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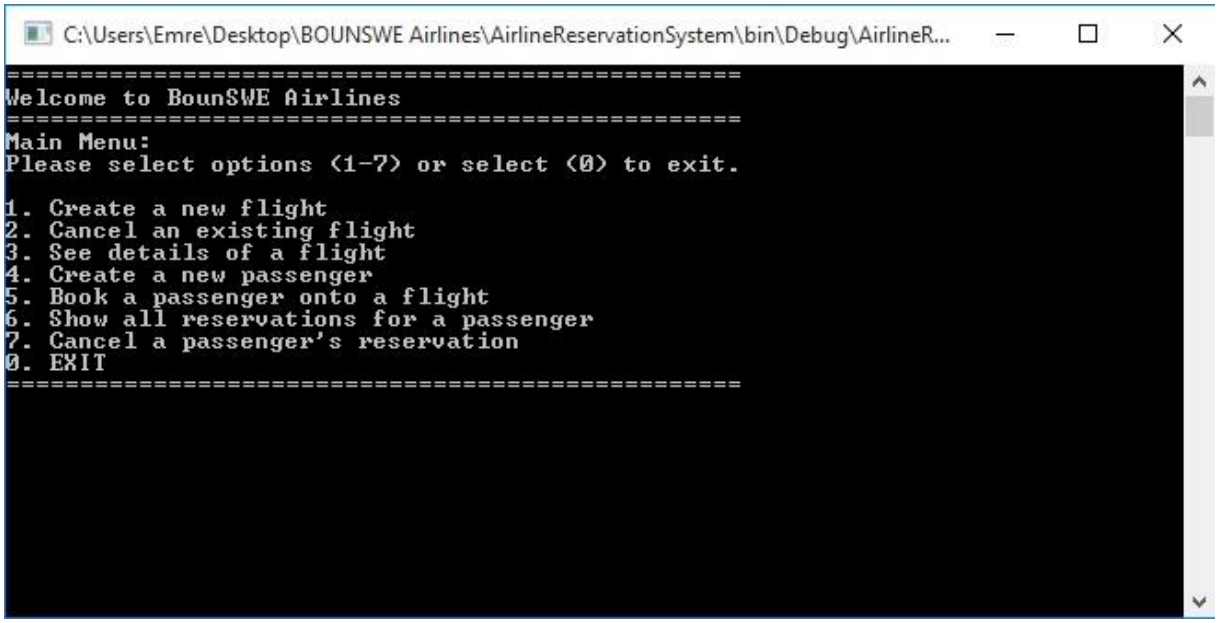
SWE501 – Assn. 2

BounSWE Airlines Reservation System

In this project I made a reservation system for a small airline called “BounSWE Airlines”. All parts of the project are created with using object oriented programming techniques.

Final Product:



About the Program:

- While **Creating a new flight** your options are;
  - Departure / Arrival city names
  - Departure / Arrival times (HH:MM)
  - Departure / Arrival dates (dd.mm.yyyy)
  - Flight number (XY123)
  - Long / short haul selecting option
  - Base price

- While **Creating a new passenger** your options are;
  - Name / Surname
  - Contact number
  - Passenger number (A123)
- You can **Cancel** an existing flight.
- You can **Book** / **Show** / **Cancel** a passanger’s reservation.

Ticket Price / Available Seats Calculation:

- ❖ On long haul flights;
  - Available seats are **300**
  - If you are flying in business class, **ticket price = base price x 2** and you can carry **3** bags with you.
  - If you are flying in economic class, **ticket price = base price** and you can carry **1** bag for free and you will pay **80TL** for each additional bags. (max. 3 bags allowed)
- ❖ On short haul flights;
  - Available seats are **120**
  - If you are flying in business class, **ticket price = base price x 2** and you can carry **3** bags with you.
  - If you are flying in economic class, **ticket price = base price** and you can carry **1** bag for free and you will pay **30TL** for each additional bags. (max. 3 bags allowed)

