Republic of Iraq Ministry of Higher Education and Scientific Research University of Diyala College of Sciences Department of Computer Sciences



Web-based Library System for Theses and Graduation Projects

This research was presented to the Council of the College of Science - University of Diyala - Department of Computer as part of the requirements to get a bachelor's degree in Computer science

BY

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ببني مِراللَّهِ ٱلرَّحْمَزِ ٱلرَّحِيمِ

" يَرفَعِ اللَّهُ الَّذِينَ آَمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ "

صدق الله العظيم

سورة المجادلة الآية (١١)

الاهداء

الى رمز الحب والحنان وبلسم الشفاء ... الى القلب الناصح بالبياض

(والدتي الحبيبة)..

الى من كلت انامله ليقدم لنا لحظه السعادة ..

الى من حصد الاشواك عن دربي ليمهد لي طريق العلم ...

الى القلب الكبير (والدي العزيز)...

الان تفتح الأشرعة وترفع المرساة لتنطلق السفينة في عرض بحر واسع مظلم هو بحر الحياة ..

وفي هذه الظلمة لا يضئ الا قنديل الذكريات ذكريات اشخاص جعلوا لنا الحياة امل وسعادة...

الشكر والتقدير

الحمد لله الذي ذكر مشرف للذاكرين وشكر مفوز للشاكرين وحمد عز للحامدين وطاعته نجاه للطائعين والصلاة والسلام على خاتم الانبياء والمرسلين محمد وعلى آل بيته الطيبين الطاهرين وبعد، فعن رسول الله ﷺ انه قال: من لم يشكر الناس لم يشكر الله ، فبعد الانتهاء من هذا البحث يطيب لي في مقام الشكر ان اسجل بامتنان شكري وتقديري الى استاذي الفاضل (اسماعيل صالح عارف)

كما اتقدم بفائق شكري وتقدير الى رئيس قسم الحاسوب والأساتذة الافاضل لرعايتهم وتشجيعهم لي خلال مدة الدراسة والبحث واقدم شكري وامتناني الى النور الذي نور دربي الى من قدم لي العون والمساعدة والراي السديد والدي العزيز .

Supervisors' Certificate

I certify that project entitle "Web-based Library System for Theses and Graduation Projects" was prepared under my supervision to computer science department to science collage by (**Anas Abdul Jabbar Ibrahim**, **Abdul Razzaq Ali Jadaan**) as a partial fulfillment of the requirements for the degree of B.Sc.in computer science Department.

Signature: Name: Ismael Salih Aref Date: / /2020

Abstract

Web based Library system is a project which aims in developing a computerized system to maintain all the daily work of library. It is a webbased application developed to assist universities to have a depository that contains all graduation projects and theses documentations that students undertake. System functionality includes viewing, downloading and borrowing graduation project documents.

The system use ASP.NET with C# has been linked to the SQL database to store the results. The system has two important parts student access and admin access. The student access used by students and will be divided into two parts, first for guest students, who only download documents, and second for member students who add theses and graduation researches documents. The second part is to administration access. This part of the system is responsible for adding and deleting the universities, colleges and departments belong to them.

This project is being developed to help the students as well as staff of library to maintain the library in the best way possible and also reduce the human efforts.

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Chapter One Introduction

1.1 Overview

The world is living now in a new world revolution, information revolution which is connecting with technology information age and the center of the world moved from revolution in to knowledge. Today, the human society's base on knowledge on ton wealth, then the knowledge became the center of progress and extensive information dos not mean anything if society cannot use this information wisely [1].

The gap between advanced countries and developing or growing countries become a knowledge men gap because of huge information in revolution information technology and telecoms. The information became an important resource to the person and society; the electronic chips begin to play a basic role such a coal which is a basic thing in the past when the industrial revolution was so important. A technology gap approach to why growth rates differ [2].

The modern technology contains the digital technology in twentyfirst century. This advanced shorten the time between any two areas on the earth because of using electronic network. The information revolution is connecting with information technology through using computer system and telecom system [1].

