

Lecture

IS 502
Information Systems Project

Document Name

ONLINE BUS RESERVATION SYSTEM
Software Requirements Specification

Version

1.1

Delivery Date

22.03.2002

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CHANGE HISTORY

Date Document	Version	File Name	Format	Status
18.03.2002	1.0	OBRS-SRS-V1.0	MS Word 2000 Document	Created
22.03.2002	1.1	OBRS-SRS-V1.1	MS Word 2000 Document	Revised

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1. Introduction

This document is organized in accordance with the initial plan document and IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications.

1.1 PURPOSE

The purpose of this Software Requirements Specification is to identify all applicable requirements within the scope of OBRS Initial Plan. This SRS explicitly cites all functions, interfaces, and performance requirements. This document is the basis upon which all design, coding, and testing will be based. It outlines any constraints and design issues that would affect the product's performance and reliability.

The intended audience is the instructor of the IS-502 course, the quality team and the customer.

1.2 SCOPE

OBRS is a web access reservation system that selling or reservation processes are realized for traveler. Also visitor can see the route information at this system. For this reason, the overall system will consist of web interfaces. And these interfaces are used to support the following functions:

- Make real-time operations on reservations.
- Assure data consistency.
- Access the information of the reservation system from anywhere and at anytime.
- Travelers and Visitors can see the date, time, cost, and routing information of different bus firms.
- Reserve the seats via the bus layout where they want to travel.
- Manage reservation activities from anytime and at anyplace by using only a web browser.
- Bus Firm Administrator informs up to date information to the customers about bus schedule, cost, and target via using OBRS web page.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

A Record:	Hostname Record
AC	Alternate Course
Bus Type:	Total number of the seats, model and door place should be different for any route. These informations constitute bus type.
Customer:	Murat YAKICI, Çiğdem GENCEL
DNS:	Domain Name System
EX:	Exception
ER:	Entity Relationship
HTML:	Hypertext Markup Language
HTTP:	Hyper Text Transform Protocol
IS-502 Course:	Information Systems Project
Instructor:	Onur DEMIRORS
JSP:	Java Server Page
OBRs:	Online Bus Reservation System
OBRs user:	Any OBRs user, who could be a traveler, a bus firm administrator or a bus firm user
OS:	Operating System
Quality Team:	Duygu Albayrak, Esin Kıymaç , Erkin Ulusoy
RDBMS:	Relational Database Management System
SQL:	Structured Query Language
SRS:	Software Requirements Specification
TCP / IP:	Transmission Control Protocol / Internet Protocol
UC	Use Case
WAP:	Web Application Project
Web Master:	Shows off with snazzy bells and whistles but when annual reviews roll around, he/she often feels invisible to the folks in human resource who can't decide where to categorize the new media specialist. For OBRs, System Administrator is included in web master.
XML:	Extensible Markup Language

1.4 REFERENCES

References, which used for this SRS document's preparation, are mentioned detail in this section.

- [1] Configuring and Using Apache Tomcat 4, The Apache Software Foundation.
- [2] Integrating Tomcat with Apache Web Server, Tomcat Documentation, The Apache Software Foundation
- [3] Deploying Web Applications, JBuilder 6 Online Help.
- [4] OBRS Initial Plan V1.1 prepared by Pokemon Team.
- [5] Oracle9i Database Installation Guide, Oracle 9i Online Help.
- [6] JSP coding standarts <http://www.wkwyw.com/Process/Software/standards/jsp.htm>

1.5 OVERVIEW

The rest of OBRS SRS includes overall description of software requirements and some other specific requirements related to the design of the described requirements.

Section 1 provides main purpose of this SRS document, gives brief explanation of the OBRS product objectives.

Section 2 provides a general description related to OBRS Project. It provides product perspectives, product functions, user characteristics, general constraints, and assumptions and dependencies of the system.

Section 3 provides specific requirements of OBRS Project that the group members need to create a design to satisfy, and to test the requirements specified in Section 2. Specific requirements include external interfaces, functions, performance requirements, logical database requirements and design constraints.

Finally, the document contains appendices. Appendix A contains the Use-Case Diagram for section 2.1.7. Appendix B provides user interfaces, details of which are explained in Section 3.1, and Appendix C includes Entity Relationship Diagram.

2. Overall Description

This section of this SRS describes the general factors that affect the OBRS Software and its requirements. It does not state specific requirements, but provides a background for them.

2.1 PRODUCT PERSPECTIVE

2.1.1 System Interfaces

OBRS will get bus firm information from Ministry of Communications as XML document. Therefore, there is a requirement to have an interface for processing this document to acquire the required data into OBRS database. This interface will run once when OBRS first started to operate, and will be used subsequently if there exists new firm information.

2.1.2 User Interfaces

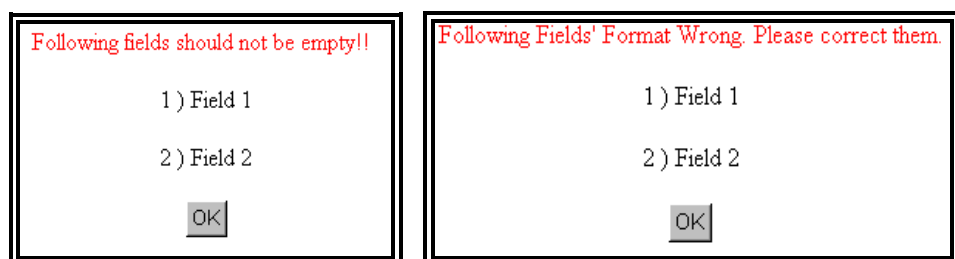
There will be a standard screen format throughout the OBRS user interfaces. There will be areas controlled by the OBRS software that listed below;

Check Boxes: To activate explained items in the related screen, select this box's blank part using mouse click on.

Radio Buttons: Some alternatives are given in related screen, but user has to be choice one. If no any alternate is accepted from OBRS, radio buttons are used and allowed user to select one choice to activate the other page. All definitions are given near the radio button items and user easily can understand which one is for what.

Text Boxes: This is user input box; that entering information is changed depends of near description textbox.

Warning Message Box: When a mistake (any wrong password input or unrelated format of the field or forgotten completed any field) occurs about input part of the screens, prevent the wrong information input by the OBRS user.



When user press the “OK” button; this will process that to turn the previous page where user enters information for registration or reservation.

In each screen, there will be hyperlinks at the bottom to call related functional parts or for the information screens that the user may require; and there will be descriptive title at the top.

All screens background is prepared with OBRS logo. (file name is Sysmbol.gif and it will give the customer when product delivery).

To optimize the usability of the interfaces, additional features will be added. Each button will have descriptive hints. At the search screens wildcards can be used in the text boxes. There will be success, failure and warning messages after the selected operations.

All the user interfaces are designed for Internet Explorer 5.0 and with 1024x768 resolution, of which they will be best viewed. Users may work on multiple browser windows at a time.

The users of the OBRS are categorized into 5. These are:

- Visitor
- Traveler
- Bus Firm User
- Bus Firm Administrator
- System Administrator

The user interfaces are characterized according to the user roles, e.g. visitors cannot view administrative interfaces. Details of the graphical user interfaces in the OBRS can be seen at Section 3.1.

2.1.3 Hardware Interfaces

OBRS has no hardware interfaces.

2.1.4 Software Interfaces

The OBRS requires the following software interfaces for execution.

Software Interface	Name	Mnemonic	Version#	Source
Operating System	Microsoft Windows	Windows	NT 4.0, Windows 2000	Microsoft
Service Pack	NT 4.0 Service Pack	Service Pack	6b	Microsoft
	Windows 2000 Service Pack	Service Pack	2	Microsoft
RDBMS	Oracle 9i Enterprise	Oracle	9.0.1	Oracle
Web Server	Apache	Apache	1.3.1	Apache
Web Container	Apache Tomcat	Tomcat	4	Apache
Runtime Platform	Java 2 Runtime Environment	JRE2	1.3	Sun

- *Operating System:* The OBRS will run on Microsoft Windows OS, including NT 4.0, or Windows 2000.
- *Service Pack:* The Microsoft Windows OS requires service pack to fix the detected bugs for running properly. For Windows NT 4.0 the pack is 6b; and for Windows 2000, the service pack is 2 will be used.
- *RDBMS:* Oracle 9i will be used as the RDBMS of OBRS. And SQL will be used as query language.
- *Web Server:* Since OBRS will be a web-based application; Apache 1.3.1 will be used as a web server.
- *Web Container:* The OBRS will be implemented based on Servlets and JSPs. Tomcat 4 will be used as Servlet Container to execute the OBRS.
- *Runtime Platform:* The OBRS will run on Java 2 Runtime Environment. JRE2 (Version 1.3.1) will be installed on the OS.

At the client side, a web browser, Internet Explorer 5.0 or later will be sufficient to access the OBRS.

2.1.5 Communication Interfaces

Since the OBRS is a web-based application, both the client side machine and the OBRS's deployed web server must connect to the Internet. And TCP/IP protocol must be installed to communicate through HTTP messages between client and OBRS deployed web server with default port 80. To enable clients for carrying out hostname resolution, a DNS A Record will be added to the appropriate DNS Server.

2.1.6 Memory Constraints

Satisfying the memory requirements of OBRS software interfaces' [4] at least 256 MB RAM with 512MB hard disk space for virtual memory (Pagefile.sys) will be required to work properly at the server side. At the client side, the memory requirement is at least 64 MB RAM to run Internet Explorer 5.0.

2.1.7 Operations

There is no backup and recovery interface in the OBRS, but by using OS Utilities, Oracle 9i database utilities and SQL, a full system backup will be done once a week; and database instance export will be done at midnights. Also Oracle 9i should be running on recovery mode.

Another periodic operation will be the Bus Firm Data taken from Ministry of Communication. Although it is assumed that the data will be taken only once, the chance of data change will be considered, and OBRS will have interface that can be used periodically to update OBRS database.

The user required operations would be explained in 3.1 and overall perspective will be seen at Appendix A, Use Case Diagram. And responsibilities of the users are listed below as a main title. Detailed lists are given in section 2.2;

Bus Firm Administrator:

- Route Operations.
- Add New User Registration.
- Update User Registration Information.
- Bus Firm Registration Operations

Bus Firm User:

- Reservation Operations
- Querying Operations
- View Help
- Selling Operation
- Update User Registration Information.

System Administrator:

- Update User Registration Information.
- Import Bus Firm Data.
- Manage User.

Traveler:

- Reservation Operations.
- Buy Ticket
- Querying Operations
- View Help

Visitor:

- Querying Operations
- View Help
- Add New User Registration.

2.1.8 Site Adaptation Requirements

The OBRS will run at any site where its software interfaces are installed and configured properly.

The adaptation requires the following issues:

- *Creation of the database instance:* While installing the Oracle 9i RDBMS based on [5], the database instance name will be *OBRS*. After the installation completed, the required schema, tables, stored procedures, triggers, etc. will be created via SQL scripts, contained in a file named *CreateInstance.sql*.
- *Configuration of the web container, Apache Tomcat 4:* The Apache Tomcat 4 installation and configuration process will be based on [1].
- *Configuration of the Apache Web Server 1.3.1:* The Apache web server 1.3.1 installation and integration to Apache Tomcat web container will be based on [2].
- *Deployment of the Servlets and JSPs (Deploying WAP):* The generated WAP will be deployed based on [3].
- *Importing the database backups from the old site:* If the existing data at an existing site will be used at the new site, then the standard RDBMS export and import functions will provide this data.

2.2 PRODUCT FUNCTIONS

The general functions that the OBRS will perform, can be categorized as follows:

- Import Bus Firm Data: Imports bus firm data that is taken from Ministry of Communication
- Bus Firm Registration Operations
 - Add New Bus Firm Registration: Registers new bus firm.
 - Update Registration Information: Updates existing bus firm registration.
- Route Operations
 - Add Route: Adds a new route to the bus firm.
 - Delete Route: Deletes a route from the bus firm.
 - Update Route: Updates an existing route.
 - View Routes: Views all the routes of a bus firm.
- Reservation Operations
 - Add Reservation: Makes a reservation on a bus.
 - Delete Reservation: Deletes an existing reservation
 - Update Reservation: Updates the information of a reservation.
 - View Reservation Detail: Looks at the details of the reservation.
 - View Reservation Summary: Gives the summary, such as total number of reservations, of the reservations.
- Querying Operations
 - Select Query Mode: Selects and inputs the required choices of parameters for the routes of the bus firms.
 - View Query Result: Views the query result.
- Buy Ticket
 - Buy Ticket: Buys the tickets that are reserved before.
 - Update Ticket and Invoice Information: Updates the ticket and invoice information of the traveler.
- Sell Ticket
 - Add Ticket and Invoice Information: Inputs ticket and Invoice information.
 - Update Ticket and Invoice Information: Updates ticket and Invoice information.
 - Delete Ticket: Deletes a ticket.

- Print Ticket and Invoice: Prints the selected ticket and invoice.
- Manage User: Insert, deletes, updates user of Bus Firm User and Bus Firm Administrator.
- Add New User Registration: Registers new user into the OBRS.
- Update User Registration Information: Updates an existing user.
- View Help: Displays descriptive information about the OBRS.

2.3 USER CHARACTERISTICS

The user types that would use the Online Bus Reservation System (OBRS) are as follows:

- **Visitor:** Visitors are the people who visit our portal, and they don't need to be registered (surely, they can't use some parts of the OBRS like making online reservation). The OBRS is based on web applications requiring no complex user operations for the visitors. Basic computer and Internet skills are expected to be enough to be able to use the OBRS. These skills include using Internet Explorer and visiting web pages.
- **Traveler:** Travelers are the people who are registered to the OBRS database. They can use all parts of the OBRS efficiently. All parts of the OBRS are based on web applications requiring no complex user operations for the travelers other than making a reservation. Basic computer and Internet skills are expected to be able to use the OBRS. These skills include using Internet Explorer, visiting and using the web pages.
- **Bus Firm Administrator:** An authorized person, who is assigned by the registered bus firm to update the information of the current bus firm. This includes the general information about the bus firm (address, telephone...), the information about the busses (bus capacity, have an upper second floor...), the arrival and departure time of the voyages, the route information, and also cancellation of an existing route, adding a new trip is the responsibility of the administrator. Also, the bus firm administrator is responsible for the defining and management of the bus firm users. Basic computer and Internet skills are expected to be able to use the OBRS. These skills include using Internet Explorer, visiting and using the web pages.
- **Bus Firm User:** An authorized person, who is assigned by the bus firm administrator to update the reservation and ticket selling operations that are made not online, but from bus firm itself by traditional methods (telephone, face-by-face...). Basic computer and Internet skills are expected to be able to use the OBRS. These skills include using Internet Explorer, visiting and using the web pages. This position also requires knowledge about bus reservation process; the bus firm user must know how to handle the reservation and ticket selling for a bus reservation using a bus layout.
- **System Administrators:** These are the people who are responsible for the deploying, updating, and also the maintenance of the OBRS. Also, the system administrators are responsible for defining and management of the bus firm administrators and bus firm users.

The system administrator imports the data that is taken from the Ministry of Communication. The desired property from the person in this position is a system administrative background on the Oracle database. Having an Oracle System Engineer certificate would be ideal for this position.

2.4 CONSTRAINTS

In the domain of the Online Bus Reservation System, there are other items that affect, even limit the options of the developer. There is an interaction of the system with them; the affect of these items, and limitations they bring to the developer's options are explained as follows:

- **Regulatory policies:** The OBRS shall be designed according to the regulations of the relevant bus firm.
- **Hardware limitations:** There are no hardware limitations related to OBRS.
- **Interfaces to other applications:** There shall be no interfaces except stated in System Interfaces (2.1.1) with other applications.
- **Parallel operation:** There are no parallel operations in the context of OBRS.
- **Audit functions:** There shall be no audit functions related to the OBRS.
- **Control functions:** There shall be no control functions related to the OBRS.
- **Higher-order language requirements:** Java is chosen as the development language, JSP and HTML will be used for developing the web pages. For manipulating database operations, SQL will be used.
- **Signal handshake protocols:** Not applicable for the OBRS.
- **Reliability requirements:** There shall be no reliability requirements except stated in Reliability (3.6.1) with other applications.
- **Criticality of the application:** The critical issue of the OBRS is, it must be available 7 days / 24 hours.
- **Safety and security considerations:** The security and safety limitations related to OBRS are stated in Security (3.6.3).

2.5 ASSUMPTIONS AND DEPENDENCIES

- The users must have computers and must be connected to the Internet to use the system.
- The application program will run on Windows 95/98/2000/NT/ME/XP Platforms that have Internet Explorer 5 or later with 1024x768 resolution.
- All users must have the Java enabled web browsers.
- TCP/IP protocol must be installed to communicate through HTTP messages between client and OBRS deployed web server with default port 80.
- The users of the OBRS must have an understanding of the online bus reservation processes.
- All the users are responsible for the truth of their information
- Ministry of Communications will supply bus firm information as XML document.
- An authorized person should make update of the firm database, the authorization process is the responsibility of the bus firm.
- The authorized person should do the update of the firm database so that the database always has the up-to-date information.
- Credit card verification will not be made during the transaction process.
- It is the responsibility of the bus firm to make the updates of the database for the reservations made and tickets sold by their traditional system (telephone, face-to-face...) so that the database must always has the up-to-date information, to prevent the duplications.
- Bus firm administrator and the system administrators are responsible for defining and management of the bus firm users. So, a management interface is needed for this process and it will be modeled during the “design phase”.
- System administrator is responsible for importing XML document taken from the Ministry of Communication. The interface for this requirement will be modeled during the “design phase”.
- ER Diagram will be reviewed in design phase and if any correction is needed, updated ER Diagram will take part in this document next version.

