VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE

21CS204-DATA STRUCTURES LAB

MINI PROJECT

RAILWAY RESERVATION SYSTEM

TEAM MEMBERS

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PROJECT GUIDE

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AIM:

To create secure and a faster railway reservation and management system and search system for trains and passenger details, to assign seats for passengers using the booking details of passenger. This project aims at improving the railway management system which will be useful for authorities as well as to passenger, by creating secure and a faster railway reservation and search system for trains and passenger details.

OBJECTIVES:

The objectives of the program are:

- To reduce paperwork.
- Reduced operational time.
- Increased accuracy and reliability.
- Fast Process.
- Data security.

SYSTEM REQUIREMENTS:

HARDWARE SPECIFICATIONS
*PROCESSOR – Intel core i5
*RAM- 8GB
*HARD DISK-1TB

SOFTWARE SPECIFICATIONS
*OS- Windows 11
*Language- C Language

ABSTRACT:

The railway reservation system facilitates the passengers to enquiry about the trains available on the basis of source and destination, booking and cancellation of tickets, enquiry about the status of the booked ticket, etc. The aim of case study is to design and develop a data base maintaining records of different trains, train status and passengers. This project contains introduction to the railways reservation system. It is the computerized system of reserving the seats of train seats in advance. It is mainly used for a long route. Online reservation has made the process for the reservation of seats very much easier than ever before.

. In our country India, there are number of counters for the reservation of the seats and one can easily make reservations and get tickets. Railway reservation system, has described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus it will help organization it better utilization of resources. Administrator of the project, with the help of a password, can enter new train record, display all train records, modify train records and delete train records. The record of train includes its number, name, source, destination, and days on which it is available, whereas record of train status includes dates for which tickets can be booked, total number of seats available, and number of seats already booked.

SCOPE\ AVAILABILITY:

The scope of this project is not limited to an engineering project. This can be used in actual railway management system for faster access of data and better waitlist management. This method can also be used in other transport services. Other scopes of this project are as follows: • Freight revenue enhancement. • Passenger revenue enhancement. • Improved and optimized service. • Booking service is open 24/7 thereby removing time constraints. • Hassle free booking.

LIMITATIONS:

(i) This program does not work in Linux systems as it uses a different compiler which does not have specific DOS command used in this program; hence it is not cross compatible.

(ii) Aside from this there is also the problem of security. The database folder can be accessed by anyone who has access to the folder of the source code.

(iii)There is also the problem of date and time. In order to maintain the Dates and time of travel, the complexity of the program has to be increased drastically. Each train must have each instance of it for every separate day. This will increase the size of the database and the program needs to be made to update the dates based on the system calendar. This level of complexity was not possible for this project and instead the trains were considered to be daily trains instead

EXPLANATION:

In this program we are going to perform operations such as:

*Receiving the details of passenger
*Allowing passenger to select their seats
*Calculation of Ticket
*Displaying Bill amount along with ticket

MODULES:

Void details ()

In this module we get the details of the passenger such as name, gender, age for ‘n’ number of passengers as the user inputs.

Int seat ()

*In this module we ask the users to select require number of seats that are available.
*Here the seat numbers are listed along with the berth
There are five types of berth
->Upper
Middle
Lower
Side upper
Side lower
Here the users books the seat on whichever seat they wants.

Int cal ()

*This module is used for the calculation of amount for the selected number of seats but we get the input from the user to select the type of class (AC, Sleeper)

Switch case is used to select the type of class(AC, Sleeper)

In AC class we get the input from the user to select(Third AC , Second AC ,First AC classes)

Each AC class has different rates increasingly and so the amount is calculated accordingly

Void bill ()

*This module displays the complete details of the passengers Reservation i.e the ticket with the source place, destination place, the boarding station , the train name, boarding time and the allocated class

*At last the total Bill amount to be paid is printed

Int main ()

*Here we get the information from the user such as the number of passenger, the source place, the destination place, the train name along with the station name

*Using switch case the details of the boarding time of the train is displayed.

