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New Revolution of HTML Code Generators

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Abstract. HTML Code generator is a generic software, that enables every user, with any level of computer skills, to create web pages without any need to know HTML code or any computer programming languages, in an easy way and in optimal time. This new code generator allows different ways to create web pages. These ways will be suitable for any users. The code generator was distributed over 90 users for testing, the aim of evaluating the software's acceptance, and it got 71% acceptance ratio.

1. Introduction

Code generator is an approach to achieve a productive industrial software production environment[1]. This paper presents new software of code generation that is based on HTML and templates. The code generator is used for automatic generation of HTML source code[2].

Using new code generator, is possible to provide the core generation needs for designing of your web pages. A homepage is the "top" of your set of Web pages[3]. It is where most people start exploring your Web Presentation, and it is the URL of that homepage you will give to people when you tell them to check out your web site. Browsing the Word Wide Web gives the indication, that any one can publish documents on the web. They can use What-You-See-Is-What-You-Get (WYSIWYG) editors and code generators like Microsoft Front Page and Adobe Page Maker without the need to learn HTML. These code generators allow users to design web sites and publish it to be in the World Wide Web's[4].

2. Web Creation

To design suitable web pages, there are many factors, such factors can be classified as follow:

– What type of information or content should be on the web?,

– How to organize the contents into main topics and sub-headings,

– How to come up with a general structure for pages and topics by 'story-boarding' homepage?,

– How will browsers go from one page to another?,

– How to avoid having too many layers? Users want to get the information quickly and having too many menu pages will annoy them.

2.1. Objective and Motivation

The main objectives for HTML code generators are:

- To help different levels of users to create web pages without any need to know or to understand HTML code, see Fig. 1.

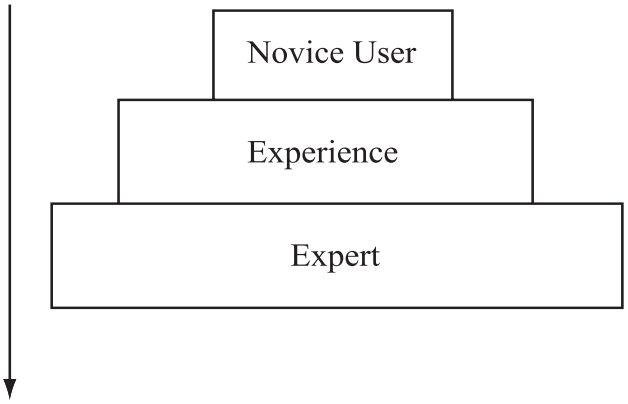

Fig. 1. User levels.

- To reduce time used for creating a web page. Thus, the new code generators support many options and tools that are used to help the user to create web site in optimal time. Example to these options and tools are page templates, wizards, quick web site builders and other tools like hyperlink, marquee, ... *etc.*
- To develop a program to cope with the disadvantages, which go with the programs[5].

3. Multi Ways of Creating Web Pages

New code generator is designed and programmed to be different from other software's, in order to cater for all level of users to create their own pages in

optimal time and it is more efficient and easy to use. So the users can create their own pages in different ways (Fig. 2), such as:

1. Designing Platform,
2. Wizard Web Creator,
3. Web Page Templates.

Fig. 2. Variety web page creation interface.

Another option that the new code generator provides is that the user can easily insert ready Java scripts without any need to program any line using scripting language. The user can easily insert these scripts by choosing Script Template. Also new code generators provide an option called Quick Web Site Builder, which enables the user to create a substantially complete full web site in optimal time.

New code generators also provide an internet browser called Internal Browser. By using the new code generator browser, there is no need to use other browser markets. So no need to close or minimize the software to open another browser and can co-work in both parts of software. One of the other option is language interface, that enables every user or users to control his or their interface language. Thus, the user can change the interface between languages.

3.1. Features of New Code Generator

The following are the key features of the new code generator:

– Multi Languages Interface,
– Attractive user interface,
– High resolution graphics to fit needs,
– Ability for Voice Listening of web page contents,
– Ability to add ready made Java Scripts,
– Ability to create pages by using Templates,
– Ability to create pages by using Wizards,
– User help and tutorials.

