

The Restaurant **Billing Report**

Data structure B2

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The Source Code:-

```
#include <iostream>

#include <string>

using namespace std;

void WelcomeMessage(){

    cout<<"    -----";

    cout<<"\n\t** Welcome to Restaurant Mr.Crab Restaurant. **"<<endl;

    cout<<"\t  ** A Restaurant Billing Application. **"<<endl;

    cout<<"    -----";

    cout<<endl;

}

void EndMessage(){

    cout<<"    -----";

    cout<<"\n\t** Thank you!!! For your shopping. **"<<endl;

    cout<<"\t  ** By Mr.Crab Restaurant. **"<<endl;

    cout<<"    -----";

    cout<<endl;

}

class billing{

public:

    string t; //name of meal

    int num_of_meal;

    int price;

    billing*next;

    billing(){

        billing*next=NULL;

    }

};

class stack{

public:
```

```

    billing*head;
    //int size;
    int max;
    stack(int max){
        // size=0;
        this->max=max;
        head=NULL;
    }
    void push(string a,int tt,int p){

        billing* new_billing=new billing;
        new_billing->t=a;
        new_billing->price=tt;
        new_billing->num_of_meal=p;
        if(head==NULL){
            head=new_billing;
            new_billing->next=NULL;
        }
        else{
            new_billing->next=head;
            head=new_billing;
            // size++;
        }
    }
    void pop(){
        if(head==NULL){
            cout<<"empty";
        }
        else{
            billing* del=head;
            head=head->next;
            delete del;
        }
    }

```

```

    }
}

void peak(){ //display billing
billing* temp = head;
cout<<"name"<<"    "<<"price"<<"    "<<"Quant"<<endl;
while (temp != NULL){
cout << temp->t <<"    ";  cout<<temp->price<<"$"<<"    ";
cout<<temp->num_of_meal<<endl;
temp = temp->next;}
cout << endl;
}
};

```

```

class MENU{ //doubly linked-list

```

```

    private:

```

```

    class MEAL{ //Node

```

```

    public:

```

```

    string Name;

```

```

    float Price;

```

```

    int quant;

```

```

    int ID;

```

```

    MEAL *next;

```

```

    MEAL *prev;

```

```

    MEAL () { //constructor

```

```

        next = NULL;

```

```

        prev = NULL;

```

```

    }

```

```

};

```

```

MEAL*head=NULL;

```

```

public:

```

```

    ~MENU(); //destructor

```

```

void Permission(int v){
    int x;
    if(v==1){
        cout<<"Please enter the password: "<<endl;
        cin>>x;
        if(x==123){
            cout<<"The password is correct."<<endl;
            cout<<"\tPlease choose one option: "<<endl;
            cout<<"\t1-Display The menu."<<endl;
            cout<<"\t2-Update The menu."<<endl;
            cout<<"\t3-Delete all The menu."<<endl;
            int e; cin>>e;
            if(e==1){
                display();
                cout<<" 1-Search for a meal. or 2-Update the price. "<<endl;
                int b; cin>>b;
                if(b==2){
                    int h1,h2;
                    cout<<"Write the old price: "<<endl;
                    cin>>h1;
                    cout<<"Write the new price: "<<endl;
                    cin>>h2;
                    newprice(h1,h2);}
                    else if(b==1){
                        cout<<"Enter the meal code: ";
                        int n; cin>>n;
                        searchmeal(n);}}
                    else if(e==2){
                        updatemenu();}
                    else if(e==3){
                        cout<<" Are you sure?"<<endl;
                        string qjj; cin>>qjj;

```

```

        if(qjj=="YES"||qjj=="Y"||qjj=="Yes"||qjj=="y"||qjj=="yes"){
            MENU::~MENU();
            cout<<"  The menu has been deleted."<<endl<<"  ";
            display();
            cout<<endl<<endl<<endl;
        }
        else{
            exit(1);
        }
    }
}

    else{
        cout<<"The password is incorrect."<<endl;
        exit(1);}}
}

void addfirst(string N,float P,int id,int q){
    MEAL* newMEAL= new MEAL;
    newMEAL->Name= N ;
    newMEAL->Price=P;
    newMEAL->ID=id;
    newMEAL->quant=q;
    if(head==NULL){
        head=newMEAL;
    }
    else {

        newMEAL->next=
head;
        head=newMEAL;
        newMEAL->prev=NULL;

    }
}

