl;
  }
```

- **Output**
  #### i. Summation

```
<<< b for back
=======================================================
Choose the options : 1
---------------------
        >>>Enter the Value of a: 4
        -------------------------
        >>>Enter the Value of b: 5
        -------------------------
        ===>The summation of  4 and 5 is 9
```

  #### ii. Subtraction

```
 =======================================================
 Choose the options : 2
 ---------------------
        >>>Enter the Value of a: 23
        -------------------------
        >>>Enter the Value of b: 3
        -------------------------
        ===>The subtraction of  23 and 3 is 20

any key to continue . . .
```

iii. Multiplication

```
=========================================================
Choose the options : 3
---------------------
        >>>Enter the Value of a: 3
        -------------------------
        >>>Enter the Value of b: 4
        -------------------------
        ===>The multiplication of  3 and 4 is 12
```

iv. Division

```
<<< B ror back
=========================================================
Choose the options : 4
---------------------
        >>>Enter the Value of a: 35
        -------------------------
        >>>Enter the Value of b: 4
        -------------------------
        ==>The division of  35 and 4 is 8.75
```

3. Math Suit
- Code
  ### i. 1+2+…+n

```
int summation1ton(int n){//summation 1 to n
    if(n==1){
        return 1;
    }else {
        return n+summation1ton(n-1);
    }

}
```

  ### ii. 1+3+5…+n

```
int summation2n1(int n){//summation of 2n-1 to n*n-1 number
    if(n==1){
        return 1;
    }else{
        return (2*n-1)+summation2n1(n-1);//2n-1 if n=3==> 1+3+5
    }

}
```

iii. 1^2+2^2+….+n^2

```
int sumsqare(int n){
    if(n==1){
        return 1;
    }else{
        return (n*n)+sumsqare(n-1);
    }
}
```

iv. Summation all primary number in between 1 to n

```
void sumPrime(){
    int n, sum=0, j, i, prime;
    cout<<"\t\t>>>Enter your N primary number: ";   cin>>n;
    cout<<"\t\t==>Summation from 1 to "<<n<<" : ";
    cout<<"1 + ";
    for(i=2; i<=n; i++){
        prime =1;
        for(j=2; j<= i/2; j++){
            if(i%j==0){
                prime = 0;
                break;
            }
        }
        if(prime==1){

            cout<<i<<" + ";
            sum = sum + i;

        }
    }
    cout<<"\b\b";
    cout<<" = "<<sum+1;

}
```

- Output
  i. 1+2+…+n

```
============================================================
Choose the options : 1
---------------------

        >>>Enter N number: 4
        -------------------------
        ==>The summation 1+2+3..+4 is 10
```

ii. 1+3+5…+n

```
============================================================
Choose the options : 2
---------------------

        >>>Enter N number: 34
        -------------------------
        ==>The summation 1+3+5..+34 is 1156
```

iii. 1^2+2^2+….+n^2

```
============================================================
Choose the options : 3
---------------------

         >>>Enter N number: 50
         -------------------------
         ==>The summation 1^2+2^2+3^2..+50^2 is 42925
```

iv. Summation all primary number in between 1 to n

```
        <<< B for Back
============================================================
Choose the options : 4
---------------------
        >>>Enter your N primary number: 6
        ==>Summation from 1 to 6 : 1 + 2 + 3 + 5  = 11
```

4. Number Conversion
   ▪ Code
      i. Base 2 to 10

```cpp
void Base10To2 (Stack *s){//base 10 to base 2
    int num,r;//r stand for remainder
    cout<<"\nPlease input decimal number to convert to binary number : ";
    cin>>num;
    cout<<"The binary number of "<<num<<" is: ";
    while(num!=0){
        r = num%2;
        push(s,r);
        num = num/2;
    }
}
```

ii. Base 10 to 2

```cpp
void Base10TO8 (Stack *s){//base 10 to base 8
    int num,r;//r stand for remainder
    cout<<"\nPlease input decimal number to convert to octal number: ";
    cin>>num;
    cout<<"The octal number of "<<num<<" is: ";
    while(num!=0){
        r = num%8;
        push(s,r);
        num = num/8;
    }
}
```

iii. Base 8 to 10

