



C++ PROJECT

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(1920)

PPS0335 - PROBLEM SOLVING AND PROGRAM
(T127)

Title: Library Seat Reservation

Group name: Life of Pi

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Introduction

Overtime, library has experienced a shift from being a space devoted to store and organise physical and informational materials to become a space that encourages collaborative learning environment. As this space is actually limited, it is essential that we organise it in a proper way for everyone's convenience, especially for student. In particular, implementing a system to manage the seats in a library can prevent the hoarding tendencies exhibited by students within first come first serve system. Thus, our this project is based on the working of a library management which involving the activity of library seat reservation. Currently, our system requires a library to maintain the record manually. All the working hour, user name, type of seat, price and other related information have to be maintained daily in record book for further reference.

This project has been undertaken to automate a library seat management. One entry should be made once and further entries will be fetched as required. This is done so to make the system able to perform in a more efficient way.

Next, here is a brief introduction for our library seat reservation system. This system is completed by us with the use of C++ programming knowledge that we gain in class and also from other sources. Our system has been set to have the working hour from 9.00 a.m. to 9.00 p.m. The type of seats that is available are public seat, single seat, group seat and also private room which is normally used for discussion. In this aspect, only public seat is out of charge where as the others require a payment and there is a 20% discount for student, provided that they provide their school name and student id. When reserving the seat, personal information like name and handphone number is also required. Once all the required information is given and payment is made, then only the reservation will be made. We strongly believe that we are able to improve the performance of a library in managing the seats with this library seat reservation system.

Objective

Our library seat reservation system has been designed to manage the seats in a library in a more efficient way, so that we can achieve the objectives for creating this system. In this case, our objectives are none other than:

- to create a convenience and favourable learning environment for the citizens
- to avoid people from wasting their time to find or get seat in library
- to create a new system for reserving seats in library
- to improve our members' skills in C++ programming

Problem Analysis Chart (PAC)

Given Data	Required Result
<ul style="list-style-type: none"> • Type of seat (Public, Single, Group, Discussion Room) • quantity • duration • Response(student) • Discount 20% for student 	<ul style="list-style-type: none"> • Type of Seat • Quantity • Time • Price • Payable
Processing Data	Solution Alternatives
<ul style="list-style-type: none"> • TypeOfSeat <ul style="list-style-type: none"> ➤ (PublicSeat)=RM 0; ➤ (SingleSeat)=RM 5; ➤ (GroupSeat)=RM 8; ➤ (DiscussionRoom)=RM 15; • Price TypeOfSeat*quantity*duration • Discount: (response=='y') Payable=price* 0.8 (response=='n') Payable=price 	<ul style="list-style-type: none"> • Define type of seat and discount according to age as a constant • Define hour, quantity and the type of seat as an input value.

IPO Chart

Input	Processing	Module Reference	Output
typeofseat	Select seat: Public seat(0), single seat,(5) group seat(8) or room (15)	Read	Total_payable
quantity	Number of seats	Read	
d,m,y	Choose date(DD/MM/YYYY)	Read	
start_time, end_time	Select time start and end(HHMM)	Read	
name	Enter the name	Read	
phonenummer	Enter the phone number	Read	
response	Are you a student?(y/n). If y,enter the name of school and student id.	Read	
schoolname	Total_payable for student=Type of seat*duration -(type of seat*20/100) Total_payable for nonstudent= Type of seat*duration	Calculate	
studentid	Payment method weather is cash or visa /master card .If using cash, enter the amount you have paid whereas visa or master card have to enter the pin number	Read	
payment_method	Print total_payable	print	
pin			

Data Dictionary

Item	Variable Name	Data type	Module	Scope
Type of seat	typeOfSeat	Numeric-integer	Read/Calc	Parameter
Quantity of seats	quantity	Numeric-integer	Read/Calc	Parameter
Price per hour	price	Numeric-real	ControlPay	Local
Response	response	String	Read	Parameter
Start time	startTime	Numeric-integer	Read/Print	Parameter
End time	endTime	Numeric-integer	Read/Print	Parameter
Duration	duration	Numeric-integer	Read/Calc	Parameter
Day	d	Numeric-integer	Read/Print	Parameter
Month	m	Numeric-integer	Read/Print	Parameter
Year	y	Numeric-integer	Read/Print	Parameter
Name	name	String	Read/Print	Parameter
Phone number	phonenumber	String	Read/Print	Parameter
Student ID	studentid	String	Read/Print	Parameter
School name	schoolname	String	Read/Print	Parameter
Total to pay	payable	Numeric-real	Print/Calc	Parameter
First money paid	paid	Numeric-real	Print/Calc	Parameter
Second money paid	paid2	Numeric-real	Print/Calc	Parameter
Money change	change	Numeric-real	Print/Calc	Parameter
Payment method	payment_method	Numeric-integer	Read	Parameter
Button to proceed	direction	String	Read	Parameter
Card pin number	pin	Numeric-integer	Read	Parameter
Choice 1	choose1	Numeric-integer	Read	Parameter
Choice 2	choose2	Numeric-integer	Read	Parameter
Name of seat	seatname	String	Print	Parameter

Pseudocode / Algorithm

Start:

1. declare constant variables

```
const double PublicSeat=0;  
const double SingleSeat=5;  
const double GroupSeat=8;  
const double Room=15;
```

2. declare variables

```
int typeOfSeat;  
string seatname;  
int quantity;  
double price;  
string response;  
int startTime, endTime;  
double duration;  
int d,m,y;  
string name;  
string phonenumber;  
string studentid;  
string schoolname;  
double payable;  
double paid, paid2, change;  
int payment_method;  
string direction;  
int pin;  
int choose1,choose2;  
time_t now = time(0);
```

3. MENU: output menu

4. choose1=0, choose2=0

5. repeat

 read typeOfSeat

 if typeOfSeat==-1

 goto MENU (3)

until (typeOfSeat==-1||1||2||3||4)

6. repeat

 read quantity

 if quantity==-1

 goto MENU(3)

 end if

until quantity>0

7. CHOOSE_DATE:

repeat

 read d

 if d==-1

 goto MENU (3)

 end if

 read cin.get()

until (cin.get()=='/')

8. read m

9. if cin.get()!='/'

 goto CHOOSE_DATE(6)

end if

10. read y

11. CHOOSE_TIME:

repeat

 read startTime

 if startTime==-1

 goto MENU (3)

 end if

until (startTime>=900&&startTime<=2000)

12. repeat

 read endTime

 if endTime==-1

 goto MENU

 end if

until (endTime>startTime&&endTime<=2100||(endTime-startTime)%100==0)

13. duration=(endTime-startTime)/100

14.CALCULATE_PRICE:

 if (typeOfSeat==1)

 price=PublicSeat*quantity*duration

 seatname="Public Seat"

 else if(typeOfSeat==2)

 price=SingleSeat*quantity*duration

 seatname="Single Seat"

 else if(typeOfSeat==3)

 price=GroupSeat*quantity*duration;

 seatname="Group Seat";

 else

 price=Room*quantity*duration;

 seatname="Room";

end if

15. output seatname, quantity, startTime, endTime, duration, date, price

16. output options

17. if (choose2==1)

 output option3

endif

18. repeat

 read choose1

 if (choose1==-1)

 goto MENU(3)

 else if (choose2==1&&choose1==3)

 goto PAYMENT (number)

 else if (choose2==1&&choose1==2)

 goto PERSONAL_INFORMATION_OUTPUT

 else if (choose1==1)

 goto SEAT

 end if

until (choose2==0&&(choose1==-1||1||2))||(choose2==1&&(choose1==-1||1||2||3))