1.2 What is ICT and Why

ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing and distance learning. In general there are some important things as the requirements for the implementation of ICT, there are [3]:

- 1. The availability of tutor support services that can help students when learning difficulties.
- 2. The existence of government officials / managers of ICT.
- 3. The existence of the positive attitude of students and educators on computer technology.
- 4. Availability of learning system design that can be learned / known by every student.
- 5. A system of evaluation of students' progress and feedback mechanisms developed by the organizers.

1.3 Problem Statements

Currently a paper-based libraries used in universities are not ideal when compared to electronic libraries systems. The use of paper-based library is financially costly compared to electronic systems where it needs an appropriate storage place (libraries) and many working hands to manage the place. Also it is not easy to obtaining these documents because it requires get access to those libraries and borrowing documents for a limited period, as needed. Therefore, to solve this problem, an electronic library system has been designed to be used as a repository for saving documents, which is characterized by ease in management and work. In addition, electronic libraries have the advantage of easily obtaining these documents so that the process requires only going to the site and downloading what the students wants freely.

1.4 Research Objective

The aim of this study is to development on-line Web based library system for theses and graduation researches documents to support libraries in many university.

1.5 Expected Contribution / Benefit

The contributions of this study are to provide support to College of Science in Diyala University to implement modernized techniques of College management especially in manage theses and graduation researches documents. The current library system in College of Science the does not support documents saving graduate researches and theses. So adding saving documents feature will facilitate the work and help students in graduation projects.

Chapter Two Literature Review

2.1 Review of Related Literature

A library is a room, building or an institution where a collection of books and other research materials are kept. It is a collection of sources, resources, and services, and the structure in which it is housed. The web is becoming "a ubiquitous source of information" giving an "illusion of depth and comprehensiveness" that leads to a questioning of the value of libraries and their collections. This review will not speculate on these future roles, but will focus instead on the certainty of changing technology, increasingly digital information resources and societal shifts that have changed user expectations of library services [4].

Scholars have examined the usability of digital libraries both in terms of general information seeking and browsing including system's ability to facilitate user's "information journey" [5]. Different types of student's will have variable needs and these needs are likely to change over time. A digital library management system must take proactive steps to accommodate changes, it cannot be a "passive warehouse of static information" and should "support students" overall information work in context" [6].

This chapter presents a review of the literature related to library system management and discuss web-based library service also it headline the benefits of automate system over manual system final explain the software tools used to construct the web site,

2.2 The Library Management System

The library management system is a web-based widespread information management system which realizes information storage and query. Through the system requires preliminary design, detailed design, coding and testing, the developer could get a good experience of coordination and hands-on development capabilities. The book search and lending management system which were developed are an important part of the whole library management system, mainly for the retrieval, query and lending of the books in the library. Those are the epitome of the main library management system [7].

2.3 Web-based library service

Since the focus was on services provided by academic libraries via the library's Web site, "Web based services" is the preferred terminology. Since Web-based library services are the reference object of the quality construct, it is important to first provide a clear understanding of them. Library services are described as services that facilitate the use of materials and information made available at a library, and which normally involve interaction between the user and the librarian. Historically, library services has typically meant reference and information desk services, reader education programs, interlibrary loan, and bibliographic search services.

Over the last two decades, however, technology has been used to introduce many new services, either by delivering existing services via electronic media, or by developing and implementing entirely new services for search, delivery, and use of information. Some examples of these modern library services include: access to electronic or digital collections such as online databases, electronic journals, e-books and digitized collections; and other services including web portals, personalized services, online library instruction, and online reference and help desk services, online document delivery, and electronic publishing.

A common term used to differentiate these services from traditional library services is electronic services. Most studies in digital library research also use the term electronic services to denote digital library services. Typically, institutional libraries deliver these services through a Web site accessible on the Internet—thus the description of "Web-based services" is used to refer to services accessible via an academic library's Web site, as to differentiate from purely digital library services that may be delivered by means of a digital library [8].

2.4 The Automated System Have Following benefits over manual system [9].

Data handling: It captures the information from different sources, presents it systematically and organizes its storage for efficient retrieval. **Quality control:** Paper work would totally be eliminated in the new system as failure data is directly fed into system.

System reliability: System is very reliable as no skipping, missing of data is possible.

Maintenance: No data mismatching is possible due to various checks incorporated in the system.