```cpp
void Base2TO10 (Stack *s){//base 2 to base 10
    int num,r;//r stand for remainder
    int dec=0;
    int i=0;
    cout<<"\nPlease input binary number to convert to decimal number : ";
    cin>>num;
    cout<<"The decimal number of "<<num<<" is: ";
    while(num!=0){
        r = num%10;
        num = num/10;
        dec=dec+r * pow(2,i);
        ++i;
    }

    push(s,dec);
}
```

iv. Base 10 to 8

```
void Base8TO10 (Stack *s){//base 8 to base 10
    int num,r;//r stand for remainder
    int dec=0;
    int i=0;
    cout<<"\nPlease input octal number to convert to decimal number : ";
    cin>>num;
    cout<<"The decimal number of  "<<num<<" is: ";
    while(num!=0){
        r = num%10;
        num = num/10;
        dec=dec+r * pow(8,i);
        ++i;
    }
    push(s,dec);
}
```

v. **Base 10 to 16**

```
void base10to16(){
 string dec= "0123456789ABCDEF";
    int num ;
    cout<<"\n\tPlease input decimal number to convert to hexadecimal number : "; cin>>num;
    int i =num;
    string rem;

    while(num > 0){
        rem = dec[num % 16] + rem;
        num /= 16;
    }
    cout<<"\t\t==>The hexadecimal number of  "<<i<<" is: "<<rem<<endl;

}
```

▪ Output
    i. **Base 2 to 10**

```
        <<<B for Back.
===========================================================

Choose the options : 1

Please input binary number to convert to decimal number : 10101
        ==>The decimal number of 10101 is: 21
```

ii. **Base 10 to 2**

```
        <<<B for Back.
==========================================================

Choose the options : 2

Please input decimal number to convert to binary number : 2344
        ==>The binary number of 2344 is: 1 0 0 1 0 0 1 0 1 0 0 0
```

iii. Base 8 to 10

```
=============================================================
Choose the options : 3

Please input octal number to convert to decimal number : 2344
        ==>The decimal number of  2344 is: 1252
```

iv. Base 10 to 8

```
        <<<B for Back.
=============================================================
Choose the options : 4

Please input decimal number to convert to octal number: 34525
        ==>The octal number of 34525 is: 1 0 3 3 3 5
```

v. Base 10 to 16

```
=============================================================
Choose the options : 5

Please input decimal number to convert to hexadecimal number : 3233
        ==>The hexadecimal number of  3233 is: CA1
```

5. Number Testing
- Code
  - i. Check Primary

```cpp
void checkPerfect(int num){
    bool perfect= true;
    int sum=0;
    if(sum==num) perfect=true;

    for(int i=1;i<num;i++){
        if(num%i==0){
            sum=sum+i;

        }

    }
    if(perfect){
            cout<<"\t\t\t==> "<<num<<" is a perfect number."<<endl;
    }else{
            cout<<"\t\t\t==> "<<num<<" is not a perfect number"<<endl;
    }
}
```

ii. Check Perfect

```cpp
23  void checkPerfect(int num){
24      bool perfect= true;
25      int sum=0;
26      if(sum==num) perfect=true;
27
28      for(int i=1;i<num;i++){
29          if(num%i==0){
30              sum=sum+i;
31
32          }
33
34      }
35      if(perfect){
36              cout<<"\t\t\t==> "<<num<<" is a perfect number."<<endl;
37      }else{
38              cout<<"\t\t\t==> "<<num<<" is not a perfect number"<<endl;
39      }
40  }
```

iii. Check Palindrome

```cpp
    }
void checkPolindrome(int num){
    int r,sum=0;


    int n;
    num=n;
    while(n>0){
        r=n%10;
        sum=(sum*10)+r;
        n=n/10;

    }
    if(sum==num){
        cout<<   "It is a palindrome number"<<endl;
    }else{
        cout<<"It is not a palindrome number"<<endl;
    }
}
```

- Output
  - i. Check Primary

```
          >>> Number testing.
                1. Check if it is a primary number.
                2. Check if it is a perfect number.
                3. Check if it is a palindrome number.

          <<<B for Back.
    ========================================================
    Choose the options : 1
    ---------------------

          >>Enter number: 6
                ==> 6 is not primary number.
ress any key to continue . . . ▪
```

ii. Check perfect

```
    ========================================================
    Choose the options : 2
    --------------------

          >>>Enter number: 6
                ==> 6 is a perfect number.

ess any key to continue . . .
```

iii. Check Palindrome

```
    ========================================================
    Choose the options : 3
    --------------------

          >>>Enter number: 101101
          ==>It is a palindrome number
```

6. Book Store
- Code

```cpp
fstream f;
string bookID;
string m;
struct Book{
    string bookID;
    string book_title;
    string bookISBN;
    string author_name;
    int public_year;
    float price;
};
Book Create_book(){
    Book b;

        cout<<"\t\t>>>Enter the Book title: ";      getline(cin,b.book_title);      getline(cin,b.book_title
        cout<<"\t\t>>>Enter the BookISBN: ";        cin>>b.bookISBN;
        cout<<"\t\t>>>Enter the Author name: ";     cin>>b.author_name;
        cout<<"\t\t>>>Enter the Published year: ";  cin>>b.public_year;
        cout<<"\t\t>>>Enter the price($): ";        cin>>b.price;
        return b;

