

# Design and Implementation of Investigative Committee System

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## Abstract

Database management system is important and fundamental at present. Access databases are important and efficient storage tools. In this system, a database management system is designed and built to fulfill the requirement of the Legal Affairs Department - Investigative Committees Division - University of Diyala. The database was built using Microsoft Access databases, and the code was built using the C # programming language. This system is designed to be easy to handle for any user as an example of (Google material design) technology for the purpose of increasing interaction between the user and the program. It also contains an alert system in the event of the expiration of the investigative commission period. In this application you can easily search for any committee and its details. It also provides statistics for committees that were formed during the year or a specific month or period. It also contains reports for the purpose of printing results or saving them in various formats (PDF-WORD-EXCEL), which facilitates its compatibility with most office programs. In addition, it has a system for data protection and preservation from any unauthorized person.

**Keywords:** Investigative Committee, System, DBMS, C#, Google Material Design, WPF, XAML, Reports, Alarm, Alert, Legal Affairs.

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## Introduction

Databases are incredibly prevalent as they underlie technology used by most people every day if not every hour. Databases reside behind a huge fraction of websites; they're a crucial component of telecommunications systems, banking systems, video games, and just about any other software system or electronic device that maintains some amount of persistent information. In addition to persistence, database systems provide a number of other properties that make them exceptionally useful and convenient: reliability, efficiency, scalability, concurrency control, data abstractions, and high-level query languages. Databases are so ubiquitous and important that computer science graduates frequently cite their database class as the one most useful to them in their industry or graduate-school careers [1].

This system is Presented as a part of the “Electronic Governance program” as a program besides another fifteen

programs. This designed program is currently working at the Legal Affairs department of the University of Diyala. This department has an important role at the administration process of the University presidency.

One of the important tasks of this department is to manage the procedure of investigative committees. The university president and his assistant, according to the regulations, have the authority to direct the legal Affairs department to issue a university order to investigate a situation. This university order comes usually with two members in addition to another person to be in charge of the committee. This committee investigates the issue and decides what is needed to be done through another university order called the committee recommendations order. The committee decides it this order to either close the case or to punish some people who were behind the bad consequences of the situation. Therefore designing a system to manage all those procedures in addition to create important statistics out of that will be the target of this project.

In this paper, we will Design and Implement a database management system to manage and archive the information of the investigative commission orders in the Department of Legal Affairs of the University of Diyala.

## Software Requirement

The following software tools are used to design and implement the proposed Database management system:

- Microsoft Access 2010. (For database creation) [2].
- Visual Studio 2015 Professional. (For C# coding and connection with MS Access database).

## APIs

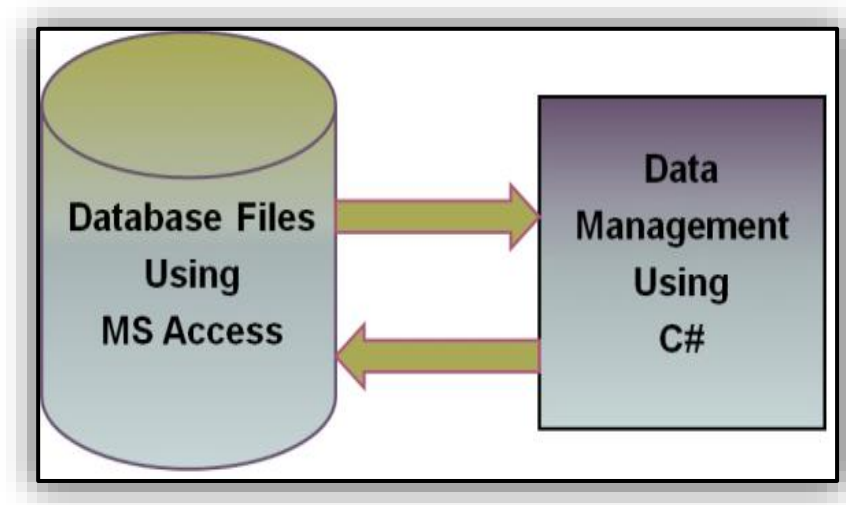
The APIs are used in this system to increase the performance of application and since they are easy to be implemented it:

- WPF (Windows Presentation Foundation) [3].
- XAML markup language [4].
- Google Material Design.