Accuracy: The data provided by the system will be accurate as all Processing steps are algorithmic and computer based.

Centralized Storage: The data is Processed and stored at central location.

Security: The data is processed and stored using .net framework based application. Hence all the security features related to .net framework are used.

2.5 Software Tools Used

2.5.1 ASP.NET

ASP.NET is part of the Microsoft .NET Framework. To build ASP.NET pages, you need to take advantage of the features of the .NET Framework. The .NET Framework consists of two parts: the Framework Class Library and the Common Language Runtime.ASP.NET introduces runtime services and a well-engineered class library for greatly enhancing Web development. ASP.NET is built from the ground up to be an extensible, feature-rich way to handle HTTP requests. ASP.NET is built from the ground up to be a comprehensive framework for writing Web applications. All the parts of the framework execute together to handle requests.ASP.NET provides a significant number of very powerful features. including: An object-oriented framework for defining applications, Separation of user interface declarations (HTML) and application logic, Compiled code for executing application logic, Configurable session state management, Built-in data caching, Built-in content caching[10].

2.5.2 C#

C# is a language targeted at developers for the Microsoft .NET platform who have already worked with a C-like language such as C, C++, or Java. Unlike previous versions of C or C++ for the Microsoft Windows platform, C# code runs under a managed execution environment. Microsoft portrays C# as a modern and innovative language for .NET development and continues to deliver on that with new features such as Language Integrated Query (LINQ) [11].

2.5.3 SQL Server

SQL Server brings with it a vast array of new features, graphical user interfaces (GUIs), and management tools. The following list should give you a brief taste of these [12]:

- The ability to host the .NET Framework common language runtime (CLR) in the database so that you can now program assemblies in C# *in the database*.
- Deep support for XML, via a full-fledged XML data-type that carries all the capabilities of relational data types. You can enter an XML document into your database, have it validated, and extract just part of the document.
- A completely revamped GUI management tool called SQL Server Management Studio (SSMS), which provides a single, integrated environment for most management/administration requirements.

2.5.4 Cascading Style Sheets (CSS)

Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language.it is a cornerstone specification of the web and almost all web pages use CSS style sheets to describe their presentation.CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts.

This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content (such as by allowing for table less web design).CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. It can also be used to allow the web page to display differently depending on the screen size or device on which it is being viewed. [13]

Chapter Three System Implementations

3.1 Introduction

This chapter presents in details the design and implementation of the proposed system. The environment for the development of the "web based library system for theses and graduation researches documents" in this project has been tested to operate on any computers, laptop or PC. The system will operate in a single system environment under windows operating system using the Internet Information Service (IIS) server. The stages of implementation are described in Sections below.

3.2 Designs of the System

The system consists of three main parts, the first view by all students (shared page) to display and download documents only, the second for member students, and the third for administrators. The figure 3.1 show the general flow chart of system.



Figure 3.1: General flow chart of system

3.3 Public Pages

These are general pages that anyone can browse them. They include the home page (the universities page), the colleges page, the departments page, and the documents page.

3.3.1 Home Page (Universities Page)

The home page contains the names of universities, each university name is a link when clicked leads to colleges associated with this university. Also it contains the login button (which is a link that forward clients(students) to login page), and the registration button (which is a link forward to register new student page). Figure 3.2 shows the home page of the web based library system.



Figure 3.2: home page

When the student logins, two icons will appear on the home page. The first contains a personal photo and the second contains link photo lead to control page (adding or view added documents). Figure 3.3 shows the home page after login.



Figure 3.3: Home page with login

3.3.2 Collages Page

This page contains the names of colleges, each college name is a link that leads to departments of pointed collage link. Figure 3.4 shows the page that contains the names of colleges associated with the selected university.



Figure 3.4: collages page

3.3.3 Departments Page

This page contains the names of departments which belong to selected collage, each department name is a link that leads to documents related with that department. Figure 3.5 shows the page that contains the names of department associated with the selected collage.



Figure 3.5: Departments Page

3.3.4 Documents Page

This page contains a table with the names of documents (theses and graduation projects) depending on the university, college, and department chosen.. Figure 3.6 shows the documents page.



