

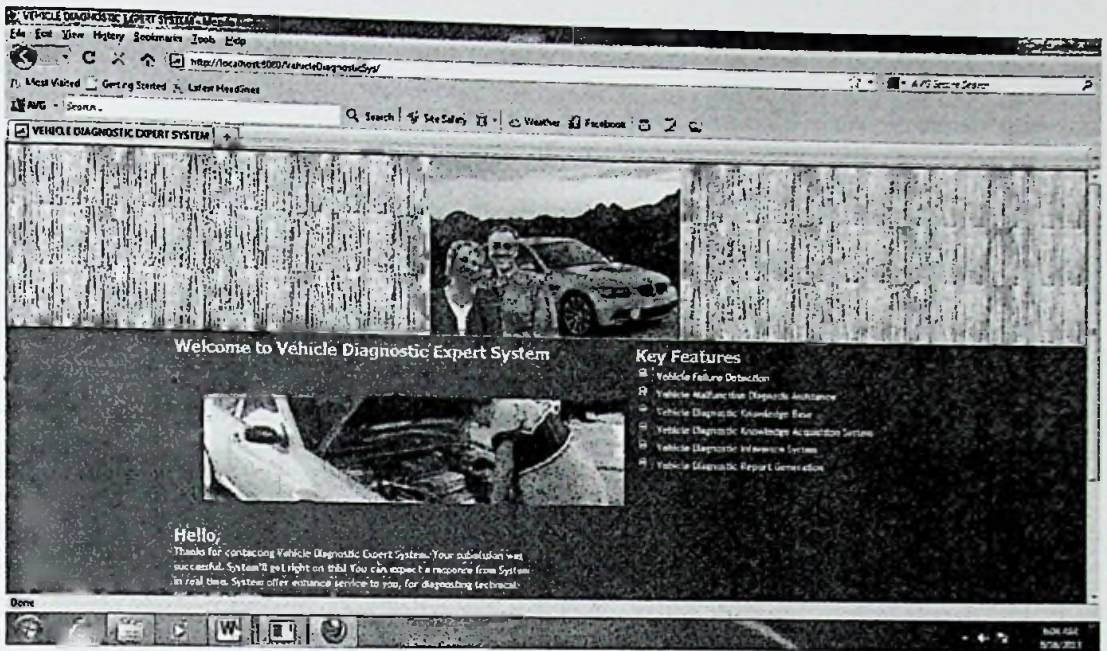
## References

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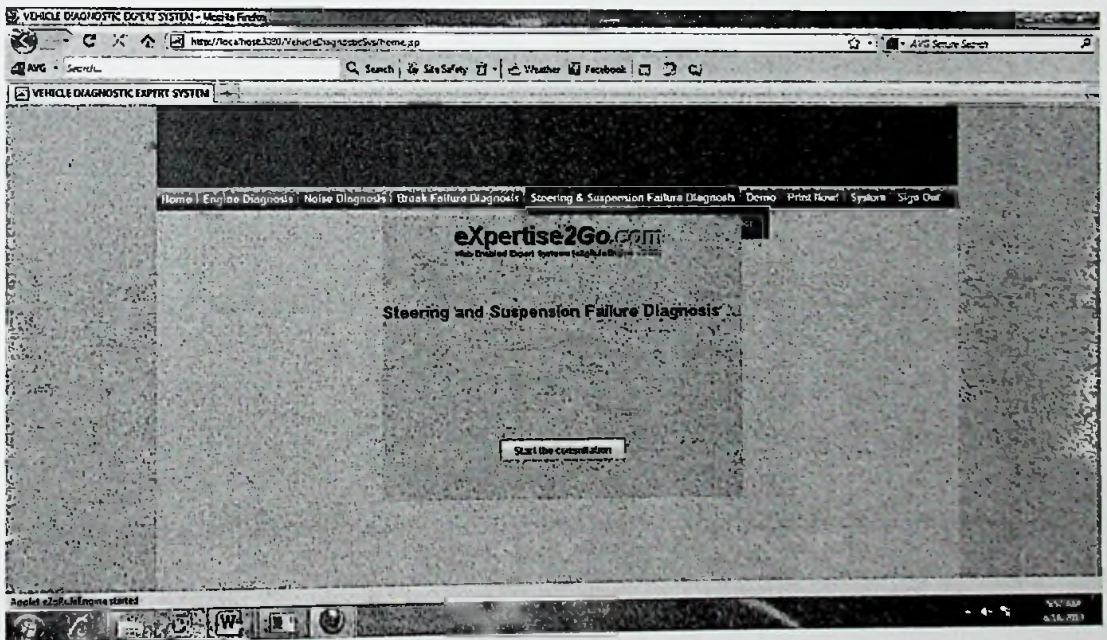
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# Appendix A: Screen Shots of the Expert System



