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Department of Computer Science and Engineering (CSE)

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Lab Project Name: Bus Reservation System

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[For Teachers use only: Don't Write Anything inside this box]

Lab Project Status

Marks: …… **Signature: .....**

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

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Chapter 1

Introduction

1.1 Introduction

Originally, C language is developed from two previous languages, BCPL and B. BCPL which were developed in 1967 by Martin Richards as a language for wring operating systems and compilers. C was evolved from B by Dennis Ritchie at Bell Laboratories and it was implemented in 1972. It initially became widely known as the development language of the UNIX operating system. Lots of today's leading operating systems are written in C and C++. C language is mostly hardware independent as it is possible to write C programs that are portable to most computers.

Why we use c language C has been used successfully for each kind of programming problem thinkable from operating systems to spreadsheets to expert systems - and efficient compilers are accessible for machines ranging in power from the Apple Macintosh to the Cray supercomputers. The largest measure of C's success appears to be based on strictly sensible considerations:

1. The standard library concept;
2. the ease with that applications can be optimized by hand-coding isolated procedures;
3. a powerful and varied repertoire of operators;
4. the portability of the compiler;

1.2 Design Goals/Objective

The objective of this project is to develop a bus reservation system for the passengers to satisfy them with all effectiveness facilities.

- Ob1: To minimize the number of staff at the ticket box and the counter.
- Ob2: To enable passenger to check the availability of the bus ticket and book in advanced.
- Ob3: To increase work flow, accuracy and reduce the work amount and time.

A small bus has just purchased a computer for its new automated reservation system. The owner has asked to program the new system in C. It is required to write a program to assign seats on each bus of the database only place (capacity: 32 seats). The program should never assign a seat which is already assigned. If there's no seat available, then print the message " the seat is full ".

After the bus is full and someone want to cancel the booking, it is displaying enter the username and seat number you want to cancel it so after the passenger cancel it, the system directly free that place id someone want to book that seat.

