

**An Online Automation System based on Windows
Sidebar Gadget for Local Market in Turkish
Republic of Northern Cyprus**

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ABSTRACT

In Turkish Republic of Northern Cyprus, there are some difficulties on effective communication between local companies and potential customers. Therefore, a complete online automation system is developed to have economical contribution for the local companies (which are one of the main economic resources) and to help customers for having new information about companies' products with less effort.

Our system is working over Internet and can be establish a bridge between the companies and potential customers by using Windows Sidebar Gadget. Windows Sidebar Gadget is a very popular and default tool in Microsoft Windows Vista and Microsoft Windows 7 operating systems which are mostly using in Turkish Republic of Northern Cyprus.

With our system, increasing local companies' sale performance, economical contribution, making company known, and attracting more customers can be provided.

Keywords: Windows Sidebar Gadget, Local Company, Economical Contribution.

ÖZ

Kuzey Kıbrıs Türk Cumhuriyeti'nde yerel ticari kuruluşlar (firmalar) ve müşteriler arasında iletişim eksikliği bulunmaktadır. Bu nedenle, Kuzey Kıbrıs Türk Cumhuriyeti'nin temel ekonomik kaynaklarından biri olan yerel ticari kuruluşların ekonomilerine katkı sağlamak ve müşterilerin daha az çaba ile yerel ticari kuruluşların ürünleri hakkında yeni bilgi sahibi olabilmelerine yardımcı olabilmek için İnternet üzerinde çalışan bir yazılım geliştirilmiştir.

İnternet ortamında çalışan sistemimizde; Windows Sidebar Gadget'lar kullanılarak, firmalar ve müşteriler arasında bir köprü kurulması sağlanmıştır. Windows Sidebar Gadget'lar, Microsoft Windows Vista ve Microsoft Windows 7 işletim sistemlerinde popülaritesini sürdürmektedir.

Dolayısıyla, bizim sistemimiz ile firmaların satış performanslarında artış, ekonomide iyileşme, firmaların tanınması ve daha çok müşteri kazanmaları sağlanacaktır.

Anahtar kelimeler: Windows Sidebar Gadget, Yerel Ticari Kuruluş, Ekonomik Kalkınma.

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LIST OF SYMBOLS/ABBREVIATIONS

WSG : Windows Sidebar Gadget

TRNC: Turkish Republic of Northern Cyprus

Chapter 1

INTRODUCTION

Nowadays, Internet has become very important in our life because it makes the world a smaller place. All computers in the world are connected via the Internet. Therefore, the communication with each other is easier when using the Internet.

The traditional communication tools such as the fax machines are being replaced by e-mail, and standard phones are being replaced by VoIP (Voice over Internet Protocol) supported Internet phones (e.g. Skype) or chatting tools (e.g. MSN Messenger). To communicate with people, social network is also used. A social network Web sites have become very popular during the past few years and they are based on a certain structure that allows people to both express their individuality and meet people with similar interests. This structure includes having profiles, friends and blog posts which are usually common for almost all social Web sites (e.g. Facebook [7], Twitter [8], LinkedIn [9]). Sharing information and reaching large group of people is easier with social network sites.

Nowadays, Microsoft Windows Vista and Microsoft Windows 7 are very popular operating systems. Both operating systems have Microsoft Windows Sidebar tool by default. Microsoft Windows Sidebar is a user interface feature and it is available in all versions of Microsoft Windows Vista and Microsoft Windows 7. It is used to

keep Windows Gadgets on desktop. By using Windows Gadgets, reaching information is become quick and easy way for large group of users over the Internet. In other words, Windows Gadgets can be performed like social networks.

In Turkish Republic of Northern Cyprus (TRNC), there are some difficulties (such as cost and inabilities) on effective communication between local companies and potential customers. Because of this, it is difficult for companies to reach the customers while advertising, announcing promotions and discounts, delivering coupons etc. and it is difficult to be aware of advertisements and opportunities. In this thesis, we concentrated on these problems. Therefore, we developed a complete online automation system in order to help customers and have economical contribution for the local companies in TRNC by using Windows Gadget (to delivering information about company advertisements).

Our system is designed and implemented to get benefits of having a positive effect on TRNC's economy. Windows Sidebar Gadget (WSG) (type of Windows Gadget) is used to see customers' interested areas in shopping, and give them the opportunity to follow related advertisements, announcements, promotions and discounts, coupons.

According to our literature survey, there are several studies that WSG is used. One of these studies is the European Credit Transfer System (ECTS) which is proposed by Ercan et al. [3]. This system enables teachers to monitor the student activities and produce statistics of courses and students for using to improve performance of the students and calculate the course credits. Different approaches are also available for using WSGs such as eBay Gadget [10] which lets the user to search products and/or

monitor any item in the auction. However, our study of being a bridge between customers and companies by using WSG can be a new approach.

The followings could be the benefits of our system that can produce positive effect on TRNC's economy:

- In TRNC, most of the companies are usually located at the centre of the city, while some of them are far away from the city centre. These companies are not well-known by customers since the customers prefer to visit popular locations. To make a company known, company needs to improve its marketing activities which also increase the expenses. Our system can support such companies;
- The companies can take an advantage of our system to attract more customers;
- Publishing advertising on WSG is cheaper than publishing on billboards, leaflets etc.;
- Without communication between companies and customers about company activities, companies cannot become more successful in the market. Company activities are required to reach customers for announcing the services and products. Company can provide to meet the customers' needs. Through this system, these companies can reach to customers and give more information about their activities effectively. Furthermore, customers can be aware of those activities;
- Customers can benefit from this system since they will be able to know the opportunities;

- Selling can be increased and revival of the market can be much better;
- There will be no need for the customers to spend any extra time to have new information about companies' products.
- On the other hand, our project can be a prototype for using other cities or countries in the world.

This project is based on our previous study [5], which is the first phase of the project and contains the materials and structures needed for the development of the project. During the development, we had some changes at some points of these materials and structures since it is seen as necessary in terms of applicability (We had already specified in our previous study that we would act by considering that this situation might be and we did so.). Therefore, it is useful to say that everything in this report is in the most recent state.

In the rest of this report, background information is given in chapter 2, architecture and design of the system is described in chapter 3, implementation of our system is given in chapter 4, and finally, thesis is concluded in chapter 5.

Chapter 2

BACKGROUND INFORMATION

In this section, background information about Windows Sidebar Gadgets and Web services will be given.

Windows Gadgets are easy to use mini programs that give you information at a glance and provide easy access to frequently used tools on Microsoft Windows Sidebar [2]. Windows Sidebar is a pane on the side of the Microsoft Windows Vista and Microsoft Windows 7 desktops where we can keep our Windows Gadgets organized and available. There are three different types of Windows Gadgets as follows;

- **Live Gadgets (also known as Web Gadgets):** Live Gadgets are mini Web applications that appear in your Live.com pages or Live Spaces.
- **SideShow Gadgets:** A Gadget for Windows SideShow is a mini-application running on the PC that sends data to devices with the Windows SideShow platform. The Gadget retrieves data from a data source such as an application or web service, and sends this data to the Windows SideShow platform, which sends it to the appropriate devices. Using Windows SideShow, you can view or control information such as e-mails, media player, and weather updates, etc.

SideShow is also appears in all kinds of devices, such as MP3 players, remote controls, phones etc.

- **Sidebar Gadgets (also known as Windows Desktop Gadget):** Sidebar Gadgets are aimed at the desktop. Windows Sidebar is a translucent panel anchored on your desktop that contains mini-applications known as Windows Sidebar Gadgets (WSG). These WSGs are designed for specialized purposes, such as displaying weather information, RSS news feeds, and more. In its simplest form, a WSG is developed an HTML and an XML definition files and may also include other files, such as image files (PNG and JPG), Cascading Style Sheets (CSS) files, and JavaScript/VBScript source files. All of the content is stored in a compressed (ZIP or RAR format) file which is renamed with a “.Gadget” extension [1]. Installation consists of downloading the “.Gadget” file and allowing the download process to install the WSG, or saving the “.Gadget” file to the local system and double-clicking to start the installation process.

NOTE: Windows Sidebar Gadget (WSG) and Windows Desktop Gadget have same meaning. That is why; Windows Desktop Gadget was used in our previous study [5].

The main use of WSG is to provide a quick and easy way for users to obtain information. Furthermore, the need to lunch- scale applications can be eliminated. For example, if users want to know the time in different time zones, they can run multiple instances of the clock by WSG, setting each clock to a specific time zone. Windows Sidebar is a user interface feature available in all versions of Microsoft Windows Vista and Microsoft Windows 7. Figure 1 shows the Sidebar anchored on

the right of the screen with four WSGs docked within. The four Windows Sidebar Gadgets shown below are CPU Meter, Notes, Clock, and Calendar, respectively.



Figure1: Windows Vista Desktop with some Windows Sidebar Gadgets

WSGs can aggregate and collect data from multiple websites and web services over the Internet. They also let users interact with desktop as well as Web services. They do not run on a web browser, but rather on a Sidebar or desktop as small mini applications.

A Web service is typically an application programming interface that is accessed via Hypertext Transfer Protocol (HTTP) and executed on a remote system, hosting the requested service. A Web service as a software system designed to support interoperable machine to machine interaction over a network [6]. Web services can offer application components such as currency conversion, weather reports, or even language translation as services. With Web services you can exchange data between different applications and different platforms [4].

Chapter 3

ARCHITECTURE AND DESIGN OF THE SYSTEM

The system consists of three main modules. These are Windows Sidebar Gadget, Administrator, and Company modules. Company module is a Web application that enables companies to publish their advertisements, announcements, promotions, etc. over the Internet. Companies register to the system for once. After registering to the system and getting the approval of the administrator, they can use the Web application to insert/delete/edit the information about their advertisements to be displayed on the customers' WSGs. Administrator module is also a web application. The company advertisements are evaluated by the administrator in this module. If an advertisement gets confirmation, then it is being available to be displayed on WSGs. WSG module contains mini Web application and Web service.

After the user is registered and downloaded the WSG mini Web application which is customized for him, WSG application will run on every computer start-up and gather information via Web service over the Internet. By using WSGs, customers can be aware of advertisements, promotions, discounts, and so on.

Figure 2 shows general architecture of the system. The details of this architecture are given in the following subsections.

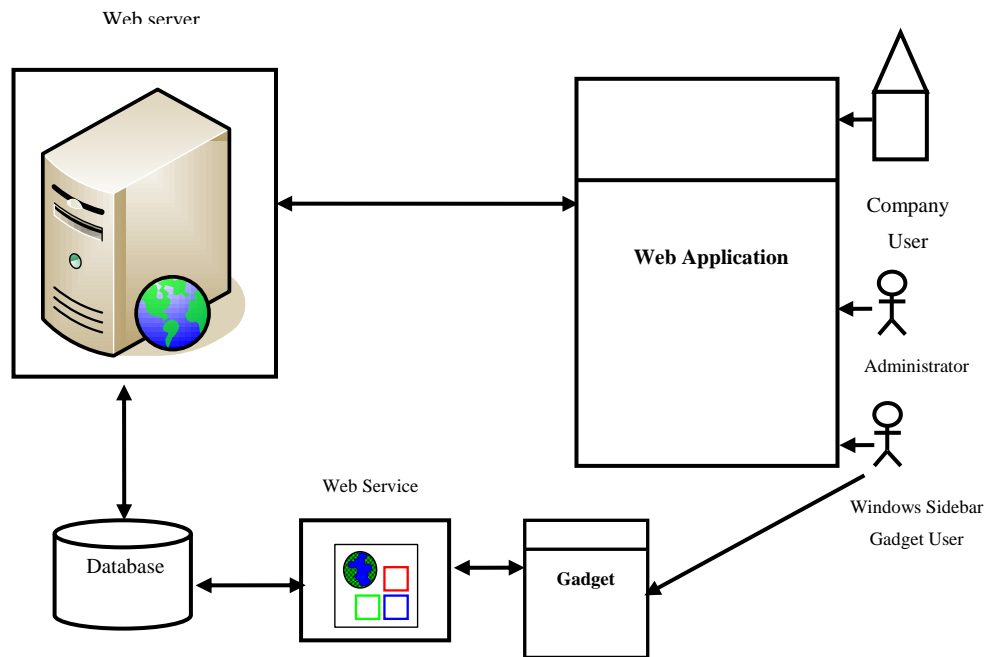


Figure 2: General Architecture of the System

3.1. Architecture of Company Module

This module provides company related issues such as the company registration and adding advertisements, promotions, coupons, etc. by the company user.

The following diagram (Figure 3) shows how the company registers to the system and logs in.