```

```

void addlast(string N,float P,int id,int q){
    MEAL* newMEAL= new MEAL;
    newMEAL->Name= N ;
    newMEAL->Price=P;
    newMEAL->ID=id;
    newMEAL->quant=q;
    newMEAL->next=NULL;
    if(head==NULL){
        newMEAL->prev=NULL;
        newMEAL->next=NULL;
        head=newMEAL;}
    else{
        MEAL*temp=head;
        while(temp->next!=NULL){
            temp=temp->next;
            newMEAL->prev=temp;
        }
        temp->next=newMEAL;
    }
}

void insert_at_pos(string N,float P,int id ,int pos,int q){
    MEAL* newMEAL = new MEAL;

    newMEAL->Name= N ;
    newMEAL->Price=P;
    newMEAL->ID=id;
    newMEAL->quant=q;
    if(head==NULL){
        head=newMEAL;
        return;
    }
    if(pos==0){

```

```

        newMEAL->next=head;
        head->prev=newMEAL;
        head=newMEAL;
        return;
    }
    MEAL*temp=head;
    for(int i=0;i<pos&&temp!=NULL;i++){
        temp = temp->next;
    }
    if(temp==NULL){
        this->addlast(N,P,id,q);
        return;
    }
    newMEAL->next=temp->prev;
    newMEAL->next=temp->next;
    temp->next=newMEAL;
    newMEAL->prev=temp;
}

void remfirst(){
    if (head == NULL)
        exit(1);
    else {
        MEAL*ptr;
        ptr = head;
        head = head -> next;
        delete ptr;
    }
}

void remove_at_pos(int pos){
    if (head == NULL)
        return;
    MEAL* temp = head;

```



```

        if (pos == 0){
            head = temp->next;
            if (head)
                head->prev = NULL;
            delete temp;
            return;
        }
        for (int i = 0; i < pos && temp != NULL; i++)
            temp = temp->next;
        if (temp == NULL)
            return;
        temp->prev->next = temp->next;
        if (temp->next)
            temp->next->prev = temp->prev;
        delete temp;
    }

void remend(){
    if (head == NULL)
        exit(1);
    if (head -> next == NULL) {
        delete head;
        exit(1);
    }
    MEAL * second_last = head;
    while (second_last -> next -> next != NULL)
        second_last = second_last -> next;
    delete(second_last -> next);
    second_last -> next = NULL;
}

void display(){
    cout << "ID    "<<"Name    "<<"    price"<<"    Quantity"<<endl;
    MEAL * temp = head;

```

```

        while (temp != NULL){
            cout << temp->ID<<"    "<<temp->Name<<"    "<<temp->Price<<"$"<<"    "
<<temp->quant<<endl;
            temp = temp->next;
        }
        cout <<endl;
    }
}

void sortlist(){
    MEAL*poin1;
    MEAL*poin2;
    poin1=head;
    poin2=NULL;
    int temp;
    if(head==NULL){
        return;
    }
    else{
        while(poin1!=NULL){
            poin2=poin1->next;
            while(poin2!=NULL){
                if(poin1->ID>poin2->ID){
                    temp=poin1->ID;
                    poin1->ID=poin2->ID;
                    poin2->ID=temp;
                }
                poin2=poin2->next;
            }
            poin1=poin1->next;
        }
    }
}

void updatemenu(){

