

ISTANBUL AYDIN UNIVERSITY ★ FACULTY of ENGINEERING

INSURANCE OFFER SYSTEM

GRADUATION PROJECT

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Software Engineering Programme

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İSTANBUL AYDIN ÜNİVERSİTESİ ★ MÜHENDİSLİK FAKÜLTESİ

SİGORTA TEKLİF SİSTEMİ

BİTİRME PROJESİ

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Yazılım Mühendisliği Bölümü

Proje Danışmanı: Prof. Dr. Hasan Hüseyin Balık

Haziran 2014

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1. INTRODUCTION

1.1 Purpose of Thesis

This thesis is aiming to make an introduction cross running platforms and it is doing insurance offers programmatically so it is reducing fault and error possibilities into minimum.

1.2 Literature Review

This application is an insurance offer application and it is running cross-platform ASP.NET and Java.

Asp.net is doing the recording part and db section of my Project and it publishes the records as a web service. Asp.net IDE can be downloaded from Microsoft Web Site. [Ref 2](#)

Java uses this web service and creates Excel reports. Java has an authentication part. So Unauthorized person can not use the report part of my program.

Java can be downloaded from Oracle web site. [Ref 1](#) and [Ref 6](#)

1.3 Hypothesis

We have a paper-based registration system for our insurance offers. Lets think about it. This system is opened for any possible error and fault. Because it is completely depending human capabilities if anybody cuts or enters wrong numbers and words and even burns the record. It is gone. You can take it back.

My program is preventing such mistakes and accidents Because it is web-based program so all records into recording DB and on this recording all entered values will be controlled according to company policies.

2. INTEGRATED DATA

2.1 Purpose

In the cross-platform applications, data integration is very important. Because cross platforms use each other's data and sometimes these data can not fit each other in my project didn't also fit some variable types.

For example ;

ASP.NET (C#) is using "string" and Java is using "String" so I used this type of variable so carefully.

2.2 ASP.NET and JAVA Web Integration

My project is doing the integration part by using web service. So ASP.NET (C#) is making a record into MySQL database and it is publishing the records in MySQL database as an ASMX web service. We will see our WSDL like in [the Figure 2.2.1](#)



Figure 2.2.1 : My wsdl file

So Java is creating necessary classes by using this web service and make calls to this web services via these classes like. We will put our wsdl address like [Figure 2.2.2](#)

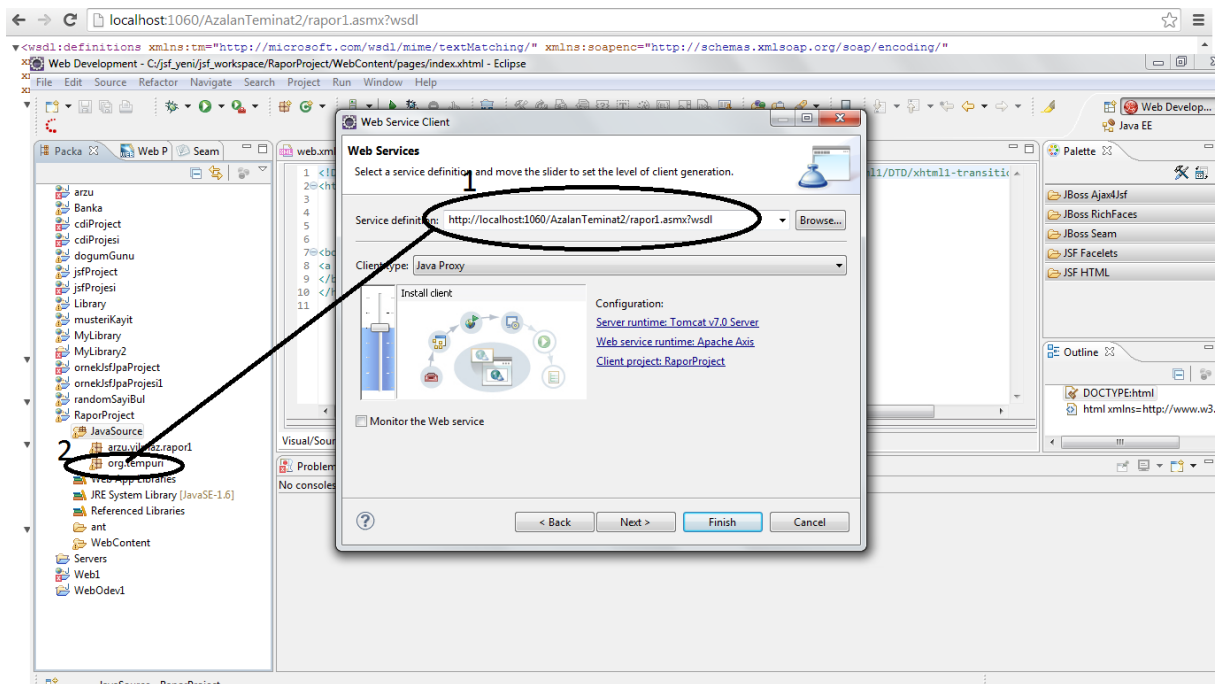


Figure 2.2.2 : Eclipse Axis Plugin.

After make java - axis web service client classes so we can reach the .asmx web service by using these classes and if we prepare our .asmx web service and asp.net data , java can use these classes and makes conversions between data types.

2.3 Web Based Project Development

Web Based Project Development is to use web browser for reaching data that is stored in database generally such as Internet Explorer , Google Chrome , Mozilla Firefox etc.

Web Based Project Development means we are also using servers for making data processing and storing data into databases.

For example;

My Project is using IIS for ASP.NET C#(C Sharp) part and Tomcat Server for java part.

Tomcat can be downloaded from Apache Tomcat web site. [Ref 3](#)

Servers are running in a specific port and a web addresses so if we want to reach to the server-side data we can make a request by using a client-side web browser.

Actually, we cannot see the operation the server is doing we can only see our data and returned data from server.

Our data is a “REQUEST” and returned data is a “RESPONSE”.

For example ;

If we click the button in the following figure Figure 2.3.1 we make a request

localhost:1060/AzalanTeminat2/hesap.aspx

MAPFRE GENEL SİGORTA

Hesaplama Türü
Azalan Teminatlı UH Taksitli Hesap ▼

Azalan Teminatlı UH Taksitli Hesap

Teklif Tarihi(*) 23423
Police Başlangıç Tarihi(*) 2342343
Mortalite Tablosu CSO80 ▼ Komisyon %20 ▼
TC Kimlik Numarası(*) 234234
İsim Soyisim(*) dgdgs324
Doğum Tarihi(*) 11.11.1980 Yaş 34
Cinsiyet Erkek ▼
Başlangıç Kapitali(*) 3123123
Para Birimi Dolar ▼
Stre(*) 21
Azalan Prim Hesapla

Figure 2.3.1 : Sending a request by clicking button

And

Server operates the submitted values when we clicked the button and it returns the response like Figure 2.3.2. Actually a web program is doing the job between these requests and responses.

localhost:1060/AzalanTeminat2/hesap.aspx

MAPFRE GENEL SİGORTA

Hesaplama Türü
Azalan Teminatlı UH Taksitli Hesap ▼

Azalan Teminatlı UH Taksitli Hesap

Teklif Tarihi(*) 23423
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Doğum Tarihi(*) 11.11.1980 Yaş 34
Cinsiyet Erkek ▼
Başlangıç Kapitali(*) 3123123
Para Birimi Dolar ▼
Stre(*) 21
Azalan Prim Hesapla

TC Kimlik numarası 11 basamaklı bir sayı olmalı...

Figure 2.3.2 : Returning response

3. FLOW PREDICTION

3.1 Purpose

My program is predicting the flow like this.

- 1) An user creates a insurance offer record.
- 2) This record can be provided after the insertion by the web service the ASP.net(C#) created.
- 3) Java makes calls to this record by using web service client classes.
- 4) Finally, Java creates excel report by using web service client classes.

3.1.1 Asp.net Web Interface

Asp.net is a programming language platform and it uses some different languages and I used C# Because it is very close the java syntax and I integrated two programming languages easier.

C# is making an cs. As extension for its files like [Figure 3.1.1.1](#)

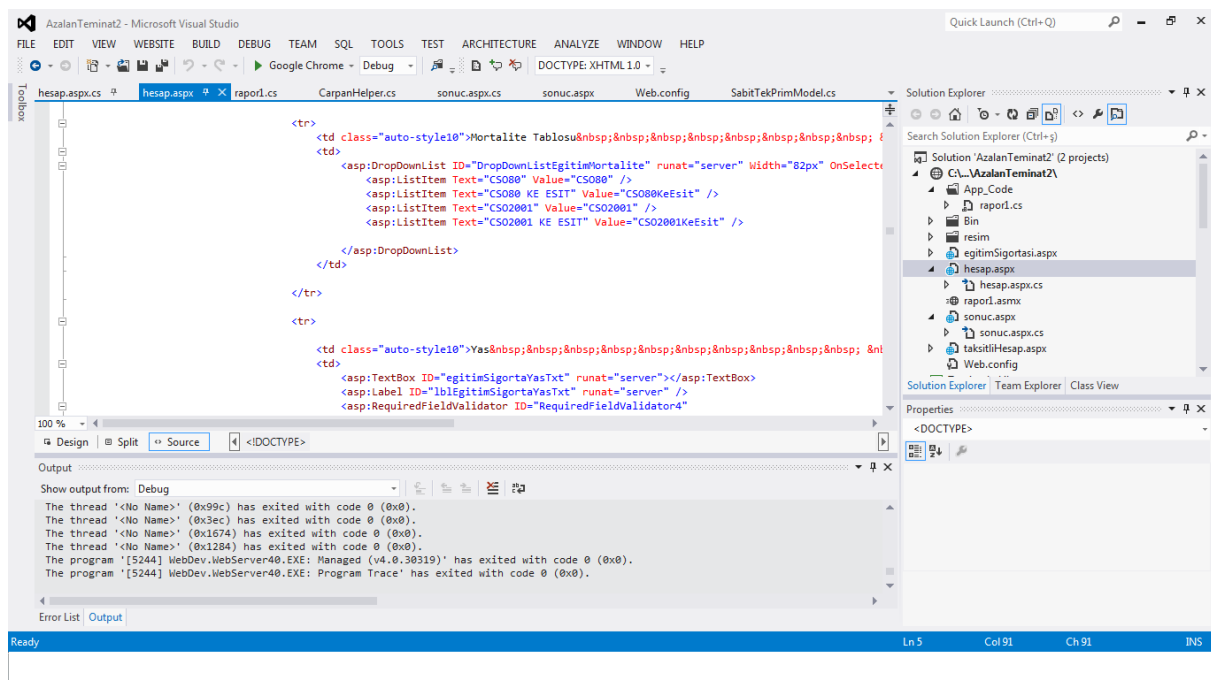


Figure 3.1.1.1 : File extensions in the C# web site

Asp.net uses Visual Studio as IDE (Integrated Development Environment). Visual Studio can contain many programming languages such as Visual Basic, C# etc.

