Green University of Bangladesh

Department of Computer Science and Engineering(CSE)

Faculty of Sciences and Engineering

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Course Title: Data Structure Lab

Course Code: 106 **Section: DA**

Lab Report Name: Restaurant Management System

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Lab Report Status

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Comments:..... **Date:.....**

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Introduction:

A console based shop management system is a point of sale (POS) tool specially design for shop, small hotel, food truck etc. this type of system mainly used in online shopping and food ordering websites. This type of system help both the customer and the user to access sales and products very easily in an automatic way.

Features of the program:

This tool mainly divided into 2 parts .

1 . Customer panel

2 . Admin panel.

```
**********************************************************************************
                    WELCOME TO FAKIRHAT SOFT DRINKS AND JUICE SHOP
**********************************************************************************


                          1. CUSTOMER SECTION-->
                          2. ADMIN SECTION-->
                          3. Exit-->
```

In customer panel there are 5 operations

1. **Ordering option.**
2. **View of ordering products.**
3. **Delete items from order list**
4. **Final billing section**
5. **Main menu section.**

```
                    \   CUSTOMER SECTION       //

                1. Place your order
                2. View your ordered items
                3. Delete an item from order
                4. Display final bill
                5. Back To Main Menu
```

In admin panel there are also 5 operations . They are

1. **View of total sales.**
2. **Add items.**
3. **Delete items.**
4. **View of product list.**
5. **Main menu.**

```
-----------------------------------------------
                ADMIN SECTION
-----------------------------------------------

            1. View total sales
            2. Add new items in the order menu
            3. Delete items from the order menu
            4. Display order menu
            5. Back To Main Menu
```

Programing language used in this project is C.

Developing tools used to build the project:

1. **Code :: Blocks(IDE)**
2. **GUNCC (compiler)**

Machine Configuration for the project:

1. **Dell insprion 15-3581**
2. **Intel i3-7020U processor**
3. **1 TB HDD + 120 GB SSD**
4. **4 GB DDR4 ram .**
5. **64 bit windows operating system.**

Data Structure :

LINKED LIST.

Here we used Doubly Linked List data structure concept to implement the project.

Doubly linked list is a type of linked list in which each node apart from storing its data has two links. The first link points to the previous node in the list and the second link points to the next node in the list.