Index Page



Interface for Start the Consultation



**eXpertise2Go.COM**  
 Web-Enabled Expert Systems (e2gRuleEngine v9.00)

**Steering and Suspension Failure Diagnosis Advisor**

Steering and suspension status:

I don't know/would rather not answer ▼

Very uncertain (50%)      Very certain (100%)

Submit Why ask? Restart

Users interact with the System

**FINAL RESULTS: Steering and Suspension Failure Diagnosis Advisor**

action is: have checked for pressure and replace if needed (100.0% confidence)

Explain all conclusions ▼ Go Back Restart

Solution Window

## Appendix B: Questionnaire

### Vehicle Problem Diagnosis Expert System Evaluation Questionnaire

Answer all questions and put a tick (✓) for the appropriate box number against each question using the scale given below. Note: if you have any queries about the questionnaire please do not hesitate to contact us.

0	1	2	3	4	5
Undecided	Very Poor	Poor	Average	Good	Excellent

<b>Interface</b>	0	1	2	3	4	5
1. The simplicity of the interface						
2. Convenience of the interface						
3. User friendly ness of the interface.						
4. Ease of navigation.						
5. Overall look of interfaces.						
6. The organization of interfaces is clear and logical						
7. The user can easily move through the interfaces.						
8. The color combinations are pleasing.						
9. Text is easy to read.						
10. Messages are appropriate.						

<b>Content</b>	0	1	2	3	4	5
11. Overall content of the system.						
12. The vocabulary is appropriate for the intended audience.						
13. The text is easy to understand						
14. There is no grammar or spelling errors.						
15. Information included is up to date						
16. The information is sufficient for the intended audience						
17. The style is consistent.						
18. Links are working properly.						
19. Will you recommend and revisit the system						
20. Are you satisfied with the Expert system						

<b>Functionalities</b>	0	1	2	3	4	5
21. Proposed expert system useful to correct errors						
22. The explanation is						
23. Correctness of the given solution						
24. Feedback given by the system						
25. The response time from the system is ok.						

26. Any suggestions to improve the developed expert system?
27. Does the developed system hasmore capabilities over a human expert? Yes/No
28. Does the developed system more useful than a human expert? Yes/No



# Vehicle Problem Diagnosis Expert System Evaluation Questionnaire

Answer all questions and put a tick (✓) for the appropriate box number against each question using the scale given below. Note: if you have any queries about the questionnaire please do not hesitate to contact us.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

	1	2	3	4	5
1. Execute the same problem with different confidence levels					
2. At different confidence level system gave different solutions					
3. Expert system provided more solutions when the confidence level is low.					
4. When confidence level is high the system provided the correct reason for the selected problem.					

	1	2	3	4	5
5. An explanation was given by the system.					
6. The explanation was clear.					
7. The explanation was correct.					
8. Expert system provided an explanation for all included problems.					