Chapter 2

Implementation of the Project

1. Implementation

C source code

```
/*
Naimul Haque Bhuyan Rahat
ID: 213902100
*/
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

// Variable Declare
char ch[10][130]={"Ena Express","Green Line","Volvo Express","Eagle Express","Shyamoli Paribahan"};
char name[32][100]={'\0'};
char number[32][2]={'\0'};
int num1[32]={0};
int busno;

// Function Prototype
void login();
void bus();
void booking();//for booking the tickets
void status();//for printing the status by user input
void cancle();
void name_number(int booking,char numstr[100]);
int read_number(int busno);//for reading the number from the file
void read_name(int busno);//for reading the name from the file
void status_1(int busno);//for printing the status while booking ticket

//Main Function
int main(){
   login();
   int num, i;

   do{
      system("cls");
      printf("\n\n\n");
      printf("============================== Welcome To Bus Reservation System ==============================\n\n");
      printf("\t\t\t\t\t[1]=> View Bus List\n\n");
      printf("\t\t\t\t\t[2]=> Book Tickets\n\n");
      printf("\t\t\t\t\t[3]=> Cancle Booking\n\n");
      printf("\t\t\t\t\t[4]=> Bus Status Board\n\n");
      printf("\t\t\t\t\t[5]=> Exit\n\n");
      printf("============================== ********************************** ==============================\n\n");
      printf("\t\t\t Enter Your Choice: ");
      scanf("%d",&num);

      switch(num){
      case 1:
         bus();
         break;
      case 2:
         booking();
         break;
      case 3:
         cancle();
         break;
```

```
        case 4:
            status();
            break;
        }
        getch();
    }while(num!=5);

    system("cls");
    printf("\n\n\n\t\t\t Thanks For Using Our System \t\t\t");
    getch();

    return 0;
}

// Function Defnation
void login(){
    int a=0,i=0;
    char uname[10];
    char pword[10];
    char user[10]="user";
    char pass[10]="pass";

    do{
        system("cls");

        printf("\n ============================== Login Form ============================== ");
        printf("\n");
        printf("Enter User Name: ");
        scanf("%s",&uname);
        printf("\n");
        printf("Enter Password: ");
        scanf("%s",&pword);
        printf("\n");

        if(strcmp(uname,"user")==0 && strcmp(pword,"pass")==0){
            printf("\n\n\n    Welcome To Our System!!! LOGIN IS SUCCESSFUL");
            printf("\n PRESS ANY KEY TO CONTINUE....\n");
            getch();
            break;
        }
        else{
            printf("\n\n\n    LOGIN UNSUCCESSFUL!!");
            a++;
            getch();
        }
    }while(a<=2);

    if(a>2){
        printf("\n Sorry You've Enter The Wrong User Name or Password Three Times\n");
        getch();
        exit(0);
    }
    system("cls");
}

void bus(){
    system("cls");
    int i;
    printf("\n\n\n");
    printf("============================== Welcome To Bus Reservation System ==============================\n\n\n");
    for(i=0;i<5;i++){
        printf("\t\t\t\t\t[%d]  =>  %s\n\n",i+1,ch[i]);
    }
    printf("Press Any Key To Return....");
}


void booking()
{
```

```
    int i=0;
    char numstr[100];
    system("cls");
    printf("=========================================== BUS RESERVATION SYSTEM
==========================================\n\n\n");//for entering train number
    bus();//for seeing bus least
    printf("Enter the Bus number:--->");
    scanf("%d",&busno);
    system("cls");
    printf("=========================================== BUS RESERVATION SYSTEM
==========================================\n\n\n");//for selecting coach
    printf("Your Bus Number is %d ********** %s",busno,ch[busno-1]);
    status_1(busno);
     FILE *f1, *fopen();//for reading the seats from the user.
     char str1[80]="32",str2[4],str3[4];
     int seat1,seat2,booking=0;
    if(busno == 1)
    {
     f1 = fopen("tr1.txt","r+");
     fgets(str1,80,f1);
     fclose(f1);
    }else if(busno == 2)
    {
     f1 = fopen("tr2.txt","r+");
     fgets(str1,80,f1);
     fclose(f1);
    }else if(busno == 3)
    {
     f1 = fopen("tr3.txt","r+");
     fgets(str1,80,f1);
     fclose(f1);
    }
    else if(busno == 4)
    {
     f1 = fopen("tr4.txt","r+");
     fgets(str1,80,f1);
     fclose(f1);
    }
    else if(busno == 5)
    {
     f1 = fopen("tr5.txt","r+");
     fgets(str1,80,f1);
     fclose(f1);
    }
    seat1=atoi(str1);//covert the string into number
    if(seat1 <= 0)
    {
     printf("There is no blank seat in this bus ");
    }else
    {
       printf("\n\n\n\t\t\t\tAvailable Seats:------>%d\n",seat1);
       printf("\n\t\t\t\tNumber of Tickets:----->");
       scanf("%d",&booking);
       printf("\n");

       seat1=seat1-booking;
       itoa(busno,numstr,10);
       name_number(booking,numstr);
       printf("\n\t\t\t\tThe Total booking amount is %d",200*booking);
       itoa(seat1, str1, 10);
       //for reading the seats from the user.
       if(busno == 1)
       {
        f1 = fopen("tr1.txt","w");
        fputs(str1,f1);
        fclose(f1);
       }
       else if(busno == 2)
       {
        f1 = fopen("tr2.txt","w");
```

```
        fputs(str1,f1);
         fclose(f1);
        }
        else if(busno == 3)
        {
         f1 = fopen("tr3.txt","w");
         fputs(str1,f1);
          fclose(f1);
        }