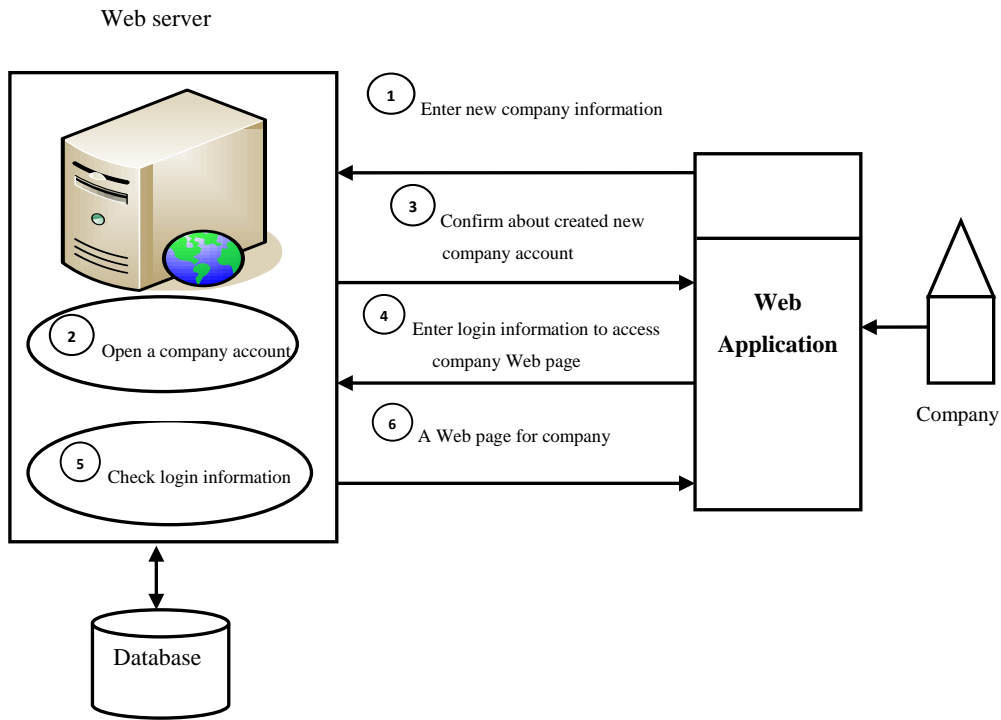


Figure 3: Open New Company Account and Login to System

First step of the work flow is the registration of a new company to the system. This registration will be done once for each company user and is divided into two parts. In the first part, company name, tax-id, city, company category (shoes, cosmetic, accessories, etc), address, contact phone number, contact e-mail are entered by company user. This part contains the company information. In the second part; user name, password, name, surname, e-mail, and phone number are entered for obtaining the company owner's contact information. The entered data are transmitted to the Web server (Process 1). After the registration process, user and company names are checked by the Web server, if the database contains the same record(s) or not. If there is no duplication in the database, the new company account is created (Process 2). Web server sends a message that contains the company's new account confirmation (Process 3). After the confirmation message, the new company tries can login by using its user name and password. After login information is delivered to the Web server (Process 4) and verified on the database (Process 5), company's Web page is ready to use (Process 6).

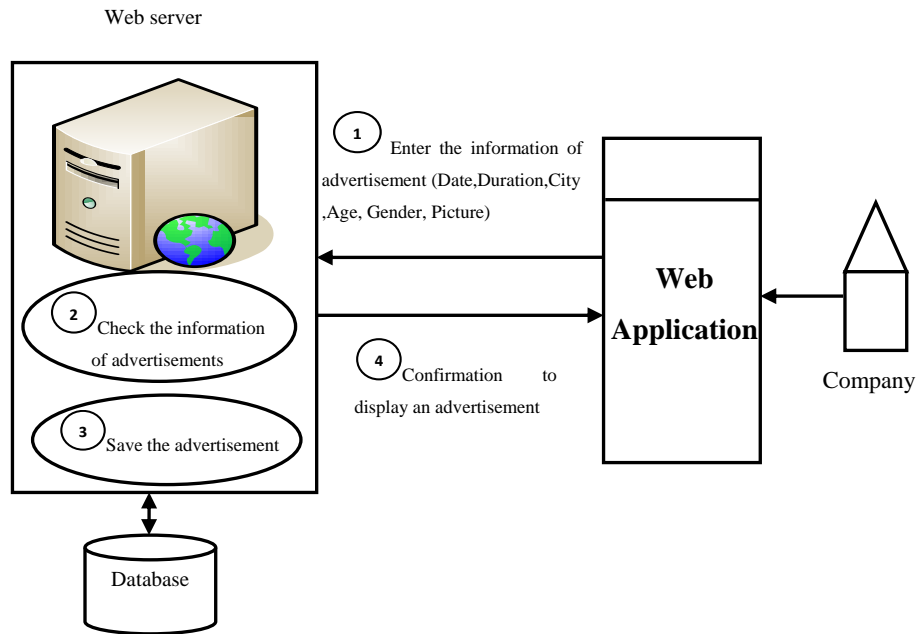


Figure 4: Inserting an Advertisement

Figure 4 shows how to insert an advertisement to the system by a registered company. Firstly, company enters information of advertisement such as the date, duration of the advertisement, city, age, gender and picture (.gif or jpeg) to the Web server (Process 1). Web server checks information of the advertisement which was requested by the company (Process 2). After that, the confirmed advertisement is stored in database (Process 3). Lastly, company gets a confirmation message that the advertisement is saved (Process 4).

Moreover, inserted and confirmed advertisement(s) reach administrator for the last confirmation step. Then, with the approval of the administrator, advertisements are published on the date and time which are set by the company user for displaying on WSGs. In addition to these, company can adjust and determine a WSG users' group. For example; a company can choose its advertisements to be published on Monday, between 15:00pm to 17:00pm, for woman WSG users who live in Gazimağusa, and their age is between 35 and 40.

Additionally, company user may see preview of advertisement (how to appears on WSG), and also the list of all published advertisements are shown in a detailed list. The company can also delete or edit their advertisement before it is confirmed by the administrator.

3.2. Architecture of Administrator Module

In this section, creating a new administrator account, login to system and checking appropriateness of advertisements which are inserted by the companies to be displayed on Windows Sidebar Gadgets are explained.

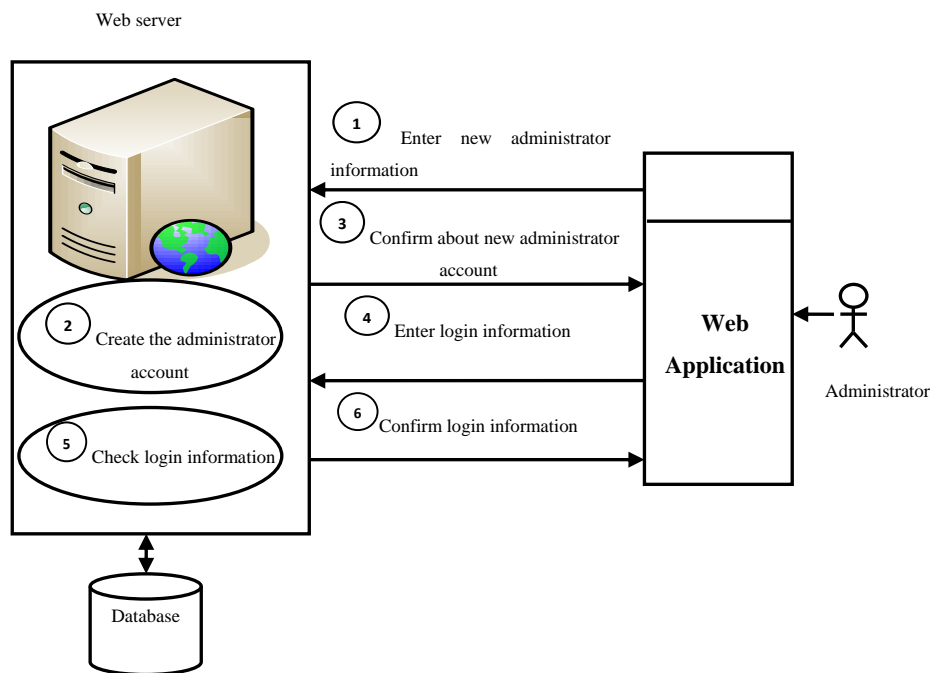


Figure 5: Open New Administrator Account and Login to System

Figure 5 shows the processes to open a new administrator account by the administrator. First of all, name, surname, e-mail address, phone number, user name, and password are entered by the administrator user and then, these data are transmitted to the Web server (Process 1). Afterwards, the Web server checks the

entered user name to see if there is any duplication on the database. If there is not, the new administrator account is created and saved to the database (Process 2). After creating the new administrator account, the administrator gets a confirmation message (Process 3). From now on, new administrator can login to the system with username and password. When the administrator enters login information (Process 4), this information is verified on the database (Process 5) and administrator's Web page is ready to use (Process 6).

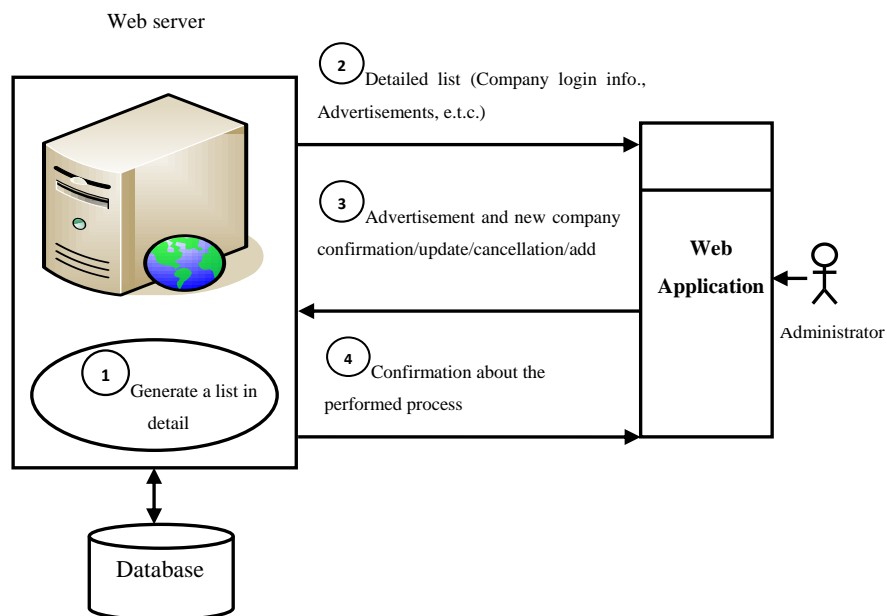


Figure 6: Checking and Confirming Advertisement Information

Figure 6 shows the administrator's processes, operations an advertisement, and new company registration. According to the architecture, the first process is a detailed list generation on the Web server which includes all advertisements (confirmed, waiting confirmation, cancelled) and all company information (confirmed, waiting confirmation and not confirmed) (Process1). When the administrator logs in to the system, a detailed list is sent to the administrator (Process 2). After the administrator gets the list, s\he checks the records of company users and uploaded advertisements, and either confirms or cancels submissions. The administrator can also update

advertisements or add new advertisement. S\he sends information to the Web server (Process 3). At last, the Web server performs administrator's request and sends a confirmation message back (Process 4).

Advertisements that are confirmed by the admin user will be displayed on WSGs according to the determined time and duration.

3.3. Architecture of Windows Sidebar Gadget Module

Our WSGs are located on customers' desktops. The WSG receives advertisements which are uploaded by companies and makes a bridge between customers and companies. The content of the WSG is dynamic and updated periodically over the Internet.

Better deals, advertisements, promotions can be seen on customers' (WSG users') WSGs. In the following figure (Figure 7), how to install a WSG and the architecture of displaying advertisements are shown.

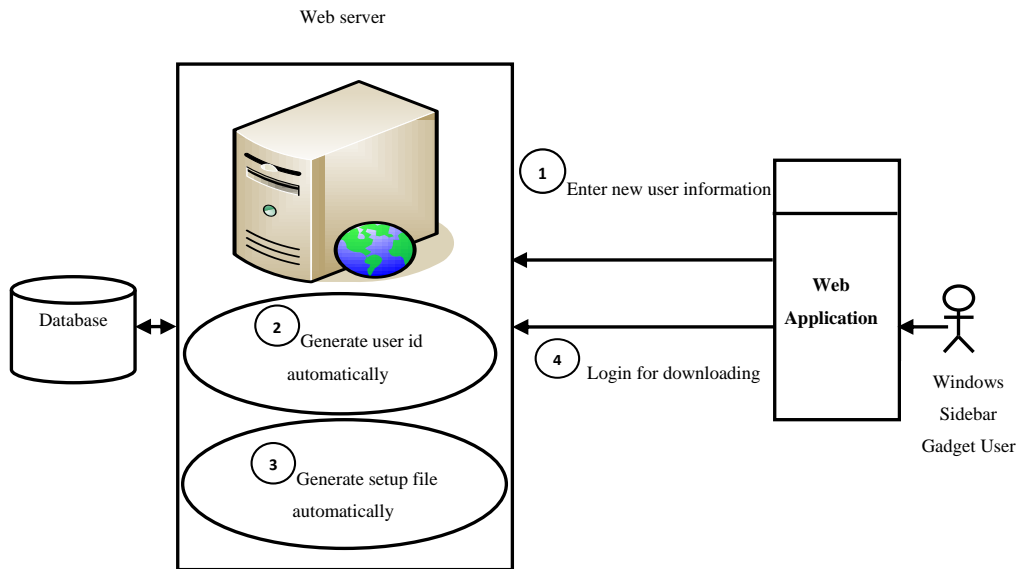


Figure 7: Open New Windows Sidebar Gadget User Account and Install Windows Sidebar Gadget File

As it is seen from the figure above, how to open a new WSG user account by the WSG user and its processes are shown respectively. According to this architecture, the first step is to login to the system as the WSG user. The WSG user enters her\his name, surname, user name, password, birth date, e-mail, phone number, gender, and city during the registration process (Process 1). Information that WSG users entered are sent to the database for checking the availability. After that, a unique user id is generated for every new WSG user automatically (Process 2). This unique user id contains user's birth date, city and gender. After generating a user id, it is saved in the database with user information. By using this user id, all information about users is embedded in the WSG's setup file. (Later, when the WSG sends a request for getting new data to display on WSG, the Web server will form the data according to user information then the WSG user will get a customized advertisement). As a result, WSG setup file is generated automatically (Process 3). In the next step, the WSG user login to download the WSG setup files (Process 4).