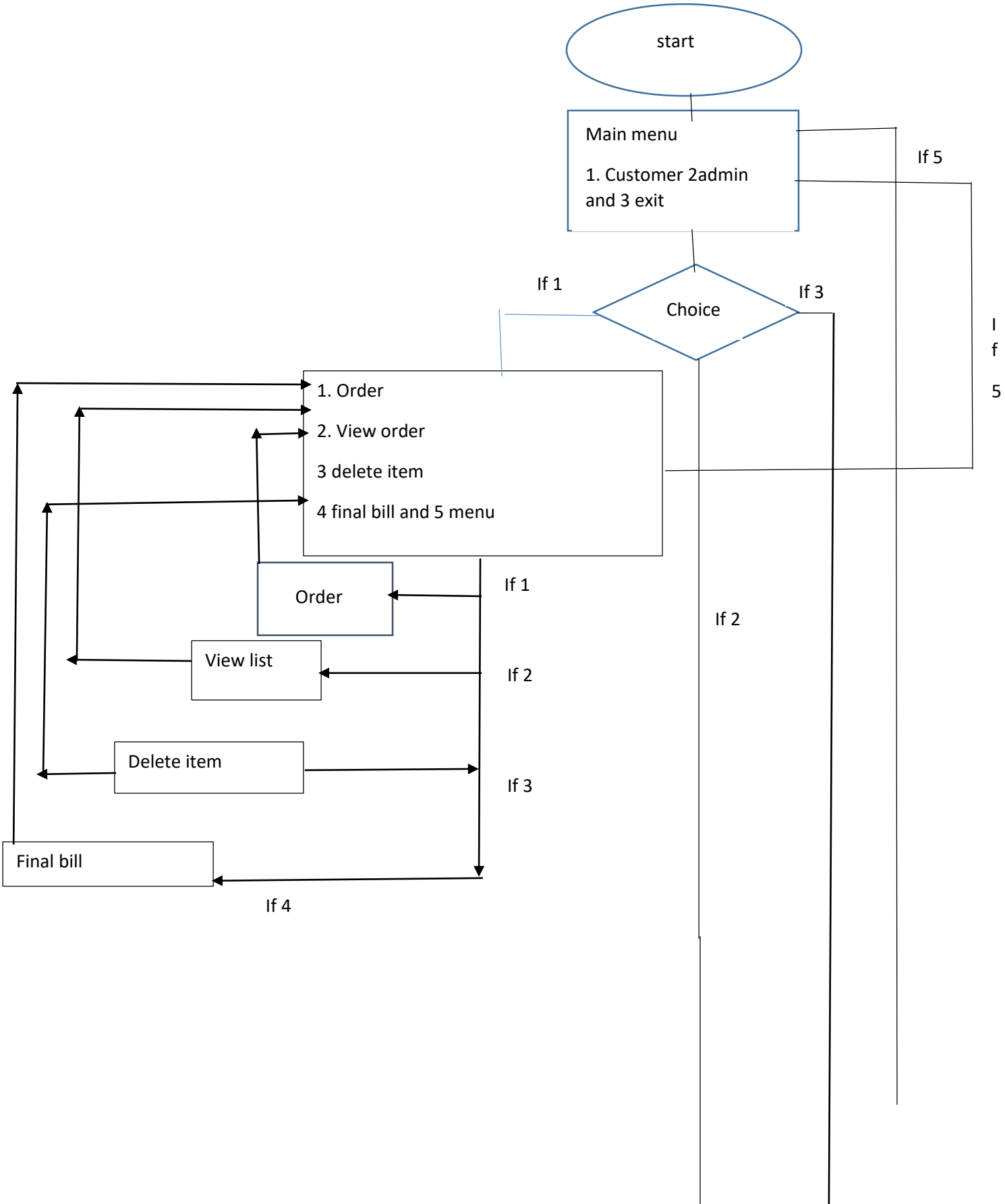
In DLL we can perform several operations like insert a node at the beginning ,middle and end .