I preferred c#.I created my application in 2 different parts.

- 1) One of them is named “TeminatlarLib” it is doing DB operations and I created this application I provided this application as a class reference so I managed to use the

classes which are included in this reference in my main project. we will see in next paragraph.

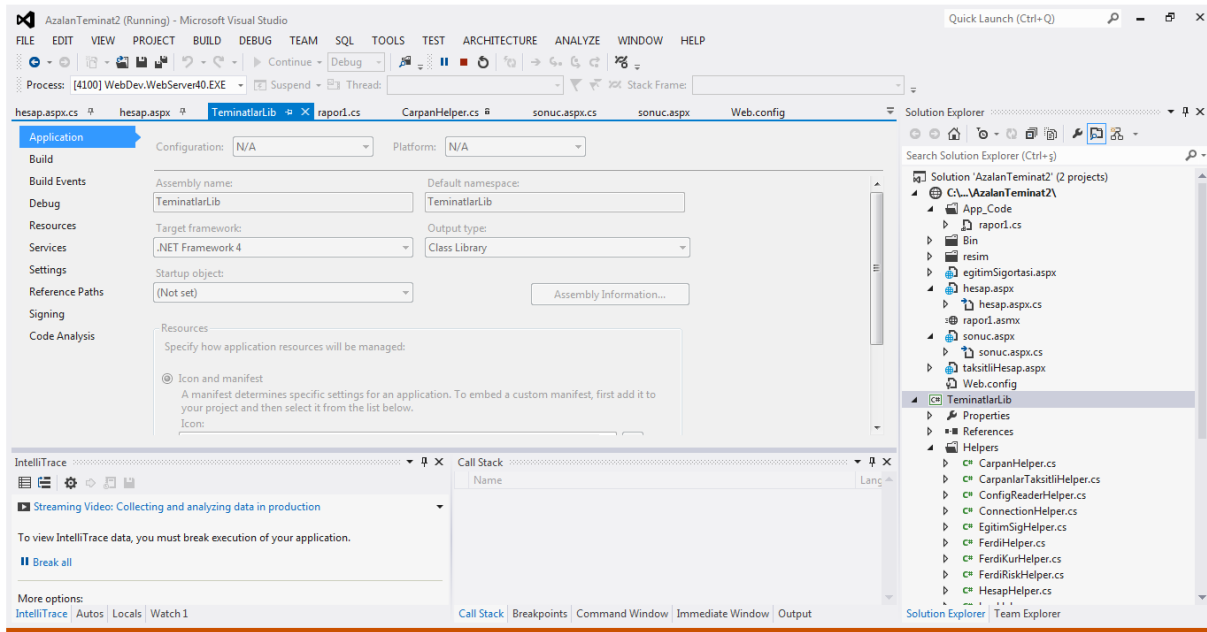


Figure 3.1.1.2 : Creating a DLL file from our project

If we make an output file type in Properties of our TeminatlarLib Project in the previous figure [Figure 3.1.1.2](#)

You can create a .dll file so you can import this .dll file into other project so easily in the next figure [Figure 3.1.1.3](#)

2)My main project is a web site C# Web Site. This web site is using the my first project as db resource and it also creates a web services for cross-platform.

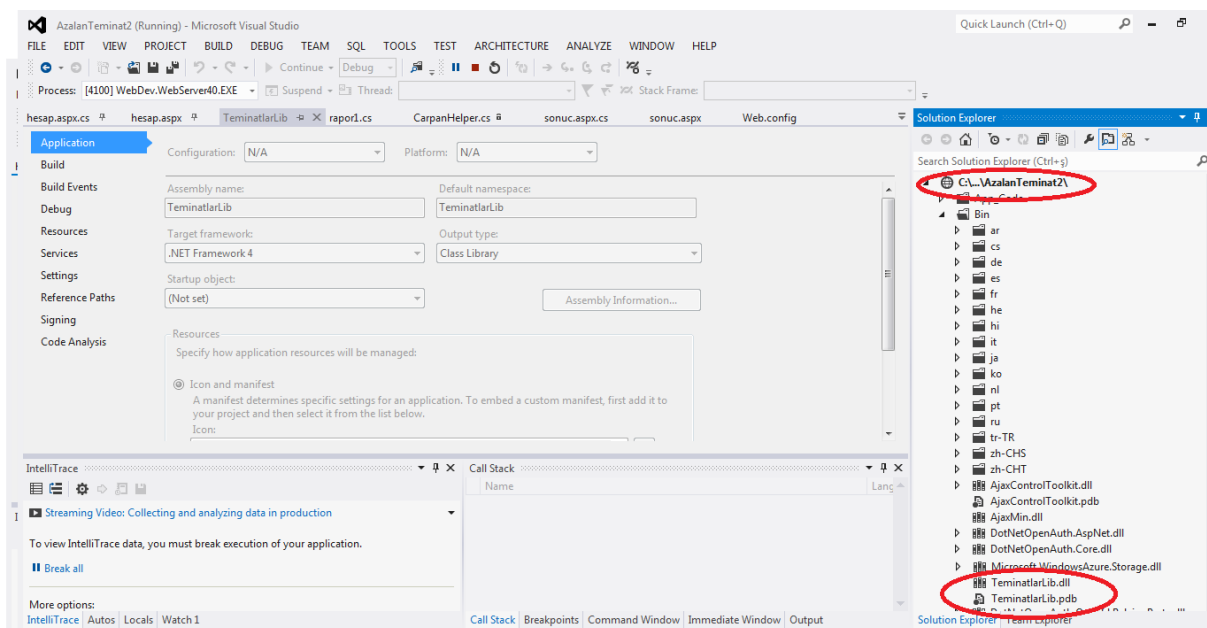


Figure 3.1.1.3 : DLL file in our web site.

Asp.net web site creates a .aspx and .aspx.cs file when we create a web page.

1).aspx file is for web pages so a user can see the content of this type of pages.

2).aspx.cs file is server side page. When an user makes a request this types of pages can operate the entered data and return a response. .aspx.cs files are class files of .aspx files. So there is a question here. How can we integrate these two files in other words How can a class file understand which .aspx file is bounded to itself?

The answer is like this;

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="hesap.aspx.cs"
Inherits="hesap" EnableViewState="true" %>
```

If we make a statement at our .aspx page's top. We are saying this

```
CodeFile="hesap.aspx.cs"
```

Class file this asp.net web page are integrated each other. In other words, If an user make request in this web page this class file operates this request and a returns a response.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Data;
using System.Text;
using System.Threading.Tasks;
using ATeminatlarLib.Helpers;
using ATeminatlarLib.Models;
```

```
public partial class hesap : System.Web.UI.Page
{
    protected void Page_Load(object sender, EventArgs e)
    {
    }
}
```

In the previous lines are showing a template for a web page class (.aspx.cs).

1)First of all, we are making other class reference by doing this.

Using System;

.

.

So we can use the classes in this reference project includes.

2) `public partial class hesap : System.Web.UI.Page`

So with this line, we say this is a web page class. It means we are using inheritance so `System.Web.UI.Page` all class features are included in this web class.

3) Last one is

```
protected void Page_Load(object sender, EventArgs e)
{
}
```

method declaration. This method will run when a web page is loading. It takes parameters one of them is type of object and other is type of EventArgs.

Brackets ({}) means the scope of a class or a method.

Both of them is packaged into a solution file (.sln) file.

3.1.2 Asp.net Getting Data and Store

I'm using web pages (.aspx pages) for getting data from user and convert into the right format and after that calling TeminatlarLib reference classes for storing data in my database. My database is mysql database. Mysql is very fine coded and very scaled and very good documented database and it has very good support. Mysql can be downloaded from Mysql web site. [Ref 7](#)

In my application, Data has 2 parts one of them is the data I provided to guide the user and other the data I got from user.

Both of them are stored into mysql database as TABLES.

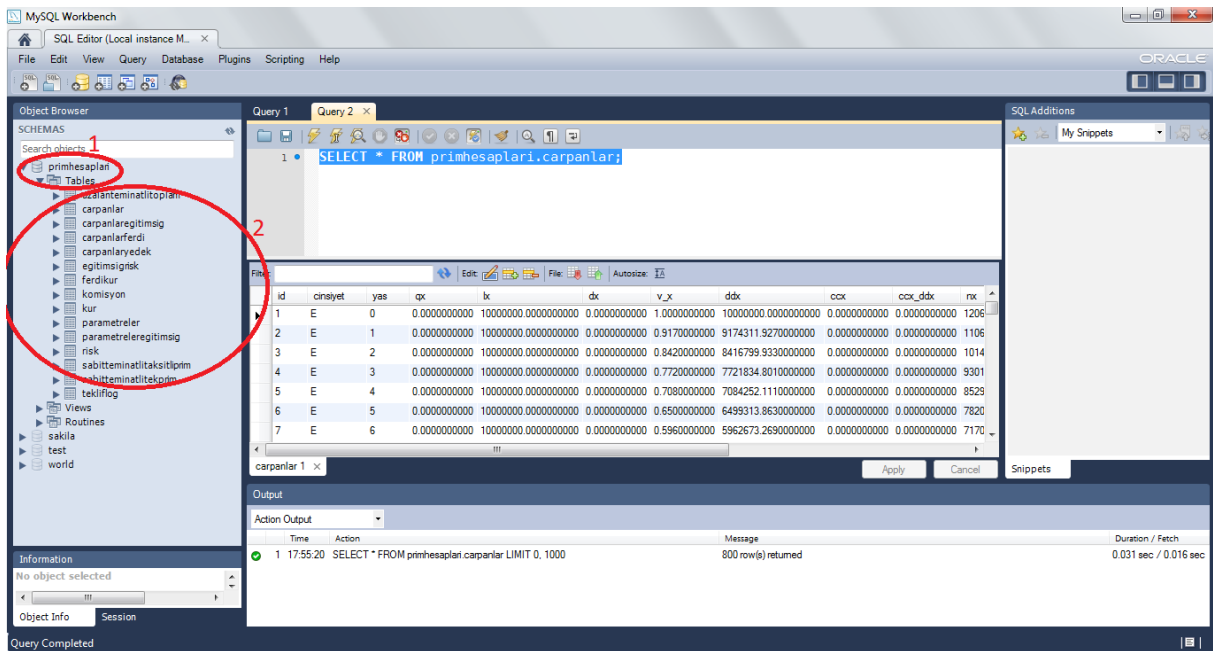


Figure 3.1.2.1 : My database and tables

Like the previous figure [Figure 3.1.2.1](#)

In the highlighted 1 is showing my database name. it is primhesaplari and highlighted 2 is showing my predefined tables. So I can provide data to user in my .aspx web files.