19. PERSONAL_INFORMATION:

 read name

 if (name=="-1")

 goto MENU

 end if

20. read phonenumber

21. if (phonenumber=="-1")

 goto MENU

end if

22. ask_student:

 read response

23. if response== "y" ||"Y"

 read schoolname

 read studentid

 payable=price*0.8

else if response=="n"||"N"

 payable=price

else

 "invalid"

 goto ask_student

end if

24. PERSONAL_INFORMATION_OUTPUT:

output name, phonenumber

25. if(response=="Y"||"y")

output schoolname, studentid

26. output options

27. repeat

 read choose2

 if(choose2==1)

 goto MENU

 else if (choose2==2)

 goto CALCULATE_PRICE

 else if (choose2==3)

 goto PERSONAL_INFORMATION

 else if (choose2==4)

 goto PAYMENT

 else

 "Invalid"

 endif

until choose2==-1||1||2||3

28. PAYMENT:

output price, payable

29. repeat

 output choose payment method

 read payment_method

until payment_method==-1||1||2

30. if(payment_method==-1)

 goto MENU

else if(payment_method==1

 read paid

 while (paid<payable)

 read paid2

 paid=paid+paid2

 end while

 change=paid-payable

 print change

else if(payment_method==2)

 read pin

 paid=payable;

end if

31. RECEIPT:

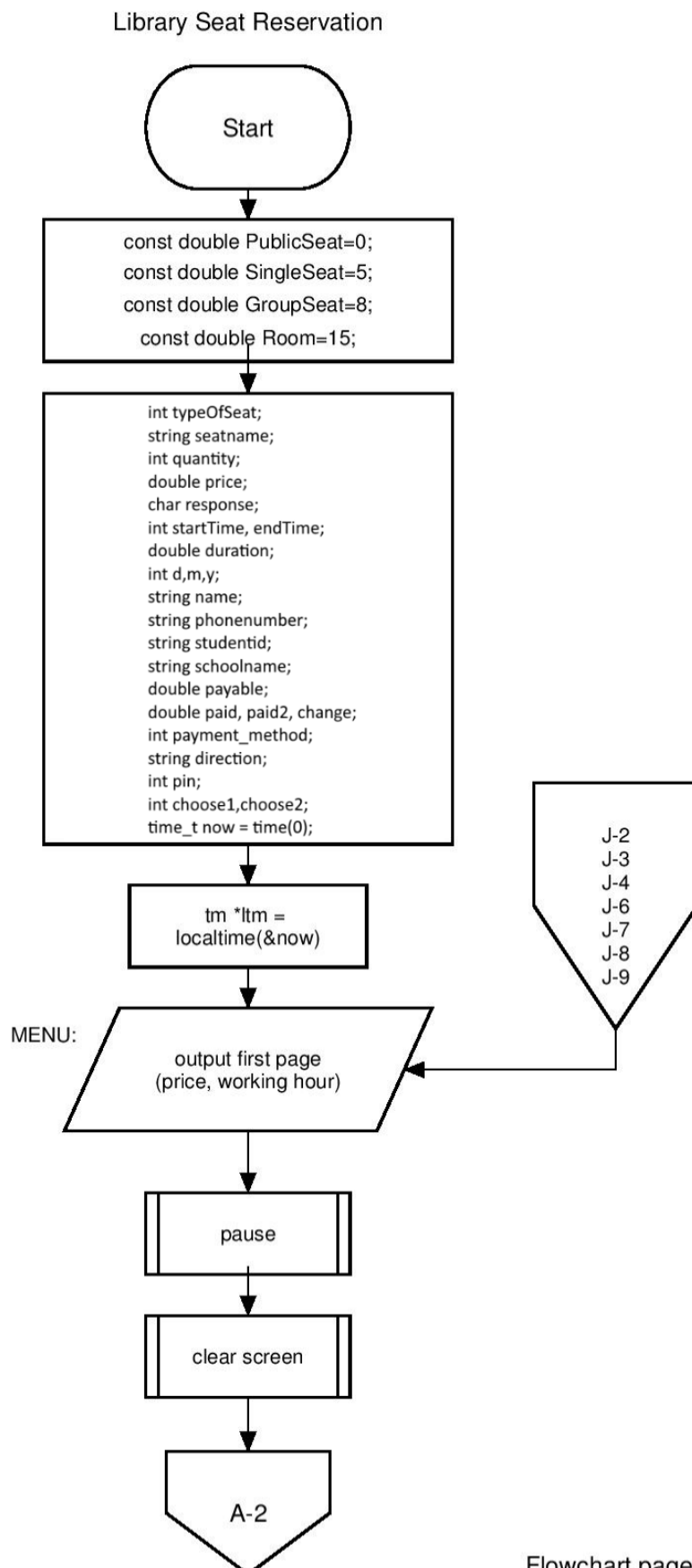
output seatname, quantity, startTime, endTime, duration, price, payable, paid, change, name,
phonenummer, schoolname, studentid

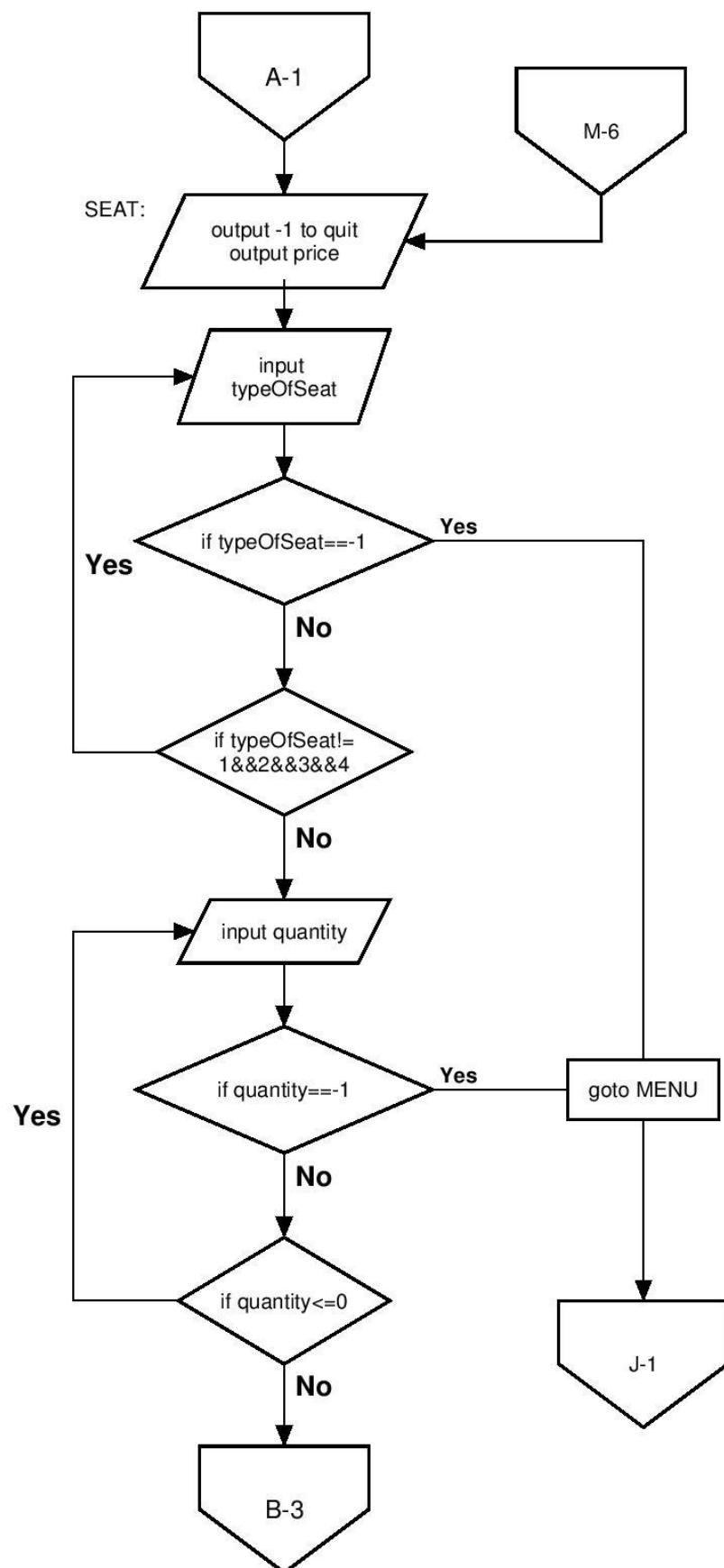
32. output "Thank you"

