# Green University of Bangladesh
# Department of Computer Science and Engineering (CSE)
**Faculty of Sciences and Engineering, Semester: (Fall, Year:2021),**
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**Course Title: Microprocessor & Microcontrollers Lab**
**Course Code: CSE 304**

**Section: 201 DE**

## Project Report

### Student Details

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# Chapter 1
# Introduction

**ACKNOWLEDGEMENT:**
This Project is completed by the support from our honorable Teacher **Mahmuda Rahman** . We are greatly indebted to our beloved teacher for her useful and necessary observation, suggestions and contribution. We could not have been able to achieve anything in this project without her supervision. May Allah enrich her greatly in every area of life.

<div align="center">

Yasir Arafat

&

Hasibul Hossain

</div>

**Introduction**

Assembly Language is a very important course for a student who studied the Computer Science and Engineering subject. In this course, we learned the concept of assembly language. At first, we learned the basic concept about assembly language. From the acquired knowledge of this course finally, we designed a Restaurant Management system . We have tried our best to make the complicated process of Restaurant Management System as simple as possible. We have tried to design the Project in such a way that user may not have any difficulty in using this package & further expansion is possible without much effort.

**Objective**
The main objective of this project is to establish an integrated Restaurant Management system . Specific Objective:
=> The program will show the foods names and pricings list. The program will calculate the total products values and quantities and will display it to the user. User can also reset the records of products. After completing the purchase user can exit the program

=> A computer based management system is designed to handle all the primary information required to calculate order number, order list, price and handle all the details required for the correct statement calculation and generation.

=> This project intends to introduce more user friendliness in the various activities such as take order, pay bill, and hassles less.

=> The ordering of foods has been made quite simple as all the details of the customer can be obtained by simply keying in the menu book.

# Chapter 2

# Project Development

**Instruction:**

We have used some Assembly Language functions in our project. These are

DB - stays for Define Byte. can be any
letter or digit combination, though it should start with a letter.

DW - stays for Define Word. can be any letter or digit combination,
though it should start with a letter.

Stack - The stack segment register  is usually used to store information about the
memory segment that stores the call stack of currently executed program.

Mov - The MOV instruction is the most important command in the 8086
because it moves data from one location to another.

Proc - A procedure is a set of code that can be branched to and returned
from in such a way that the code is as if it were inserted at the point from
which it is branched to. The branch to procedure is referred to as the call,
and the corresponding branch back is known as the return.

DS – Data segment register.

AX - This is the accumulator. It is of 16 bits and is divided into two 8-bit
registers AH and AL to also perform 8-bit instructions.

DX – This is the data register. It is of 16 bits and is divided into two 8-bit
registers DH and DL to also perform 8-bit instructions. It is used in
multiplication an input/output port addressing.