```

```

cout<<" please enter the password"<<endl;
int pss; cin>>pss;
if(pss==123){
cout<<" The password is correct."<<endl;
cout<<" Please choose one option: "<<endl;
cout<<"1-Do you want to add a meal? or 2-delete a meal?"<<endl;
int ww; cin>>ww; if(ww==1){
cout<<" Where do you want to add the meal? "<<endl;
cout<<" 1-At First 2-At End 3-At position "<<endl;
int z; cin>>z;
if(z==1){
    string qq; float pp; int l,nb;
    cout<<"The Name of the meal: "<<endl;
    cin>>qq;
    cout<<"The Price of the meal: "<<endl;
    cin>>pp;
    cout<<"The ID of the meal: "<<endl;
    cin>>l;
    cout<<"The Quantities of the meal: "<<endl;
    cin>>nb;
    addfirst(qq,pp,l,nb);
    cout<<qq<<" meal has been added "<<endl;
    cout<<"The new menu is: "<<endl;
    display();
    cout<<"Do you want to sort The menu? Y/N?"<<endl;
    char rw; cin>>rw;
    if(rw=='Y'){
        sortlist();
        display();}
    else if(rw=='N'){
        exit(1);
    }
}
}

```

```

    }
    else if(z==2){
        string zq; float kk; int j,xz;
        cout<<"The Name of the meal: "<<endl;
        cin>>zq;
        cout<<"The Price of the meal: "<<endl;
        cin>>kk;
        cout<<"The ID of the meal: "<<endl;
        cin>>j;
        cout<<"The Quantities of the meal: "<<endl;
        cin>>xz;
        addlast(zq,kk,j,xz);
        cout<<zq<<" meal has been added "<<endl;
        cout<<"The new menu is: "<<endl;
        display();
        cout<<"Do you want to sort The menu? Y/N?"<<endl;
        char rw; cin>>rw;
        if(rw=='Y'){
            sortlist();
            display();}
        else if(rw=='N'){
            exit(1);
        }
    }
    else if(z==3){
        string po; float yy; int jo,ji,mn;
        cout<<"The Name of the meal: "<<endl;
        cin>>po;
        cout<<"The Price of the meal: "<<endl;
        cin>>yy;
        cout<<"The ID of the meal: "<<endl;
        cin>>jo;
    }
}

```

```

        cout<<"The Position of the meal: "<<endl;
        cin>>ji;
        cout<<"The Quantities of the meal: "<<endl;
        cin>>mn;
        insert_at_pos(po,yy,jo,ji,mn);
        cout<<po<<" meal has been added "<<endl;
        cout<<"The new menu is: "<<endl;
        display();
        cout<<"Do you want to sort The menu? Y/N?"<<endl;
        char rw; cin>>rw;
        if(rw=='Y'){
            sortlist();
            display();}
        else if(rw=='N'){
            exit(1);
        }
    }
}
else if(ww==2){
    cout<<" Where is the meal you want to delete? "<<endl;
    cout<<" 1-At First  2-At End  3-At position "<<endl;
    int lo; cin>>lo;
    if(lo==1){
        remfirst();
        cout<<"The meal has been deleted "<<endl;
        cout<<"The new menu is: "<<endl;
        display();
    }
    else if(lo==2){
        remend();
        cout<<"The meal has been deleted "<<endl;
        cout<<"The new menu is: "<<endl;
    }
}

```

```

        display();
    }
    else if(lo==3){
        cout<<"Write the position: "<<endl;
        int jj; cin>>jj;

        remove_at_pos(jj);
        cout<<"The meal has been deleted "<<endl;
        cout<<"The new menu is: "<<endl;
        display(); }}}
    else{
        cout<<"password is incorrect."<<endl;
        exit(1);
    }
}

void searchmeal(int IDsearch){
    MEAL*temp=head;
    int found=0;
    int i=0;
    if(temp==NULL){
        cout<<"MENU IS EMPTY "<<endl;}
    else{
        while(temp!=NULL){ i++;
            if(temp->ID==IDsearch){
                found++;
                break;
            }
            temp= temp->next;}
        if(found==1){
            if(IDsearch==1001){
                cout<<"Pizza: ";}
            else if(IDsearch==1002){
                cout<<"Meat: ";
            }
        }
    }
}

```

```

else if(IDsearch==1003){
    cout<<"Pasta: ";
    }
else if(IDsearch==1004){
    cout<<"Liver: ";
    }
else if(IDsearch==1005){
    cout<<"Burger: ";
    }

    cout<<temp->quant;
}
else{
    cout<<IDsearch<<"  Didn't found the meal "<<endl;
    cout<<"  Do you want to update the menu?  Y/N?"<<endl;
    char q; cin>>q;
    if(q=='Y'){
        updatemenu();}
    else if(q=='N'){
        exit(1); }}}}

void newprice(int old, int new_val){
    if(old !=75 && old !=100 && old !=50 && old !=60 && old !=40){
        cout<<"  The old Price is incorrect."<<endl;
        exit(1);
    }
    else{
        int c =0;
        MEAL*temp=head;
        if(head ==NULL){
            return;
        }
        while (temp!=NULL){
            c++;