4. Software Engineering Cases

User Interface Design: It is a fact that a good user interface allows people who understand the problem domain to work with the application without having to read the manuals or to get trained. Because for most people, the user interface is a software. Interface design is important for several reasons. First of all, the more intuitive the user interface, the easier it is to use; and the easier it is to use the cheaper it is. The better the user interface, the easier it is to train people to use it. Thus it reduces your training costs. The better the user interface, the lesser help will be needed to use it, reducing support costs and more users will like to use it, increasing their satisfaction with the work that you have done[6].

The following points are required to design good interface :

- **Ability to get help:** The user must be able to get help from anywhere and at any time. So the new code generators should enhance the methods to make information available anywhere and anytime, see Fig. 3.

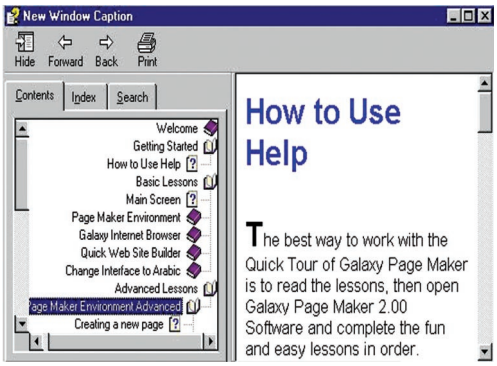

Fig. 3. Tutorial and help file interface.

The users buy or use the new code generators. They have the right to get the help from anywhere and at any time, to find solution to any problem faced. Also they should get tutorial of our software. So, the help should be in different forms such as:

– New code generator help file : which helps the user to use the software,
– On-line help: usually by browsing the web site provider.

- **Easy to use and easy installation.**

5. Requirements Specification

Since new code generator is a component based system, the requirements adjustment depends on a Standard DHTML editor component.

The editor provided with DHTML offers a "what you see is what you get" (WYSIWYG) HTML editing environment with a rich set of capabilities. It can be activated using Visual Studio NET. A number of techniques could be used to customize the DHTML Editor[7] (Fig. 4 & 5).

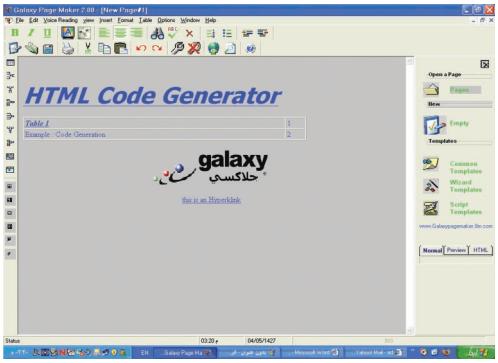

Fig. 4. Designing interface.

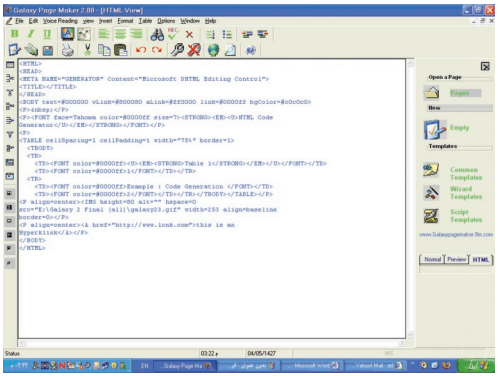

Fig. 5. Code generation interface.

5.1. DHTML Editor

The editor provides the following facilities to the user:

- Standard editing functionality such as create positioning, keyboard navigation, drag-and-drop, and content selection,
- Copy, cut, delete, and paste operations,
- Multi-level undo and redo,- The ability to toggle selected text between bold, italic, and/or underlined,
- The ability to alter typeface, font size, forecolor (text), and backcolor,
- The ability to remove formatting,
- The ability to increase or decrease indentation,
- The ability to justify text (left, center, right),
- The ability to create a hyperlink or bookmark,

– The ability to insert a variety of intrinsic controls.

These include buttons, text boxes, radio buttons, check boxes, submit controls, and drop-down and list boxes[8].

6. Implementation

During programming or during thinking about critical point, many problems were faced. Some of these problems would lead to change the program's back-bone. Working like this led to a big loss in time. On the other hand, other type of problems, not as big as the previous ones, which have appeared after getting the right backbone, made dealing with them more easy.