Offset - The OFFSET operator returns the offset of a memory location

## Source Code :

```
.model large
.stack 1000h
.data
m1 db 10,13,10,13,'           ****welcome to our green garden restaurants****$',10,13
m2 db 10,13,10,13,'Enter your choice $'

m3 db 10,13, '          1.breakfast          $'
m4 db 10,13, '          2.lunch             $'
ms5 db 10,13,'          3.dinner            $'
m5 db 10,13, '          4.snacks            $'
m6 db 10,13, '          5.dessert           $'
m7 db 10,13, '          6.drinks            $'


m8 db 10,13,10,13,'***choice your food from the menu***$'

;breakfast
m9 db 10,13, ' **        1.tanduri roti        10/-                 **$' ;breakfast
m10 db 10,13,' **        2.nan               10/-            **$'
m11 db 10,13,' **        3.parata            10/-            **$'
m12 db 10,13,' **        4.dal               10/-            **$'
m13 db 10,13,' **        5.mixed vegetables      20/-                 **$'
m14 db 10,13,' **        6.halwa             20/-            **$'
m15 db 10,13,' **        7.luchi             10/-            **$'
m16 db 10,13,' **        8.fried egg          20/-            **$'
m17 db 10,13,' **        9.kichuri            60/-            **$'


;lunch & dinner

m25 db 10,13,' **  1.kachchi birani             90/-            **$'
m26 db 10,13,' **  2.chicken birani             90/-            **$'
m27 db 10,13,' **  3.plain polaw               30/-            **$'
m28 db 10,13,' **  4.chicken bhuna khichuri          90/-                **$'
m29 db 10,13,' **  5.mutton bhuna khichuri          90/-                **$'
m30 db 10,13,' **  6.plain rice              10/-            **$'
m31 db 10,13,' **  7.pabda fish             30/-            **$'
m32 db 10,13,' **  8.lobstar(chingri)           30/-            **$'
m33 db 10,13,' **  9.koi fish              30/-            **$'

;dinner

m18 db 10,13,' **  1.chicken roast         60/-                 **$'
m19 db 10,13,' **  2.chicken bhuna khichuri  80/-                  **$'
m20 db 10,13,' **  3.mutton bhuna khichuri  80/-                  **$'
m21 db 10,13,' **  4.salad             40/-            **$'
m22 db 10,13,' **  5.chicken curry        50/-                 **$'
m23 db 10,13,' **  6.spicy beef fry       70/-                 **$'
m34 db 10,13,' **  7.hilsha fish          60/-            **$'
m35 db 10,13,' **  8.rui fish            60/-            **$'
m36 db 10,13,' **  9.special vegetable     60/-                 **$'
;
;snacks

m41 db 10,13,' **  1.moghol porata    8/-            **$'
m42 db 10,13,' **  2.jali kabab       80/-            **$'
m43 db 10,13,' **  3.singara         5/-          **$'
m44 db 10,13,' **  4.samucha         5/-           **$'

;sweat meat
m45 db 10,13,' **  1.faluda   50/-            **$'
m46 db 10,13,' **  2.puding   50/-            **$'
m47 db 10,13,' **  3.firni    50/-          **$'
m48 db 10,13,' **  4.rasmalai 50/-               **$'
```

```
. ;drinks
m49 db 10,13,' **  1.soft drinks  8/-            **$'
m50 db 10,13,' **  2.lemon juice  6/-            **$'
m51 db 10,13,' **  3.borhani     9/-           **$'
m52 db 10,13,' **  4.coffee      9/-           **$'
m53 db 10,13,' **  5.lemon tea   7/-            **$'
m54 db 10,13,' **  6.tea         5/-           **$'

;invalid
m55 db 10,13,10,13,'***&&invalid entry&&***$'
m56 db 10,13,'    ***&&try again&&***$'


m57 db 10,13,10,13,'enter your order: $'
m58 db 10,13,'quantity: $'
m59 db 10,13,'total price: $'

drink db ?
quantity db ?


m60 db 10,13,10,13,'1.go back to main menu$'
m61 db 10,13,'2.exit$'

;star resize


mr1 db 10,13,' **                        **$'
mr2 db 10,13,' *******************************************$'

mr3 db 10,13,' **                     **$'


mr4 db 10,13,' **                            **$'
mr5 db 10,13,' **************************************************************$'



mr6 db 10,13,' **                     **$'