2.6 APPORTIONING OF REQUIREMENTS

The requirements that may be delayed until future versions of the Online Reservation Bus System (OBRS) are as follows:

- The security issue is not handled in the first version of the OBRS. The credit card information is taken from the traveler, but no credit card verification will be done. In the future versions of the OBRS trust intermediaries (i.e. VeriSign) will be used for the purpose of validating the credit card information.
- Since the credit card information taken from the customer cannot be used (no security issue), money cannot be drawn from the banks, online. In the future versions of the OBRS, banks will be used and the money transactions will be handled.
- Backup and recovery of the database will not be done in the first version of the OBRS. In the future versions of the OBRS this issues are handled by the appropriate database system.

When the OBRS developed in the future handle these requirements, this subsection of the corresponding SRS document will be updated.

3. Specific Requirements

This section of this SRS describes all specific software requirements in detail. Requirements include the descriptions of all inputs into and outputs from the software, in addition to the descriptions of functions in response to the inputs.

3.1 EXTERNAL INTERFACES

Interfaces external to the OBRS are understood as “User Interfaces”. The following sections provide details of the user interfaces: (The graphical representations of them are given in Appendix B.)

3.1.1 Main Page

3.1.1.1. Name: Online Bus Reservation System Main Page (Appendix B: Figure 1)

3.1.1.2. Purpose: It is used to make the login process; the visitor can login from this page, and go to the related page (bus firm admin main page or bus firm user main page or traveler main page) according to the login user and password. If the visitor doesn't have any user name and password, then he/she would be registered to our system by following the new user or register link. Also, this page is used to set the environment that visitors can call the related functions.

3.1.1.3. Inputs/Types:

- Login Name = string
- Password = string

3.1.1.4. Outputs/Types: The related page according to the identity of the user is displayed. If the new user or register links are clicked, then the registration page for the new user is displayed. *“Login is failed. Try again...” message will be displayed when it is failed. Possible reasons of the failure can be: User name or password is wrong.*

3.1.1.5. Screen Formats: Visitors can put in their login name and password in the corresponding fields, and by clicking to the “Login” button; they can go to the related pages for their identity. “Login” is a textbox and enter here the name of the any user (traveler, bus firm or bus firm administrator). “Password” is a textbox too, but entering numbers or characters are shown only “*****” format in this field.

3.1.1.6. Execution Time: This interface is the “Home Page” of our system.

3.1.1.7. Relationship to other interfaces: From this interface, login process can be done and the corresponding page (bus firm admin main page or bus firm user main page or traveler main page) can be reached according to the given user name and password. Bus firm information page, search for travel page and register page can be reached and also, a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.2 Main Registration Page

3.1.2.1. Name: Main Registration Page (Appendix B: Figure 2)

3.1.2.2. Purpose: Visitor come to this page and chooses the identity (bus firm admin, bus firm user or traveler) to proceed with the registration process.

3.1.2.3. Inputs/Types: The desired identity to continue with the registration process is chosen at this page. The possible choices are “Bus Firm Admin”, “Bus Firm User” and “Traveler”.

3.1.2.4. Outputs/Types: The related registration page according to the identity of the user is displayed.

3.1.2.5. Screen Formats: Visitors make the choice of their identity by selecting one of the three radio buttons and then by clicking to the “Next ->” button; they can go to the related registration pages for their identity.

3.1.2.6. Execution Time: This interface can be reached by following the “New User” or “Register” links at the main page.

3.1.2.7. Relationship to other interfaces: From this interface, the identity to continue the registration is chosen and the corresponding registration page can be reached. Bus firm information page, search for travel page and register page can be reached and also, a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.3 Bus Firm Administrator - Registration

3.1.3.1. Name: Administrator Registration Page (Appendix B: Figure 3)

3.1.3.2. Purpose: It is used to register the Bus Firm Administrator.

3.1.3.3. Inputs/Types:

- Login Name = String
- Password = String
- Confirm password = String
- Firm id = String
- Firm Password = String
- Name = String
- Surname = String
- E-mail Address = String
- Firm Name = String

- Firm E-mail address = String
- Firm Address = String
- Firm City = String
- Firm Telephone number = String
- Firm Fax number = String
- Firm Web page = String
- Extra information = String

3.1.3.4. Outputs/Types: “Registered successfully” message will be displayed when there is no problem in the registration process. “Registration is failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: Login name is chosen before, firm id or password is wrong, or any of the desired information is not given.

3.1.3.5. Screen Formats: In this page, administrator registration can be finished by clicking to the “Register” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the main page by clicking to the “Back” button. Bus firm administrator completes fields with using keyboard. Only “Firm City” field is pull down menu, others are in text box format.

3.1.3.6. Execution Time: The interface is seen when the visitor chooses the “Bus Firm Admin” for the registration process from the “Main Registration” page, and then clicks the link “Next ->” at this page.

3.1.3.7. Relationship to other interfaces: From this interface, bus firm information, add new route information, update existing route information, search for travel, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.4 Bus Firm Administrator – Main Page

3.1.4.1. Name: Administrator Main Page (Appendix B: Figure 4)

3.1.4.2. Purpose: It is used to choose one of the three possible functions for the bus firm administrator.

3.1.4.3. Inputs/Types: Selecting one of the radio buttons is the only input.

3.1.4.4 Outputs/Types: Selected function’s page (“Add New Route Information” page or “Update Existing Route Information” page or “Change Bus Firm Information” page) is displayed.

3.1.4.5. Screen Formats: There are radio buttons to select one of the three functions (“Add New Route Information”, “Update Existing Route Information” and “Change Bus Firm Information”). There are also 2 buttons for the following functions:

- *Next* ->: The corresponding function is chosen and the related page of the corresponding function is displayed after pressing this button.
- *Back*: The main page is displayed and the function choosing operation is cancelled.

3.1.4.6. Execution Time: The interface is seen when visitor is registered from main page as the identity (login name and password) corresponding to the Bus Firm Admin; this is the main page of the Bus Firm Administrator.

3.1.4.7. Relationship to other interfaces: From this interface, one of the three functions of bus firm administrator can be called. Also from this interface, bus firm information, add new route information, update existing route information, search for travel, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page..

3.1.5 Bus Firm Administrator – Add New Route Information

3.1.5.1. Name: Administrator Add New Route Information Page (Appendix B: Figure 5)

3.1.5.2. Purpose: Administrator of the corresponding bus firm can add new route information for the bus firm.

3.1.5.3. Inputs/Types:

- Bus Firm = String
- From = String
- To = String
- Date (day / month / year) = Integer / String / Integer
- Time (hour / min) = Integer / Integer
- Bus Type = String
- Price = String

3.1.5.4. Outputs/Types: “Information added successfully” message will be displayed when there is no problem in the process. “Information can not be added” message will be displayed when clicked “Submit” button and procedure is failed. Possible reasons of the failure can be: There exists a route having the same information as the added route information. In this case not adding but updating information function must be done.

3.1.5.5. Screen Formats: There are 7 fields that show the route information.

- Bus Firm: The bus firm of the administrator (automatically seen).
- From: Starting point (Pull down menu).
- To: Finish point (Pull down menu).
- Date: Take off date for the travel (Pull down menu separated from day / month / year selection for three informations one by one)
- Time: Take off time for the travel (Pull down menu for minute and hour)
- Bus Type: Bus type corresponding to this travel (Pull down menu)
- Price: Price of the travel (Text box for entering price value).

Clicking to the “Reset” button reset all the fields, and process can be cancelled and turned back to the administrator main page by clicking to the “Back” button. “Submit” button is used to save new route information.

3.1.5.6. Execution Time: The interface is seen when bus firm administrator chooses the “add new route information” from the administrator main page and then clicks the “Next ->” button.

3.1.5.7. Relationship to other interfaces: From this interface, bus firm information, add new route information, update existing route information, search for travel, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page..

3.1.6 Bus Firm Administrator – Update Existing Route Information

3.1.6.1. Name: Administrator Update Existing Route Information Page (Appendix B: Figure 6)

3.1.6.2. Purpose: Administrator of the corresponding firm can update existing route information for the bus firm.

3.1.6.3. Inputs/Types:

- Bus Firm = String
- From = String
- To = String
- Update Info Only for This Date (day / month / year) = Integer / String / Integer
- Update All Info After Date (day / month / year) = Integer / String / Integer
- Time Old (hour / min) = Integer / Integer
- Time New (hour / min) = Integer / Integer
- Bus Type = String

- Price Old = String
- Price New = String

3.1.6.4. Outputs/Types: “Information updated successfully” message will be displayed when process is finished. “Information can not be updated” message will be displayed when clicked “Submit” button and procedure is failed.

3.1.6.5. Screen Formats: There are 7 fields that show the route information.

- Bus Firm: The bus firm of the administrator.
- From: Starting point.
- To: Finish point.
- Update Only for This Date: Updates all the information only for the corresponding travel date
- Update All Info After Date: Updates all the information after the corresponding travel date, the travels that will be done after this date to this route will be updated.
- Time Old: Old take off time for the travel
- Time New: New take off time for the travel
- Bus Type: New bus type corresponding to this travel
- Price Old: Old price of the travel.
- Price New: New price of the travel.

Clicking to the “Reset” button reset all the fields, and process can be cancelled and turned back to the administrator main page by clicking to the “Back” button. “Submit” button is used to update entering route information

3.1.6.6. Execution Time: The interface is seen when bus firm administrator chooses the “update existing route information” from the administrator main page and then clicks the “Next->” button.

3.1.6.7. Relationship to other interfaces: From this interface, bus firm information, add new route information, update existing route information, search for travel, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.7 Bus Firm Administrator - Change Firm Information

3.1.7.1. Name: Change Firm Information Page (Appendix B: Figure 7)

3.1.7.2. Purpose: It is used to change the bus firm administrator registration information.

3.1.7.3. Inputs/Types:

- Login Name = String
- Name = String
- Surname = String
- E-mail address = String
- Firm Name = String
- Firm e-mail Address = String
- Firm Address = String
- Firm City = String
- Firm Telephone Number = String
- Firm Fax Number = String
- Firm Web Page = String
- Extra Information = String

If password change is wanted, the checkbox must be checked and then the following inputs can be edited:

- Old Password = String
- New Password = String
- Confirm Password = String

3.1.7.4. Outputs/Types: “Updated successfully” message will be displayed when there is no problem in the registration process. “Update failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: New password and confirm new password doesn’t match or any of the desired information is not given.

3.1.7.5. Screen Formats: In this page, bus firm administrator information can be changed by clicking to the “Update” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the bus firm administrator related page from where bus firm administrator comes, by clicking to the “Back” button.

3.1.7.6. Execution Time: The interface is seen when the bus firm administrator chooses the “Change Firm Information” link from any of the bus firm administrator related pages.

3.1.7.7. Relationship to other interfaces: From this interface, bus firm information, add new route information, update existing route information, search for travel, unregister,

logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.8 Traveler - Main Page

3.1.8.1. Name: Traveler Main Page (Appendix B: Figure 8)

3.1.8.2. Purpose: It is used to set the environment that traveler can call the related functions.

3.1.8.3. Inputs/Types: NA

3.1.8.4. Outputs/Types: Amount of reservations and purchased tickets that are made will be displayed.

3.1.8.5. Screen Formats: Travelers can call their related functions by the links at the bottom of the page. These links are as follows:

- *Purchased Tickets*
- *Reservations*
- *Search for Travel*
- *Change Traveler Information*
- *Unregister*
- *Logout*
- *Main Page*

3.1.8.6. Execution Time: The interface is seen when traveler login to the system.

3.1.8.7. Relationship to other interfaces: From this interface, purchased tickets, reservations, search for travel, change traveler information, unregister, logout and main page can be reached.

3.1.9 Traveler - Registration

3.1.9.1. Name: Traveler Registration Page (Appendix B: Figure 9)

3.1.9.2. Purpose: It is used to register the traveler.

3.1.9.3. Inputs/Types:

- Login Name = String
- Password = String
- Confirm Password = String
- Name = String
- Surname = String

- E-mail address = String
- Gender = String
- Age = Integer
- Date of Birth (day / month / year) = Integer / String / Integer
- Marital Status = String
- Occupation = String
- Street Address = String
- City = String
- Phone Number = String
- Fax Number = String
- Do you have any disabilities = String
- If yes please specify = String

3.1.9.4. Outputs/Types: “Registered successfully” message will be displayed when there is no problem in the registration process. “Registration is failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: Login name is chosen before, password and confirm password doesn’t match, or any of the desired information is not given.

3.1.9.5. Screen Formats: In this page, traveler registration can be finished by clicking to the “Register” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the “Online Bus Reservation System Main Page” by clicking to the “Back” button.

3.1.9.6. Execution Time: The interface is seen when the visitor chooses the “Traveler” for the registration process from the “Main Registration” page, and then clicks the link “Next - >” at this page.

3.1.9.7. Relationship to other interfaces: From this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.10 Traveler – Change Information

3.1.10.1 Name: Change Traveler Information Page (Appendix B: Figure 10)

3.1.10.2. Purpose: It is used to change the traveler registration information.

3.1.10.3. Inputs/Types:

- Login Name = String
- Password = String
- Confirm Password = String
- Name = String
- Surname = String
- E-mail address = String
- Gender = String
- Age = Integer
- Date of Birth (day / month / year) = Integer / String / Integer
- Marital Status = String
- Occupation = String
- Street Address = String
- City = String
- Phone Number = String
- Fax Number = String
- Do you have any disabilities = String
- If yes please specify = String

If password change is wanted, the checkbox must be checked and then the following inputs can be edited:

- Old Password
- New Password
- Confirm Password

3.1.10.4. Outputs/Types: “Updated successfully” message will be displayed when there is no problem in the registration process. “Update failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: New password and confirm new password doesn’t match or any of the desired information is not given.

3.1.10.5. Screen Formats: In this page, traveler information can be changed by clicking to the “Update” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the traveler related page from where traveler comes, by clicking to the “Back” button.

3.1.10.6. Execution Time: The interface is seen when the traveler chooses the “Change User Information” link from any of the traveler related pages.

3.1.10.7. Relationship to other interfaces: From this interface, bus firm information, search for travel, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.11 Traveler - Search for Travel

3.1.11.1. Name: Search for Travel Page (Appendix B: Figure 11)

3.1.11.2. Purpose: It is used to search the travels offered by the bus firms.

3.1.11.3. Inputs/Types

- From = String
- To = String
- Date (day / month / year) = Integer / String / Integer
- Time (hour / min) = Integer / Integer
- Bus Firm = String

3.1.11.4. Outputs/Types: “Travel Search Results” page will be displayed after pressing the “Find” button.

3.1.11.5. Screen Formats: In this page, there are 3 buttons: “Find” button find routes according to the form, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the traveler related page from where traveler comes, by clicking to the “Back” button. The corresponding fields are filled to make the search:

- From: Starting point.
- To: Finish point.
- Date: Take off date for the travel
- Time: Take off time for the travel
- Bus Firm: One of the bus firms that are registered to our system.

3.1.11.6. Execution Time: The interface is seen when traveler clicks the “Search for Travel” link in one of the traveler related page.

3.1.11.7. Relationship to other interfaces: “Travel search results” page will be seen after clicking the “Find” button. From this interface, purchased tickets, reservation, search for travel, change user information, unregister, logout and main page can be reached,

and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page

3.1.12 Traveler – Travel Search Results

3.1.12.1. Name: Search for Travel Results Page (Appendix B: Figure 12)

3.1.12.2. Purpose: It shows the resulting travels offered by the bus firms according to the search specifications (Refer to 3.1.11).

3.1.12.3. Inputs/Types: NA.

3.1.12.4. Outputs/Types: “Search for Travel Results” are displayed in a tabular format, so “Travel Date” and “Time” have the “String” format, as follows:

- Route id = String
- From = String
- To = String
- Available Seats = Integer
- Travel Date = String
- Time = String

3.1.12.5. Screen Formats: In this page, by clicking to the “Route id” link, traveler will be reached to the “Reservation from Bus Layout” page.

- Route id: Bus firm’s unique identity for their routes.
- From: Starting point.
- To: Finish point.
- Available seats: Free seats number in the bus.
- Travel Date: Take off date for the travel
- Time: Take off time fro the travel

3.1.12.6. Execution Time: The interface is seen when traveler clicks the “Find” button in the “Search for Travel” page.

3.1.12.7. Relationship to other interfaces: If “Route id” link is clicked, “Reservation from Bus Layout” page is displayed. Also from this interface, purchased tickets, reservations, search for travel, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.13 Traveler – Reservation from Bus Layout

3.1.13.1. Name: Reservation from Bus Layout Page (Appendix B: Figure 13)

3.1.13.2. Purpose: It shows details of the travels that are chosen from “Travel Search Results” page (Refer to 3.1.12). The traveler shall see reserved seats details and choose empty seats from the bus layout to reserve or buy.