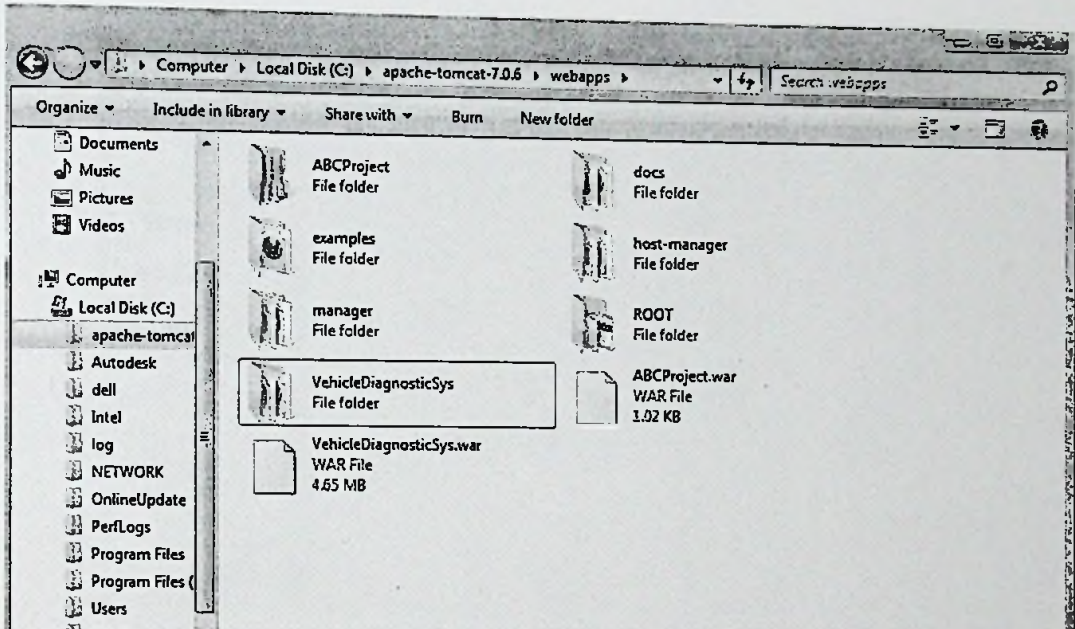
	1	2	3	4	5
9. When information missing the expert system provided a solution					
10. When information missing system provided alternative solutions					
11. When information is missing developed expert system is capable of predicting solutions.					
12. When data missing the response time to give a solution/explanation is reasonable.					

13. Any suggestions to improve the developed expert system?

.....  
 .....  
 .....

## Appendix C: Installation Guide

1. Install Apache Tomcat -7.0.6 to your computer.
2. Install MySQL server 5.
3. Copy VehicleDiagnosticSys folder inside ofwebapps folder which is inside Apache Tomcat -7.0.6.

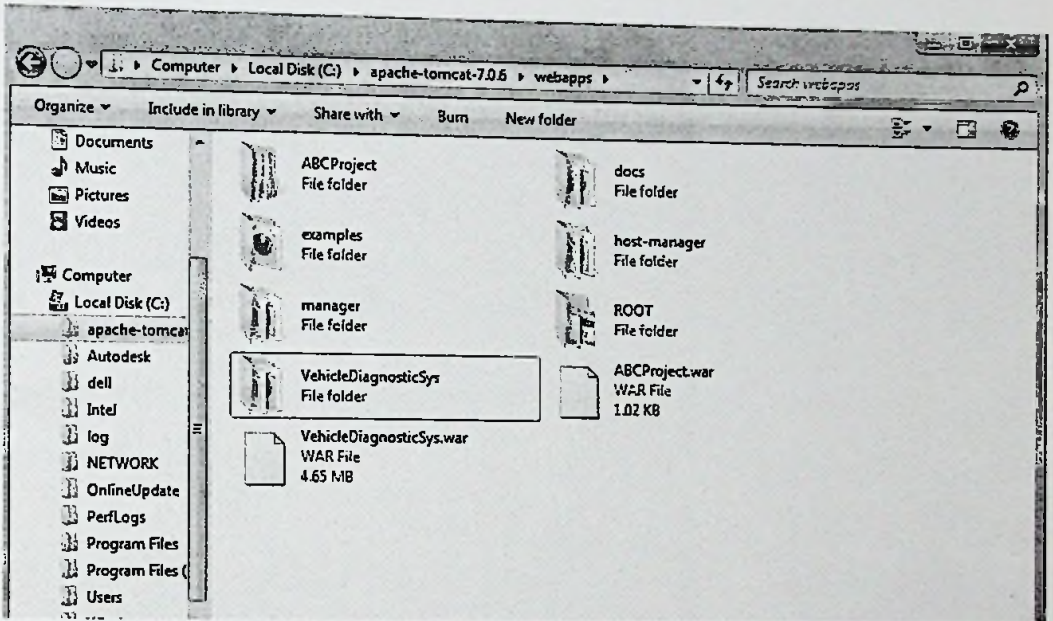


Content of Webapps Folder

4. Start Apache Tomcat web server by going to the administrator panel of the Apache Tomcat and select "Start Up".
5. Open a web browser and type `http://local host: 8080` in the address bar of the web browser.
6. You will get the index page or the home page of the vehicle problem diagnosis expert system.