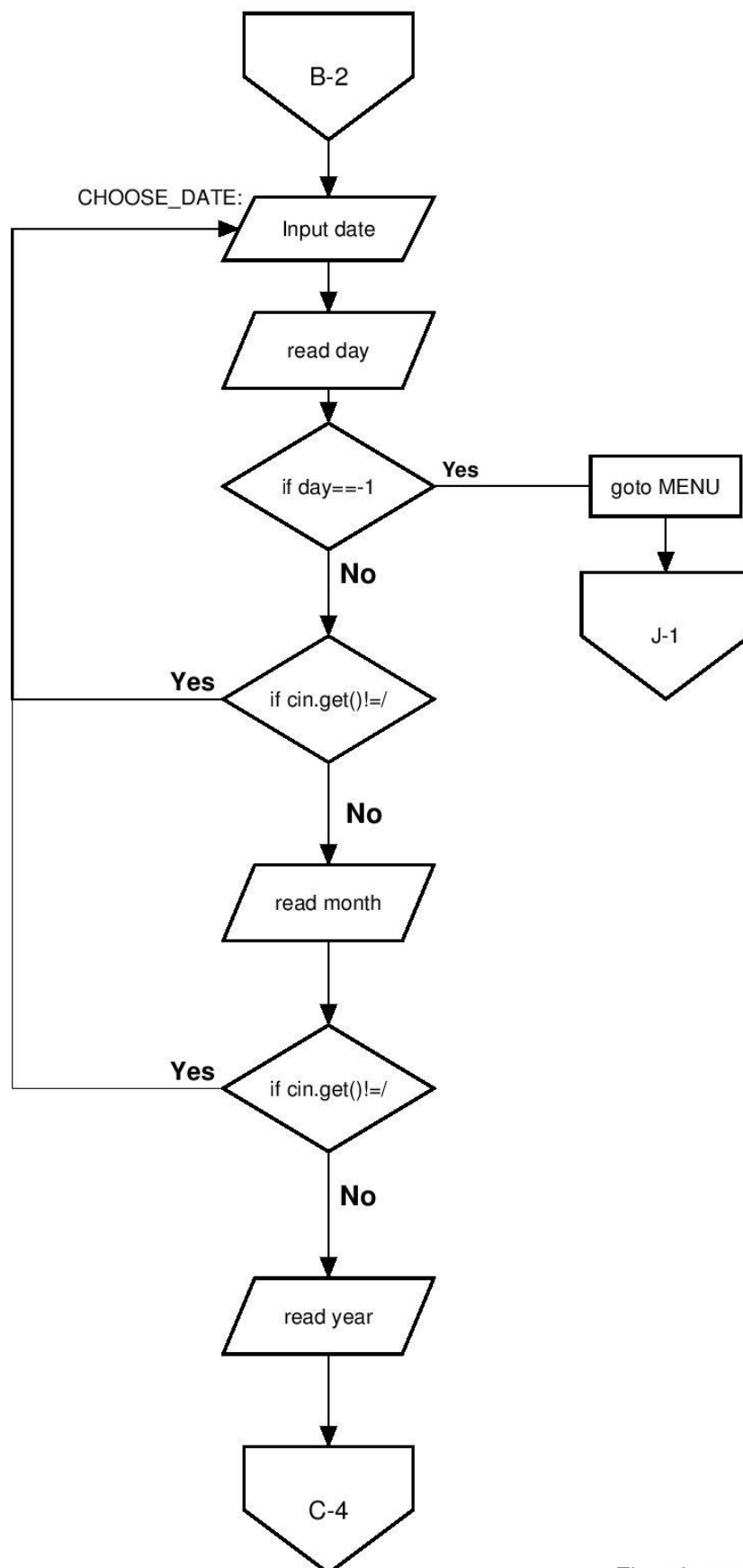
33. output current time.

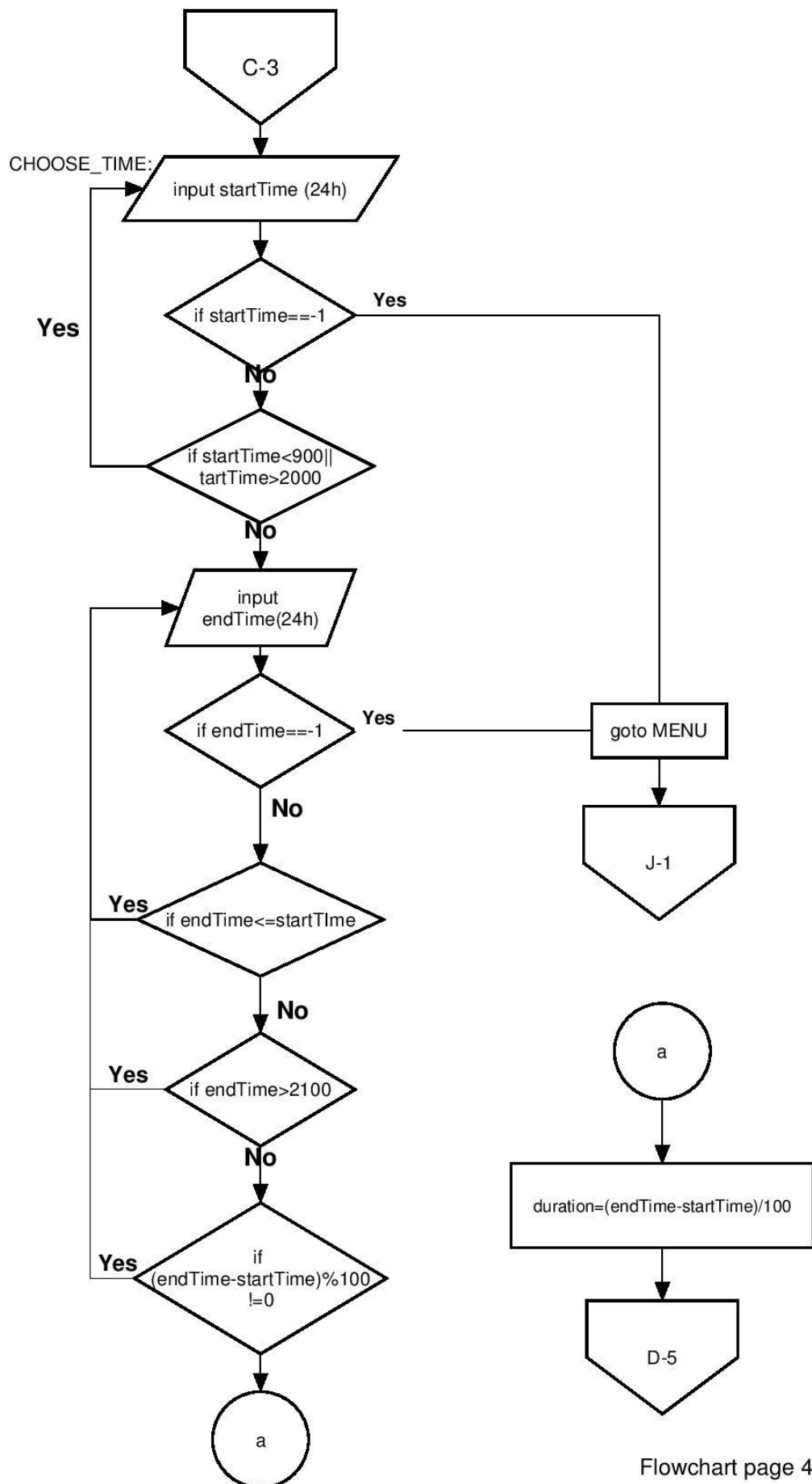
End:

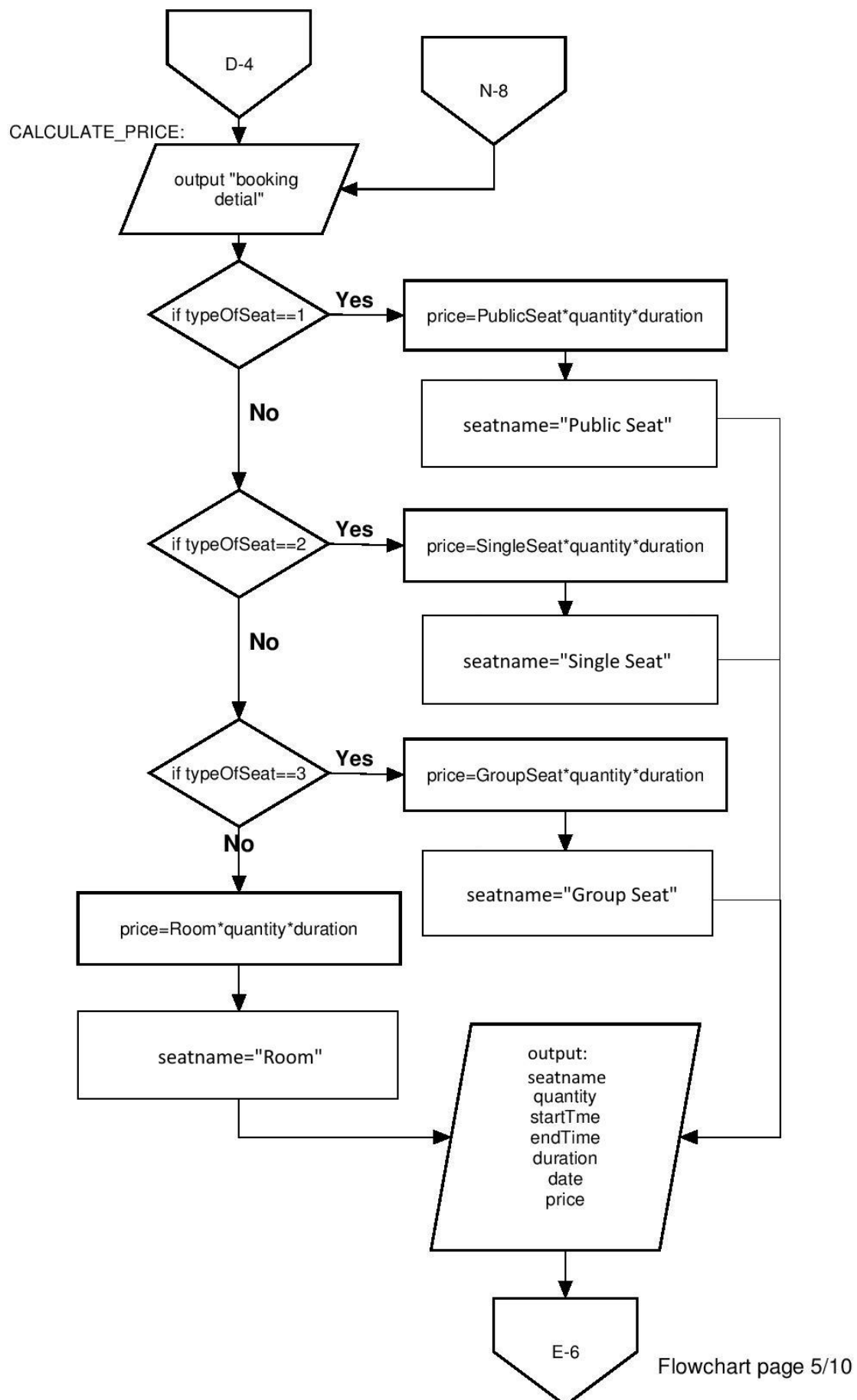
Flowchart

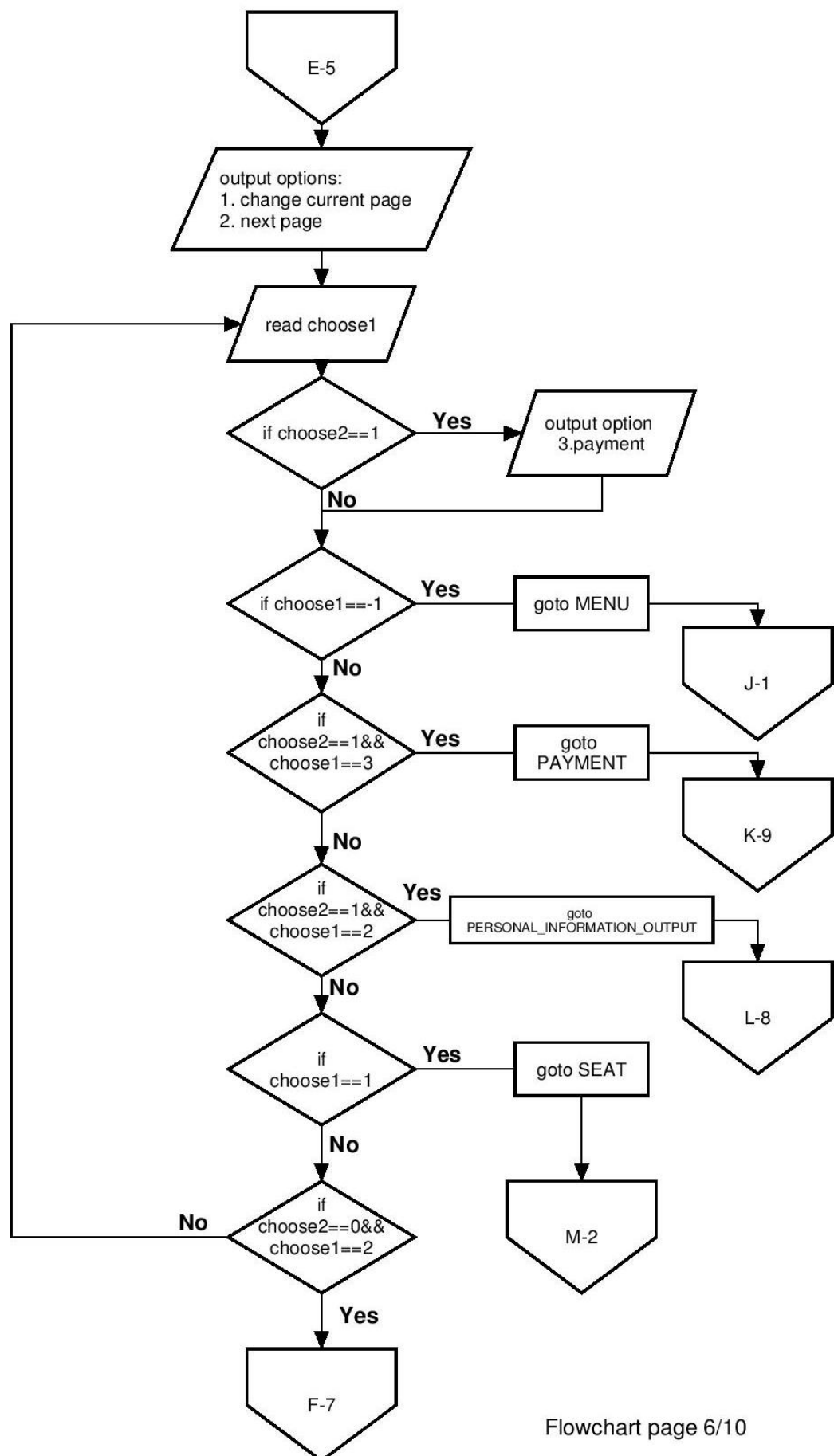


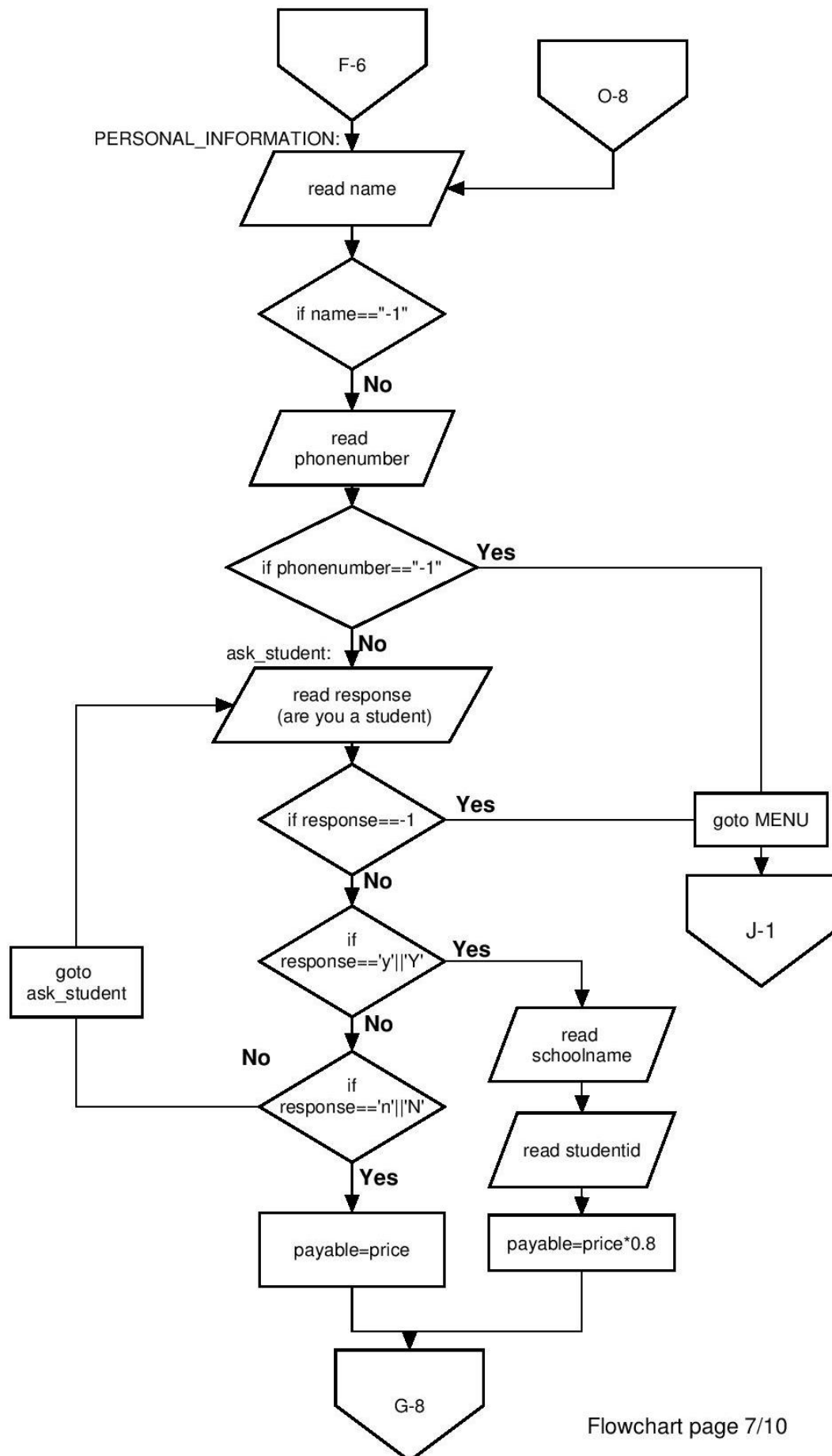




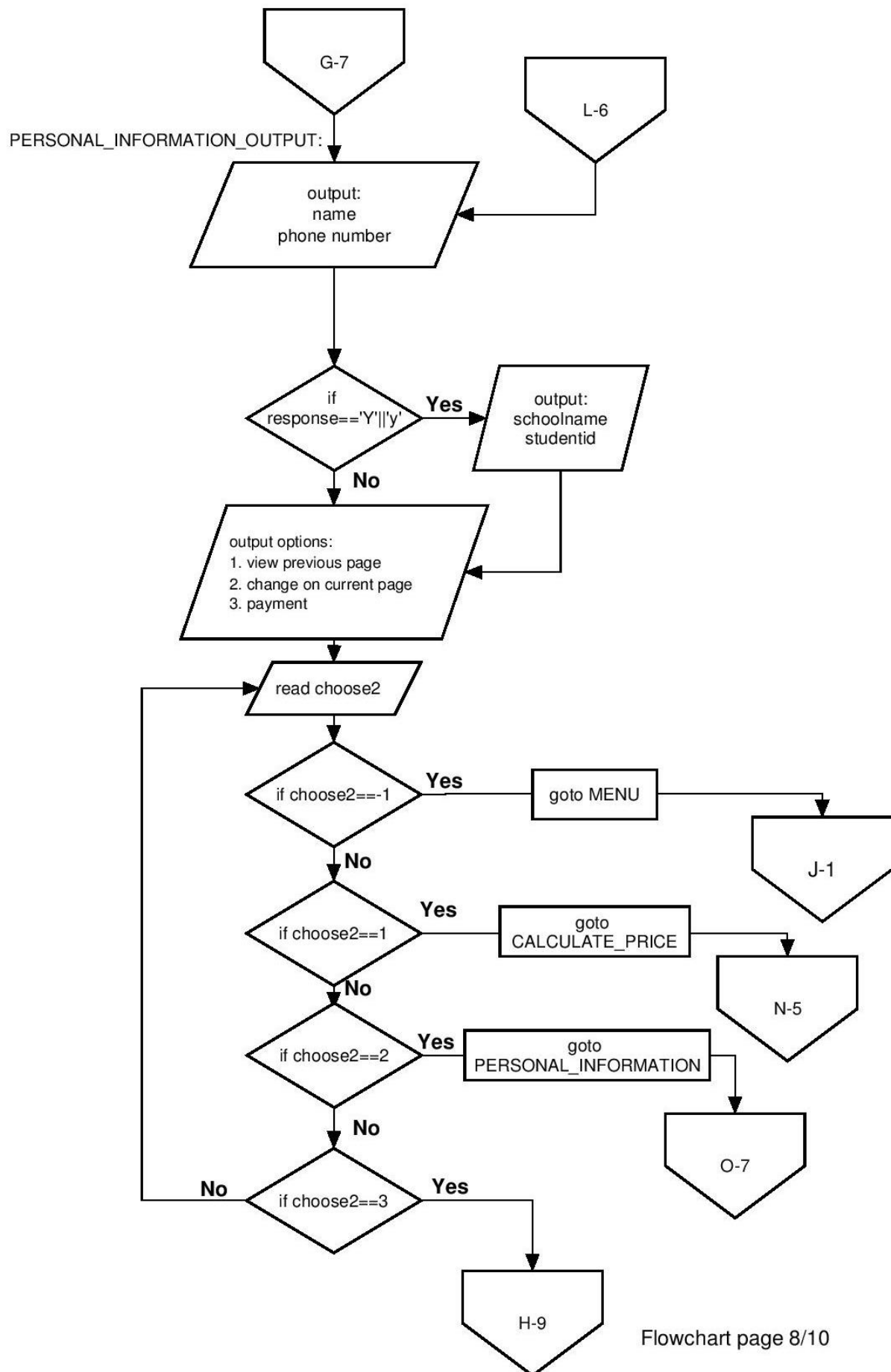


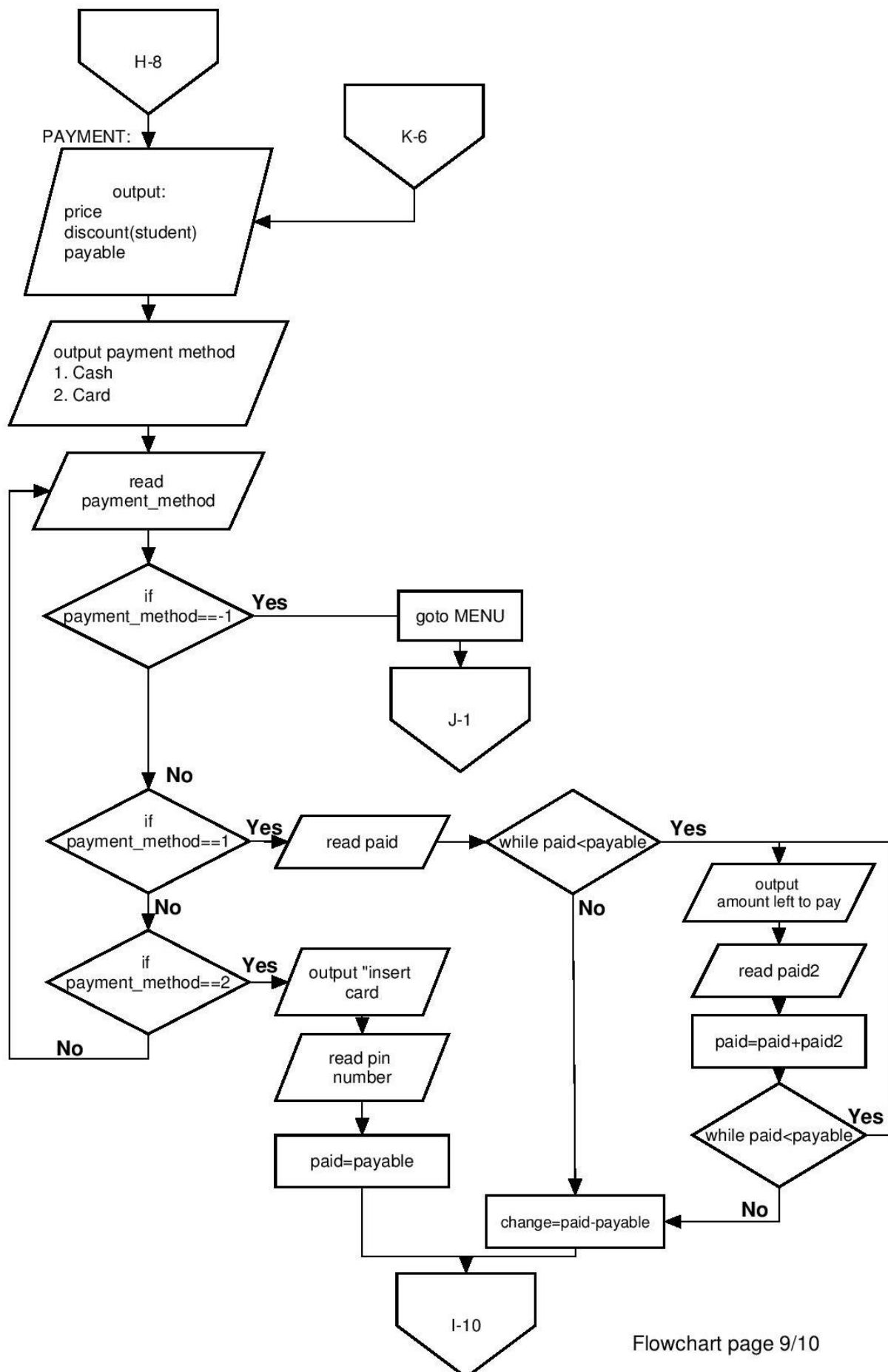




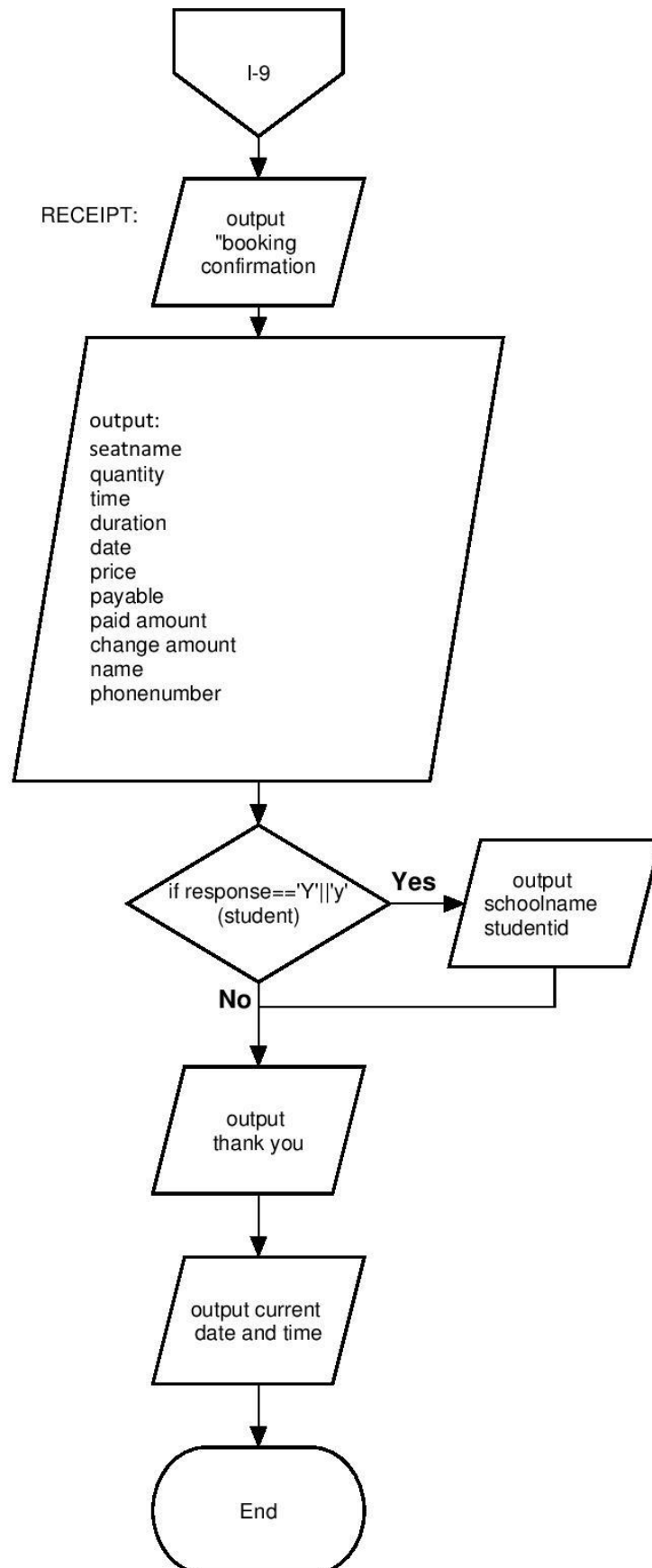


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Flowchart page 9/10



Codes

```
#include <iostream>
#include <iomanip>
#include <cstdlib>
#include <string>
#include <ctime>
#include <cmath>
#include <windows.h>

using namespace std;

const double PublicSeat=0;
const double SingleSeat=5;
const double GroupSeat=8;
const double Room=15;