FILES

BounSWEAirlines.cpp

```
// Emre Bolat
// 2015719033
// ebolat@boun.edu.tr
// SWE501 - Project 2


#include "passenger.h"
#include "flight.h"
#include <iostream>
#include <list>


list<Passenger> passengers;
list<Flight> flights;
list<Passenger>::iterator i;
list<Flight>::iterator j;


bool flightExist(string flightNumber)
{
    for(j=flights.begin(); j!=flights.end(); j++)
    {
        Flight flt = *j;
        if(flightNumber.compare(flt.flightNumber)==0)
        {
            return true;
        }
        else
```

```
        {
            return false;
        }
    }
}


bool passengerExist(string passengerNumber)
{
    for(i=passengers.begin(); i!=passengers.end(); i++)
    {
        Passenger psg = *i;
        if (passengerNumber.compare(psg.passengerNumber)==0)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
}


int main() // main method!
{
     int response;
     cout << "================================================" << endl;
     cout << "Welcome to BounSWE Airlines" << endl;
     while(response != 0)
     {
         string passengerNumber;
         string flightNumber;
         cout << "================================================" << endl;
         cout << "Main Menu: " << endl;
         cout << "Please select options (1-7) or select (0) to exit." << endl;
         cout << endl;
         cout << "1. Create a new flight" << endl;
         cout << "2. Cancel an existing flight" << endl;
         cout << "3. See details of a flight" << endl;
         cout << "4. Create a new passenger" << endl;
         cout << "5. Book a passenger onto a flight" << endl;
         cout << "6. Show all reservations for a passenger" << endl;
         cout << "7. Cancel a passenger's reservation" << endl;
         cout << "0. EXIT" << endl;
         cout << "================================================" << endl;


         cin >> response;
         switch(response)
         {
```

```
            case 1:
                {
                    Flight f;
                    f.createFlight();
                    flights.push_back(f);
                    break;
                }
            case 2:
                {
                    cout << "Enter flight number (XY123) : ";
                    cin >> flightNumber;
                    if(flightExist(flightNumber))
                    {
                        j = flights.erase(j);
                        cout << "Flight number " << flightNumber << " has been
removed." << endl;
                    }
                    else
                    {
                        cout << "Flight " << flightNumber << " not found." << endl;
                    }
                    break;
                }
            case 3:
               {
                    cout << "Enter flight number (XY123) : ";
                    cin >> flightNumber;
                    if(flightExist(flightNumber))
                    {
                        Flight flt = *j;
                        flt.showFlight();
                    }
                    else
                    {
                        cout << "Flight " << flightNumber << " not found." << endl;
                    }
                    break;
               }
            case 4:
               {
                   Passenger p; // Takes the passenger information and saves it to a
list.
                   p.getInfo();
                   passengers.push_back(p);
                   break;
               }
            case 5:
               {
                   cout << "Enter passenger number (A123) : ";
                   cin >> passengerNumber;
                   cout << "Enter flight number (XY123) : ";
```

```
                    cin >> flightNumber;
                    if(passengerExist(passengerNumber)) // Checks if passenger exist.
                    {
                        if (flightExist(flightNumber)) // Checks if flight exist.
                        {
                            Passenger p = *i;
                            Flight f = *j;
                            if(f.longHaul && f.seatsLeft>0) // Checks if requirements
are met.
                            {
                                p.makeReservation(flightNumber,f.longHaul,f.basePrice);
                                f.seatsLeft--; // Available seats decreased 1.
                                *i = p; // Update lists.
                                *j = f;
                            }
                            else if(f.seatsLeft>0) // For short haul flights.
                            {
                                p.makeReservation(flightNumber,f.longHaul,f.basePrice);
                                f.seatsLeft--;
                                *i =p;
                                *j=f;
                            }
                            else
                            {
                                cout << "Flight is full!" << endl;
                            }
                        }
                        else
                        {
                           cout << "Flight " << flightNumber << " is not found." <<
endl;
                        }
                    }
                    else
                    {
                        cout << "Passenger with passenger number: " << passengerNumber
<< " is not found." << endl;
                    }
                    break;
                }
            case 6:
                {
                    cout << "Enter passenger number (A123): ";
                    cin >> passengerNumber;
                    if (passengerExist(passengerNumber))
                    {
                        Passenger p = *i;
                        p.printInfo();
                    }
                    else
                    {
```

```
                        cout << "Passenger with passenger number: " << passengerNumber
<< "not found." << endl;
                    }
                    break;
                }
            case 7:
                {
                    cout << "Enter passenger number (A123): ";
                    cin >> passengerNumber;
                    cout << "Enter flight number (XY123) : ";
                    cin >> flightNumber;
                    if(passengerExist(passengerNumber))
                    {
                        if(flightExist(flightNumber))
                        {
                            Passenger p = *i;
                            Flight f = *j;
                            p.cancelReservation(flightNumber);
                            f.seatsLeft++; // Available seats increase 1 after a
reservation cancel.
                        }
                        else
                        {
                            cout << "Flight number: " << flightNumber << " is not
found." << endl;
                        }
                    }
                    else
                    {
                        cout << "Passenger number: " << passengerNumber << " is not
found." << endl;
                    }
                    break;
                }
        }
    }
    return 0;
}
```