Consequently, after finishing these processes, the user can install her\his own WSG and it will be located on his\her desktop. As long as the WSG works, there is no need to login again.

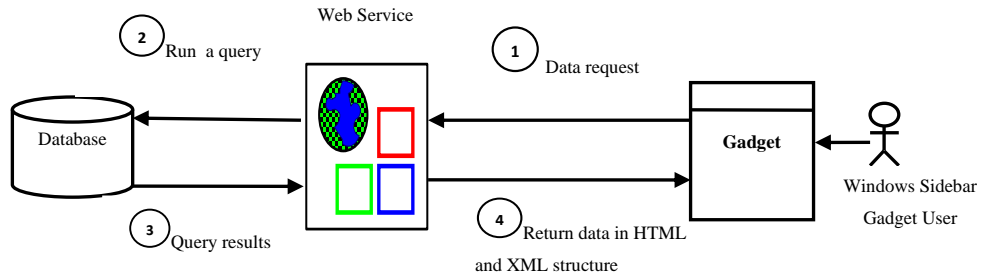


Figure 8: Access to Advertisements

Access to advertisements which are added to the system by the company is shown in figure 8. First step to reach the advertisement is to send user id to the Web service and request information (Process 1). This user id includes user's birth date, city and gender and they are analyzed by the Web service. After that, the Web service runs a query (Process 2) and receives the advertisement data for the user (Process 3). Then, the Web service organizes the data into WSG understandable form (HTML and XML structure) and sends it to the WSG (Process 4). Consequently, with the help of the user id, the system will be able to send the company advertisements to the specific customer group (WSG users). For example; the company may choose its advertisement to be published on Wednesday, at 17:00pm, for man WSG users who live in Lefkoşa, and their age is between 30 and 50.

These processes are repeated in every five minutes. In other words, the advertisement information displayed on the WSG will be updated in every five minutes.

In addition to download WSG file, WSG users can edit or update their profile details.

3.4. Use Case Modelling

Figure 9 shows the class diagram of the developed system. There are seven main classes and many variables:

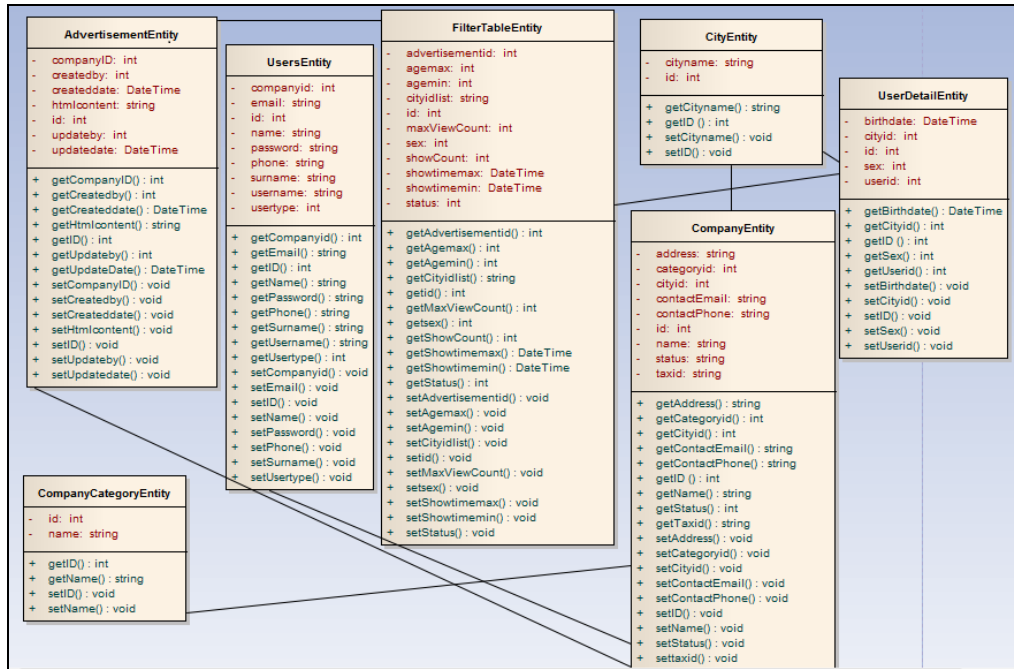


Figure 9: The Class Diagram of The Developed System

3.4.1. Actor as Company User

- **Edit Profile:** Company profile can be edited.
- **Set Advertisement Time Interval:** Company can set advertisement date and time.
- **Choose Customer Profile:** Company can choose customer group according to age, gender, and city of the customers.
- **Create New Account:** Company can create new unique account.
- **Login/Logout:** Login Web page and logout Web page.
- **Insert New Advertisement:** New advertisement can be added to the system by the company user for being published on WSGs.

- **Update Advertisement:** Advertisements information; such as time, duration, city, age, gender or picture can be updated by the company user. Uploaded advertisement can be edited before it is confirmed by the administrator.
- **Delete Advertisement:** Uploaded advertisement can be deleted from the system before they get confirmation message from admin user.
- **Advertisement List:** The list of all published advertisements.
- **See Preview of Advertisement:** Company can see its advertisement before it is published.

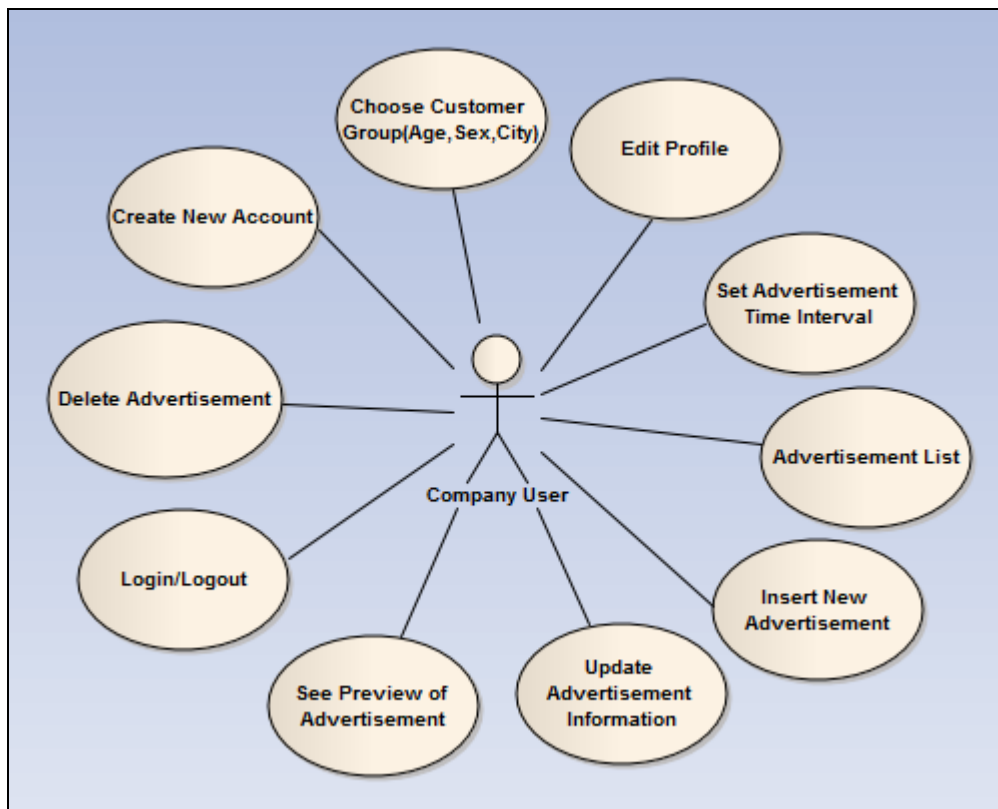


Figure 10: Actor as Company User

3.4.2. Actor as Windows Sidebar Gadget User

- **Edit Profile:** WSG user profile can be edited and updated.
- **Create New Account:** Creates a new unique account

- **Login/Logout:** Login Web page and logout Web page.
- **Download WSG set-up file:** WSG file can be downloaded by WSG user.

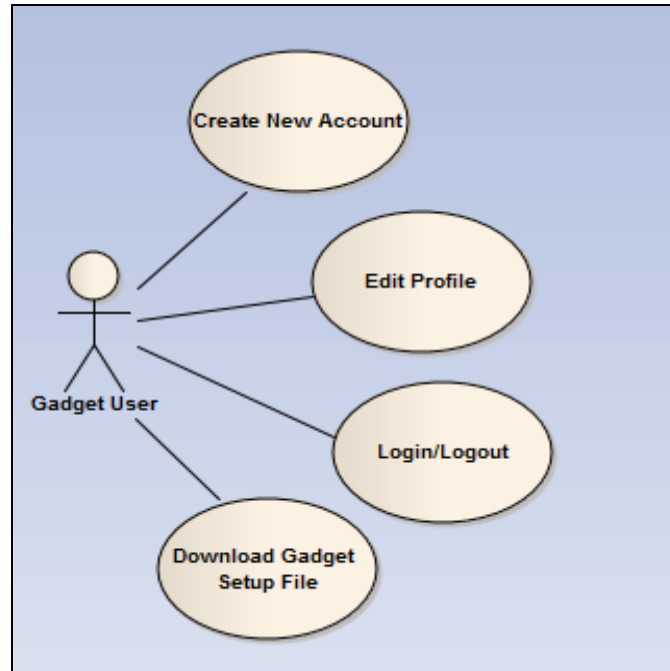


Figure 11: Actor as Windows Sidebar Gadget User

3.4.3. Actor as Administrator User

- **Edit Profile:** Company profile can be edited by admin user.
- **Set Advertisement Time Interval:** Administrator can set advertisement date and time.
- **Confirm Company Registration:** Checks all information of company registration and sends confirmation message.
- **Create New Account:** Administrator can create new unique account.
- **Login/Logout:** Login Web page and logout Web page.
- **View All Company Users' information:** Administrator can view all company users' information.

- **Update Advertisement:** Advertisements information; such as time, duration, city, age, gender or picture can be updated by the administrator.
- **All Advertisement List:** The list of all published advertisement.
- **All Advertisement Details:** All published advertisements are in a detailed list.

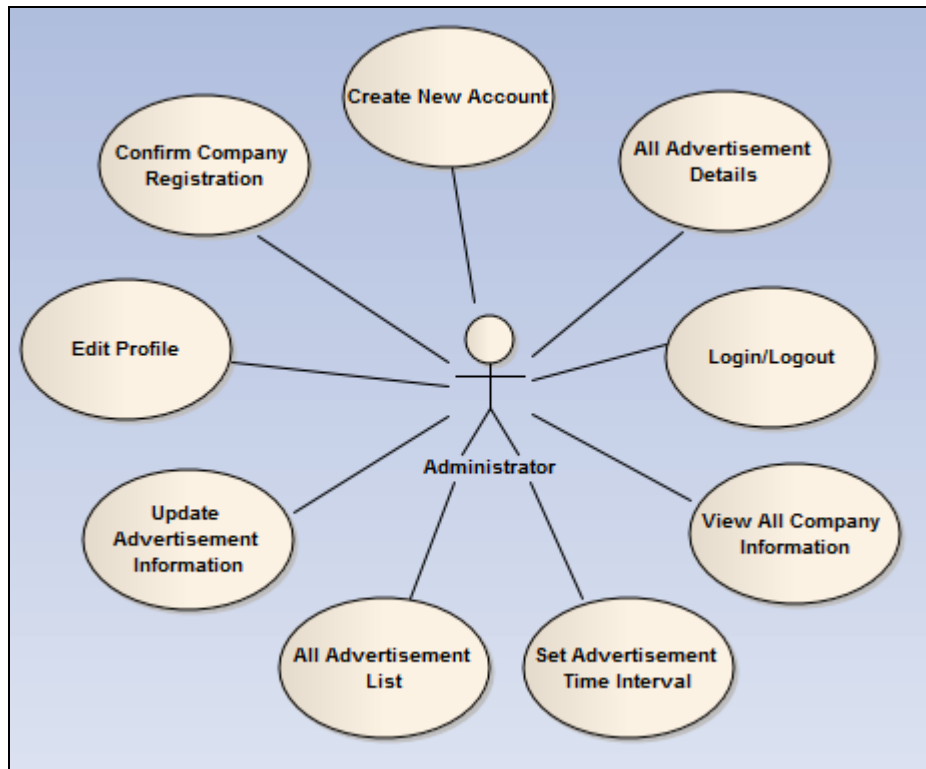


Figure 12: Actor as Administrator

3.4.4. Database Relationships

After the database, called AdGad.dbo, is designed for our system, it is in Microsoft SQL Server 2005. The tables of the database are explained in detail as follows.