}
void save_Book(Book b){
    f.open(bookID+"book.txt",ios::out);
    f<<"ID: "<<bookID<<"\n";
    f<<"Book Title: "<<b.book_title<<"\n";
    f<<"Book ISBN: "<<b.bookISBN<<"\n";
    f<<"Author: "<<b.author_name<<"\n";
    f<<"Public Year: "<<b.public_year<<"\n";
    f<<"Price($): "<<b.price<<"\n";
    f.close();
}
void display_Book_by_ID(Book b){
    int i=0;
    string line;
    f.open(bookID+"book.txt",ios::in);
        while(!f.eof()){
            getline(f,line);
            cout<<"\n\t\t"<<line;
            i++;
        }
        f.close();
        cout<<"------------------------------------------------------------"<<endl;
```

```cpp
void Display_all_data(){
    fstream f2;
    int z=0;
    f.open("File_Namebook.txt",ios::in);
    string line;
    getline(f,line);
    cout<<line;
    while(!f.eof()){
        z=1;
        getline(f,line);
        f2.open(line+"book.txt",ios::in);
        string text;
        while(!f2.eof()){
            getline(f2,text);
            cout<<"\t\t"<<text<<endl;
        }
        f2.close();
    }
    f.close();
    cout<<"-------------------------------------------------------------"<<endl;
    if(z==0) cout<<"\t\t==>There are no data"<<endl;


}

void store_file_name_book(Book b){
    f.open("File_Namebook.txt",ios::app);
    f<<endl<<bookID;
    f.close();
}
void update_book(Book b){

    cout<<"\n\t\t>>>Do you want Update Information or not."<<endl;
        cout<<"\t\t\t1. Update."<<endl;
        cout<<"\t\t\tOther don't Update."<<endl;
        cout<<"\t\t==>Enter your choose: ";     cin>>m;
        system("cls");
        cout<<"\t-------------------------------------------------------------"<<endl;

        if(m=="1"){
```

```cpp
        if(m=="1"){

        cout<<"\n\t\t\t==>This book is updated."<<endl;
        cout<<"\t-----------------------------------------------------------------"<<endl;
    }else{
        cout<<"\n\t\tThat inform don't saved "<<endl;
        cout<<"\t-----------------------------------------------------------------"<<endl;
    }


}
void delete_File(){
    char c[bookID.length()+30];
    strcpy(c,(bookID+"book.txt").c_str());

    if(remove(c)==0){
        cout<<"\t\t==> Delete successfully!!!"<<endl;
    }else cout<<"\t\t Error!!!"<<endl;
}
void remove_line_in_File_book(){///remove a line from file
    fstream f1;
    string line;
    int s=0;
    f1.open("File_Namebook.txt", ios::in);
    while(!f1.eof()){
        getline(f1, line);
        s++;
    }
    f1.close();
    s=s-1;
    string str[s];
    f1.open("File_Namebook.txt", ios::in);
    getline(f1,line);//skip 1st line
    for(int i=0;i<s;i++){
        getline(f1,line);
        str[i]=line;
    }
    f1.close();

    f1.open("File_Namebook.txt", ios::out);
    for(int i=0;i<s;i++){///overwrite the file excluding the Deleted ID
        if(str[i]!=bookID) f1<<endl<<str[i];
    }
    f1.close();
```

```cpp
void condition_BooK_store(){
    string k;
    Book b;

    while(k!="0"){
        cout<<"\t==========================================================="<<endl;
        cout<<"\t\t>>> Book Store management."<<endl;
        cout<<"\t\t\t1. Create."<<endl;
        cout<<"\t\t\t2. Display all book."<<endl;
        cout<<"\t\t\t3. Display by ID."<<endl;
        cout<<"\t\t\t4. Update."<<endl;
        cout<<"\t\t\t5. Delete."<<endl;
        cout<<"\n\t\t<<<B for Back."<<endl;
        cout<<"\t==========================================================="<<endl;
        cout<<"\tChoose the options : "; cin>>k;
        cout<<"\t--------------------"<<endl;
    if(k=="1"){//create book


        cout<<"\t--------------------------------------------------------------";
        cout<<"\n\t\tTo fill informations for create a new Book"<<endl;
        cout<<"\t--------------------------------------------------------------"<<endl;
        b=Create_book();

