

Design and Implementation of a Secure E-learning System for the Wireless Networks

تصميم وتنفيذ نظام تعليم الكتروني مؤمن عن الشبكات اللاسلكية

Abbas Fadhil Mohammed Ali AL-Juboori
Department of Computer Science
College of Science / Kerbala University
abbaszain2003@yahoo.com

الخلاصة

في هذا البحث فإن النظام المقترح قد قسم الى قسمين : الأول هو جزء المصمم أو (المدير) وهذا بدوره يستطيع السيطرة والتحكم في جميع خيارات وامكانيات النظام في ادارة وتحديث جميع المعلومات الموجودة في قاعدة بيانات النظام. أما الجزء الثاني فهو جزء المستخدم الذي يمكن المستخدم الراغب في التعلم من التنقل في جميع بيئات النظام لإكتساب المعرفة اللازمة. لقد تم اختيار موضوع مهم جداً في هذا النظام لتعليمه وهو موضوع الشبكات اللاسلكية في مجال الحاسبات والاتصالات . يتضمن النظام امكانيات عديدة وهي (الاضافة ، الحذف ، التحديث ، وخدمة البحث) في قاعدة بيانات النظام. دعم النظام بأمنية عالية باستخدام تقنية كلمة السر. أضيفت للنظام تأثيرات صوتية موسيقية لجعل المستخدم أكثر راحة خلال عملية الاستعراض في النظام. صمم النظام باستخدام Apache server, PHP, HTML, Web Page Maker و MySQL لبناء قاعدة البيانات.

Abstract

In this paper ,the proposed system was presented and it divided into two parts . First one is the designer or (Administrator) part who can control on all options of the system in managing and updating all information included in the data base of the system .The second is the user part who can navigate in all environments of the system to give the required knowledge. Very important subject was selected to include it in the secure e-learning system which is (wireless networks) because it is very important topic in the computer and communication world . The capabilities of the system are (add , delete, update, search) for data base of the system . The security was supported in the system by using the password technique. The system includes audio (music) effect to make the user more relax when he browses the pages.The system was designed by using Apache server , PHP, HTML, Web Page Maker , and MYSQL for data base .

Keywords: (e-learning, wireless, networks, secure).

1. Introduction

E-learning is becoming increasingly prominent in tertiary education, with universities increasing provision and more students signing up. But is it actually changing the way universities teach and students learn, or is it simply a case of students typing up their essays on computers and professors sending them course reading lists or work assignments by e-mail? The vision common at the height of the dot.com boom of students following entire courses at a prestigious overseas university from the comfort of their own home, without the inconvenience and cost of living abroad for years has largely failed to materialize. Students are still mostly wedded to classrooms for at least part of the time, and after the hype of the new economy, growing disenchantment with e-learning has replaced earlier over-enthusiasm. Failures of e-learning operations have, at least temporarily, overshadowed the prospects of widened and flexible access to tertiary education, pedagogic innovation and decreased cost, that e-learning once embodied. But universities are gradually bringing e-learning into the mainstream of their educational programmer, and it is often an integral part of a classroom-based course. Will this trend continue? How could governments and institutions help make further progress in e-learning and reap all its potential benefits? To try to answer some of the questions raised, in partnership with the UK-based Observatory on Borderless Higher Education (OBHE), carried out a survey of e-learning in 19 tertiary education institutions in 13 countries. The qualitative findings of the project were complemented by an OBHE survey of

online learning in Commonwealth universities undertaken in 2004. This Policy Brief looks at the results of these surveys, and likely future trends in e-learning at university [1],[2],[3].

2. Growth of e-learning

By 2005, more than 3.2 million students were participating in on-line learning at institutions of higher education in the United States. Many higher education, for-profit institutions, now offer on-line classes. By contrast, only about half of private, non-profit schools offer them. The Sloan report, based on a poll of academic leaders, says that students generally appear to be at least as satisfied with their on-line classes as they are with traditional ones. Private Institutions may become more involved with on-line presentations as the cost of instituting such a system decreases. Properly trained staff must also be hired to work with students on-line. These staff members must be able to not only understand the content area, but also be highly trained in the use of the computer and Internet. Online education is increasing.[6],[7]

3. E-learning technologies

At present, e-learning technologies encompass three main areas of activity:

- Content creation and management: the sourcing, creation, storage and management of e-learning content — functions typically addressed by a learning content management system (LCMS);
- Learning management: the capture and application of information about learning resources, existing skills and learning activities to measure and manage learning outcomes at the organisational level — functions typically addressed by a learning management system (LMS); and
- Learning activity: the delivery of e-learning content, facilitating interaction and learning assessment — functions typically performed by instructors or trainers [7],[8]

4. Advantages and Disadvantages of E-Learning

Key advantages of E-learning are flexibility, convenience and the ability to work at any place where an internet connection is available and at one's own pace. E-classes are asynchronous which allows learners to participate and complete coursework in accordance with their daily commitments. This makes an E-learning education a viable option for those that have other commitments such as family or work or cannot participate easily e.g. depending on a disability. There are also transportation cost (and time) benefits with not having to commute to and from campus [6],[9].