The database relationship diagram is shown in Figure 13.

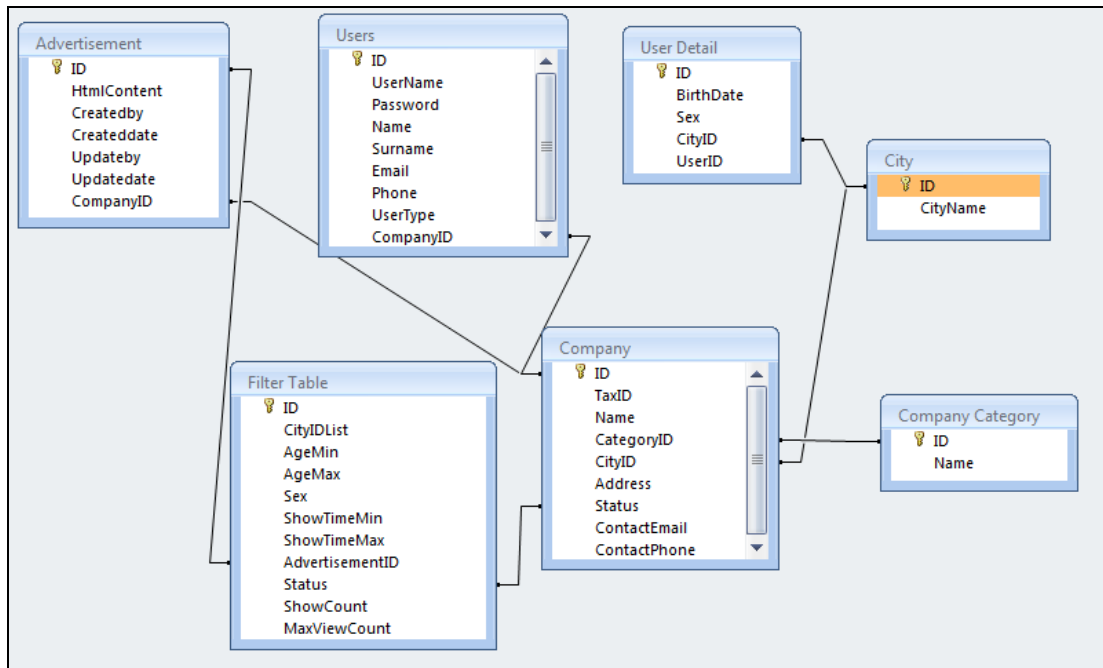


Figure 13: Database Relationships

‘Advertisement’ table (Table 1) is used to stored advertisement records. ‘ID’ field is a primary key and it is a bigint (the byte size is 8 bytes). Database server generates a unique ID for every insertion of an advertisement. Additionally, HtmlContent, CreatedBy, CreatedDate, UpdateBy, UpdateDate, CompanyID fields are used to store advertisement details. CreatedBy, CreatedDate, UpdateBy and ID are required fields for an advertisement record and cannot be null. Advertisement table and Company table has one to many relationships for the field ‘CompanyID’.

Table 1: ‘Advertisement’ table in detail

Table: Advertisement		
	Field Name	Data Type
P.K	ID	bigint
	Html Content	varchar(MAX)
	CreatedBy	bigint
	CreatedDate	datetime
	UpdateBy	bigint
	UpdateDate	datetime
	CompanyID	bigint

‘City’ table (Table 2) stores the city list of TRNC. ‘ID’ field is a primary key and it is a bigint (the byte size is 8 bytes). When the system needs to display the list of cities, it uses this table.

Table 2: ‘City’ table in detail

Table: City		
	Field Name	Data Type
P.K	ID	bigint
	CityName	varchar(50)

‘Company’ table (Table 3) stores company information for every company. ‘ID’ field is a primary key. Company table has one to many relationships with ‘Advertisement’, ‘City’, and ‘Category’, tables on CompanyID, CityID, and CategoryID fields respectively.

Table 3: 'Company' table in detail

Table: Company		
	Field Name	Data Type
P.K	ID	bigint
	TaxID	varchar(150)
	Name	varchar(50)
	CategoryID	bigint
	CityID	bigint
	Address	varchar(MAX)
	Status	int
	ContactE-mail	nvarchar(MAX)
	ContactPhone	varchar(20)

'UserDetail' table (Table 4) stores WSG user information for every WSG user. 'ID' field is a primary key. This value is never shown to the user in the application. UserDetail table has one to one relationship with 'City' table on CityID field.

Table 4: 'UserDetail' table in detail

Table: UserDetail		
	Field Name	Data Type
P.K	ID	bigint
	BirthDate	datetime
	Sex	smallint
	CityID	bigint
	UserID	bigint

As shown in Table5, table is used to store all users' information including usernames and passwords. 'ID' is a primary key in the table. Users table has one to one relationship with 'Company' table on CompanyID field.

Table 5: 'Users' table in detail

Table: Users		
	Field Name	Data Type
P.K	ID	bigint
	UserName	varchar(50)
	Password	varchar(MAX)
	Name	varchar(50)
	Surname	varchar(50)
	E-mail	varchar(50)
	Phone	varchar(20)
	UserType	Smallint
	CompanyID	Bigint

‘FilterTable’ table is shown in Table 6. ‘ID’ field is a primary key. Advertisement information is stored in this table in detail. The table has one to many relationships with ‘Advertisement’ table on AdvertisemenID field.

Table 6: ‘FilterTable’ table in detail

Table: FilterTable		
	Field Name	Data Type
P.K	ID	bigint
	CityIDList	varchar(50)
	AgeMin	smallint
	AgeMax	smallint
	Sex	smallint
	ShowTimeMin	datetime
	ShowTimeMax	datetime
	AdvertisementID	bigint
	Status	smallint
	ShowCount	bigint
	MaxViewCount	bigint

‘CompanyCategory’ table (Table 7) stores the category list of TRNC companies.

‘ID’ field is a primary key and it is a bigint (the byte size is 8 bytes).

Table 7: 'CompanyCategory' table in detail

Table: CompanyCategory		
	Field Name	Data Type
P.K	ID	bigint
	Name	varchar(50)

Chapter 4

IMPLEMENTATION

Our online automation system is designed mainly as four modules which are Company, Administrator, Windows Sidebar Gadget, and Web service. These modules are parts of a complete system and they work in cooperation. Therefore, in the implementation phase, a Web application, WSG and a Web service is developed to operate the modules.

The Web application is a common application for company, administrator, and WSG modules. New company registration, company advertisement issues, all company advertisements, administrator operations, company registration confirmation, new WSG registration, WSG setup file downloading issues are done in this application. When the application runs main page (Figure 14) appears and the list of operations, which can be done with the application, is listed as follows;

- New Company Registration,
- New Windows Sidebar Gadget User Registration,
- Registered Company User,
- Administrator,
- Registered Windows Sidebar Gadget User.

WSG is designed for displaying companies' advertisement on customers' desktops.

WSG consists of HTML, CSS, JavaScript, and image files, which all coordinated to

accomplish a variety of tasks. WSG is a mini Web page and calls the Web service to get information for displaying.

Web service is developed to offer service to WSGs. It gets the request from a WSG, runs the appropriate query on the server, receives the advertisement data and, by organizing the advertisement data, sends the required data to WSG in WSG understandable form.

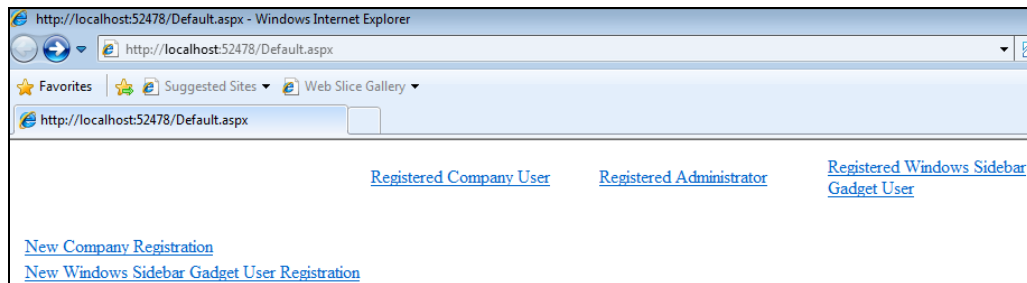


Figure 14: Main Page

The following subsections describe all implementation details based on four modules.

4.1. Company User Module

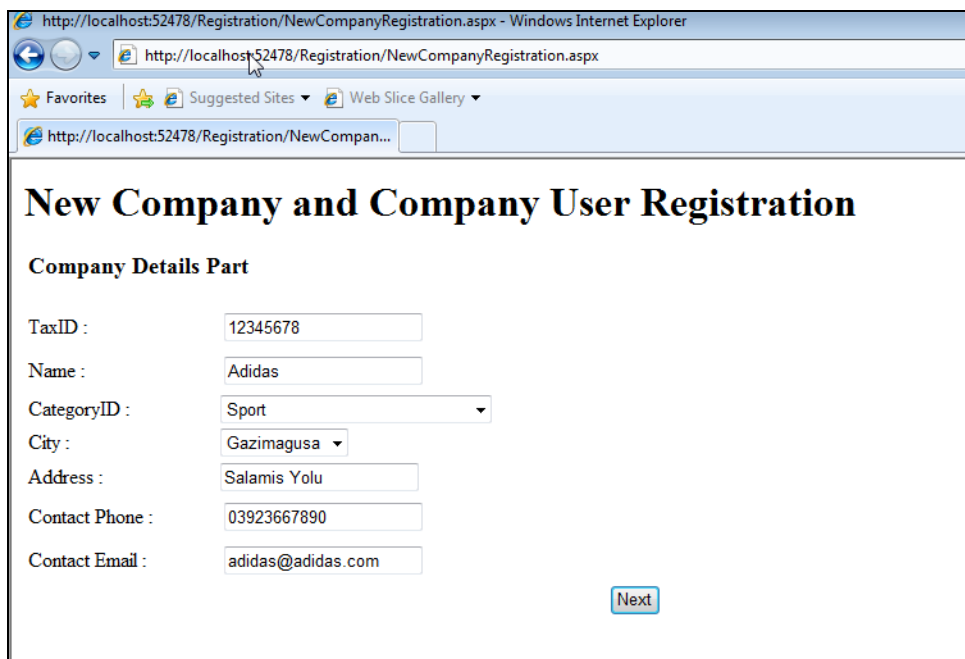
Company user module is used to register new company user, insert new advertisement, update/delete advertisement, see preview of advertisement and show all advertisements. Registered company users' all advertisement operations and registration phases are given below in detail.

4.1.1. New Company Registration

New company user should register once to the system by clicking "New Company" link on the main page. Then, the form on figure 15 will be displayed. Company user

registration is included two parts which are “Company Details Part” and “Company User Part” and the “Company Details Part” part is shown first as it seen in the form.

In the company details part, company user enters information of company which are “Tax Id”, “Company Name”, “CategoryID”, and “City”, “Address”, “Contact Phone” and “Contact Email”.



The screenshot shows a web browser window with the URL `http://localhost:52478/Registration/NewCompanyRegistration.aspx`. The page title is "New Company and Company User Registration". The main content area is titled "Company Details Part" and contains a registration form with the following fields and values:

TaxID :	<input type="text" value="12345678"/>
Name :	<input type="text" value="Adidas"/>
CategoryID :	<input type="text" value="Sport"/>
City :	<input type="text" value="Gazimagusa"/>
Address :	<input type="text" value="Salamis Yolu"/>
Contact Phone :	<input type="text" value="03923667890"/>
Contact Email :	<input type="text" value="adidas@adidas.com"/>

A "Next" button is located at the bottom right of the form.