            cout<<"\n\t\tDo you want that imformed save or not."<<endl;
            cout<<"\t\t\t1. save."<<endl;
            cout<<"\t\t\tOther don't save."<<endl;
            cout<<"\t\t>>>Enter your choose: ";    cin>>m;
            if(m=="1"){

                cout<<"\t\t>>>Enter ID of Book: "; cin>>bookID;//write to txt file
                save_Book(b);

                cout<<"\n\t\t\t==>This product is saved."<<endl;
                cout<<"\t------------------------------------------------------------"<<endl;
            }else{
                cout<<"\n\t\tThat inform don't saved "<<endl;
                cout<<"\t------------------------------------------------------------"<<endl;
            }

        store_file_name_book(b);
        His CreateBook();//History
```

```cpp
                    cout<<"\t---------------------------------------------------------------"<<endl;
                }

            store_file_name_book(b);
            His_CreateBook();//History

        }else if(k=="2"){// display all
                Display_all_data();
                His_Dis_allBook();//history

        }else if(k=="3"){//display by ID

            cout<<"\t---------------------------------------------------------------";
            cout<<"\n\t\t\tTo display a Book by ID"<<endl;
            cout<<"\t---------------------------------------------------------------"<<endl;
            cout<<"\t\t>>>Enter ID to Display Data: "; cin>>bookID;
            display_Book_by_ID(b);
            His_Dis_Book_byId();//history
        }else if(k=="4"){//update
            cout<<"\t---------------------------------------------------------------";
            cout<<"\n\t\t\tTo Update a Book by ID"<<endl;
            cout<<"\t---------------------------------------------------------------"<<endl;
            cout<<"\t\t>>>Enter ID to Update Data: "; cin>>bookID;
            His_UpdateBook_byID();//history

            display_Book_by_ID(b);
            b=Create_book();

            cout<<"\n\t\t>>>Do you want Update Information or not."<<endl;
            cout<<"\t\t\t1. Update."<<endl;
            cout<<"\t\t\tOther don't Update."<<endl;
            cout<<"\t\t==>Enter your choose: ";     cin>>m;
            cout<<"\t---------------------------------------------------------------"<<endl;

            if(m=="1"){
                    save_Book(b);

                cout<<"\n\t\t\t==>This product is updated."<<endl;
                cout<<"\t---------------------------------------------------------------"<<endl;


            }else{
                cout<<"\n\t\tThis information didn't saved "<<endl;
                cout<<"\t---------------------------------------------------------------"<<endl;


            }else{
                cout<<"\n\t\tThis information didn't saved "<<endl;
                cout<<"\t---------------------------------------------------------------"<<endl;
            }
        }else if(k=="5"){//Delete
            cout<<"\t\t>>>Enter ID to Delete Data: "; cin>>bookID;
            His_DeleteBOOK_byID();//history

            delete_File();
            remove_line_in_File_book();

            His_DeleteBOOK_byID();//history
        }else if(k=="B" || k=="b"){
        His_Back();//history

        system("pause");
        system("cls");
          break;
        }
         else {
            cout<<"\n\t\tThe program have no this option."<<endl;
            cout<<"\t---------------------------------------------------------------"<<endl;
        }
        cout<<"\n";
        system("pause");
        system("cls");
    }
}
```

- Output
  i. Create Book

```
=========================================================
Choose the options : 1
--------------------
----------------------------------------------------------------
        To fill informations for create a new Book
----------------------------------------------------------------
        >>>Enter the Book title: The Night
        >>>Enter the BookISBN: 234_237_234
        >>>Enter the Author name: Jame
        >>>Enter the Published year: 2001
        >>>Enter the price($): 30

        Do you want that imformed save or not.
                1. save.
                Other don't save.
        >>>Enter your choose: 1
        >>>Enter ID of Book: TN2001

            ==>This product is saved.
----------------------------------------------------------------
```

  ii. Display all Book

```
        --------------------
        ID: TN2001
        Book Title: The Night
        Book ISBN: 234_237_234
        Author: Jame
        Public Year: 2001
        Price($): 30

        ID: OD2003
        Book Title: One Day
        Book ISBN: 234_234_123
        Author: jessie
        Public Year: 2003
        Price($): 23

----------------------------------------------------------------
```

  iii. Display a Book by ID

```
                ----------------------
----------------------------------------------------------
                    To display a Book by ID
----------------------------------------------------------
            >>>Enter ID to Display Data: OD2003

            ID: OD2003
            Book Title: One Day
            Book ISBN: 234_234_123
            Author: jessie
            Public Year: 2003
            Price($): 23
            ------------------------------------------------------------
```

iv. Update a Book by ID