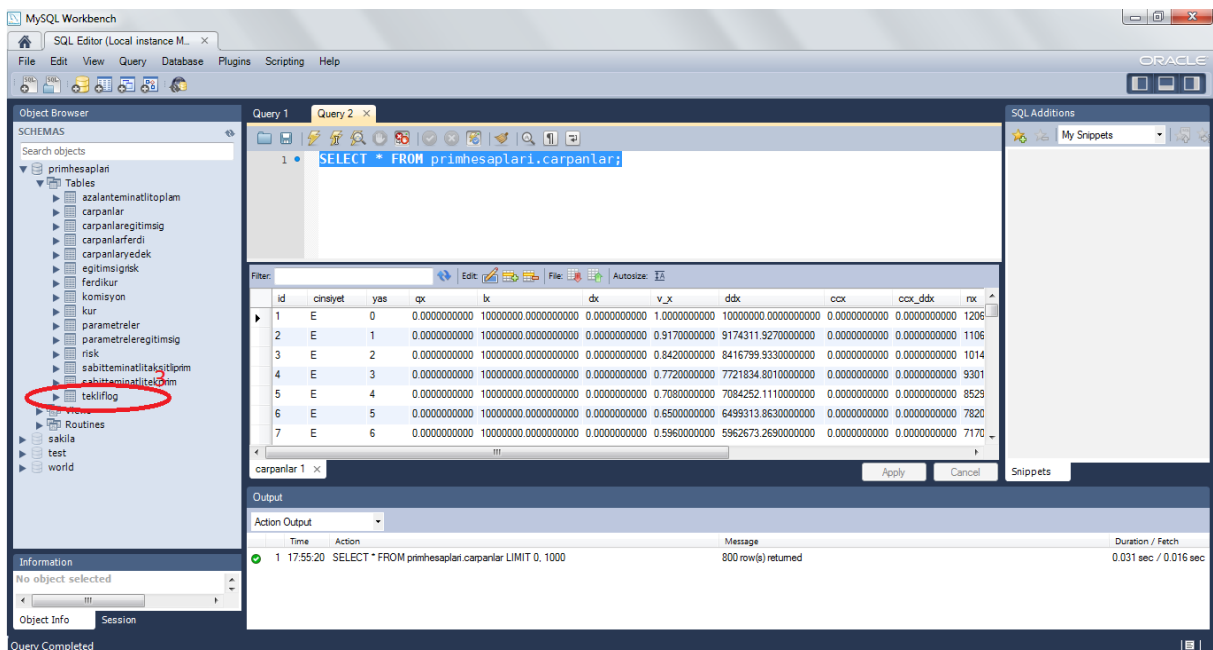


Figure 3.1.2.2 : Customer record table

Highlighted 3 is showing the table that is storing the data an user provided in the previous figure [Figure 3.1.2.2](#) . Mysql uses columns for the storing data in tables so we can split data in our tables.

Data integration is very important between database tables and programming languages so I used

MYSQL PROGRAMMING LANGUAGE

varchar	string
int	int
decimal	decimal

My database tables are represented in my asp.net application in TeminatlarLib project as Models in folder Models in the next figure [Figure 3.1.2.3](#) .

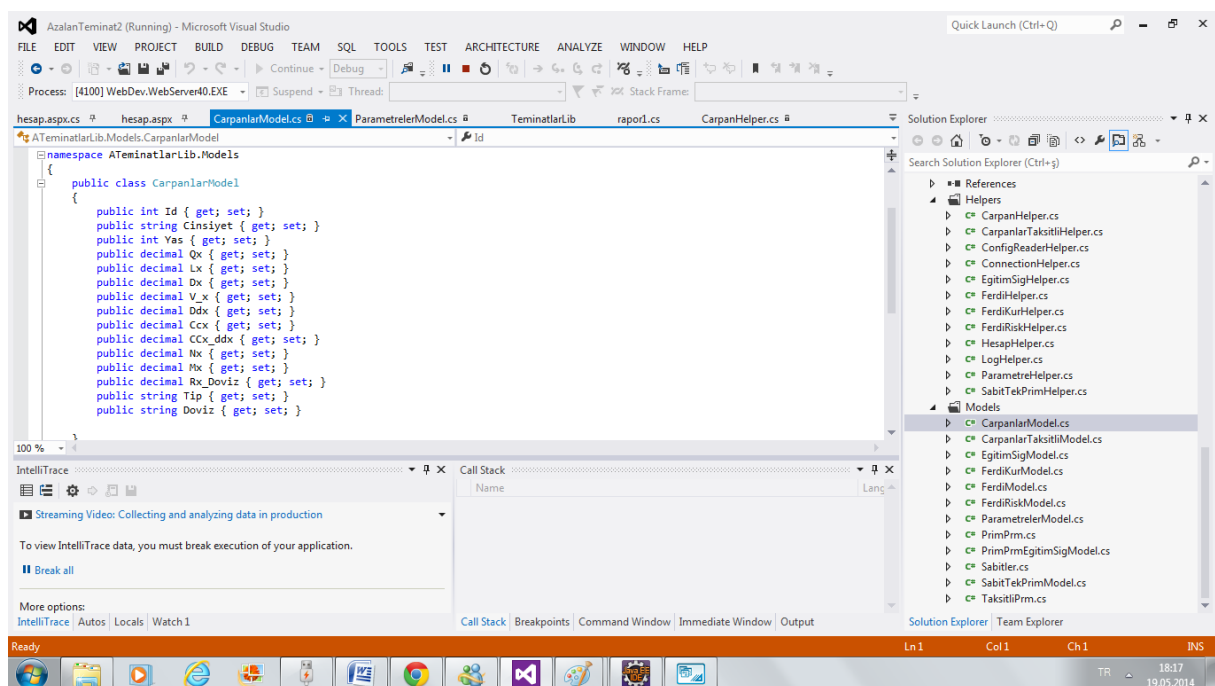


Figure 3.1.2.3 : Model Class

And Database-side Tables representation in the next figure [Figure 3.1.2.4](#)

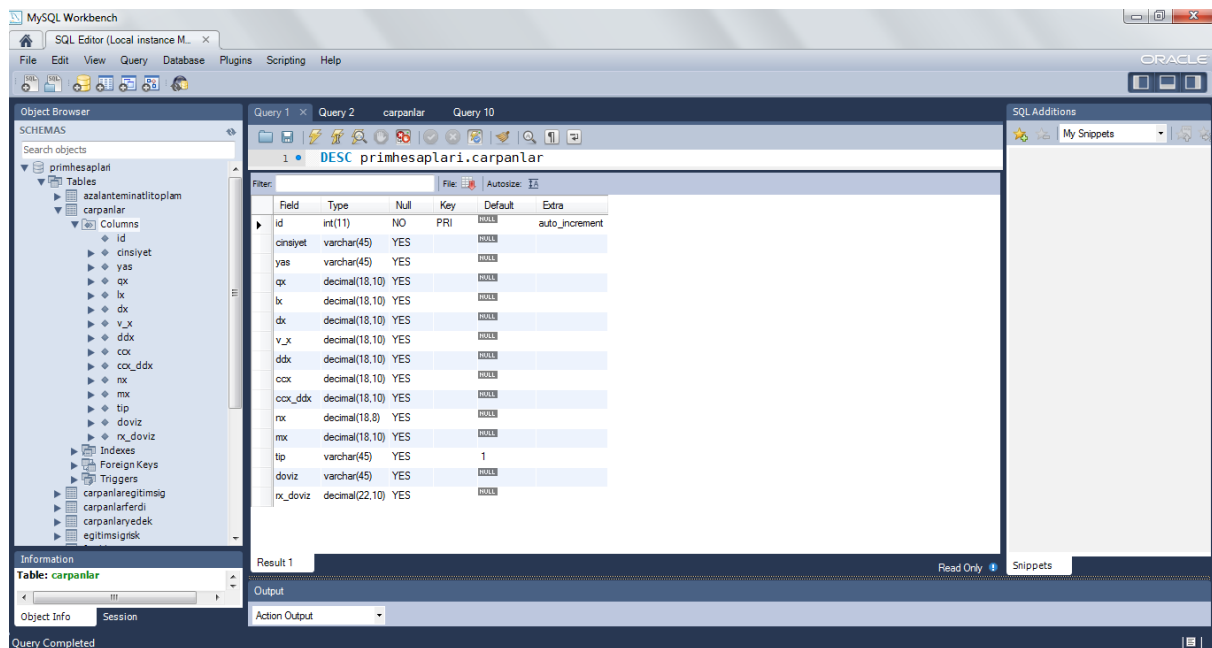


Figure 3.1.2.4 : Table Columns in Database

So I can map database tables in my project. So if I made a change in this models class it made a change in corresponded database table.

3.1.3 Asp.net Web Service

In Asp.net a web service creation is very simple.

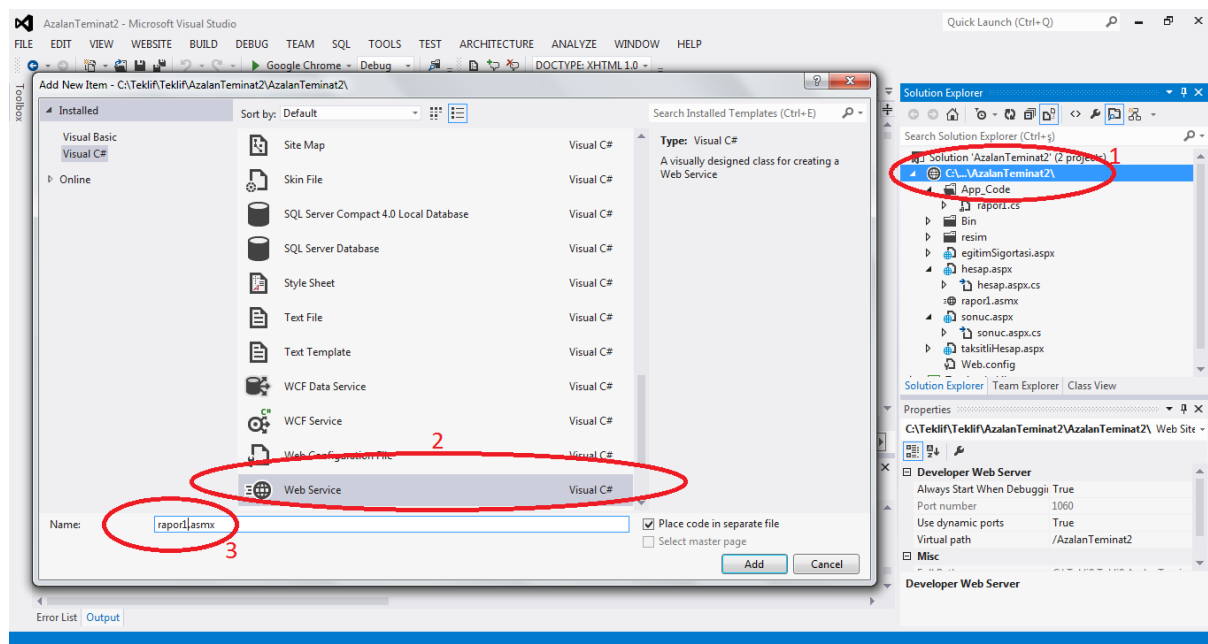


Figure 3.1.3.1 : Creating web service in Visual Studio

In the previous figure [Figure 3.1.3.1](#), I came my web site and clicked right-mouse button and selected Add New Item and left Window was opened and I selected Web Service (highlighted 2)and I gave a name rapor1.asmx (highlighted 3) and that is all. Asp.net created a web service for me

```
<%@ WebService Language="C#" CodeBehind="~/App_Code/rapor1.cs" Class="rapor1"%>
```

And put this web service class into folder App_Code . It is actually a class but it is little different Because it uses attributes

```
[WebService(Namespace = "http://tempuri.org/")]  
[WebServiceBinding(ConformsTo = WsiProfiles.BasicProfile1_1)]
```

like the previous ones. They are saying this class is a web service class and its namespace is Namespace = "http://tempuri.org/" .so When we create this web service client classes, client classes will be created into org.tempuri package.