3.1.13.3. Inputs/Types:

- Name = String
- Surname = String
- Contact Phone = String
- Price (TL) = String

3.1.13.4. Outputs/Types: “Price” will be updated as seats are chosen, and show the corresponding price for selected seats. Also, the following outputs will be seen when the related buttons are clicked:

- *Reserve:* “Successfully Reserved” messages and the reservation id will be displayed if it is successful. “Reservation is failed. Try again” messages will be displayed when there is a problem on the reservation.
- *Buy:* “Credit Card Information” page will be displayed if it is successful. “Ticket selling process is failed. Try again” messages will be displayed when there is a problem on the selling.

3.1.13.5. Screen Formats: All the sold, reserved and empty seats are shown as a bus layout. The empty seats can be chosen from the layout to reserve or buy. There are 4 fields and 4 buttons in the page:

- Name = Traveler name, who made reservation
- Surname = Traveler surname
- Contact Phone = Phone number which is helped the bus firm or system administrator to reach the traveler if any disagreement is occurred.
- Price (TL) = Amount of required payment.
- Reserve: Reserve the chosen seats for the traveler.
- Buy: Buy wanted ticket(s) for the traveler.
- Reset: All the fields can be reset by clicking to the “Reset” button, process can be cancelled
- Back: Turned back to the “Travel Search Results” page by clicking to the “Back” button.

3.1.13.6. Execution Time: The interface is seen when traveler clicks to the “Route id” link of the result table in the “Travel Search Results” page. (Refer to 3.1.12)

3.1.13.7. Relationship to other interfaces: From this interface, reservation or ticket buying process can be done. If reservation is done, then “Reservation Summary” page will be reached after clicking to the “Reserve” button. If buying process is done, then “Credit Card Information” page will be reached after clicking to the “Buy” button. Also from this interface, purchased tickets, reservations, search for travel, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.14 Traveler – Reservation Summary

3.1.14.1. Name: Reservation Summary Page (Appendix B: Figure 14)

3.1.14.2. Purpose: It shows the resulting reservation information for the reserved seats for a specific travel.

3.1.14.3. Inputs/Types: NA.

3.1.14.4. Outputs/Types: “Reservation Summary” are displayed in a tabular format, so “Travel Date”, “Reservation Date” and “Time” have the “String” format, as follows:

- Route id = String
- Reservation id = Long Integer
- Name & Surname = String
- Phone = String
- Reservation Date = String
- Reserved Seat Numbers = Integer
- Price = String
- From = String
- To = String
- Bus Firm = String
- Available Seats = Integer
- Travel Date = String
- Departure Time = String

3.1.14.5. Screen Formats: In this page, all data is given in tabular format and only thing to be done from now on is following the links at the bottom of the page.

3.1.14.6. Execution Time: The interface is seen when traveler clicks the “Reserve” button in the “Reservation from Bus Layout” page.

3.1.14.7. Relationship to other interfaces: From this interface, purchased tickets, reservations, search for travel, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.15 Traveler - Credit Card Information

3.1.15.1. Name: Credit Card Information (Appendix B: Figure 15)

3.1.15.2. Purpose: It is used for taking the credit card information of the traveler to proceed with the registration.

3.1.15.3. Inputs/Types:

- *Price:* String
- Credit card type = String
- Credit card number = String
- Expiration date = String

3.1.15.4. Outputs/Types: “Travelers can take your ticket from our departments” message will be displayed. “Invalid credit card information” message will be displayed when clicked “Submit” button and procedure is failed. Possible reasons of this failure can be: Invalid credit card number, invalid expiration date...

3.1.15.5. Screen Formats: Clicking the “Buy” button will proceed with the registration process and the traveler buys tickets. Clicking to the “Reset” button reset all the fields, and process can be cancelled and turned back to the “Reservation from Bus Layout” page by clicking to the “Back” button.

3.1.15.6. Execution Time: The interface is seen when the traveler clicks to “Buy” button in the seat reservation from the bus layout page.

3.1.15.7. Relationship to other interfaces: After clicking the “Buy” button in this page, the tickets are bought, and the ticket sold summary page is displayed. From this interface, purchased tickets, reservation, search for travel, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page

3.1.16 Bus Firm User - Main Page

3.1.16.1. Name: Bus Firm User Main Page (Appendix B: Figure 16)

3.1.16.2. Purpose: It is used to set the environment that bus firm users can call the related functions.

3.1.16.3. Inputs/Types: NA

3.1.16.4. Outputs/Types: Amount of reservations and purchased tickets that are made will be displayed.

3.1.16.5. Screen Formats: Firm users can call their related functions by the links at the bottom of the page. These links are as follows:

- *Purchased Tickets*
- *Reservations*
- *Routes*
- *Update Information*
- *Change user information*
- *Unregister*
- *Logout*
- *Main Page*
- *Webmaster*

3.1.16.6. Execution Time: The interface is seen when bus firm user login to the system.

3.1.16.7. Relationship to other interfaces: From this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.17 Bus Firm User - Registration

3.1.17.1. Name: Bus Firm Registration Page (Appendix B: Figure 17)

3.1.17.2. Purpose: It is used to register the bus firm.

3.1.17.3. Inputs/Types:

- Login Name = String
- Password = String
- Confirm password = String

- Firm id = String
- Firm Password = String
- Name = String
- Surname = String
- E-mail address = String
- Bus Firm = String

3.1.17.4. Outputs/Types: “Registered successfully” message will be displayed when there is no problem in the registration process. “Registration is failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: Login name is chosen before, firm id or password is wrong, or any of the desired information is not given.

3.1.17.5. Screen Formats: In this page, bus firm registration can be finished by clicking to the “Register” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the “Online Bus Reservation System Main Page” by clicking to the “Back” button. Textboxes are used for Login Name, Password, Confirm password, Firm id, Firm Password, Name, Surname and E-mail address field. Pull down menu is used for Bus Firm

3.1.17.6. Execution Time: The interface is seen when the visitor chooses the “Bus Firm User” for the registration process from the “Main Registration” page, and then clicks the link “Next ->” at this page.

3.1.17.7. Relationship to other interfaces: From this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.18 Bus Firm User - Change User Information

3.1.18.1. Name: Change User Information Page (Appendix B: Figure 18)

3.1.18.2. Purpose: It is used to change the bus firm user registration information.

3.1.18.3. Inputs/Types:

- Login Name = String
- Name = String
- Surname = String
- E-mail address = String
- Bus Firm = String

If password change is wanted, the checkbox must be checked and then the following inputs can be edited:

- Old Password = String
- New Password = String
- Confirm Password = String

3.1.18.4. Outputs/Types: “Updated successfully” message will be displayed when there is no problem in the registration process. “Update failed. Try again with correcting the “XXX” field” message will be displayed when it is failed. Possible reasons of the failure can be: New password and confirm new password doesn’t match or any of the desired information is not given.

3.1.18.5. Screen Formats: In this page, bus firm information can be changed by clicking to the “Update” button, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the traveler related page from where traveler comes, by clicking to the “Back” button. Textboxes are used for Login Name, Old Password, New Password, Confirm New Password, Name, Surname and e-mail address field. Pull down menu is used for Bus Firm and check box is used for Change Password.

3.1.18.6. Execution Time: The interface is seen when the bus firm user chooses the “Change User Information” link from any of the bus firm related pages.

3.1.18.7. Relationship to other interfaces: From this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.19 Bus Firm User - Search Reservations

3.1.19.1. Name: Search Reservations Page (Appendix B: Figure 19)

3.1.19.2. Purpose: It is used to search the reservations made by the travelers.

3.1.19.3. Inputs/Types

- Name = String
- Surname = String
- Phone = String
- Reservation id = Long integer
- Reservation date (day / month / year) = Integer / String / Integer

- Time (hour / min) = Integer / Integer
- Route id = String

3.1.19.4. Outputs/Types: “Reservation Search Results” page will be displayed after pressing the “Search” button

3.1.19.5. Screen Formats: In this page, there are 3 buttons: “Search” button find reservations according to the form, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the bus firm related page from where bus firm user comes, by clicking to the “Back” button.

3.1.19.6. Execution Time: The interface is seen when bus firm user clicks to “Reservations” link from any bus firm related pages.

3.1.19.7. Relationship to other interfaces: Search result will be displayed in the “Reservation Search Results” page. Also from this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.20 Bus Firm User - Reservation Search Results

3.1.20.1. Name: Reservation Search Results Page (Appendix B: Figure 20)

3.1.20.2. Purpose: It shows the result of the “Search Reservations” page (Refer to 3.1.19)

3.1.20.3. Inputs/Types: NA

3.1.20.4. Outputs/Types: “Reservation Search Results” are displayed in a tabular format, so “Reservation Date”, “Travel Date” and “Time” have the “String” format, as follows:

- Route id = String
- Reservation Id: Long Integer
- Name & Surname = String
- Phone = String
- Reservation Date = String
- From = String
- To = String
- Travel Date = String
- Time = String

3.1.20.5. Screen Formats: In this page, by clicking to the “Route id” link, bus firm user will be reached to the “Update Information” page, and by clicking to the “Reservation Id” link, bus firm user will be reached to the “Buy / Reservation Details” page. The fields in this page can be defined as:

- Route id: Specific identity of a route.
- Reservation Id: Specific identity of a reservation
- Name & Surname: Name and surname of the traveler that make the corresponding reservation
- Phone: Telephone number of the traveler that make the corresponding reservation
- Reservation Date: Date that the corresponding reservation has made.
- From: Starting point.
- To: Finish point.
- Travel Date: Take off date for the travel
- Time: Take off time for the travel

Text format is used for all fields in this page.

3.1.20.6. Execution Time: The interface is seen when bus firm user clicks to “Find” button when in “Bus Firm Search Reservations” page. (Refer to 3.1.19)

3.1.20.7. Relationship to other interfaces: From this interface, route detailed information will be displayed in the “Buy / Reservation Details Page” page (Refer to 3.1.24), when “Reservation Id” link is clicked.

3.1.21 Bus Firm User - Search Routes

3.1.21.1. Name: Search Routes Page (Appendix B: Figure 21)

3.1.21.2. Purpose: It is used to search the routes offered by the bus firm.

3.1.21.3. Inputs/Types

- From = String
- To = String
- Date (day / month / year) = Integer / String / Integer
- Time (hour / min) = Integer / Integer
- Route id = String

3.1.21.4. Outputs/Types: “Route Search Results” page will be displayed after pressing the “Find” button.

3.1.21.5. Screen Formats: In this page, there are 3 buttons: “Find” button find routes according to the form, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the bus firm user related page from where bus firm user comes, by clicking to the “Back” button. The corresponding fields are filled to make the search:

- From: Pull down menu to starting point.
- To: Pull down menu to finish point.
- Date: Pull down menu to take off date for the travel but separated format of day, month and year.
- Time: Pull down menu to take off time for the travel but hour and minute are separated.
- Route Id: Pull down menu to specific identity of a route.

3.1.21.6. Execution Time: The interface is seen when bus firm user clicks to “Routes” link from any bus firm related pages.

3.1.21.7. Relationship to other interfaces: Search result will be displayed in the “Route Search Results” page. Also from this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.22 Bus Firm User - Route Search Results

3.1.22.1. Name: Route Search Results Page (Appendix B: Figure 22)

3.1.22.2. Purpose: It shows the result of the “Search Routes” page (Refer to 3.1.21)

3.1.22.3. Inputs/Types: NA

3.1.22.4. Outputs/Types: “Route Search Results” are displayed in a tabular format, so “Travel Date” and “Time” have the “String” format, as follows:

- Route id = String
- From = String
- To = String
- Available Seats = Integer
- Travel Date = String

- Time = String

3.1.22.5. Screen Formats: In this page, by clicking to the “Route id” link, bus firm user will be reached to the “Update Information” page. The fields in this page can be defined as:

- Route id: Specific identity of a route.
- From: Starting point.
- To: Finish point.
- Available seats: Free seats number in the bus.
- Travel Date: Take off date for the travel
- Time: Take off time for the travel

Text format is used for all fields in this page.

3.1.22.6. Execution Time: The interface is seen when bus firm user clicks to “Find” button when in “Search Routes” page. (Refer to 3.1.21)

3.1.22.7. Relationship to other interfaces: If “Route id” link is clicked, “Update Information” page is displayed. Also from this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.23 Bus Firm User – Update Information

3.1.23.1. Name: Update Information Page (Appendix B: Figure 23)

3.1.23.2. Purpose: It shows details of the routes that are chosen from “Route Search Results” page (Refer to 3.1.22). The Bus Firm shall see reservation details and make updates (buy / reserve seats) from bus layout for a specific route.

3.1.23.3. Inputs/Types:

- Name = String
- Surname = String
- Contact Phone = String

3.1.23.4. Outputs/Types: The following outputs will be seen when the related buttons are clicked:

- *Reserve:* “Successfully Reserved” messages and the reservation id will be displayed if it is successful. “Reservation is failed. Try again” messages will be displayed when there is a problem on the reservation.

- *Buy*: “Successfully Sold” messages will be displayed if it is successful. “Ticket Selling is failed. Try again” messages will be displayed when there is a problem on the selling.

Important: Here “credit card information” is not taken, because this is the page for the bus firm user to make the updates of the database for the reservations made and tickets sold by their traditional system (telephone, face-to-face...).

3.1.23.5. Screen Formats: All the sold, reserved and empty seats are shown as a bus layout. The empty seats can be chosen from the layout to reserve or buy. There are 5 buttons in the page:

- **Reserve:** Reserve the chosen seats for the person that made reservation by not using our system, but by connecting to bus firm.
- **Buy:** Buy ticket for the person that bought ticket by not using our system, but by connecting to bus firm.
- **Reset:** All the fields can be reset by clicking to the “Reset” button, process can be cancelled
- **Back:** Turned back to the “Route Search Results” page by clicking to the “Back” button.
- **Details:** Details of the routes will be displayed in the “Buy / Reservation Details” page.
- Textbox is used for Name, Surname and Contact Phone fields.

3.1.23.6. Execution Time: The interface is seen when bus firm user clicks to “Route Id” link in the “Route Search Results” page (Refer to 3.1.22).

3.1.23.7. Relationship to other interfaces: From this interface, reservation or ticket buying updates can be done. When “Details” link is clicked, then “Buy / Reservation Details” page will be reached. Also from this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.24 Bus Firm User - Buy / Reservation Details

3.1.24.1. Name: Buy / Reservation Details Page (Appendix B: Figure 24)

3.1.24.2. Purpose: It is used to show the travelers information that have reserved or bought seats.

3.1.24.3. Inputs/Types: NA

3.1.24.4. Outputs/Types: The following outputs will be seen:

- Seat No = Integer
- Traveler: String
- Reservation Id: Long Integer

3.1.24.5. Screen Formats: All the sold, reserved and empty seats are shown as a bus layout. The following data will be seen near the bus layout:

- Seat No: The reserved and bought seat numbers.
- Traveler: The traveler name that have reserved or bought the seat number.
- Reservation Id: Specific identity of a reservation.

Text format is used for all fields in this page.

3.1.24.6. Execution Time: The interface is seen when bus firm user clicks to button “Details” from the “Update Information” page (Refer to 3.1.23) or by clicking to the “Reservation Id” link in the “Reservation Search Results” page (Refer to 3.1.20).

3.1.24.7. Relationship to other interfaces: By clicking to the “Reservation Id” link of any traveler, the “Reservation Search Results” page for the corresponding reservation is reached. From this interface, purchased tickets, reservations, routes, update information, change user information, unregister, logout and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.25 Visitor – Bus Firm Search

3.1.25.1. Name: Bus Firm Search Page (Appendix B: Figure 25)

3.1.25.2. Purpose: It is used to search for the existing bus firms that are registered in the system.

3.1.25.3. Inputs/Types:

- Bus Firm = String

3.1.25.4. Outputs/Types: “Bus Firm Search Results” page will be displayed after pressing the “Next” button.

3.1.25.5. Screen Formats: In this page, there are 2 buttons: “Next ->” button find bus reservation(s) according to the selection. Selection can be made as selecting a single bus firm or selecting “All” (meaning to show all the firms available in the system) from the drop down menu. Process can be cancelled and turned back to the visitor related page from where visitor comes, by clicking to the “Back” button. Pull down menu is used for Bus Firm field.

3.1.25.6. Execution Time: The interface is seen when visitor clicks to the link “Bus Firm Information” at the bottom of the page from any visitor related page.