If you install through the VehicleDiagnosticSys.war you have to follow the following instructions in order to install the system.

1. Install Apache Tomcat -7.0.6 to your computer.
2. Install MySQL server 5.
3. Copy VehicleDiagnosticSys.war file inside of webapps folder which is inside Apache Tomcat -7.0.6.



Content of Webapps Folder

4. If you have put VehicleDiagnosticSys.war file start Apache Tomcat web server by going to the administrator panel of the Apache Tomcat and select “Start Up”.
5. Open a web browser and type `http://local host: 8080` in the address bar of the web browser.
6. You will get the index page or the home page of the vehicle problem diagnosis expert system.



## Appendix D : Sample Code

Sample code for vehicle engine diagnosis advisor

```
<%
response.setHeader("Pragma","no-cache"); //HTTP 1.0
response.setHeader("Cache-Control","no-cache"); //HTTP 1.1
response.setDateHeader("Expires", 0); //prevents caching at the proxy
server
response.setHeader("Cache-Control", "private"); // HTTP 1.1
response.setHeader("Cache-Control", "no-store"); // HTTP 1.1
response.setHeader("Cache-Control", "max-stale=0"); // HTTP 1.1

if(session.getAttribute("log").equals(true)&&session.getAttribute("us
ertype").equals("staff")){
%>

<%@page import="model.DB" %>
<%@page import="java.sql.*" %>
<%@page import="java.text.DecimalFormat" %>
<%@page import="model.*" %>

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<style type="text/css">
    p.none {border-style:none;}
    p.dotted {border-style:dotted;}
    p.dashed {border-style:dashed;}
    p.solid {border-style:solid;}
    p.double {border-style:double;}
    p.groove {border-style:groove;}
    p.ridge {border-style:ridge;}
    p.inset {border-style:inset;}
    p.outset {border-style:outset;}
    p.hidden {border-style:hidden;}
</style>

<link href="../../SpryAssets/stylesheet.css"rel="stylesheet"
type="text/css">
<script src="../../date/src/js/jscal2.js"></script>
<script src="../../date/src/js/lang/en.js"></script>
<script src="../../SpryAssets/SpryValidationSelect.js"
type="text/javascript"></script>
<link rel="stylesheet"
type="text/css"href="../../date/src/css/jscal2.css" />
<link rel="stylesheet" type="text/css"href="../../date/src/css/border-
radius.css" />
<link rel="stylesheet"
type="text/css"href="../../date/src/css/gold/gold.css" />
<link href="../../SpryAssets/SpryValidationSelect.css"rel="stylesheet"
type="text/css">

    <link href="../../SpryAssets/stylesheet.css"rel="stylesheet"
type="text/css" />
    <script src="../../SpryAssets/SpryValidationTextField.js"
type="text/javascript"></script>
```



```

<script src="../../SpryAssets/SpryValidationTextarea.js"
type="text/javascript"></script>
<link
href="../../SpryAssets/SpryValidationTextField.css"rel="stylesheet"
type="text/css" />
<link href="../../SpryAssets/SpryValidationTextarea.css"rel="stylesheet"
type="text/css" />
<link href="../../SpryAssets/stylesheet.css"rel="stylesheet"
type="text/css" />
    <script src="../../SpryAssets/SpryTabbedPanels.js"
type="text/javascript"></script>
<script type="text/javascript"src="../../js/ajax.js"></script>
<script type="text/javascript"src="../../js/ajax-dynamic-
list.js"></script>
    <script src="../../SpryAssets/SpryTabbedPanels.js"
type="text/javascript"></script>
    <script src="../../SpryAssets/SpryValidationTextField.js"
type="text/javascript"></script>
    <script
type="text/javascript"src="../../SpryAssets/csspopup.js"></script>
    <script src="../../SpryAssets/SpryValidationSelect.js"
type="text/javascript"></script>
    <link
href="../../SpryAssets/SpryValidationTextField.css"rel="stylesheet"
type="text/css" />
    <link
href="../../SpryAssets/SpryTabbedPanels.css"rel="stylesheet"
type="text/css" />

    <meta http-equiv="Content-Type" content="text/html;
charset=utf-8" />
<title>Vehicle Engine Diagnosis Advisor</title>
    <link href="../../SpryAssets/stylesheet.css"rel="stylesheet"
type="text/css" />
<script type="text/javascript" language="javascript">
</script>
</head>

<BODY BGCOLOR="#c1aca9">
<center>
<APPLET CODE="e2gRuleEngine" archive="e2gRuleEngine.jar" width=450
height=350>
<PARAM NAME="KBURL" VALUE="autol.kb">
<PARAM NAME="APPTITLE" VALUE="Vehicle Engine Diagnosis Advisor"><
<param name="titlecolor" value="#0000ff">
<PARAM NAME="DEBUG" VALUE="false">
<PARAM NAME="BGCOLOR" VALUE="#c1aca9">
Java-capable browser required
</APPLET>
</center>
</BODY>

<%
System.gc();
%>

</html>
<%
} else {
response.sendRedirect("../session.jsp");

