

**University of Diyala**  
**College of Science**  
**Computer Department**



## **Diyala Retirement Department System Project**

**Presented by**  
**Ali Amer Abd AL kader**  
**Naqe Dakel Ali**

**Supervised by**  
**MS. Juliet Kadum**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ

صَدَقَ اللَّهُ الْعَظِيمِ

سورة المجادلة (١١)

# الأهداء

أهدي هذا العمل المتواضع إلى أبي الذي لم يبخل علي يوماً بشيء

وإلى أمي التي زودتني بالحنان والمحبة

أقول لهم: أنتم وهبتموني الحياة والأمل والنشأة على شغف الاطلاع والمعرفة

وإلى إخوتي وأسرتي جميعاً

ثم إلى كل من علمني حرفاً أصبح سنا برقه يضيء الطريق أمامي

## شكر وتقدير

الحمد لله رب العالمين، والصلاة والسلام على أشرف الخلق والمرسلين نبينا محمد صلى الله عليه وسلمو على آله الطيبين الطاهرين أول الشكر وآخره أتقدم به إلى المنعم الباري عز وجل (الله) سبحانه وتعالى، الذي أحاطني برعايته الإلهية العظيمة، ويسر لي كل عسير، وألهمني الصبر والقوة في شق طريقي نحو البحث العلمي. وأتوجه بخالص شكري وتقديري وعظيم امتناني إلى أستاذتي الفاضلة القديرة الأستاذة جوليت كاظم داوود لما أبداته من حسن رعاية ورحابة صدر وروح علمية مخلصة، وما قدمته لي من توجيهات ونصائح سديدة وملاحظات قيمة ومستمرة فدعائي لها بالخير والعافية. وإلى من تعجز كلماتي وتنحني هامتي لعظيم عطائها، شمس حياتي التي لا تغيب، وسبيلي إلى الجنة، إلى من وصفتها منذ صغري بالجبل في شموخها، وعظمتها، وبالجمل في صبرها وجلدها، وكاندى في حنانها الذي لا ينتهي، إليك (يا أمي) أطال الله في عمرك في صحة وخير حال. وإلى كل من شدوا أزرني وشاطروني أمري لأكمل الخطوات لولا هم بعد الله سبحانه وتعالى لاعتذر القلم عن رسم الكلمات (إخوتي) أطال الله أعماركم بالصحة والسعادة وسدد طريق الخير لخطاكم. وأخيراً لا بد من كلمة شكر ومحبة وامتنان إلى كل من شد من أزرني، وكل من ساندني في عملي وأعطاني القدرة والإصرار في تحقيق هدفي حتى لو كان بكلمة تشجيع واحدة، وممن فاتني ذكر أسمائهم، جزاهم الله خير الجزاء.

## **Supervisor Certification**

Educational curriculum I certify that this "Diyala Retirement Department System" has been prepared under my supervision in the Department of Computer Science to the College of Science as meeting the requirements for the degree of science in computer science

**Signature:**

**Name: Ms. Juliet Kadum**

**Date:   /   / 2020**

## **Abstract**

Diyala's pension system is a very important system in serving people in getting rid of crowds in the retirement department. This system includes queues that include retirement departments that facilitate the service of youth and the elderly Women when reviewing the retirement department. The system provides a set of services to facilitate the service of people in the retirement department, because it allows people to record a sequence for each of the retirement departments a special serial code and is drawn to people through a connected printer but rather a calculator and is exposed on a plasma TV screen connected to a computer. Then it is also possible to know the number of people who served and who did not serve through the system served during the working time of each department, as well as all departments in a retirement department. The system was designed with Visual Studio version 2015, and the Visual Basic language is defined, where the tools are used to repeat operations and tools and other tools in the system This system is a daily offer for the purpose of ending the congestion in the retirement department and it is possible through the development of a project to restrict a database with Microsoft Access 2016 system to save the data in which the data is displayed in the system when moving to the database section