```
                 To update a Book by ID
----------------------------------------------------------
        >>>Enter ID to Update Data: OD2003

        ID: OD2003
        Book Title: One Day
        Book ISBN: 234_234_123
        Author: jessie
        Public Year: 2003
        Price($): 23
        ----------------------------------------------------------
        >>>Enter the Book title: One Day
        >>>Enter the BookISBN: 345_2432_234
        >>>Enter the Author name: jessei
        >>>Enter the Published year: 2004
        >>>Enter the price($): 20

        >>>Do you want Update Information or not.
                1. Update.
                Other don't Update.
        ==>Enter your choose: 1
----------------------------------------------------------
```

v. Delete a Book By ID

```
    ==========================================================
    Choose the options : 5
    --------------------
            >>>Enter ID to Delete Data: OD2003
            ==> Delete successfully!!!

ess any key to continue . . . _
```

7. Product Management

- Code

```cpp
struct Product{
    int counts;
    float price;

    string brand_name;
    string name_pro;
    string manufactuerd_date;
    string exp_date;
    string country;
    string category;
};


Product Create_product(){
    Product pro;

        cout<<"\t\t>>> Name's product: ";          cin>>pro.name_pro;
        cout<<"\t\t>>> Brand Name of Product : ";   cin>>pro.brand_name;
        cout<<"\t\t>>> Category : ";                 cin>>pro.category;
        cout<<"\t\t>>> Made in(Country): ";         cin>>pro.country;
        cout<<"\t\t>>>Manufactured Date: ";         cin>>pro.manufactuerd_date;
        cout<<"\t\t>>> Expiry Date: ";              cin>>pro.exp_date;
        cout<<"\t\t>>> Counts: ";                    cin>>pro.counts;
        cout<<"\t\t>>> Price per product($) :";        cin>>pro.price;
        return pro;
}
void save_product(Product pro){
    f1.open(ID+"pro.txt",ios::out);

    f1<<"ID: "<<ID<<"\n";
    f1<<"Bar Code: "<<BarCode<<"\n";
    f1<<"Brand name: "<<pro.brand_name<<"\n";
    f1<<"Name Product: "<<pro.name_pro<<"\n";
    f1<<"Category : "<<pro.category<<"\n";
    f1<<"Made in: "<<pro.country<<"\n";
    f1<<"Manufactured Date: "<<pro.manufactuerd_date<<"\n";
    f1<<"Expiry Date: "<<pro.exp_date<<"\n";
    f1<<"Counts: "<<pro.counts<<"\n";
    f1<<"Price per product($): "<<pro.price<<"\n";

    f1.close();
}
void save BarCode(Product pro){
```

```cpp
void save_BarCode(Product pro){
    f1.open(BarCode+"proBarCode.txt",ios::out);

    f1<<"ID: "<<ID<<"\n";
    f1<<"BarCode: "<<BarCode<<"\n";
    f1<<"Brand name: "<<pro.brand_name<<"\n";
    f1<<"Name Product: "<<pro.name_pro<<"\n";
    f1<<"Category : "<<pro.category<<"\n";
    f1<<"Made in: "<<pro.country<<"\n";
    f1<<"Manufactured Date: "<<pro.manufactuerd_date<<"\n";
    f1<<"Expiry Date: "<<pro.exp_date<<"\n";
    f1<<"Counts: "<<pro.counts<<"\n";
    f1<<"Price per product($): "<<pro.price<<"\n";

    f1.close();
}
void dispaly_product_by_BarCode( Product pro){//read from txt file
        f1.open(BarCode+"proBarCode.txt",ios::in);
        int i=0;
        string line;
        while(!f1.eof()){
                getline(f1,line);
            cout<<"\n\t\t"<<line;
            i++;

        }
        f1.close();
        cout<<"-------------------------------------------------------------"<<endl;

}
void delete_pro_File_barcode(){
    char c[BarCode.length()+30];
    strcpy(c,(BarCode+"proBarCode.txt").c_str());

    if(remove(c)==0){
        cout<<"\t\t==> BarCode is removed successfully!!!"<<endl;
    }else cout<<"\t\t Error!!!"<<endl;
}



void dispaly_product_byID( Product pro){//read from txt file
        f1.open(ID+"pro.txt",ios::in);
```

```cpp
void dispaly_product_byID( Product pro){//read from txt file
        f1.open(ID+"pro.txt",ios::in);
        int i=0;
        string line;
        while(!f1.eof()){
                getline(f1,line);
            cout<<"\n\t\t"<<line;
            i++;


        }
        f1.close();
        cout<<"------------------------------------------------------------------"<<endl;



