## Contents

1. **INTRODUCTION** ........................................................................................................... 3  
   1.1. Overview .................................................................................................................. 3  
   1.2. Scope & Organization of the Manual ..................................................................... 3  
   1.3. Contact & Support ................................................................................................. 3  

2. **SYSTEM SUMMARY** .................................................................................................. 3  
   2.1. User Accounts ........................................................................................................ 3  
   2.1.1. User Registration ............................................................................................... 3  
   2.1.2. User Login/Logout ............................................................................................ 4  
   2.1.3. User Profile Update ......................................................................................... 4  
   2.2. Optimized Path Search .......................................................................................... 4  
   2.2.1. Saving Search Results ..................................................................................... 5  
   2.2.2. Converting Saved Results into Tickets ............................................................. 5  
   2.2.3. Cancelling .......................................................................................................... 5  
   2.3. Knowledge Database .............................................................................................. 5  
   2.3.1. Entering a New Question ................................................................................. 6  
   2.3.2. Answering a Question ....................................................................................... 6  
   2.4. Machinist Train Assignments ................................................................................. 7  
   2.5. View Assigned Jobs ............................................................................................... 8  
   2.6. Train Tracking ........................................................................................................ 8
1. INTRODUCTION

1.1. Overview

Railway Information System (RIS) is a software package that is designed for managing/organizing a railway system and enhancing the services such a system offers to its users. Administrators may assign the machinists to trains automatically, passengers may search for optimized paths or anyone can see the trains on an interactive map.

1.2. Scope & Organization of the Manual

This user manual is prepared to clarify how to use the Railway Information System from different user type perspectives and describe its features.

In section 2, the services provided will be explained briefly with some sample scenarios.

1.3. Contact & Support

For further assistance you may contact us through e-mail:

- bugbustersteam@gmail.com

Also you may found some resources on our project web page:

- http://senior.ceng.metu.edu.tr/2010/bugbusters/

2. SYSTEM SUMMARY

Railway Information System provides many services and facilities to its users. Below they are described in more detail with screenshots.

2.1. User Accounts

Users of the Railway Information System need an account to use all the facilities of the system. A new user without an account may simply register for a new account, update his/her account and use this account to log into the system.

2.1.1. User Registration

Users may register to the system by filling the form which appears when “Yeni Kullanıcı” link is clicked. When the form is filled and submitted, the user is registered.
form is sent, immediately a confirmation e-mail is sent to the user’s e-mail. As soon as the link in that e-mail is clicked, the user account is activated by the system.

2.1.2. User Login/Logout
After registration, users may login/logout to the system to use the provided services. Login process requires a matching user name and password tuple. Logged in users may use the logout button to safely exit from the system.

2.1.3. User Profile Update
Users may update their profiles by clicking the “Kişisel Bilgiler” button on the left menu. Clicking this button shows a form filled with user’s current information.

![User Profile Update](image)

At this state, the form is locked. To update the information on the form, user should click the link below the form first. Then the form becomes updateable and user may enter the changes. Restrictions includes that the user name field is non-updateable and the fields marked with an asterisk cannot be empty.

2.2. Optimized Path Search

One of the awesome services of Railway Information System, optimized path searching is essentially implemented for passengers. According to user input, RIS path finding algorithm generates possible paths and presents them to the user for further usage.

![Path Search](image)
2.2.1. Saving Search Results

After a successful search, users may save the search results they select. Saved search results will be displayed on page “Seyir Defteri”. User may check the checkboxes at the last row of desired search results and click the “Kaydet” button to save the selected results.

Saved search results can be viewed from the “Seyir Defteri” page along with the ones which are converted to tickets.

2.2.2. Converting Saved Results into Tickets

After a search result is saved, it can be converted into a ticket. To do that, a search result should be saved first. Earlier saved search results may also be converted into tickets. The desired search results are selected in a similar way described section 2.2.1 and whenever the user clicks the “Bilete dönüştür” button, they are listed in the tickets section of the “Seyir Defteri” page.

2.2.3. Cancelling

Saved search results and tickets may also be cancelled. The process is simple, the user selects what he/she wants to cancel and clicks the “İptal et” button of the according section.

2.3. Knowledge Database

Another important segment of the system is knowledge database. In that database, there are many different sections such as “Sıkça Sorulan Sorular”, “Genel Sorular/Cevaplar”, “Cevap Bekleyen Sorular”, etc. “Sıkça Sorulan Sorular” section is not subject to modification and edited directly by administrators. Users may add their questions to “Cevap Bekleyen Sorular” section. The questions in that section may be answered only by administrators or users who ask that question. Whenever a question is answered and marked as solved by an administrator, it is with all its answers are moved into “Genel Sorular/Cevaplar” section. The
answers of questions are folded by default and clicking the "cevap" button under any question expands the answer/s of that question.

2.3.1. Entering a New Question
On the top left corner of the knowledge database page, there is a button labeled as "Yeni Kayıt". Clicking this button opens a page with a form; users may add new questions into the system by filling this form which contains title, topic and question fields. Clicking "Gönder" button classifies the newly entered question according to its topic and adds the question under appropriate category.

2.3.2. Answering a Question
A question, if not under “Sıkça Sorulan Sorular” section, may be answered by administrators or the user who asked the question.

Figure 5 : Frequently Asked Questions

Figure 6 : Answering a Question
Everyone can see the above question but it may be answered by the user “brk” or any administrator. “Cevapla” link is not visible to other users. Clicking this link expands an input field just under the question (or the last answer if there is any). After entering the solution, clicking “Gönder” button adds the solution to database.

2.4. Machinist Train Assignments

An important part of the system is the automation of Machinist - Train Assignments. Administrators can access the assignments page by clicking the “Sefer Atama” button on their home page. Just as the page appears, they select a region and the date. Clicking the “Listele” button submits the form and a page with three tables is displayed. These tables contain the idle machinists, machinists with assigned jobs and trains without machinist. According to displayed information, an administrator can match a train with a machinist in either of the following two ways:

- Using the “Tek Sefer Ataması” form. Administrator enters the machinist id and journey id to this form and makes the assignment between them.
- Using the file submit form. Administrator enters a file location, the machinist-journey tuples are assigned to each other.

Figure 7 : Machinist-Journey Assignment Page
2.5. View Assigned Jobs

Whenever a machinist logs into the system, a form with one date field is displayed. When the machinist enters the date, the jobs assigned to him/her on that date are ordered by time and listed in tabular form. He can also access his/her past schedules.

2.6. Train Tracking

![Train Tracking](image)

Figure 8: Machinist Task List

Figure 9: Train Tracking
Train tracking system may be reached following the “Tren Takip Sistemi” button on the left menu.

All users can see the system and follow desired trains. On the right side, information for the selected train can be seen. Information is received from the simulation module. In simulation module the stations on the route are entered. Module produces the coordinates by looking at the shapefiles for the railways. Angles are calculated from the accelerometer data coming from another port. On the left the map is shown and the trains are marked on the map. The train icons move by updating the coordinate values with incoming data. The map has navigation and zoom panels, but these features can be used by mouse click&drag, double-click or mouse wheel. On the right of the map there is a plus sign. When user clicks on it, a small window is opened. User can select the layers to be shown from there. The accelerometer data can also be simulated in the simulation module by reading from a file.