## **Table of Contents**

<b>Chapter</b>	<b>Subject</b>	<b>Page</b>
<b>CHAPTER ONE</b>	<b>INTRODUCTION</b>	
1.1	Introduction	1
1.2	Diyala constituency pension system	1
1.3	Problem Statement	2
1.4	Research Objective	2
1.5	Research Scope	2
1.6	Expected Contribution / Benefit	2
<b>CHAPTER TWO</b>	<b>LITERATURE REVIEW</b>	
2.1	Retirement	3
2.2	About the National Retirement Authority	3
2.2.1	First The State Employees' Pension Fund	3
2.2.2	Authority branches in the governorates	4
2.3	Retirement departments	4
2.3.1	The accounting department	4
2.3.2	The Archive section	4
2.3.3	The Military Department	4
2.3.4	The Civil Department	4

2.3.5	The retirement fund	5
2.3.6	The audit department	5
2.4	Disadvantages of Retirement circuit	5
2.5	Scheduling Algorithms	6
2.5.1	Priority Based Scheduling (PS)	6
2.5.2	The SJF scheduling algorithm (SJF)	6
2.5.3	Round Robin scheduling algorithm (RR)	6
2.6	Define and Used FcFs in the program system	7
2.6.1	Calculating Average Waiting Time	7
2.6.2	Problems with FCFS Scheduling	8
2.6.3	Advantages of FCFS	9
2.6.4	Disadvantages of FCFS	9
<b>CHAPTER THREE SYSTEM IMPLEMNTATION</b>		
3.1	Practical part of the system	10
3.2	System interface	10
3.3	Queue section	11
3.4	Service department	12
3.5	Department of Statistics	14
3.6	Screen section	14
3.7	About Us	15
3.8	program is designed	16

3.8.1	uses of Visual Basic	16
3.8.2	Advantages of Visual Basic	17
<b>CHAPTER FOUR</b>	<b>CONCLUSION AND SUGGESTIONS</b>	
4.1	Conclusion	18
4.2	Suggestions	19
	<b>References</b>	20

## List of Figures

<b>Figure</b>	<b>Title</b>	<b>Page</b>
<b>CHAPTER TWO</b>		
2.1	The implementation of the algorithm	8
<b>CHAPTER THREE</b>		
3.1	Login to System	10
3.2	Home Page	10
3.3	Cheek Queue Section	11
3.4	printer attached to the calculator	12
3.5	shown Service department	12
3.6	Added by clicking	13
3.7	Transfer service	13
3.8	Manager-specific interface	14
3.9	shown Screen section	15
3.10	About Us	15

# **Chapter One**

## **INTRODUCTION**

## **1.1 Introduction**

Diyala's retirement department system is a very important system in serving people. This system includes queues that include sections of the retirement department that facilitate the service of youth, the elderly and pregnant women when they review the retirement department. The system provides asset of services to facilitate the service of people in the retirement department, as it allows people to record a sequence for me in any of the retirement departments and the sequence number is printed by a printer that is connected to the calculator and given to the registrant according to the department that he wants to review and wait until his role in the audit appears through a visible Serial number on the plasma TV screen connected to the computer. Then it is possible to find out through the system the number of people served and not served during the day for each department, as well as all departments at the level of the Diyala Retirement Department. This system is designed using Visual Studio.

## **1.2 Diyala constituency pension system**

The Diyala Department retirement system is a program that is used because of the large number of crowds that occur in the retirement department, as it contains queues that include all sections of the retirement department, such as the main director, the computer department (accounting), the military department and the civil department. Or another section of retirement departments, and it also contains the service department through which it is possible to know the people who entered the service and who were transferred to another section and through it can be displayed on the screen the retirement departments and contains the statistics department, through which it is possible to know the number of people remaining in The queue receiving the service, in addition to the total number of servants as well as the total number of people entering the retirement department Where the system is used by connecting the computer to the TV required to display the system where each section has a special and serial code that is printed by the printer connected to the computer And give it to the person according to the department in the retirement department who wants to review it and watch on the screen until a serial number is known until he enters the required department until the review

### **1.3 Problem Statement**

The research problem is that many people make a lot of effort when going to the retirement department to review. Where the retirement department is full of crowds to a very high degree and among the elderly people their percentage is to review the retirement department. Through the Diyala Retirement Department system, where people who review the retirement department can record a sequence according to the department to be reviewed, the reviewer is given by printing it on a sheet containing a number. The sequence and the review date and waiting for the time for the sequence number to appear on the screen connected to the computer in order to perform the audit easily without any congestion or problems and thus we have solved a major problem.