Figure 3.6: documents page

3.4 Member students page

This page contains the names of documents assigned to each student. Where appear only the documents for the student who logins or make new registration. This page is the control panel for member students, through which the student can add or delete a document, as well as view the added documents. Figure 3.7 show the member students page.

| اهلا :اسماعیل صالح عارف | تسجيل الغروج | الجامعات | نسافة مشروع | | |
|-------------------------|---------------------------------|----------------------------|------------------|--|------------|
| | | | | | l lo |
| | بحث تخرج | نوع الدراسة | | | |
| رج ورسائل الماجستير | مكتبة الكترونية لبحوت الند 1 | الموضوع عدد المشرفين | نوع الدراسة | اسم المشروع او الرسالية | |
| | م.م اسماعيل صالح عارف | المشرف | بحث تخرج | internet security | حذف تفاصيل |
| | 2 انس عبدالجبار ابراهیم | عدد الطلاب الطالب الاول | رسالة ماجستير | internet security2 | حذف تفاصيل |
| | عبدالرزاق علي جدعان | الطالب الثاني | بحث تخرج | مكتبة الكترونية | حذف تفاصيل |
| | 2020 | السنة الدراسية | بحث تخرج | مكتبة الكترونية لبحوث التخرج ورسائل الماجستير | حذف تفاصيل |
| | chapter two.docx | تحميل المللف | | | |
| :01 م | 53:14 25/06/2020 | تاريخ الرفع | | | |

Figure 3.7: student member page

3.5 Administration Pages

The web site administrator can add a university with its colleges and departments, and modify or delete it. The admin can also add new students and update their data. the admin able to view, modify and delete the all the documents added by all student, Figure 3.8, 3.9 show the pages of administrator.

| | تسجيل الغروج | اهلا :اسماعیل صالح عارف | | نافذة الجامعات | اضافة مشروع | an Africana (A. G. 1999) (a feed of the African African | |
|-------|--------------|----------------------------|---|-------------------------------|--------------------|--|-------------------------|
| | | | اضافة جامعة | | ، الجامعة: | اسم | |
| and a | | (| حذف جامعة | | الجامعة: بنداد | اختار | |
| | اضافة كلية | ~ | بغداد | اختار الجامعة | | | اسم الكلية |
| | اضافة قسم | ¥ | ینداد | اختار الجامعة اختار الكلية | | | اسم القسم |
| JII- | | | · | نېلى | اختار الجامعة | | |
| | الله الم | | <u>اسم القسم</u> بيا النفط و المعادن | قسم جيو لو ج | | الديم الكارية | |
| | حقق تعيل | | حياة | قسم علوم ال | | | كلية التربية الإساسية |
| | حقق تعيل | | کیمیاء | قسم علوم ال | الاقتدام حذف تعديل | رفة | كلية التربية للعلوم الص |
| | هنگ نعبل | | لاحيائية | قسم التقانة ا | الأضلح هذف خميل | | كلية العلوم |
| | حقق تعيل | | حاسوب | قسم علوم ال | | | كلية الزراعة |
| 1 | حقق تعيل | | رياضيات | قسم علوم ال | 1 | 2 | |
| - | منف تعدل | | فيزياء | قسم علوم ال | | | |

Figure 3.8: Editing university, colleges ,department page



Figure 3.9: User information page

3.6 Login and New Registration Pages

The login page is used to sign in to the admins page or the member students page. The registration page is used to register a new student. Figure 3.10, 3.11 show the login and registration page.



Figure 3.10 : Login page



Figure 3.11 : Registration page

Chapter Four

Conclusion And

Suggestions

4.1 Conclusions

In this research we have built system for library management for theses and graduate project documents by using Asp.Net with c# application, which added high flexibility in the process of storing an saving data. Finally, our project is able to arrange the documents in a good way so that the document can be chosen according to the university, college and department. This helps a lot in facilitating the research process. The student can also add new documents (thesis or graduation research) by registering on the site, where they can add and delete the documents they have added.

4.2 Suggestions

Our suggestions for future work are:

- 1. Add the possibility to system for supporting the scientific researches ,books and lecturers.
- 2. We wish to adopt the system to be used in library at Science College.

