

Simplified E-Learning Systems Using Ontology Rules

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ABSTRACT: The Semantic Web is a collaborative movement led by the international standards body, the World Wide Web Consortium (W3C). It is an extension of the current web that provides an easier way to find, share, reuse and combine information. Ontology formally represents knowledge as a set of concepts within a domain, and the relationships between pairs of concepts. It can be used to model a domain and support reasoning about concepts. E-Learning is the use of electronic media and information communication technologies (ICT) in education. It is broadly inclusive of all forms of educational technology in learning. It can occur in and out of the class room. It can be self placed, asynchronous learning or may be instructor led, synchronous learning. This work shows how we can implement simple searching in e-learning systems using ontology rules. This work minimizes user time while searching in the e-learning systems. This work will be definitely used for those who are doing their final year projects. And also it will be used for Research scholars.

Keywords: Semantic web, ontology, rule acquisition and rule composition.

1 INTRODUCTION

"The Semantic Web is a mesh of information linked up in such a way as to be easily processable by machines, on a global scale." "The Semantic Web approach develops languages for expressing information in a machine processable form." These two sentences define the essence of the SW: its information in machine processable form; however in the same time first one defines SW as a global scale information mesh and the second sentence defines it as Framework for expressing information. Both citations demonstrate the main principle of the SW: Information in Web should be more machine processable and understandable. In this case SW can be the goal (mesh of information) as well as a tool (language for expressing). We use Web as a global database first of all for search. Today's search engines cannot search more precise that they do it now. May be the main reason is that the structure and size of current Web do not allow to make search more precise and efficient. The second reason cannot be eliminated: Web contains now a huge number of documents and this number has a strong tendency to double each one or two years. The structure of documents and Web itself, probably, can be changed in "a better – machine processable way"[7].

2. ONTOLOGIES IN THE SEMANTIC WEB

Ontology is the philosophical study of the nature of being, becoming, existence, or reality, as well as the basic categories of being and their relations. Traditionally listed as a part of the major branch of philosophy known as metaphysics, ontology deals with questions concerning what entities exist or can be said to exist, and how such entities can be grouped, related within a hierarchy, and subdivided according to similarities and differences[9]. Ontologies play an important role in fulfilling semantic interoperability as described in the seminal article on the Semantic Web. W3C has standardized a layered stack of ontology languages that possess the advantages of both knowledge representation (KR) formalisms and conceptual modeling methods for databases. Standardization encouraged creating new ontologies and porting existing ontologies into the Semantic Web[8].

2.1 Ontology Types

Ontologies are classified in various ways using criteria such as the degree of abstraction and field of application:

Upper ontology: concepts supporting development of an ontology, meta-ontology.

Domain ontology: concepts relevant to a particular topic or area of interest, for example, information technology or computer languages, or particular branches of science.

Interface ontology: concepts relevant to the juncture of two disciplines.

Process ontology: inputs, outputs, constraints, sequencing information, involved in business or engineering processes[9].

Ontology Rules:

- Rule Acquisition
- Rule Composition

3. CONCEPTS

E-Learning is the use of electronic media and information communication technologies (ICT) in education. It is broadly inclusive of all forms of educational technology in learning. It can occur in and out of the class room. It can be self placed, asynchronous learning or may be instructor led, synchronous learning. This System has 3 main things. That is

- Student
- Staff.
- Admin

STUDENT:

The student logs in to the application and enters the following details.

1. Search material
2. View Material
3. Download material

Details:

- The student can search a material and download a material
- The student can view Materials details
- The student also download a material

Rules Applied:

- Ontology Rule Acquisition is used when we give input in the search button. This rule searched that particular book and it says whether that thing is present or not.
- Ontology Rule composition is used when we download that particular book in our system where we want.