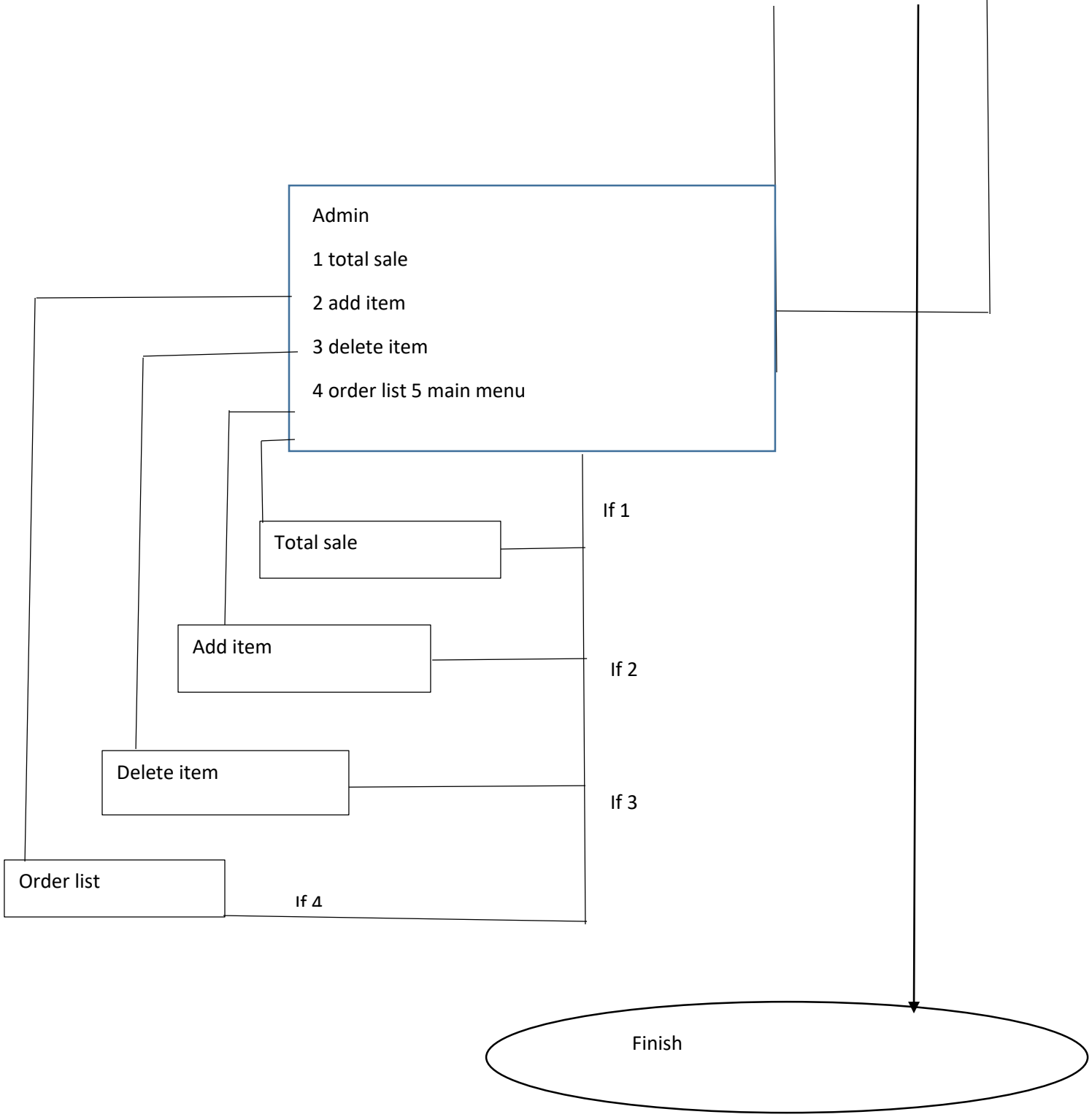
And also delete a first node last node and any node. We can search a particular node also.

We can travers a list also the linked list .

We also use pointer ,functions, structure properties of c programing language.

Flowchart:


start
Main menu
1. Customer 2admin and 3 exit
If 5
If 1
Choice
If 3
I
f
5
1. Order
2. View order
3 delete item
4 final bill and 5 menu
Order
If 1
If 2
View list
If 2
Delete item
If 3
Final bill
If 4


Admin
1 total sale
2 add item
3 delete item
4 order list 5 main menu
If 1
Total sale
Add item
If 2
Delete item
If 3
Order list
If 4
Finish

Source code for the program:

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

struct node
{
   char foodname[50];
   int quantity;
   float price;
   int data;
   struct node *prev;
   struct node *next;
};

struct node *headc = NULL,*newnode,*tailc = NULL;
struct node *heada = NULL, *taila = NULL;
struct node *head_s;

void adminmenu()
{
   printf("\n\t\t\t\t\t\t\t1. View total sales\n");
   printf("\t\t\t\t\t\t\t2. Add new items in the order menu\n");
   printf("\t\t\t\t\t\t\t3. Delete items from the order menu\n");
   printf("\t\t\t\t\t\t\t4. Display order menu\n");
   printf("\t\t\t\t\t\t\t5. Back To Main Menu \n\n");
```

