

ASP.NET-Tutor: Intelligent Tutoring System for learning ASP.NET

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Abstract: *ASP.net is one of the most widely used languages in web developing of its many advantages, so there are many lessons that explain its basics, so it should be an intelligent tutoring system that offers lessons and exercises for this language. why tutoring system? Simply because it is one-one teacher, adapts with all the individual differences of students, begins gradually with students from easier to harder level, save time for teacher and student, the student is not ashamed to make mistakes, and more.*

Therefore, in this paper, we describe the design of an Intelligent Tutoring System for teaching ASP.net to help students learn ASP.net easily and smoothly. Tutor provides beginner level in ASP.net. Finally, we evaluated our tutor and the results were excellent by students and teacher.

Keywords— ASP; Net; Intelligent Tutoring System; Tutor

1. INTRODUCTION

ASP.NET is more than the following variant of Active Server Pages (ASP); it gives a bound together Web advancement demonstrate that incorporates the administrations important for designers to fabricate endeavor class Web applications. While ASP.NET is to a great extent sentence structure good with ASP, it likewise gives another programming model and framework for more versatile and stable applications that assistance gives more noteworthy security. You can don't hesitate to enlarge your current ASP applications by incrementally adding ASP.NET usefulness to them [1].

ASP.NET Web pages, referred to authoritatively as Web Forms, are the principle building hinders for application improvement in ASP.NET. There are two essential systems for Web Forms, a web application arrange, and a site format. Web applications should be aggregated before organization, while sites structures enable the client to duplicate the documents specifically to the server without earlier assemblage. Web shapes are contained in documents with an ".aspx" expansion; these records commonly contain static (X)HTML markup or part markup. The segment markup can incorporate server-side Web Controls and User Controls that have been characterized in the structure or the page. For instance, a textbox part can be characterized on a page as `<asp: textbox id='myid' runat='server'>`, which is rendered

into a HTML input box. Also, dynamic code, which keeps running on the server, can be set in a page inside a piece `<% - dynamic code - %>`, which is like other Web improvement advances, for example, PHP, JSP, and ASP. With ASP.NET Framework, Microsoft presented another code-behind model that gives static content a chance to stay on the .aspx page, while dynamic code stays in an .aspx.vb or .aspx.cs or .aspx.fs record (contingent upon the programming dialect utilized) [2].

Intelligent Tutoring Systems are computer-based systems designed to teach students in a field, in other words, to play the role of a teacher to the fullest extent by introducing artificial intelligence [3].

ITSs have the shared objective of empowering learning in a significant and compelling way by using many technologies [4].

The main goal of the ASP.Net intelligent tutoring system was to make accessible the advantages of one-on-one educational in a cost-effective way to the students of ASP.Net [5].

2. LITERATURE REVIEW

The subject of the intelligent tutoring system has been addressed in many papers because of its importance in the field of education in addition to its positive result, such as An Intelligent Tutoring System Authoring Tool designed by Abu Naser teaches how to use java program [4], SQL-Tutor, teaches and explains to students the way of writing queries in

relational database through several lessons in the basics of writing query [6], ITS for Health problems related to addiction of video game playing [7], TS for C# Language [8], effectiveness of the CPP-Tutor [9], teaching AI searching algorithms [10], teaching database [11], and ITS for Teaching the 7 Characteristics for Living Things [17], ITS for teaching the right letter pronunciation in reciting the Holy Quran [12], ITS for teaching advanced topics in information security [13], Oracle Intelligent Tutoring System (OITS) [14], ITS for learning Computer Theory[15], e-learning system [16], ADO-Tutor: Intelligent Tutoring System for learning ADO.NET [18], ITS for Parameter Passing in Java Programming [22], and Predicting learners performance using NT and ITS [19], CPP-Tutor for C++ Programming Language [20], a comparative study between Animated Intelligent Tutoring Systems (AITS) and Video-based Intelligent Tutoring Systems (VITS) [21], ITS for stomach disease Intelligent Tutoring System [23], ITS for diabetes [24], Computer Networks [25], DSE Tutor for Teaching DES Information Security Algorithm [26].