References

- [1] A. Singhal and E. M. Rogers, *India's information revolution*. SAGE Publications Pvt. Limited, 1989.
- [2] J. Fagerberg, "A technology gap approach to why growth rates differ," *Research policy*, vol. 16, no. 2-4, pp. 87-99, 1987.
- [3] B. Ekbal, "Information Technology and Higher Education," *XXIII IASLIC*, 2001.
- [4] D. Shin, H. Jang, and H. Jin, "BUS: an effective indexing and retrieval scheme in structured documents," in *Proceedings of the third ACM conference on Digital libraries*, 1998, pp. 235-243.
- [5] I. H. Witten, D. Bainbridge, and S. J. Boddie, "Power to the people: end-user building of digital library collections," in *Proceedings of the 1st ACM/IEEE-CS joint conference on Digital libraries*, 2001, pp. 94-103.
- [6] A. Kumar, R. Saigal, R. Chavez, and N. Schwertner, "Architecting an extensible digital repository," in *Proceedings of the 2004 Joint ACM/IEEE Conference on Digital Libraries, 2004.*, 2004: IEEE, pp. 2-10.
- [7] R. Egunjobi and R. Awoyemi, "Library automation with Koha," *Library Hi Tech News*, 2012.
- [8] K. Kiran and S. Diljit, "Modeling web-based library service quality," *Library & Information Science Research,* vol. 34, no. 3, pp. 184-196, 2012.
- [9] L. Haravu, "Emerging initiatives in library management systems," *ICAL Technology, Policy and Innovation,* pp. 240-246, 2009.
- [10] Z. Yuelian, *Data Analysis and Knowledge Discovery*, vol. 21, no. 1, pp. 73-75, 2005-01-25 2005, doi: 10.11925/infotech.1003-3513.2005.01.20.
- [11] X.-h. XU and X.-j. CHENG, "The Realization of an E-Mail Management System Based on C# .NET [J]," *Journal of Beijing Institute of Graphic Communication,* vol. 6, 2007.
- [12] K. Delaney, *Inside Microsoft SQL Server 2000*. Microsoft Press, 2000.
- [13] T. A. Powell, *HTML & CSS: the complete reference*. McGraw-Hill New York, 2010.

الخلاصة

نظام المكتبة على شبكة الإنترنت هو مشروع يهدف إلى تطوير نظام حاسوبي للحفاظ على جميع الأعمال اليومية للمكتبة بصورة الكترونية. هو تطبيق على شبكة الإنترنت تم تطويره لمساعدة الجامعات على أن يكون لديها مستودع يحتوي على جميع مشاريع التخرج و الرسائل الجامعية التي يقوم بها الطلاب. تتضمن وظائف النظام عرض مستندات مشروع التخرج وتنزيلها واستعارتها.

النظام يستخدم ASP.NET مع لغة البرمجة #C وقد تم ربطه بقاعدة بيانات SQL لتخزين النتائج. يحتوي النظام على جزأين مهمين لوصول الطلاب ووصول المشرف. سيتم استخدام وصول الطلاب من قبل الطلاب وسيتم تقسيمه إلى قسمين ، الأول للطلاب الضيوف ، الذين يقومون بتنزيل المستندات فقط ، والثاني للطلاب الأعضاء الذين يضيفون الرسائل ووثائق أبحاث التخرج. الجزء الثاني مخصص لوصول الإدارة. هذا الجزء من النظام مسؤول عن إضافة وحذف الجامعات والكليات والأقسام التابعة لها.

يتم تطوير هذا المشروع لمساعدة الطلاب وكذلك موظفي المكتبة على الحفاظ على المكتبة بأفضل طريقة ممكنة وكذلك تقليل الجهود البشرية.

جممورية العراق وزارة التعليم العالي والبحث العلمي جامعة حيالي كلية علوم قسم علوم الداسوب



نظام المكتبه على شبكه الانترنت للرسائل الجامعيه وبحوث التخرج

بحث مقدم الى مجلس كلية العلوم – جامعة ديالى – قسم علوم الحاسوب كجزء k من متطلبات الحصول على شهادة البكالوريوس في علوم الحاسوب

> اعداد انس عبد الجبار ابراهیم عبدالرزاق علی جدعان

> > اشرف

م.م اسماعيل صالح عارف