3.1.25.7. Relationship to other interfaces: From this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.26 Visitor – Bus Firm Search Results

3.1.26.1. Name: Bus Firm Search Results Page (Appendix B: Figure 26)

3.1.26.2. Purpose: It shows the result of the “Bus Firm Search” page (Refer to 3.1.25).

3.1.26.3. Inputs/Types: NA

3.1.26.4. Outputs/Types: “Bus Firm Search Results” are displayed in a tabular format and the following outputs will be seen:

- Bus Firm = String
- Contact Phone = String
- Fax Number = String
- e-mail Address = String
- web Page = String

3.1.26.5. Screen Formats: The fields in this page can be defined as:

- Bus Firm = Selected bus firm that is registered to the system
- Contact Phone = Telephone number of the selected bus firm
- Fax Number = Fax number of the selected bus firm
- E-mail Address = E-mail address of the selected bus firm
- Web Page = Official web page of the selected bus firm

Text format is used for all fields in this page.

3.1.26.6. Execution Time: The interface is seen when bus firm administrator clicks to the link “Bus Firm Information” at the bottom of the page from any bus firm administrator related page.

3.1.26.7. Relationship to other interfaces: From this interface, the official web page of the selected bus firm will be reached by following the “web page” link. Also from this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.27 Visitor – Reservation Results

3.1.27.1.*Name:* Reservation Results Page (Appendix B: Figure 27)

3.1.27.2.*Purpose:* It is used to show the visitor that to make any reservation or to buy ticket, login to the system or if not registered, registration to the system is a must.

3.1.27.3.*Inputs/Types:* NA

3.1.27.4.*Outputs/Types:* If the visitor tries to make reservation or buy ticket, this page displays a warning message as “PLEASE FIRST REGISTER OR LOGIN TO SYSTEM THEN TRY TO MAKE RESERVATION”.

3.1.27.5.*Screen Formats:* With the links in the warning message, the page guides the visitor to the “login” or “registration” pages.

3.1.27.6.*Execution Time:* The interface is seen when “Visitors” wants to make reservation or try to buy tickets from any related pages.

3.1.27.7.*Relationship to other interfaces:* From this interface, “Login” or “Registration” pages must be reached to continue to the registration or buying process, by following the “web page” link. Also from this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.28 Visitor - Search for Travel

3.1.28.1.*Name:* Search For Travel Page (Appendix B: Figure 28)

3.1.28.2.*Purpose:* It is used to search for travel information.

3.1.28.3.*Inputs/Types:*

- From = String
- To = String
- Date (day / month / year) = Integer / String / Integer
- Time (hour / min) = Integer / Integer

3.1.28.4.*Outputs/Types:* “Travel Search Results” page will be displayed after pressing the “Find” button.

3.1.28.5.*Screen Formats:* In this page, there are 3 buttons: “Find” button find travels according to the form, all the fields can be reset by clicking to the “Reset” button, or process can be cancelled and turned back to the visitor page from where visitor comes, by clicking to the “Back” button. The corresponding fields are filled to make the search:

- From: Starting point (pull down menu).
- To: Finish point (pull down menu)
- Date: Take off date for the travel (pull down menu for each day, month and year items).
- Time: Take off time for the travel(pull down menu for each hour and minute items)

3.1.28.6.*Execution Time:* The interface is seen when visitors clicks to the link “Search for travel” at the bottom of the page from any visitor page.

3.1.28.7.*Relationship to other interfaces:* From this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.29 Visitor - Search for Travel Results

3.1.29.1. *Name:* Search For Travel Results Page (Appendix B: Figure 29)

3.1.29.2. *Purpose:* It shows the result of the “Search for Travel” page (Refer to 3.1.28).

3.1.29.3. *Inputs/Types:* NA

3.1.29.4.*Outputs/Types:* “Search for Travel Results” are displayed in a tabular format, so “Travel Date” and “Time” have the “String” format, as follows:

- Route id = String
- From = String
- To = String
- Available Seats = Integer
- Travel Date = String
- Time = String

3.1.29.5. *Screen Formats:* In this page, by clicking to the “Route id” link, visitor will be reached to the “Reservation Results” page. The fields in this page can be defined as:

- Route id: Specific identity of a route.
- From: Starting point.
- To: Finish point.
- Available seats: Free seats number in the bus.
- Travel Date: Take off date for the travel
- Time: Take off time for the travel

Text format is used for all items in this page.

3.1.29.6.*Execution Time:* The interface is seen when visitor clicks to “Find” button when in “Search for Travel” page (Refer to 3.1.28).

3.1.29.7.*Relationship to other interfaces:* If “Route id” link is clicked, “Reservation Results” page is displayed. Also from this interface, bus firm information, search for travel, register and main page can be reached, and a mail can be sent to the Webmaster of the system from this site by following the links at the bottom of the page.

3.1.30 Unregister

3.1.30.1.*Name:* Unregister Page

3.1.30.2.*Purpose:* It shows the confirmation message.

3.1.30.3.*Inputs/Types:* NA

3.1.30.4.*Outputs/Types:* “Successfully unregistered” message will be displayed if it is successful, “Unregistration is failed. Try again” message will be displayed if it is failed.

3.1.30.5.*Screen Formats:* In this page, by clicking to the “Yes” button , unregistration will be done, if “No” is pressed, the unregistration process will be canceled.

3.1.30.6.*Execution Time:* The interface is seen when “Unregister” link is clicked

3.1.30.7.*Relationship to other interfaces:* NA

3.2 FUNCTIONAL REQUIREMENTS

The functional requirements of the OBRS are represented by use cases. Below figure gives the list of the uses cases and the followings give use case descriptions.

1. UC1. Import Bus Firm Data
2. UC2. Operate on Bus Firm Registration
 - a. Add New Bus Firm Registration
 - b. Update Registration Information
3. UC3. Operate on Route
 - a. Add Route
 - b. Delete Route
 - c. Update Route
 - d. View Routes
4. UC4. Operate on Reservation
 - a. Add Reservation
 - b. Delete Reservation
 - c. Update Reservation
 - d. View Reservation Detail
 - e. View Reservation Summary
5. UC5. Querying Operations
 - a. Select Query Mode
 - b. View Query Results
6. UC6. Buy Ticket
 - a. Update Ticket and Invoice Information
 - b. Buy Ticket
7. UC7. Sell Ticket
 - a. Add Ticket and Invoice Information
 - b. Update Ticket and Invoice Information
 - c. Delete Ticket

- d. Print Ticket and Invoice
- 8. UC8. Manage User
 - a. Add a User
 - b. Delete a User
 - c. Update a User
- 9. UC9. Add New User Registration
- 10. UC10. Update User Registration Information
- 11. UC11. View Help

Use Case ID:	UC1		
Use Case Name:	Import Bus Firm Data		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	System Administrator
Description:	This use case is used by the system administrator to import the bus firm information taken from Ministry of Communication.
Preconditions:	<ol style="list-style-type: none"> 1. System Administrator should login the OBRS. 2. XML formatted bus firm information is taken from Ministry of Communication.
Post conditions:	Bus firm information is imported into the OBRS database.
Normal Course of Events:	<ol style="list-style-type: none"> 1. System administrator selects the Import Bus Information hyperlink. 2. Import Bus Information screen is shown. 3. System administrator writes the full path of the XML file into FileName text area, and clicks Import button. 4. OBRS displays the process message. 5. OBRS administrator closes the link.
Alternative Courses:	-
Exceptions:	<p>UC1.EX1. If the system cannot open the selected file, or the XML document cannot be validated, OBRS displays an error message.</p> <p>UC1.EX2. If the OBRS cannot insert the bus firm information, OBRS displays an error message.</p>
Assumptions:	The bus firm information is supplied as XML file.
Notes and Issues:	-

Table 1: Description of Use Case 1

Use Case ID:	UC2		
Use Case Name:	Operate on Bus Firm Registration		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Bus Firm Administrator
Description:	This use case is used by bus firm administrator to operate on bus firm registration.
Preconditions:	<ol style="list-style-type: none"> 1. Bus Firm Administrator should login the OBRS. 2. There is a built-in System Administrator at the start of using OBRS. 3. There is a bus firm information record before bus firm administrator creates new registration.
Post conditions:	New bus firm registration information is created or existing bus firm registration information is updated.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Bus firm administrator selects Bus Firm Registration hyperlink. 2. OBRS lists and bus firm administrator selects one with the available choices: <ol style="list-style-type: none"> a. New Registration b. Update Existing Registration 3. Bus firm administrator chooses Update Existing Registration option. 4. OBRS displays the registration information in editable data areas. 5. Bus firm administrator updates the registration information. 6. Bus firm administrator clicks Submit button. 7. OBRS displays the process message. 8. Bus firm administrator closes the link.
Alternative Courses:	<p>UC2.AC1. After step 2; bus firm administrator selects New button.</p> <ol style="list-style-type: none"> 1. OBRS displays the bus firm choices. 2. Bus firm administrator selects the bus firm from the choices. 3. OBRS verifies the bus firm administrator is delegated for the selected bus firm. 4. Bus firm administrator edits the registration information. 5. Bus firm administrator clicks Submit button. 6. OBRS displays the process message. 7. Bus firm administrator closes the link
Exceptions:	<p>UC2.EX1. If the OBRS cannot read or update the bus firm registration information, OBRS displays an error message.</p> <p>UC2.EX2. If the bus firm administrator leaves some data areas blank, then the OBRS warns.</p> <p>UC2.EX3. If the system administrator or bus firm administrator tries to update some data areas with inappropriate values, OBRS displays an error message.</p>
Notes and Issues:	-

Table 2. Description of Use Case 2

Use Case ID:	UC3		
Use Case Name:	Operate on Route		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Bus Firm Administrator
Description:	This use case is used by bus firm administrator to operate on bus firm routes.
Preconditions:	Bus Firm Administrator should login the OBRS.
Post conditions:	New route is added; existing route is updated, deleted, or viewed.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Bus firm administrator selects Routes hyperlink. 2. OBRS lists route search choices. 3. Bus firm administrator selects choices and presses Find button. 4. OBRS displays routes. 5. Bus firm administrator closes the link.
Alternative Courses:	<p>UC3.AC1. After step 2; bus firm administrator selects New button.</p> <ol style="list-style-type: none"> 1. OBRS displays the new route editable data areas. 2. Bus firm administrator edits the route information. 3. Bus firm administrator clicks Submit button. 4. OBRS displays the process message. 5. OBRS refreshes Routes screen with the new route. 6. Bus firm administrator closes the link <p>UC3.AC2. After step 2; bus firm administrator selects Update button.</p> <ol style="list-style-type: none"> 1. OBRS displays the update route editable data areas. 2. Bus firm administrator updates the route information. 3. Bus firm administrator clicks Submit button. 4. OBRS displays the process message. 5. OBRS refreshes Routes Screen with the updated route. 6. Bus firm administrator closes the link <p>UC3.AC3. After step 2; bus firm administrator selects Delete button.</p> <ol style="list-style-type: none"> 1. OBRS displays confirmation message for the delete process. 2. Bus firm administrator confirms the deletion. 3. OBRS refreshes Routes screen without the deleted route.
Exceptions:	<p>UC3.EX1. If the OBRS cannot read or update the route information, OBRS displays an error message.</p> <p>UC3.EX2. If the bus firm administrator leaves some data areas blank, then the OBRS warns.</p> <p>UC3.EX3. If the bus firm administrator tries to update some data areas with inappropriate values, OBRS displays an error message.</p>
Assumptions:	-
Notes and Issues:	-

Table 3. Description of Use Case 3

Use Case ID:	UC4		
Use Case Name:	Operate on Reservation		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Bus Firm User, Traveler
Description:	This use case is used by bus firm user and traveler to operate on reservations.
Preconditions:	<ol style="list-style-type: none"> 1. The bus firm user and traveler should login the OBRS. 2. Bus firm users and travelers registration information is done.
Post conditions:	New reservation is added; existing reservation is updated, deleted, or viewed.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Bus firm user or traveler selects Reservations hyperlink. 2. OBRS lists reservation search choices. 3. Bus firm user selects choices and presses Search button. 4. OBRS displays reservations. 5. Bus firm user or traveler closes the link.
Alternative Courses:	<p>UC4.AC1. After step 4; bus firm user or traveler selects New button.</p> <ol style="list-style-type: none"> 1. OBRS displays the new reservation editable data areas. 2. Bus firm user or traveler edits the reservation information. 3. Bus firm user or traveler clicks Submit button. 4. OBRS displays the process message. 5. OBRS refreshes Reservations screen with the new route. 6. Bus firm user or traveler closes the link <p>UC4.AC2. After step 4; bus firm user or traveler selects Update button.</p> <ol style="list-style-type: none"> 1. OBRS displays the update reservation editable data areas. 2. Bus firm user or traveler updates the reservation information. 3. Bus firm user or traveler clicks Submit button. 4. OBRS displays the process message. 5. OBRS refreshes Reservation screen with the updated reservation. 6. Bus firm user or traveler closes the link <p>UC4.AC3. After step 4; bus firm administrator selects Delete button.</p> <ol style="list-style-type: none"> 1. OBRS displays confirmation message for the delete process. 2. Bus firm user or traveler confirms the deletion. 3. OBRS refreshes Reservation screen without the deleted route.
Exceptions:	<p>UC4.EX1. If the OBRS cannot read or update the reservation information, OBRS displays an error message.</p> <p>UC4.EX2. If the bus firm user or traveler leaves some data areas blank, then the OBRS warns.</p> <p>UC4.EX3. If the bus user and traveler tries to update some data areas with inappropriate values, OBRS displays an error message</p>
Assumptions:	<ol style="list-style-type: none"> 1. The bus firms' administrators added the routes. 2. Operating on reservations is done on user-friendly bus layout screens.

Table 4. Description of Use Case 4

Use Case ID:	UC5		
Use Case Name:	Querying Operations		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Visitor, Traveler
Description:	This use case is used by visitor and traveler to query on routes.
Preconditions:	The visitor and traveler should start the OBRS.
Post conditions:	Query result with respect to different options viewed.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Visitor or traveler selects Search hyperlink. 2. OBRS lists search choices. 3. Visitor or traveler selects choices and presses Find button. 4. OBRS displays search results. 5. Visitor or traveler closes the link.
Alternative Courses:	UC5.AC1. After step 4; visitor or traveler selects View button. OBRS displays details of the search result.
Exceptions:	UC5.EX1. If the OBRS cannot read route information, OBRS displays an error message. UC5.EX2. If the OBRS cannot manipulate the search choices, OBRS displays an error message.
Assumptions:	<ol style="list-style-type: none"> 1. The bus firms' administrators added the routes. 2. Detail of the search result is viewed on user-friendly bus layout screens.
Notes and Issues:	-

Table 5. Description of Use Case 5

Use Case ID:	UC6		
Use Case Name:	Buy Ticket		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Traveler
Description:	This use case is used by traveler to buy the tickets.
Preconditions:	<ol style="list-style-type: none"> 1. The traveler should login the OBRS. 2. The traveler should have reservations that are made before.
Post conditions:	Traveler buys ticket and updates the invoice and ticket information.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Traveler selects Purchase Ticket hyperlink. 2. OBRS lists traveler's available reservations. 3. Traveler selects View Invoice and Ticket Information hyperlink. 4. OBRS displays Invoice and Ticket Information screen. 5. Traveler updates invoice and ticket information. 6. OBRS displays the process message. 7. OBRS refreshes Reservations screen with the bought reservations 8. Traveler closes the link
Alternative Courses:	-
Exceptions:	<p>UC6.EX1. If the OBRS cannot read the reservation information or invoice and ticket information, OBRS displays an error message.</p> <p>UC6.EX2. If the traveler leaves some data areas blank, then the OBRS warns.</p> <p>UC6.EX3. If the traveler tries to update some data areas with inappropriate values, OBRS displays an error message</p>
Assumptions:	-
Notes and Issues:	-

Table 6. Description of Use Case 6

Use Case ID:	UC7		
Use Case Name:	Sell Ticket		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Bus Firm User
Description:	This use case is used by the bus firm user to sell the tickets.
Preconditions:	The bus firm user should login the OBRS.
Post conditions:	Tickets that are sold by the bus firm are recorded on the OBRS database; the existing sold ticket information is updated; or sale is canceled.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Bus firm user selects Ticket Sale hyperlink. 2. OBRS lists available choices. 3. Bus firm user selects choices and press Search button. 4. OBRS displays Ticket Sale screen with the route reservation and sale results. 5. Bus firm user press New Button. 6. OBRS display New Sale Screen with editable data areas containing Invoice and Ticket information. 7. Bus firm user edits the data values and presses Submit button. 8. OBRS displays the process message. 9. Bus firm user closes the link.
Alternative Courses:	<p>UC7.AC1. After step 4; bus firm user selects Update button.</p> <ol style="list-style-type: none"> 1. OBRS displays the existing sale information with editable data areas. 2. Bus firm user updates the Invoice and Ticket information. 3. Bus firm user clicks Submit button. 4. OBRS displays the process message. 5. OBRS refreshes Ticket Sale screen with the new sale information. <p>UC7.AC2. After step 4; bus firm user selects Delete button.</p> <ol style="list-style-type: none"> 1. OBRS displays confirmation message for the delete process. 2. Bus firm user confirms the deletion. 3. OBRS refreshes Ticket Sale screen without the deleted ticket. <p>UC7.AC3. After step 4; bus firm user selects View button.</p> <p>OBRS displays the Invoice and Ticket in their original layout.</p>
Exceptions:	<p>UC7.EX1. If the OBRS cannot read, update or delete the sale information, OBRS displays an error message.</p> <p>UC7.EX2. If the bus firm user leaves some data areas blank, then the OBRS warns.</p> <p>UC7.EX3. If the bus firm user tries to update some data areas with inappropriate values, OBRS displays an error message</p>