## System Implementation

The Diagram of the proposed database is shown in figure (1.a). The proposed system divided into two main parts: The first part is the database files which are created and stored in MS Access using Microsoft Access program [5]. The second part is the data entry forms and reports. These

forms and reports are created by C# Language using Visual Studio as shown in figure (1.b). In the next sections, sufficient details about both parts are presented..



**Fig 1.a :** Diagram of the proposed system.

### Database Management System Analysis

The proposed system contains 16 table created by MS Access Database. These tables have been linked by the foreign key for the purpose of working cascade update. Cascade deletes data if the data in main table is changed. Some tables will be read-only created for storing static data.[6][7] Figure (2) shows the database files of the proposed system.

### Data Management Window

The data management windows are created using C# Language and XAML. The required software tools for C# language must be installed. This Software is Visual Studio 2015. By using XAML tags we will create user interfaces[8] as shown in figure (3).

- 1- Log on Window: - This window used to access application for special user, shown in figure (4).
- 2- Create a committee Window: - This window is used to create a committee and save or print it, shown in figure (5).
- 3- Review Archive Window: - This window is used to review all committee and we can search about any committee, delete it and update as shown in figure (6).
- 4- Create Recommendation Window: - This window used to create recommendation, shown in figure (7).

- 5- Create Member Replace Window: - This window is used to create report for replacing a member as shown in figure (8).
- 6- Create Pull Hand Window: - This window used to create report for “pull hand”, which is an administrative procedure in which the investigation committee may recommend, after the approval of the supreme authorities to stop the person concerned from doing his work and validity until the decision of the committee. The pull hand window of proposed system is shown in figure (9).
- 7- Statistics Window: - This window used to review statistics of all committees as shown in figure (10).
- 8- Settings Window: - This window contains the settings of Application such as alarm, password, member names and etc. shown in figure (11).
- 9- Help Window: - This window contains tutorials for this Application and contains logs of login data, shown in figure (12).
- 10- Alarm Notification: - Alarm notification is used to alert the user if any committee time out,[9] shown in figure (13).
- 11- Reports: - The sample of report shown in figure (14) and figure (15).

The user guide of this project has been offered to the Department of Leggal Affairs at the University of Diyala

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3 references
public static List<ShowTemplate> SelectAllCmd()
{
    List<ShowTemplate> list = new List<ShowTemplate>();
    cmd = new OleDbCommand("SELECT * FROM commands", ConnectDb());
    OleDbDataReader reader = cmd.ExecuteReader();
    int idCount = 1;
    while (reader.Read())
    {
        ShowTemplate st = new ShowTemplate() { ID = idCount,
            CmdNumber = Convert.ToInt32(reader["CmdNumber"]),
            CmdDate = reader["CmdDate"].ToString(),
            CmdConcern = reader["CmdConcern"].ToString(),
            ExpDate = reader["ExpireDate"].ToString(),
            CmdType = reader["CmdType"].ToString() };
        list.Add(st);
        idCount++;
    }
    con.Close();
    return list;
}
    