Second attribute `[WebServiceBinding(ConformsTo = WsiProfiles.BasicProfile1_1)]`

is saying this web service is a basic profiled web service.

These attributes are created automatically by visual studio when we create a web service by using visual studio.

If we make a asp.net web service , another necessary line is `public class rapor1 : System.Web.Services.WebService {` . So we can take all System.Web.Services.WebService class features into my web service class.

There is a last point .

```
[WebMethod]  
public string raporDondur(string TCKimlikNo)
```

Here We are saying this method will be web service method. If I did not use this attribute in my method this method cannot call from client classes. In other words `[WebMethod]` attribute make a method visible from client classes.

So If I did not use this attribute I would not call this method from my java classes.

In my web service I made a method and I take a parameter a customer TC NO and it search this TC NO in application DataBase

If a TC NO exists in db then return values

Else return empty result

3.1.4 Java Web Service Client

So until here I created a web service in asp.net by using C# and Visual Studio. Now It is time to move JAVA web service client and java part.

For creating java web service clients I used Eclipse IDE in other words Eclipse Platform. It is open sourced and it is using AXIS web service client generation method. Eclipse can be downloaded from Eclipse web site. [Ref 5](#) First of all

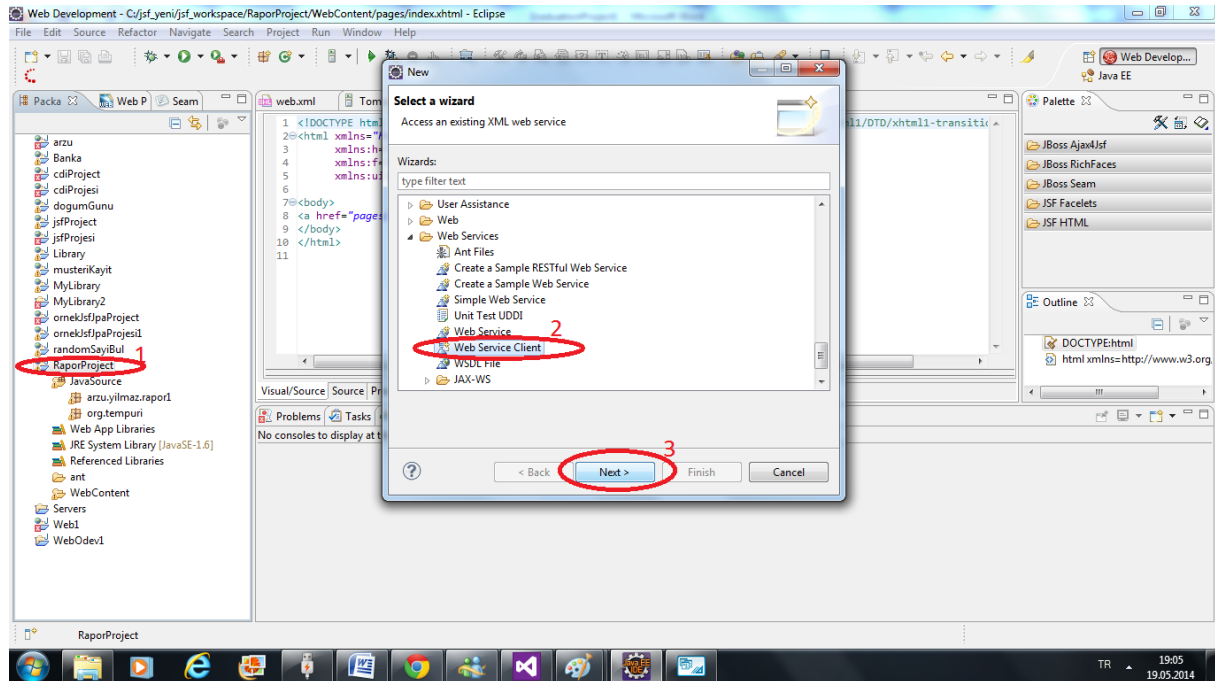


Figure 3.1.4.1 : Creating web service client in Eclipse IDE

After I created a web project in Eclipse I came upon my web project “Report Project” in highlighted 1 and right-mouse button click and I selected “New” and

A new window was opened and I selected “Web Service Client” in highlighted 2 And I clicked Next button in highlighted 3 in the previous figure [Figure 3.1.4.1](#)

Axis Web service plugin can be downloaded from Axis web site . Ref 4

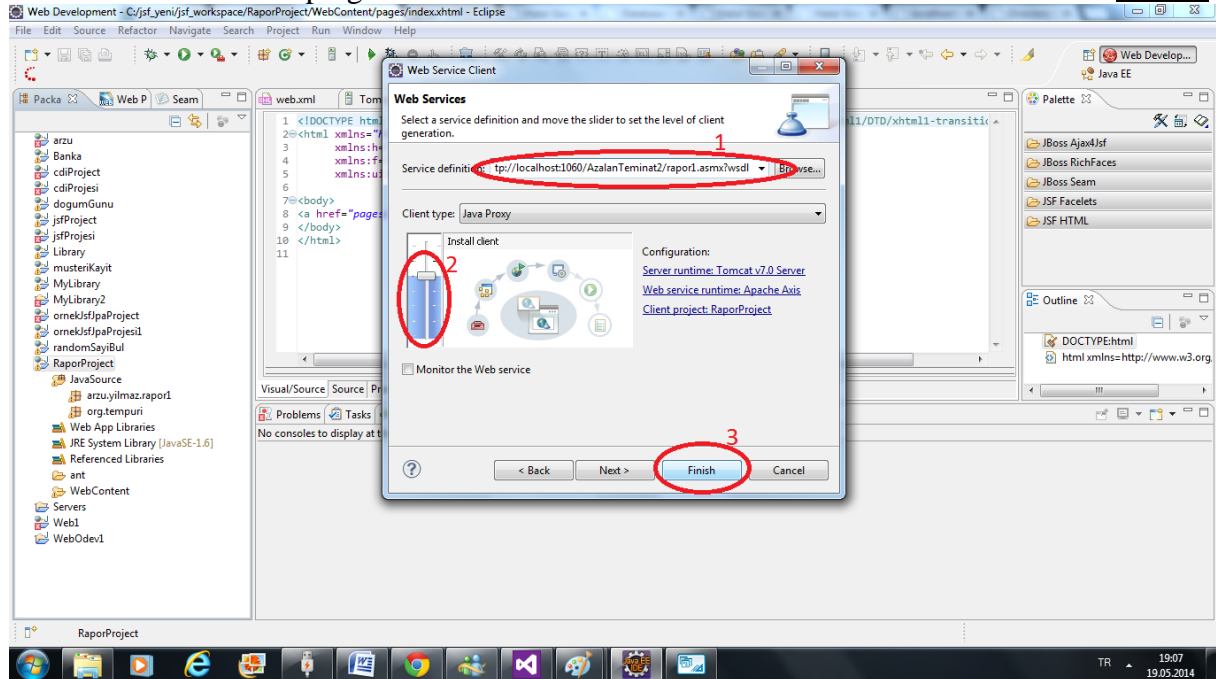


Figure 3.1.4.2 : Creating Java Web Service Client Sequence in Eclipse Axis Plugin

In the previous figure [Figure 3.1.4.2](#) , So A new window was opened and I wrote my web service .asmx address with “?wsdl” extension at the end of this address in highlighted 1 , so Eclipse can recognize it as a web service address and I dragged the web service client status in highlighted 2 so Eclipse can install all necessary classes for me and finally I clicked finished in highlighted 3 and all client classes are generated for me.

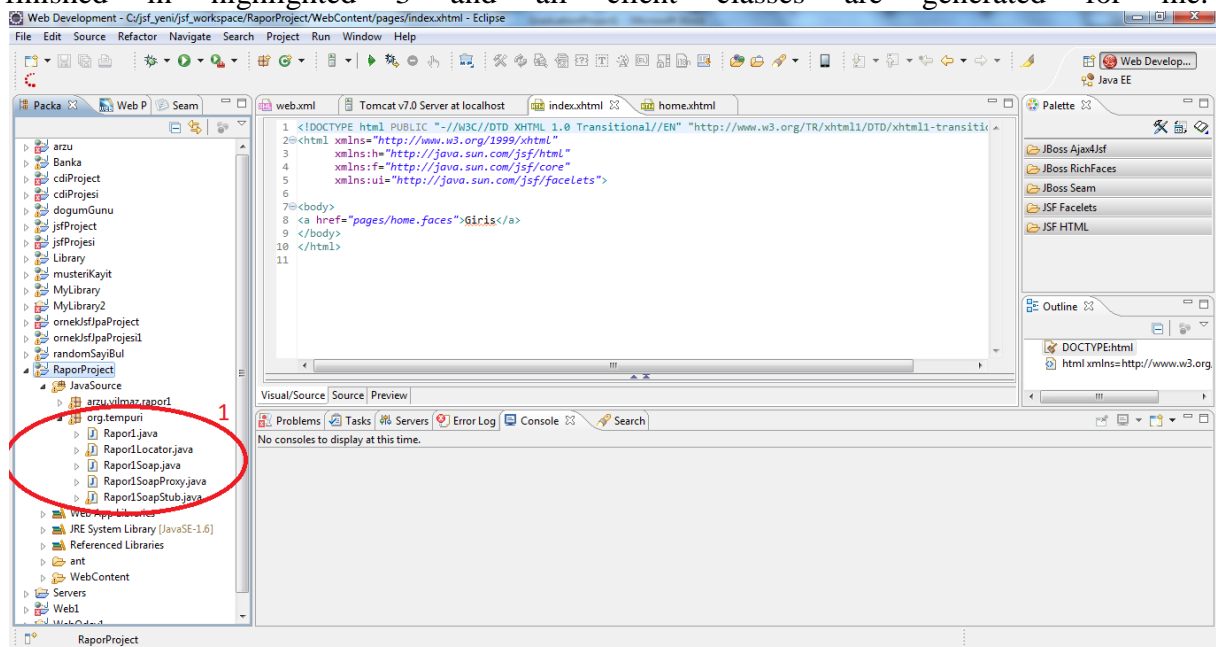


Figure 3.1.4.3 : Java web service client classes

In the previous figure [Figure 3.1.4.3](#) you will see our client classes and all classes were packaged into our asp.net web service attribute’s Namespace value “org.tempuri”.