The cost benefits of E-learning to large corporate organizations are difficult to ignore. When using E-learning to train users of corporate computer systems, normally achieved by way of simulation-based learning content, the learner finds himself in a software environment that is exactly like the real one but which does not carry the same error risk. Unlike classroom training, users may repeat the E-learning course without duplicating the cost. It is commonly accepted that the initial cost of an E-learning implementation is expensive (once-off development cost), but that the cost of training (per user) goes down exponentially as more learners use the E-learning course material. When using E-learning simulations to assess learning progress, the instructor is assessing the actual competence of the user to perform a transaction and not merely knowledge of the system.

Other advantages of E-learning are the ability to communicate with fellow classmates independent of spatial distance, a greater adaptability to learner's needs, more variety in learning experience with the use of multimedia and the non-verbal presentation of teaching material. Streamed video recorded lectures and MP3 files provides visual and audio learning that can be reviewed as often as needed. For organizations with distributed and constantly changing learners (e.g. restaurant staff), E-learning has considerable benefits when compared with organizing classroom training [4].

Disadvantages of E-learning include the lack of face-to-face interaction with a teacher. Critics of E-learning argue that the process is no longer "educational" in the highest philosophical

sense (for example, as defined by RS Peters, a philosopher of education). Supporters of E-learning claim that this criticism is largely unfounded, as human interactions can readily be encouraged through audio or video-based web-conferencing programs, threaded discussion boards, of fact, many in K12 would support E-learning if it was not associated with the more extreme versions that attempt to cut out the directed teacher-student relationship.

The feeling of isolation experienced by distance learning students is also often cited, although discussion forums and other computer-based communication can in fact help ameliorate this and in particular can often encourage students to meet face-to-face, although meeting face-to-face is often not possible due to the disarray of student's physical locality. Discussion groups can also be formed on-line. Human interaction, faculty-to-student as well as student-to-student, should be encouraged in any form [2],[10].

E-learning tends to work better for the student when the topic matter consists of self-learned items. When much group collaboration is required, E-learning can cause lag times in collaborative feedback if the students are not disciplined. For example, some student's may only check their online agenda once a week, or even less, making it impossible to achieve goals. Web and software development can be expensive as can systems specifically geared for E-learning. The development of adaptive materials is also much more time-consuming than that of non-adaptive ones.[1],[4].

5. System Design

Apache server, PHP, HTML, program web page maker, and MYSQL for data base are used to design the system.

The system is broken down into two parts, designer side, and user side.

6. Implementation of the system

The system can Implemented by opining main window which illustrates as shown in figures (1) and (2) below:



Figure (1): The main window .



Figure (2): Wireless Network window.

By clicking on the wireless network phrase, the page below which consist of two parts will appears, the top part which used to access to the designer side and the down part is used to access to the user side see the figure (3) below :

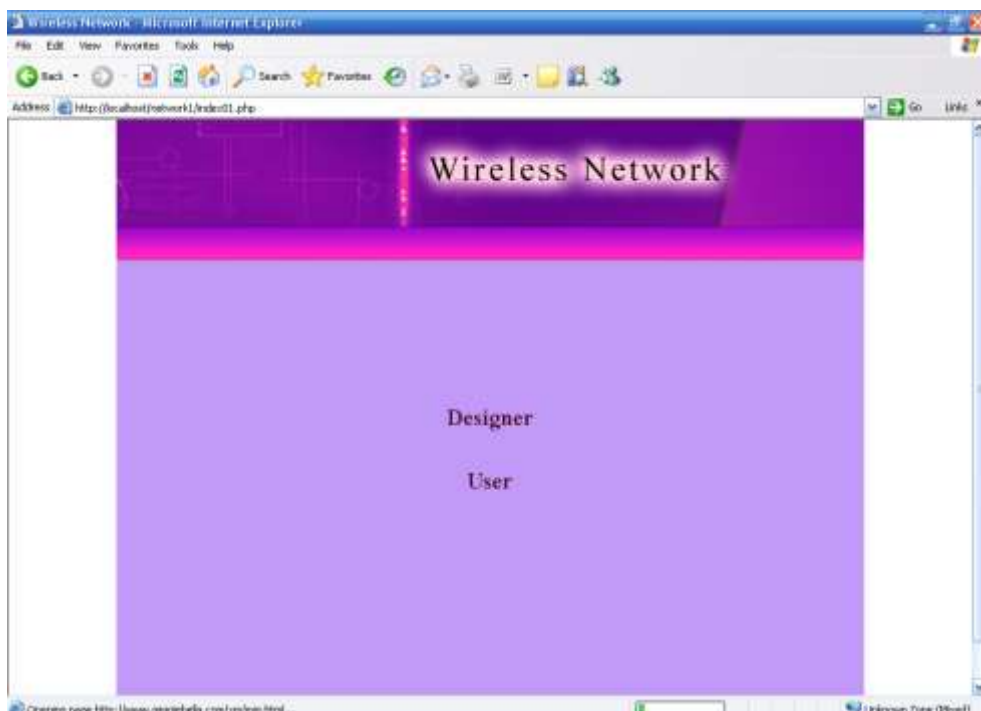


Figure (3): designer and user window.