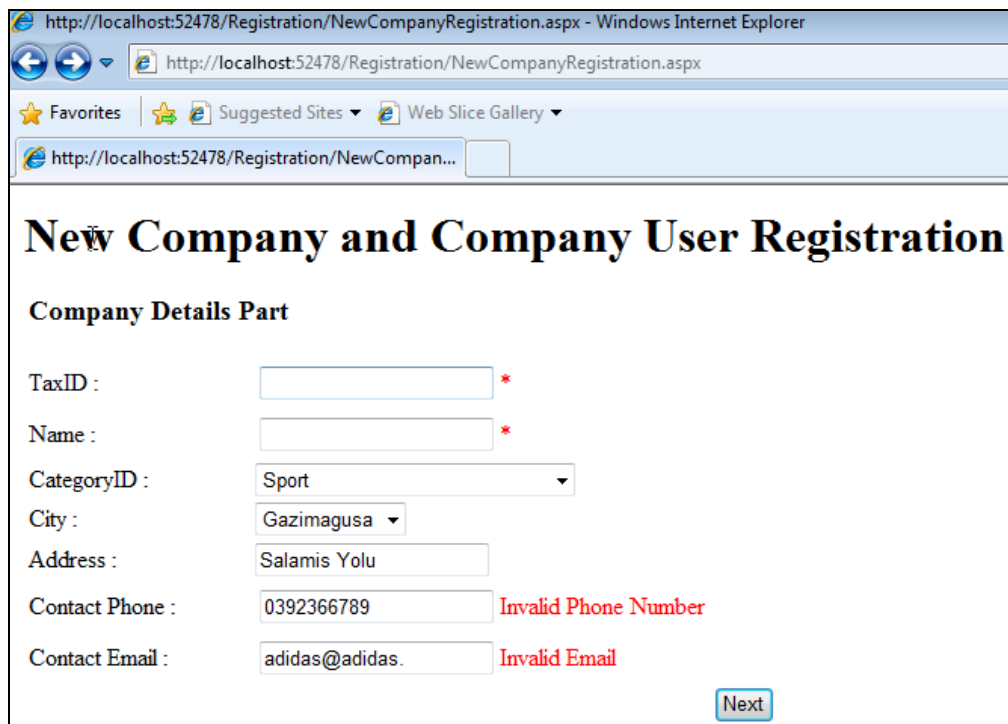
Figure 15: “Company Details Part” Page

There are some restrictions on the registration form. Such as, some textboxes must not be empty and some must be filled in a correct structure. `RequiredFieldValidator` and `RegularExpressionValidator` controls are used to check the validation of the user's input before submitting the form. Furthermore, these controls are also points the textboxes which contains invalid data.

In figure 15, a sample user data is filled on the form. When the user presses “Next” button, the system will check the validation of all data and if it detects typing error,

empty textbox, wrong e-mail address/contact phone number, it will give an error message beside the corresponding textbox(es).

Figure 16 shows how the invalid data are shown when user wants to enters missing information into textboxes.



The screenshot shows a web browser window with the address bar displaying `http://localhost:52478/Registration/NewCompanyRegistration.aspx`. The page title is "New Company and Company User Registration". The form is titled "Company Details Part" and contains the following fields:

TaxID :	<input type="text"/>	*
Name :	<input type="text"/>	*
CategoryID :	Sport	
City :	Gazimagusa	
Address :	Salamis Yolu	
Contact Phone :	0392366789	Invalid Phone Number
Contact Email :	adidas@adidas.	Invalid Email

A "Next" button is located at the bottom right of the form.

Figure 16: A Sample Form Which Contains Invalid User Data

After the company user fills the form correctly and presses "Next" button, the second part of the registration process starts with the "Company User Part" form appears.

As shown in Figure 16, the company user part page contains personal information of the company user which are "UserName", "Password", "Re-Password", "Name", "Surname", "E-mail" and "Phone".

The screenshot shows a web browser window with the address bar displaying 'http://localhost:52478/Registration/NewCompanyRegistration2.aspx'. The page title is 'New Company and Company User Registration'. Below the title, there is a section titled 'Company User Part'. The form contains the following fields and values:

UserName :	Adidas
Password :	•••••
Re-Password :	•••••
Name :	Ali
Surname :	Dogan
Email :	alidogan@adidas.com
Phone :	05423564712

At the bottom of the form, there are two buttons: 'Back' and 'Register'.

Figure 17: “Company User Part” Page

New company users have the right to select any username or password. After the user fills the form and press “Register” button, the system starts to check if the entered username exists in the database or not. If the username is not available the system shows a corresponding message to the user. Furthermore, the system checks some other possible user mistakes for the following validation criterias. For the validation criterias below, the validator controls (RequiredFieldValidator and RegularExpressionValidator) are used. A sample form which has invalid data is shown in figure 18.

- The UserName, Password, Re-Password, Name, Surname, E-mail and Phone fields cannot be empty.
- The contents of Password and Re-Password textboxes must be the same.

The screenshot shows a web browser window with the URL `http://localhost:52478/Registration/NewCompanyRegistration2.aspx`. The page title is "New Company and Company User Registration". Below the title is a section titled "Company User Part" containing a registration form. The form fields and their values are as follows:

UserName :	<input type="text" value="Adidas"/>	
Password :	<input type="password" value="....."/>	
Re-Password :	<input type="password" value="....."/>	Not Same
Name :	<input type="text"/>	*
Surname :	<input type="text" value="Doğan"/>	
Email :	<input type="text" value="alidoGan@adidas.com"/>	Invalid Email
Phone :	<input type="text" value="0542356471"/>	Invalid Phone Number

At the bottom of the form, there are two buttons: "Back" and "Register".

Figure 18: A Form Which Contains Invalid User Data

After successful completion of the registration process, the following page in figure 19 is illustrated.

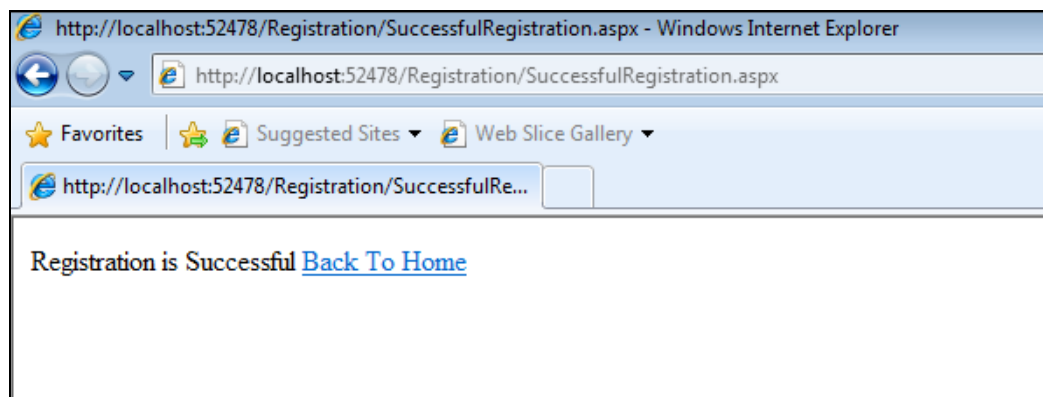


Figure 19: The Page After Successful Registration

4.1.2. Company User's Login Page

After the company user finishes registration process, administrator confirmation is required and if s\he attempts to login to the system without confirmation, the system displays a message as “Your account is not confirmed yet. You are in the pending status. Please try again later” (Figure 20).

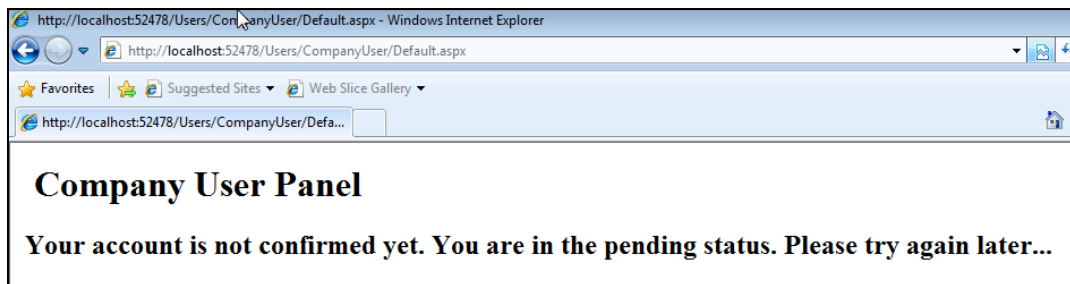


Figure 20: Confirmation is Required Message

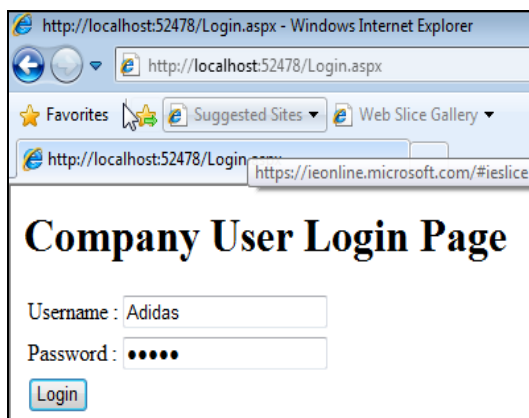


Figure 21: “Company User Login” Page

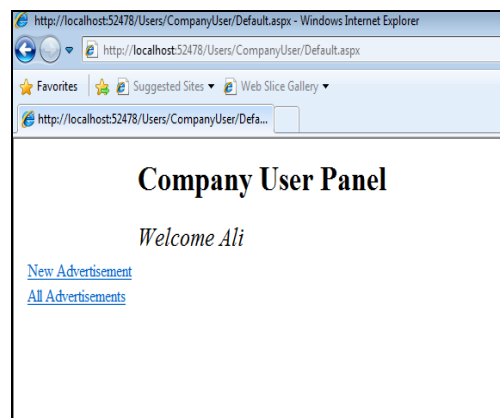


Figure 22: “Company User Panel”

After the confirmation of administrator, company can login to its own Web page by using the username and password (Figure 21). With successful login, the system welcomes the company user with his/her name (Figure 22).

In the company user's personal Web page, "All Advertisements" and "New Advertisement" links are available.

In "All Advertisements" part, advertisements which were published previously on the Windows Sidebar Gadgets will be listed in detailed.

"All Advertisements" part shows company advertisements' details and preview. Moreover, delete and edit options are available (Figure 23 and Figure 24).

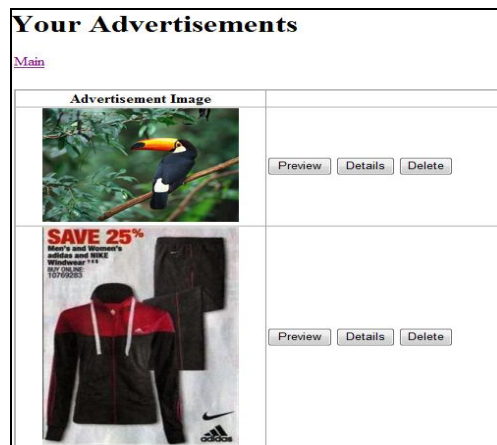


Figure 23: "All Advertisement" Page After Administrator Confirmation



Figure 24: "All Advertisement" Page Before Administrator Confirmation

When the company user presses "Details" button, all information of selected advertisement is shown in a detailed list. The user can delete the advertisement with

“Delete” button. If advertisement is not confirmed yet, the user is also able to edit the advertisement (Figure 24).

The other page is ‘New Advertisement’. In this page, the system requires all necessary information about the advertisement (city, age, sex, date, time interval for the advertisement and image (gif or jpeg format)). A sample “New Advertisement” page is shown in Figure 25. On this sample, advertisement data is filled on the form.

The screenshot shows a web browser window with the URL `http://localhost:52478/Users/CompanyUser/NewAdvertisement.aspx`. The page title is "New Advertisement". Below the title is a "Main" link. The form contains several input fields: "City List" with a dropdown menu set to "All" and a list of cities (Gazimagusa, Girne, Güzelyurt, Lefkosa); "Age Range" with a dropdown menu set to "18 - 71"; "Sex" with a dropdown menu set to "Female"; "Time Interval" with sub-fields for "Date" (03/12/2010), "Hour Interval" (13 - 14), and "Duration" (15min), along with "Add Time Filter" and "Remove Time Filter" buttons; and "New Advertisement Image" with a "Browse..." button. A "Submit" button is located at the bottom right of the form.

Figure 25: “New Advertisement” Page

After filling the form, the company user has to press ‘Submit’ button. When the company user press “Submit” button, the system checks the validation of all data on the form if it detects empty field, and/or wrong time interval, it gives an error message. Furthermore, the system checks some other possible user mistakes for the following validation criterias. For the validation criterias below, the validator controls (RequiredFieldValidator and RegularExpressionValidator) are used.

- Company cannot select date to publish an advertisement within the same day. Company user must select further dates.