CODE:

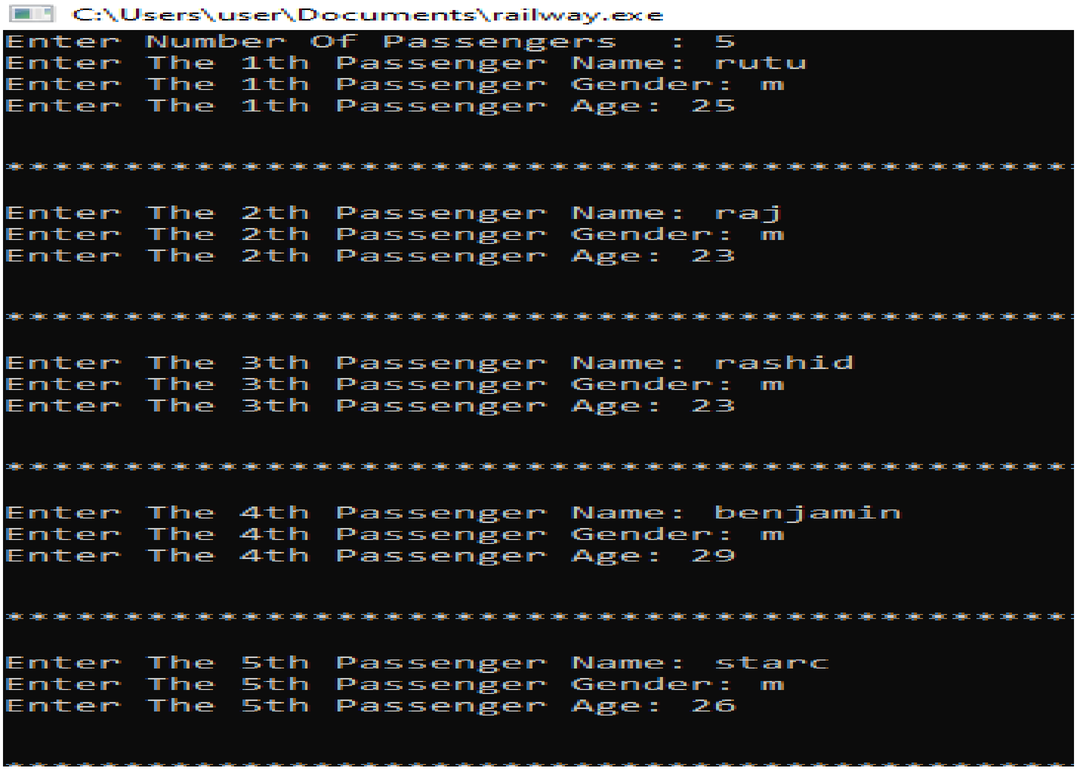
```
# include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>


typedef struct mynode {
    char name[20];
    char gen[6];
    int age;
    struct mynode* link;
} Node;

Node* start = NULL;

void details(int);
int seat(int);
int cal(int, int, int);
void bill(int, int);


char source[20], des[20], train[40];
char station[40], cla[40];
```

```
int time1, time2, a[55];

// Driver Code
int main()
{
    int i, j, a1, a2, b, c, x = 0, d, e, r;
    char o;
    printf("Enter Number Of Passengers : ");
    fflush(stdin);
    scanf("%d", &j);

    // Calling details() function with
    // argument number of passenger
    details(j);
    printf("Enter The Source Place  : ");
    fflush(stdin);
    gets(source);
    printf("Enter The Destination Place  : ");
    gets(des);
    printf("\n\n");
    printf("*******************************************************
**********************");
    printf("\n\n");
    printf("The Following Trains "
           "Are Available ....\n");
    printf("\t1. Rajdhani Express.."
           " ...10:00 "
           "a.m ... Sealdah Station\n");
    printf("\t2. Satabdi Express .."
           "....05:00 "
           "p.m ....Howrah Station\n");
    printf("\t3. Humsafar Express..."
           "....11:00 "
           "p.m ....Kolkata Chitpur"
           " Station\n");
    printf("\t4. Garib-Rath Express"
           " .....05:00 "
           "p.m ....Sealdah Station\n");
    printf("\t5. Duronto Express .. "
           "......07:00 "
           "a.m .... Santraganchi"
           "Station\n");
    printf("enter 1 or 2 or 3 or 4 or 5 :\n");
    scanf("%d", &i);
     printf("\n\n");
    printf("*******************************************************
**********************");
    printf("\n\n");
    do {
        switch (i) {
        case 1: {
            strcpy(train,
                   "Rajdhani Express");
            strcpy(station,
                   "Sealdah Station");
            time1 = 10;
            time2 = 00;
            a1 = 2099;
            a2 = 1560;

            // Calling cal() function
            // with the three argument
            // and return value

            d = cal(a1, a2, j);
            printf("Total Bill Amount:"
                   " %d\n",
                   d);
                    printf("\n\n");
    printf("*******************************************************
**********************");
    printf("\n\n");
        }; break;
        case 2: {
            strcpy(train,
                   "Satabdi Express");
            strcpy(station,
                   "Howrah Station");
            time1 = 05;
            time2 = 00;
            a1 = 1801;
            a2 = 981;
             printf("\n\n");
    printf("*******************************************************
**********************");
    printf("\n\n");
```

```
            // Calling cal() function with
            // three argument & return value
            d = cal(a1, a2, j);
            printf("Total Bill Amount:"
                   "%d\n",
                   d);
                    printf("\n\n");
    printf("***********************************************************
**********************");
    printf("\n\n");
        }; break;
        case 3: {
            strcpy(train,
                   "Humsafar Express");
            strcpy(station,
                   "Kolkata Chitpur Express");
            time1 = 11;
            time2 = 00;
            a1 = 2199;
            a2 = 1780;

            // Calling cal() function with
            // three argument & return value
            d = cal(a1, a2, j);
            printf("Total Bill Amount: %d\n", d);
             printf("\n\n");
    printf("***********************************************************
**********************");
    printf("\n\n");
        }; break;