After choosing designer part that contains designer name and password, see the figure (4) below:



Figure (4): designer window.

After entering designer name and password, the window in the figure (5) below will appear which contains the link (change the design).

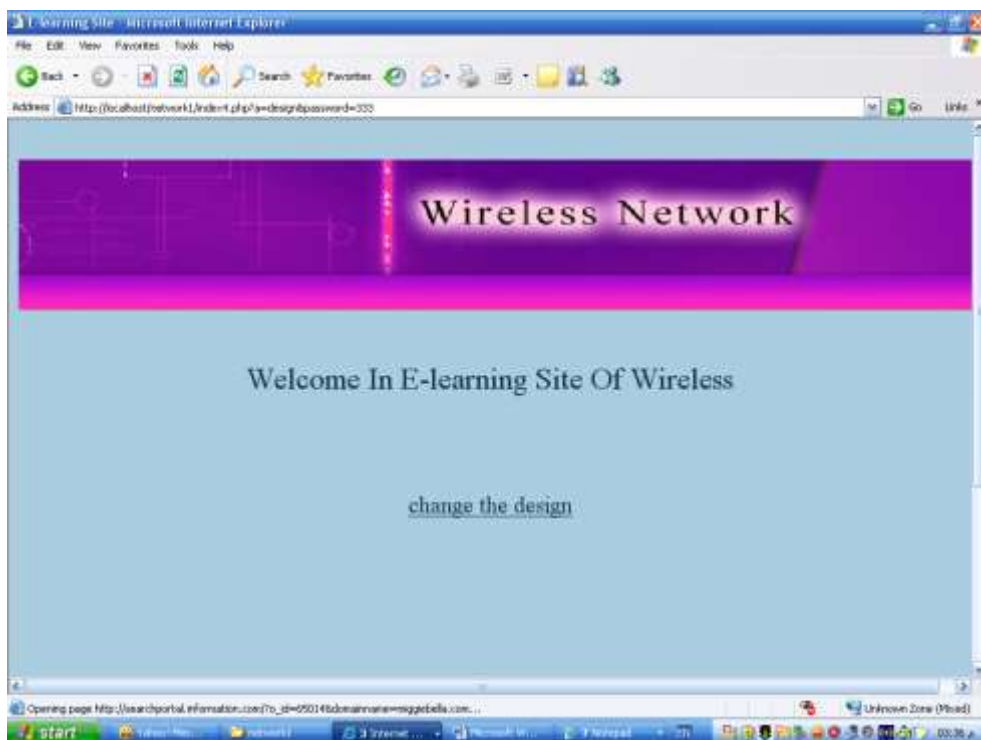


Figure (5): change the design window.

After clicking on that link, the window below will seen which contains four options (view, add, modify & delete, and search) see the figure (6) below:

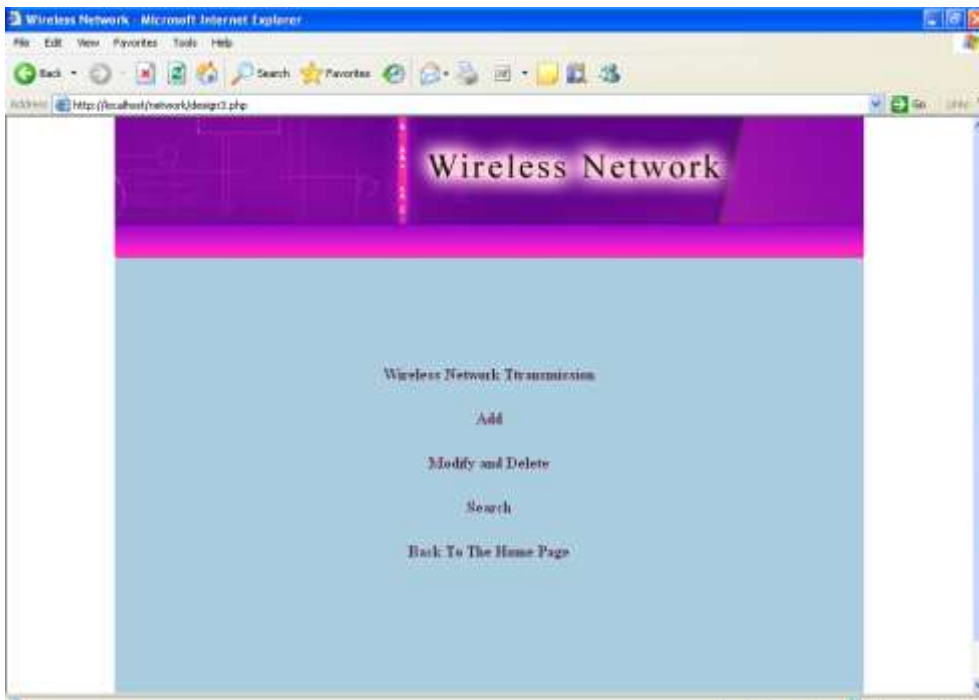


Figure (6): Capabilities of the designer to change window.