Assumptions:	<ol style="list-style-type: none">1. Bus firms that sold tickets by phone, or face to face, records into the OBRS.2. Printer is installed on the bus firm user computer.
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Table 7. Description of Use Case 7

Use Case ID:	UC8		
Use Case Name:	Manage Users		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	System Administrator, Bus Firm Administrator
Description:	This use case is used by the system administrator or bus firm administrator to manage users.
Preconditions:	<ol style="list-style-type: none"> 1. System Administrator or Bus Firm Administrator should login the OBRS. 2. There is a built-in System Administrator at the start of using OBRS.
Post conditions:	A new user is created; an existing user is updated or deleted.
Normal Course of Events:	<ol style="list-style-type: none"> 1. System administrator or bus firm administrator selects User Management hyperlink. 2. OBRS opens User Management Screen. 3. System administrator or bus firm administrator selects user to be updated. 4. OBRS displays the user information in editable data areas. 5. System administrator or bus firm administrator edits the user information. 6. System administrator or bus firm administrator clicks Submit button. 7. OBRS displays the process message. 8. System administrator or bus firm administrator closes the link.
Alternative Courses:	<p>UC8.AC1. After step 2; the system administrator or bus firm administrator selects New button.</p> <ol style="list-style-type: none"> 1. OBRS displays editable data areas for the new user. 2. System administrator or bus firm administrator inputs information at the data areas. 3. System administrator or bus firm administrator clicks Submit button. 4. OBRS refreshes User Management Screen with the new user. <p>UC8.AC2. After step 2; the system administrator or bus firm administrator selects Delete button.</p> <ol style="list-style-type: none"> 1. OBRS displays confirmation message for the delete process. 2. System administrator or bus firm administrator confirms the deletion. 3. OBRS refreshes User Management screen without the deleted user.
Exceptions:	<p>UC8.EX1. If the OBRS cannot read or update the user information, OBRS displays an error message.</p> <p>UC8.EX2. If the system administrator or bus firm administrator leaves some data areas blank, then the OBRS warns.</p> <p>UC8.EX3. If the system administrator or bus firm administrator tries to update some data areas with inappropriate values, OBRS displays an error message.</p>
Assumptions:	-
Notes and Issues:	<ol style="list-style-type: none"> 1. System administrator is responsible for managing bus firm administrators. 2. Bus Firm administrator is responsible for managing bus firm users.

Table 8. Description of Use Case 8

Use Case ID:	UC9		
Use Case Name:	Add New User Registration		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Visitor.
Description:	This use case is used by Visitor to register as a Traveler, System Administrator, or Bus Firm Administrator.
Preconditions:	<ol style="list-style-type: none"> 1. A built-in system administrator account exists, and visitor is informed with this account. 2. Built-in bus firm administrator account is created for each firm while importing bus firm information database and visitor is informed with this account. 3. Visitor should have connected to the OBRS.
Post conditions:	A traveler is created; a system administrator from built-in account is created; a bus firm administrator from built-in account is created. The visitor is confirmed via e-mail.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Visitor selects New Registration hyperlink. 2. OBRS lists available choices: <ol style="list-style-type: none"> a. Traveler b. Bus Firm Administrator c. System Administrator 3. Visitor selects choices and press Next button. 4. OBRS displays the editable Registration Information screen. 5. Visitor edits the required fields and presses Submit button. 6. OBRS displays the process message. 7. Visitor closes the link.
Alternative Courses:	-
Exceptions:	<p>UC9.EX1. If the OBRS cannot read, update or delete the information, OBRS displays an error message.</p> <p>UC9.EX2. If the visitor leaves some data areas blank, then the OBRS warns.</p> <p>UC9.EX3. If the visitor tries to update some data areas with inappropriate values, OBRS displays an error message.</p>
Assumptions:	-
Notes and Issues:	-

Table 9. Description of Use Case 9

Use Case ID:	UC10		
Use Case Name:	Update User Registration Information		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Traveler, Bus Firm User, Bus Firm Administrator, System Administrator.
Description:	This use case is used by traveler, bus firm user, bus firm administrator, or system administrator to update their registration information.
Preconditions:	Users will connect to the OBRS.
Post conditions:	Traveler, bus firm user, bus firm administrator, or system administrator registration information is updated.
Normal Course of Events:	<ol style="list-style-type: none"> 1. Traveler, bus firm user, bus firm administrator, or system administrator selects Change User Information hyperlink. 2. OBRS displays editable User Registration Information data areas. 3. Traveler, bus firm user, bus firm administrator, or system administrator selects updates and presses Submit button. 4. OBRS displays the process message. 5. Traveler, Bus Firm User, Bus Firm Administrator, System Administrator closes the link.
Alternative Courses:	-
Exceptions:	<p>UC10.EX1. If the OBRS cannot read, update or delete the user registration information, OBRS displays an error message.</p> <p>UC10.EX2. If the user leaves some data areas blank, then the OBRS warns.</p> <p>UC10.EX3. If the user tries to update some data areas with inappropriate values, OBRS displays an error message.</p>
Assumptions:	-
Notes and Issues:	-

Table 10. Description of Use Case 10

Use Case ID:	UC11		
Use Case Name:	View Help		
Created By:	Pokemon Team	Last Updated By:	
Date Created:	March 17, 2002	Date Last Updated:	

Actor(s):	Visitor, Traveler, Bus Firm User, Bus Firm Administrator, System Administrator.
Description:	This use case is used by visitor, traveler, bus firm user, bus firm administrator, or system administrator to learn the functionality of the OBRS.
Preconditions:	Visitor, traveler, bus firm user, bus firm administrator, or system administrator should open a screen of the OBRS.
Post conditions:	Help topics of the OBRS are displayed.
Normal Course of Events:	<ol style="list-style-type: none"> 1. User selects the Help hyperlinks in each Screen. 2. Help topics related to the selected Screen are displayed. 3. User closes Help Screen.
Alternative Courses:	-
Exceptions:	-
Assumptions:	-
Notes and Issues:	-

Table 11. Description of Use Case 11

3.3 PERFORMANCE REQUIREMENTS

- The system shall support 50 simultaneous client connections.
- The system response time shall be maximum 15 seconds in the 100 mbit LAN environment.

3.4 LOGICAL DATABASE REQUIREMENTS

Our customer will give the database that store firms detailed information. Also OBRS database is structured based on customer requirements and Appendix C is shown modified customer database ER Diagram.

3.5 DESIGN CONSTRAINTS

3.5.1 Standards compliance

- Coding standard shall be compatible with the JSP coding standard[6].

3.6 SOFTWARE SYSTEM ATTRIBUTES

3.6.1 Reliability

- Total number of bugs in the system shall not exceed %2 of the total lines of code.

3.6.2 Availability

- System shall be restarted in 30 seconds when the system crash occurs.
- System shall be available to serve travelers and firms for 7 days and 24 hours.
- In the event of database down time, a warning message will be sent to the user.

3.6.3 Security

- There is no security issue. Passwords will be in plain format.
- Communication will not be encrypted between the client and the server

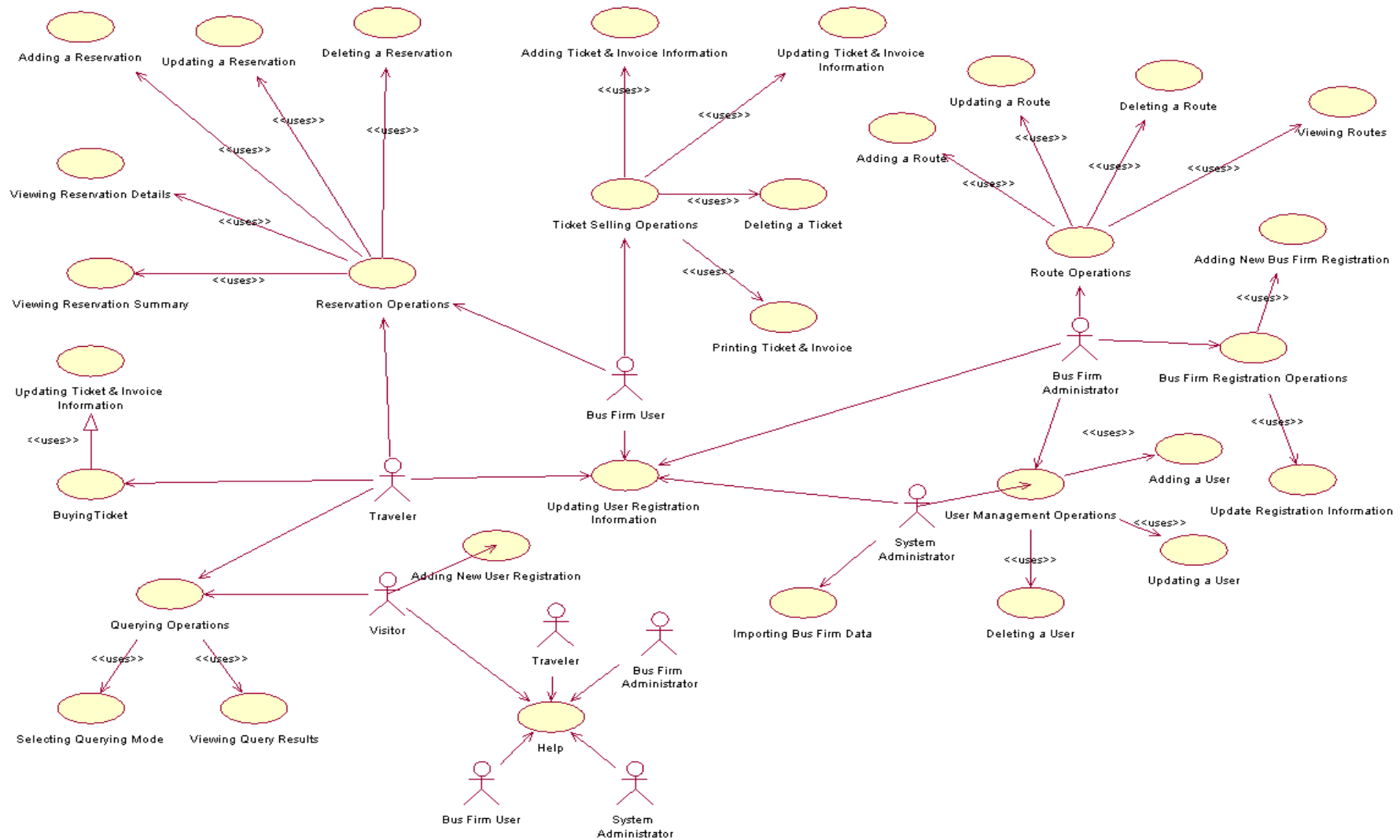
3.6.4 Maintainability

- OBRS Software will be developed using object oriented programming approach and using Java development language.
- Each and every module will be explicitly defined and documented.
- Documents for each phase of software development process and source codes will be delivered with the product, so that internal maintenance will take place.

3.6.5 Portability

- The execution platform is defined in Section 2.1.4 and the tasks that will be done for a new site is defined in Section 2.1.8.

Appendix – A: Use Case Diagram



Appendix – B: User Interfaces

Figure 1: Online Bus Reservation System Main Page

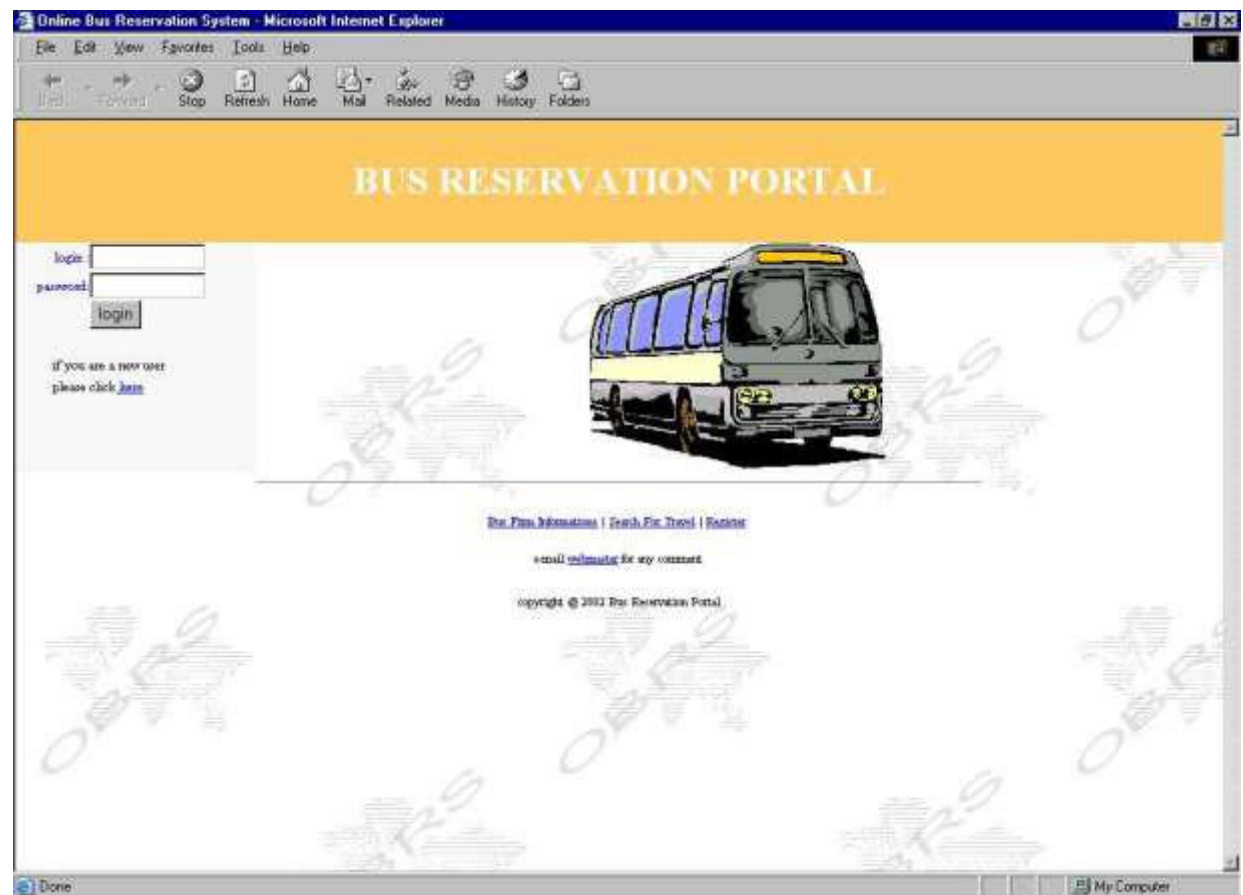


Figure 2: Main Registration Page

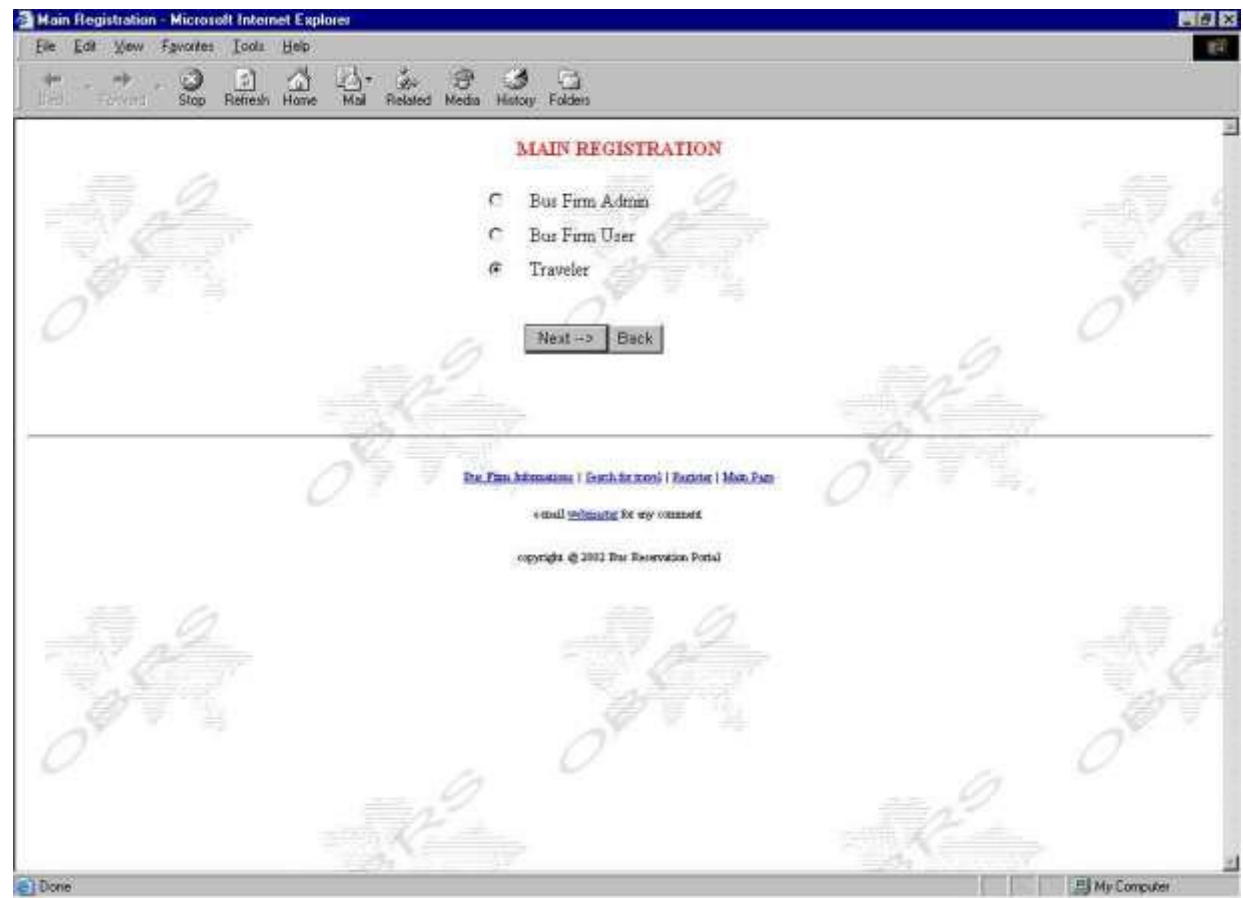


Figure 3: Administrator Registration Page

Administrator Registration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

http://www.obfrs.gov.tr/

ADMINISTRATOR REGISTRATION

Login Name :