3.1.5 Java Excel Reports

I used poi library for java excel reports.

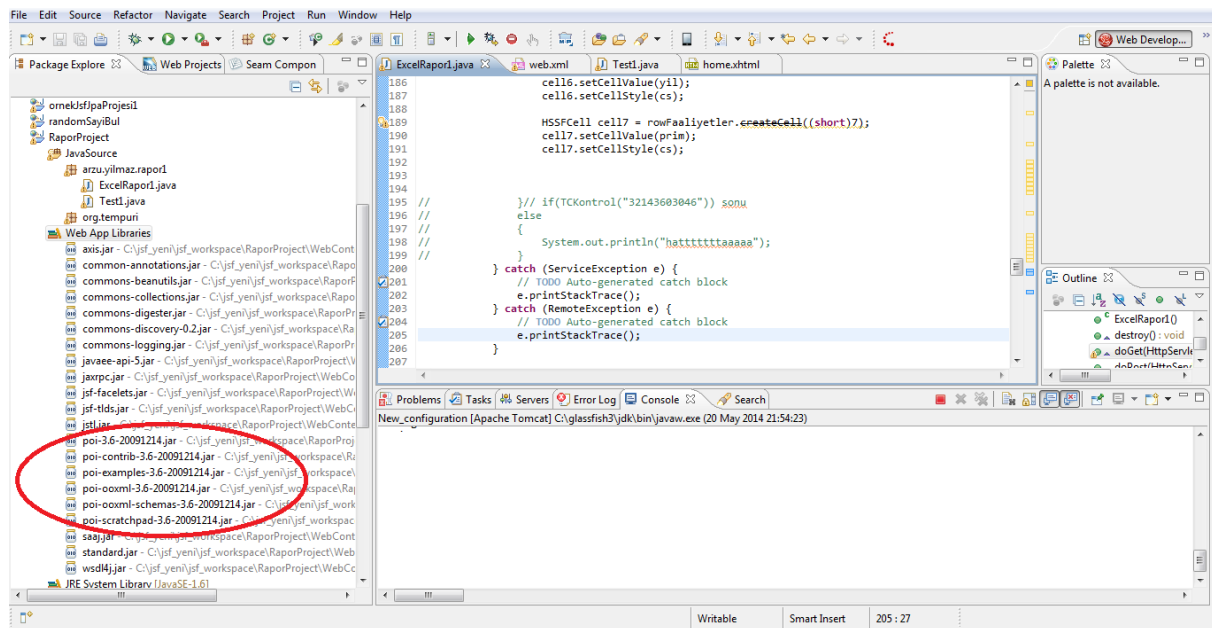


Figure 3.1.5.1 : Java Excel Report Library Jar Files

In the previous figure [Figure 3.1.5.1](#), I showed you my poi jars for creating java excel reports. This library creates a normal excel sheets. So we are creating a sheet first of all and after that a row and columns respectively. That's all.

3.2 Application Data

My application data is stored mysql database and provided to user via .aspx web pages in ASP.net part. But When a customer provides the right information for insertion this data will be stored in my project database in xml format.

Actually this insertion prevents so many columns creation Because I retrieve data from xml column so easily and convert it any format.

4.CHAPTER 4

4.1 Asp.net Web Form Implementation

My project has a one Asp.net web form in the figure [Figure 4.1.1](#) . it is hesap.aspx and it actually makes all job. A web form has “form” element as main web form item.

```
<form id="form1" runat="server">
```

Every item must be in this form element If it is intended to carry any data with its side.

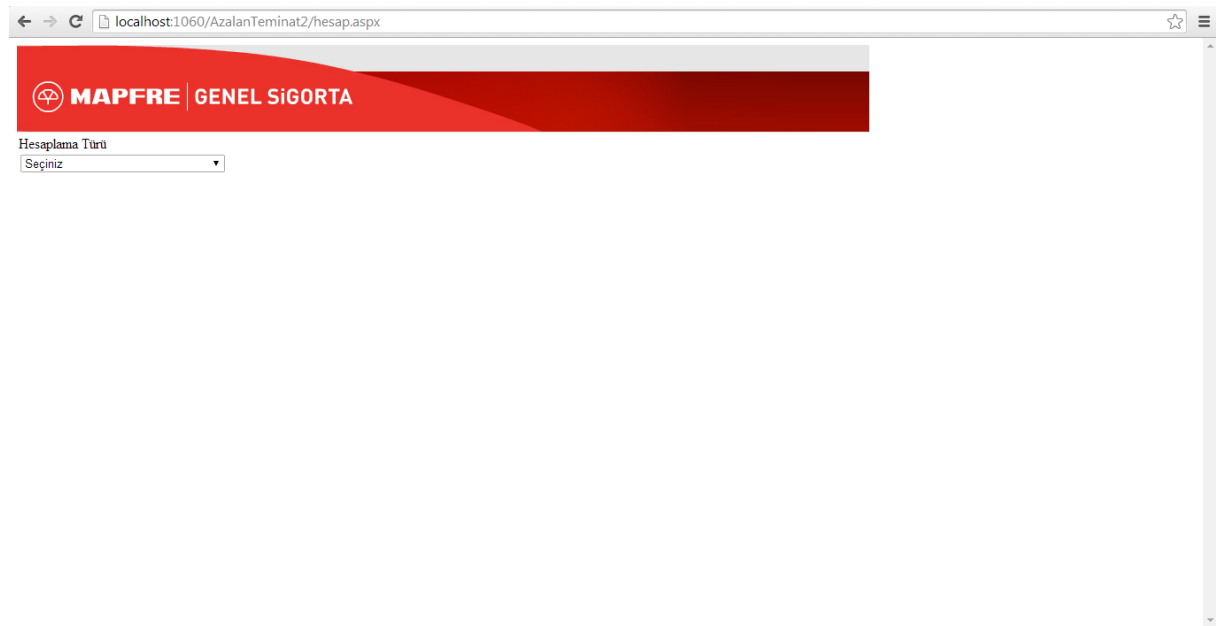


Figure 4.1.1 : My Aspx Web Form

It appears at the beginning when it is loaded. It has a dropdownlist item and this item has

- 1)Seçiniz
- 2)Azalan Teminatlı UH Tek Primli
- 3)Azalan Teminatlı UH Taksitli Hesap
- 4)Eğitim Sigortası
- 5)Sabit Teminatlı UH Tek Prim
- 6)Sabit Teminatlı UH Taksitli Prim
- 7)Ferdî Yıllık Hayat Teklif

7 different choices. Option “Seciniz” is not a calculation option it is only a opening option for dropdownlist.

If we select one of the other 6 options.

MAPFRE GENEL SİGORTA

Hesaplama Türü
Azalan Teminatlı UH Taksitli Hesap

Azalan Teminatlı UH Taksitli Hesap

Teklif Tarihi(*)

Police Başlangıç Tarihi(*)

Mortalite Tablosu CS080 Komisyon %20

TC Kimlik Numarası(*)

İsim Soyisim(*)

Doğum Tarihi(*) Yaş

Cinsiyet Erkek

Başlangıç Kapitali(*)

Para Birimi Dolar

Süre(*)

Azalan Prim Hesapla

Figure 4.1.2 : Azalan Teminatlı UH Taksitli Hesap Panel

This page will be seen like in the previous figure [Figure 4.1.2](#)

Actually All these 6 options have a relation to a panel and all these panels are invisible and when an option was selected this option's panel will be visible. This can achieve with this.

```
<asp:DropDownList ID="DropDownListHesaplamaTuru" runat="server"
AutoPostBack="true"
OnSelectedIndexChanged="DropDownListHesaplamaTuru_SelectedIndexChanged">
```

This is how the dropdownlist is seen in the code side. Here I am saying this dropdownlist item is running on a server and has a ID “[DropDownListHesaplamaTuru](#)”.

It is important because every item has to be a unique id. So its web class can reach this item by this item's id and [AutoPostBack="true"](#) is doing so important mission. Its value is true, so when this dropdownlist's selected value is changed

[OnSelectedIndexChanged="DropDownListHesaplamaTuru_SelectedIndexChanged"](#) method will

be executed.

If we come to other parts of my project's asp.net form implementation. We will see so many asp:panel. A panel is a container it contains so many web form item. I used them because when my main dropdownlist's selected item is changed one of this panels will be visible and that panel's items too.

In my web form page I used another reference

```
<%@ Register TagPrefix="cc1" Namespace="AjaxControlToolkit"
Assembly="AjaxControlToolkit" %>
```

and I referenced it like the following. When item start with "cc1" it is toolkit item.

```
<form id="form1" runat="server">
```

```
<cc1:ToolkitScriptManager ID="ToolkitScriptManager1" runat="server"
EnablePartialRendering="true">
</cc1:ToolkitScriptManager>
```

like the previous lines are showing. It is AjaxControlToolkit. This toolkit gives a calendar capability to my project.

```
<cc1:CalendarExtender ID="CalendarExtender4" runat="server" Enabled="True"
TargetControlID="txtAzalanPoliceTrh" Format="dd.MM.yyyy">
</cc1:CalendarExtender>
```

So I can pick a date from user. This calendarextender is related to

```
<asp:TextBox ID="txtAzalanPoliceTrh" runat="server"></asp:TextBox>
```

this textbox and when this textbox will be clicked a calendar picker will be seen in the next figure Figure 4.1.3.