int main()
{
    int typeOfSeat;
    string seatname;
    int quantity;
    double price;
    string response;
    int startTime, endTime;
    double duration;
    int d,m,y;
    string name;
    string phonenummer;
    string studentid;
    string schoolname;
    double payable;
    double paid, paid2, change;
```



```

int payment_method;
int pin;
int choose1,choose2;
time_t now = time(0); //get current date and time

tm *ltm = localtime(&now);

//menu/first page
MENU:
{
    cout<<"===== "<<endl;
    cout<<"      Welcome to Pi Library"<<endl;
    cout<<"===== "<<endl<<endl;
    cout<<" Working Hour: 0900-2100"<<endl<<endl;
    cout<<"----- "<<endl;
    cout<<" Type of seat      Price per hour"<<endl;
    cout<<"----- "<<endl;
    cout<<" Public seat      Free"<<endl;
    cout<<" Single seat      RM 5.00"<<endl;
    cout<<" Group seat      RM 8.00"<<endl;
    cout<<" Room      RM15.00"<<endl;
    cout<<"----- "<<endl<<endl;
    cout<<"***** 20% discount for student *****"<<endl<<endl;
    system("pause");
    system("cls");
    choose1=0,choose2=0;
}

//choose seats
SEAT:
{
    cout<<"Enter '-1' to quit reservation"<<endl<<endl;
    cout<<"===== "<<endl;
    cout<<"      CHOOSE SEAT"<<endl;
    cout<<"===== "<<endl<<endl;