mr7 db 10,13,' *******************************************$'


sej db 10,13,10,13,' $'

.code
main proc
  mov ax,@data
  mov ds,ax
 top:

  lea dx,m1
  mov ah,9
  int 21h

  lea dx,sej ;newline
  mov ah,9
  int 21h

  lea dx,mr2
  mov ah,9
  int 21h
```

```asm
    lea dx,mr2
    mov ah,9
    int 21h     ;border

    lea dx,mr3
    mov ah,9
    int 21h

lea dx,m3
    mov ah,9
    int 21h

    lea dx,m4
    mov ah,9
    int 21h

    lea dx,ms5
    mov ah,9
    int 21h

    lea dx,m5
    mov ah,9
    int 21h

lea dx,m6
    mov ah,9
    int 21h

    lea dx,m7
    mov ah,9
    int 21h

    lea dx,mr1
    mov ah,9
    int 21h

    lea dx,mr2
    mov ah,9
    int 21h

    lea dx,mr2
    mov ah,9
    int 21h

    lea dx,m2
    mov ah,9
    int 21h


    mov ah,1
    int 21h
    mov bh,al
    sub bh,48

    cmp bh,1
    je breatfast

    cmp bh,2
    je ld

    cmp bh,3
    je dinner
```

```asm
	cmp bh,4
	je snacks


	cmp bh,5
	je sweatmeat

	cmp bh,6
	je drinks


	jmp invalid



breatfast:


	lea dx,m8    ;breatfast starts
	mov ah,9
	int 21h

	lea dx,sej ;newline
	mov ah,9
	int 21h

	lea dx,mr5
	mov ah,9
	int 21h


	lea dx,mr5
	mov ah,9
	int 21h

	lea dx,mr4
	mov ah,9
	int 21h

	lea dx,m9    ;item 1
	mov ah,9
	int 21h


	lea dx,m10  ;item 2
	mov ah,9
	int 21h

	lea dx,m11
	mov ah,9          ;3nd
	int 21h

	lea dx,m12
	mov ah,9          ;4rd
	int 21h


	lea dx,m13          ;5th
	mov ah,9
	int 21h


	lea dx,m14    ;6th
	mov ah,9
	int 21h
```

```asm
   lea dx,m15
     mov ah,9          ;7th
     int 21h


     lea dx,m16        ;8th
     mov ah,9
     int 21h

     lea dx,m17        ;9th
     mov ah,9
     int 21h


     lea dx,mr4
     mov ah,9
     int 21h

     lea dx,mr5
     mov ah,9
     int 21h


     lea dx,mr5
     mov ah,9
     int 21h


     lea dx,m57
     mov ah,9
     int 21h


     mov ah,1
     int 21h
     mov bl,al
     sub bl,48

     cmp bl,1
     je ten

     cmp bl,2
     je ten

     cmp bl,3
     je ten

     cmp bl,4
     je ten

     cmp bl,5
     je twenty

     cmp bl,6
     je twenty

     cmp bl,7
     je ten

     cmp bl,8
     je twenty

     cmp bl,9
     je sixty
```

```asm
lea dx,m49          ;1th
    mov ah,9
    int 21h

    lea dx,m50          ;2th
    mov ah,9
    int 21h

    lea dx,m51          ;3th
    mov ah,9
    int 21h

    lea dx,m52          ;4th
    mov ah,9
    int 21h

    lea dx,m53          ;5th
    mov ah,9
    int 21h

    lea dx,m54          ;6th
    mov ah,9
    int 21h

    lea dx,mr6
    mov ah,9
    int 21h


    lea dx,mr7
    mov ah,9
    int 21h    ;border

    lea dx,mr7
    mov ah,9
    int 21h

    lea dx,m57
    mov ah,9
    int 21h


    mov ah,1
    int 21h
    mov bl,al
    sub bl,48

    cmp bl,1
    je softdrink

    cmp bl,2
    je laschi

    cmp bl,3
    je borhani

    cmp bl,4
    je labang

    cmp bl,5
    je coffee

    cmp bl,6
    je tea

    jmp invalid
```

```asm
softdrink:
 mov bl,8
 jmp common

 laschi:
 mov bl,6
 jmp common


 borhani:
 mov bl,9
 jmp common

 labang:
 mov bl,9
 jmp common


 coffee:
 mov bl,7
 jmp common


 tea:
 mov bl,5
 jmp common



 common:
 lea dx,m58
 mov ah,9
 int 21h

 mov ah,1
 int 21h
 sub al,48

 mul bl
 aam

 mov cx,ax
 add ch,48
 add cl,48


 lea dx,m59
 mov ah,9
 int 21h

 mov ah,2
 mov dl,ch
 int 21h


 mov dl,cl
 int 21h


 mov dl,47
 int 21h
 mov dl,45
 int 21h

 ;go back to main menu
```

```asm
        lea dx,m60
        mov ah,9
        int 21h

        lea dx,m61
        mov ah,9
        int 21h

        lea dx,m2
        mov ah,9
        int 21h

        mov ah,1
        int 21h
        sub al,48


        cmp al,1
        je top

        jmp exit:

    invalid:

        lea dx,m55
        mov ah,9
        int 21h

        lea dx,m56
        mov ah,9
        int 21h


        jmp exit


        exit:

        mov ah,4ch
        int 21h
        main endp
    end main
```
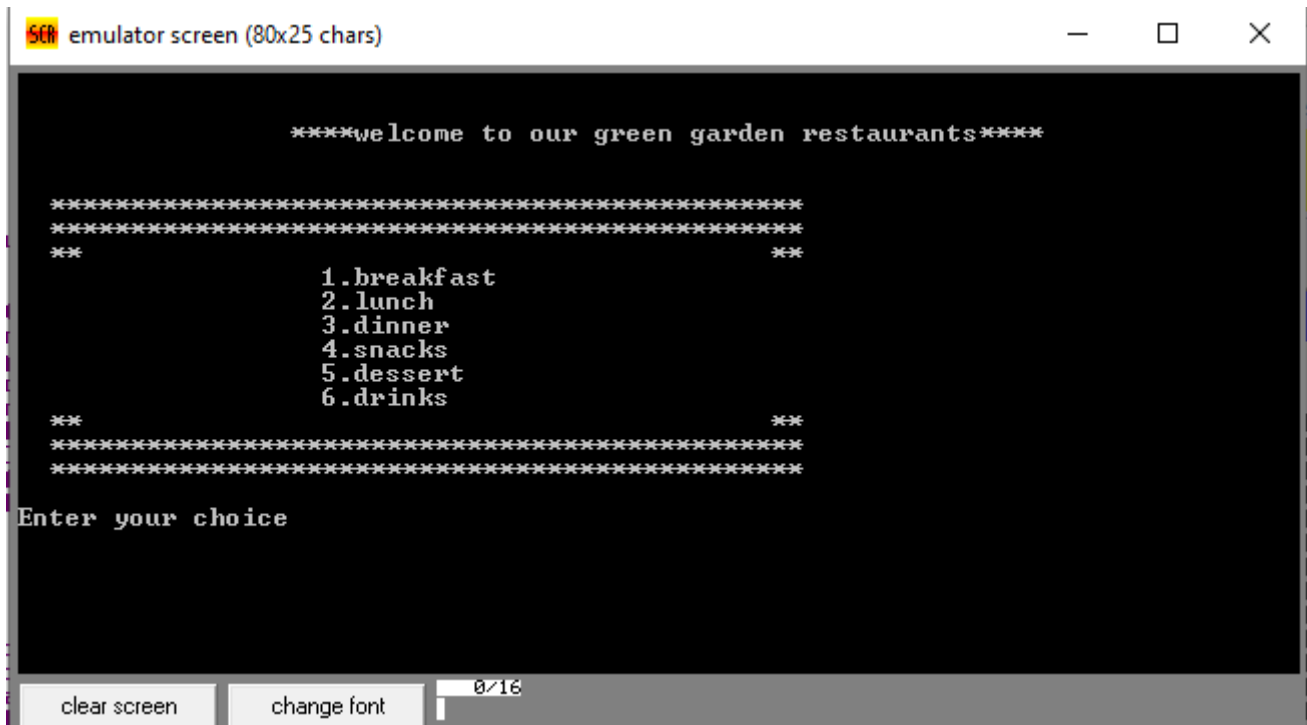
# Chapter 3
## Implementation