```

```

        if(temp->Price==old){
            temp->Price=new_val;
            new_val=temp->Price;
            cout<<"new update "<<endl;
            display();
        }
        if(temp->next!=NULL){
            temp=temp->next;
        }
        else {
            break;
        }
    }
};

```

```

MENU::~MENU(){ //destructor
    MEAL* temp = head;
    while (head != NULL){
        head = head->next;
        delete temp;
        temp = head;}}

```

```

int main() {
    WelcomeMessage();
    MENU rest;
    //The Menu :
    rest.addfirst("Pizza ",75,1001,50);
    rest.addfirst("Meat ",100,1002,60);
    rest.addfirst("Pasta ",50,1003,20);
    rest.addfirst("Liver ",60,1004,17);
    rest.addfirst("Burger ",40,1005,42);
    cout<<"\t\tPlease choose one option: "<<endl;
    cout<<"\t\t1-Admin      2-Customer"<<endl;
    int v; cin>>v;
    if(v==1){

```



```

rest.Permission(v); } //Admin or Customer

else if(v==2){
    cout<<"\tPlease choose one option: "<<endl;
    cout<<"\t1-Display The menu."<<endl;
    int y; cin>>y; if(y==1){
        rest.display();
        cout<<"\tWould you like to make an order? Y/N?"<<endl;
        char ff; cin>>ff;
        if(ff=='N'){
            exit(1);}

        else if(ff=='Y'){
            stack *bill=new stack(10);
            int p=0;
            double price;
            string name;
            int t[50]; //price
            cout<<"Please enter number of meals: "<<endl;
            int n; int s=0; cin>>n;
            for(int i=0;i<n;i++){
                int arr[n];
                cout<<"Enter the meal code: "<<endl;
                cin>>arr[i];
                if(arr[i]==1001){
                    name="Pizza ";
                    cout<<name;
                    t[i]=75;
                }
                else if(arr[i]==1002){
                    name="Meat ";
                    cout<<name;

```

```

        t[i]=100;
    }
    else if(arr[i]==1003){
        name="Pasta ";
        cout<<name;
        t[i]=50;
    }
    else if(arr[i]==1004){
        name="Liver ";
        cout<<name;
        t[i]=60;
    }
    else if(arr[i]==1005){
        name="Burger ";
        cout<<name;
        t[i]=40;
    }

    cout<<"meal has been added."<<endl;
    cout<<"How many quantities you want? "<<endl;
    int q; cin>>q;
    bill->push(name,t[i],q);
    s+=t[i]*(q);
    p=s-t[i]*(q);
}

cout<<"1-Do you want to delete The Last meal? OR 2-End your Order?"<<endl;
int endd; cin>>endd;
if(endd==2){
    bill->peak();
    cout<<"TOTAL :-"<<" "<<s<<endl;
    EndMessage();
    exit(1);
}

```

```
else if(endd==1){  
    bill->pop();  
    bill->peak();  
    cout<<"TOTAL :-"<<" "<<p<<endl;  
    EndMessage();  
    exit(1);}  
}}  
return 0;  
}
```

• The Screenshots:-

1 -When we run the code, We have 2 options: -

```
-----  
** Welcome to Restaurant Mr.Crab Restaurant. **  
** A Restaurant Billing Application. **  
-----  
Please choose one option:  
1-Admin          2-Customer
```

2 -When we choose (1 -Admin) and enter password, we choose one option:-

```
-----  
** Welcome to Restaurant Mr.Crab Restaurant. **  
** A Restaurant Billing Application. **  
-----  
Please choose one option:  
1-Admin          2-Customer  
1  
Please enter the password:  
123  
The password is correct.  
Please choose one option:  
1-Display The menu.  
2-Update The menu.  
3-Delete all The menu.
```