```

Fig 1.b : Sub code to read all records of Committees from database and return it as objects list.

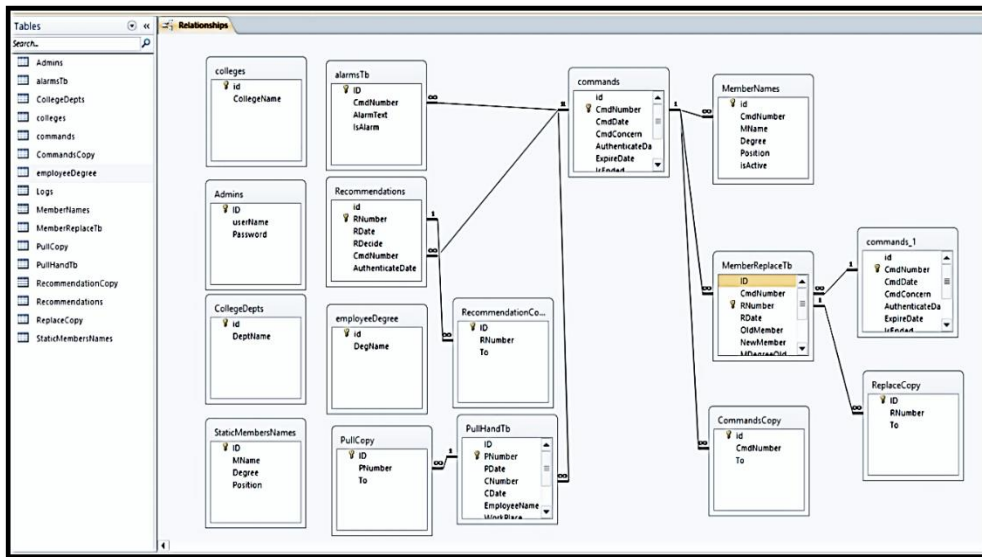


Fig (2): Analysis of the proposed system database.

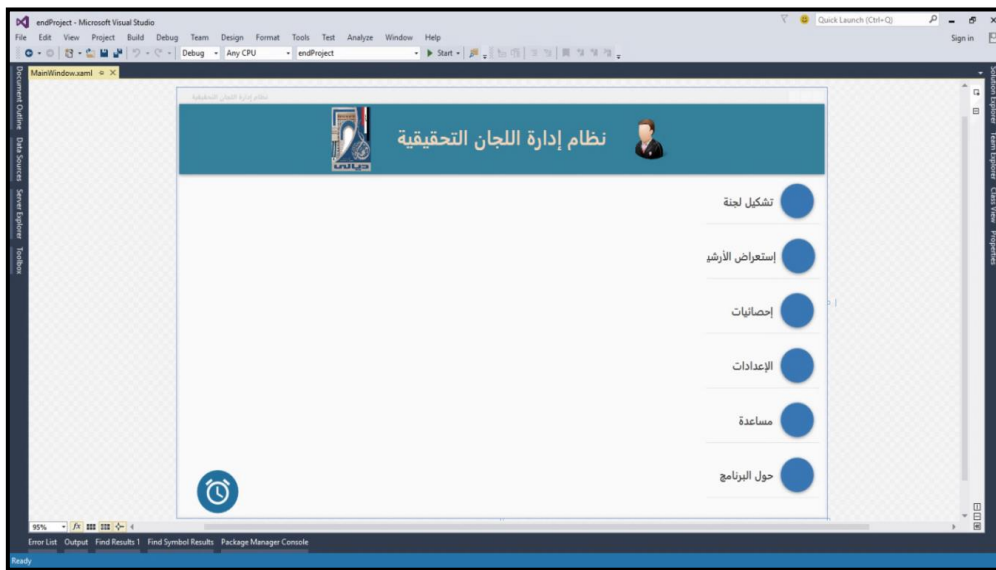


Fig (3): Main window of proposed system

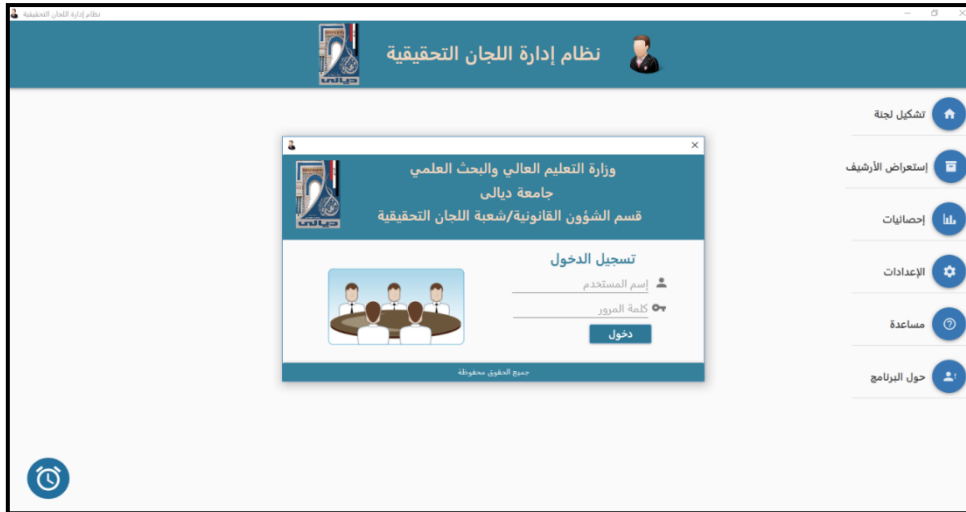


Fig (4): Log on window of proposed system

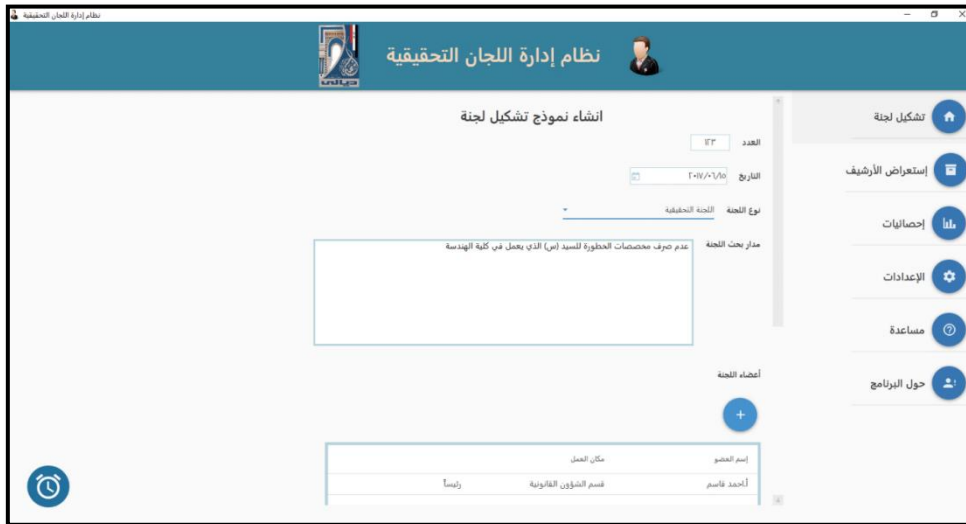


Fig (5): Create a committee window of proposed system

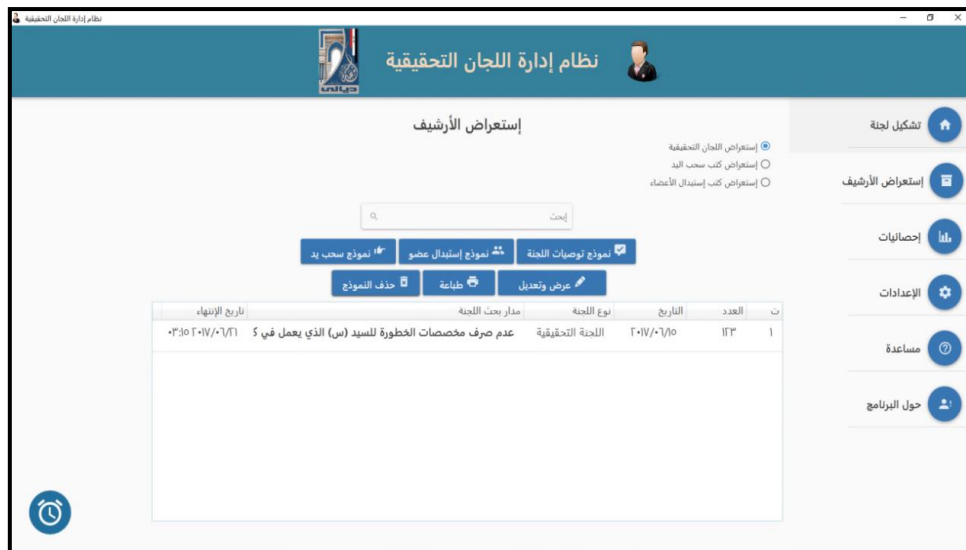


Fig (6): Review archive window of proposed system

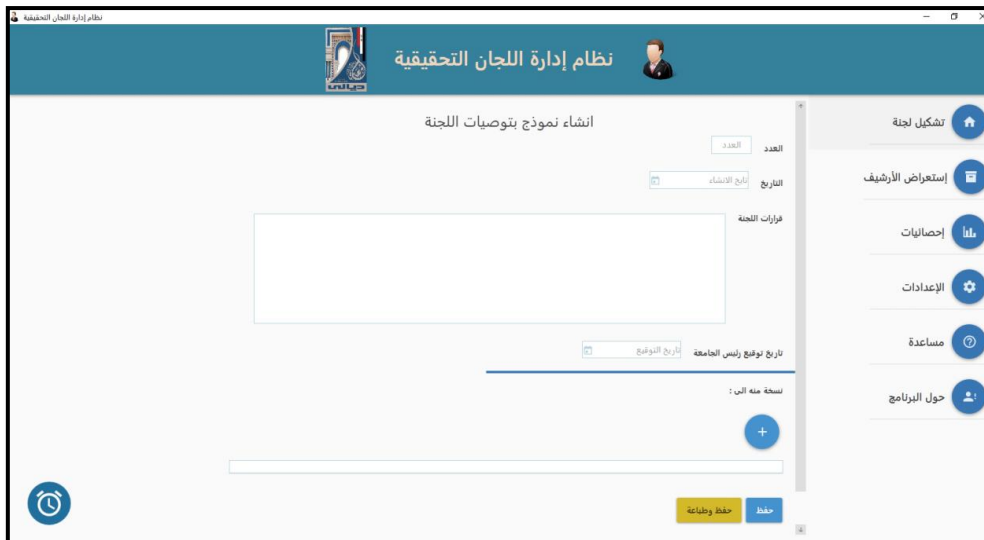