### **1.4 Research Objective**

The goal of the Diyala Retirement Department system is to reduce the crowds in the Diyala Retirement Circle and facilitate the proper and comfortable service of people. The research focuses on promoting the end of crowds because people make an effort to go to the retirement department, including patients and the elderly, that this system enhances the ease of serving people during the review and is correct and comfortable in order to serve people.

### **1.5 Research Scope**

The research focuses on promoting the end of crowds in the retirement department because people suffer during the review from the many crowds and not serving them properly in the retirement department that this system promotes facilitating things in terms of serving people during the review without any crowds and in a correct and easy way.

### **1.6 Expected Contribution / Benefit**

The contributions of the Diyala Retirement Department system to help people reduce or end crowds in the circle and easily serve them correctly and get rid of crowds in the circle and gain the comfort of people during the review through the contribution from this system can serve people in easy and healthy ways, taking into account the elderly and facilitate their service in the best possible way.

# **Chapter Two**

## **LITERATURE REVIEW**

## **2.1 Retirement**

is the point at which a person completely stops working [1], [2] Many people are referred to retirement when they become ineligible to work due to old age and in most countries they receive half of the salary that was taken during work, and Germany was the first country to enter the pension system in 1880. At present, most developed countries have systems to provide pensions, which may be sponsored by the employers or the state. In many western countries this right is mentioned in the constitution.

## **2.2 About the National Retirement Authority**

This body aims to serve retirees in all their categories, including civilians, military and security forces, the implementation of all pension legislation, fix the services of state employees, lay the foundations and principles and issue instructions to facilitate the implementation process and raise proposals to higher bodies to develop the work for the better and implement decisions issued by the competent authorities and address the problems facing the application within The framework of these goals, the elimination of the extra links in the completion of the pension treatment, the introduction of automation and computer work in all the activities of the organization and the development of future plans to develop the work of the organization for the better, for the purpose of serving the retired segment of thousands Go as far as possible and ensure that they obtain their pension rights in the shortest possible time The National Retirement Authority consists of the following formations.

### **2.2.1 First The State Employees' Pension Fund**

The goals of the State Employees' Pension Fund are to calculate the pension rights covered by Law No. 27 of 2006 amending and collect contributions from state employees according to the above law and invest part of its money in investment portfolios according to the law to reduce the budget's burden. In addition to that, there are laws that the department applies: Consolidated Retirement Law No. 27 of 2006 amended by Law No. 69 of 2007 Investment Law No. 13 of 2006 Law of Selling and Renting State Funds No. 32 of 1986, which regulates how to invest the real estate of the state's departments by offering the department's properties for rent or investment The department's tasks are achieved through its returns represented in (collecting contributions from state employees, financial investments, subsidies or

grants. The symptoms of this pattern may be similar to I, but they may be less obvious often. Therefore, the disease may be diagnosed after several years of onset of symptoms, after complications. This type of diabetes was encountered only in adults until recently, but now occurs among children as well

### **2.2.2 Authority branches in the governorates**

It calculates the retirement rights of employees who are referred to retirement and all the variables that arise in relation to their salaries or heirs who are entitled to retirement rights in accordance with the law within the geographical location of the governorate, and each branch contains divisions (allocation, variables, human resources, financial, accounts of retirees, calculator, files and division Auditing Authority (before the disbursement) for branches that apply the decentralized system, as well as calculating the excess expense and the discharge of retired military and security forces and their heirs who receive their salaries from the governorate.

### **2.3 Retirement departments**

We will explain some sections of the retirement department about their work through which we serve people in the retirement department.

#### **2.3.1 The accounting department**

is one of the departments of the retirement department that organizes all incoming and outgoing accounts for the retirement department and includes all civil and military categories and organizes advances and loans for military and civil retirees as well as is interested in organizing advances and loans for employees of all categories

#### **2.3.2 The Archive section**

is one of the departments of the retirement department through which all files and information of civilian and military retired people and martyrs are preserved according to a special program for the department through which information and files can be obtained at any time, the archive is considered one of the very important places as it helps to protect a lot of the files for retirees and can be referred to after many years and search for them.

#### **2.3.3 The Military Department**

is the section for military retirees, martyrs and beneficiaries, where all their affairs are organized from loans or advances or the receipt of the retirement amount.