```
    printf("\t\t\t\t\t\t\t   Enter Your Choice --->");
}

void customermenu()
{
    printf("\n\t\t\t\t\t\t\t1. Place your order\n");
    printf("\t\t\t\t\t\t\t2. View your ordered items\n");
    printf("\t\t\t\t\t\t\t3. Delete an item from order\n");
    printf("\t\t\t\t\t\t\t4. Display final bill\n");
    printf("\t\t\t\t\t\t\t5. Back To Main Menu \n\n");
    printf("\t\t\t\t\t\t\t   Enter Your Choice --->");
}

struct node* createadmin(struct node *head,int data, char foodname[25], float price)
{
    newnode = (struct node*)malloc(sizeof(struct node));

    newnode->data = data;
    newnode->price = price;
    newnode-> quantity = 0;
    strcpy(newnode->foodname,foodname);
    newnode->next = NULL;
    newnode->prev = NULL;

    struct node *temp = head;

    if(temp==NULL)
```

```
        heada = taila = newnode;
    else
    {
        while(temp->next!=NULL)
            temp=temp->next;

        temp->next=newnode;
        newnode->prev = taila;
        taila = newnode;
    }

    return heada;
}

struct node* createcustomer(struct node *head,int data,int quantity)
{
    newnode = (struct node*)malloc(sizeof(struct node));

    struct node *temp1 = heada;
    int flag = 0;
    while(temp1!=NULL)
    {
        if(temp1->data==data)
        {
            flag = 1;
            break;
        }
```

```
    temp1 = temp1->next;
}

if(flag==1)
{
    newnode->data = data;
    newnode->price = quantity*(temp1->price);
    newnode-> quantity = quantity;
    strcpy(newnode->foodname,temp1->foodname);
    newnode->next = NULL;
    newnode->prev = NULL;

    struct node *temp = head;

    if(temp==NULL)
        headc = tailc = newnode;
    else
    {
        while(temp->next!=NULL)
            temp=temp->next;

        temp->next=newnode;
        newnode->prev = tailc;
        tailc = newnode;
    }
```

```
    }
    else
    {
        printf("\n\t\t\t\t\t\t\t\tThis item is not present in the menu!\n");
    }
    return headc;
}

void displayList(struct node *head)
{
    struct node *temp1 = head;
    if(temp1==NULL)
    {
        printf("\n\t\t\t\t\t\t\t\tList is empty!!\n\n");
    }
    else
    {
        printf("\n");
        while(temp1!=NULL)
        {
            if(temp1->quantity==0)
                printf("\t\t\t\t\t\t\t%d \t %s \t%0.2f TAKA\n",temp1->data,temp1-
>foodname,temp1->price);
            else
            {
                printf("\t\t\t\t\t%d no Drink\t%s\t\t%d pices\t%0.2f TAKA\n",temp1->data,temp1-
>foodname,temp1->quantity,temp1->price);
            }
```

```
        temp1 = temp1->next;
      }
      printf("\n");
   }

}

struct node* totalsales(int data,int quantity)
{
   newnode = (struct node*)malloc(sizeof(struct node));
   int flag = 0;

   struct node *temp1 = heada;
   while(temp1->data!=data)
   {
      temp1 = temp1->next;
   }

   newnode->data = data;
   newnode->price = quantity*(temp1->price);
   newnode-> quantity = quantity;
   strcpy(newnode->foodname,temp1->foodname);
   newnode->next = NULL;
   newnode->prev = NULL;

   struct node *temp = head_s;
```

```
if(temp==NULL)
   head_s = newnode;
else
{
   while(temp->next!=NULL)
   {
      if(temp->data==data)
      {
         flag = 1;
         break;
      }
      temp=temp->next;
   }

   if(flag==1)
   {
      temp->quantity += newnode-> quantity;
      temp->price += newnode->price;
   }
   else
   {
      temp->next=newnode;
   }
}

return head_s;
```

```
}

void calculatetotsales()
{
   struct node *temp = headc;
   while(temp!=NULL)
   {
      head_s = totalsales(temp->data, temp->quantity);
      temp=temp->next;
   }
}

struct node* delete(int data,struct node *head, struct node* tail)
{
   if(head==NULL)
   {
      printf("\n\t\t\t\t\t\t\tList is empty\n");
   }
   else
   {
      struct node* temp;
      if(data==head->data)
      {
         temp = head;
         head = head->next;
         if (head != NULL)
            head->prev = NULL;
```