When the administrator selects the link of (wireless transmission), the data base content will appear, see the figure (7) below:

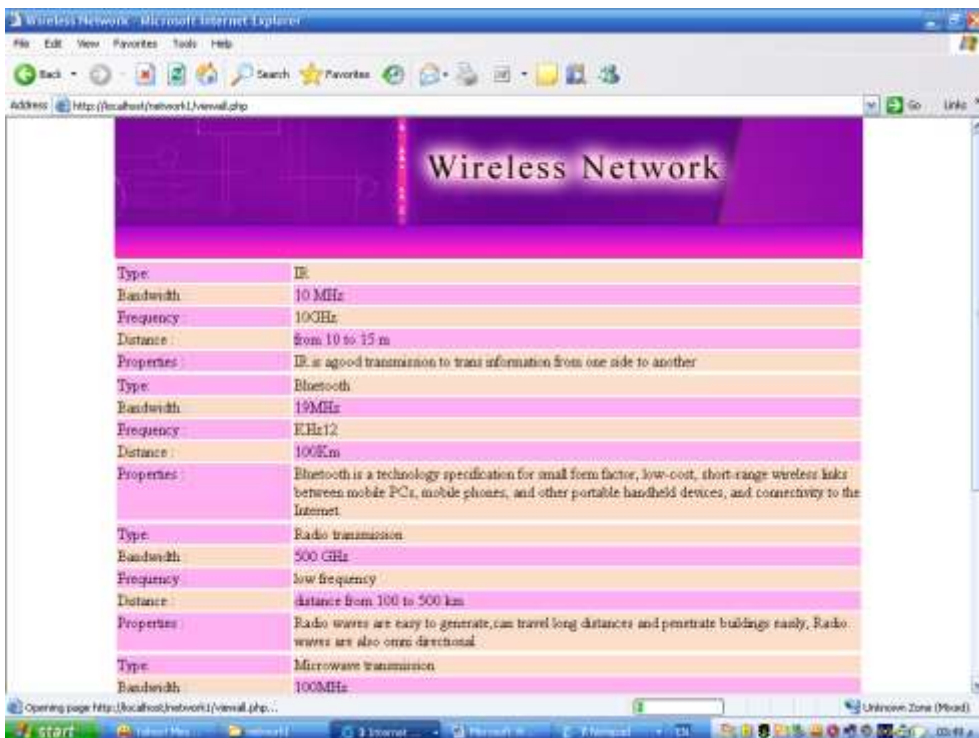


Figure (7): Transmission of wireless networks window.

The admin can add new information to the data base after selecting the link of (add), see the figure (8) below:

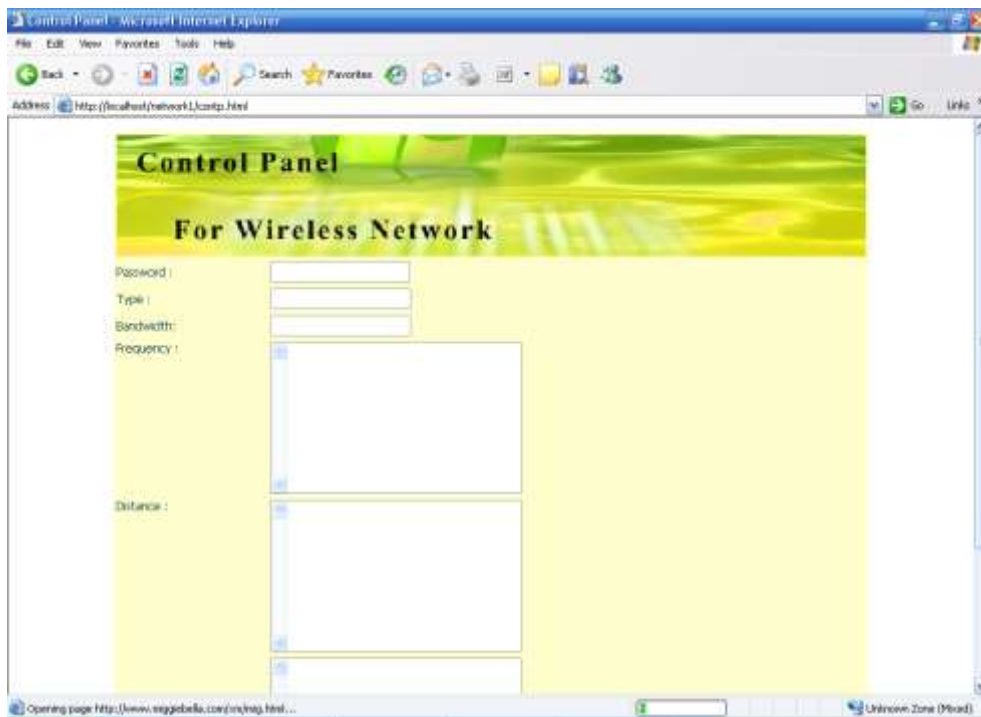


Figure (8): Add information to the data base window.