```

```

cout<<"-----"<<endl;
cout<<" Type of seat      Price per hour"<<endl;
cout<<"-----"<<endl;
cout<<" 1. Public seat      Free"<<endl;
cout<<" 2. Single seat     RM 5.00"<<endl;
cout<<" 3. Group seat      RM 8.00"<<endl;
cout<<" 4. Room           RM15.00"<<endl;
cout<<"-----"<<endl<<endl;

do{
    cout<<"Enter number to choose your seat."<<endl;
    cin>>typeOfSeat;
    if(typeOfSeat==-1)
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }
    else if(typeOfSeat!=1&&typeOfSeat!=2&&typeOfSeat!=3&&typeOfSeat!=4)
    {
        cout<<"*Please choose a valid number (1, 2, 3 or 4)"<<endl;
    }
} while(typeOfSeat!=1&&typeOfSeat!=2&&typeOfSeat!=3&&typeOfSeat!=4&&typeOfS
eat!=-1);

do{
    cout<<endl<<"How many seats would you like?"<<endl;
    cin>>quantity;

    if(quantity==-1)
    {

```

```
    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}
if (quantity<=0)
{
    cout<<"*Please choose a valid value"<<endl;
}

}while(quantity<=0);

//choose date
CHOOSE_DATE:

cout<<endl<<"Choose date ( DD / MM / YYYY )"<<endl;
cin >> d; // read the day
if(d==-1)
{
    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}

if(cin.get()!='/')
{
    cout<<"*Please follow the format ( DD / MM / YYYY )"<<endl;
    goto CHOOSE_DATE;
}
```

```
cin >> m; // read the month
if(cin.get()!='/')
{
    cout<<"*Please follow the format ( DD / MM / YYYY )" <<endl;
    goto CHOOSE_DATE;
}

cin >> y; // read the year

//invalid for passed date (extra);
if((y==1900+ltm->tm_year)&&(m==1+ltm->tm_mon)&&(d<ltm->tm_mday))
{
    cout<<"*Please choose a valid date" <<endl;
    goto CHOOSE_DATE;
}

if((y==1900+ltm->tm_year)&&(m<1+ltm->tm_mon))
{
    cout<<"*Please choose a valid date" <<endl;
    goto CHOOSE_DATE;
}

if(y<1900+ltm->tm_year)
{
    cout<<"*Please choose a valid date" <<endl;
    goto CHOOSE_DATE;
}

//invalid for invalid date (extra)
if(d<1)//day
{
    cout<<"*Please choose a valid date" <<endl;
    goto CHOOSE_DATE;
}
```

```

else if((m>12)|| (m<1))//month 1-12
{
    cout<<"*Please choose a valid date"<<endl;
    goto CHOOSE_DATE;
}
else if ((y%4==0)&&(m==2)&&(d>29)) //February leap year
{
    cout<<"*Please choose a valid date"<<endl;
    goto CHOOSE_DATE;
}
else if ((y%4!=0)&&(m==2)&&(d>28)) //February common year
{
    cout<<"*Please choose a valid date"<<endl;
    goto CHOOSE_DATE;
}
else if
((m==1)&&(m==3)&&(m==5)&&(m==7)&&(m==8)&&(m==10)&&(m==12)&&(d>31))
//a solar month of 31 days
{
    cout<<"*Please choose a valid date"<<endl;
    goto CHOOSE_DATE;
}
else if ((m==4)&&(m==6)&&(m==9)&&(m==11)&&(d>30)) //a lunar month of 30
days
{
    cout<<"*Please choose a valid date"<<endl;
    goto CHOOSE_DATE;
}

//choose time
CHOOSE_TIME:
do{
    cout<<endl<<"Select time start (24h): (HHMM)"<<endl;

```

```

cin>>startTime;
if(startTime== -1)
{
    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}
else if((startTime<900) || (startTime>2000))
{
    cout<<"*Please choose the time within our working hour(0900-2100)"<<endl<<endl;
}
else if ((startTime%100)>59) //max 59 minutes (extra)
{
    cout<<"*Please choose a valid time"<<endl;
}
}while((startTime<900) || (startTime>2000)|| (startTime%100>59));

//invalid for passed time (extra)

if((y==1900+ltm->tm_year)&&(m==1+ltm->tm_mon)&&(d==ltm->tm_mday)&&(startTim
e/100<ltm->tm_hour))//invalid for passed hour
{
    cout<<"*Please choose a valid time"<<endl;
    goto CHOOSE_TIME;
}
else
if((y==1900+ltm->tm_year)&&(m==1+ltm->tm_mon)&&(d==ltm->tm_mday)&&(startTim
e/100==ltm->tm_hour)&&(startTime%100<=ltm->tm_min))//invalid for passed minutes
{
    cout<<"*Please choose a valid time"<<endl;
    goto CHOOSE_TIME;
}

```

```

    }

do{
    cout<<endl<<"Select time end (24h): (HHMM)"<<endl;

cin>>endTime;

    if(endTime== -1)
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }
    if(endTime<=startTime)
    {
        cout<<"*Please choose the time after your starting time"<<endl<<endl;
    }
    else if(endTime>2100)
    {
        cout<<"*Please choose the time within our working hour(0900-2100)"<<endl<<endl;
    }
    else if(endTime%100>59) //max 59 minutes (extra)
    {
        cout<<"*Please choose a valid time"<<endl;
    }
    else if((endTime-startTime)%100!=0)
    {
        cout<<"*The time slot available is measured in hour"<<endl;
    }
} while((endTime<=startTime)|| (endTime>2100)|| ((endTime%100)>59)|| (endTime-
startTime)%100!=0);

```

```
duration=((endTime-startTime)/100);

}

cout<<endl;
system("pause");
system("CLS");

//calculation for price
CALCULATE_PRICE:
{
    cout<<"Enter '-1' to quit reservation"<<endl<<endl;
    cout<<"===== "<<endl;
    cout<<"          Booking Details"<<endl;
    cout<<"===== "<<endl<<endl;

    if(typeOfSeat==1)
    {
        price=PublicSeat*quantity*duration;
        seatname="Public Seat";
    }
    else if(typeOfSeat==2)
    {
        price=SingleSeat*quantity*duration;
        seatname="Single Seat";
    }
    else if(typeOfSeat==3)
    {
        price=GroupSeat*quantity*duration;
        seatname="Group Seat";
    }
    else
    {
        price=Room*quantity*duration;
```



```

        seatname="Room";
    }

    cout<<fixed;
    cout<<" Type Of Seat : "<<seatname<<endl;
    cout<<" Quantity    : "<<quantity<<endl;
    if(startTime<=900)
        cout<<" Time      : 0"<<noshowpoint<<setprecision(0)<<startTime<<" -
"<<endTime<<endl;
    else
        cout<<" Time      : "<<noshowpoint<<setprecision(0)<<startTime<<" -
"<<endTime<<endl;

    if(duration>1)
        cout<<" Duration   : "<<duration<<" hours"<<endl;
    else
        cout<<" Duration   : "<<duration<<" hour"<<endl;

    cout<<" Date        : "<<d<<"/"<<m<<"/"<<y<<endl;
    cout<<" Price       : RM "<<setprecision(2)<<price<<endl<<endl;
}

cout<<"Options"<<endl;
cout<<"1. Make change on current page"<<endl;
cout<<"2. Proceed to next page"<<endl;
if(choose2==1)
{
    cout<<"3. Proceed to PAYMENT"<<endl;
}
do{
    cout<<endl<<"Enter the number: ";
    cin>>choose1;

    if(choose1==-1)
    {

```

```

    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}
else if(choose2==1&&choose1==3)
{
    system("cls");
    goto PAYMENT;
}
else if (choose2==1&&choose1==2)
{
    system("cls");
    goto PERSONAL_INFORMATION_OUTPUT;
}
else if (choose1==1)
{
    system("cls");
    goto SEAT;
}
else if (choose2==0&&choose1==2)
{
    cout<<endl;
    system("cls");
}
if((choose2==0&&choose1!=1&&choose1!=2&&choose1!=-
1)||((choose2==1&&choose1!=1&&choose1!=2&&choose1!=3&&choose1!=-1))
{
    cout<<"*Please choose a valid option"<<endl;
}
}while ((choose2==0&&choose1!=1&&choose1!=2&&choose1!=-
1)||((choose2==1&&choose1!=1&&choose1!=2&&choose1!=3&&choose1!=-1));