- The City List, Age Range, Sex, Time Interval, New Advertisement Image fields cannot be empty.
- Additionally, every hour is divided into five-minute-periods which means that every hour is 12 periods (5min, 10min, 15 min 60 min) in total and maximum different 12 advertisements can publish in an hour. The user may choose more than one period for the advertisement in an hour, more than one hour in a day, and more than one day. Sample form (in figure 25) shows, advertisement information which will be uploaded to display on 03-12-2010 at 13:00-14:00 for 15 minutes an. It d on 12/03/2010 at 12:00-13:00 for 10 minutes. Then, those time periods will be reserved by this company and any other company cannot use those time periods. A sample form in figure 26 has invalid data since another company user attempts to select 55 minutes which has time clash with the advertisement mention above. When the company user presses ‘Submit’ button, the message “Only 45 minutes available at this date and time” is shown on the page. This error message informs the company user that there is no time period more than 45 minutes.

The screenshot shows a web browser window with the URL `http://localhost:52478/Users/CompanyUser/NewAdvertisement.aspx`. The page title is "New Advertisement". Below the title is a "Main" link. The form contains the following fields and values:

- City List:** A dropdown menu set to "All" with a list of cities: Gazimagusa, Gime, Güzelyurt, Lefkosa.
- Age Range:** A range from 18 to 93.
- Sex:** A dropdown menu set to "Male".
- Time Interval:** Date: 03-12-2010, Hour Interval: 13-14, Duration: 55min. There are buttons for "Add Time Filter" and "Remove Time Filter".
- New Advertisement Image:** A text input field with a "Browse..." button.

A red error message is displayed below the Time Interval section: "Same day can not be selected. Please select further dates. Only 45 minutes available at this date and time!". A "Submit" button is located at the bottom right of the form.

Figure 26: “New Advertisement” form which contains invalid data

After successful completion of the “New Advertisement” process, the following page in figure 27 is shown.

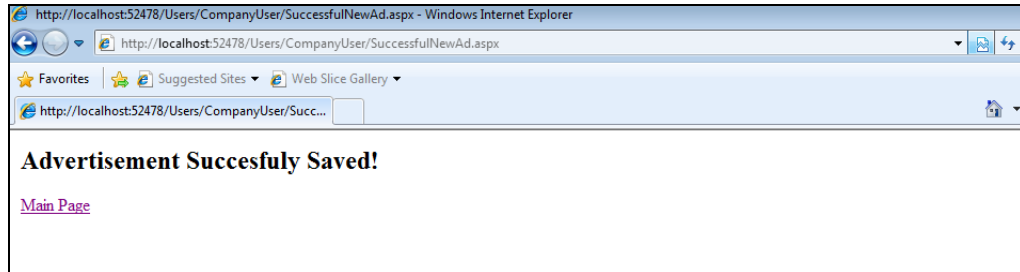


Figure 27: The Message after Successfully Added Advertisement

4.2. Administrator Module

Administrator module is used to register new administrator user, view all advertisements, confirm/decline company registration, confirm/cancel advertisement, and edit/delete the content of advertisement. All administrator’s operations and registration phase are given below in detail.

4.2.1. New Administrator Registration

New administrator should register once to the system. As shown in figure 28, administrator’s registration page contains personal information of administrator which are “UserName”, “Password”, “Re-Password”, “Name”, “Surname”, “Email”, and “Phone”. This page cannot be seen in the main page of the Web site, because this page is private for administrator. Administrator can reach register another administrator from his/her own account.

The image shows a screenshot of a web browser window. The address bar displays the URL: <http://localhost:52478/Registration/NewAdminRegistration.aspx>. The browser interface includes a search bar, a Favorites section, and a Web Slice Gallery. The main content area contains a registration form with the following fields and values:

UserName :	<input type="text" value="administrator2"/>
Password :	<input type="password" value="•••••"/>
Re-Password :	<input type="password" value="•••••"/>
Name :	<input type="text" value="Selden"/>
Surname :	<input type="text" value="Dalgıçoğlu"/>
Email :	<input type="text" value="selden@hotmail.com"/>
Phone :	<input type="text" value="03923451897"/>

At the bottom right of the form, there is a button labeled "Register".

Figure 28: “New Administrator Registration” Page

Administrator initializes the new administrator’s username and password (New administrator may change his/her own password login to the system). After administrator fills and press “Register” button, the system checks if entered username exists in the database or not since the username must be unique in the system. If the username is available to be used, then the registration of a new administrator will be completed.

4.2.2. Administrator’s Login Page

Administrator can login to his/her own Web page by using the username and password (Figure 29). With successful login, the system welcomes the administrator with his/her name (Figure 30). In the administrator’s personal Web page, “View Advertisements”, “Confirm Company Registration” and “Edit Profile” links are available.

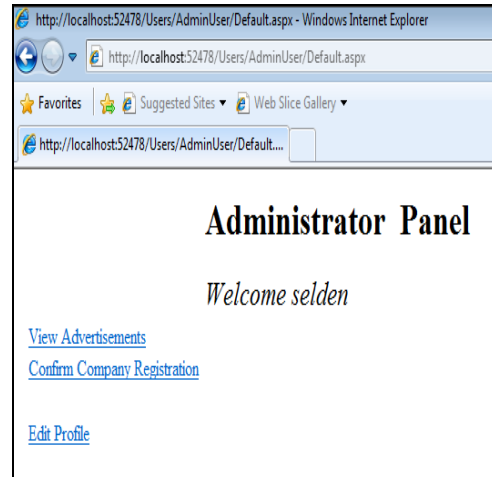
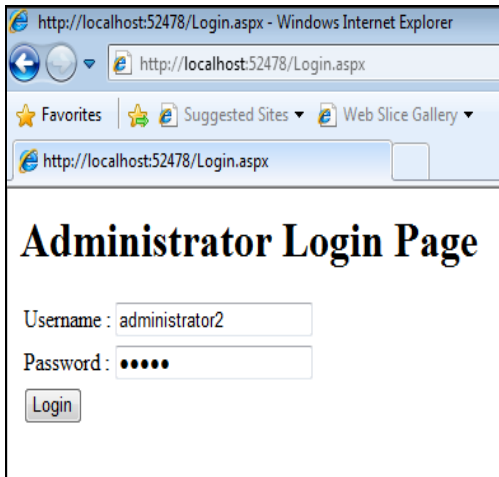


Figure 29: “Administrator Login” Page Figure 30: “Administrator Panel” Page

‘View Advertisements’ page shows, advertisements in a detailed list (Figure 31). Administrator is able to see all advertisements as well as to filter the advertisements list either to see the advertisements waiting confirmation or confirmed advertisements.

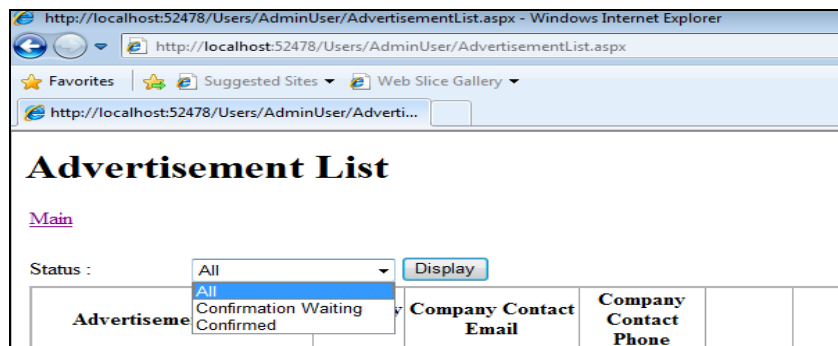


Figure 31: “Advertisements List” Page

The samples of confirmed advertisements list and confirmation waiting advertisements list are shown in figure 32 and figure 34 respectively. Two lists include different features.

	Adidas	adidas@adidas.com	03923667832	Details
	Adidas	adidas@adidas.com	03923667832	Details

Figure 32: “Confirmed Advertisements” List

Every advertisement in the confirmed advertisements list has “Details” button for displaying the details of the corresponding advertisement.

Advertisement Details

[Main](#)

Advertisement Image :



CreatedBy : 37
 CreatedDate : 11/28/2010 2:56:18 PM
 City List : Gazimagusa, Girne, Güzelyurt, Lefkosa
 Age Range : 18 - 46
 Sex : Male
 Time Interval : 11/29/2010 3:00:00 PM - 11/29/2010 4:00:00 PM
 Show Period : 2
 Status : Confirmed

Figure 33: “Advertisement Details” Page

When the administrator presses “Details” button, for any advertisement details of that advertisement (City, createdBy (who created this advertisement), createdDate

(when advertisement is created), Age Range, Sex, Time Interval, duration, and status (confirmed, waiting conformation, and declined)) is shown such as in figure 33.

The screenshot shows a web interface titled "Advertisement List". At the top left, there is a link labeled "Main". Below it, a "Status:" label is followed by a dropdown menu set to "Confirmation Waiting" and a "Filter" button. The main content is a table with the following structure:

Advertisement Image	Company Name	Company Contact Email	Company Contact Phone		
	Adidas	adidas@adidas.com	03923667832	Details	Edit

Figure 34: “Confirmation Waiting Advertisements” List

Confirmation waiting status also contains “Details” option but there is one extra feature apart from “Details” which is “Edit” option. When the administrator presses “Edit” button, advertisement edit page appears. As shown in figure 35, the advertisement edit page contains all necessary information about the advertisement (i.e. City, age, sex, date, time interval for the advertisement and image (gif or jpeg format)). If the administrator finds any mistake or missing thing in details before the confirmation, s/he can directly fix it with the acknowledgment of company.

http://localhost:52478/Users/AdminUser/Adverti...

Advertisement Update

[Main](#)

Advertisement Image : 

City List :

Age Range : -

Sex :

Time Interval : Date : Hour Interval : - Duration:

Advertisement Image :

Figure 35: “Advertisement Edit” Page

After checking the advertisement information, the administrator press ‘Submit’ button to confirm the advertisement. When the “Submit” button is pressed, the system checks the validation of all data and if it detects empty field, and/or wrong time interval, it will give an error message. Otherwise, it will confirm the advertisement. The validation criterias used in this part are the same as the validation criterias described in the company user’s new advertisement insertion subsection.

Figure 36: A Form Which Contains Invalid Advertisement Data

“Confirm Company Registration” page is the administrator’s second operation. “Confirm Company Registration” is used to show company list which needs to be confirmed or declined by the administrator. A sample list is shown in figure 37. Furthermore, figure 38 shows the page which is displayed after confirmation/decline or when there is no any record to confirm/decline.

Tax ID	Name	Category Name	City Name	Address	Email	Phone	
12345678	Adidas	Sport	Gazimagusa	Salamis Yolu	adidas@adidas.com	03923667832	<input type="button" value="Confirm"/> <input type="button" value="Decline"/>

Figure 37: “Confirm Company Registration” Page

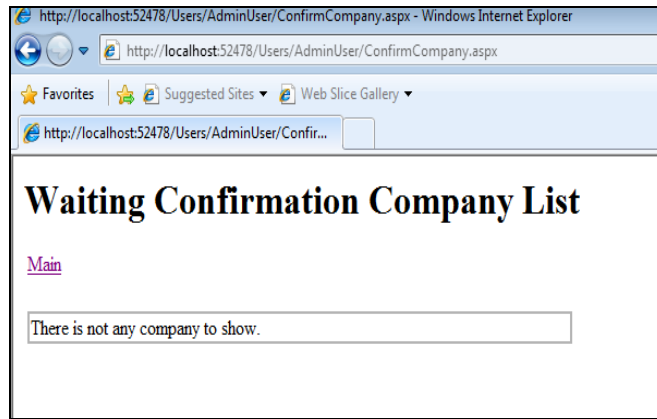


Figure 38: The Page After Confirm/Decline or When There Is No Any Record To Confirm/Decline

To prevent any disorder, administrator confirmation is required for both company registration and new advertisement insertion.