This is our main menu . It has 6 parts . These are :



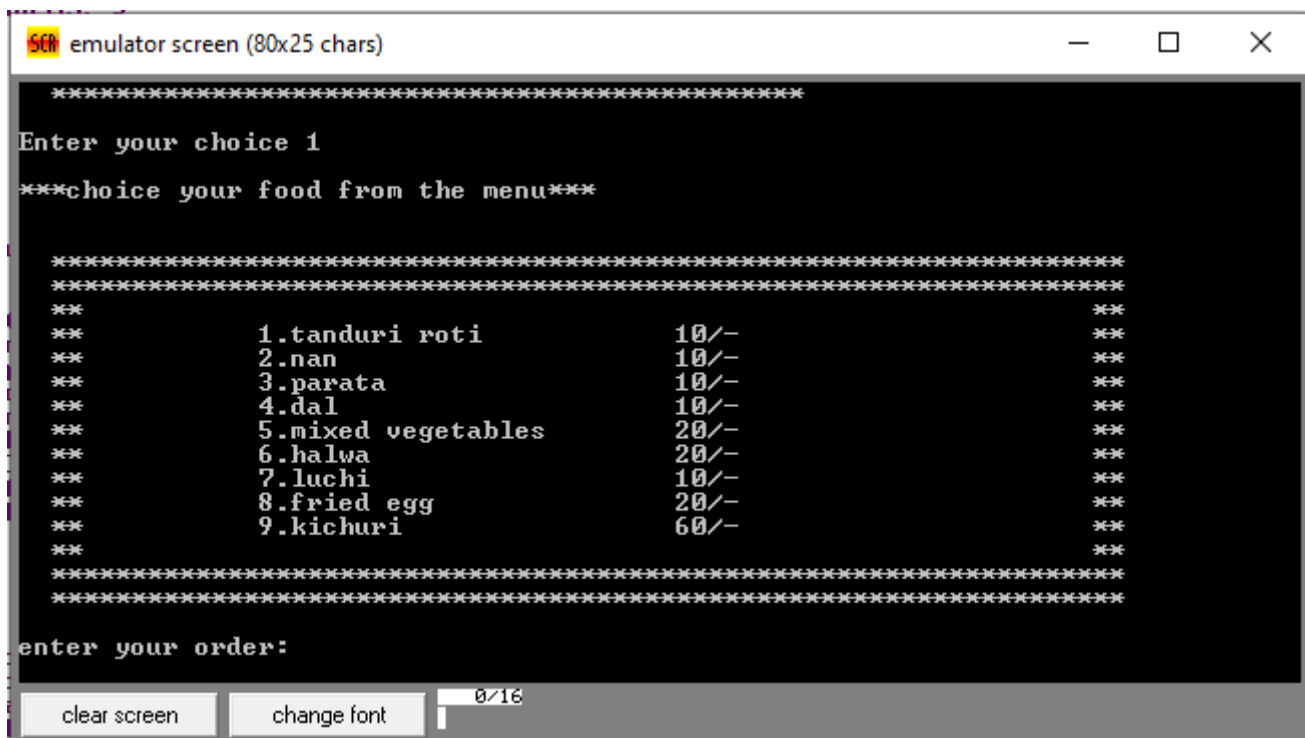At first , Clicked 1 for breakfast .Then breakfast menu is open

