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BOOK 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 8

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BOOK 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 8

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USING WEB BASED TECHNOLOGIES ON TRAINING IN XHTML

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***Abstract**:* The worldwide trend of innovative technologies entering all spheres of life is observed also in the educational field. Introducing interactive training boosts the learning process and it becomes easier, faster and more interesting for comprehension. This paper focuses on issues related to GSM technology, WAP applications and the usage of HTML, XHTML and CSS. It presents a website developed for training in XHTML

***Keywords**:* XHTML, Web based Technologies, Web based Training

INTRODUCTION

The information in the World Wide Web is a virtually unlimited resource for satisfying the needs of communication, information and knowledge. It is of high performance, immense amount and actuality – three main parameters which define information as a reliable ally. Through the Web, FTP and e-mail people get to know the latest news, the innovation booms in Science and Technologies, etc [2].

GSM technology allows short messages, news, etc. to be easily conveyed to the user. Data transfer is carried out by two protocols for wireless data transfer, i.e. the Short Message Service (SMS) and the Wireless Application Protocol (WAP). So, side by side with the development of ordinary phone services in the wireless digital telephones, a parallel process of developing the possibilities for text communication is running, providing a continually growing priority of text data transmission.

The Protocols, used for the needs of maintenance and operation of telecommunication appliances, devices and information servers, are the *Telnet* (in recent years, the *ssh* – secure shell – telnet protocol with connection encryption to avoid transmission of unprotected along the communication channel passwords and other important information) and the *HTTP* (web interface with administration functions for controlling interactively the communication device by means of keys and menus in the web browser environment). They enable the configuration and control of network-connected routers, switchers, commutation appliances and devices (modems, access servers, ISDN devices), web servers, servers for databases and many other types of structural units, ensuring the operation of the communication network or the data transfer net.

Nowadays the fast developing technologies and the mobile services continual drop of prices provoke the expanding usage of mobile devices (cell phones, PDA, etc., generally called mobile terminals). The number of cell phones' users keeps on increasing, challenged by new services and technologies like Internet, MMS, etc. incorporated in mobile devices.

Distinguished from personal computers (PCs), mobile terminals are characterized with specific features: small screens, unstable communication connection, and mostly of the type 'operated with one hand'. WAP is the protocol for effective transmission of data to the users of mobile devices. It is suitable for application in all standard wireless networks: CDPD, CDMA, GSM, PDC, PHS, TDMA, FLEX, ReFLEX, iDEN, TETRA, DECK *DataTAC, Mobitex,* etc. The language for creating pages on mobile phones is the *Wireless Markup Language* (WML). The information in it is organized in cards and packs. The table below shows the comparative characteristics of WML and HTML [1, 3, 5,8].

WAP/WML	HTTP/HTML
Interactive environment for applications	Documents(information) presentation
Specialized mobile devices supporting micro browsers	For PCs in networks with stable communication channels
The content is presented with short specific menus structured in cards and packs	The content consists of text and graphic pages without strict technical limits of the amount
WML cards consist of visible content and controlling directives for replacement of a current card (by the user)	HTML pages consist of visible and controlling symbols (and expressions)

WAP applications include access to distributed databases, banking, entertainment, message exchange. An essential part of the communication implementation is fulfilled by the WAP switches (protocol convertors). They are the linking unit between Internet and the pocket wireless devices. WAP switches may be the property of the mobile operator, the Internet Service Provider (ISP), or the owner of the website with WAP or WML content. More reliable protection is provided by an operator-based WAP server. The limitations for working on mobile terminals are mainly owed to their weaker parameters in comparison with those of the traditional PCs. Mobile terminals incorporate a low-efficient processor, less memory capacity (ROM and RAM), limited electric power, low resolution and small screen size, non-conventional input device [4,6,7].

All these disadvantages impose the creation of applications with specific features. In principle, after a WAP application is being developed, it can be transferred to a mobile phone and seen how it runs, but as the work is rather impeded, mobile devices' emulators have been developed. With their help the applications' tests are considerably speeded up and the designing process is facilitated as a whole.