        case 4: {
            strcpy(train, "Garib-Rath Express");
            strcpy(station, "Sealdah Station");
            time1 = 05;
            time2 = 00;
            a1 = 1759;
            a2 = 1200;

            // Calling cal() function with
            // three argument & return value
            d = cal(a1, a2, j);
            printf("Total Bill Amount: %d\n", d);
             printf("\n\n");
    printf("***********************************************************
**********************");
    printf("\n\n");
        }; break;
        case 5: {
            strcpy(train, "Duronto Express");
            strcpy(station, "Santraganchi Station");
            time1 = 07;
            time2 = 00;
            a1 = 2205;
            a2 = 1905;
                          printf("\n\n");
    printf("********************************************************
**********************");
    printf("\n\n");
            // Calling cal() function with
            // three argument & return value
            d = cal(a1, a2, j);
            printf("Total Bill Amount  : %d\n", d);
        }; break;
        default:
            printf("Enter Correct choice ....\n");
            x = 1;
            break;
        }
    } while (x);
    printf("Now Book Your Seats .....\n");

    // Calling seat() function with number
    // of passenger
    seat(j);

    // Calling bill() function with
    // the number of passenger
    // and amount argument
    bill(d, j);
}

// Function for calculation of amount
int cal(int y1, int y2, int h)
{
printf("\n\n");
    printf("********************************************************
**********************");
    printf("\n\n");
    int b, c, i, t, r, n;
    printf("\tEnter Your Choice..... \n");
    printf("\t1. Sleeper Class ... \n");
    printf("\t2. A.C Class ......\n");
    printf("enter 1 or 2 :\n");
    scanf("%d", &i);
    switch (i) {
    case 1: {
        strcpy(cla, "Sleeper Class");
        b = y2 * h;
        c = b + (b * 0.18);
    } break;
    case 2: {
        printf("\tEnter Your Choice... \n");
        printf("\t1. 3A Class ... \n");
        printf("\t2. 2A Class ... \n");
        printf("\t3. 1st Class A.C .... \n");
        scanf("%d", &n);
        switch (n) {
        case 1: {
            strcpy(cla, "3A Class");
            b = y1 * h;
            c = b + (b * 0.18);
        } break;
        case 2: {
            strcpy(cla, "2A Class");
            b = (y1 + 1000) * h;
            c = b + (b * 0.18);
        } break;
        case 3: {
            strcpy(cla, "1st Class A.C.");
            b = (y1 + 5000) * h;
            c = b + (b * 0.18);
        } break;
        default: {
            printf("\tEnter Right Choice .....\n");
        }
        }
    } break;
    default: {
        printf("\tEnter Right Choice .....\n");
    }
    }
    return c;
}
void add_node(char lol[20], char der[6], int b)
{
    Node *newptr = NULL, *ptr;
    newptr = (Node*)malloc(sizeof(Node));
    strcpy(newptr->name, lol);
    strcpy(newptr->gen, der);
    newptr->age = b;
    newptr->link = NULL;
    if (start == NULL)
        start = newptr;
    else {
        ptr = start;
        while (ptr->link != NULL)
            ptr = ptr->link;
        ptr->link = newptr;
    }
}

// Function for taking details
// of passengers
void details(int k)
{
    int i, a ;
    char val[20], gen[6];
    for (i = 1; i <= k; i++) {
        printf("Enter The %dth Passenger Name: ", i);
        fflush(stdin);
        gets(val);
        printf("Enter The %dth Passenger Gender: ", i);
        fflush(stdin);
        gets(gen);
        printf("Enter The %dth Passenger Age: ", i);

        fflush(stdin);
        scanf("%d", &a);
  printf("\n\n");
    printf("********************************************************
**********************");
    printf("\n\n");
```