Figure 4.1.3 : Date Picker

Another form item in my project is

```
<asp:RequiredFieldValidator ID="RequiredFieldValidator9"
ControlToValidate="txtAzalanTeklifTrh"
Text="Teklif Tarihi Zorunlu Alandır!"
runat="server" />
```

It is a client-side control element. It says it is related to a textbox that has a ID named “txtAzalanTeklifTrh” and when my web form main button clicked and form is submitted If this textbox has no value , a warning message will be seen in the page

```
Text="Teklif Tarihi Zorunlu Alandır!"
```

And it says this textbox must have a value!.

Another form item in my project is asp:Label.

```
<asp:Label ID="lblAzalanTeklifTrh" runat="server" />
```

asp:Label is a text element. It only shows its value in wherever used. So we can show any value in this label by using like this.

```
lblAzalanTeklifTrh.text="blablabla"
```

As I said before we can use any web form element by using its ID and because of this every web form item must have an unique ID. So every web form item can be different from anyone else.

4.2 Asp.net Web Classes Implementation

Asp.net has approximately java class syntax. Asp.net web classes must extend System.Web.UI.Page class. Because This class has a template for all asp.net web classes.

I used one web class. It is hesap.aspx.cs.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Data;
using System.Text;
using System.Threading.Tasks;
using ATeminatlarLib.Helpers;
using ATeminatlarLib.Models;
```

First of all I declared the reference package names which I used in this class. As I said before, first of all, method Page_Load runs in a web class at the beginning.

There are so many method definitions in this class. Many of them are main methods which are being called from asp.net web page and others are helper methods which are being called from other methods in this class.

If a method wants to be a callable method from web pages It has to have 2 parameters. One of them is “object” and other is “EventArgs”.

I used many methods of this types. Because I controlled the values which are entered by users. When a user puts values into a textbox an method call is being placed. First of all I am controlling the null values. Because I do not want null values in my database. Because of this I followed such a pseudo code

If a textbox value is null

Make a warning to user about it

Else

Go to next line.

I followed this pseudo code so many places in my class. Another thing in my class is happening when my main dropdownlist that is selecting insurance type is being selecting. When my dropdownlist’s value is changing, method

```
protected void DropDownListHesaplamaTuru_SelectedIndexChanged(object sender, EventArgs e)
```

Is being fired. So I can control which index is being selected and I am simply changing visibility of the selected index to true and of course the bounded update panel’s visibility too.

such a pseudo code is running.

If a index 1 is selected then

Update panel 1’s visibility is true

Others are false

Else if index 2 is selected then

Update panel 2’s visibility is true

Others are false.

.
.
.
.
.

And when an user are changing the selected index of my main dropdownlist it is repeating . This is happening for all 6 options.

When I am controlling a textbox value , I am using textbox's id and Text attribute like this.

For example;

```
txtAzalanDogTarihi
```

is my textbox id and when I am reaching this textbox I simply do

```
txtAzalanDogTarihi.Text
```

Like in The previous example I can reach textbox and other form elements' value.

Another special situation is Identity Number control. It must be 11 character in our Country so I must warn an user If it enters wrong numbers or some invalid characters. So for this aim, I am using a method

```
public bool TCKontrol(string str)
```

This method is taking a parameter from string type and returns a value from bool type (true or false). In other words I am sending TC No that was entered by user and if it is valid for my country, this method returns "true" and if it is wrong This method returns "false". In this method I am splitting parameter string value into characters and I am controlling these characters one by one with my character array

```
int[] sayilar = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 };
```

This array keeps the numbers as you see and I am using the numbers of correct matches in a counter variable and at the every correct match I am increasing the counter by one.

And in my classes There are some database methods. These methods are doing insertion into my mysql database tables by using TeminatlarLib reference's model and helper classes. This method gets all correct textbox values and calls the right model or helper class method. But This class doing some queries before the insertions Because the calculations in my project need some pre-defined values in my tables.

For example;

```
FerdiHelper fh = new FerdiHelper();
```

```
SabitTekPrimModel esm = fh.GetSabitTekPrim(SigCinsiyet, Yas, ht, para);
```

Making a method call to method GetSabitTekPrim of FerdiHelper Class from TeminatlarLib project with some parameters . This method is returning an object of type of SabitTekPrimModel class.

Now Let's look at this method GetSabitTekPrim.

Actually This method is doing the same thing like other helper class's methods.

It is making a connection to my mysql database with a connection string parameter. This connecton string parameter is coming from method getConString22() of class of [ConnectionHelper](#) This method is returning my database connection data

```
return "Server=localhost;Port=3306;Database=PrimHesaplari;Uid=root;Pwd=arzuadem;";
```

Like the previous line. After the connection is established I am making a query on my database and I am using parameters coming from calling method for this. I am setting parameters for this query like this

```
cmd.Parameters.AddWithValue("@CINSIYET", Cins == Cinsiyet.Erkek ? "E" : "K")
```

And I sent this query string with parameters into a MySqlCommand object and this object is executing query for me and I am putting the returned object into a MySqlDataAdapter object and this MySqlDataAdapter object is filling a DataTable with the returned values of the query and I am putting these returned values into the object that will be returned from this Helper method to the calling method.

After I took the returned value in my hesap.aspx.cs class , I am preparing the insertion string for database. So I am using xml format for insertion and for preparing this xml I am using class "StringBuilder".This class gave me a lot of flexibility and I wrote the xml like a string

For example;

```
sbParametreler.Append(string.Format("<b>{0}<b>{1}<br />", "Teklif Tarihi", txtTeklifFerdi.Text));
```

and

```
sbHesapTutar.Append(string.Format("<b>{0}</b>{1}", "Toplam Prim", lblVefatFerdi.Text));
```

And I put this values into the class of "LogHelper" and I called the method "logla". This method makes a connection into my database as I told in the previous page and make an insertion. That is all.

If I summarize the happenings in my hesap.aspx.cs class.

- 1) I am taking the necessary customer values from user
- 2) I am controlling whether if the values are valid.
- 3) If values are valid I am taking the pre-calculation values from database and I am making a calculation for the customer and I am recording the customer data.
- 4) If values are invalid I warn the user as I say these values are wrong.

4.3 Asp.net Web Service Implementation

As I said before Web service creation is very simple in visual studio. I clicked my web site with right-button click and I added a web service named “rapor1.asmx”. After this creation Visual studio made all necessary addition into my web service class and I changed only one method.

[WebMethod]

public string raporDondur(string TCKimlikNo)

I put a parameter into this method definition. This parameter taked the Customer’s Identity Number (TCKimlikNo) and making a query with this parameter and this TCKimlikNo is in my database this method returns the values which are necessary for java excel report and If this TCKimlikNo is wrong or is not in my database There is no returning value.

But There is an issue here Because the record in my database is in xml format and I am taking excel report in text format. Because of this I needed a conversion between xml and text format.

I read all data returning from data and split according to tag “”. Because I put my data with this tag “” into xml format , so I need to split my xml data from this “” and I am taking one by one all customer data. But there is an another issue here. Xml format has an tag “
” at the beginning so I split this tag too.

That’s all my xml data is ready for java excel report after all these conversion process and I am returning the converted text data to the calling web service client classes.

At the end, I am releasing web service with my project deploy into IIS server.



Figure 4.3.1 : My aspx wsdl address in IIS Server

This is my .wsdl file in the previous figure [Figure 4.3.1](#). This file is being used for client classes. Visual Studio is converting my asp.net Web Service Class into this wsdl file format automatically. This wsdl is in xml format. Because it is easy to transport data in xml format between http requests.

4.4 Java Web Project Configuration

I used Eclipse IDE for coding and for configuration Eclipse has some special folders such as folder “JavaSource” for source .java classes and folder “web content” for web pages and folder “ant” for team development but I did not use this folder “ant”. I made a dynamic web project It means I have java web pages differently from “.html” files. My project tree is like the following figure [Figure 4.4.1](#)

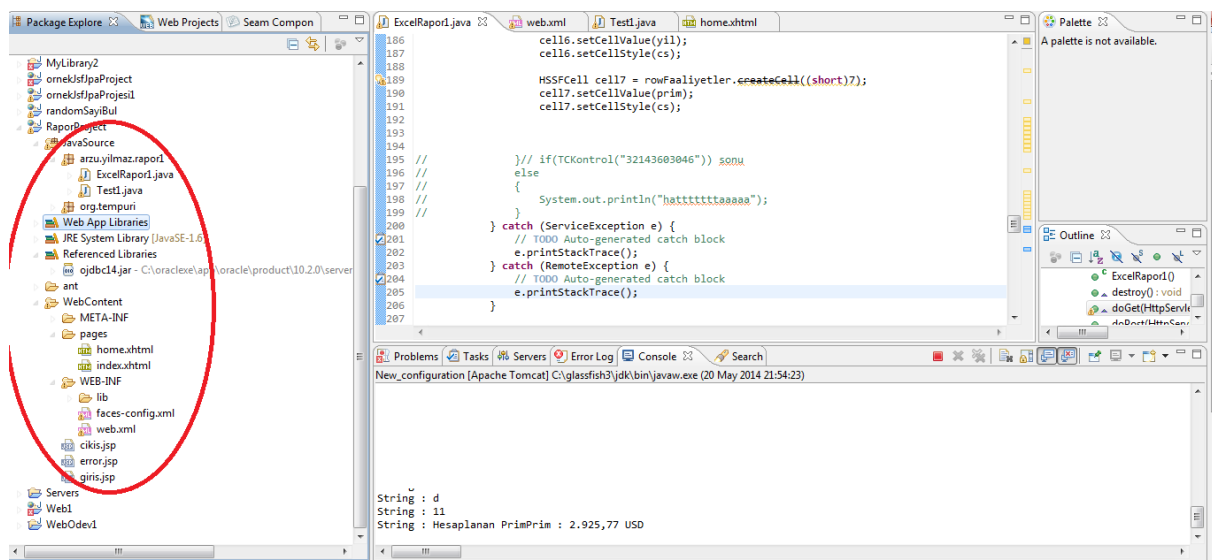


Figure 4.4.1 : My project tree in Eclipse IDE

As I made a java web project I must create an file named “web.xml”. it is configuration file of java web.

Web.xml is written in xml format and it says to project this project version is this and my namespaces for reading my tags is this