Date.h

```
// Emre Bolat
// 2015719033
// ebolat@boun.edu.tr
// SWE501 - Project 2


#include <iostream>
```

```
class Date
{
    int day;
    int month;
    int year;


public:
    void make(int,int,int);
    bool lessThan24(Date);
    void showDate();
};


void Date::make(int d, int m, int y)
{
       day = d;
       month = m;
       year = y;
}


void Date::showDate()
{
    cout << day << "." << month << "." << year; // Format of the date (dd.mm.yyyy)
}
```

Flight.h

```
// Emre Bolat
// 2015719033
// ebolat@boun.edu.tr
// SWE501 - Project 2


#include "date.h"
#include <iostream>
#include <string>


class Flight
{
    string departureCity;
    string arrivalCity;
    int departureTime;
    int arrivalTime;
    Date departureDate;
    Date arrivalDate;
```

```
public:
    string flightNumber;
    bool longHaul;
    int capacity;
    int seatsLeft;
    double basePrice;


public:
    void createFlight();
    void cancelFlight();
    void showFlight();
};


void Flight::createFlight()
{
    int day;
    int month;
    int year;


    cout << "Enter departure city: " << endl;
    cin >> departureCity;
    cout << "Enter arrival city: " << endl;
    cin >> arrivalCity;


    cout << "Enter departure time(HH:MM) : " << endl;
    cin >> departureTime;
    cout << "Enter arrival time(HH:MM) : " << endl;
    cin >> arrivalTime;


    cout << "Enter departure date (dd.mm.yyy)" << endl;
    cout << "Departure day (dd) : " << endl;
    cin >> day;
    cout << "Departure month (mm) : " << endl;
    cin >> month;
    cout << "Departure year (yyyy) : " << endl;
    cin >> year;
    departureDate.make(day, month, year);


    cout << "Enter arrival date (dd.mm.yyy) : " << endl;
    cout << "Arrival day (dd) : " << endl;
    cin >> day;
    cout << "Arrival month (mm) : " << endl;
    cin >> month;
    cout << "Arrival year (yyyy) : " << endl;
```

```
    cin >> year;
    arrivalDate.make(day, month, year);


    cout << "Enter flight number (XY123): " << endl;
    cin >> flightNumber;


    string result;
    cout << "Is this flight long haul? (y/n)";
    cin >> result;
    if(result.compare("y")==0)
    {
        longHaul = true;
        capacity = 300;
        seatsLeft = capacity;
    }
    else
    {
        longHaul = false;
        capacity = 120;
        seatsLeft = capacity;
    }
    cout << "Enter base price for this flight (XXX.XX): " << endl;
    cin >> basePrice;
}


void Flight::showFlight()
{
    cout << "-----------------------------------" << endl;
    cout << departureCity << " to " << arrivalCity << endl;
    cout << "-----------------------------------" << endl;
    cout << "Departing at: " << departureTime << " " <<endl;
    departureDate.showDate();
    cout << endl;
    cout << "-----------------------------------" << endl;
    cout << "Arriving at: " << arrivalTime << " " << endl;
    arrivalDate.showDate();
    cout << endl;
    cout << "-----------------------------------" << endl;
    cout << "Flight Number: " << flightNumber << endl;
    cout << "Base Price: " << basePrice << endl;
    cout << seatsLeft << "/" << capacity << " seats left." << endl;
    cout << "-----------------------------------" << endl;


}
```