}
void Display_all_data_product(){
    fstream f2;
    cout<<"\t============================================================"<<endl;
    int z=0;
    f1.open("File_Nameproduct.txt",ios::in);
    string line;
    getline(f1,line);
    cout<<line;
    while(!f1.eof()){
        z=1;
        getline(f1,line);
        f2.open(line+"pro.txt",ios::in);
         string text;
        while(!f2.eof()){
            getline(f2,text);
            cout<<"\t\t"<<text<<endl;
        }
        f2.close();
    }
    f1.close();
    cout<<"\t============================================================"<<endl<<endl;
    if(z==0) cout<<"\t\t==>There are no data"<<endl;



}
void Update_product(Product pro){

//string p;
        cout<<"\n\t\t>>>Do you want Update Information or not."<<endl;
```

```cpp
void Update_product(Product pro){
//string p;
        cout<<"\n\t\t>>>Do you want Update Information or not."<<endl;
        cout<<"\t\t\t1. Update."<<endl;
        cout<<"\t\t\tOther don't Update."<<endl;
        cout<<"\t\t==>Enter your choose: ";      cin>>p;

        cout<<"\t-----------------------------------------------------------"<<endl;

        if(p=="1"){
            cout<<"\t\t>>>Please,Enter a old Barcode!: "; cin>>BarCode;//chatch barcode
            delete_pro_File_barcode();//to delete old file
            //if the program change barcode
            cout<<"\t\t>>>A new  BarCode: ";   cin>>BarCode;

            pro=Create_product();
            save_BarCode(pro);
            save_product(pro);


            cout<<"\t\t\t==>This product is Updated."<<endl;
            cout<<"\t-----------------------------------------------------------"<<endl;
        }else{
            cout<<"\t\tThat inform didn't Update "<<endl;
            cout<<"\t-----------------------------------------------------------"<<endl;
        }
}
void store_file_name_product(Product pro){
    f1.open("File_Nameproduct.txt",ios::app);
    f1<<endl<<ID;
    f1.close();
}
void delete_pro_File(){
    char c[ID.length()+30];
    strcpy(c,(ID+"pro.txt").c_str());

    if(remove(c)==0){
        cout<<"\t\t==> Delete successfully!!!"<<endl;
    }else cout<<"\t\t Error!!!"<<endl;
}
void remove line in File pro(){///remove a line from file

}
void remove_line_in_File_pro(){///remove a line from file
    fstream f1;
    string line;
    int s=0;
    f1.open("File_Nameproduct.txt", ios::in);
    while(!f1.eof()){
        getline(f1, line);
        s++;
    }
    f1.close();
    s=s-1;
    string str[s];
    f1.open("File_Nameproduct.txt", ios::in);
    getline(f1,line);//skip 1st line
    for(int i=0;i<s;i++){
        getline(f1,line);
        str[i]=line;
    }
    f1.close();

    f1.open("File_Nameproduct.txt", ios::out);
    for(int i=0;i<s;i++){///overwrite the file excluding the Deleted ID
        if(str[i]!=ID) f1<<endl<<str[i];
    }
    f1.close();
}
```

```cpp
void condition_product(){
    string k;
    Product pro;

    while(k!="0"){
        cout<<"\t=============================================================="<<endl;
        cout<<"\t\t>>> Product Management."<<endl;
        cout<<"\t\t\t1.Create a new product."<<endl;
        cout<<"\t\t\t2.Display all product."<<endl;
        cout<<"\t\t\t3.Display a product by ID."<<endl;
        cout<<"\t\t\t4.Update a product by ID."<<endl;
        cout<<"\t\t\t5.Delete a product by ID."<<endl;
        cout<<"\t\t\t6.Search for a Product."<<endl;
        cout<<"\n\t\t<<<B for Back."<<endl;
        cout<<"\t=============================================================="<<endl;
        cout<<"\tChoose the options : "; cin>>k;
        cout<<"\t---------------------"<<endl;

        if(k=="1"){//create a new product


            cout<<"\t--------------------------------------------------------------";
            cout<<"\n\t\tTo fill informations for create a new product"<<endl;
            cout<<"\t--------------------------------------------------------------"<<endl;
            pro=Create_product();

            cout<<"\n\t\t>>>Do you want that imformed save or not."<<endl;
            cout<<"\t\t\t1. save."<<endl;
            cout<<"\t\t\tOther don't save."<<endl;
            cout<<"\t\t==>Enter your choose: ";    cin>>p;

            cout<<"\t\tTo save date, please! Enter ID."<<endl;
            cout<<"\t--------------------------------------------------------------"<<endl;
            if(p=="1"){

                cout<<"\t\t>>>Enter ID: ";  cin>>ID;
                cout<<"\t\t>>>Enter BarCode: ";  cin>>BarCode;//write to txt file
                save_product(pro);
                store_file_name_product(pro);
                save_BarCode(pro);
                cout<<"\n\t\t\t==>This product is saved."<<endl;
                cout<<"\t--------------------------------------------------------------"<<endl;
```