```



```
}  
%>
```

Sample code for break failure diagnosis advisor

```
<%  
response.setHeader("Pragma","no-cache");//HTTP 1.0  
response.setHeader("Cache-Control","no-cache");//HTTP 1.1  
response.setDateHeader("Expires", 0);//prevents caching at the proxy server  
response.setHeader("Cache-Control", "private");// HTTP 1.1  
response.setHeader("Cache-Control", "no-store");// HTTP 1.1  
response.setHeader("Cache-Control", "max-stale=0");// HTTP 1.1  
  
if(session.getAttribute("log").equals(true)&&session.getAttribute("usertype").equals(  
"staff")){  
%>  
  
<%@page import="model.DB" %>  
<%@page import="java.sql.*" %>  
<%@page import="java.text.DecimalFormat" %>  
<%@page import="model.*" %>  
  
<html xmlns="http://www.w3.org/1999/xhtml">  
<head>  
<style type="text/css">  
    p.none {border-style:none;}  
    p.dotted {border-style:dotted;}  
    p.dashed {border-style:dashed;}  
    p.solid {border-style:solid;}  
    p.double {border-style:double;}  
    p.groove {border-style:groove;}  
    p.ridge {border-style:ridge;}  
    p.inset {border-style:inset;}  
    p.outset {border-style:outset;}  
    p.hidden {border-style:hidden;}  
</style>  
  
<link href="../SpryAssets/stylesheet.css" rel="stylesheet" type="text/css">  
<script src="../date/src/js/jscal2.js"></script>  
<script src="../date/src/js/lang/en.js"></script>  
<script src="../SpryAssets/SpryValidationSelect.js" type="text/javascript"></script>  
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<link rel="stylesheet" type="text/css" href="../date/src/css/border-radius.css" />  
<link rel="stylesheet" type="text/css" href="../date/src/css/gold/gold.css" />  
<link href="../SpryAssets/SpryValidationSelect.css" rel="stylesheet" type="text/css">  
  
    <link href="../SpryAssets/stylesheet.css" rel="stylesheet" type="text/css" />  
    <script src="../SpryAssets/SpryValidationTextField.js"  
type="text/javascript"></script>  
<script src="../SpryAssets/SpryValidationTextarea.js"  
type="text/javascript"></script>
```

```

<link href="../../SpryAssets/SpryValidationTextField.css" rel="stylesheet"
type="text/css" />
<link href="../../SpryAssets/SpryValidationTextarea.css" rel="stylesheet"
type="text/css" />
<link href="../../SpryAssets/stylesheet.css" rel="stylesheet" type="text/css" />
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    <script src="../../SpryAssets/SpryValidationTextField.js"
type="text/javascript"></script>
    <script type="text/javascript"
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type="text/javascript"></script>
    <link href="../../SpryAssets/SpryValidationTextField.css"
rel="stylesheet" type="text/css" />
    <link href="../../SpryAssets/SpryTabbedPanels.css" rel="stylesheet"
type="text/css" />

    <meta http-equiv="Content-Type" content="text/html; charset=utf-8"
/>
<title>Break Failure Diagnosis Advisor</title>
    <link href="../../SpryAssets/stylesheet.css" rel="stylesheet"
type="text/css" />
<script type="text/javascript" language="javascript">
</script>
</head>

<BODY BGCOLOR="#c1aca9">
<center>
<APPLET CODE="e2gRuleEngine" archive="e2gRuleEngine.jar" width=450
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<PARAM NAME="BGCOLOR" VALUE="#c1aca9">
Java-capable browser required
</APPLET>
</center>
</BODY>

<%
System.gc();
%>

</html>