        else if(busno == 4)
        {
         f1 = fopen("tr4.txt","w");
         fputs(str1,f1);
          fclose(f1);
        }
        else if(busno == 5)
        {
         f1 = fopen("tr5.txt","w");
         fputs(str1,f1);
         fclose(f1);
        }
    }
}

void name_number(int booking,char numstr[100])
{
    char tempstr[100],tempstr1[12]="status",tempstr2[12]="number";
    int number;
        FILE *a,*b;
        int i=0;
       strcat(numstr,".txt");
       strcat(tempstr1,numstr);
       strcat(tempstr2,numstr);
       a = fopen(tempstr1,"a");//for open the file to write the name in the file
       b = fopen(tempstr2,"a");//for open the file for writing the number in the file
    for(i=0; i<booking; i++)//for entering the person name and seat number in the file
    {
        printf("============================Enter the details for ticket no %d============================\n\n\n",i+1);
          printf("\t\t\t\tEnter the seat number:--->");
          scanf("%d",&number);
          printf("\t\t\t\tEnter the name of person:--->");
          scanf("%s",name[number-1]);

printf("\n=============================================================================================
=========\n\n");
        printf("\n");
          itoa(number, tempstr, 10);
          fprintf(a,"%s ",name[number-1]);
          fprintf(b,"%s ",tempstr);

    }
    fclose(a);
    fclose(b);
}

int read_number(int busno)//for putting the numeric value in the array
{
    char tempstr[100],tempstr2[12]="number";
    FILE *a,*b;
    char numstr[100];
    int i=0,j=0,k;
    itoa(busno,numstr,10);
    strcat(numstr,".txt");
    strcat(tempstr2,numstr);
    a = fopen(tempstr2,"a+");//for open the file to write the name in the file
   while(!feof(a))
   {
      number[i][j] = fgetc(a);

     if(number[i][j] == ' ')
```

```
    {
       j=0;
       i++;
    }
    else
    {
    j++;
    }
  }
  k=i;
  for(i=0; i<k; i++)
  {
     num1[i] = atoi(number[i]);
  }
  fclose(a);
  return k;
}


void read_name(int busno)//for putting the numeric value in the array
{
   char tempstr1[12]="status";
   FILE *b;
   char numstr[100];
   int i=0,j=0,k=0;
   itoa(busno,numstr,10);
   strcat(numstr,".txt");
   strcat(tempstr1,numstr);
   b = fopen(tempstr1,"a+");//for open the file to write the name in the file
  while(!feof(b))
  {
    name[i][j] = fgetc(b);

    if(name[i][j] == ' ')
    {
       j=0;
       i++;
    }
    else
    {
      j++;
    }

  }
  name[i][j]='\0';
  k=i;
  fclose(b);
}

void status()
{
   system("cls");
   printf("=============================================          BUS          RESERVATION          SYSTEM
=============================================\n\n\n");
   int i,busno,index=0,j;
   printf("Enter the number of bus:---->");
   scanf("%d",&busno);
   j=read_number(busno);
   read_name(busno);

printf("_____
_____\n");
   printf("                    Bus.no-->%d---->%s                                    \n",busno,ch[busno-1]);

printf("_____
_____\n");
   char tempname[33][10]={"Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty
","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty
","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty "};
   for(i=0; i<j; i++)
```

```
    {
       strcpy(tempname[num1[i]],name[i]);
    }
    for(i=0; i<8; i++)
    {
       printf("\t\t\t\t");
       for(j=0; j<4; j++)
          {
       printf("%d.%s\t",index+1,tempname[index+1]);
       index++;
          }
          printf("\n");
    }
}

void status_1(int busno)
{
    printf("Your Bus Number is %d ********** %s",busno,ch[busno-1]);
    system("cls");
    printf("========================================== BUS RESERVATION SYSTEM ==========================================\n\n\n");
    int i,index=0,j;
    j=read_number(busno);
    read_name(busno);
    char tempname[33][10]={"Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty ","Empty "};
    for(i=0; i<j; i++)
    {
       strcpy(tempname[num1[i]],name[i]);
    }
    for(i=0; i<8; i++)
    {
       printf("\t\t\t\t");
       for(j=0; j<4; j++)
          {
       printf("%d.%s\t",index+1,tempname[index+1]);
       index++;
          }
          printf("\n");
}
}
void cancle()
{
 int seat_no,i,j;
 char numstr[100],tempstr2[15]="number",tempstr1[15]="status";
 printf("Enter the bus number:---->");
 scanf("%d",&busno);
 itoa(busno,numstr,10);
 strcat(numstr,".txt");
 strcat(tempstr1,numstr);
 strcat(tempstr2,numstr);
 read_number(busno);
 read_name(busno);
 status_1(busno);
 printf("Enter the seat number:--->");
 scanf("%d",&seat_no);
 FILE *a,*b;
 a = fopen(tempstr1,"w+");
 b = fopen(tempstr2,"w+");
 for(i=0; i<32; i++)
 {
    if(num1[i] == seat_no)
    {
       for(j=0; j<32; j++)
       {
          if(num1[j] != seat_no && num1[j] != 0)
          {
             fprintf(b,"%d ",num1[j]);
             fprintf(a,"%s",name[j]);
```

```
            }
            else if(num1[j] == seat_no && num1[j] != 0)
            {
               strcpy(name[j],"Empty ");
            }
        }
     }
  }
   fclose(a);
   fclose(b);
   printf("\n\n");

printf("=============================================================================================================
=======\n");
   printf("\t\t\t\tYour 200 tk. has been Returned\t\t\t\n");

printf("=============================================================================================================
=======\n");
}
```