Here , various foods items and their prices available. We can order any
items. Suppose ,we want to order "Parata" so , clicked 3 and Quantity =2
Total price : 20/-
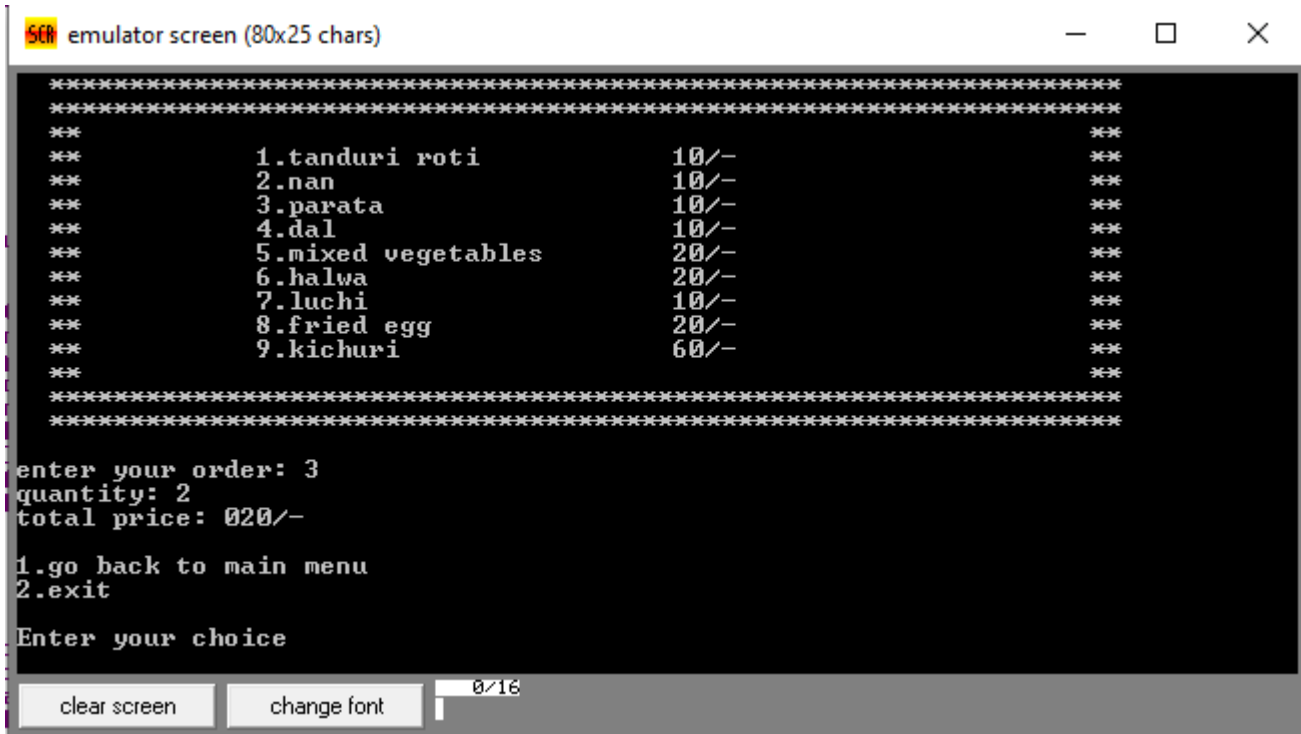
```
SCA emulator screen (80x25 chars)                          —    □    ×

   ************************************************************************
   ************************************************************************
   **                                                                  **
   **            1.tanduri roti              10/-                       **
   **            2.nan                       10/-                       **
   **            3.parata                    10/-                       **
   **            4.dal                       10/-                       **
   **            5.mixed vegetables          20/-                       **
   **            6.halwa                     20/-                       **
   **            7.luchi                     10/-                       **
   **            8.fried egg                 20/-                       **
   **            9.kichuri                   60/-                       **
   **                                                                  **
   ************************************************************************
   ************************************************************************

 enter your order: 3
 quantity: 2
 total price: 020/-

 1.go back to main menu
 2.exit

 Enter your choice
                            0/16
   clear screen     change font  █
```
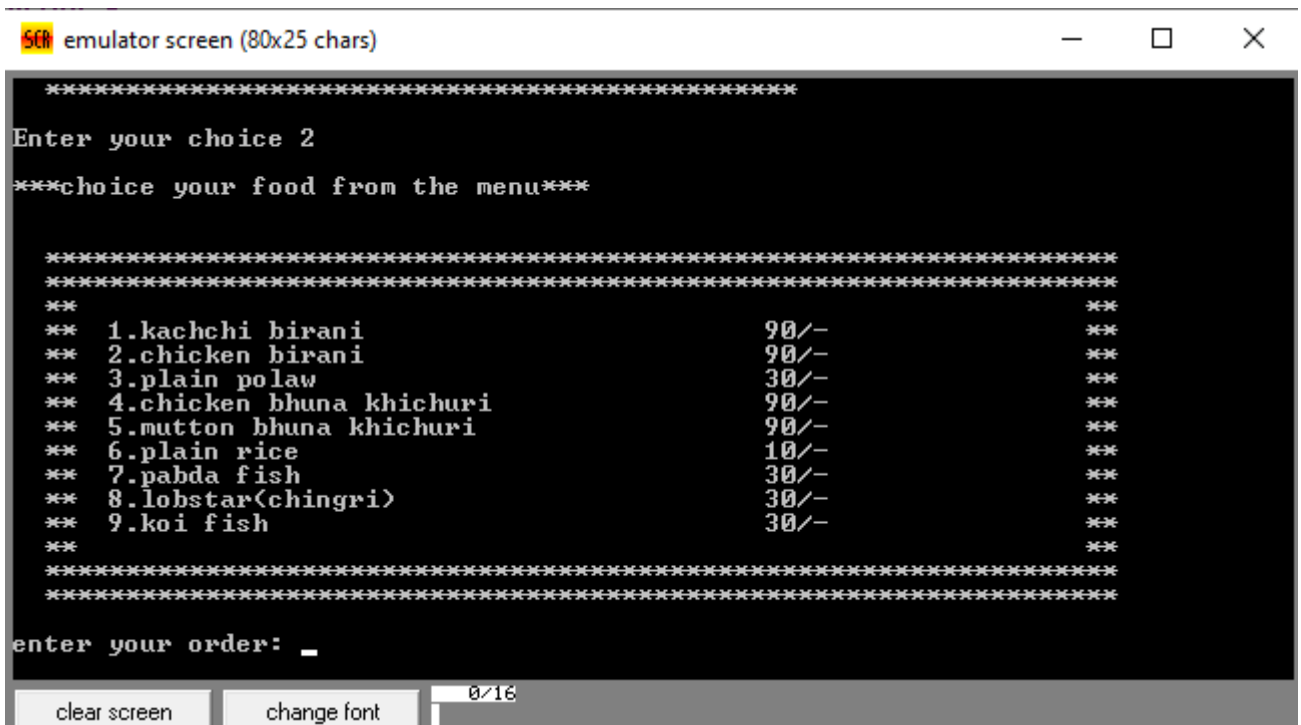
Clicked 1 for go to main menu and clicked 2 for go to lunch menu.
And lunch menu is open

```
SCA emulator screen (80x25 chars)                          —    □    ×

   *****************************************************
 Enter your choice 2

 ***choice your food from the menu***


   ************************************************************************
   ************************************************************************
   **                                                                  **
   **  1.kachchi birani                      90/-                       **
   **  2.chicken birani                      90/-                       **
   **  3.plain polaw                         30/-                       **
   **  4.chicken bhuna khichuri              90/-                       **
   **  5.mutton bhuna khichuri               90/-                       **
   **  6.plain rice                          10/-                       **
   **  7.pabda fish                          30/-                       **
   **  8.lobstar(chingri)                    30/-                       **
   **  9.koi fish                            30/-                       **
   **                                                                  **
   ************************************************************************
   ************************************************************************

 enter your order: _
                            0/16
   clear screen     change font  █
```