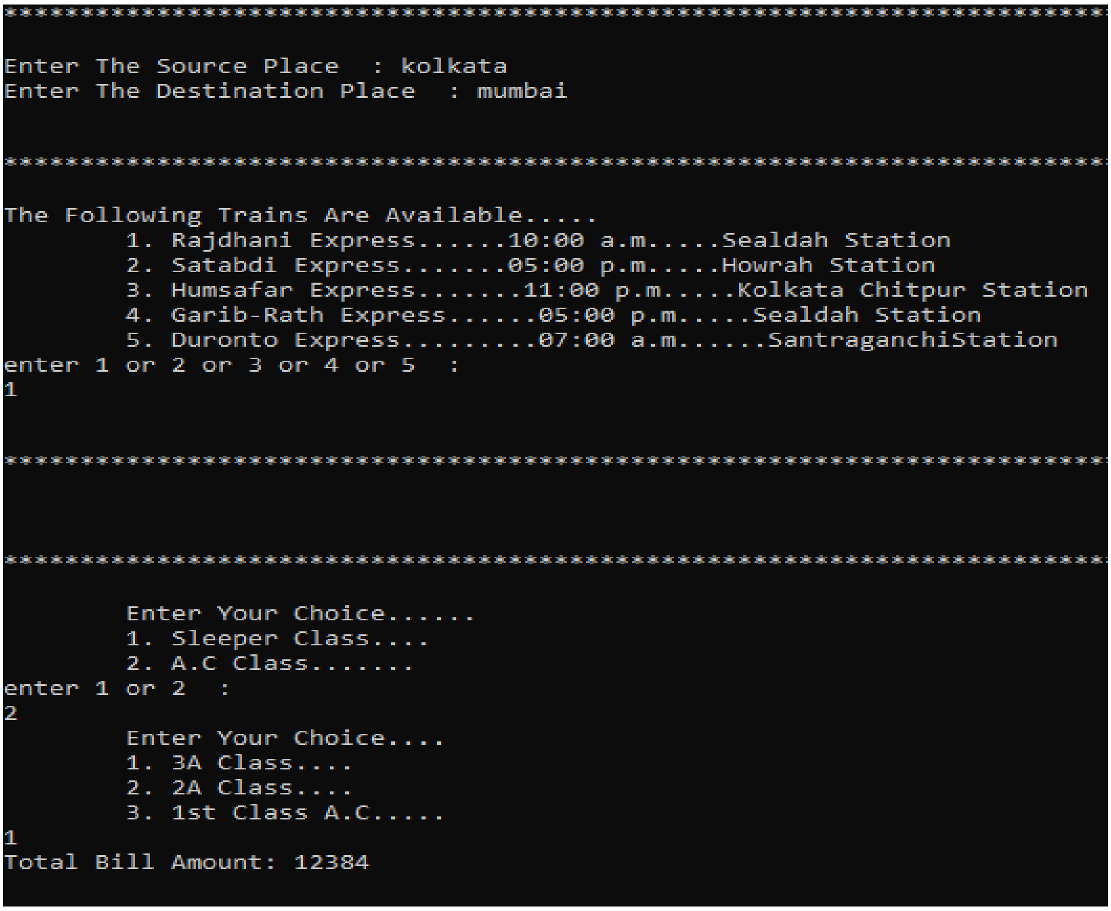
```
        // Calling add_node() function
        add_node(val, gen, a);
    }
}

// Function to add details in node
// for each passengers



// Function for choosing seats
int seat(int p)
{
printf("\n\n");
    printf("********************************************************
**********************");
    printf("\n\n");
    int i;
    printf("\t          -:SEAT MATRIX:-        \n");
    printf("\t(U)    (M)        (L)    (L)    "
           "    (U)\n\n");
    printf("\t01    02        03\t04        "
           "05\n\n");
    printf("\t06    07        08\t09        "
           "10\n");
    printf("\t11    12        13\t14        "
           "15\n\n");
    printf("\t16    17        18\t19        "
           "20\n");
    printf("\t21    22        23\t24        "
           "25\n\n");
    printf("\t26    27        28\t29        "
           "30\n");
    printf("\t31    32        33\t34        "
           "35\n\n");
    printf("\t36    37        38\t39        "
           "40\n");
    printf("\t41    42        43\t44        "
           "45\n\n");
    printf("\t46    47        48\t49        "
           "50\n");
    printf("\t51    52        53\t54        "