```
        free(temp);
      }
      else if(data==tail->data)
      {
        temp = tail;
        tail = tail->prev;
        tail->next = NULL;
        free(temp);
      }
      else
      {
        temp = head;
        while(data!=temp->data)
        {
          temp = temp->next;
        }
        (temp->prev)->next = temp->next;
        (temp->next)->prev = temp->prev;
        free(temp);
      }
    }
    return head;
}

int deleteadmin()
{
    printf("\n\t\t\t\t\tEnter serial no. of the drinks item which is to be deleted: ");
```

```
    int num;
    scanf("%d",&num);

    struct node* temp=heada;
    while(temp!=NULL)
    {
        if (temp->data == num)
        {
            heada = delete(num, heada, taila);
            return 1;
        }
        temp=temp->next;
    }

    return 0;
}

int deletecustomer()
{
    printf("\n\t\t\t\t\tEnter serial no. of the drinks item which is to be deleted: ");
    int num;
    scanf("%d",&num);

    struct node* temp=headc;
    while(temp!=NULL)
    {
        if (temp->data == num)
```

```
        {
            headc = delete(num, headc, tailc);
            return 1;
        }
        temp=temp->next;
    }

    return 0;
}

void displaybill()
{
    displayList(headc);
    struct node *temp = headc;
    float total_price = 0;
    while (temp!=NULL)
    {
        total_price +=temp->price;
        temp = temp->next;
    }

    printf("\t\t\t\t\t\t\tTotal price: %0.02f TAKA\n",total_price);

}

struct node* deleteList(struct node* head)
{
```

```
    if(head==NULL)
    {
        return NULL;
    }
    else
    {
        struct node* temp = head;
        while(temp->next!=0)
        {
            temp = temp->next;
            free(temp->prev);
        }
        free(temp);
        head = NULL;
    }

    return head;
}

void admin()
{
    printf("\n\t\t\t\t\t   ----------------------------------------\n");
    printf("\t\t\t\t\t\t\t    ADMIN SECTION\n");
    printf("\t\t\t\t\t   ----------------------------------------\n");
    while(1)
    {
        adminmenu();
```

```
int opt;
scanf("%d",&opt);

if(opt==5)
   break;

switch (opt)
{
   case 1:
      displayList(head_s);
      break;
   case 2:

      printf("\n\t\t\t\t\t\t\tEnter serial no. of the drinks item: ");
      int num,flag = 0;
      char name[50];
      float price;
      scanf("%d",&num);

      struct node *temp = heada;

      while(temp!=NULL)
      {
         if(temp->data==num)
         {
            printf("\n\t\t\t\t\t\tFood item with given serial number already exists!!\n\n");
```

```
            flag = 1;
            break;
        }
        temp = temp->next;
    }

    if(flag==1)
        break;

    printf("\t\t\t\t\t\t\tEnter Drinks item name: ");
    scanf("%s",name);
    printf("\t\t\t\t\t\t\tEnter price: ");
    scanf("%f",&price);
    heada = createadmin(heada, num, name, price);
    printf("\n\t\t\t\t\t\t\tNew Drinks item added to the list!!\n\n");
    break;
case 3:
    if(deleteadmin())
    {
        printf("\n\t\t\t\t\t\t### Updated list of Drinks items menu ###\n");
        displayList(heada);
    }
    else
        printf("\n\t\t\t\t\t\tDrinks item with given serial number doesn't exist!\n\n");