```

```
//personal information
```

```
PERSONAL_INFORMATION:
```

```
{
    cout<<"Enter '-1' to quit reservation"<<endl<<endl;
    cout<<"===== "<<endl;
    cout<<"      Personal Information"<<endl;
    cout<<"===== "<<endl;

    cout<<"Enter your name:"<<endl;
    cin.ignore();
    getline(cin,name);
    if(name=="-1")
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }

    cout<<endl<<"Enter your phone number: "<<endl;
    cin>>phonenumber;
    if(phonenumber=="-1")
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }
}
```

ask_student:

```
cout<<endl<<"Are you a student? (y/n)"<<endl;
cin.ignore();
cin>>response;
if(response=="-1")
{
    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}
else if (response=="y"||response=="Y")
{
    cout<<endl<<"Enter the name of your school: "<<endl;
    cin.ignore();
    getline(cin,schoolname);
    if(schoolname=="-1")
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }

    cout<<endl<<"Enter your student ID: "<<endl;
    cin>>studentid;
    if(studentid=="-1")
    {
        system("cls");
        cout<<"You have quit from the reservation"<<endl;
```

```

        cout<<"Thank You"<<endl;
        Sleep(5000);
        system("cls");
        goto MENU;
    }
    payable=price*0.8;
}
else if (response=="n"||response=="N")
{
    payable=price;
}
else
{
    cout<<"*Please enter a valid input"<<endl;
    goto ask_student;
}
cout<<endl;

}

system("pause");
system("CLS");

//output for personal information
PERSONAL_INFORMATION_OUTPUT:
{
    cout<<"Enter '-1' to quit reservation"<<endl<<endl;
    cout<<"===== "<<endl;
    cout<<"      Personal Information"<<endl;
    cout<<"===== "<<endl<<endl;
    cout<<" Name          : "<<name<<endl;
    cout<<" Phone number    : "<<phonenumber<<endl;
    if(response=="Y"||response=="y")
    {
        cout<<" School      : "<<schoolname<<endl;
    }
}

```

```
    cout<<" Student ID      : "<<studentid<<endl;
}
cout<<endl;
}

cout<<"Options"<<endl;
cout<<"1. View previous page"<<endl;
cout<<"2. Make change on current page"<<endl;
cout<<"3. Proceed to PAYMENT"<<endl;
do{
cout<<endl<<"Enter the number: ";
cin>>choose2;

if(choose2==-1)
{
    system("cls");
    cout<<"You have quit from the reservation"<<endl;
    cout<<"Thank You"<<endl;
    Sleep(5000);
    system("cls");
    goto PERSONAL_INFORMATION;
}
else if (choose2==1)
{
    system("cls");
    goto CALCULATE_PRICE;
}
else if (choose2==2)
{
    system("cls");
    goto PERSONAL_INFORMATION;
}
else if (choose2==3)
{
    system("cls");
```

```

        goto PAYMENT;
    }
else
{
    cout<<"*Please choose a valid option"<<endl;
}
}while (choose2!=1 &&choose2!=2&&choose2!=3&&choose2!=-1);
system("pause");
system("cls");

//payment
PAYMENT:
{
    cout<<"Enter '-1' to quit reservation"<<endl<<endl;
    cout<<"===== "<<endl;
    cout<<"          Payment"<<endl;
    cout<<"===== "<<endl<<endl;

    cout<<" Price          : RM "<<showpoint<<setprecision(2)<<price<<endl;
    if(response=="y"||response=="Y")
        cout<<" * Student Price  -20% *"<<endl;

    cout<<"----- "<<endl;
    cout<<" Total Payable   : RM "<<payable<<endl;
    cout<<"----- "<<endl;
    cout<<endl;

    do{
        cout<<"Choose a payment method"<<endl;
        cout<<"1. Cash"<<endl;
        cout<<"2. VisaCard / MasterCard"<<endl;
        cin>>payment_method;
        cout<<endl;
    }

```

```
if (payment_method==1)
{
    system("cls");
    cout<<"Reservation has been canceled"<<endl;
    Sleep(5000);
    system("cls");
    goto MENU;
}
else if(payment_method==1)
{
    cout<<"You have chosen Cash."<<endl<<endl;
    cout<<"Enter the amount you have paid "<<endl<<"RM ";
    cin>>paid;
    while(paid<payable)
    {
        cout<<"You still have RM "<<payable-paid<<" more to Pay"<<endl;
        cout<<"Enter the amount you have paid again"<<endl;
        cin>>paid2;
        paid=paid+paid2;
    }
    change=paid-payable;
    cout<<"Your payment is successful."<<endl;
    if(change>0)
    {
        cout<<"Your change is RM "<<change<<endl;
    }
}
else if (payment_method==2)
{
    cout<<"You have chosen VisaCard / MasterCard"<<endl<<endl;
    cout<<"Please insert your MasterCard or VisaCard..."<<endl<<endl;

    system("pause");
```



```

        cout<<endl<<"Enter your pin number"<<endl;
        cin>>pin;
        paid=payable;
    }
    else
    {
        cout<<"*Please choose a valid option"<<endl;
    }
}while(payment_method!=1&&payment_method!=2&&payment_method!=-1);
}
cout<<endl<<"Your payment has successful"<<endl<<endl;
system("pause");
system("CLS");

//receipt booking confirmation
RECEIPT:
{
    cout<<"====="<<endl;
    cout<<"      Booking Confirmation"<<endl;
    cout<<"====="<<endl<<endl;

    cout<<" Type Of Seat      : "<<seatname;

    cout<<" x"<<quantity<<endl;

    if(startTime<=900)
        cout<<" Time          : 0"<<noshowpoint<<setprecision(0)<<startTime<<" -
"<<endTime<<endl;
    else
        cout<<" Time          : "<<noshowpoint<<setprecision(0)<<startTime<<" -
"<<endTime<<endl;

    if(duration>1)
        cout<<" Duration      : "<<duration<<" hours"<<endl;

```

```

else
    cout<<" Duration      : "<<duration<<" hour"<<endl;

    cout<<" Date          : "<<d<<"/"<<m<<"/"<<y<<endl;;
    cout<<"-----"<<endl;
    cout<<" Price          : RM "<<showpoint<<setprecision(2)<<price<<endl;

    if(response=="y"||response=="Y")
        cout<<" * Student Price  -20% *"<<endl;

    cout<<"-----"<<endl;

    cout<<" Total payable   : RM "<<payable<<endl<<endl;
    cout<<" Paid amount      : RM "<<paid<<endl;
    cout<<" Change amount    : RM "<<change<<endl<<endl<<endl;

    cout<<" Name           : "<<name<<endl;
    cout<<" Phone No        : "<<phonenumber<<endl;
    if (response=="y"||response=="Y")
    {
        cout<<" School       : "<<schoolname<<endl;
        cout<<" Student ID     : "<<studentid<<endl<<endl<<endl;
    }

    cout<<"  Thank you for choosing Pi Library"<<endl;
    cout<<"      Please come again..."<<endl<<endl;
}

//get current date and time
DATE_TIME:
{
    if(ltm->tm_mday>=10)
        cout<<ltm->tm_mday<<"/";
    else
        cout<<"0"<<ltm->tm_mday<<"/";
}

```

```
if( 1 + ltm->tm_mon>=10)
    cout<<1+ltm->tm_mon<<"/";
else
    cout<<"0"<<1+ltm->tm_mon<<"/";
cout<<1900 + ltm->tm_year;

cout << setw(25);

if(ltm->tm_hour>=10)
    cout << ltm->tm_hour << ":";
else
    cout << "0"<<ltm->tm_hour << ":";

if(ltm->tm_min>=10)
    cout << ltm->tm_min << ":";
else
    cout <<"0"<< ltm->tm_min << ":";

if(ltm->tm_sec>=10)
    cout << ltm->tm_sec << endl;
else
    cout <<"0"<< ltm->tm_sec << endl;
}
return 0;
}
```

Conclusion

The library seat reservation will manage the information which is chosen by customers. The students can select the type of seat which is suitable to them to study at the best environment. Besides that, it will promote the discount to students to encourage them come to library study, reading and even group discussion also can carry out in a good atmosphere. We believe that with the help of system, the whole process will be more advanced and more students willing to visit our library to promote social reading. During the work cooperation with group members, we got the opportunity to learn a lot of skills of creating a programme and we are able to gain extra knowledge due to the online research to write a program.