We want to order "Chicken birani" so , clicked 2 and Quantity =3
Total price : 270/-

```
SCR emulator screen (80x25 chars)                    —    □    ×

 **********************************************************************
 **********************************************************************
 **                                                                **
 **   1.kachchi birani                        90/-                 **
 **   2.chicken birani                        90/-                 **
 **   3.plain polaw                           30/-                 **
 **   4.chicken bhuna khichuri                90/-                 **
 **   5.mutton bhuna khichuri                 90/-                 **
 **   6.plain rice                            10/-                 **
 **   7.pabda fish                            30/-                 **
 **   8.lobstar(chingri)                      30/-                 **
 **   9.koi fish                              30/-                 **
 **                                                                **
 **********************************************************************
 **********************************************************************
enter your order: 2
quantity: 3
total price: 270/-

1.go back to main menu
2.exit

Enter your choice _
                              0/16
    clear screen       change font
```

Clicked 1 for go to main menu and clicked 3 for go to dinner menu. And dinner menu
is open . we clicked 5 for "Chicken Curry" and Quantity =4

```
SCR emulator screen (80x25 chars)                    —    □    ×

  **********************************************************************
  **********************************************************************
  **                                                                **
  **   1.chicken roast              60/-                            **
  **   2.chicken bhuna khichuri     80/-                            **
  **   3.mutton bhuna khichuri      80/-                            **
  **   4.salad                      40/-                            **
  **   5.chicken curry              50/-                            **
  **   6.spicy beef fry             70/-                            **
  **   7.hilsha fish                60/-                            **
  **   