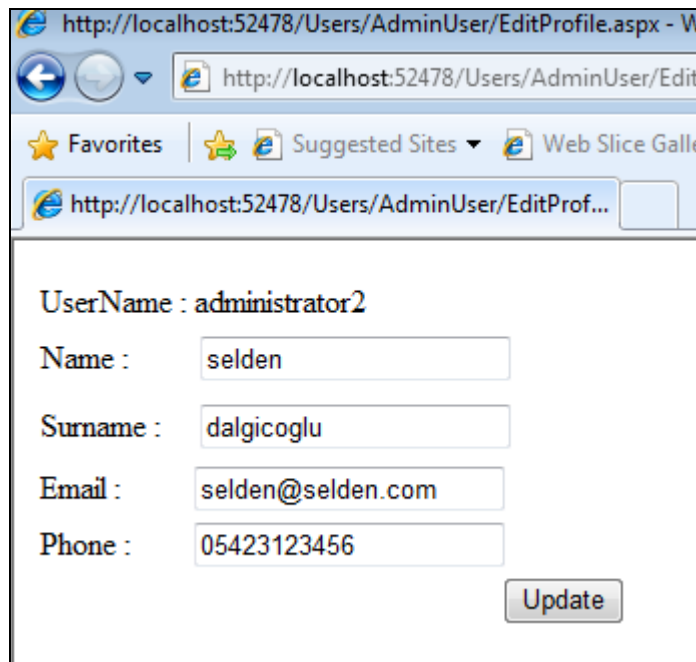


Figure 39: “Edit Profile” Page

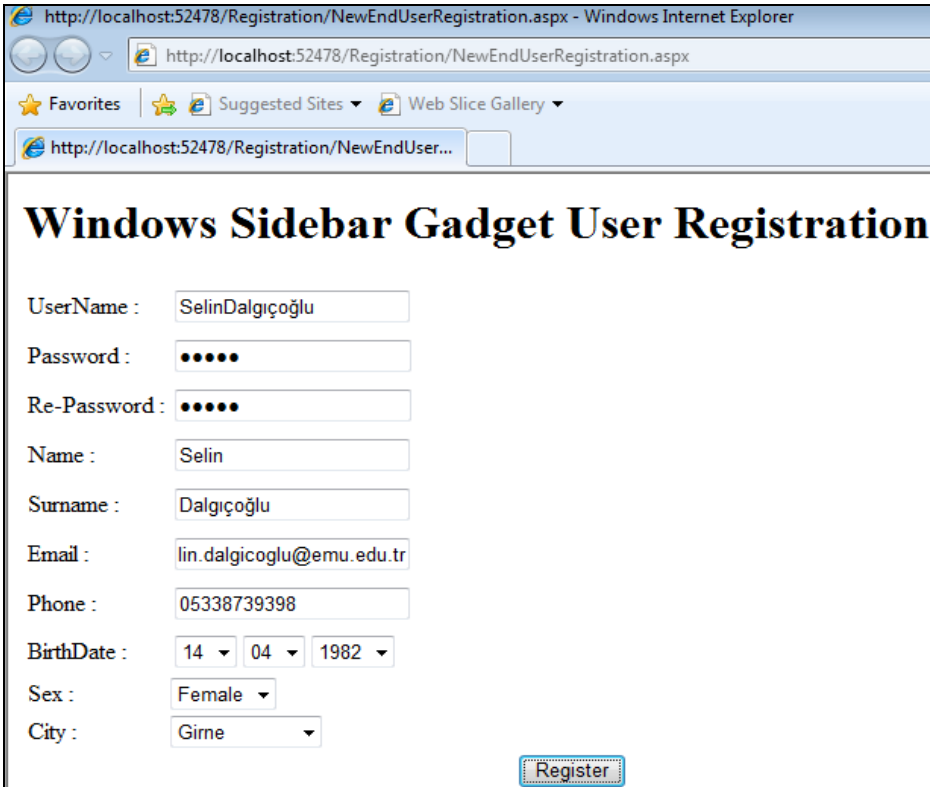
Administrator can edit their profile detail by using ‘Edit Profile’ link (Figure 39).

4.3. Windows Sidebar Gadget User Module

WSG user module is used to register new WSG user, edit profile, download WSG setup file, and displaying advertisement in time periods. All operations of registered WSG users and registration phases are given below in detail.

4.3.1. New Windows Sidebar Gadget User Registration

New WSG user should register once to the system by clicking the “New Windows Sidebar Gadget User” link on the main page. Then, “New Windows Sidebar Gadget user registration” page will be displayed (Figure 40). The WSG user registration page contains personal information of the WSG user which are “UserName”, “Password”, “Re-Password”, “Name”, “Surname”, “Email”, “Phone”, “BirthDate”, “City” and “Sex”.



The screenshot shows a web browser window with the URL <http://localhost:52478/Registration/NewEndUserRegistration.aspx>. The page title is "Windows Sidebar Gadget User Registration". The form contains the following fields:

UserName :	<input type="text" value="SelinDalgıçoğlu"/>
Password :	<input type="password" value="•••••"/>
Re-Password :	<input type="password" value="•••••"/>
Name :	<input type="text" value="Selin"/>
Surname :	<input type="text" value="Dalgıçoğlu"/>
Email :	<input type="text" value="lin.dalgicoglu@emu.edu.tr"/>
Phone :	<input type="text" value="05338739398"/>
BirthDate :	<input type="text" value="14"/> <input type="text" value="04"/> <input type="text" value="1982"/>
Sex :	<input type="text" value="Female"/>
City :	<input type="text" value="Girne"/>

A "Register" button is located at the bottom right of the form.

Figure 40: “New Windows Sidebar Gadget User Registration” Page

New WSG users have the right to select any username and password. After the user fills the registration form and presses on “Register” button, the system starts to check if the entered username is exists in the database or not. If the username is not available, the system shows a corresponding message (“Username exists. Please change”) to the WSG user. Moreover, the system checks some other possible mistakes by considering the following validation criterias (RequiredFieldValidator and RegularExpressionValidator controls are used to check the validation of the user's input before submitting the form),

- The Username, Password, Re-Password, Name, and Surname, E-mail, Phone, Birth date, Sex and City fields can not be empty.
- The content of the Password and the Re-Password textboxes must be the same.

A sample form which has invalid data is shown in figure 41.

http://localhost:52478/Registration/NewEndUserRegistration.aspx - Windows Internet Explorer
http://localhost:52478/Registration/NewEndUserRegistration.aspx

Windows Sidebar Gadget User Registration

UserName :

Password :

Re-Password : **Not Same**

Name :

Surname :

Email : **Invalid Email**

Phone : **Invalid Phone Number**

BirthDate :

Sex :

City :

Figure 41: A Form Which Contains Invalid User Data

After successful completion of registration process, the following page in figure 42 is shown.

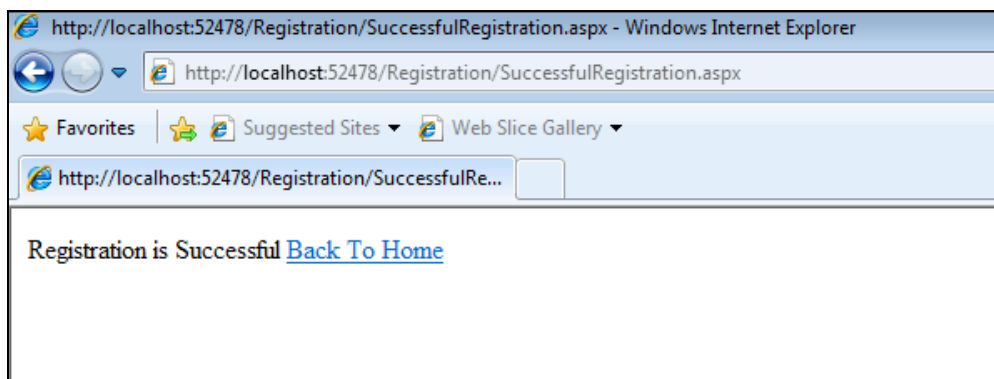


Figure 42: The Page After Successful Registration

4.3.2. Windows Sidebar Gadget User's Login Page

After the WSG user finishes registration process, WSG user can login to his/her own Web page by using the username and password (Figure 43). With successful login, the system welcomes the WSG user with his/her name (Figure 44).

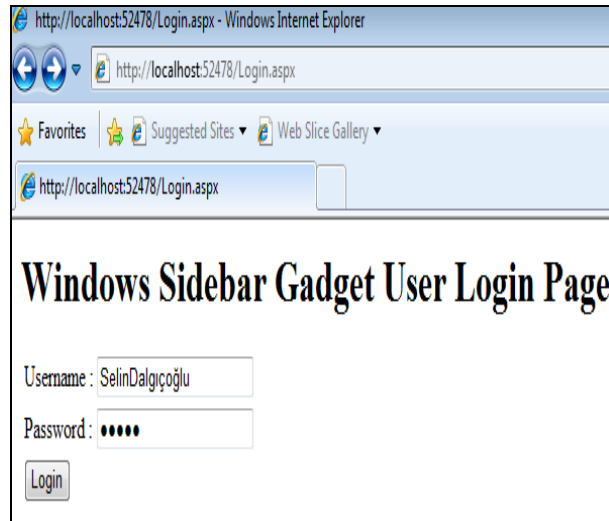


Figure 43: “Windows Sidebar Gadget User Login” Page

In the WSG user Web page “Download Gadget” and “Edit Profile” link are available.

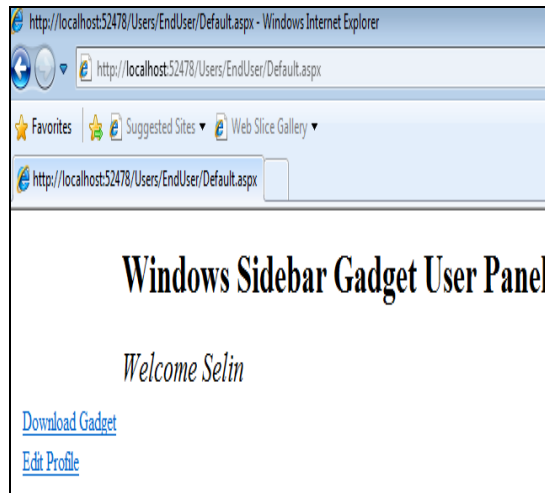


Figure 44: “Windows Sidebar Gadget User Panel” Page

“Download Gadget” page includes the process of downloading personalized WSG setup file. The system automatically generated setup file by integrating the user’s personal information into it since, later, the WSG will request to get advertisement according to its user’s personal information.

By clicking ‘Download Gadget’ link, “Download Gadget” page appears (Figure 45) and the downloading process starts by pressing “Download Gadget” button.

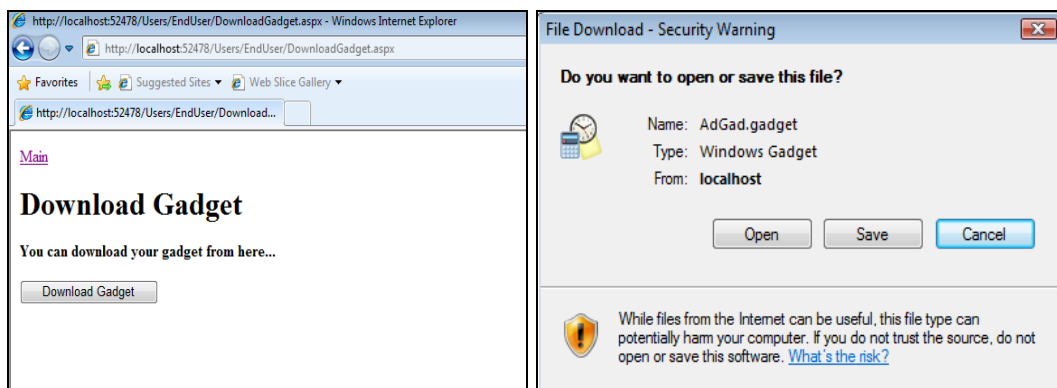


Figure 45: Download Gadget Page

Figure 46: File Download Dialog Page

After “Download Gadget” button is clicked, file download dialog box will be displayed (Figure 46).

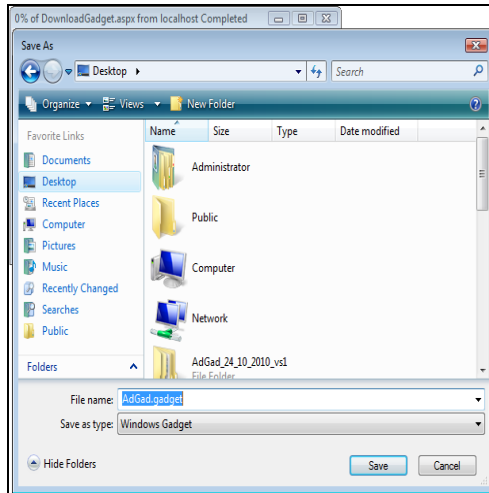


Figure 47: A File Saving

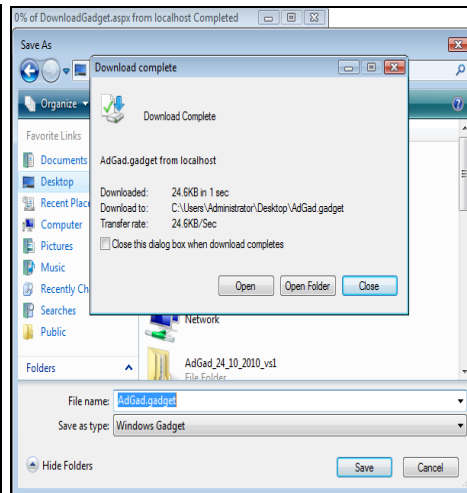


Figure 48: Download complete

The user presses “Save” button to save the setup file by choosing the path for saving (Figure 47). Figure 48 shows the successfully completed download.