When entering the current password and full information ,we can see window that telling the successful adding.

selecting the link of (modify & delete) can modify information or delete any data base, see the figure (9) below:

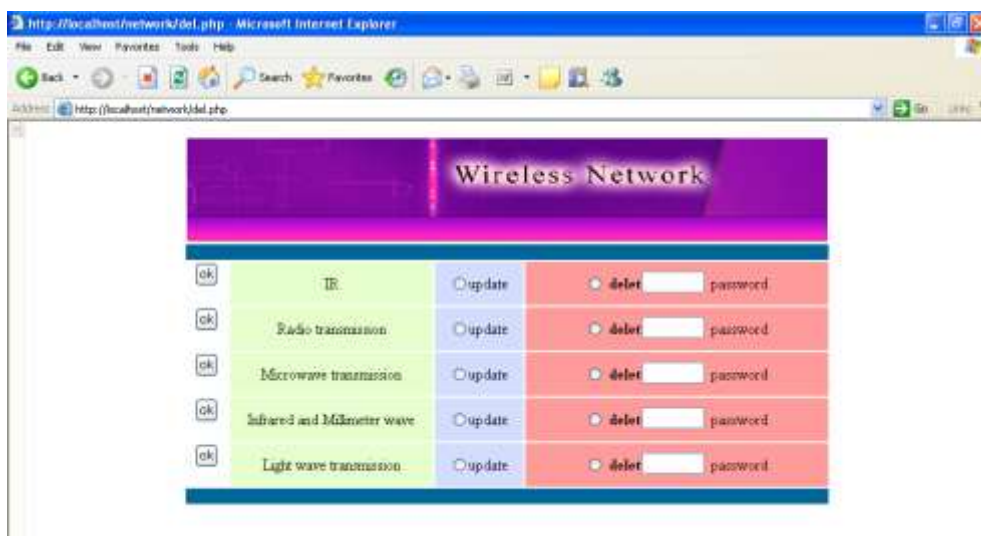


Figure (9): Modify & Delete data base window.

Also when the admin enters the password and choose (update), the window that allow to update information will appear, for example: when he want to update information about "IR" , the figure (10) below will illustrate this property:

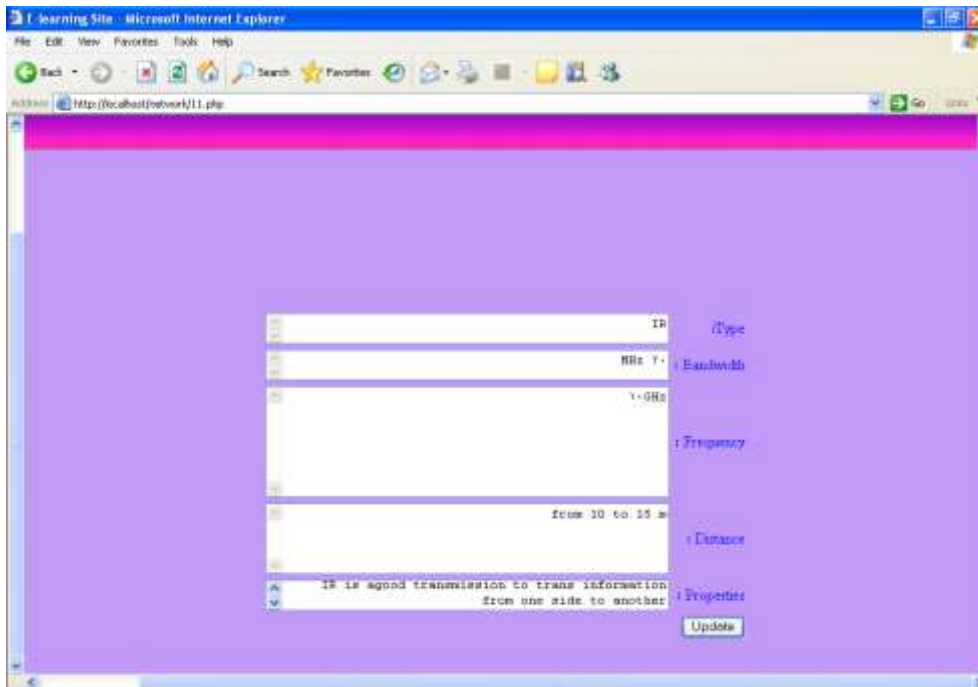


Figure (10): Modify window.