    break;
case 4:
```

```
            printf("\n\t\t\t\t\t\t\t   ### Order menu ###\n");

printf("\n_____
_____\n");
            displayList(heada);
            break;


          default:
            printf("\n\t\t\t\t\t\t\tWrong Input !! PLease choose valid option\n");
            break;
      }
   }
}

void customer()
{
   int flag=0,j=1;
   char ch;
   printf("\n\t\t\t\t
_____\n");
   printf("\t\t\t\t\t\t\t \\   CUSTOMER SECTION      //\n");
   printf("\t\t\t\t\t
_____\n");
   while(1)
   {
      customermenu();

      int opt;
```

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

if(opt==5)
   break;

switch (opt)
{
   case 1:
      displayList(heada);
      printf("\n\t\t\t\t\t\tEnter number corresponding to the item you want to order: ");
      int n;
      scanf("%d",&n);
      printf("\t\t\t\t\t\tEnter quantity: ");
      int quantity;
      scanf("%d",&quantity);
      headc = createcustomer(headc, n, quantity);
      break;
   case 2:
      printf("\n\t\t\t\t\t\t\t  ### List of ordered items ###\n");
      displayList(headc);
      break;
   case 3:
      if(deletecustomer())
      {
         printf("\n\t\t\t\t\t\t### Updated list of your ordered food items ###\n");
         displayList(headc);
      }
```

```
            else
               printf("\n\t\t\t\t\t\t\tFood item with given serial number doesn't exist!!\n");
            break;
         case 4:
            calculatetotsales();
            printf("\n\t\t\t\t\t\t\t  ### Final Bill ###\n");
            displaybill();
            headc = deleteList(headc);
            printf("\n\t\t\t\t\t\t\tPress any key to return to main menu:\n\t\t\t\t\t\t\t");
            fflush(stdin);
            ch=fgetc(stdin);
            flag=1;
            break;

         default:
            printf("\n\t\t\t\t\t\t\tWrong Input !! PLease choose valid option\n");
            break;
      }
      if(flag==1)
         break;
   }
}

void mainnenu()
{
   printf("\n
**********************************************************************\n")
;
```

```
   printf("                                WELCOME TO FAKIRHAT SOFT DRINKS AND JUICE
SHOP\n");
   printf("
**********************************************************************\n\
n\n");


   printf("\t\t\t\t\t\t\t1. CUSTOMER SECTION--> \n");
   printf("\t\t\t\t\t\t\t2. ADMIN SECTION--> \n");
   printf("\t\t\t\t\t\t\t3. Exit--> \n\n");
   printf("\t\t..................................................................................... \n\n");
   printf("\t\t\t\t\t\t\tEnter Your Choice --->");
}

int main()
{
   heada = createadmin(heada,1,"7UP     (500ml)  ",35);
   heada = createadmin(heada,2,"7UP    (1000ml)",  50);
   heada = createadmin(heada,3,"Sprite (500ml)",   35);
   heada = createadmin(heada,4,"Sprite (1000ml)",  50);
   heada = createadmin(heada,5,"TIGER  (250ML)",   25);
   heada = createadmin(heada,6,"SPEED  (250ML)",   25);
   heada = createadmin(heada,7,"PAPSI  (250ML)",   25);
   heada = createadmin(heada,8,"CheerUp(250ml)",   15);
   heada = createadmin(heada,9,"Coca-Cola(400ml)", 30);
   heada = createadmin(heada,10,"PRAN Lacchi(200ml) ", 20);

   while(1)
   {
```

```
mainnenu();
int choice;
scanf("%d",&choice);

if(choice==3)
{
   printf("\n\n\t\t\t\t\t\t\t**********Thank you!!**********\n");
   break;
}

switch (choice)
{
   case 1:
      //admin();
      customer();
      break;
   case 2:
      //customer();
      admin();
      break;
   case 3:
      break;

   default:
      printf("\n\t\t\t\t\t\tWrong Input !! PLease choose valid option\n");
      break;
}
```

```
    }
}
```