```cpp
                    cout<<"\t------------------------------------------------------------------"<<endl;


            }else{
                    cout<<"\n\t\tThat inform don't saved "<<endl;
                    cout<<"\t------------------------------------------------------------------"<<endl;
        }
        His_Product();

    }
    else if(k=="2"){//display all products
        cout<<"\t------------------------------------------------------------";
        cout<<"\n\t\tDisplay all information products"<<endl;
        cout<<"\t------------------------------------------------------------"<<endl;
        Display_all_data_product();
        His_Dis_allPro();//history
    }
    else if(k=="3"){//display by ID


        cout<<"\t------------------------------------------------------------";
        cout<<"\n\t\tTo display a product by ID"<<endl;
        cout<<"\t------------------------------------------------------------"<<endl;
        cout<<"\n\t\t>>>Enter ID to Display Data: "; cin>>ID;

        His_Dis_pro_byId();//history
        dispaly_product_byID(pro);

    }
    else if(k=="4"){//update by ID

        cout<<"n\t\t>>>Enter ID to update Data: "; cin>>ID;


        dispaly_product_byID(pro);

        cout<<"\t------------------------------------------------------------";
        cout<<"\n\t\tTo fill informations for Update a product"<<endl;
        cout<<"\t------------------------------------------------------------"<<endl;

        Update_product(pro);
        His_Update_pro_byID();//history

    }
```

```cpp
        }
    else if(k=="5"){//delete by ID
        cout<<"\t\t>>>Enter ID to delete Data: "; cin>>ID;
        cout<<"\t\t>>>Do you want to delete This product.\n";
        dispaly_product_byID(pro);
        cout<<"\t\t>>>Please,Enter old Barcode!: ";cin>>BarCode;//to catch barcode to delete
        cout<<"\t\t\t1. Delete."<<endl;
        cout<<"\t\t\tOther don't delete."<<endl;
        cout<<"\t\t==>Enter your choose: ";    cin>>p;
        if(p=="1"){
            delete_pro_File_barcode();
            delete_pro_File();
            remove_line_in_File_pro();
        }else{
            cout<<"\t\t==> Didn't delete.\n";
        }

        His_Delete_Pro_byID();//history


    }else if(k=="6"){// search for a product
        cout<<"\t------------------------------------------------------------";
        cout<<"\n\t\tTo search for a product"<<endl;
        cout<<"\t------------------------------------------------------------"<<endl;
        cout<<"\n\t\t>>>Enter BarCode to Display Data: "; cin>>BarCode;
        dispaly_product_by_BarCode(pro);
        His_search_for_pro();
    }
    else if(k=="B" || k=="b"){
        His_Back();
        system("pause");
        system("cls");
        break;
    }
    else {
        cout<<"\n\t\tThe program have no this option."<<endl;
        cout<<"\t------------------------------------------------------------"<<endl;
    }
    cout<<"\n";
    system("pause");
    system("cls");

}
```

- Output
  - i. Create a product

```
---------------------------------------------------------------
        To fill informations for create a new product
---------------------------------------------------------------
    >>> Name's product: Iphone
    >>> Brand Name of Product : Apple
    >>> Category : phone
    >>> Made in(Country): USA
    >>>Manufactured Date: 23/03/2021
    >>> Expiry Date: 00/00/00
    >>> Counts: 1000
    >>> Price per product($) :890

    >>>Do you want that imformed save or not.
            1. save.
            Other don't save.
    ==>Enter your choose: 1
    To save date, please! Enter ID.
---------------------------------------------------------------
    >>>Enter ID: A1000
    >>>Enter BarCode: 234_234_232

        ==>This product is saved.
---------------------------------------------------------------
```

ii. Display all product

```
        Display all information products
-----------------------------------------------------------
===========================================================
    ID: A1000
    Bar Code: 234_234_232
    Brand name: Apple
    Name Product: Iphone
    Category : phone
    Made in: USA
    Manufactured Date: 23/03/2021
    Expiry Date: 00/00/00
    Counts: 1000
    Price per product: 890

    ID: A2000
    Bar Code: 253_345_234
    Brand name: Apple
    Name Product: Ipad
    Category : Tablet
    Made in: USA
    Manufactured Date: 30/09/2022
    Expiry Date: 00/00/00
    Counts: 2000
    Price per product: 780