Passenger.h

```
// Emre Bolat
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// SWE501 - Project 2


#include "reservation.h"
#include <iostream>
#include <string>
#include <list>


class Passenger
{
    string name;
    string contactInfo;


public:
    string passengerNumber; // Unique 4-digit number (A123)
    list<Reservation> reservations; // A list for passenger's reservations
    list<Reservation>::iterator i;


public:
    void getInfo();
    void makeReservation(string flightNumber, bool longHaul, double basePrice);
    void cancelReservation(string flightNumber); // Business class passengers can cancel
their reservations.
    void printInfo();
};


void Passenger::getInfo()
{
    cout << "Enter passenger name: " << endl;
    cin >> name;
    cout << "Enter passengers contact number: " << endl;
    cin >> contactInfo;
    cout << "Enter passenger number (A123) : " << endl;
    cin >> passengerNumber;
}


void Passenger::makeReservation(string flightNumber, bool longHaul, double basePrice)
{
    Reservation r;
    r.makeReservation(flightNumber,longHaul,basePrice);
    reservations.push_back(r);
```

```
}


void Passenger::cancelReservation(string flightNumber)
{
	for(i = reservations.begin();i!=reservations.end();i++)
	{
		Reservation r = *i;
		if(r.flightNumber.compare(flightNumber)==0)
		{
			if(r.businessclass)
		{
		    cout << "Flight Canceled, " << r.price << "TL refunded." << endl;
		}
			else
		{
		    cout<<"Flight Canceled" << endl;
		}
			i=reservations.erase(i);


			break;
		}
	}
}


void Passenger::printInfo()
{
    cout << "===================================" << endl;
    cout << "BounSWE Airlines Passenger Status" << endl;
    cout << "-----------------------------------" << endl;
    cout << "Name: " << name << endl;
    cout << "Contact: " << contactInfo << endl;
    cout << "-----------------------------------" << endl;
    cout << "Reservation Details" << endl;
    for(i = reservations.begin();i!=reservations.end();i++)
	{
		Reservation r = *i;
		r.showReservation();
	}
	cout << endl;
    cout << "-----------------------------------" << endl;
    cout << "===================================" << endl;
}
```

Reservation.h

```
// Emre Bolat
// 2015719033
// ebolat@boun.edu.tr
// SWE501 - Project 2

#include <iostream>
#include <string>
using namespace std;

class Reservation
{
public:
    string flightNumber; // The Number of Flight (AB123)
    string seatPosition; // Hallway(aisle), middle or window
    bool businessclass; // True if Business Class, false if not.
    int bags;
    double price;


public:
        void makeReservation(string flightNumber, bool longHaul, double basePrice); //
Method for reservation details.
        void showReservation(); // Method for showing reservation details.
};


void Reservation::makeReservation(string flightNumber, bool longHaul, double basePrice)
{
    if(longHaul)
    {
        string response;
        cout << "Would you like to fly in business class? (y/n)";
        cin >> response;


        if (response.compare("y")==0)
        {
            businessclass = true;
        }
        else
        {
            businessclass = false;
        }


        if (businessclass)
        {
            cout << "Would you like a hallway (aisle) or window sit? (hallway/window)";
            cin >> seatPosition;
```

```
            price = basePrice*2;
            bags = 3;
        }
        else
        {
            cout << "Would you like a hallway (aisle), middle or window sit?
(hallway/middle/window)";
            cin >> seatPosition;
            cout << "Your first bag is free of charge. Would you like to carry more bags
for 80TL/each? (0-2)";
            cin >> bags;
            price = basePrice + bags*80; // We are charging 50TL for each extra bag.
            cout << "Flight " << flightNumber << " is booked." << endl;
        }
    }


    else
        {
            cout << "Would you like a hallway (aisle), middle or window seat?
(hallway/middle/window)";
            cin >> seatPosition;
            cout << "Would you like to carry some bags for 30TL/each? (x)";
            cin >> bags;
            price = basePrice + bags*30;
            cout << "Flight " << flightNumber << " is booked."<<endl;
            businessclass = false;
        }
}

void Reservation::showReservation()
{
    cout << "===================================" << endl;
    cout << "BounSWE Airlines Reservation Status" << endl;
    cout << "-----------------------------------" << endl;
    cout << "Flight Number: " << flightNumber << endl;
    cout << "Seat Position: " << seatPosition << endl;
    if(businessclass)
    {
        cout << "Business Class: Yes";
    }
    else
    {
        cout << "Business Class: No";
    }
    cout << endl;
    cout << "Bags: " << bags << endl;
    cout << "Price: " << price << "TL" << endl;
    cout << "===================================" << endl;
}
```