Screenshots

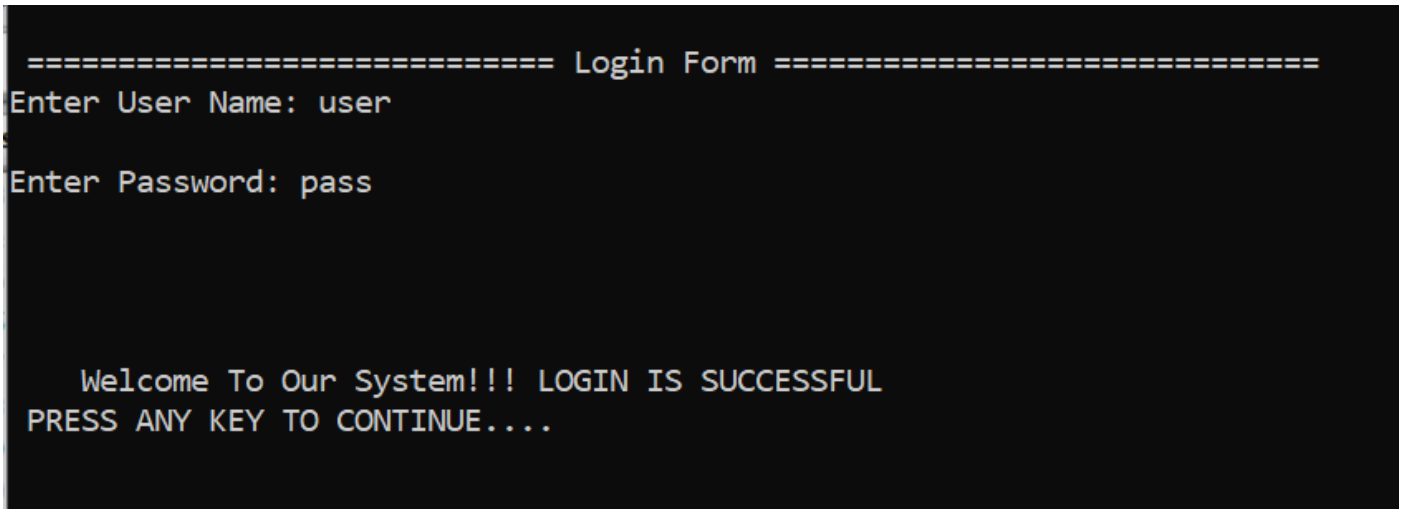

Figure 1: Login Interface

When the program is executed, the user must login in the system with correct username and password.