Password :

Confirm Password :

Firm id : (login name taken from: ulastirma.gov.tr)

Firm Password : (password taken from: ulastirma.gov.tr)

Name :

Surname :

e-mail Address :

Firm name :

Firm e-mail Address :

Firm Address :

Firm City :

Firm Telephone Number :

Firm Fax Number :

Firm Web Page :

Extra information :

[See Your Information](#) | [Search For Taxes](#) | [Register](#) | [Main Page](#)

e-mail obfrs@obfrs.gov.tr for any comment

Done My Computer

Figure 4: Administrator Main Page



Figure 5: Administrator Add New Route Information Page

ADD NEW ROUTE INFORMATION

Bus Firm: Ulasoy
From: Rize
To: Marmaris
Date: day month year
Time: hour min
Bus Type: Setra
Price (TL):
Submit Reset Back

[Bus Firm Information](#) | [Add New Route Information](#) | [Update Existing Route Information](#) | [Search for travel](#) | [User Login](#) | [Logout](#) | [Main Page](#)

e-mail: webmaster@obrs.com.tr for any comment.

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Figure 6: Administrator Update Existing Route Information Page

Admin Update Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Mail Related Media History Folders

UPDATE EXISTING ROUTE INFORMATION

Bus Firm: Uhasoy

From: Ankara

To: Adana

☒ Update Info Only for This Date: 12 April 2002

☐ Update All Info After Date: day month year

Time Old: 21:30

Time New: 21:45

Bus Type: Setra

Price Old (TL): 18000000

Price New (TL): 20000000

Submit Reset Back

[Bus Firm Information](#) | [Add New Route Information](#) | [Update Existing Route Information](#) | [Search for routes](#) | [Unregister](#) | [Logout](#) | [Main Page](#)

e-mail info@obrs.org for any comment

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Done My Computer

Figure 7: Change Firm Information Page

CHANGE FIRM INFORMATION

Login Name :

☒ **Change Password**

Old Password :

New Password :

Confirm New Password :

Name :

Surname :

e-mail Address :

Firm Name :

Firm e-mail Address :

Firm Address :

Firm City :

Firm Telephone Number :

Firm Fax Number :

Firm Web Page :

Extra information :

[Bus Firm Information](#) | [All User Firms Information](#) | [Update Existing Firms Information](#) | [Search for firm](#) | [Disclaimer](#) | [Logout](#) | [Main Page](#)

e-mail [info@varan.com.tr](#) for any comment.

Figure 8: Traveler Main Page



Figure 9: Traveler Registration Page

TRAVELER REGISTRATION

Login Name:

Password:

Confirm Password:

Name:

Surname:

e-mail Address:

Gender:

Age:

Date of Birth:

Marital Status:

Occupation:

Street Address:

City:

Phone Number:

Fax Number:

Do you have any disabilities? if yes please specify

[See Firm Information](#) / [Search for travel](#) / [Exits](#) / [Main Page](#)

e-mail [info@obrs.com.tr](#) for any comment

Figure 10: Change Traveler Information Page

CHANGE TRAVELER INFORMATION

Login Name :

☒ **Change Password**

Old Password :

New Password :

Confirm New Password :

Name :

Surname :

e-mail Address :

Gender :

Age :

Date of Birth :

Marital Status :

Occupation :

Street Address :

City :

Phone Number :

Fax Number :

Do you have any disabilities? : if yes please specify :

Figure 11: Search for Travel Page

SEARCH FOR TRAVEL

From:

To:

Date:

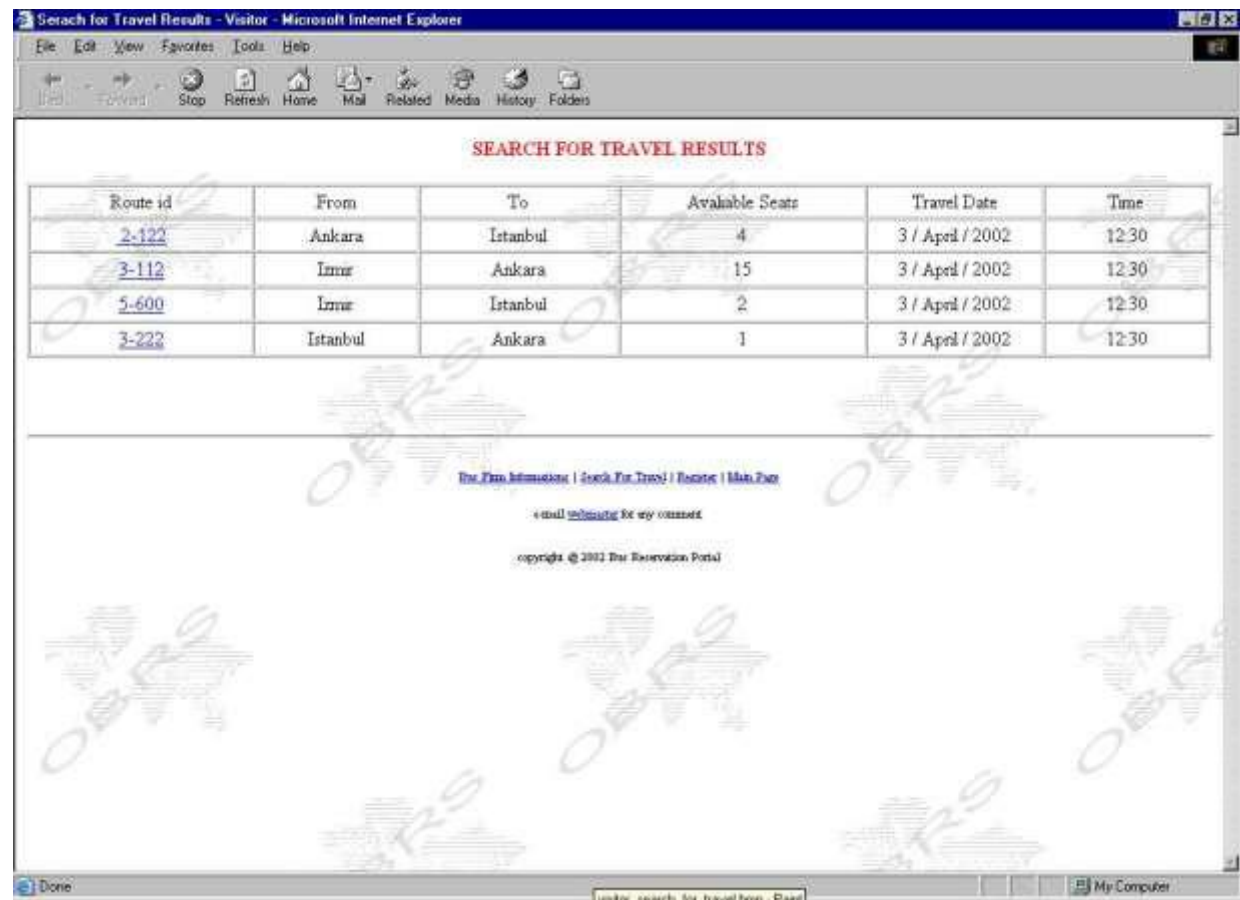
Time:

Bus Firm:

[Purchase Tickets](#) | [Reservations](#) | [Search for Travel](#) | [Change Travel Information](#) | [Disclaimer](#) | [Logout](#) | [Main Page](#)

e-mail [info@busres.com.tr](#) for any comment

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Figure 12: Search for Travel Results Page

SEARCH FOR TRAVEL RESULTS

Route id	From	To	Available Seats	Travel Date	Time
2-122	Ankara	Istanbul	4	3 / April / 2002	12:30
3-112	Izmir	Ankara	15	3 / April / 2002	12:30
5-600	Izmir	Istanbul	2	3 / April / 2002	12:30
3-222	Istanbul	Ankara	1	3 / April / 2002	12:30

[The Firm Informations](#) | [Search For Travel](#) | [Routes](#) | [Main Page](#)

[e-mail us@obrs.tr](#) for any comment

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Figure 13: Reservation from Bus Layout Page

SEAT RESERVATION

Bus Layout

Driver		DOOR	
6	7	4	5
10	11	8	9
14	15	12	13
18	19	16	17
22	23	20	21
26	27	24	25
30	31	28	29
34	35	32	33
38	39	36	37
		40	41

Grey: Sold Blue: Reserved by man
Green: Available Pink: Reserved by woman

Name:

Surname:

Contact Phone:

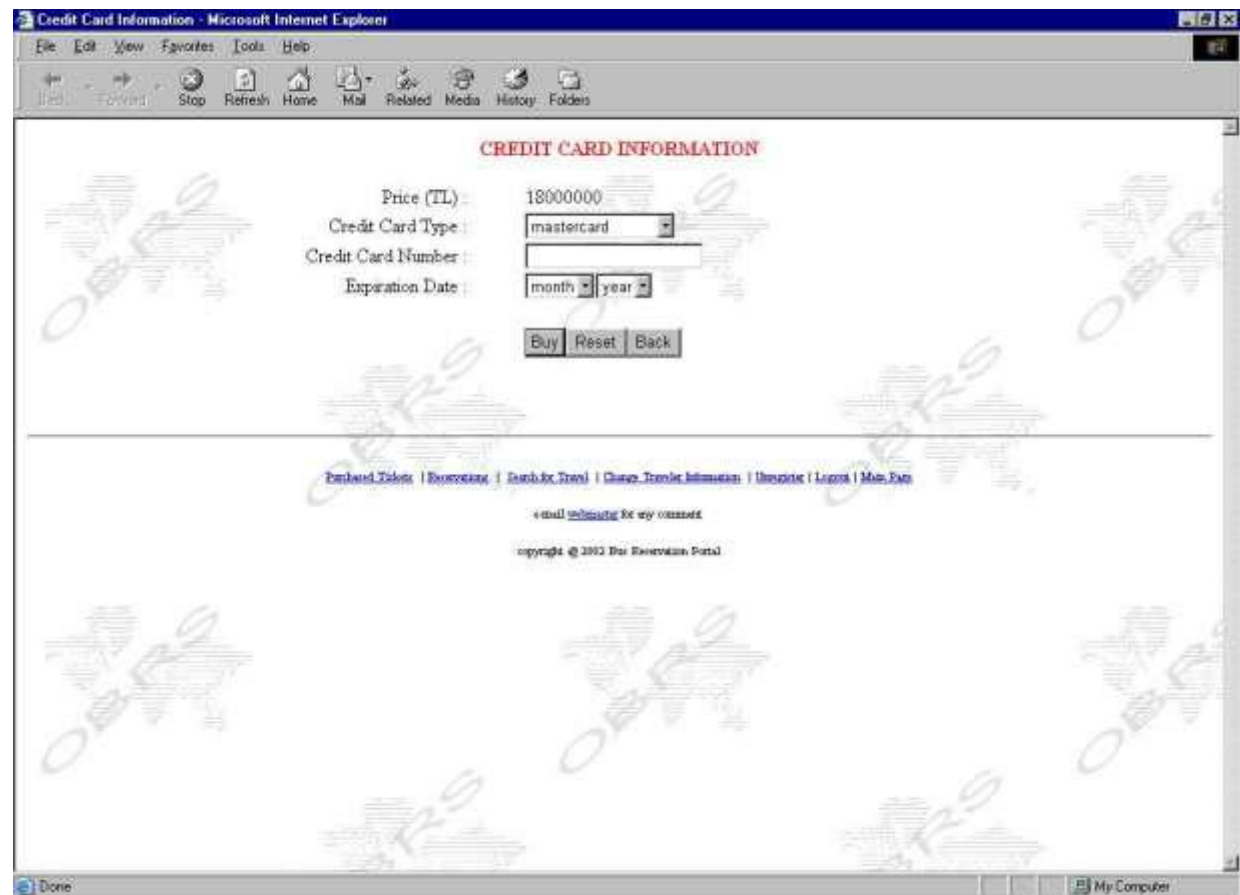
Price (TL):

[Purchased Tickets](#) | [Reservations](#) | [Schedule Travel](#) | [Change Transfer Information](#) | [Register](#) | [Logout](#) | [Main Page](#)

e-mail [info@busres.com.tr](#) for any comment

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Figure 15: Credit Card Information Page



The screenshot shows a web browser window titled "Credit Card Information - Microsoft Internet Explorer". The browser's address bar is empty. The main content area displays a form titled "CREDIT CARD INFORMATION" in red text. The form contains the following fields and controls:

- Price (TL): 18000000
- Credit Card Type: A dropdown menu with "mastercard" selected.
- Credit Card Number: An empty text input field.
- Expiration Date: Two dropdown menus for "month" and "year".
- Buttons: "Buy", "Reset", and "Back".

Below the form, there is a horizontal line. Underneath the line, there is a row of links: [Portland Tickets](#), [Reservations](#), [Search for Tickets](#), [Change Ticket Information](#), [Help/FAQ](#), [Logout](#), and [Main Page](#). Below the links, there is a small text: "e-mail [webmaster](#) for any comment". At the bottom, there is a copyright notice: "copyright © 2002 Bus Reservation Portal". The browser's status bar at the bottom shows "Done" and "My Computer".