```
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xmlns="http://java.sun.com/xml/ns/javaee"
         xmlns:web="http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
         xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
         http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
         version="2.5">
```

like this.

I clicked right-mouse button in my project name and I clicked the option that is showed in the previous figure Figure 4.4.2.

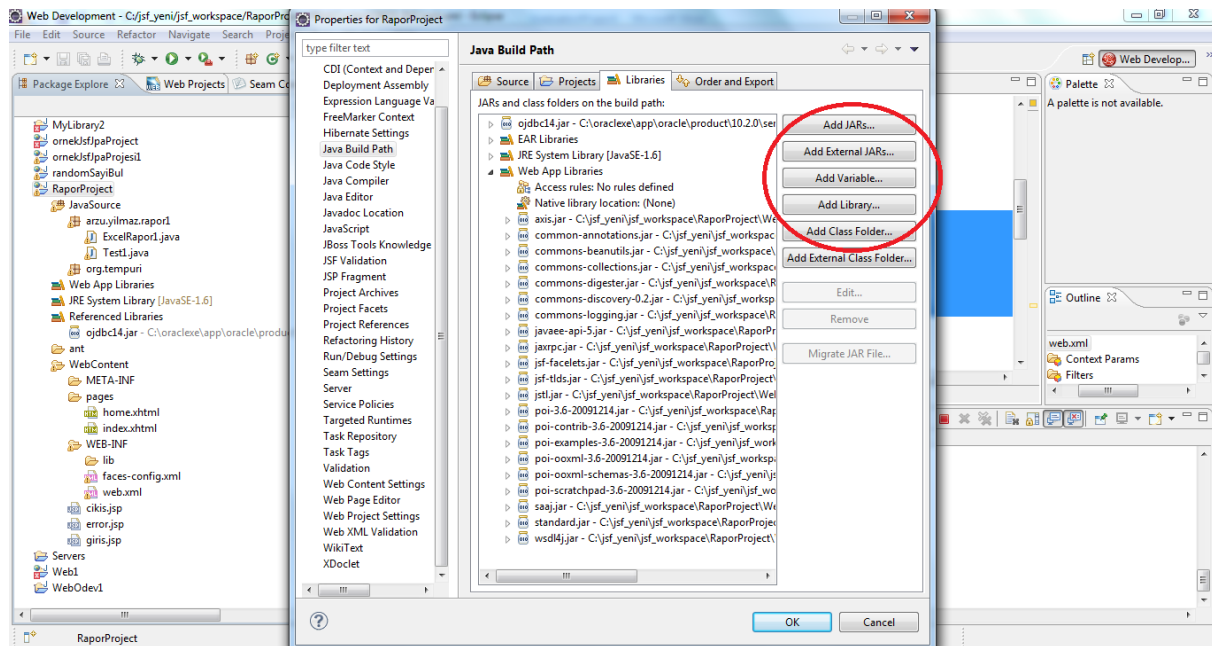


Figure 4.4.3 : Adding jar files in Eclipse IDE

And I am choosing the right option from the red highlighted part in the previous figure [Figure 4.4.3](#) or There is a second way for adding needed jars we can select all needed jars from desktop , or other places where the jar files are located and I am dragging all jar files into folder “lib” in folder “Web Content” .

```
<welcome-file-list>
  <welcome-file>pages/index.xhtml</welcome-file>
</welcome-file-list>
```

Web.xml also is saying which web page is my project’s opening page or in another words welcome page. Also Web.xml has many attributes those were defined when the project was created.

```
<context-param>
  <param-name>com.sun.faces.validateXml</param-name>
  <param-value>true</param-value>
</context-param>
<context-param>
  <param-name>com.sun.faces.verifyObjects</param-name>
  <param-value>true</param-value>
</context-param>
<context-param>
  <param-name>facelets.DEVELOPMENT</param-name>
  <param-value>true</param-value>
</context-param>
<context-param>
  <param-name>facelets.REFRESH_PERIOD</param-name>
  <param-value>2</param-value>
</context-param>
```

```

<context-param>
    <param-name>javax.faces.DEFAULT_SUFFIX</param-name>
    <param-value>.xhtml</param-value>
</context-param>
<context-param>
    <param-name>javax.faces.STATE_SAVING_METHOD</param-name>
    <param-value>client</param-value>
</context-param>

```

like in the previous lines. These are JSF attributes

Default_Suffix = If .xhtml file is making a request. This is a JSF REQUEST. So If We want to use JSF our web pages must have the files of .xhtml type.

Others are for Faces Servlet and are involved in the requests indirectly.

So I have home.xhtml and index.xhtml files in my pages folder in Web Content. When a request is made from these pages JSF Servlet is taking this request and make a response.

4.5 Java Web Authentication

A java web project needs some configuration settings and files if it has an authentication. So When we need a configuration in web project It has to be in file web.xml. Because It is main configuration file of a web project in java As I said before. So I put these lines into my web.xml file

```

<security-constraint>
    <web-resource-collection>
        <web-resource-name>RaporProject</web-resource-name>
        <url-pattern>/pages/*</url-pattern>
    </web-resource-collection>
    <auth-constraint>
        <role-name>user</role-name>
    </auth-constraint>
    <user-data-constraint>
        <transport-guarantee>NONE</transport-guarantee>
    </user-data-constraint>
</security-constraint>
<login-config>
    <auth-method>FORM</auth-method>
    <realm-name>Example Form-Based Authentication Area</realm-name>
    <form-login-config>
        <form-login-page>/gis.jsp</form-login-page>
        <form-error-page>/error.jsp</form-error-page>
    </form-login-config>
</login-config>
<security-role>
    <role-name>user</role-name>
</security-role>

```

Here I say My project name is

```
<web-resource-name>RaporProject</web-resource-name>  
<url-pattern>/pages/*</url-pattern>
```

And the requests to the web pages in the folder “pages” have to be authenticated.

```
<auth-constraint>  
  <role-name>user</role-name>  
</auth-constraint>
```

```
<security-role>  
  <role-name>user</role-name>  
</security-role>
```

and a person who wants to use this program has an user role. This role definition is made in file “context.xml” and my database I will explain later.

```
<user-data-constraint>  
  <transport-guarantee>NONE</transport-guarantee>  
</user-data-constraint>
```

and a request was made Do not wait for a quarantine for response or data integrity. Because if The program wait for a guarantee , it can wait so long time and this can occur an error.

```
<login-config>  
  <auth-method>FORM</auth-method>  
  <realm-name>Example Form-Based Authentication Area</realm-name>  
  <form-login-config>  
    <form-login-page>/giris.jsp</form-login-page>  
    <form-error-page>/error.jsp</form-error-page>  
  </form-login-config>  
</login-config>
```

I say this project use a form based authentication it means my login page “giris.jsp” has authentication form fields and if there is an error or an user enters wrong credentials, user will go to page “error.jsp”.

There is an important point here. We must do some coding in my file giris.jsp about this authentication like in the next figure Figure 4.5.1 . So I put the following lines into my giris.jsp

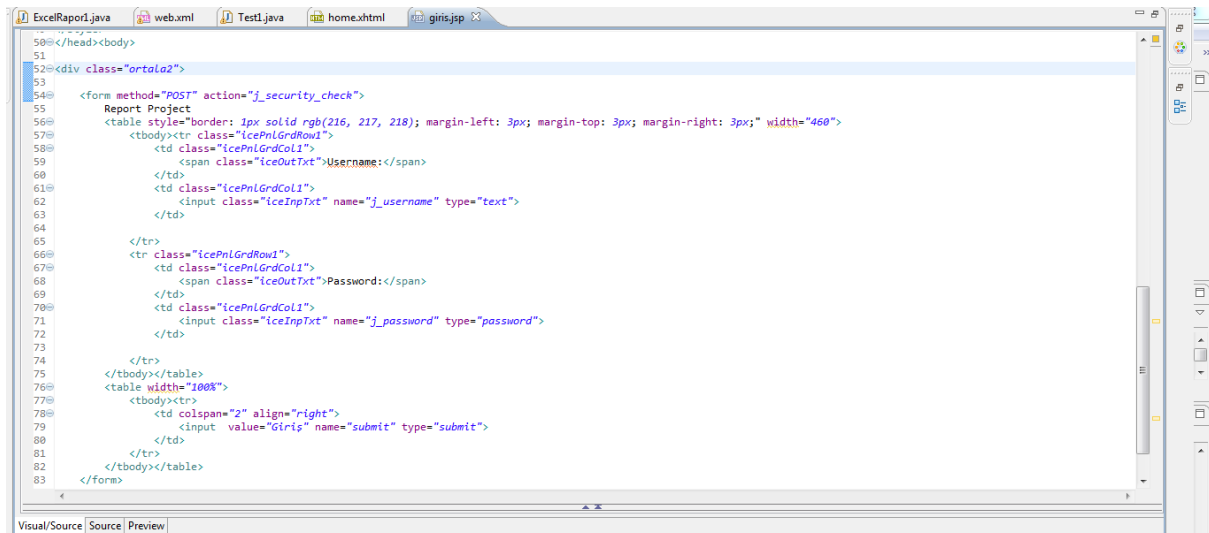


Figure 4.5.1 : giris.jsp

and here I say when this form is submitted the submitted values are evaluated a special place where I mentioned in my web.xml

```

<login-config>
<auth-method>FORM</auth-method>

```

.

.

.

with the previous lines in my project There will be a special class for evaluating the file giris.jsp. But I must use this

- 1) action="j_security_check" in form element
- 2) a j_username in a input element of text type.
- 3) a j_password in a input element of password type.

These fields are evaluated when the submit button was clicked and if the information provided by user is correct , user goes to welcome page or it is wrong , user goes to error page.

There is one more setting actually a file. Because I am taking user credentials from database. Java web projects are using a file named "context.xml" for authentication and We must put this file into folder WEB-INF. This WEB-INF folder has all necessary configuration files.


```

1)<?xml version="1.0" encoding="UTF-8"?>
2)<Context path="/RaporProject" docBase="/RaporProject" debug="99">
3)<Realm className="org.apache.catalina.realm.JDBCRealm"
4)    driverName="oracle.jdbc.OracleDriver"
5)    connectionURL="jdbc:oracle:thin:@localhost:1521:XE"
6)    connectionName="rapor1" connectionPassword="rapor1"
7)    userTable="USERTABLE" userNameCol="USERNAME" userCredCol="SIFRE"
8)    userRoleTable="USERROLES" roleNameCol="ROLENAME" />
9)    <WatchedResource>WEB-INF/web.xml</WatchedResource>
10)   <WatchedResource>META-INF/context.xml</WatchedResource>
11) </Context>

```

So Let's look this file line by line.

Line 1: It is saying this is a xml file

Line 2: This file belongs to ReportProject and Context is main tag in this file and everything is defined in this tag.

Line 3: Which type of authentication is used in this project. I am saying database authentication.

Line 4: I am saying I used Oracle for database authentication.

Line 5: Where My authentication database is located.

Line 6: My Database Schema Username and Password

Line 7: Which table Project users' usernames are kept in.

Line 8 : Which table Project users' roles are kept in.

Line 9 and 10 : These lines show which files are used for authentication.

4.6 Java Web Service Client

When we develop a cross-platform application we must provide the data of one side as a web service and in my project I provided my data in asp.net as a web service and other side needs the client classes of web service and in my project I created client classes in java platform.

First of all, I need the wsdl location of my asp.net web service and so this I took <http://localhost:1060/AzalanTeminat2/rapor1.asmx?WSDL> and I am creating client classes in package “org.tempuri”.

And for using my asp.net web service

- 1) I am using Rapor1Locator class and I am creating an object of this class.
- 2) I am creating Rapor1Soap object by using Rapor1Locator object that I created before.
- 3) This Rapor1Soap object is reaching my asp.net web service class and method and I am sending TCKimlikNo as a parameter.

But I must do one more thing using this web service I must catch possible exceptions These are

- 1)Service Exception
- 2)RemoteException

In this project I am using “axis web service generator” this generator is bundled into eclipse so eclipse is creating automatically the client classes which are named as stub and skeleton classes.

Axis Web service needs some jars. These jars are

- 1)axis.jar
- 2)jaxrpc.jar
- 3)saaj.jar
- 4)wsdl4j.jar

4.7 Java Excel Reports

Java has perfect jar support for excel creation. One of them is POI. I chose it because of ease. But I am doing this excel sheet creation in a servlet. Because a servlet is a perfect place for another formats such as Pdf, Word etc. Because a servlet can create a ServletOutputStream object which creates these types in java.