           "55\n\n");
    printf("\t56    57        58\t59        "
          "60\n");
    printf("\tEnter Seat Numbers: \n");
    for (i = 0; i < p; i++)
        scanf("%d", &a[i]);
         printf("\n\n");
    printf("************************************************************
**********************");
    printf("\n\n");
}

// Function for printing receipt
void bill(int y, int j)
{
    int i;
    Node* ptr = start;
    for (i = 1; i <= j; i++) {
        printf("\t%dst Passenger Name: ", i);
        puts(ptr->name);
        printf("\t%dst Passenger Gender: ", i);
        puts(ptr->gen);
        printf("\t%dst Passenger Age: %d\n\n", i,
               ptr->age);
        ptr = ptr->link;
    }
    printf("\tSource Place: ");
    puts(source);
    printf("\tDestination Place: ");
    puts(des);
    printf("\tThe Boarding Station: ");
    puts(station);
    printf("\tTrain Is: ");
    puts(train);
    printf("\tAllocated Class: ");
    puts(cla);
    printf("\tBoarding Time: %d:%d\n", time1, time2);
    printf("\tTotal Bill Amount: %d\n", y);
    printf("\tAllocated Seats Are: \n");
    for (i = 0; i < j; i++) {
        printf("\t%d ", a[i]);
    }
    printf("\n");
    printf("\t\t\t\t.....Thank You.....\n");
}
```