4. IMPLEMENTATION

public partial class Login : System.Web.UI.Page

```
{
SqlConnection conn = new
SqlConnection("server=.;uid=sa;database=semantic");
public void Page_Load(object sender, EventArgs e)
{
if (Request.QueryString["var"] == "Student")
{
conn.Open();
SqlCommand cmd = new SqlCommand("select *
from newuser where username=" + gin1.UserName
+ " and pwd=" + Login1.Password + " and usersta
tus='Student'", conn);
SqlDataReader dr = cmd.ExecuteReader();
if (dr.Read() == true)
{
Response.Redirect("Student.aspx");
}
dr.Close();
conn.Close();
}
}
}
```

public partial class Default2 : System.Web.UI.Page

```
{
protected void Page_Load(object sender, EventArgs e)
{
}
protected void LinkButton3_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK3.pdf");
}
protected void LinkButton1_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK1.pdf");
}
protected void LinkButton9_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK2.pdf");
}
protected void LinkButton4_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK4.pdf");
}
protected void LinkButton5_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK5.pdf");
}
protected void LinkButton6_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK6.pdf");
}
protected void LinkButton7_Click(object sender, EventArgs e)
{
Response.Redirect("BOOK7.pdf");
}
}
```

```
protected void LinkButton8_Click(object sender, EventArgs e)
```

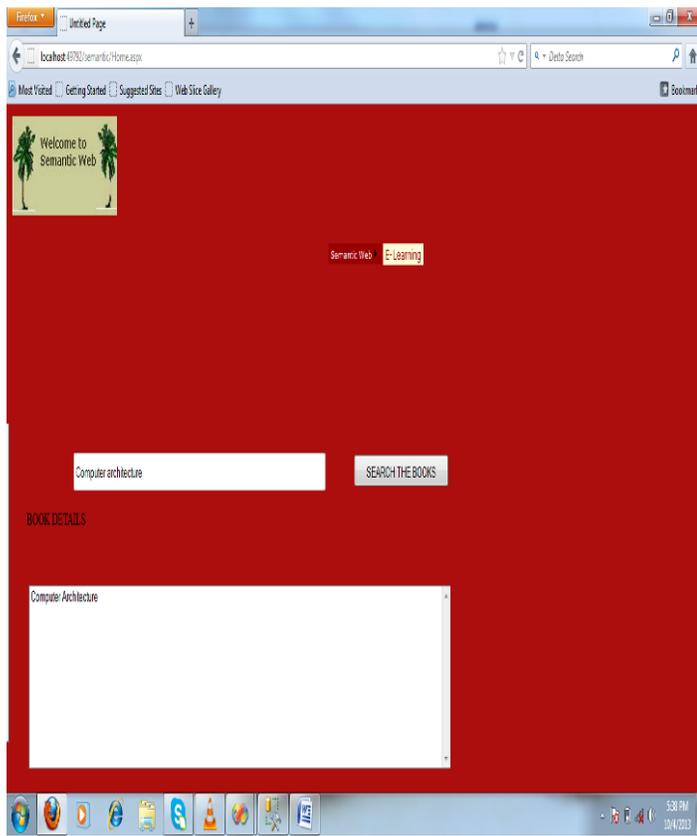
```
{  
    Response.Redirect("BOOK8.pdf");  
}
```

```
protected void LinkButton10_Click(object sender, EventArgs e)
```

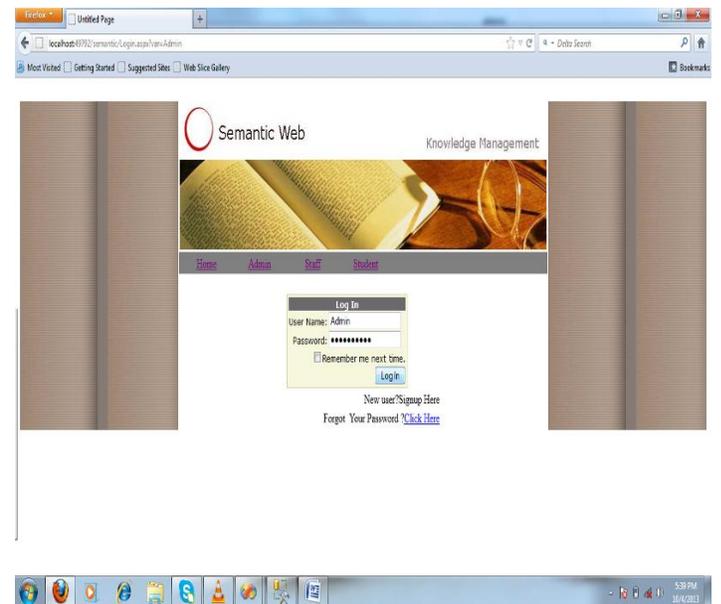
```
{  
    Response.Redirect("Home.aspx");  
}
```