HTML, XHTML and CSS

For consolidation of HTML platform so that it is built upon efficiently, the standardization organization W3C created the EML (*Extensible Markup Language).*

XML resembles HTML – completed with tags, attributes and values. It is a standard for developing other languages. XML can be used, for instance, to create a language for documents formatting. Such a personal language is equipped with tags containing specifications of the actual data.

When the XML tag specifies data, the latter becomes accessible for other tasks as well. A software program can be developed to retrieve only the necessary information, incorporate it to the data of another resource and the combined result can be presented for other purposes.

To facilitate the operation of XML programs for synthetic analysis *(parsers)*, XML requires a careful usage of uppercase and lowercase letters, quotes, closing tags, etc. In addition to that, billions of Web pages written in HTML already exist, and accordingly, millions of servers and browsers for their support.

W3C re-wrote HTML in XML. The new XHTML [1] contains all the technologies of HTML and it can be understood by any browser. Besides, users who know HTML, easily switch on it. On the other hand, the built-in XML's syntax adds power and flexibility and it becomes an ideal basis for the usage of CSS.

Though XHTML and CSS make a strong combination, there is a small disadvantage in browser's support. The addition of extensions is not problematic, but when it concerns a serious and full support of specifications, no browser can manage the task.

However, the prolonged waiting is also not useful. In the A List Aparat online magazine, devoted to the Web designing (http://www.alistapart.com/stories/tohell/), some authors support the cause to create XHTML/CSS-base pages, which look admirable to the standard supporting browsers, and acceptable to the ordinary or old ones.

HTML was magnificent with the specificity that the punctuation might not be adhered to. That extremely facilitated the writing of Web pages.

Some circles of specialists reject HTML and consider that XHTML is the only solution. XHTML is a significant improvement of HTML. It is stricter, very flexible and powerful, and it seems for sure that would be supported in the future; the possibility of extensions will meet various needs. Nevertheless, if there is no need to satisfy all, but just to publish a simple page, then better use HTML.

There are three standard trends in both HTML and XHTML: transitional that allows the usage of rejected tags; *frameset* allowing the usage of rejected tags and frames; *strict* that forbids the usage of rejected tags. These constructive trends can be applied in different CSS's versions but the chosen combination depends on several factors.

CHOOSING HTML, XHTML or CSS

There are several principles for making the proper choice:

- The larger amount of data in the site, the more advisable is the usage of CSS and XHTML. The first one facilitates the application, editing and updating within the site formatting, while the second component helps creating the structure of the page, ensuring its continual existence.
- Many companies and state agencies set out the condition Web pages to be in correspondence with definite requirements, which ensure adequate access to people with physical limitations. In that case the designer should follow the strictness of the XHTML and the CSS formatting.
- Big commercial sites, which aim at reaching as many customers as possible, can choose the transitional trend of XHTML applying the advantages of some rejected tags for universal support, while banking is laid upon the sustainability of XHTML. These types of sites probably will pass to the more powerful CSS with the increase of the support necessities.
- Small or personal sites are likely to refer to the advantages of the easy-to-apply syntax in HTML combined with the might of the CSS formatting, and the partial usage of rejected tags, if necessary.

HTML and XHTML definitely share one and the same lexis with insignificant syntax differences. When a statement is valid for both XHTML and HTML, the abbreviation (X)HTML is applied.

CSS is incorporated into the specifications of (X)HTML as a natural extension and at the same time as a specific instrument.

WEB-BASED TRAINING IN XHTML

The website aims at making XHTML learning easier on the basis of the following key points – availability of diverse lecture material containing graphics and photographs that facilitate the process of knowledge acquisition, and availability of terminological vocabulary providing quick access to the explanation of a concrete term.

Fig. 1 shows the navigation map of the website.