### **2.3.4 The Civil Department**

is one of the departments of the Retirement Department, which is for civilian retirees of all groups, where the pension, loans and advances are organized for retirees.

### **2.3.5 The retirement fund**

is the department responsible for delivering pensioners' salaries or their loans and it is also responsible for receiving installments of loans and advances from civilian or military retirees.

### **2.3.6 The audit department**

is a person who works within the department's internal audit department who performs internal audits and assumes their responsibility. As the internal audit is a type of administrative discipline from an activity that focuses mainly on financial and accounting matters until it reaches the entire operational levels where it analyzes the economic activities of the department that was measured by reports Accounting.

## **2.4 Disadvantages of Retirement circuit**

- 1- Too many crowds and crowds in the retirement circle
- 2- Delay in serving people in the retirement department
- 3- The subject of fingerprint and its problems in the retirement department
- 4- Mishandling the elderly when they review the retirement department
- 5- Bribes in the department and the exploitation of people

Where these problems can be solved using the pension system through the scheduling algorithms that we used in the program

## **2.5 Scheduling Algorithms**

CPU scheduling deals with the problem of determining which [3] processes in the ready-made queue will be allocated to the CPU. There are many different CPU scheduling algorithms. We will describe many of these algorithms

### **2.5.1 Priority Based Scheduling (PS)**

- Priority scheduling is a non-preemptive algorithm and one of the most common scheduling algorithms in batch systems.
- Each process is assigned a priority. Process with highest priority is to be executed first and so on.
- Processes with same priority are executed on first come first served basis.
- Priority can be decided based on memory requirements, time requirements or any other resource requirement.

### **2.5.2 The SJF scheduling algorithm (SJF)**

is better than FCFS as the problems like the convoy effect (if a process is very large, the processes which arrive after that process has to wait for a much longer time even if they have a job of only a few time units) does not occur in this type of schedule. However, the longer processes may be delayed for a much longer period of time in this type of schedule which is its major drawback.

### **2.5.2 Round Robin scheduling algorithm (RR)**

is a type of preemptive type of scheduling used by the operating system for scheduling the processes in the Round Robin scheduling algorithm, a time quantum is decided which remains constant throughout the execution of all processes. Each process executes only for this much time. If within this time, the process completes its execution, then it is terminated. Else, it waits for its turn for again getting the processor for the same time quantum, and this process continues. Let us understand it further with the help of an example.

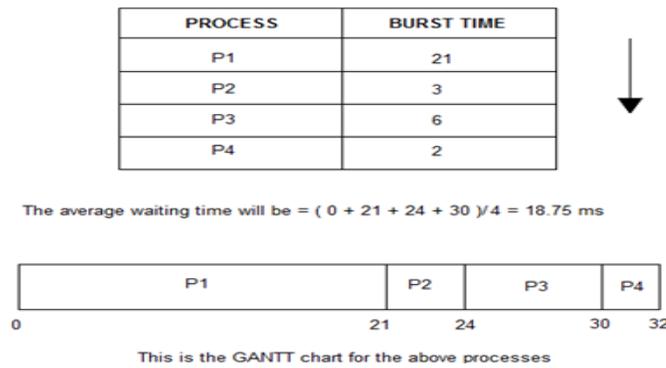
## **2.6 Define and Used (FCFS) in the program system**

First come first serve (FCFS) scheduling algorithm simply [4] schedules the jobs according to their arrival time. The job which comes first in the ready queue will get the CPU first. The lesser the arrival time of the job, the sooner will the job get the CPU. FCFS scheduling may cause the problem of starvation if the burst time of the first process is the longest among all the jobs. So we used this kind of algorithm in the program system in the "First come first serve" scheduling algorithm, as the name suggests, the process which arrives first, gets executed first, or we can say that the process which requests the CPU first, gets the CPU allocated first.

- 1- First Come First Serve, is just like FIFO (First in First out) Queue data structure, where the data element which is added to the queue first, is the one who leaves the queue first.
- 2- This is used in Batch Systems.
- 3- It's easy to understand and implement programmatically, using a Queue data structure, where a new process enters through the tail of the queue, and the scheduler selects process from the head of the queue.
- 4- A perfect real life example of FCFS scheduling is buying tickets at ticket counter.