Fig (7): Create recommendation window of proposed system.

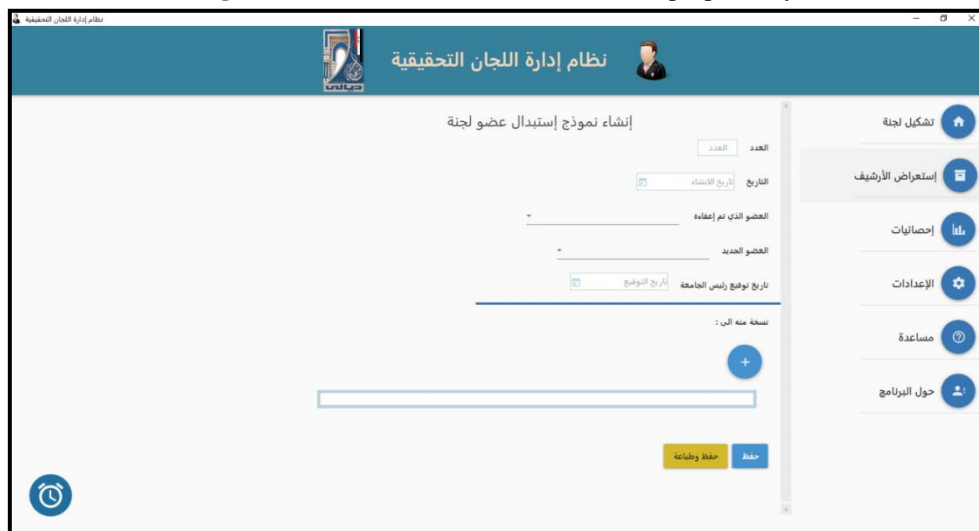


Fig (8): Create member replace window of proposed system

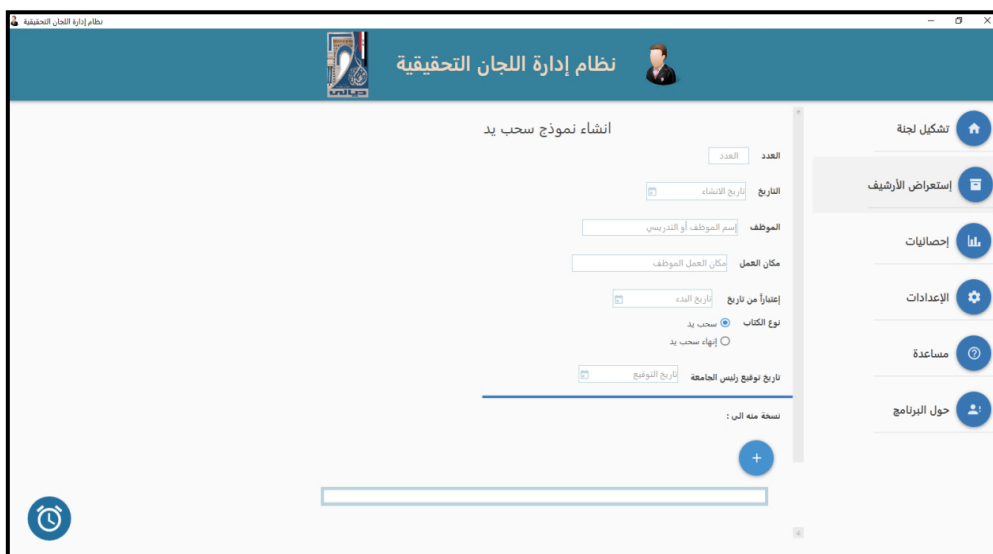


Fig (9): Create pull hand window of proposed system



Fig (10): Statistics window of proposed system



Fig (11): Settings window of proposed system

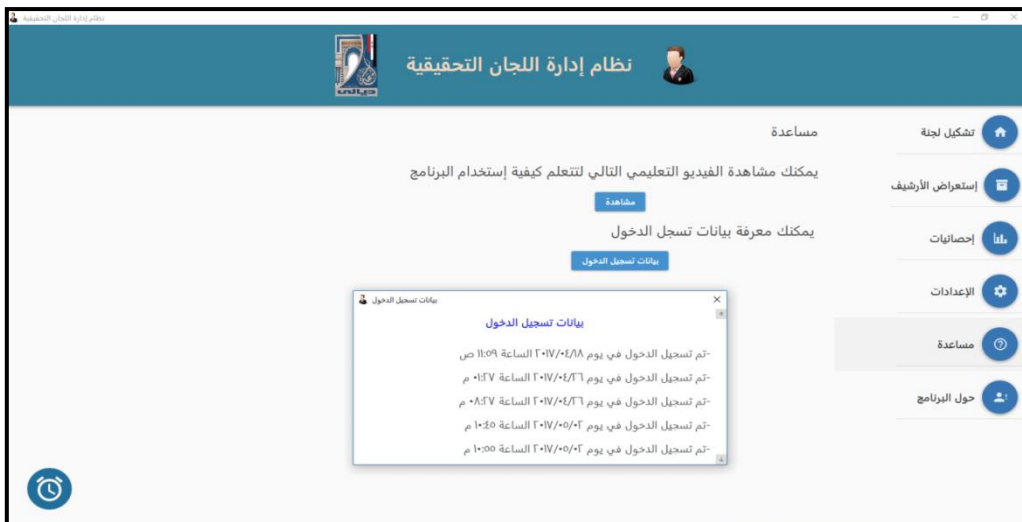


Fig (12): Help window of proposed system.



Fig (13): Alarm notification of the proposed system



Fig (14): Report of creates committee of



Fig (15): Report of a committee

**Conclusion**

In this project, designing and implementing of database management system, to archive investigative commission orders in the Department of Legal Affairs at the University of Diyala, is done using C# and MS Access. Both tools can be considered as an efficient pair for such kind of data management systems. Good and clear data management forms can be created using Windows Presentation Foundation (WPF) with Google material design theme. MS Access Quick and easy to create database systems. MS Access produces flexible and adaptable database systems. Visual studio 2015 is best environment to develop and coding applications. Further, the open source access to visual studio can be considered as an important feature to encourage other students and researchers to use it in their applications. In conclusion, the proposed system is simply capable of: Creating investigative committee orders and suggesting members; replacing members; printing out the recommendation of the committees; filing those orders, recommendations and their documents; and making statistics and report in any suggested period of time.

**Acknowledgment:**

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