8.rui fish                   60/-                            **
  **   9.special vegetable          60/-                            **
  **                                                                **
  **********************************************************************
  **********************************************************************
enter your order: 5
quantity: 4
total price: 160/-

1.go back to main menu
2.exit

Enter your choice
                              0/16
    clear screen       change font
```
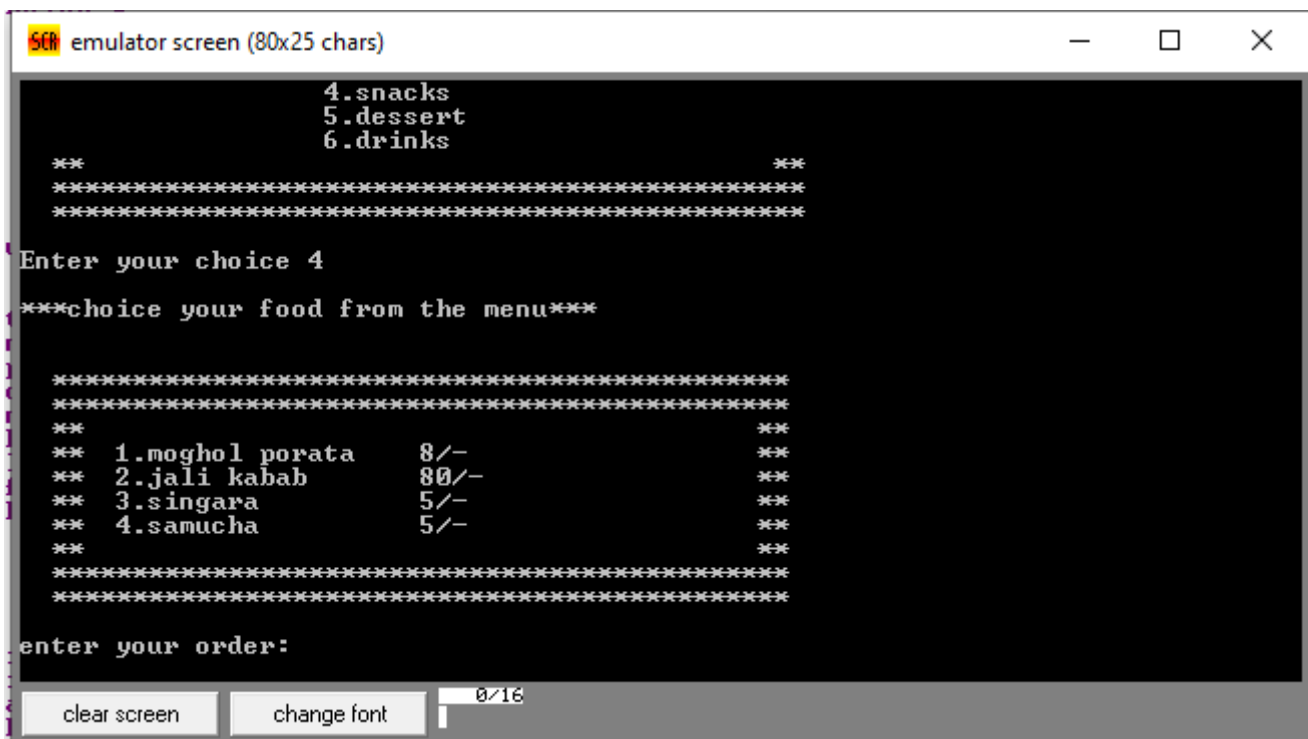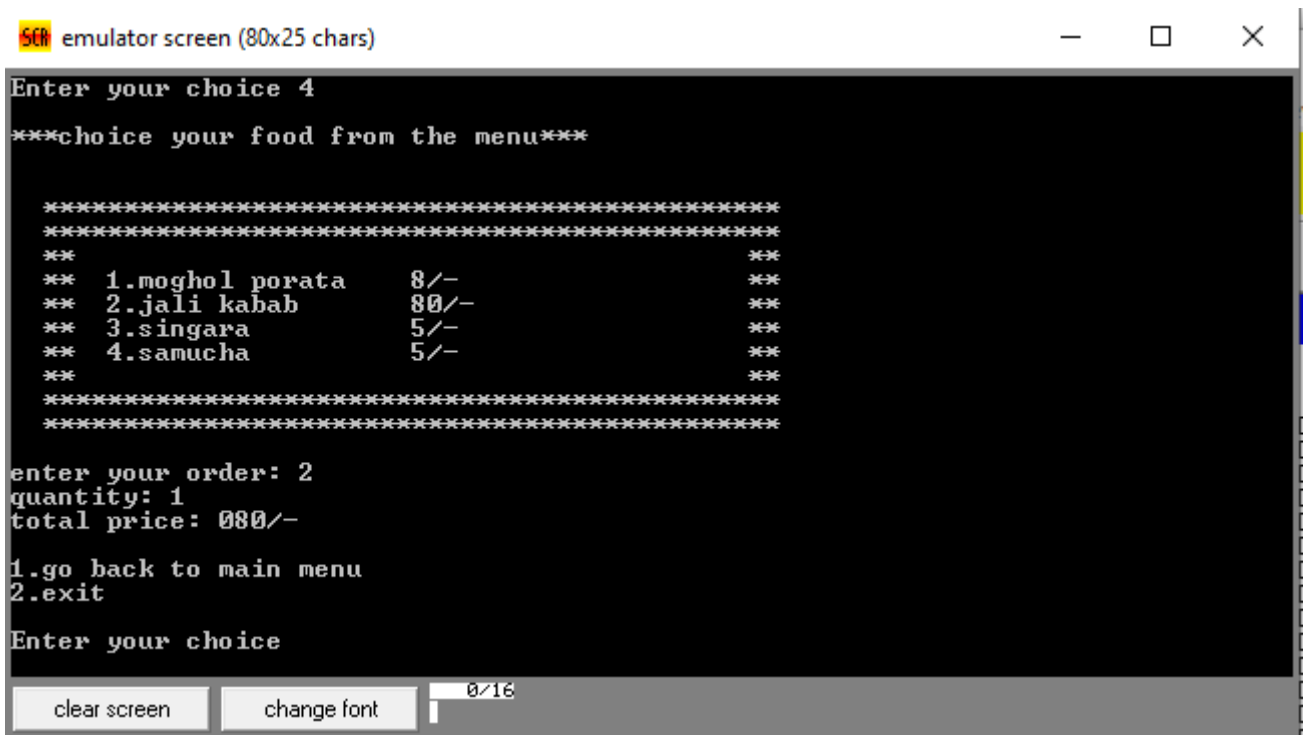
Clicked 1 for go to main menu and clicked 4 for go to snacks menu. And snacks menu is open .



```
              4.snacks
              5.dessert
              6.drinks
  **                                    **
  *************************************************
  *************************************************
Enter your choice 4

***choice your food from the menu***


  *************************************************
  *************************************************
  **                                    **
  **   1.moghol porata    8/-           **
  **   2.jali kabab       80/-          **
  **   3.singara          5/-           **
  **   4.samucha          5/-           **
  **                                    **
  *************************************************
  *************************************************

enter your order:
                          0/16
```
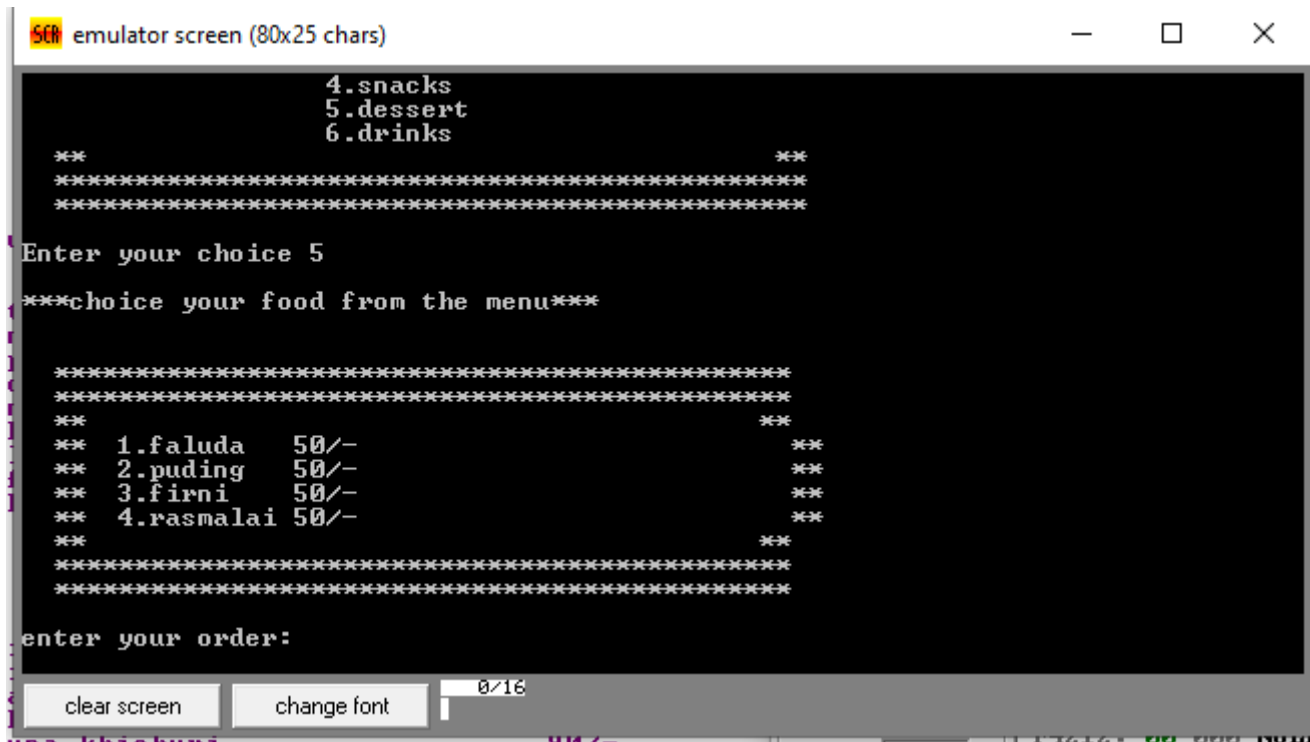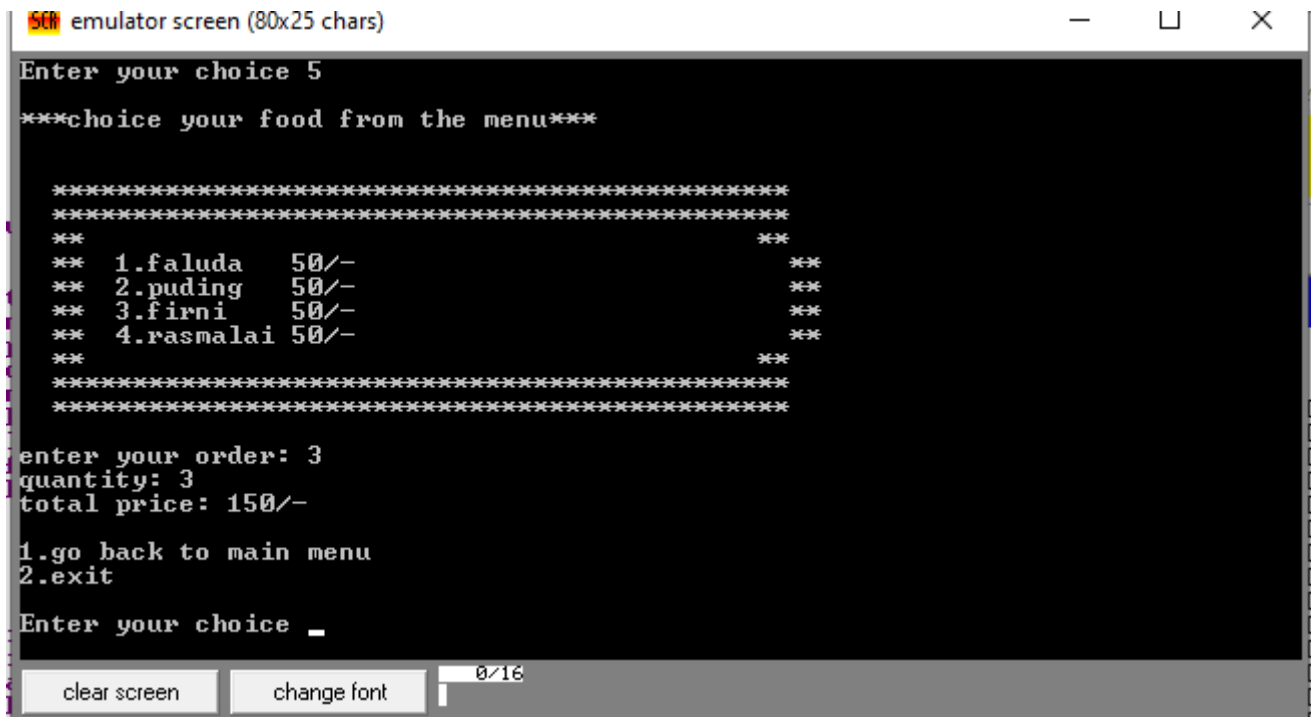
We clicked 2 for "Jali Kabab" and  Quantity =1 . Total price : 80/-



```
Enter your choice 4

***choice your food from the menu***


  *************************************************
  *************************************************
  **                                    **
  **   1.moghol porata    8/-           **
  **   2.jali kabab       80/-          **
  **   3.singara          5/-           **
  **   4.samucha          5/-           **
  **                                    **
  *************************************************
  *************************************************

enter your order: 2
quantity: 1
total price: 080/-

1.go back to main menu
2.exit

Enter your choice
                          0/16
```