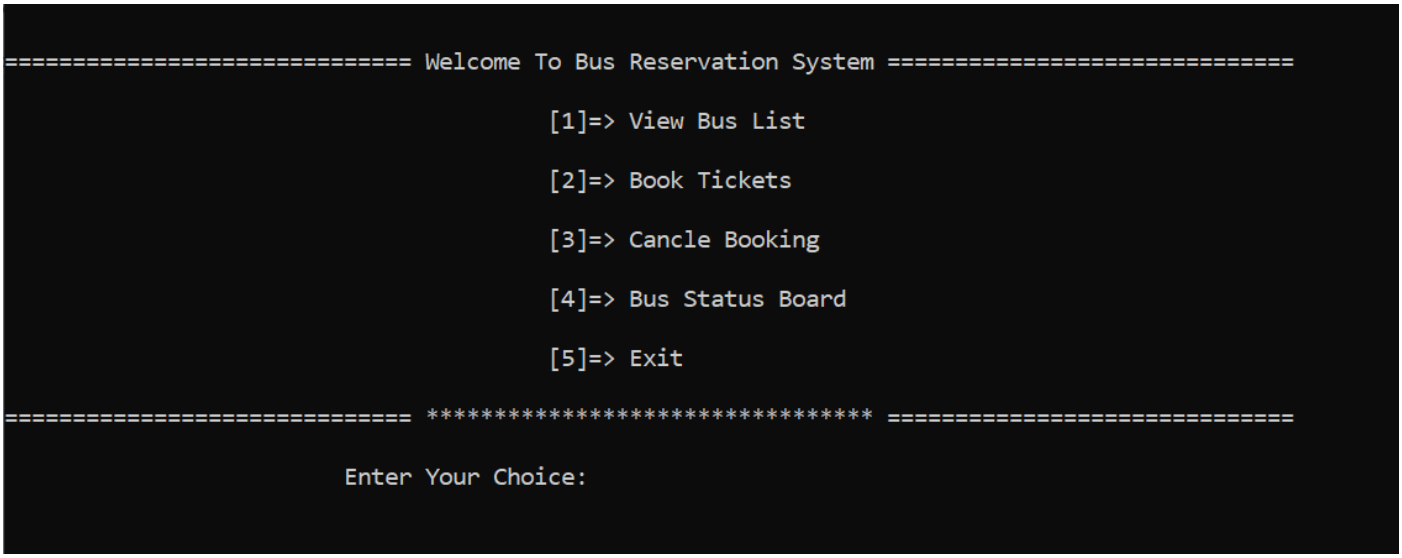

Figure 2 : Main Menu Interface

After login successfully, the user will be directed to the main menu interface. The program is introduced with a few lines of texts. Then four selections are made for the user as the user can choose to reserve, cancel, display or exit the program.