3 -If we choose display, it will display the menu, and if we choose (1 - search) and write the code(id) of any meal, it will display the name and quantity of this meal.

```
-----
** Welcome to Restaurant Mr.Crab Restaurant. **
** A Restaurant Billing Application. **
-----

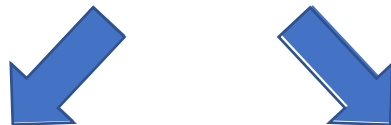
Please choose one option:
1-Admin          2-Customer

1
Please enter the password:
123
The password is correct.
Please choose one option:
1-Display The menu.
2-Update The menu.
3-Delete all The menu.

1
ID      Name      price  Quantity
1001    Pizza      75$    50
1002    Meat       100$   60
1003    Pasta       50$    20
1004    Liver       60$    17
1005    Burger      40$    42

1-Search for a meal. or 2-Update the price.
1
Enter the meal code: 1001
Pizza: 50
Process returned 0 (0x0)  execution time : 837.288 s
Press any key to continue.
```

4 -if we choose (2 -update price): -



```
1-Search for a meal. or 2-Update the price.
2
Write the old price:
75
Write the new price:
122
new update
ID      Name      price  Quantity
1001    Pizza      122$   50
1002    Meat       100$   60
1003    Pasta       50$    20
1004    Liver       60$    17
1005    Burger      40$    42

Process returned 0 (0x0)  execution time : 8.700 s
Press any key to continue.
```

```
1-Search for a meal. or 2-Update the price.
2
Write the old price:
122
Write the new price:
75
The old Price is incorrect.

Process returned 1 (0x1)  execution time : 10.243 s
Press any key to continue.
```

5-if we choose (2-update menu), then we choose one option-> (add a meal), then we choose to add it at first, then write name, price, id, quantity: -

```
123
The password is correct.
Please choose one option:
1-Do you want to add a meal? or 2-delete a meal?
1
Where do you want to add the meal?
1-At First    2-At End    3-At position
1
The Name of the meal:
Shawerma
The Price of the meal:
28
The ID of the meal:
1006
The Quantities of the meal:
35
Shawerma meal has been added
The new menu is:
ID      Name      price      Quantity
1006    Shawerma    28$        35
1005    Burger      40$        42
1004    Liver       60$        17
1003    Pasta       50$        20
1002    Meat        100$       60
1001    Pizza       75$        50

Do you want to sort The menu? Y/N?
Y
ID      Name      price      Quantity
1001    Shawerma    28$        35
1002    Burger      40$        42
1003    Liver       60$        17
1004    Pasta       50$        20
1005    Meat        100$       60
1006    Pizza       75$        50
```

6 - if we choose at end: -

```
Where do you want to add the meal?
1-At First    2-At End    3-At position
2
The Name of the meal:
Shawerma
The Price of the meal:
22
The ID of the meal:
1000
The Quantities of the meal:
2
Shawerma meal has been added
The new menu is:
ID      Name      price      Quantity
1001    Pizza       75$        50
1002    Meat        100$       60
1003    Pasta       50$        20
1004    Liver       60$        17
1005    Burger      40$        42
1000    Shawerma    22$         2

Do you want to sort The menu? Y/N?
Y
ID      Name      price      Quantity
1000    Pizza       75$        50
1001    Meat        100$       60
1002    Pasta       50$        20
1003    Liver       60$        17
1004    Burger      40$        42
1005    Shawerma    22$         2
```

7 -if we choose at a position: -

```
Where do you want to add the meal?
1-At First      2-At End      3-At position
3
The Name of the meal:
Shawerma
The Price of the meal:
43
The ID of the meal:
1003
The Position of the meal:
2
The Quantities of the meal:
12
Shawerma meal has been added
The new menu is:
ID      Name      price      Quantity
1001     Pizza      75$        50
1002     Meat       100$       60
1003     Shawerma    43$        12
1003     Pasta      50$        20
1004     Liver      60$        17
1005     Burger     40$        42

Do you want to sort The menu? Y/N?
Y
ID      Name      price      Quantity
1001     Pizza      75$        50
1002     Meat       100$       60
1003     Shawerma    43$        12
1003     Pasta      50$        20
1004     Liver      60$        17
1005     Burger     40$        42
```