The solution to the previous problems depends on the kind of problem. If it is big like the first one. It will need more deep thinking to get the right idea, that lead to solve the problem. If the function causes the problem, which is related with other function, this doubles the problem, so there is need now to know how to solve the problem and how the changing on this function will not effect the other function[9].

7. Evaluation

Software Evaluation, is a process to ensure that software conforms to its specification and meet the needs of the main objectives of software. In this process, it is checked that the system meets its specified functional and non functional requirements[10,11].

For new code generator, the evaluation will be by the following way:

7.1. User Testing

The system was distributed to 82 users in order to measure the usability, trainability, portability and user satisfaction. These users were classified into three categories on the basis of their ability to use computer software as follows: novice users, experienced users and expert users. A questionnaire was developed to measure the above mentioned factors. The questionnaire consisted of 22 questions including tricky questions designed specially to show if there is any contradiction in the users' responses. On the basis of these special questions, 32 users were excluded. This was to ensure that questionnaire was taken seriously by the respondents. As a result, the sample of this study was composed of 50 respondents, classified as in Table 1.

The responses of the users on each question were categorized as follows:

There were 2 users using Windows 95, 12, Windows 98, 2, Windows 2000, 11, Windows millennium and 23, Windows XP (Table 2).

Table 1. Number and types of users.

Users		
Novice	**Experienced**	**Expert**
7	22	21

Table 2. Operating systems usage.

Operating system				
Win. 95	**Win. 98**	**Win. 2000**	**Win. ME**	**Win. XP**
2	12	2	11	23

There were 2 users using Pentium 2, 21, using Pentium 3 and 27, Pentium 4 (Table 3).

Table 3. CPU types.

CPU		
Pentium 2	**Pentium 3**	**Pentium 4**
2	21	27

According to the size of RAM: there were 2 users using 16 MB memory, 2, using 64 MB, 40, using 128 MB and 6, using 256 MB memory (Table 4).

Table 4. RAM size.

RAM			
16 MB	**64 MB**	**128 MB**	**256 MB**
2	2	40	6

The above figures related to Operating System, CPU type and Memory size are important to determine Requirements Specification for System requirements.

Other questions were YES or NO questions and users, response to them was as follows:

Table 5. Number of Yes/No questions.

Questions	Yes	No
1	47	3
2	2	48
3	3	47
4	1	49
5	0	50

Table 5. Contd.

Questions	Yes	No
6	17	33
7	32	18
8	14	36
9	34	16
10	2	48
11	45	5
12	0	50
13	44	6
14	4	46
15	46	4
16	31	19
17	43	7
18	26	24
19	33	17
20	44	6
21	47	3
22	14	36

According to the first five questions, that measured the installation process efficiency, we got the following ratios:

Ratio of satisfied users = 96.4 %

Ratio of dissatisfied users = 3.6 %.

For to help and tutorial of the system (question from 6 to 10), the ratios were:

Ratio of users who read the readme file at the root of the CD = 34 %.

Ratio of users who did not use the help file of software = 64 %.

Ratio of users who found the solutions for certain problems in help file = 28%.

Ratio of users who didn't need to read the help file because they considered the software clear = 68 %.

Ratio of users who visited the web site searching for additional help = 4%.

For the user interface (questions from 11 to 14), the satisfaction ratios were as follows (Fig. 6):

Ratio of satisfied users = 92.5 %.

Ratio of dissatisfied users = 7.5 %.

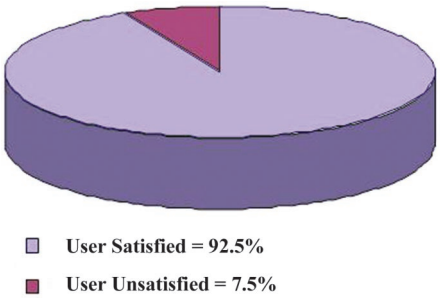

Fig. 6. Interface ratio for satisfied users.

For to the questions, from 15 to 22, measuring the user satisfaction with the features presented by the program, the ratios were (Fig. 7):

Ratio of satisfied users = 71 %.

Ratio of dissatisfied users = 29%

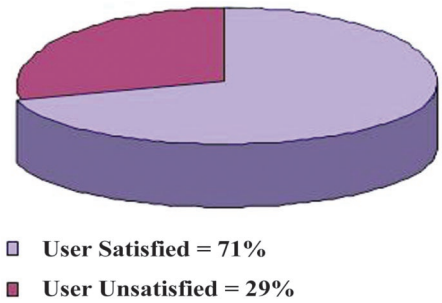

Fig. 7. User satisfaction features.