```
response.setContentType("application/vnd.ms-excel");
response.setHeader("Content-Disposition", "inline; filename=adem1"
+ dt.getTime() + ".xls");
```

And I am saying This will be an excel file by putting content type “application/vnd.ms-excel” and giving a name to this excel page by adding a header line into my response object.

- 1) Create a sheet
- 2) Create a row by using this sheet object
- 3) Create cell objects by using this row object.

First of all, I created header columns for my project.

Teklif Tarihi, Poliçe Başlangıç Tarihi, TCKimlikNo, Ad ve Soyad, Yaş, Kapital, Yıl, Prim and I am using UNICODE Turkish Characters creating this excel pages. Because we can not use Turkish characters directly. Because Java can not read Turkish characters and I put matching character in UNICODE for “ŞıİöÖüÜğĞ”.

When I create a servlet Eclipse put some lines into file web.xml.

```
<servlet>
  <description></description>
  <display-name>ExcelRapor1</display-name>
  <servlet-name>ExcelRapor1</servlet-name>
  <servlet-class>arzu.yilmaz.rapor1.ExcelRapor1</servlet-class>
</servlet>
<servlet-mapping>

  <servlet-name>ExcelRapor1</servlet-name>

  <url-pattern>*.rapor1</url-pattern>

</servlet-mapping>
```

These lines are saying where this servlet is located and when this servlet is fired and in my project when a request has a “.rapor1” this servlet will be fired.

So I created a file of .xhtml type and I wrote

```
<form action="deneme.rapor1">
<input type="text" name="TC" />
<input type="submit" value="Create Report"/>
</form>
```

This form has a input element which has the type of text and a submit button like the Figure 4.7.1. But There is an important point in this form that is form's action attribute. I said when the button is clicked this form's values are sent into my report servlet and I am getting TC element of this form in my servlet by doing

```
String TC=request.getParameter("TC");
```

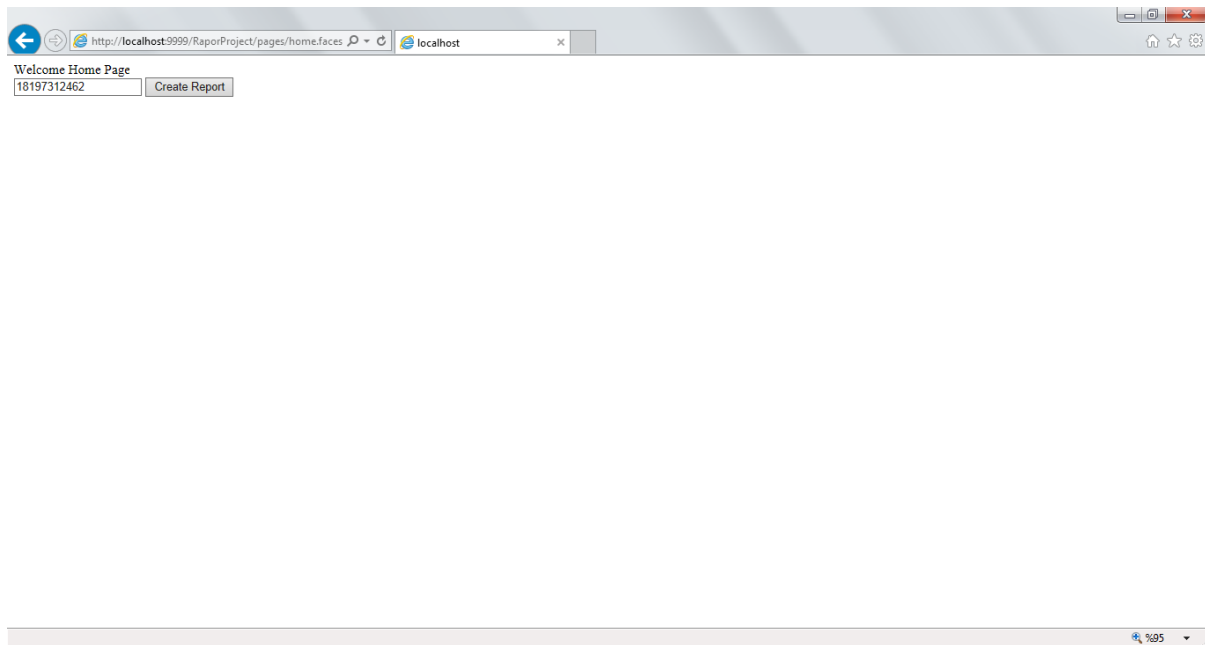


Figure 4.7.1 : My jsp report page in java

I am getting TC like the previous line. Because Servlet gets all form elements' values as a parameter from object of request type.

Servlet has another advantage Because It has request and response objects directly. So I can get easily any parameters by using this request object and create all file types by using response object. After We create our xml we will see the result like the Figure 4.7.2.

	A	B	C	D	E	F	G	H
	TEKLİF TARİHİ	POLİÇE BAŞLANGIÇ TARİHİ	TC KİMLİK NO	AD SOYAD	YAŞ	KAPİTAL	YIL	HESAPLANAN PRIM
1	05.01.2014	05.01.2014	67967696776	gb hghgh	44	75576	11	Hesaplanan PrimPrim : 2.925,77 USD
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								

Figure 4.7.2 : Excel Report

5. CONCLUSIONS AND RECOMMENDATIONS

At the end, my aim was to convert the paper-based customer recording system to a more secure and reliable web-based customer recording system for insurance companies and I could handle it. I also used a cross-platform So we can use any technology for web service client. I chose Java for web service client. Anymore Insurance companies can use this program without any problem. Because it is running perfect.

As a recommendation , You can use a text based columns in database for keeping the customer data.

5.1 Practical Application of This Study

Practical application of this study is customer recording system for insurance companies. Because this application can do complex calculations and can save all data that an insurance company needs.

Because this application is a complete project that has database and cross-platform applications.

5.2 Cross-Platform Development and Integration

Cross-platform applications are very hard. Because sometimes You can't integrate the data between cross platforms. Because data types can't match. Because of this I selected simply convertible languages. Another problem is we need two different SDKs for these cross-platforms and maybe There can be an issue between these SDKs.

I set .NET FRAMEWORK and JAVA EE SDK for my project and they run without any problem in any system. Cross-platform applications can need a web service and a client for this web service.

Another issue can be server port collisions . Because Both sides of my project can be run on the same port number. These can be a problem but in my project IIS Server of ASP.NET is running on port number "80" and tomcat server of java is running on port number "9999".

But in a collision we can change port numbers easily from servers' configuration files so we can prevent this possible collisions. There is another issue on these port numbers. Because every computer has some special and pre-reserved port numbers for this reason we can learn the port numbers of our computers and according to this we have to develop our programs and our servers.

We can learn port numbers running on our computer with this command in windows OS.

```
netstat -a
```

This command shows all running ports.

5.2.1 Asp.net

I used visual studio for asp.net development and .net framework of 4.0 version and some 3rd party component that is Ajax Toolkit and I took customer data and published this data as a web service.

I recorded customer data as xml so when I publish asp.net web service I converted this xml to text format and when doing this I put ":::" symbols between each column data in this xml So I can easily read this data by splitting this ":::" symbols.

There is an important point visual studio and asp.net when we develop a web site we need to make some additions in asp.net web configuration file "web.config" and I put some "assembly" definitions for my mysql database and .net definition.

5.2.2 Java

My Java development platform is Eclipse. Because It is open-source and free program and It has very good support Because It is developed by a foundation and has many packages with itself. I used one of these packages. It is Axis web service package.

Axis package is very robust and fast development tool for web service clients. I only added my asp.net project's web service wsdl address to this axis package and Axis created all client classes automatically.

I used tomcat as a server in java web development and simply changed its port number to 9999 so I prevented any possible collision with IIS server.

I used POI library for excel reports and creating this excel report I used a servlet. Because A servlet can create easily excel, pdf or word file. Because a servlet has request and response object. Response object creates my excel file.

I firstly took web service data and split it by “:::” symbols and I put this split data into my excel sheet cells.

REFERENCES

Ref 1 : www.oracle.com

Ref 2 : [http://msdn.microsoft.com/en-us/library/vstudio/4w3ex9c2\(v=vs.100\).aspx](http://msdn.microsoft.com/en-us/library/vstudio/4w3ex9c2(v=vs.100).aspx)

Ref 3 : <http://tomcat.apache.org/>

Ref 4 : <http://axis.apache.org/axis/>

Ref 5 : www.eclipse.org

Ref 6 : <http://www.oracle.com/technetwork/java/javase/overview/index.html>

Ref 7 : <http://dev.mysql.com/downloads/workbench/>

APPENDICES

APPENDIX A:

Asp.net : A programming language platform developed by Microsoft company.

C# : A programming language for asp.net platform developed by Microsoft company.

Java : A programming language developed by Sun Micro Systems at the beginning and now by Oracle company.

.net : It is framework of asp.net and it is a base library for .net projects.

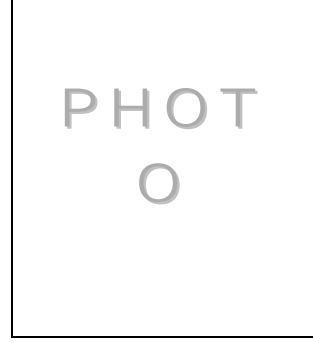
Tomcat : It is a server for web projects. It is being developed by Apache foundation.

IIS : It is a server for asp.net web sites.

Eclipse : Java development platform. It is developed by Eclipse Foundation. It is free and open source IDE.

Visual Studio : Asp.net development platform. It has many programming languages such as C#, Visual Basic.

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PUBLICATIONS/PRESENTATIONS ON THE THESIS