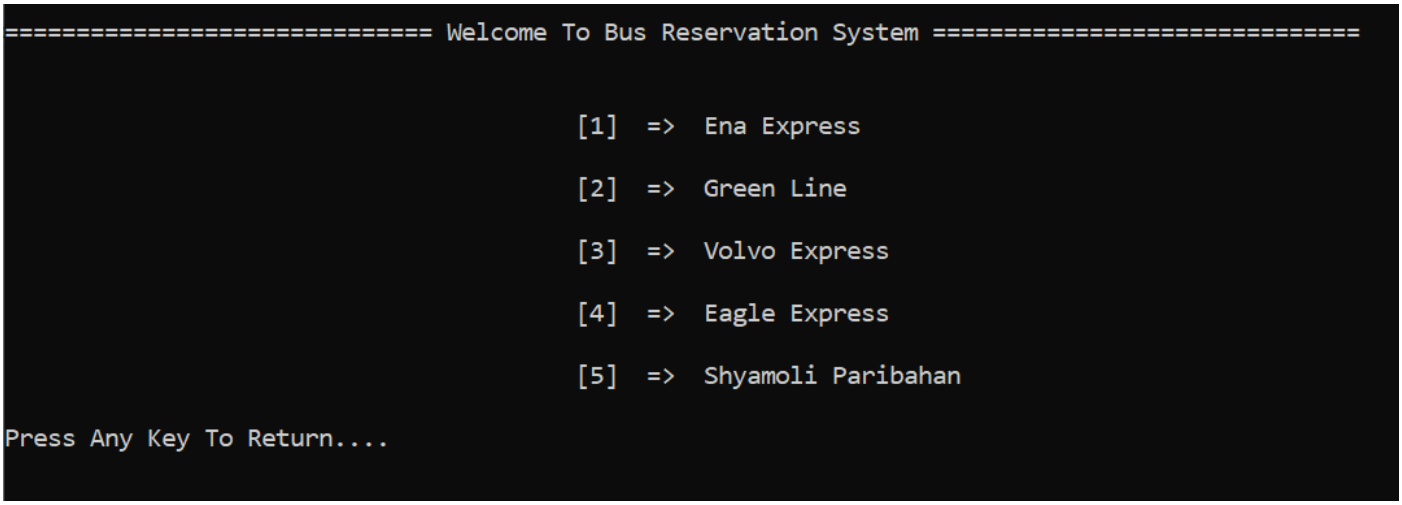

Figure 3: View Bus List Function

. If the user accidentally choose option one (1), then the user can see the available bust list in the database.

```
================================== BUS RESERVATION SYSTEM ========================================


                        1.Empty         2.Empty         3.Empty         4.Empty
                        5.Empty         6.Empty         7.Empty         8.Empty
                        9.Empty         10.Empty        11.Empty        12.Empty
                        13.Empty        14.Empty        15.Empty        16.Empty
                        17.Empty        18.Empty        19.Empty        20.Empty
                        21.Empty        22.Empty        23.Empty        24.Empty
                        25.Empty        26.Empty        27.Empty        28.Empty
                        29.Empty        30.Empty        31.Empty        32.Empty



                        Available Seats:------>32

                        Number of Tickets:----->
```

Figure 4: Reservation function

If the user choose 2nd option for Book Tickets then at first the system show the bust list to user to choose bus. After choosing bus user can show the available seat for booking.

```
                                Available Seats:------>32

                                Number of Tickets:----->1

============================Enter the details for ticket no 1============================


                                Enter the seat number:--->6
                                Enter the name of person:--->Naimul Haque

=============================================================================================



                                The Total booking amount is 200
```

Figure 5: Enter Ticket Details

For book a seat at first user must enter some details which are number of tickets, seat number and person name. Then the system automatic show the cost of ticket and wait for user confirmation. If user press enter then the booking is confirmed.

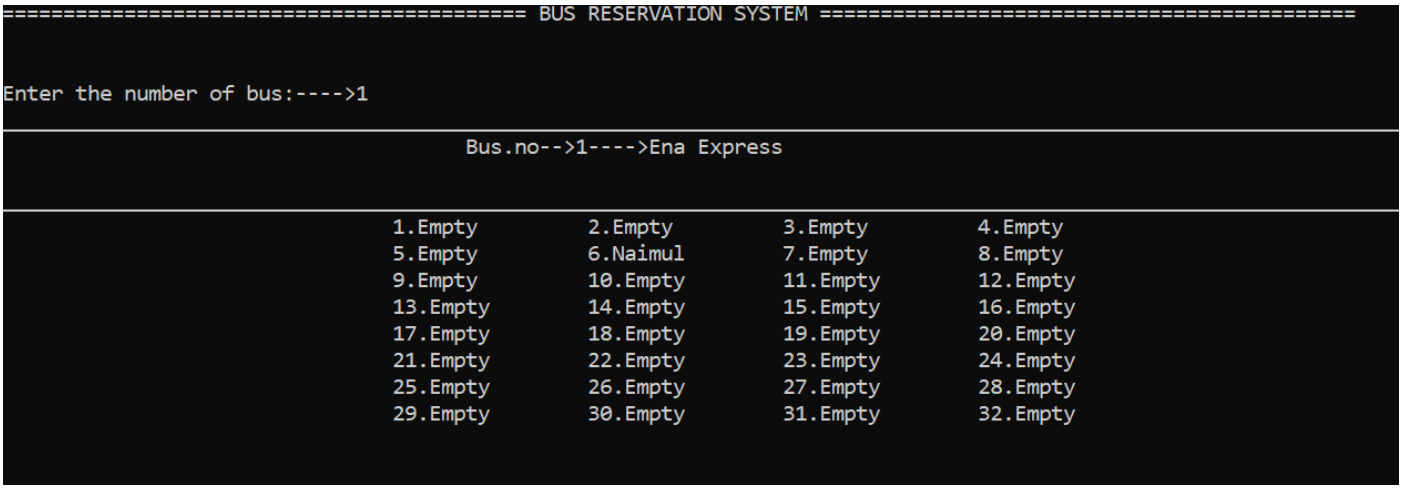

Figure 6: Show the booking status

As shown in the interface the seat reservation has been booked successfully, If the user choose 4th option for show the booking status then the system first ask for the bus number. Then the system show the current seat list of bust list where in the 6th number it shown as user name which mean it is booked and others are empty.