Output of the program:

```
                    ********************************************************************************
                                    WELCOME TO FAKIRHAT SOFT DRINKS AND JUICE SHOP
                    ********************************************************************************


                                            1. CUSTOMER SECTION-->
                                            2. ADMIN SECTION-->
                                            3. Exit-->

        ..............................................................................................

                                            Enter Your Choice --->2

                                        ------------------------------------------
                                                    ADMIN SECTION
                                        ------------------------------------------

                                            1. View total sales
                                            2. Add new items in the order menu
                                            3. Delete items from the order menu
                                            4. Display order menu
                                            5. Back To Main Menu

                                               Enter Your Choice --->
```

```
  ********************************************************************************************
                          WELCOME TO FAKIRHAT SOFT DRINKS AND JUICE SHOP
  ********************************************************************************************


                                1. CUSTOMER SECTION-->
                                2. ADMIN SECTION-->
                                3. Exit-->

.....................................................................................

                                Enter Your Choice --->1

    ____________________________________________________________
                            \   CUSTOMER SECTION       //
          ______________________________________________________________________

                                1. Place your order
                                2. View your ordered items
                                3. Delete an item from order
                                4. Display final bill
                                5. Back To Main Menu

                                   Enter Your Choice --->
```

```
   Enter Your Choice --->1

1         7UP      (500ml)          35.00 TAKA
2         7UP     (1000ml)          50.00 TAKA
3         Sprite  (500ml)           35.00 TAKA
4         Sprite  (1000ml)          50.00 TAKA
5         TIGER   (250ML)           25.00 TAKA
6         SPEED   (250ML)           25.00 TAKA
7         PAPSI   (250ML)           25.00 TAKA
8         CheerUp(250ml)            15.00 TAKA
9         Coca-Cola(400ml)          30.00 TAKA
10        PRAN Lacchi(200ml)        20.00 TAKA

Enter number corresponding to the item you want to order: _
```

```
                5. Back To Main Menu

                   Enter Your Choice --->4

                  ### Final Bill ###

1 no Drink      7UP     (500ml)                 2 pices 70.00 TAKA
3 no Drink      Sprite (500ml)          2 pices 70.00 TAKA
10 no Drink     PRAN Lacchi(200ml)              20 pices        400.00 TAKA

                Total price: 540.00 TAKA

        Press any key to return to main menu:
```

```
                ### List of ordered items ###

2 no Drink      7UP     (1000ml)          3 pices 150.00 TAKA
5 no Drink      TIGER   (250ML)           5 pices 125.00 TAKA
```

```
                Enter Your Choice --->2

    ---------------------------------------------
                    ADMIN SECTION
    ---------------------------------------------

                1. View total sales
                2. Add new items in the order menu
                3. Delete items from the order menu
                4. Display order menu
                5. Back To Main Menu

                   Enter Your Choice --->1

1 no Drink      7UP     (500ml)                 2 pices 70.00 TAKA
3 no Drink      Sprite (500ml)          2 pices 70.00 TAKA
10 no Drink     PRAN Lacchi(200ml)              20 pices        400.00 TAKA
2 no Drink      7UP    (1000ml)         7 pices 350.00 TAKA
5 no Drink      TIGER  (250ML)          5 pices 125.00 TAKA
```

Use of this program:

This type of program can be useful for small smart shop. This type of tools can use in online food ordering websites.

Limitation and development area of the program::

In this program, file handling system can use to store data. In admin panel we can use password system for better security. We use only linked list data structure concept. But we can also use stack queue data structure concept to maintain the product quantity.

Reference:

1. C the complete reference(book).
2. Geek for Geeks(project idea).
3. IIT, Gujarat (2016 , 2nd year project paper)