### **2.6.1 Calculating Average Waiting Time**

For every scheduling algorithm, Average waiting time[5] is a crucial parameter to judge its performance. AWT or Average waiting time is the average of the waiting times of the processes in the queue, waiting for the scheduler to pick them for execution. Lower the Average Waiting Time, better the scheduling algorithm. Consider the processes P1, P2, P3, P4 given in the below table, arrives for execution in the same order, with Arrival Time 0, and given Burst Time, let's find the average waiting time using the FCFS scheduling algorithm.



**Figure (1.1)**

The average waiting time will be 18.75 MS

For the above given processes, first P1 will be provided with the CPU resources,

1- Hence, waiting time for P1 will be 0 P1 requires 21 MS for completion, hence waiting time for P2 will be 21 MS

2- Similarly, waiting time for process P3 will be execution time of P1 + execution time for P2, which will be  $(21 + 3)$  MS = 24 Ms.

3- For process P4 it will be the sum of execution times of P1, P2 and P3. The GANTT chart above perfectly represents the waiting time for each process.

### 2.6.2 Problems with FCFS Scheduling

Below we have a few shortcomings or problems with the FCFS scheduling algorithm:

1. It is Non Pre-emptive algorithm, which means the process priority doesn't matter. If a process with very least priority is being executed, more like daily routine backup process, which takes more time, and all of a sudden some other high priority process arrives, like interrupt to avoid system crash, the high priority process will have to wait, and hence in this case, the system will crash, just because of improper process scheduling.
2. Not optimal Average Waiting Time.
3. Resources utilization in parallel is not possible, which leads to Convoy Effect, and hence poor resource (CPU, I/O etc ) utilization.

### **2.6.3 Advantages of FCFS**

- 1- Simple
- 2- Easy
- 3- First come, First serve

### **2.6.4 Disadvantages of FCFS**

1. The scheduling method is non preemptive, the process will run to the completion.
2. Due to the non-preemptive nature of the algorithm, the problem of starvation may occur.
3. Although it is easy to implement, but it is poor in performance since the average waiting time is higher as compare to other scheduling algorithms.

# **Chapter Three**

## **SYSTEM IMPLEMENTATION**

## Chapter Three

### 3.1 Practical part of the system

When entering the system, you will be asked for a user name and password. Write in the user name (ad) and in the password (ad) then press the enter button as shown in the figure (3.1) below



Figure (3.1)

### 3.2 System interface

Upon entering the system, the system is divided into five main sections, which are the queue, service, and statistics section, and Monitor and about the system as shown in Figure (3.2) below.



Figure (3.2)

## Chapter Three

### 3.3 Queue section

This section contains the departments of the retirement department, which are the director, the deputy directors of accounting, auditing, military and civil retirement, victims of terrorism, accounts, folders, archives, a pension fund, and self, as shown in the figure (3.2)

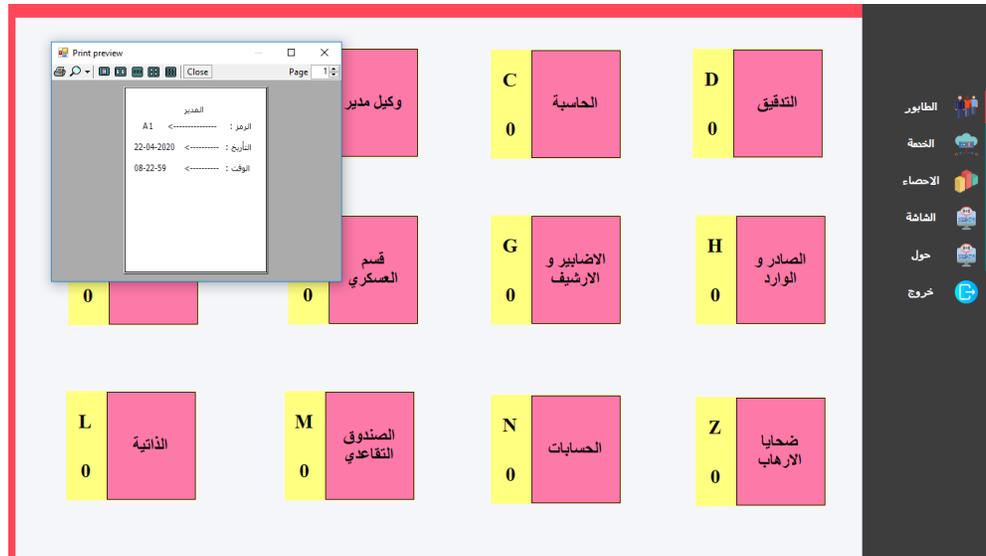


Figure (3.3)