Figure 16: Bus Firm User Main Page



Figure 17: Bus Firm Registration Page

BUS FIRM USER REGISTRATION

Login Name:

Password:

Confirm Password:

Firm Id: (Only name taken from slottime given)

Firm Password: (password taken from slottime given)

Name:

Surname:

e-mail Address:

Bus Firm:

[Bus Firm Information](#) | [Tech Support](#) | [Register](#) | [Main Page](#)

e-mail [mailto:info@busres.com](#) for any comment

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Figure 18: Change User Information Page

CHANGE USER INFORMATION

Login Name :

☒ **Change Password**

Old Password :

New Password :

Confirm New Password :

Name :

Surname :

e-mail Address :

Bus Firm :

[Purchase Tickets](#) | [Reservations](#) | [Enter](#) | [Update Information](#) | [Change User Information](#) | [About Us](#) | [Logout](#) | [Main Page](#)

e-mail [mailto:info@varan.com.tr](#) for any comment

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File:///D:/is/n536/register.html

Figure 19: Search Reservations Page

SEARCH RESERVATIONS

Name:

Surname:

Phone:

Reservation id:

Reservation date: day month year

Time: hour min

Route id:

[Forward Tickets](#) | [Reservations](#) | [Routes](#) | [Ticket Information](#) | [Change User Information](#) | [Disclaimer](#) | [Contact](#) | [Main Page](#)

e-mail yehemate@bc.org.com

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Figure 20: Reservation Search Results Page

Bus Firm see Reservation Results - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Mail Related Media History Folders

RESERVATION SEARCH RESULTS

Route id	Reservation ID	Name & Surname	Phone	Reservation Date	From	To	Travel Date	Time
2-122	00000001	Bilgehan Turan	03122321112	2 / March / 2002	Ankara	Istanbul	3 / April / 2002	12:30
3-112	00000002	Güven Fidan	02121123349	2 / March / 2002	Izmir	Ankara	3 / April / 2002	12:30
5-600	00000003	Candas Bozkurt	05322233993	2 / March / 2002	Izmir	Istanbul	3 / April / 2002	12:30
3-222	00000004	Meltem Yildirim	05352244990	2 / March / 2002	Istanbul	Ankara	3 / April / 2002	12:30

[Purchase Tickets](#) | [Reservations](#) | [Routes](#) | [Update Information](#) | [Change User Information](#) | [Newsletter](#) | [Logout](#) | [Main Page](#)

© 2002 Bus Reservation Portal

My Computer

Figure 21: Search Routes Page

info@obrs.org for any comment'. At the bottom is a copyright notice: 'copyright © 2002 Bus Reservation Portal'. The browser's status bar at the bottom shows 'Done' and 'My Computer'."/>

Search Routes - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Mail Related Media History Folders

ROUTES

From:

To:

Date:

Time:

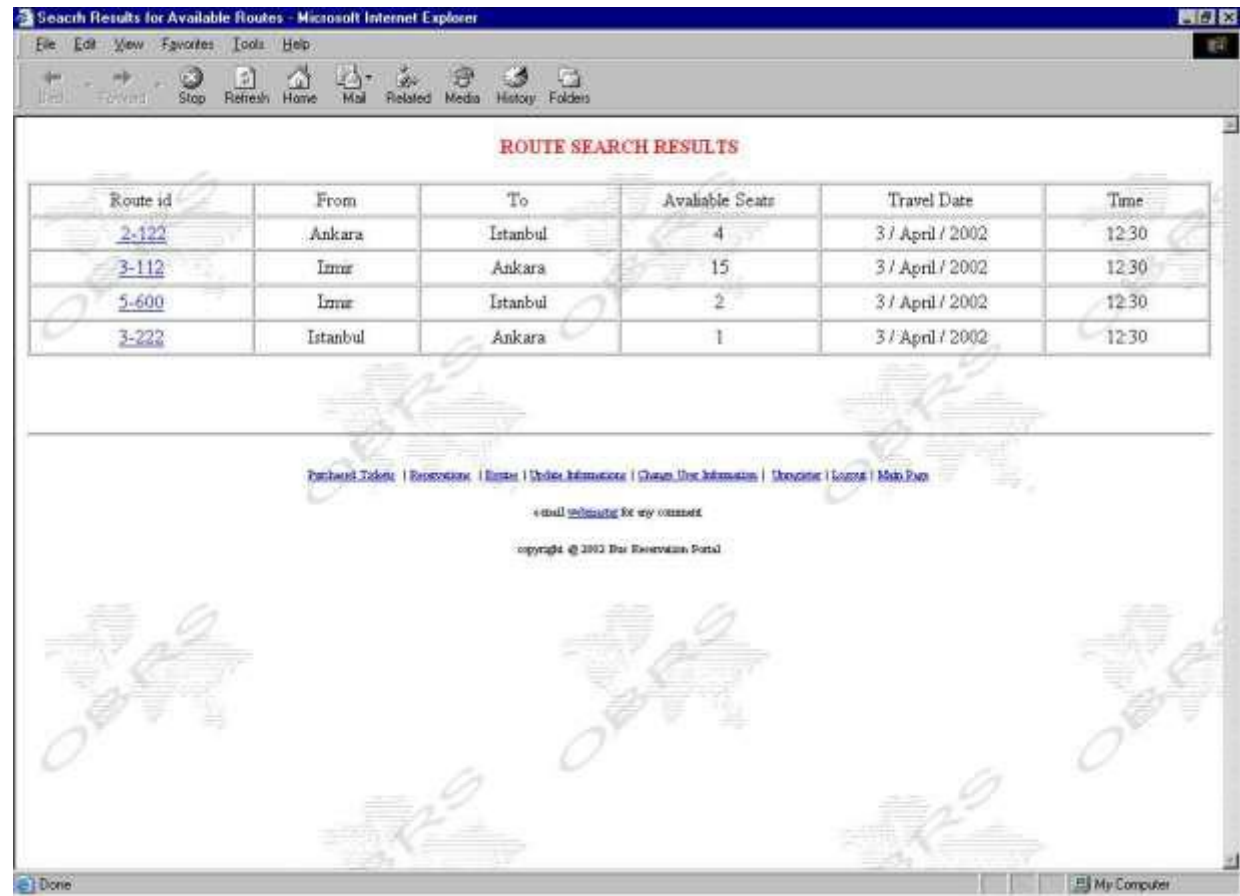
Route Id:

[Purchase Tickets](#) | [Reservations](#) | [Routes](#) | [Check Information](#) | [Check User Information](#) | [Check User](#) | [Logout](#) | [Main Page](#)

e-mail [info@obrs.org](#) for any comment

copyright © 2002 Bus Reservation Portal

Done My Computer

Figure 22: Route Search Results Page

ROUTE SEARCH RESULTS

Route id	From	To	Available Seats	Travel Date	Time
2-122	Ankara	Istanbul	4	3 / April / 2002	12:30
3-112	Izmir	Ankara	15	3 / April / 2002	12:30
5-600	Izmir	Istanbul	2	3 / April / 2002	12:30
3-222	Istanbul	Ankara	1	3 / April / 2002	12:30

[Purchase Tickets](#) | [Reservations](#) | [Routes](#) | [Online Information](#) | [Online User Information](#) | [About Us](#) | [Contact](#) | [Main Page](#)

[e-mail us](#) for any comment

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Figure 23: Update Information Page

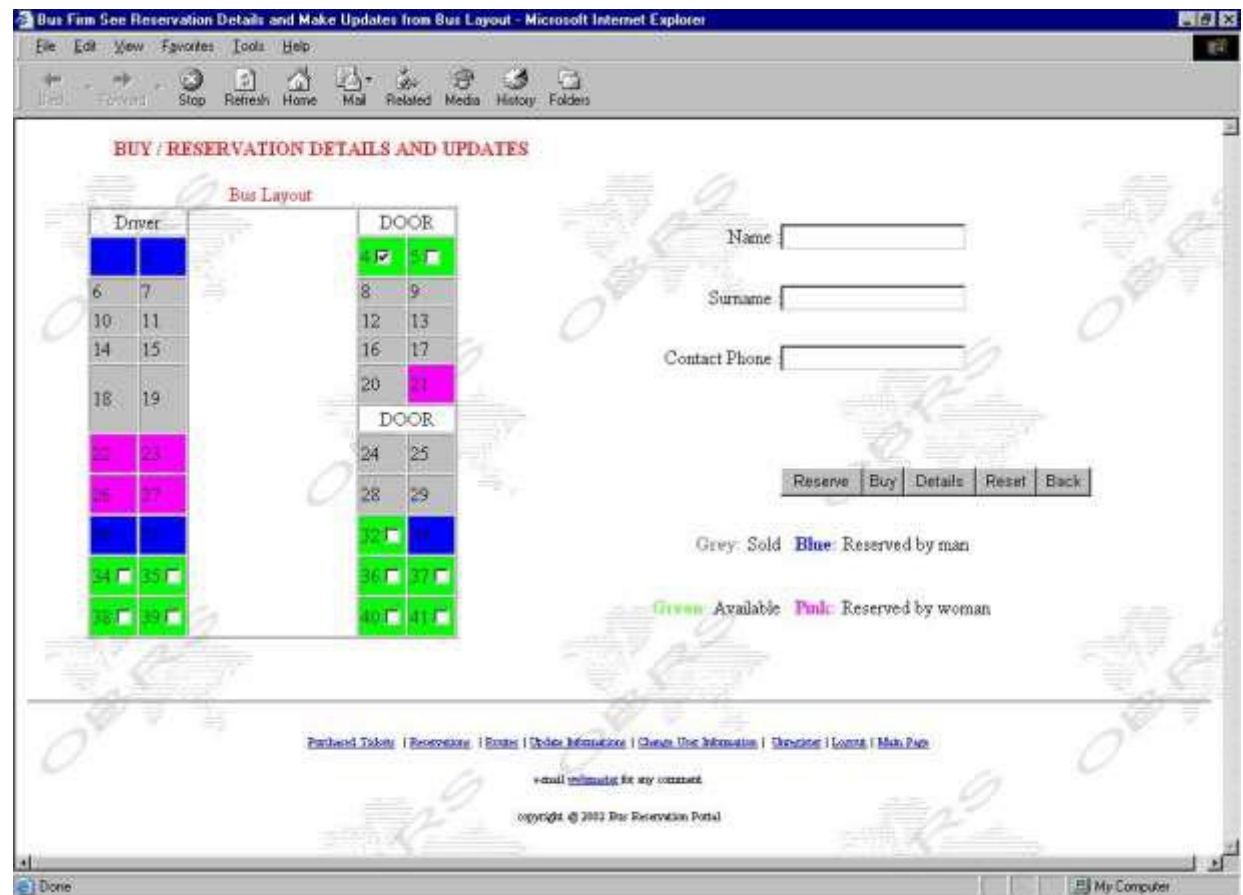


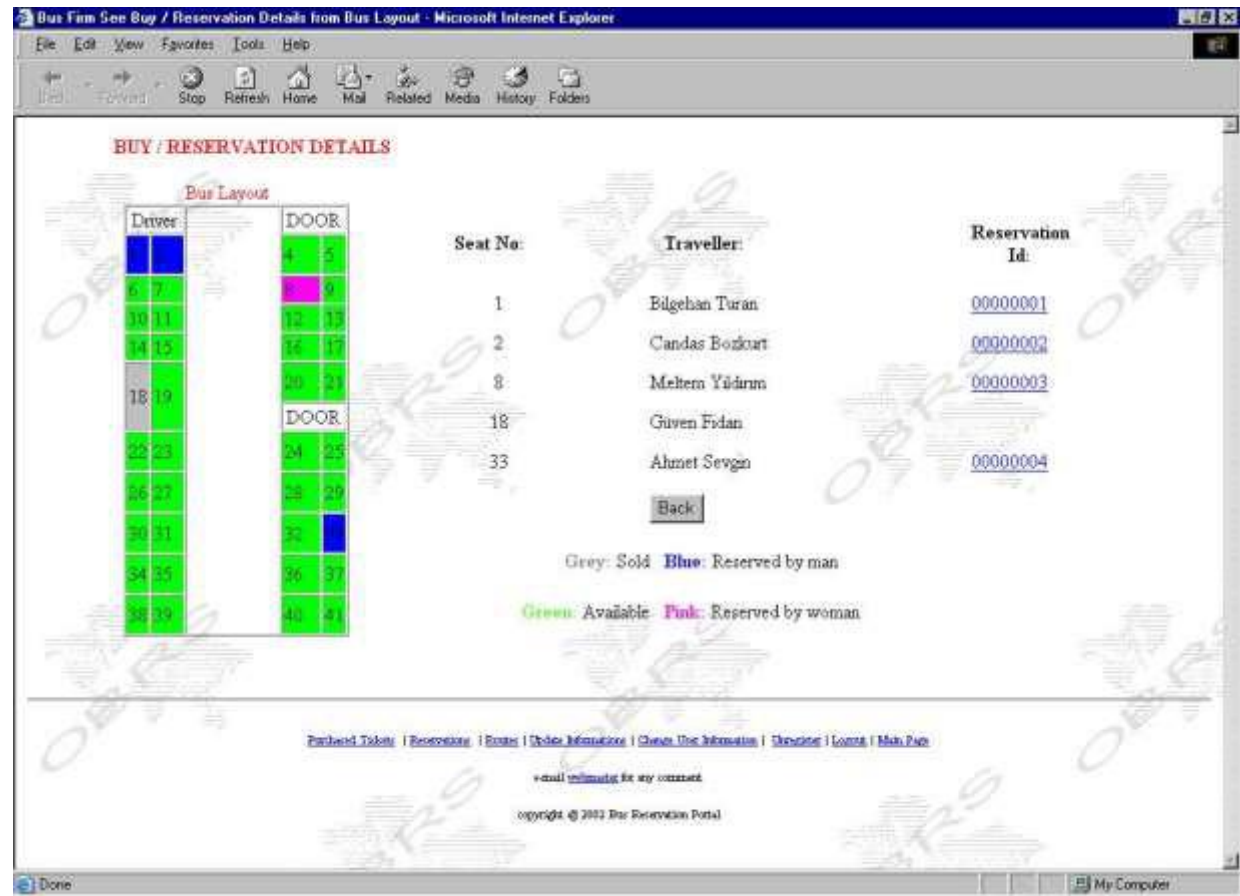
Figure 24: Buy / Reservation Details Page

Figure 25: Bus Firm Search Page

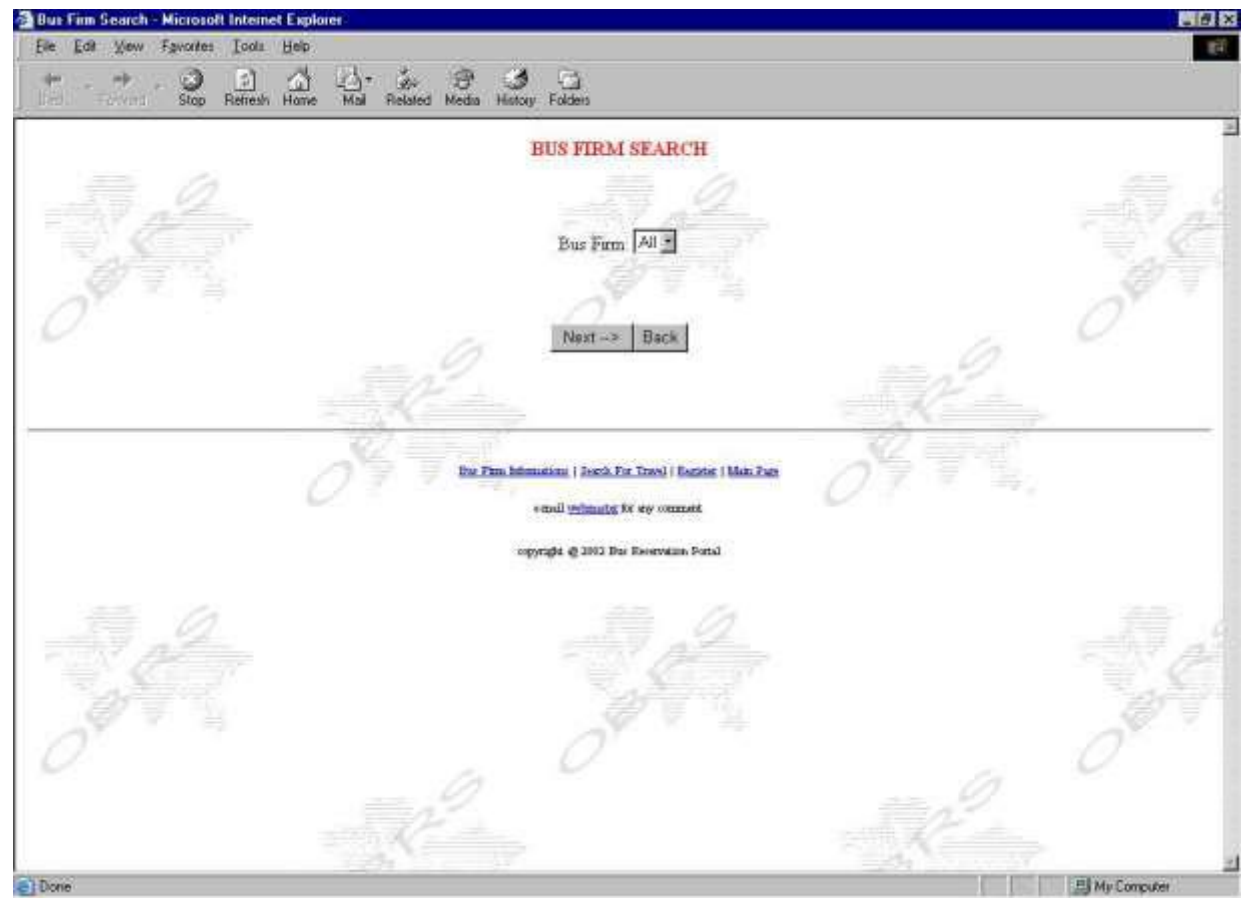
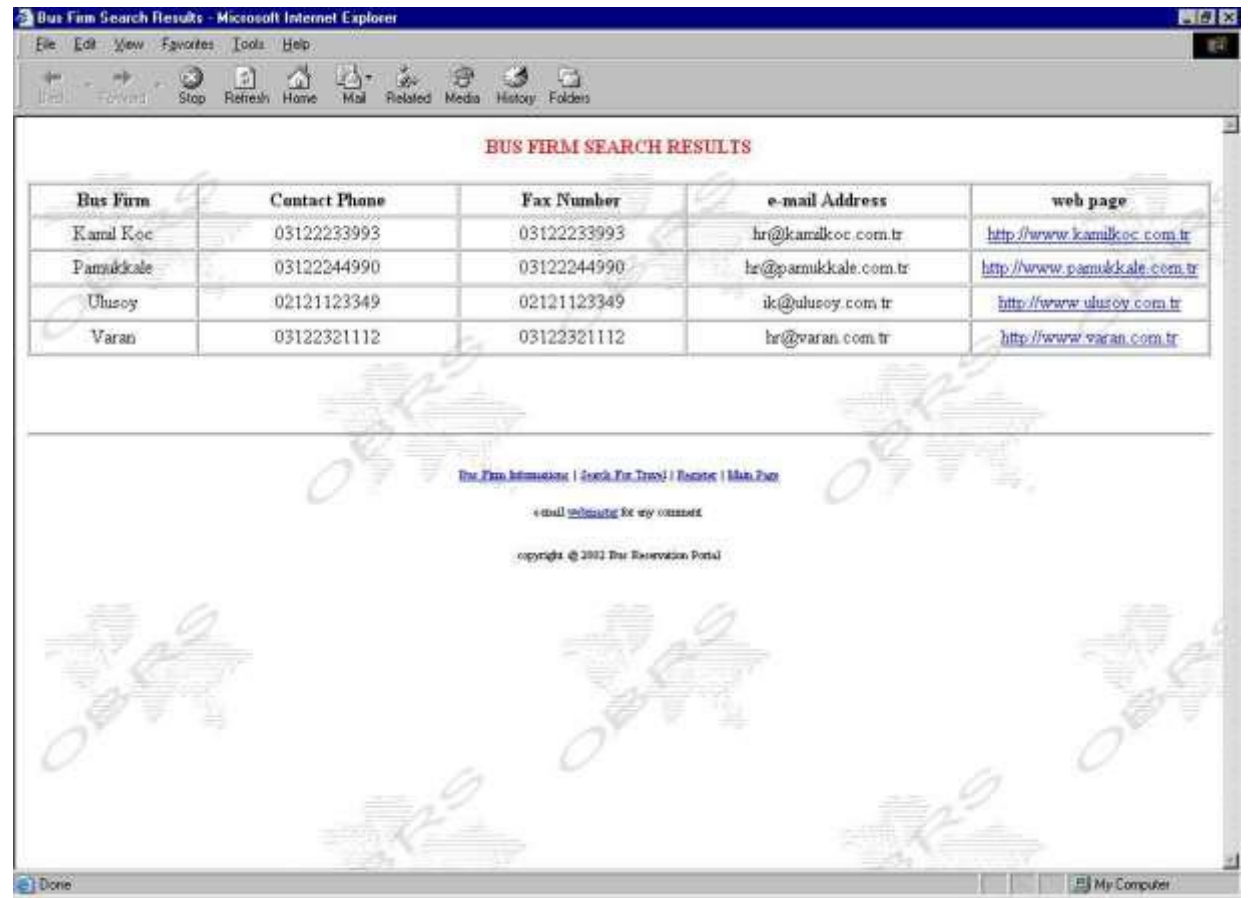