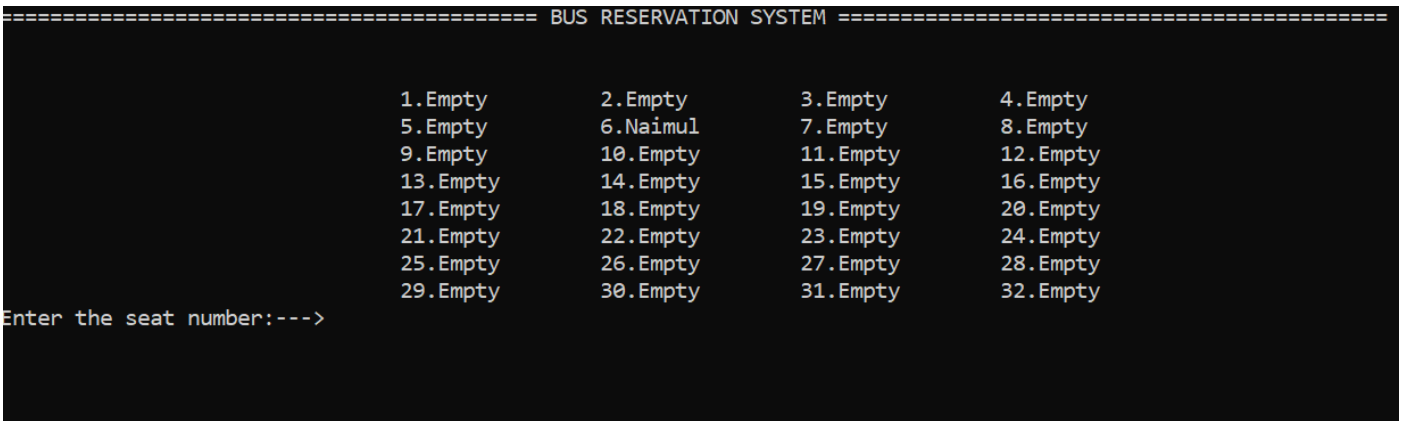

Figure 7: Cancle Booking

If the user choose 3rd option for cancel booking, then at first the system ask the user for enter the bus number and then the seat number which user want to delete.

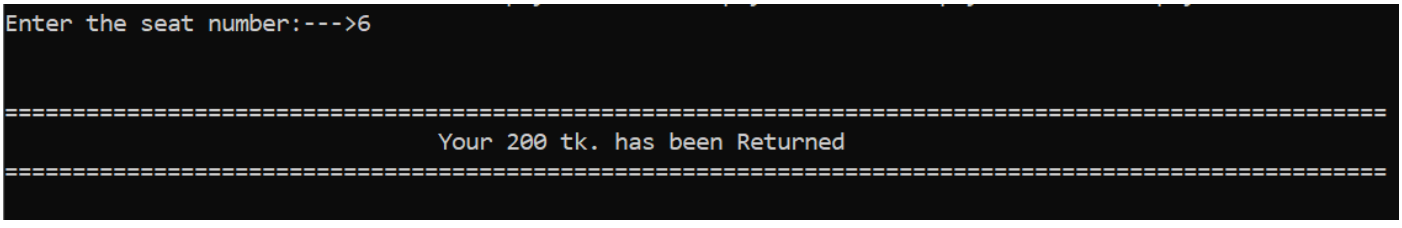

Figure 8: Return Ticket Price

If the user enter correct seat number which he booked, then after confirmation cancle booking the system automaticly returned the users ticket cost.