Where each section of the retirement queues has its own serial code. When you click on the manager's section, a window will appear for us and a sequence and date and the time that coincides with the day and time of the review will appear as shown in the Figure (3.3)

After that, we can withdraw the sequence code that contains the date and time as well, in order to give it to the references via a printer attached to the calculator as shown in the Figure (3.4)

# Chapter Three

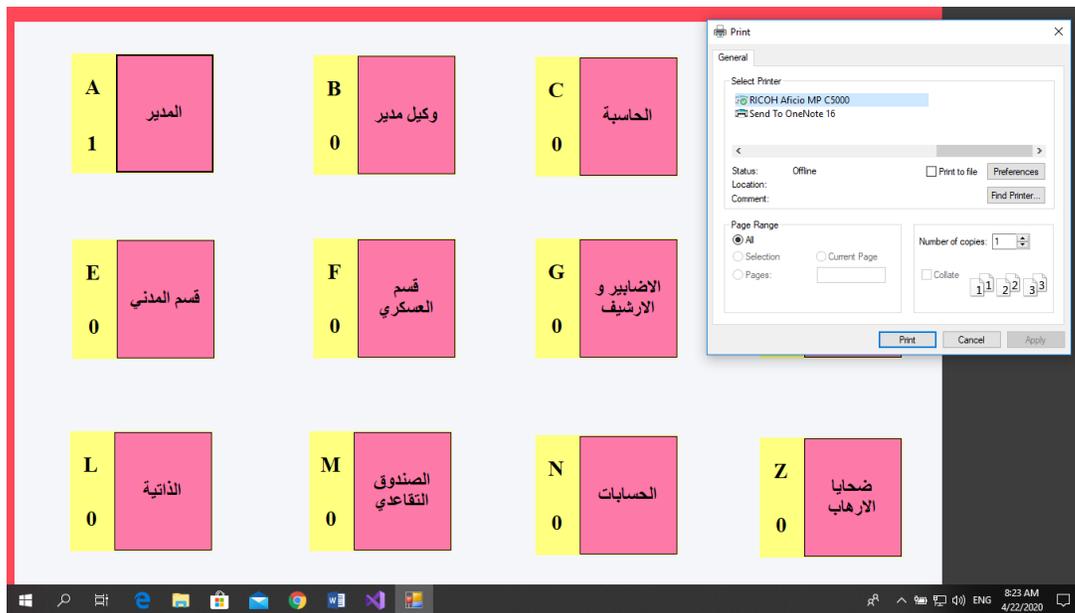


Figure (3.4)

## 3.4 Service department

Through this section, it is possible to control the entry of auditors to the section to be reviewed and control me displaying the serial code on the screen in order to know the entry to the service as shown in the Figure (3.5) and figure (3.6) where A1 was added by pressing the (+) sign and after entering the service and its service can add an owner The second sequence A2 by means of the (+) sign of the queue in which it was recorded



Figure (3.5)

# Chapter Three



Figure (3.6)

Also, references can be transferred to one of the retirement departments by clicking on Transfer Service and a window will appear to us in which we write the code of the desired section sequence as shown in the figure (3.7)



Figure (3.7)

## Chapter Three

### 3.5 Department of Statistics

Where this section is to know the number of people served for each section of the retirement department and the number of people who are not served and know the number of flute served to all departments and the number of people who are not served to all departments and the number of people served and not served together as shown in the figure (3.8)