The "Home" page (Fig. 2) provides information on the website concept. The navigation menu is displayed on top of the screen and it is permanently visualized, nevertheless of the user location within the system. The navigation bar consists of six

components, which can be seen in all pages of the application: Home; Lectures; Exercises; Links; Application.

The “Lectures” page (Fig.3) contains the teaching material grouped in topics.

The “Exercises” page (Fig.4) contains information on the required exercises and the software products necessary for their execution. Emulator has been used on developing relevant exercises. The “Files” page (Fig. 5) contains all source codes for conducting the exercises.

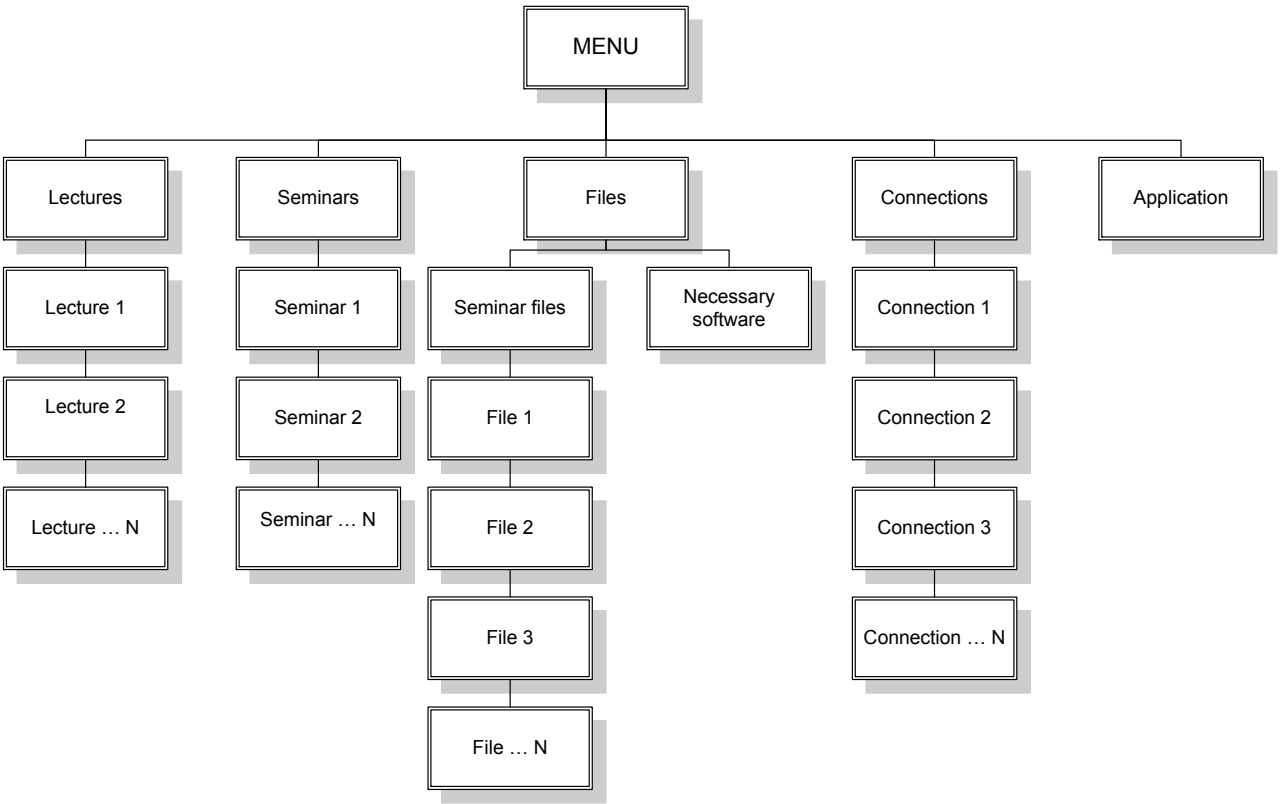

Fig. 1. Navigation map of the site

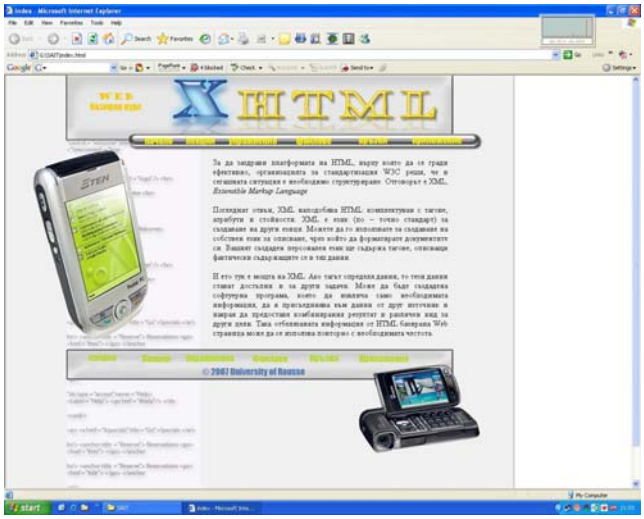

Fig. 2. “Home” page

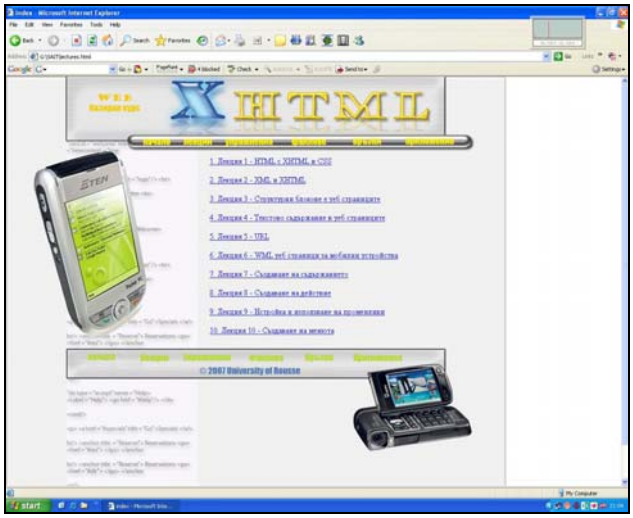

Fig. 3. “Lectures” page

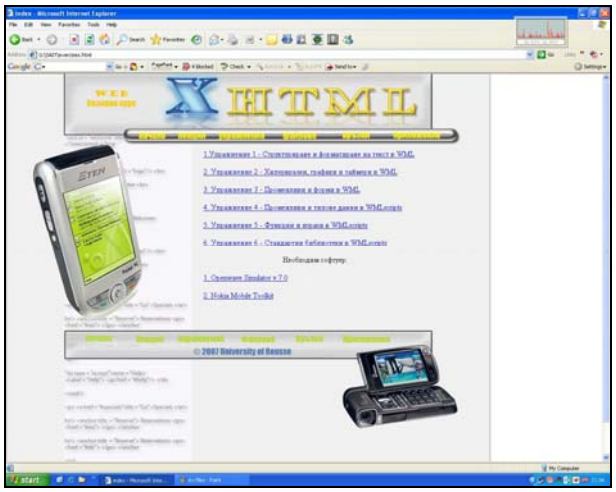

Fig. 4. "Exercises" page

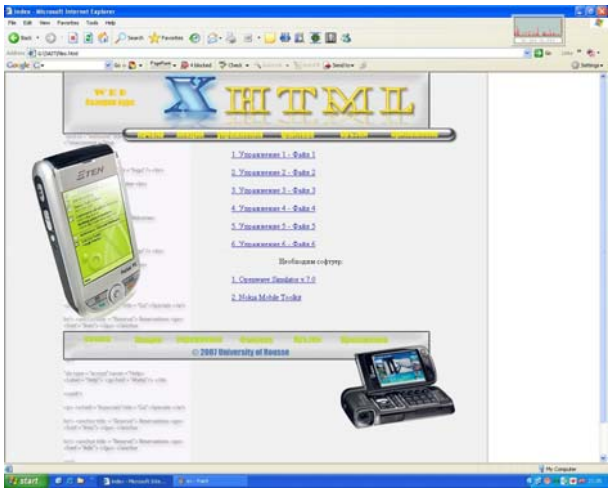

Fig. 5. "Files" page

The "Links" page (Fig. 6) provides information on the references and other useful hints. The “Application” page is shown on Fig. 7.