```



```

<%
} else {
response.sendRedirect("../session.jsp");
}
%>

```

Sample code of suspensionfailure diagnostic advisor

```

<%
response.setHeader("Pragma","no-cache");//HTTP 1.0
response.setHeader("Cache-Control","no-cache");//HTTP 1.1
response.setDateHeader("Expires", 0);//prevents caching at the proxy server
response.setHeader("Cache-Control","private");// HTTP 1.1
response.setHeader("Cache-Control","no-store");// HTTP 1.1
response.setHeader("Cache-Control","max-stale=0");// HTTP 1.1

```

```

if(session.getAttribute("log").equals(true)&&session.getAttribute("usertype").equals(
"staff")){
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<head>
<style type="text/css">

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    p.outset {border-style:outset;}
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```

</style>

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<link rel="stylesheet" type="text/css" href="../date/src/css/gold/gold.css" />
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        <link href="../../SpryAssets/stylesheet.css" rel="stylesheet" type="text/css" />
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src="../../SpryAssets/csspopup.js"></script>
        <script src="../../SpryAssets/SpryValidationSelect.js"
type="text/javascript"></script>
        <link href="../../SpryAssets/SpryValidationTextField.css"
rel="stylesheet" type="text/css" />
        <link href="../../SpryAssets/SpryTabbedPanels.css" rel="stylesheet"
type="text/css" />

        <meta http-equiv="Content-Type" content="text/html; charset=utf-8"
/>
<title>Steering and Suspension Failure Diagnosis Advisor</title>
        <link href="../../SpryAssets/stylesheet.css" rel="stylesheet"
type="text/css" />
<script type="text/javascript" language="javascript">
</script>
</head>

<BODY BGCOLOR="#c1aca9">
<center>
<APPLET CODE="e2gRuleEngine" archive="e2gRuleEngine.jar" width=450
height=350>
<PARAM NAME="KBURL" VALUE="auto4.kb">
<PARAM NAME="APPTITLE" VALUE="Steering and Suspension Failure
Diagnosis Advisor"><
<param name="titlecolor" value="#0000ff">
<PARAM NAME="DEBUG" VALUE="false">
<PARAM NAME="BGCOLOR" VALUE="#c1aca9">
Java-capable browser required
</APPLET>
</center>

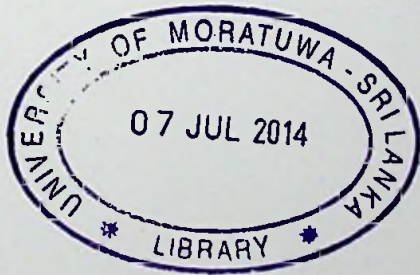
```



</BODY>

```
<%  
System.gc();  
%>
```

```
</html>  
<%  
} else {  
response.sendRedirect("../session.jsp");  
}  
%>
```



NO	YEAR	ISSUE
1	2014	01
2	2014	02
3	2014	03
4	2014	04
5	2014	05
6	2014	06
7	2014	07
8	2014	08
9	2014	09
10	2014	10
11	2014	11
12	2014	12