5. EXPERIMENTAL RESULTS

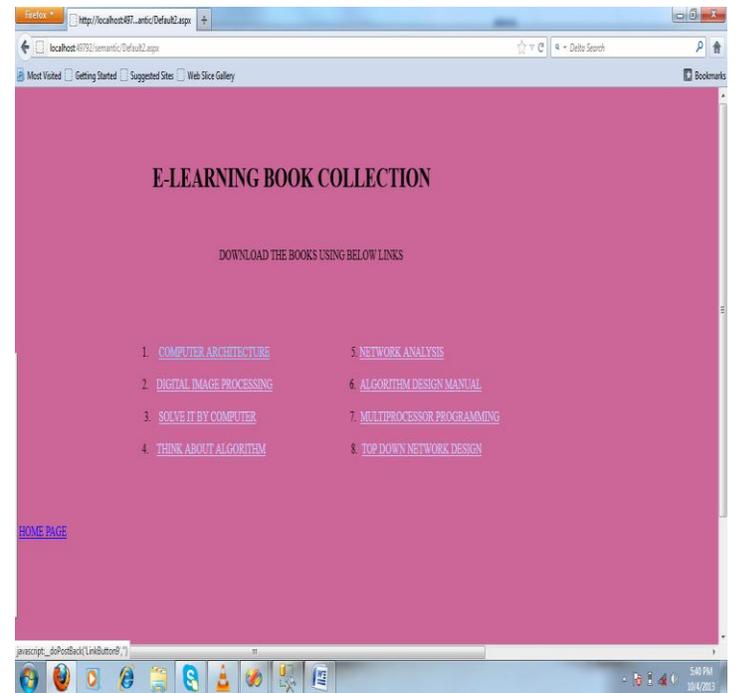
Searching:



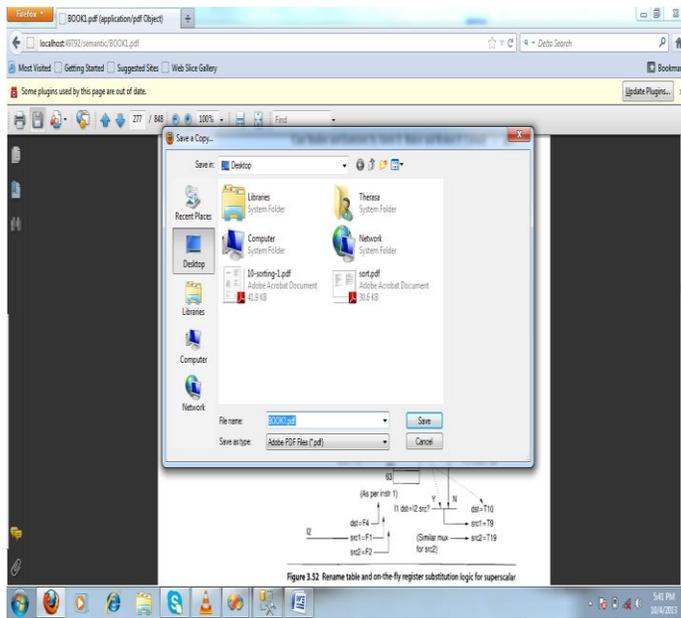
Login :



View:



Download:



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CONCLUSION

E-Learning can occur in and out of the class room. It can be self placed, asynchronous learning or may be instructor led, synchronous learning. This work showed how we can implement simple searching in e-learning systems using ontology rules. This work minimized user time while searching in the e-learning systems. This work will be definitely used for those who are doing their final year projects. And also it will be used for Research scholars. I hope that students may understand definitely the simple code implementations using .net software. Really .Net is a very good software to reduce and simplify the codes.

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