3. ASP.NET ITS ARCHITECTURE

In this paper we used ITSB tool to build intelligent tutoring system for learning building websites using ASP.net, ITSB authoring tool is developed using Delphi Embarcadero XE8, 2015; ITSB authoring tool has two faces. The first, Admin can add materials and questions and answers etc. and the latter, students learn the course material and answer the exercises [4]. Intelligent Tutoring System consists of four main components and can be listed as follows: domain module, teaching module, student module and user interfaces module [28].

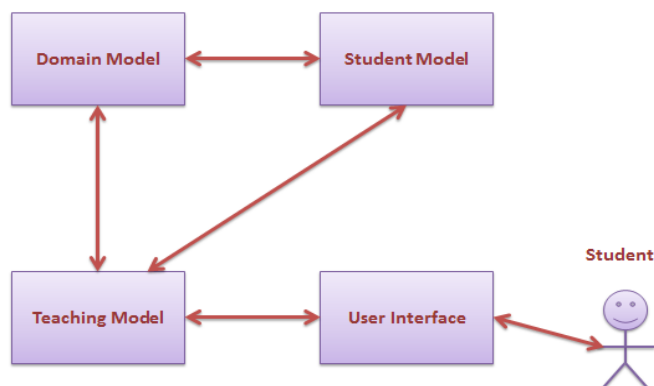


Figure 1: Overall System Architecture.

3.1 DOMAIN MODULE

In this section we talk about expert knowledge in ASP.net or how teachers do in this domain. The topics covered in our tutor are:

- General introduction about ASP.net and its components.
- ASP.NET - Environment Setup.
- ASP.NET - Life Cycle.
- ASP.NET - Event Handling.
- ASP.NET - Server Side.
- ASP.NET - Server Controls.
- ASP.NET - HTML Server.
- ASP.NET - Client Side.
- ASP.NET - Basic Controls.
- ASP.NET – Directives.
- ASP.NET - Managing State.
- ASP.NET – Validators.

3.2 STUDENT MODULE

Each student can access the system through his own account and then review the lessons from the beginner to the professional, the student also follows the examples of the lesson and then solve the exercises, the exercises are presented to the student is easy to difficult if the student responds to the new lesson or if you fail to return to the lesson again.

The system gives hints to the student if needed, as the system shows the student's degree.

3.3 TEACHING MODULE

This module as controller that controls operations in ITS, the student can answer questions if has good degree or more he can move to next level, but if he fails he back to exercises of the same level.

The degree of difficulty increases as the student moves from a lower level to a higher level and if the student obtains a higher degree than good.

3.4 USER INTERFACE MODULE

The user interface is divided into two sections for the teacher to add lessons, examples, exercises, modification and deletion, in addition to adding new users to the color adjustment and many settings. The student interface is the one through which lessons are reviewed, exercises are solved and the student's degree is determined.

Here some of screenshots of teacher interface and student interface. As shown in Fig2 – Fig9.

ITSB Language was created by Prof. Dr. Samy S. Abu Naser

ASP.NET Teacher

Student No: 0000-0000 /

Student Name:

Last Session was on:

Login Exit

Figure 2: Student Login Form.

Constants Data Entry

ITS Basic Data Students Data Colors

Enter Title of The ITS System (English) ASP.NET Teacher

Enter Title of The ITS System (Arabic) نظام المدرب الذكي لتعليم تصميم مواقع الانترنت باستخدام ASP.net

Enter location of the Data Base

Enter Name of creator of the ITS (English) Musbah Musa

Enter Name of creator of the ITS(Arabic) مصباح جمال موسى

Enter the meaning of @ symbol

Enter the meaning of # symbol

Enter the meaning of \$ symbol

Enter the meaning of % symbol

Enter the meaning of ^ symbol

Enter User Interface Language English-انجليزي

Save Close

Figure 3: Form for adding ITS Basic Data

The screenshot shows a window titled "Constants Data Entry" with three tabs: "ITS Basic Data", "Students Data", and "Colors". The "Students Data" tab is active. It contains the following fields and values:

- Enter Student Number: 20163450
- Enter Student Name: مصباح موسى
- Enter Student Major: (empty)
- Enter Student Grade Point Average: 70
- Enter Student Passed Credit: 20
- Re-Set Student Difficulty Level: 1
- Re-Set Student Problem Number: 1
- Re-Set Student Current Score: 100
- Re-Set Student Over All Score: 100
- Re-Set Student Current Lesson: 13

At the bottom, there is a row of navigation buttons: first, last, previous, next, add, delete, up, down, check, uncheck, and a "Close" button.