===========================================================
```

iii. Display a product by ID

```
              ----------------------------------------------------------------
                      To display a product by ID
              ----------------------------------------------------------------

                      >>>Enter ID to Display Data: A2000

                      ID: A2000
                      Bar Code: 253_345_234
                      Brand name: Apple
                      Name Product: Ipad
                      Category : Tablet
                      Made in: USA
                      Manufactured Date: 30/09/2022
                      Expiry Date: 00/00/00
                      Counts: 2000
                      Price per product: 780
                      ----------------------------------------------------------------
```

iv.   Update a product by ID

```
       ----------------------
           >>>Enter ID to update Data: 2
n
           ID: 2
           Bar Code: 134_123_123
           Brand name: coca
           Name Product: CoCa
           Category : drink
           Made in: USA
           Manufactured Date: 24/04/2022
           Expiry Date: 24/10/2022
           Counts: 1000
           Price per product($): 10
           ----------------------------------------------------------------
       ----------------------------------------------------------------
           To fill informations for Update a product
       ----------------------------------------------------------------

           >>>Do you want Update Information or not.
                   1. Update.
                   Other don't Update.
           ==>Enter your choose: 1
       ----------------------------------------------------------------
           >>>Please,Enter a old Barcode!: 134_123_123
           ==> BarCode is removed successfully!!!
           >>>A new  BarCode: 234_112_254
           >>> Name's product: Coke
           >>> Brand Name of Product : coca
           >>> Category : Drink
           >>> Made in(Country): Japon
           >>>Manufactured Date: 24/09/2021
           >>> Expiry Date: 30/04/2022
           >>> Counts: 3000
           >>> Price per product($) :23
                   ==>This product is Updated.
       ----------------------------------------------------------------
```

v.   Delete a product by ID

```
        <<<B for Back.
======================================================
Choose the options : 5
---------------------
        >>>Enter ID to delete Data: 2
        >>>Do you want to delete This product.

        ID: 2
        Bar Code: 234_112_254
        Brand name: coca
        Name Product: Coke
        Category : Drink
        Made in: Japon
        Manufactured Date: 24/09/2021
        Expiry Date: 30/04/2022
        Counts: 3000
        Price per product($): 23
        ------------------------------------------------------------
        >>>Please,Enter old Barcode!: 234_112_254
                1. Delete.
                Other don't delete.
        ==>Enter your choose: 1
        ==> BarCode is removed successfully!!!
        ==> Delete successfully!!!

Press any key to continue . . . _
```

vi. Search for a product

```
        To search for a product
        ------------------------------------------------------------

        >>>Enter BarCode to Display Data: 253_345_234

        ID: A2000
        BarCode: 253_345_234
        Brand name: Apple
        Name Product: Ipad
        Category : Tablet
        Made in: USA
        Manufactured Date: 30/09/2022
        Expiry Date: 00/00/00
        Counts: 2000
        Price per product: 780
        ------------------------------------------------------------
```

8. History

- Code

```cpp
void Display_history(){
    fstream file;
    string textline;

    file.open ("History.txt", ios::in);

    while(getline(file,textline)){

        cout<<textline<<endl;
    }
    file.close();
}

void His_Basic_Math(){
    fstream file;
    file.open("History.txt", ios::app);
    time_t result = time(nullptr);

    file<<"------------------------------------------------------------------------------------\n";
    file<<left<<setw(30)<<"Option: Basic Math\t\t\t"<<asctime(localtime( &result));
    file<<"------------------------------------------------------------------------------------\n";
    file.close();
}

//math suit


void His_Math_Suit(){
    fstream file;
    file.open("History.txt", ios::app);
    time_t result = time(nullptr);
    file<<"------------------------------------------------------------------------------------\n";
    file<<left<<setw(30)<<"Option: Math Suit\t\t\t"<<asctime(localtime( &result));
    file<<"------------------------------------------------------------------------------------\n";
    file.close();
}
```

- Output

```
Function: Display all Products                  Thu Jul 14 07:26:16 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Display a Product ID: 2          Thu Jul 14 07:26:29 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Update a Product BY ID: 2        Thu Jul 14 07:29:07 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Display all Products                  Thu Jul 14 07:29:13 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Update a Product BY ID: 2        Thu Jul 14 07:32:52 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Delete a Product by ID: 2        Thu Jul 14 07:34:18 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Function: Back to MainMenu                  Thu Jul 14 07:55:54 2022
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Option: History                             Thu Jul 14 07:55:59 2022
----------------------------------------------------------------------------
```