Figure 26: Bus Firm Search Results Page


The screenshot shows a web browser window titled 'Bus Firm Search Results - Microsoft Internet Explorer'. The browser's address bar is empty. The main content area displays a table with the following data:

Bus Firm	Contact Phone	Fax Number	e-mail Address	web page
Kamalkoc	03122233993	03122233993	hr@kamalkoc.com.tr	http://www.kamalkoc.com.tr
Parmukkale	03122244990	03122244990	hr@parmukkale.com.tr	http://www.parmukkale.com.tr
Ulusoy	02121123349	02121123349	ik@ulusoy.com.tr	http://www.ulusoy.com.tr
Varan	03122321112	03122321112	hr@varan.com.tr	http://www.varan.com.tr

Below the table, there is a horizontal line. Underneath the line, there are several links: [The Firm Informations](#), [Search For Travel](#), [Reserve](#), and [Main Page](#). Below these links, there is a text: 'e-mail [mailto:hr@ulusoy.com.tr](#) for any comment'. At the bottom, there is a copyright notice: 'copyright © 2002 Bus Reservation Portal'. The browser's status bar at the bottom shows 'Done' and 'My Computer'.

Figure 27: Reservation Results Page

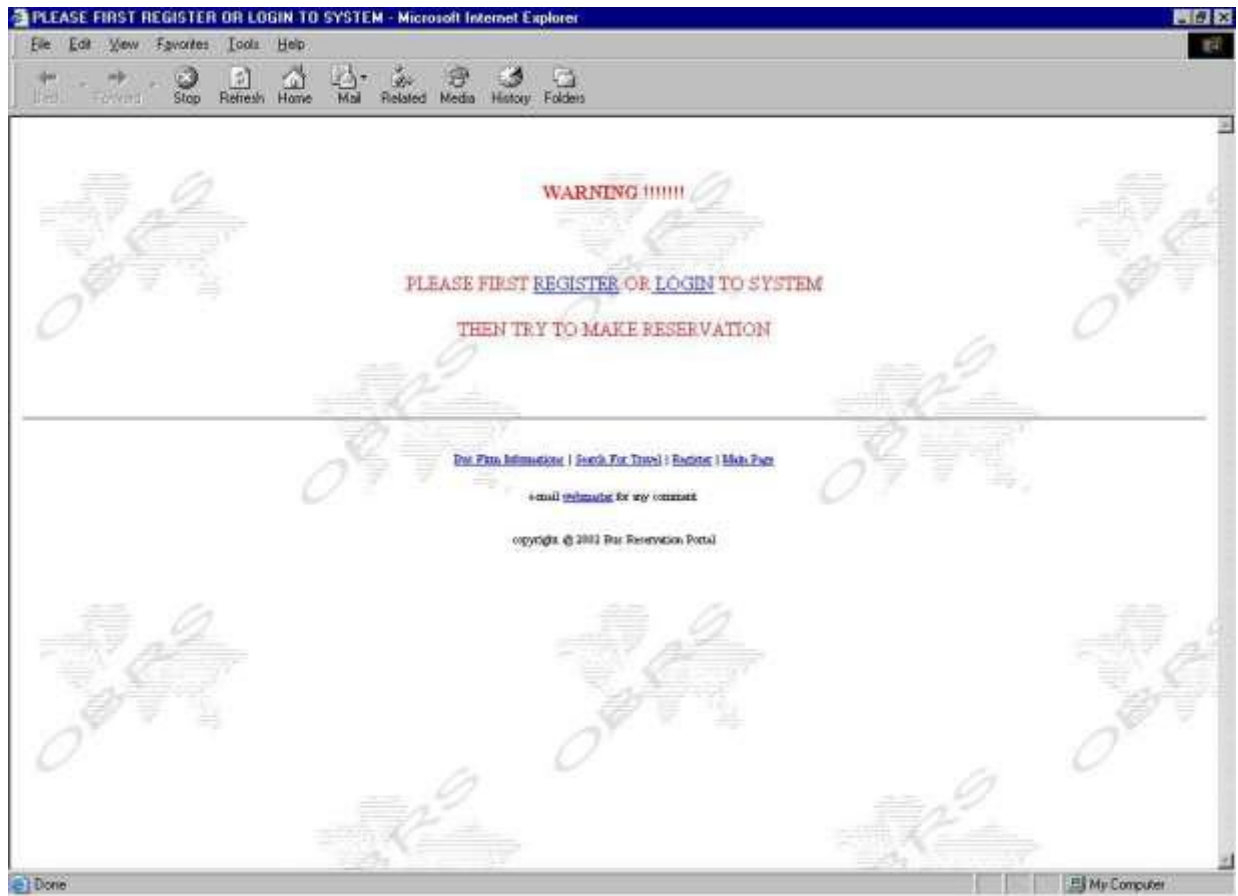


Figure 28: Search For Travel Page

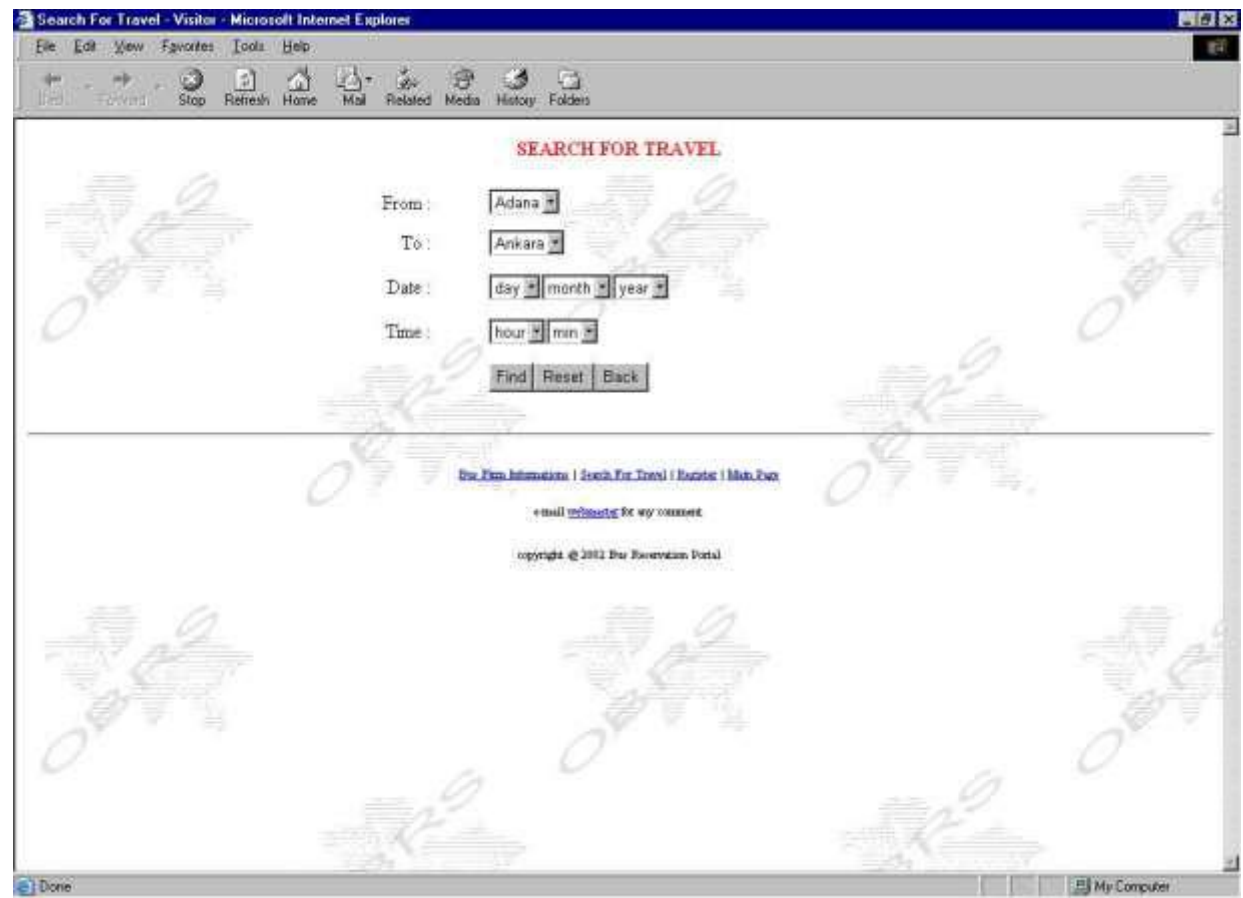
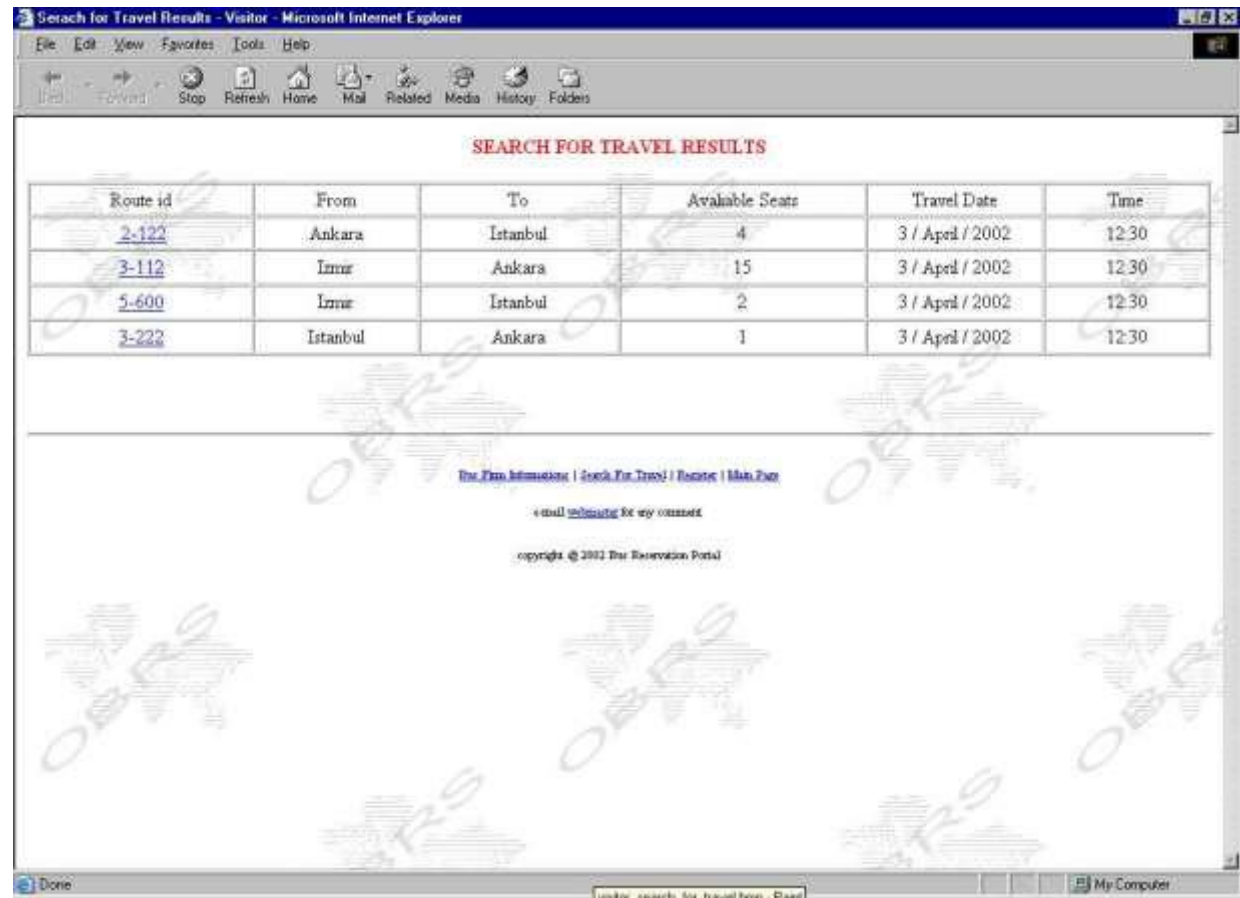


Figure 29: Search For Travel Results Page

SEARCH FOR TRAVEL RESULTS

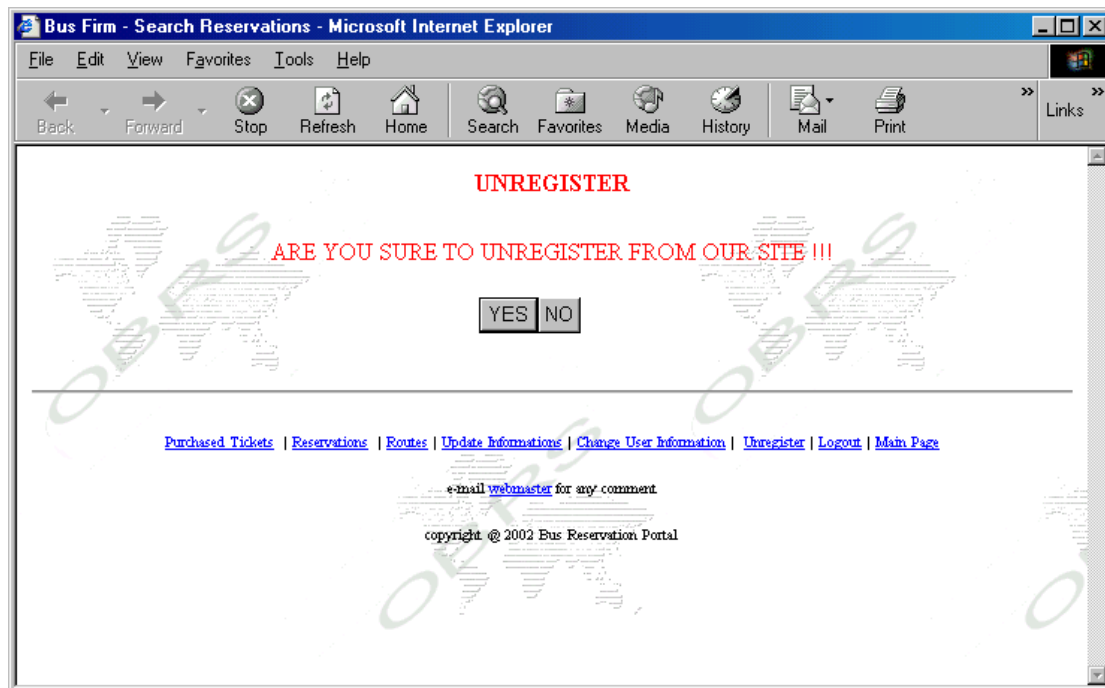
Route id	From	To	Available Seats	Travel Date	Time
2-122	Ankara	Istanbul	4	3 / April / 2002	12:30
3-112	Izmir	Ankara	15	3 / April / 2002	12:30
5-600	Izmir	Istanbul	2	3 / April / 2002	12:30
3-222	Istanbul	Ankara	1	3 / April / 2002	12:30

[The Firm Information](#) | [Search For Travel](#) | [Reserve](#) | [Main Page](#)

[e-mail us](#) for any comment

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Figure 30: Unregister Page



Appendix – C: ER DIAGRAM