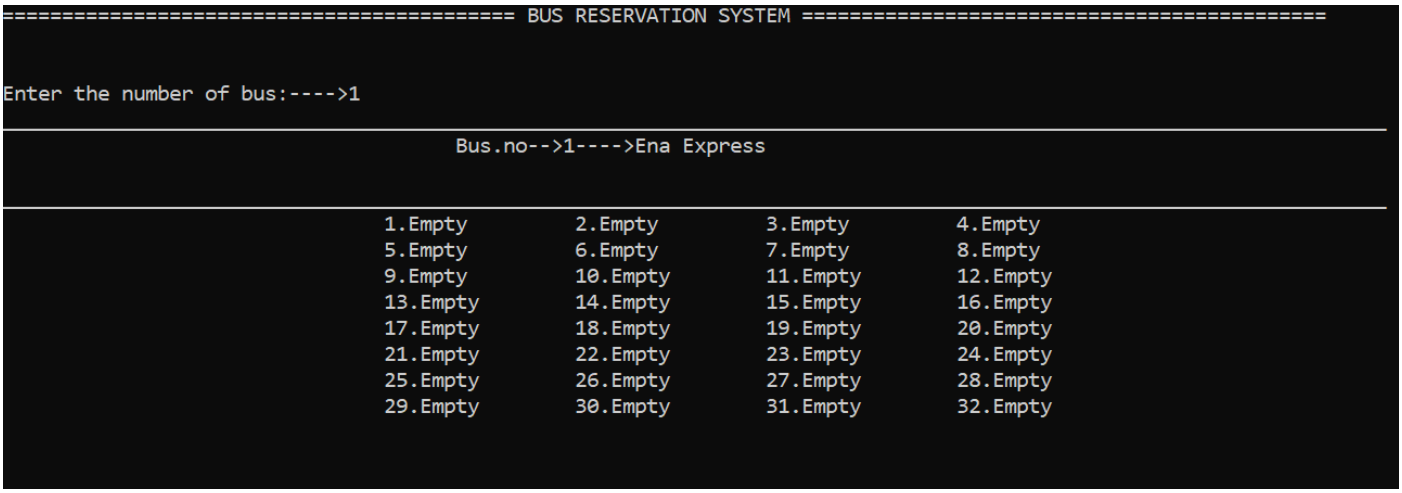

Figure 9: Show Cancel Status

If the user again choose 4th option for show the cancel booking status, then the user first ask for the bus number then show the booking status list where the user name is removed and the field fill with empty.

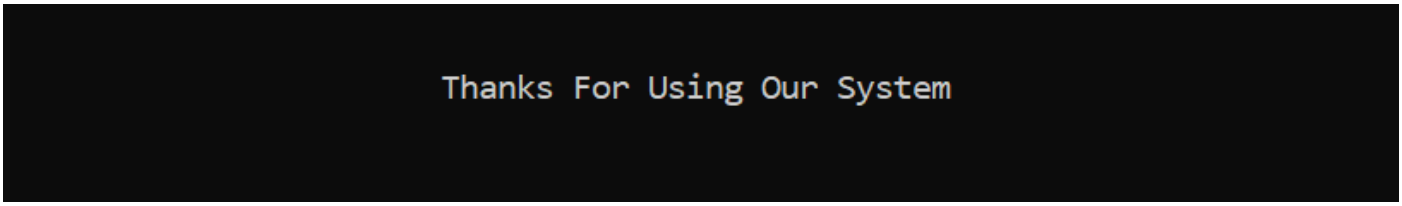

Figure 10: Exit Programm

The user can simply close the program by choose the 5th option from the user menu which is Exit.

Bus Reservation System	5/13/2022 3:18 PM	C Source File	12 KB
Bus Reservation System	5/16/2022 7:50 PM	Application	40 KB
Bus Reservation System.o	5/16/2022 7:50 PM	O File	13 KB
number1	5/16/2022 7:55 PM	Text Document	1 KB
status1	5/16/2022 7:55 PM	Text Document	1 KB
tr1	5/16/2022 7:55 PM	Text Document	1 KB

In the program folder the system create 3 text files whis stores the user details, booking seat number and how many seat available.

Chapter 3

Conclusion

Learning Outcome

The Bus Reservation system is designed for users to reserve a seat, cancel, display seat and exit the system. A formula is included in the function to calculate the seats are reserved.

From this assignment, I have learnt to implement a few C concepts in the future projects such as functions, switch statement and do…while statement, arrays, pointers and structures in the program.

Future Scope

- We can use graph theory to include route map in this project
- We can add database to our project to store all employee and passenger information of the Bus Reservation system.
- We can use the system from anywhere in the world by converting the system online based.