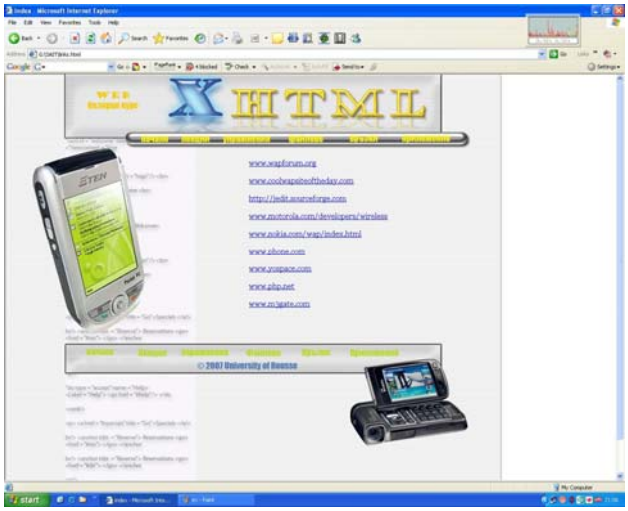

Fig. 6. "Links" page

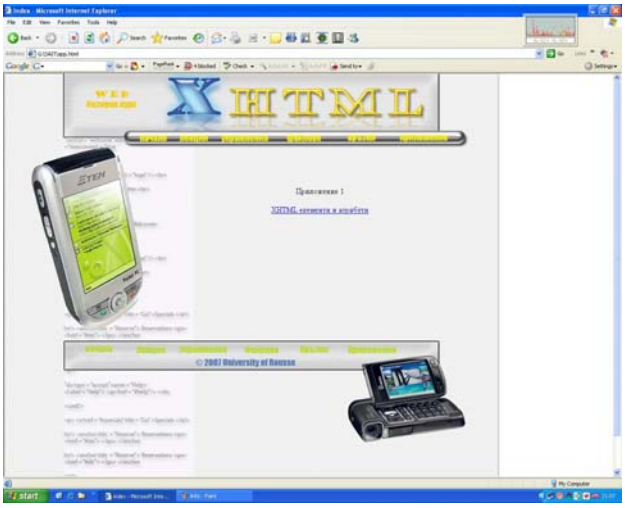

Fig. 7. "Application" page

CONCLUSION

The application that has been created presents the implementation of the basic training trends in XHTML – including theory, exercises, terminological vocabulary and plenty of diagrams, graphics and supplementary text information. The advantages concern the better comprehension of the teaching material, boosted by the interactive communication ant all this encourages the interest and motivation of learners. The website is intuitive and ensures positive and unique learning environment for users.

The application is open – it gives opportunities for supplementing the lessons with practice-oriented videos, as well as animation to the topics in order to add visual effects, aiming to achieve better understanding of the material included in the exercises. The terminology vocabulary may also be extended as it contains indices for the English terms and abbreviations.

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ПРИЛОЖЕНИЕ НА WEB БАЗИРАНИТЕ ТЕХНОЛОГИИ В ОБУЧЕНИЕТО ПО XHTML

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***Резюме**: Общата тенденция за въвеждане на нови технологии във всички сфери се наблюдава и в областта на обучението. Възможността за създаване на интерактивно обучение спомага за по-лесно, бързо и приятно възприемане на учебния материал. В публикацията се дискутират въпроси, свързани с GSM технологията, приложенията на WAP и използването на HTML, XHTML и CSS. Представя се и разработеният сайт за web базирано обучение по XHTML*

***Ключови думи**: XHTML, Web базирани технологии,Web базирано обучение*

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