OUTPUT:

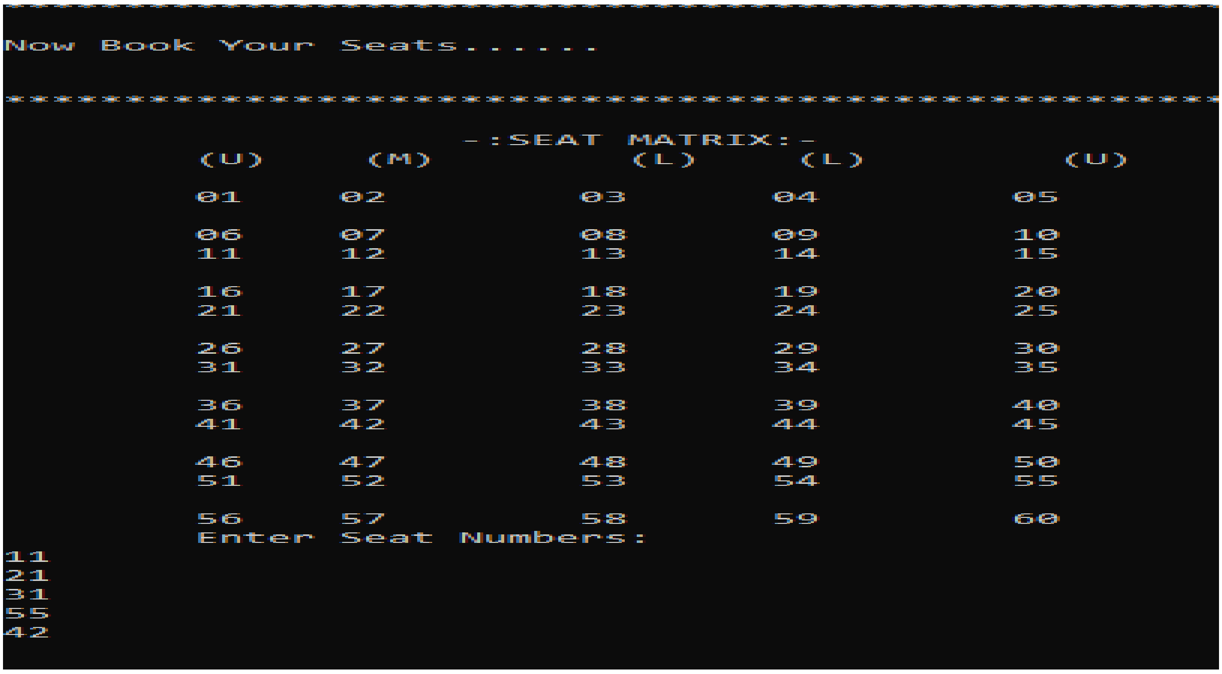


C:\Users\user\Documents\railway.exe

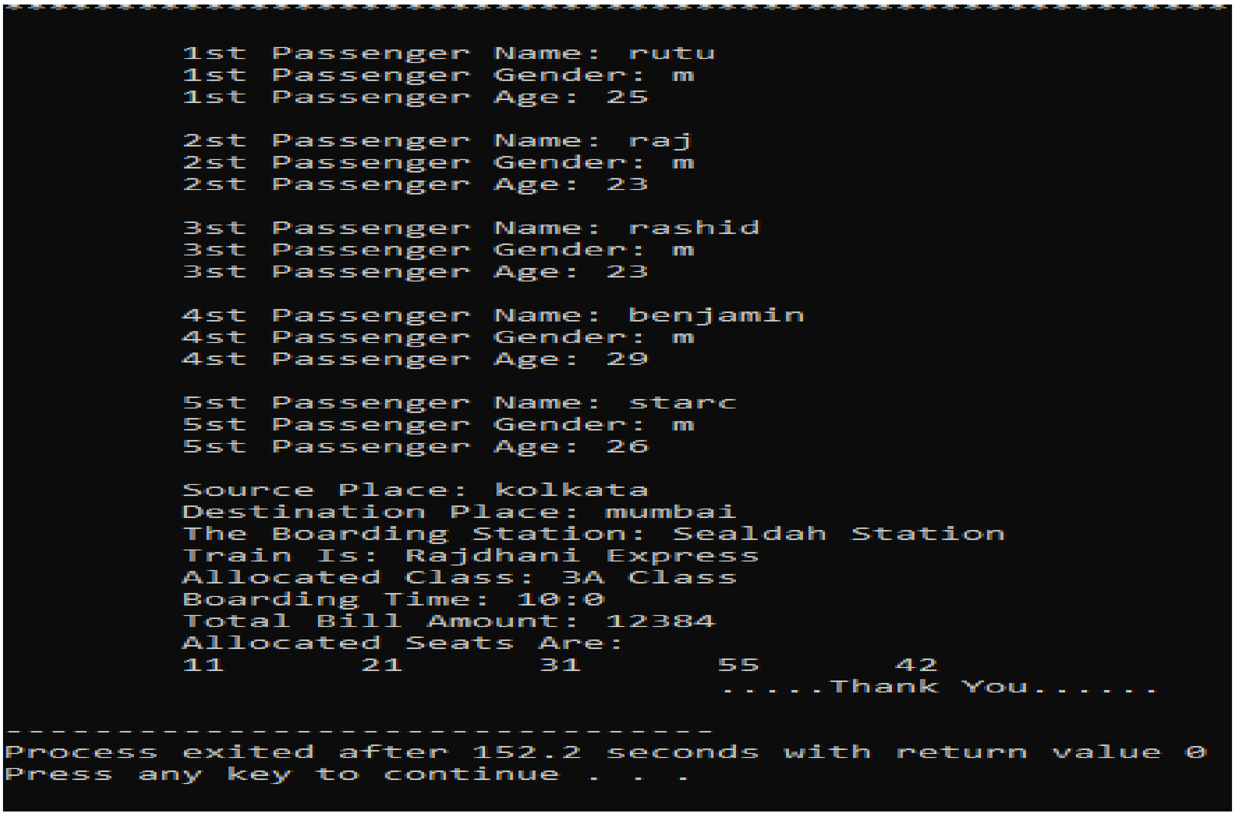
```
Enter Number Of Passengers   :  5
Enter The 1th Passenger Name:  rutu
Enter The 1th Passenger Gender:  m
Enter The 1th Passenger Age:  25

*********************************************

Enter The 2th Passenger Name:  raj
Enter The 2th Passenger Gender:  m
Enter The 2th Passenger Age:  23

*********************************************

Enter The 3th Passenger Name:  rashid
Enter The 3th Passenger Gender:  m
Enter The 3th Passenger Age:  23

*********************************************

Enter The 4th Passenger Name:  benjamin
Enter The 4th Passenger Gender:  m
Enter The 4th Passenger Age:  29

*********************************************

Enter The 5th Passenger Name:  starc
Enter The 5th Passenger Gender:  m
Enter The 5th Passenger Age:  26

*********************************************
```



```
*************************************************************************

Enter The Source Place   : kolkata
Enter The Destination Place   : mumbai


*************************************************************************

The Following Trains Are Available.....
        1. Rajdhani Express......10:00 a.m.....Sealdah Station
        2. Satabdi Express.......05:00 p.m.....Howrah Station
        3. Humsafar Express.......11:00 p.m.....Kolkata Chitpur Station
        4. Garib-Rath Express......05:00 p.m.....Sealdah Station
        5. Duronto Express.........07:00 a.m......SantraganchiStation
enter 1 or 2 or 3 or 4 or 5   :
1


*************************************************************************



*************************************************************************

        Enter Your Choice......
        1. Sleeper Class....
        2. A.C Class.......
enter 1 or 2  :
2
        Enter Your Choice....
        1. 3A Class....
        2. 2A Class....
        3. 1st Class A.C.....
1
Total Bill Amount: 12384
```



```
****************************************************

Now Book Your Seats......

****************************************************

                   -:SEAT MATRIX:-
        (U)    (M)        (L)    (L)        (U)

        01     02         03      04        05