8. Conclusion

New code generator is a software, which was developed to enable any user of any level to design, create and build his own pages, ready to publish on world wide web without any need to know HTML code. A user can use many options to create his own pages such as Page Template, Wizard Template, Scripts Template or Quick Web Site Builder that makes our software the best.

After presenting this software to many users for testing, programming and designing, the new code generators attracted all users with its great and nice user interface as well as ready scripts.

About Evaluation results that were given to users for testing gave new code generator software 71% efficiency percentages, it is a good percentage knowing that new code generators is the first version. In future work section 9, by adding programmers and users suggestions, the efficiency percentage will increase.

Visual Basic, Visual C++ or other Visual programming languages had been found excellent development platforms to develop new code generators, mainly an ActiveX components.

9. Future Work

Finally, after new code generator software is finalized, hopefully, it will be developed in future, and under this heading many suggestions in terms of future work should be like:

- Add more forms in the Quick web site builder,
- Add more templates,
- Support for built in picture and sound library,
- Support security issue at the new code generator,
- Add more scripts (both Java Script, VB Script),
- Support for FTP (File Transfer protocol) feature,
- Increase the file management option,
- Add the drawing option tools,
- Add interfaces skins, so that the user can choose the suitable interface skins.

References

[1] **Rausch, A.,** *A Proposal for a Code Generator based on XML and Code Templates*, München, Germany, ACC, **11** (1): 3-11 (1998).

[2] **Hillenbrand, D.,** *Real-Time Performance Improvements*, University of Kaiserslautern, Department of Control and Signal Theory (2002).

[3] **MSDN,** *MSDN Library Visual Studio 6.0* (1992-1998), Microsoft Corporation.

[4] **Miller, R.C.** and **Myers, B.A.** (1997) *Creating Dynamic World Wide Web Pages by Demonstration*, Human Computer Interaction Institute, http://www.cs.cmu.edu/~rcm (2003).

[5] **Tobin, R.** (1998) HTML: The Web & Beyond, Computer Publishing Report, www.-thetadata.com (2/11/2003).

[6] **Ambler, S.W.,** *User Interface Design: Tips and Techniques*, New York: SIGS Books/ Cambridge University Press (May 1998).

[7] **Microsoft,** *www.microsoft.com.* (2004).

[8] **Lovegrove, B., Congdon, D.** and **Schaub, S.** (2000) *Internet Toasters as a Capstone Design Project*, www.siteseer.com. (2003).

[9] **Deitel, H.M., Deitel, P.J.** and **Nieto, T.R.,** *Visual Basic 6 How to Program*, Prentice-Hall, Inc. (1999).

[10] *http://www.sharewarepromotions.com/software_evaluation.html* (8/1/2004).

[11] *http://www.so.cc.va.us/vccsit/softchek.htm* (8/1/2004).

ثورة جديدة في مولدات كود النص المترابط (HTML)

عدنان أبو عرفة ، و عبد الباعث محمد* ، و إيهاب عامر*
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المستخلص. مولدات كود النص المترابط (HTML): هي برامج حاسوبية تمكن أي مستخدم – بغض النظر عن مستواه في الإلمام بمهارات الحاسب – من احتراف إنشاء صفحات الويب كخطوة لنشرها على الشبكة العنكبوتية ، وبدون الحاجة إلى خبرة البرمجة أو حتى الدراية بلغة النص المترابط (HTML)، وهذا كله بطريقة سهلة بسيطة وفي زمن قياسي. ويمكن مولد الكود البرمجي (HTML) الجديد المستخدم من إنشاء صفحات الويب بطرق مختلفة ، وباستخدام أدوات مختلفة من خلال البرنامج نفسه، ويعتبر هذا الاختلاف في طرق إنشاء صفحات الويب وسيلة مناسبة لجميع المستخدمين باختلاف مستواهم في التعامل مع الحاسب.

وقد تم توزيع مولد الكود البرمجي للنص المترابط (HTML) على تسعين مستخدم لأغراض تجربة البرنامج. والهدف من هذا هو تقييم البرنامج الجديد حيث حقق نسبة قبول تعادل واحد وسبعون في المائة.