After pressing on (update) button, the window that tell the update is success. Will appear . When the admin enters the password and choose delete, the window that tell the delete process is success will appear. After selecting (search) link that can search for any types of wireless transmission in the data base, see the figure (11) below:



Figure (11): Search window

When enter any type of wireless transmission, the information can fetched from data base, for example, chose "IR" , the figure (12) below will appear:



Figure (12): Search for IR window

The admin can returns to the home page by clicking on the (Back to the Home Page) option . After choosing the user part, the window that contains four options (details, view, search, and back to the home page) will appear as in the figure (13) below:

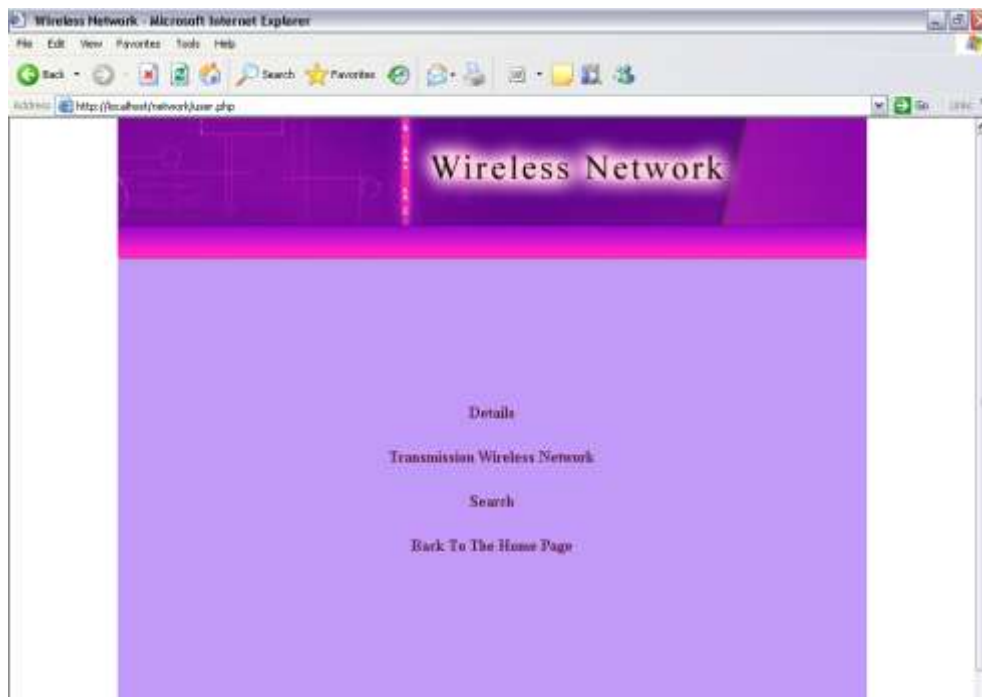


Figure (13): User window.

The information about wireless networks will be shown after the user selects the link of (details), see the figure (14) below :



Figure (14): Details of wireless networks window.

In wireless network window which contains introduction to wireless networks and seven links (wireless LAN, wireless technologies, types of wireless ,wireless glossary, corporate security, public wireless , evolution of wireless). When click on each of those links a new window will appear . After pressing on the link of (wireless LAN),the window in the figure (15)below will appear:



Figure (15): Wireless LAN window.

This window that contains introduction to wireless LAN and four links (history, benefits, disadvantages ,and types of wireless LAN). When click on each of those links, the user can see all details about these subject. When click on the link of (history), the history of wireless LAN information will appear to the user.

When return to wireless LAN and click on the link of (benefits), the benefits of wireless LAN information will appear to the user.

When return to wireless LAN and press on the link of (disadvantages), the disadvantages of wireless LAN information will appear to the user..

When return to wireless LAN and click on the link of (types of wireless LAN), the types of wireless LAN information will appear to the user..

When return to wireless networks and click on the link of (wireless technologies), explanation of wireless technologies information will appear to the user, as shown in the figure (16)below:



Figure (16): Technologies of wireless networks window

When return to wireless networks and press on the link of (types of wireless), explanation of types of wireless information will appear to the user. , see the figure (17)below:



Figure (17): Types of wireless networks window.

When return to wireless networks and click on the link of (wireless glossary), glossary of wireless information will appear to the user , see the figure (18)below:

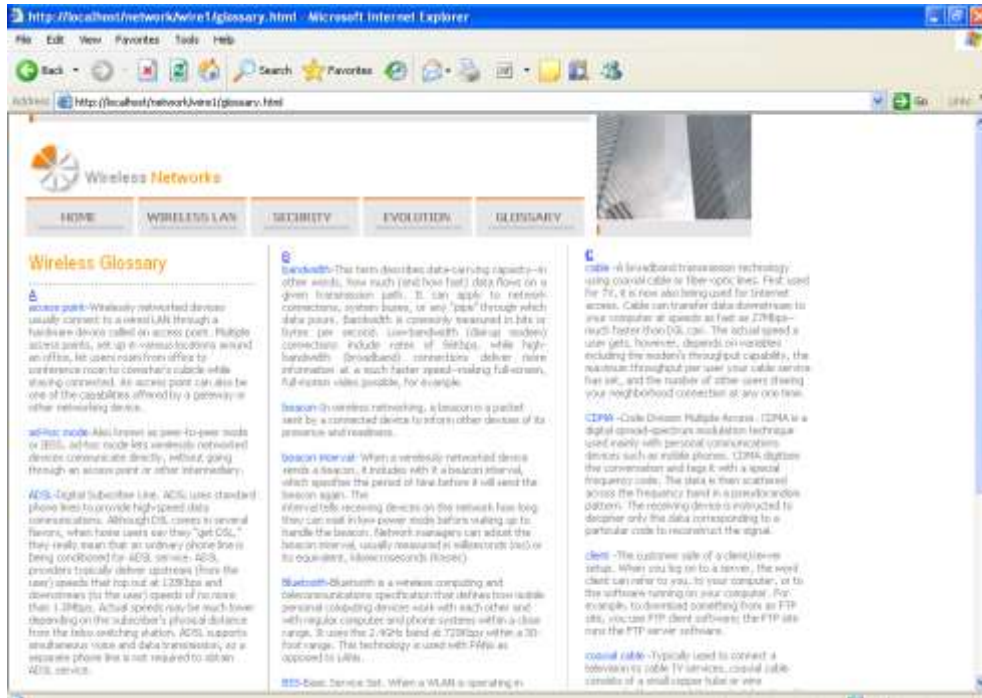


Figure (18): Glossary of wireless networks window.

When return to wireless networks and select the link of (corporate security of wireless), corporate security of wireless information will appear to the user., see the figure (19)below:

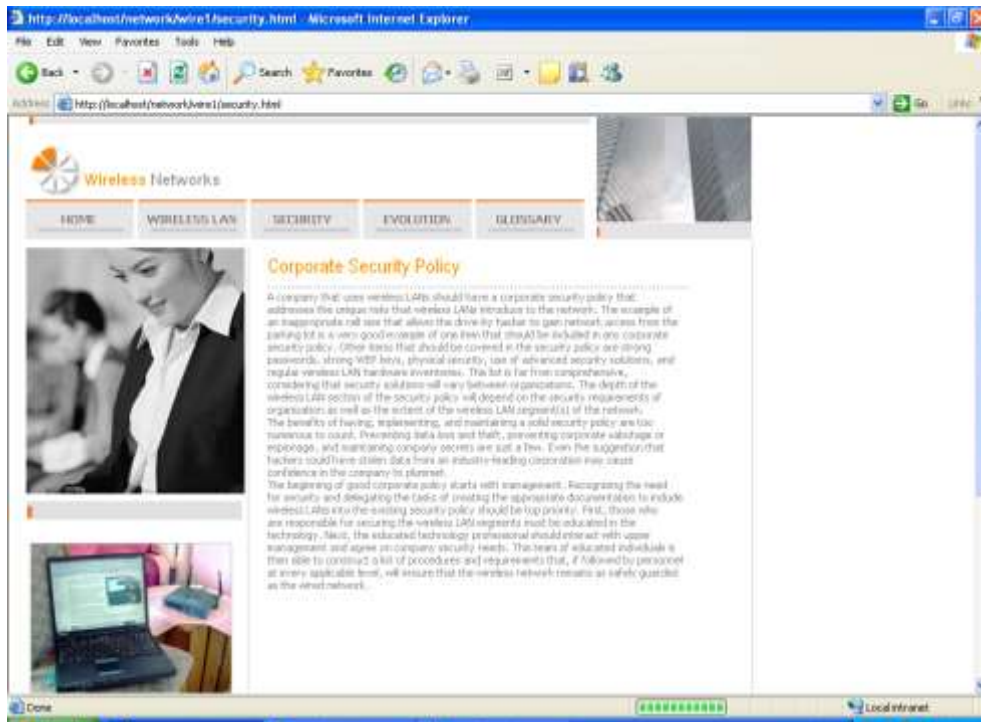


Figure (19): Corporate security of wireless networks window.

When the user returns to wireless networks page and chooses the link of (public wireless), public of wireless information will appear to the user.

When return to wireless networks and select the link of (evolution of wireless), evolution of wireless information will appear to the user.

When return to user window and press on the link of (transmission of wireless networks), transmission of wireless information will appear to the user., see the figure (20)below:

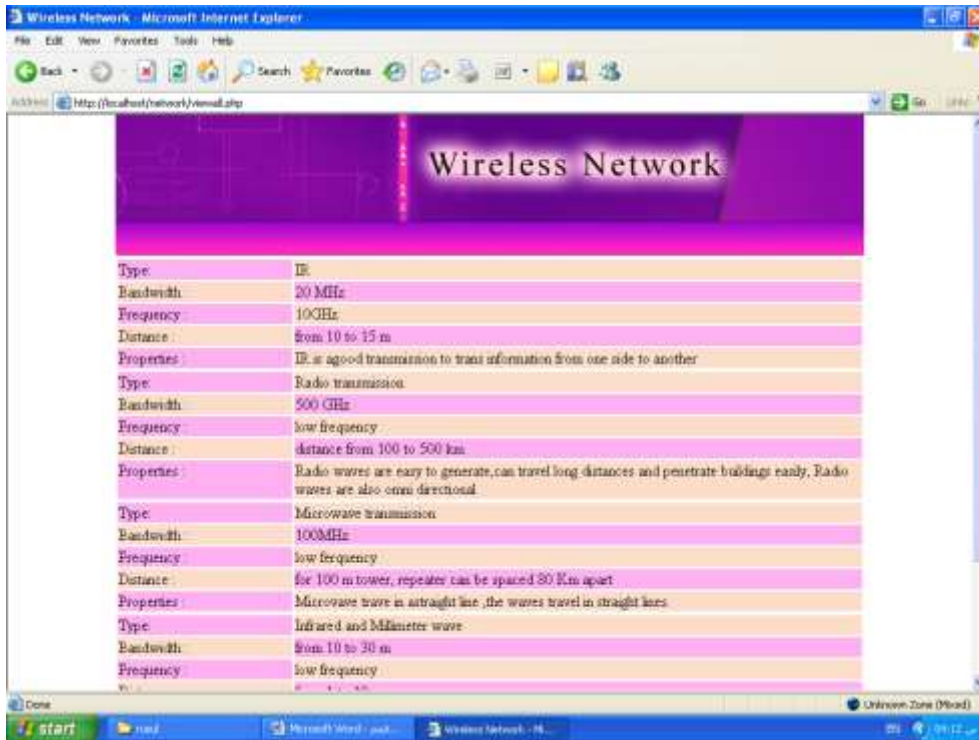
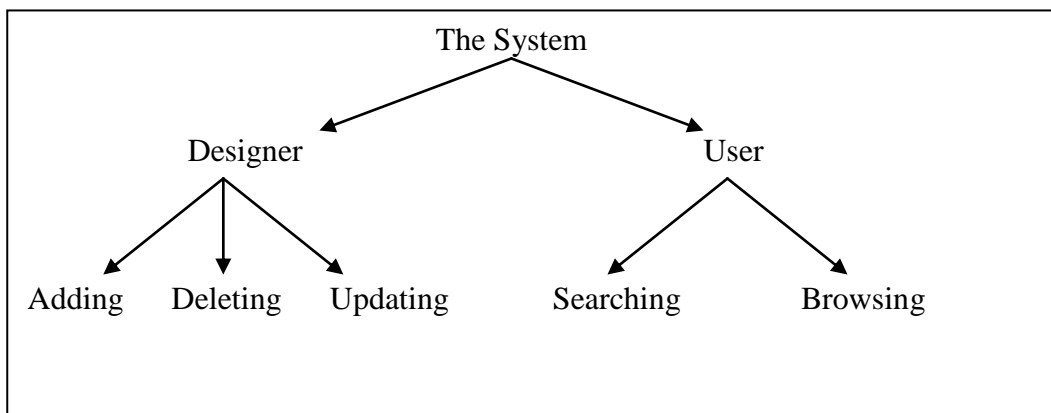


Figure (20): Transmission of wireless networks window.

When return to user window and press on the link of (search) that can search for any types of wireless transmission in the data base.



The Diagram of the System

7. Conclusions and Suggestions For Future Works

- 1-Many features can added for the system to support it to ease the dealing between the user and the system , such as conferences , chatting , online exams , ... etc.
- 2-The administrator can update the system using adding and deleting information .
- 3-The response speed and the time efficiency is high and it depends of the server efficiency.
- 4- Strong and modern languages are used to design the system in order to do updating every time and increase the data base easily.
- 5- Many subjects are recommended to add to the learning system to learn the user in different fields.

References

1. Richard w. Riley , "*Policy Brief*" , 2005.
2. Graham Attwell (ed.), "*Evaluating E-learning. A Guide to the. Evaluation of E-learning.*", Evaluate Europe Handbook Series Volume 2, 2006.
3. Casey, "*Intellectual Property Rights (IPR) in. Networked e-Learning*", A Beginners Guide for Content Developers. 2008.
4. Wikipedia , "*E-learning*" , 2007. www.wikipedia.org
5. J. Chorro Gasco , "*Learning Evaluation with Probabilistic Nets*", University of Valencia , Paper , 2008.
6. Thomas J.Falkowski,Vice , "*The Foundation President of an Effective e-Learning Strategy Performance and Results*" ,2004.
7. Joe Pulichino, "*The e-learning guide (future direction in e-learning)*", Book, 2006.
8. Brennan, Funke & Anderson, "*What is e-learning*" , article , 1997.
9. P. Tripathi and S. Mukerji, "*Networked Learning Environment for Students with Learning Management System (LMS)*", Paper , INTED Conference, 2008.
10. Alexandros Paramythis and Susanne Loidl-Reisinger, "*Adaptive Learning Environments and e-Learning. Standards*", Johannes Kepler University, Linz, Austria, 2007.J.