        06     07         08      09        10
        11     12         13      14        15

        16     17         18      19        20
        21     22         23      24        25

        26     27         28      29        30
        31     32         33      34        35

        36     37         38      39        40
        41     42         43      44        45

        46     47         48      49        50
        51     52         53      54        55

        56     57         58      59        60
        Enter Seat Numbers:
11
21
31
55
42
```



```
*******************************************************

        1st Passenger Name: rutu
        1st Passenger Gender: m
        1st Passenger Age: 25

        2st Passenger Name: raj
        2st Passenger Gender: m
        2st Passenger Age: 23

        3st Passenger Name: rashid
        3st Passenger Gender: m
        3st Passenger Age: 23

        4st Passenger Name: benjamin
        4st Passenger Gender: m
        4st Passenger Age: 29

        5st Passenger Name: starc
        5st Passenger Gender: m
        5st Passenger Age: 26

        Source Place: kolkata
        Destination Place: mumbai
        The Boarding Station: Sealdah Station
        Train Is: Rajdhani Express
        Allocated Class: 3A Class
        Boarding Time: 10:0
        Total Bill Amount: 12384
        Allocated Seats Are:
        11      21      31      55      42
                                .....Thank You......

--------------------------------
Process exited after 152.2 seconds with return value 0
Press any key to continue . . .
```

CONCLUSION:

It aims to give beginners a good understanding of programming small to large projects by imparting general workable and practical information about C. This project can be modified to suit different client requirements. It also has a objective of completely ruling out manual railway ticket booking and making a efficient program to meet today’s high demand.

REFERENCE:

*****Programming in C – Reema Thareja

*Data structures using C – Reema Thareja

*Data structures through C – Yashwant Kanetkar

*https://www.geeksforgeeks.org

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