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İSTANBUL TEKNİK ÜNİVERSİTESİ ELEKTRİK-ELEKTRONİK FAKÜLTESİ

Travel Organizer: TRavel.NET

Bitirme Ödevi

**Bilge BAŞKELEŞ
Pınar KARAGÜLLE**

**Bölüm : Bilgisayar Mühendisliği
Anabilim Dalı: Bilgisayar Bilimleri**

Danışman : Yrd. Doç. Dr. Feza BUZLUCA

Mayıs 2004

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(ÖZET)

Internet temelli uygulamalarda kullanımı tercih edilen son teknoloji olan web servis teknolojisi birden fazla uygulamaya destek vermesi ve çeşitli internet standartlarını bünyesinde barındırması sayesinde esneklik, ölçeklendirme, güvenlik ve kuvvetliliğin yanı sıra iş mantığını merkezi bir sunucuda toplama yeteneği de kazanmaktadır. Bu özellikleri web servislerini, hem belirli düzeyde güvenlik hem de veri haberleşmesi gerektiren web tabanlı e-ticaret uygulamaları için biçilmiş kaftan yapmaktadır. Rapor, bitirme ödevi amaçlı gerçekleştirilen ve bir web servis, bir veri tabanı, web servisin sunduğu servisleri kullanan bir ASP.NET web uygulaması ve bir ASP.NET mobil uygulamadan oluşmakta olan TRavel.NET sistemini anlatmaktadır.

Travel Organizer: TRavel.NET

(SUMMARY)

Nowadays, the cutting-edge technology that is preferred for using in Internet-based applications is web services. Web services pack the sophisticated qualities such as flexibility, scalability, security and robustness together with a business logic placed in the center of the server. The web services technology combines many Internet standards together and the flexibility of the web services enable support for more than one type of applications. These various qualities of the web service technology is the solution for e-commerce services and applications requiring programmatic and instant access to information through various devices including PCs and mobile devices and data security based on user authentication. In this report, the TRavel.NET system is going to be described which is a system constructed using powerful technologies such as web services, C# and ASP.NET including a web service with various methods, a database, an ASP.NET web application and an ASP.NET mobile web application.

The system is composed of two main parts, one of them is designed for the ordinary user willing to search or reserve (if firms enable) for transportation, accommodation or tours. The ordinary user defined in the system as traveller may be a registered user of the system or not. The other part is designed for firm consultants and besides entering up-to-date transportation or accommodation data, they may also change the existing data to inform the user of anything going wrong about the reservation or delays.

The scope of the ordinary user's part of the system is to provide a platform for travelling from node₁ to node_n using the algorithms for finding the least cost, most comfortable, fastest journeys that vary under a plenty of transportation vehicles such as busses, planes, train etc. stopping at predetermined n-2 nodes to transform. Besides showing the final path passing all required nodes the system is also responsible for optionally planning tours for selected regions given the time period for the travel. The tours may also consist accommodation places selectively. If proper interaction with transportation firms are enabled, the system also enables reservation. The platforms for using the services is variant in that the platform can either be PCs, mobile devices with internet connection and browsers.

The scope of the firm consultant part of the system is to provide a platform for firms to publish their services and check reservation (if available). The platforms for using the services is PCs with internet connection and browsers.

TRavel.NET is designed and implemented for people who are interested in or love travelling and transportation firms who want to express their facilities and opportunities through web.

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1 - INTRODUCTION

1.1 Description of the Project

TRavel.NET is designed and implemented for people who are interested in travelling and transportation firms who want to express their facilities and opportunities through web. The first important difference of the system from other transportation services is that TRavel.NET gathers many firms, companies together on a single platform to service the ordinary users of the system. The user is given the opportunity to search for the transportation vehicles that are suitable for the choices of the user. The choices are taken from the user through a web form and proper search is maintained with the chosen nodes and weighted merits. The final results can vary by either firm or transportation vehicle. The system is flexible in that reservation can be embedded if proper interaction with firms are obtained.

The second important difference of the system from other transportation systems is that TRavel.NET can also construct a tour, if the user gives proper weighted choices of merits through a web form. Then, the system determines nodes that fit the user's choices and accomodation if the user demands.

The system is constructed using C# language with Visual Studio .NET technology. The web services technology is a tool to implement a system with various functionalities at full. From the start date of the project, 09-02-2004, we aimed to implement a web service with a supporting database and two web applications one of which is a mobile application to construct the TRavel.NET system. These technologies were completely new to us, neither of the group members have any experience with the environment, but we managed to complete the work.

TRavel.NET system is composed of three main components which are TRavel.NET web service, TRavel.NET web application and TRavel.NET mobile web application.

The TRavel.NET service is composed of various web methods and supporting classes which are used in both type of applications. Among them there are methods that include search.

The TRavel.NET web application is composed of various web forms that enable the user to interact with the web service. For the ordinary user of the system, the web application consists web forms that are used for logging in, travel searching, tour searching and saving (reservation if available) and viewing their saved tours. Saving requires the user is registered into the system, because it is the first step before reservation. Only registered users can reserve for their chosen transportation and accomodation because of the payment

requirements. The user can view the status of the travel (reservations if available) by viewing the travels, delete the travel or cancel reservations.

The firm consultant part of the system enables the user to enter new data for both transportation, accommodation, update the existing data for them. These operations are maintained through web methods that provide connection and interaction with the database.

The TRavel.NET mobile web application is composed of various web forms that enable the user to interact with the web service. For the ordinary user of the system, the web application consists web forms that are used for logging in, travel searching, tour searching and saving (reservation if available) and viewing their saved tours. Saving requires the user is registered into the system, because it is the first step before reservation. Only registered users can reserve for their chosen transportation and accommodation because of the payment requirements. The user can view the status of the travel (reservations if available) by viewing the travels, delete the travel or cancel reservations.

No mobile application for firm consultants exist.

In the first part of the report, Section 2, we start with explaining the search algorithm implemented, Branch and Bound. Then Analytic Hierarchy Process, which is used in calculating weights, is explained. Brief overview of the .NET XML web services and the C# language are also provided, to familiarize the reader with these new concepts.

Section 3 deals with the details of the whole system. Web service classes, functional parts of the service, database, web methods used in database interaction and any other related information can be found here.

The two applications that maintain the user interaction as a whole are explained in Section 4. The monitor captions can also be found in this section.

Conclusions, recommendations and future plans about the project are stated in Section 5.

All the references used in this report and all through the construction period of the project is given in Section 6.