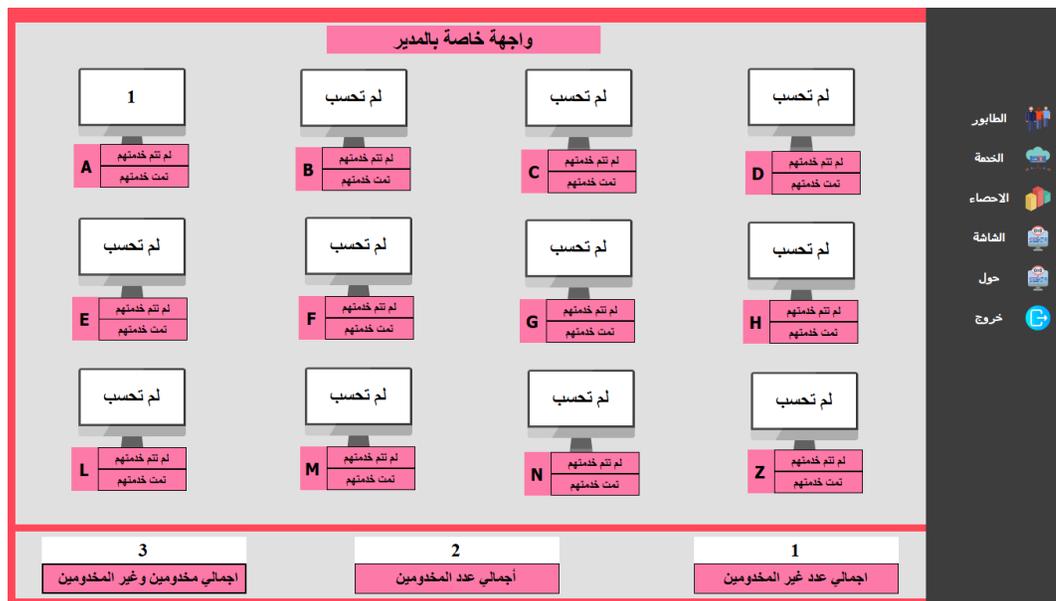


Figure (3.8)

### 3.6 Screen section

Where this section displays the serial code for me, the departments of the retirement department on a plasma TV screen connected to the computer for the purpose of seeing the references, the serial number of the department that wants to review as shown in the figure (3.9)

## Chapter Three

المدير تم دخول A2 الى الخدمة	وكيل المدير فارغ	الحاسبة فارغ	التدقيق فارغ
قسم المدني فارغ	قسم العسكري فارغ	الاضابير و الارشيف فارغ	الصادر و الوارد فارغ
الذاتية فارغ	الصندوق التقاعدي فارغ	الحسابات فارغ	ضحايا الارهاب فارغ

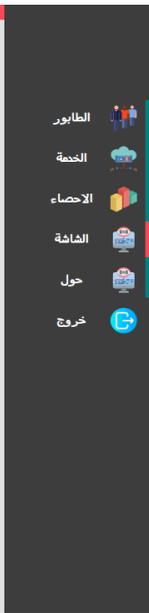


Figure (3.9)

### 3.7 About Us

The fourth and final section is about system and system designers as shown in the figure (3.10) below



Figure (3.10)

## Chapter Three

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### 3.8 program is designed

The program is designed using a language Visual Basic Visual Basic is engineered for productively building type-safe and object-oriented applications. Visual Basic enables developers to target Windows, Web, and mobile devices. As with all languages targeting the Microsoft .NET Framework, programs written in Visual Basic benefit from security and language interoperability. This generation of Visual Basic continues the tradition of giving you a fast and easy way to create .NET Framework-based applications. Visual Basic is a third-generation event-driven programming language from Microsoft for its Component Object Model (COM) programming model first released in 1991 and declared legacy during 2008. Microsoft intended Visual Basic to be relatively easy to learn and use. [6][7] Visual Basic was derived from BASIC and enables the rapid application development (RAD) of graphical user interface (GUI) applications, access to databases using Data Access Objects, Remote Data Objects, Visual Basic can also use the Windows API, which requires external function declarations. The final release was version 6 in 1998 (now known simply as Visual Basic).