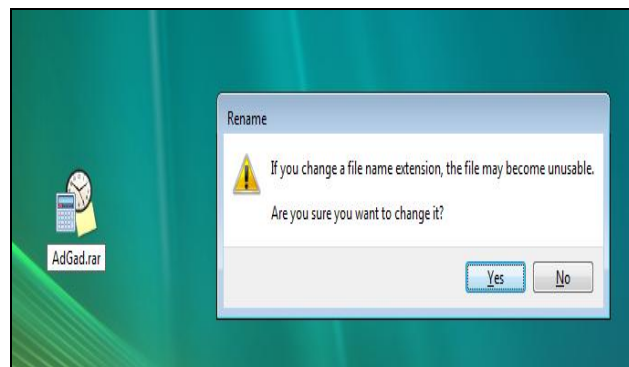


Figure 49: Renaming the extension of the downloaded setup file.

Then, the user locates the downloaded file and renames its extension as “.rar” (Figure 49). Next step is to extract this file as a folder. This folder contains all WSG files which are “img folder”, “js folder”, “Gadget.htm” and “Gadget.xml”.

The WSG consists of mainly two files:

1. Gadget.xml - An XML file that contains general configuration and presentation of information for the WSG.

```
<?xml version="1.0" encoding="utf-8" ?>
<Gadget>
  <name>AdGad</name>
  <author name="Selin">
    <logo src="img/AdGad_logo.png" />
  </author>
  <copyright>Copyright © 2009-2010</copyright>
  <version>1.0.0.0</version>
  <description>Enables Company to Reach Customers in an Easy Way</description>
  <icons>
    <icon height="71" width="71" src="img/AdGad_icon.png" />
  </icons>
  <hosts>
    <host name="sidebar">
      <autoscaleDPI>true</autoscaleDPI>
      <base type="HTML" apiVersion="1.0.0" src="Gadget.htm" />
      <permissions>Full</permissions>
      <platform minPlatformVersion="1.0" />
    </host>
  </hosts></Gadget>
```

Figure 50: XML Definition File

As shown in figure 50, it is a standard XML file with a base element of WSG. Here

is a list of the elements in the XML file;

- name: Title of WSG.
- version: Version number of WSG.
- author: Author name or company's name.
- logo src: Name of company's logo image file.
- copyright: Copyright notice.
- description: Description of the WSG.
- icon src: Name of icon image file for the WSG.
- base src: Name of WSG's main HTML file

2. Gadget.htm is visual part of the gadget. Gadget.htm contains the HTML definition of the WSGs displayed in the sidebar. Notepad is used to set the size of the WSG with body.

```
<html>
<head>
  <title>AdGad</title>
  <script language="javascript" src="js/script.js"></script>
  <style type="text/css">
    body
    {
      margin: 0;
      width: 200px;
      height: 200px;
      font-family: verdana;
      font-weight: bold;
      font-size: 20px;
    }
  </style>
</head>
<body onload="OnBodyLoad()" >
  <div style="width:200px; height:200px;">
    <g:background id="imgBackground"><span id="spnWarn"
  ></span></g:background>
  </div>
```

Figure 51: HTML Definition File

The extracted folder must be located by the user and copied into the system folder associated with the Sidebar:

“%USERPROFILE%\AppData\Local\Microsoft\Windows Sidebar\Gadgets”

To activate the WSG, the user clicks the "+" symbol at the top of the Sidebar (Figure 52) to open the Gadget gallery (Figure 53) and double clicks “AdGad” icon.



Figure 52: The Gadget Gallery Symbol

(Note that dragging and dropping “AdGad” to the Sidebar is the same as double-clicking it.)

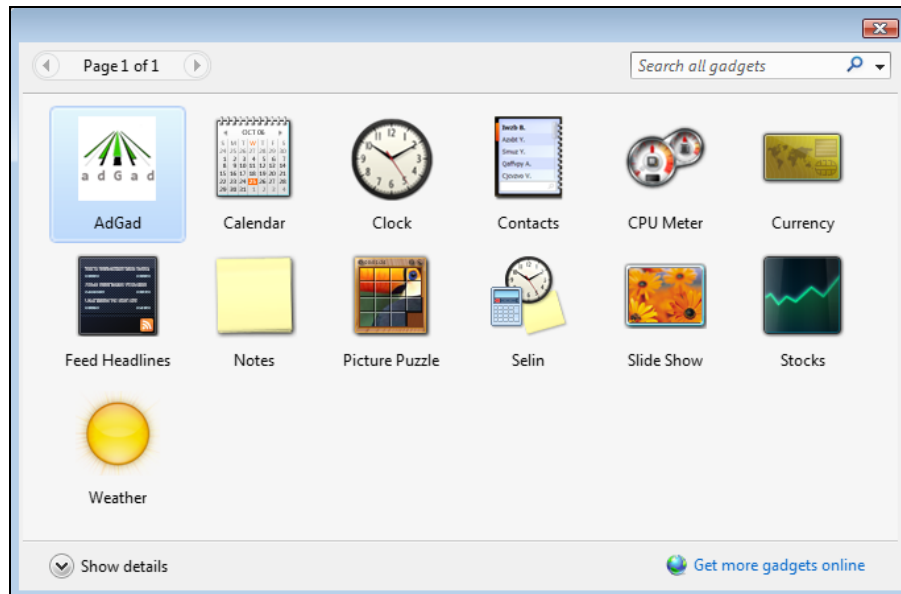


Figure 53: The Gadget Gallery

After all, “AdGad” is located on the Sidebar and starts to display advertisements as shown in Figure 54. After double-click the "AdGad" icon, uploaded advertisements (by companies) will be displayed on WSG users’ sidebar.

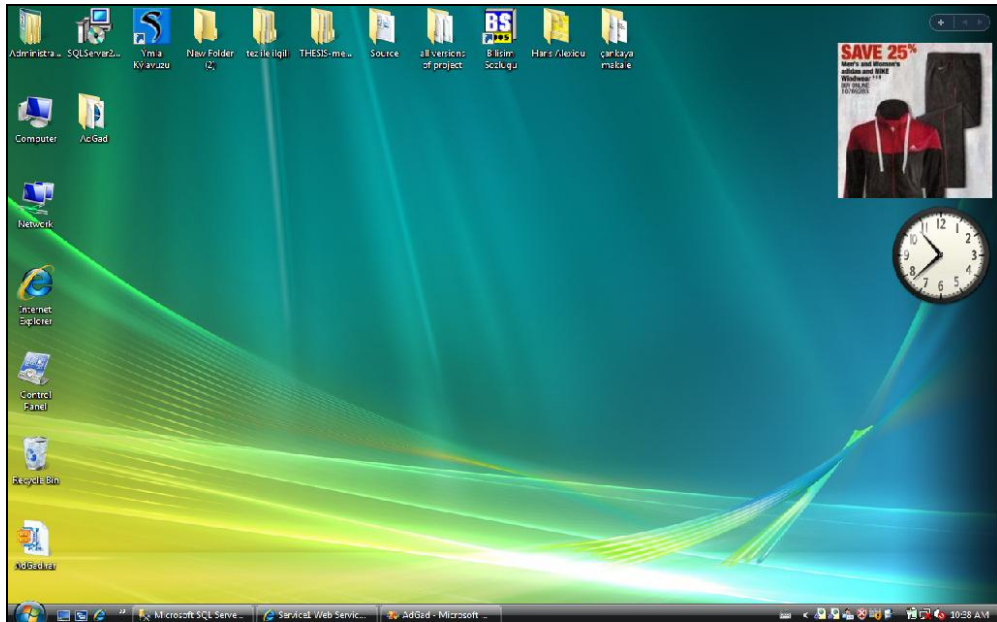


Figure 54: “AdGad” Windows Sidebar Gadget on Desktop

When WSG user turns on his/her computer, the WSG automatically takes its place on the sidebar.

The second operation for WSG users is “Edit Profile”. “Edit Profile” is used to edit information of the WSG user.

A screenshot of a web browser window displaying the 'Profile Edit' page. The browser's address bar shows the URL 'http://localhost:52478/Users/EndUser/EditProfile.aspx'. The page content includes a navigation link for 'Main' and a form with the following fields: 'UserName' (filled with 'SelinDalgıçoğlu'), 'Password' (empty), 'Re-Password' (empty), 'Name' (filled with 'Selin'), 'Surname' (filled with 'Dalgıçoğlu'), 'Email' (filled with 'selin.dalgicoglu@emu.edu'), 'Phone' (filled with '0542888888'), 'BirthDate' (filled with '14/04/1983'), 'Sex' (filled with 'Female'), and 'City' (filled with 'Girne'). An 'Update' button is located at the bottom right of the form.

Figure 55: “Edit Profile” Page

WSG users can edit their profile detail by using 'Edit Profile' link (Figure 54). However, if a user changes his/her birthdate, sex, or city, downloading and installing the WSG is required again since the WSG uses those personal settings while displaying an advertisement.

4.4. Web Service Module

Due to security reason, Web service module is used as an interface module between WSG and the database server instead of direct access of WSG to the database.

Web service module is developed to offer service to WSG. Therefore, it gets the request from a WSG, resolves the personal information of the WSG user, runs the appropriate query on the database server, receives the specific advertisement data for the WSG user and, by organizing the advertisement data in HTML and XML format, sends the required information to the WSG.

Chapter 5

CONCLUSION

In Turkish Republic of Northern Cyprus (TRNC), there are difficulties to improve company sales. Some of these difficulties are based on insufficient communication between the companies and customers. In our project, a complete online automation system which uses Windows Sidebar Gadget for delivering company advertisements is developed to minimize such difficulties and improve the economy of TRNC with the following benefits;

- Local markets (companies) can take an advantage of our system to attract more customers,
- Through this system, companies, which are located far from the city centre, can reach to customers and give more information about their activities effectively. Furthermore, customers can be aware of advertisements, promotions, discounts, etc.,
- Publishing advertising on Windows Sidebar Gadget is cheaper than publishing on billboards, leaflets etc.,
- With our system, there will be no need for the customers to spend extra time to have new information about companies' products,
- Customers can benefit from this system since they will be able to know the opportunities,

- Selling can be increased and revival of the market can be much better.

As a result, our study of being a bridge between customers and companies by using Windows Sidebar Gadget can be a new approach. Furthermore, our project can be a prototype for using in other cities or countries in the world.

As a future work, we would like to generate a batch file for WSG setup. Through the batch file, the WSG user can install WSG more easier without doing additional steps such as copying file and renaming file. In addition to this, graphical user interface of our Web application and WSG would be improved.

In addition to these, some statistics can be produced about company's advertisements. Also our WSG can be more interactive. For example when the user clicks on the WSG, related Web site (such as company's Web site) can be opened.

Finally, we would like to test our system on a sample set of companies and customers to have feedback and improve our system.

REFERENCES

- [1] Build Your Own Windows Vista Sidebar Gadget, <http://msdn.microsoft.com/en-us/magazine/cc163370.aspx> (Last Visited: 10 October 2010)
- [2] Wei-Meng Lee, “Professional Windows Vista® Gadgets Programming”, Wiley Publishing, Inc, Indianapolis, Indiana, (2008).
- [3] Ercan T., Karaağaç F. and Emekli A. E., “A desktop application to learn the actual workload of the students”, World Conference on Educational Sciences, 2009.
- [4] Web Service, http://www.w3schools.com/webservices/ws_why.asp (Last Visited: 14 November 2010)
- [5] S. Dalgıçoğlu and Y. Bitirim, “Gadget’larla Sosyal Ağ Yaratılarak Ekonomiye Katkı Sağlama Üzerine Bir Çalışma”, *Proceedings of the Third Symposium on Engineering and Technology*, pp. 78-84, Çankaya University, Ankara, Turkey, April 2010.
- [6] Web Service, http://en.wikipedia.org/wiki/Web_service (Last Visited: 25 December 2010)

- [7] Facebook, <http://www.facebook.com>, (Last Visited: 10 December 2010).
- [8] Myspace, <http://www.twitter.com>, (Last Visited: 10 December 2010).
- [9] LinkedIn, <http://www.linkedin.com>, (Last Visited: 10 December 2010).
- [10] “Auction Sidebar Tool for eBay”,
<http://gadgets.intelligroup.eu/index.php/gadgets/auction-sidebar-tool>, (Last Visited: 18 March 2010).
- [11] Lal, R., “Creating Vista® Gadgets: Using HTML, CSS and JavaScript with Examples in RSS, Ajax, ActiveX (COM) and Silverlight™”, Sams Publishing, United States of America, (2008).
- [12] File Zipping, <http://dotnetzip.codeplex.com/>, (Last Visited: 10 July 2010).
- [13] SQL Helper, <http://www.codeproject.com/KB/aspnet/SQLHelper20.aspx>,
(Last Visited: 22 August 2010).
- [14] Image Resize,
<http://weblogs.asp.net/markmcdonnell/archive/2008/03/09/resize-image-before-uploading-to-server.aspx>, (Last Visited: 09 July 2010).
- [15] Javascript and XML, <http://www.devarticles.com/c/a/JavaScript/JavaScript-and-XML/>, (Last Visited: 24 September 2010).

[16] Javascript and XML, http://www.w3schools.com/XML/xml_examples.asp,

(Last Visited: 24 September 2010).