Clicked 1 for go to main menu and clicked 5 for go to dessert menu. And dessert menu is open .



We clicked 3 for "Firni" and Quantity =3 . Total price : 150/-

Clicked 1 for go to main menu and clicked 6 for go to drinks menu. And drinks menu is open .



We clicked 5 for "Lemon Tea" and  Quantity =1 . Total price : 07/-

Finally Clicked '2' for go to exit.
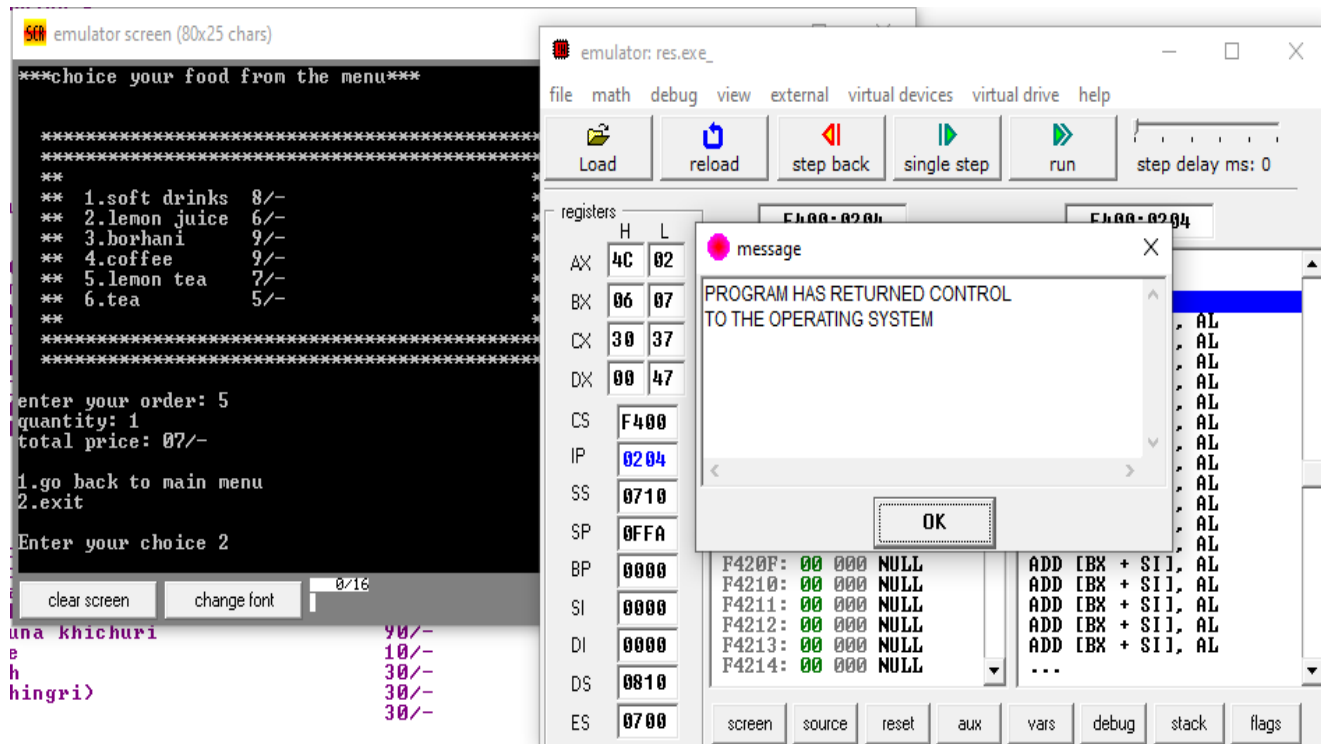
# Chapter 3
# Conclusion

**Scope of Future Work:**

We also want to modify our application for the Future Work .We hope this work will help us in our future work. The application to be developed deals with creating a Restaurant Management System which will automate the major restaurant operations such as generating COD, billing and keeping track of records of daily transaction.

**Required software:**

For using this project, we need to maintain a software requirement which is given  below

a)   Emu 8086
b) Operating System

**Hardware:**

In hardware requirements we require all those components which will provide us the  platform for the development of the project. The minimum hardware required for the  development of this project is as follows—

Ram minimum 2 GB
Hard disk—minimum 250 GB
Processor- Pentium 1 and Above

**Results and Discussions**

The purpose of our project is to make a restaurant management system . We have able to complete our target. First of all we  had faced  many problems while completing this project . Although it was difficult at first ,later we have able to complete our project  correctly. We have learned a lot from this project and have worked with great  pleasure.

**Reference:**
[1] Wikipedia
[2] Dev.to

**Thank You**