Figure 4: Form for adding Students Data

The screenshot shows a window titled "Questions and Answers Data Entry". It contains the following fields and values:

- Enter Question Text 1: Which one of the following is the last stage of the Web forms lifecycle?
- Enter Question Text 2: (empty)
- Enter Answer Choice 1: Page_Load
- Enter Answer Choice 2: Event Handling
- Enter Answer Choice 3: Page_Init
- Enter Answer Choice 4: Page_Unload
- Enter Answer Choice 5: (empty)
- Enter Answer Choice 6: (empty)
- Enter Picture link(optional): Get Pic Name (empty)
- Enter Video link(Optional): Get Video Name (empty)
- Enter Hint for this question: (empty)
- Enter Correct Answers: Choice 1: 0, Choice 2: 0, Choice 3: 0, Choice 4: 1, Choice 5: 0, Choice 6: 0
- Level of difficulty: 1
- Choose a lesson: Life Cycle

At the bottom, there is a row of navigation buttons: first, last, previous, next, add, delete, up, down, check, uncheck, and a "Close" button.

Figure 5:Interface for modifying Fonts of all screens of the system

The 'Constants Data Entry' window has three tabs: 'ITS Basic Data', 'Students Data', and 'Colors'. The 'Colors' tab is active, showing configuration options for various UI elements. The table below summarizes the settings shown in the window:

UI Element	Background Color	Font Name	Font Color	Font Size
Forms	clSkyBlue			
Labels		Arial	clBlack	12
Buttons		Arial	clBlack	11
Page Sheet		Arial	clMaroon	9
Richedit	clInfoBk	Arial	clBlue	9
List Box	clBtnFace	Arial	clBlue	9
Combo Box	clBtnFace	Arial	clBlue	9
Edit	clInfoBk	Arial	clBlue	9

At the bottom of the window are 'Save' and 'Close' buttons.

Figure 6: Form for adding questions and answers

The 'Learn: ASP.NET Teacher - admin' window displays lesson content. The 'Lessons Area' on the left lists various topics, with 'Basic Controls' selected. The main content area shows the following text:

ASP.NET - Basic Controls

In this chapter, we will discuss the basic controls available in ASP.NET.

Button Controls

ASP.NET provides three types of button control:

- Button** : It displays text within a rectangular area.
- Link Button** : It displays text that looks like a hyperlink.
- Image Button** : It displays an image.

When a user clicks a button, two events are raised: Click and Command.

Basic syntax of button control:

```
<asp:Button ID="Button1" runat="server" onclick="Button1_Click" Text="Click" / >
```

Common properties of the button control:

Property	Description
Text	The text displayed on the button. This is for button and link button controls only.
ImageUrl	For image button control only. The image to be displayed for the button.
AlternateText	For image button control only. The text to be displayed if the browser cannot display the image.

Figure 7: Student lessons and examples form

Figure 8: Student Exercises form.

studentNo	ProblemNo	difficulty	CurrentScore	OverallScore	SessionDate	title
▶ 20163450	1	1	0	0	12/22/2017 11:18:00	Environment Setup

Figure 9: Student statistics form

4. ITS EVALUATION

We tested some students interested in the language of ASP.net using the intelligent tutoring system and the results were excellent and all of them showed a desire to use the system because it is the work of the human teacher to the fullest.

5. CONCLUSION

ITSs are seen as future's mentoring framework and many examinations fulfilled around there. When they are contrasted with customary classroom climate, ITSs are very effective and moderately having instructors' spot, they go up against supporting obligation for understudies. In customary showing condition, understudies' contrasts aren't considered.

In this paper, we have designed intelligent tutoring system for student learning websites developing by ASP.net using ITSB tool. The system was created for students who need to think about ASP.net or increment their knowledge in this field easily. The evaluations of the system have been done by teachers and students.

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