8 -if we choose to delete a meal at first: -

```
123
The password is correct.
Please choose one option:
1-Do you want to add a meal? or 2-delete a meal?
2
Where is the meal you want to delete?
1-At First      2-At End      3-At position
1
The meal has been deleted
The new menu is:
ID      Name      price      Quantity
1002     Meat       100$       60
1003     Pasta      50$        20
1004     Liver      60$        17
1005     Burger     40$        42
```

9-if we choose to delete a meal at end: -

```
123
The password is correct.
Please choose one option:
1-Do you want to add a meal? or 2-delete a meal?
2
Where is the meal you want to delete?
1-At First    2-At End    3-At position
2
The meal has been deleted
The new menu is:
ID      Name      price      Quantity
1001    Pizza      75$        50
1002    Meat        100$       60
1003    Pasta        50$        20
1004    Liver        60$        17
```

10-if we choose to delete a meal at a position: -

```
123
The password is correct.
Please choose one option:
1-Do you want to add a meal? or 2-delete a meal?
2
Where is the meal you want to delete?
1-At First    2-At End    3-At position
3
Write the position:
2
The meal has been deleted
The new menu is:
ID      Name      price      Quantity
1001    Pizza      75$        50
1002    Meat        100$       60
1004    Liver        60$        17
1005    Burger      40$        42
```

11-if we choose (3-delete the menu): -

```
123
The password is correct.
Please choose one option:
1-Display The menu.
2-Update The menu.
3-Delete all The menu.
3
Are you sure?
Y
The menu has been deleted.
ID      Name      price      Quantity
```


12-if we choose the option 2-Customer: -

```
*****
** Welcome to Restaurant Mr.Crab Restaurant. **
** A Restaurant Billing Application. **
*****

Please choose one option:
1-Admin      2-Customer

2

Please choose one option:
1-Display The menu.

1
ID      Name      price      Quantity
1001    Pizza      75$       50
1002    Meat       100$      60
1003    Pasta       50$       20
1004    Liver       60$       17
1005    Burger     40$       42

Would you like to make an order?  Y/N?
Y
Please enter number of meals:
5
Enter the meal code:
1001
Pizza meal has been added.
How many quantities you want?
2
Enter the meal code:
1002
Meat meal has been added.
How many quantities you want?
3
Enter the meal code:
1003
Pasta meal has been added.
How many quantities you want?
6
Enter the meal code:
1005
Burger meal has been added.
How many quantities you want?
5
Enter the meal code:
1001
Pizza meal has been added.
How many quantities you want?
2
Enter the meal code:
1002
Meat meal has been added.
How many quantities you want?
3
Enter the meal code:
1003
Pasta meal has been added.
How many quantities you want?
6
Enter the meal code:
1005
Burger meal has been added.
How many quantities you want?
3
Enter the meal code:
1004
Liver meal has been added.
How many quantities you want?
7
1-Do you want to delete The Last meal? OR  2-End your Order?
2
name      price      Quant
Liver     60$          7
Burger    40$          3
Pasta     50$          6
Meat      100$         3
Pizza     75$          2

TOTAL :- 1290

*****
** Thank you!!! For your shopping. **
** By Mr.Crab Restaurant. **
*****
```

13-if we choose same options,
but at last we choose to delete last

```
*****
Would you like to make an order?  Y/N?
Y
Please enter number of meals:
5
Enter the meal code:
1001
Pizza meal has been added.
How many quantities you want?
6
Enter the meal code:
1004
Liver meal has been added.
How many quantities you want?
2
Enter the meal code:
1003
Pasta meal has been added.
How many quantities you want?
5
Enter the meal code:
1002
Meat meal has been added.
How many quantities you want?
2
Enter the meal code:
1005
Burger meal has been added.
How many quantities you want?
5
1-Do you want to delete The Last meal? OR  2-End your Order?
1
name      price      Quant
Meat      100$         2
Pasta     50$          5
Liver     60$          2
Pizza     75$          6

TOTAL :- 1020

*****
** Thank you!!! For your shopping. **
*****
```