#### 3.8.1 uses of Visual Basic

- Database software: Software for managing large databases using GUI.
- Simple and Complex software: Even a 10-year-old child can write a simple program to add two numbers. Complex softwires including database management, etc. also can be written using Visual Basic.
- Games: Yes, we can write games using VB. Literally, it is not for developing games, but we can use it.
- Easy developing: Programming in VB is a combination of visually arranging components or controls on a form, specifying attributes and actions for those components, and writing additional lines of code for more functionality. Since VB defines default attributes and actions for the components, a programmer can develop a simple program without writing much code.
- Simple: Forms can be created using simple drag-and-drop techniques

### **3.8.2 Advantages of Visual Basic**

- The structure of the Basic programming language is very simple, particularly as to the executable code.
- VB is not only a language but primarily an integrated, interactive development environment (IDE).
- The VB-IDE has been highly optimized to support rapid application development (“RAD”). It is particularly easy to develop graphical user interfaces and to connect them to handler functions provided by the application.
- The graphical user interface of the VB-IDE provides intuitively appealing views for the management of the program structure in the large and the various types of entities (classes, modules, procedures, forms, ...).
- VB provides a comprehensive interactive and context-sensitive online help system.
- When editing program texts, the “IntelliSense” technology informs you in a little popup window about the types of constructs that may be entered at the current cursor location.
- VB is a component integration language which is attuned to Microsoft’s Component Object Model (COM).

# **Chapter Four**

## **CONCLUSION AND SUGGESTIONS**

## Chapter Four

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### 4.1 Conclusion

Many people make great efforts to go to the retirement department to review their salaries, loans or retirement advances for all divisions, where they suffer from crowds and poor service properly, especially the elderly, who are the majority of retirees. In this system, we can get rid of crowds in the retirement circle and serve people more properly and easily than possible. Through the retirement department system, it records the special sequence according to the section to be reviewed in this system designed by the queues of the retirement departments where each section has its own sequence code, we click on the required section so a window appears with the sequence code with the registration time and date and we print it through a printer that is connected to the calculator We give it to the references and wait in the place of sitting until its serial symbol appears on a plasma TV screen that is connected to the computer in order to enter the department and thus we will eliminate the crowds in the retirement department and we have facilitated the service of people. It is worth noting that this system is based on the number of people served and not served in the retirement department at the level of each department and all departments together.

## Chapter Four

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### 4.2 Suggestions

In this system it contains retirement departments where we can add other departments. The system can be developed by adding a connected database, but instead, data saving tables, and according to this system, it can service other service departments that suffer from crowds, also, the same problem.

## References

[1] <http://www.mof.gov.iq/pages/ar/PublicPensionBody.aspx> A brief summary of the National Retirement Authority and its departments

[2] <http://www.mof.gov.iq/pages/ar/financialdepartment.aspx>- A brief summary of the National Retirement Authority and its departments The financial department of the following divisions

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[7] [Type 2 diabetes: The management of type 2 diabetes – NICE Clinical Guideline 66.](#)

## الخلاصة

نظام التقاعد في ديبالي هو نظام مهم جدا في خدمة الناس للتخلص من الزحام في قسم التقاعد. يتضمن هذا النظام طوابير تتضمن أقسام التقاعد التي تسهل خدمة الشباب والشباب والنساء عند مراجعة قسم التقاعد. يوفر النظام مجموعة من الخدمات لتسهيل خدمة الأشخاص في قسم التقاعد ، لأنه يسمح للأشخاص بتسجيل تسلسل لكل قسم من أقسام التقاعد رمزًا تسلسليًا خاصًا ويتم سحبه إلى الأشخاص من خلال طابعة متصلة بل حاسبة و تعرض على شاشة تلفزيون بلازما متصلة بجهاز كمبيوتر. ثم من الممكن أيضًا معرفة عدد الأشخاص الذين خدموا والذين لم يخدموا من خلال النظام الذي تم تقديمه خلال وقت عمل كل قسم ، وكذلك الإصدار ٢٠١٥ ، وتم تعريف لغة فجول استديو جميع الأقسام في دائرة التقاعد. تم تصميم النظام باستخدام فجول بيسك، حيث يتم استخدام الأدوات لتكرار العمليات والأدوات الأخرى في النظام هو عرض يومي لغرض إنهاء الازدحام في التقاعد قسم ومن الممكن من خلال تطوير مشروع لعمل قاعدة بيانات مع نظام لحفظ البيانات التي يتم عرض البيانات في النظام عند الانتقال إلى قسم قاعدة 2016 مايكروسوفت اكسس البيانات



جامعة ديالى

كلية العلوم

قسم علوم الحاسوب

## مشروع نظام دائرة التفاضل في ديالى

أعداد الطالب

علي عامر محمد القادر

نقيي كخيل علي

بأشراف

م.م. جولييت كاظم