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Ministry of Higher Education
and Scientific Research
Diyala University
College of Science
Computer Science Department**



Check identity of a student based on electronic gate of the University diyala

**A Project
Submitted to College of Science, Baghdad University in
Partial Fulfillment of the Requirements for the
Degree of B.Sc. in Computer Science**

BY

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ

سورة المجادلة

صدق الله العلي العظيم

إهداء..

إلى كل من فَيَّ الوجود بعد الله ورسوله
إلى من أَرْضَعَتني الحب والحنان
إلى القلب الناصع بالبياض (والدتي الحبيبة)

إلى من أحمل اسمه بكل فخر
إلى من أزال الاشوك عن دربي ليمهد لي طريق العلم
إلى القلب الكبير (والدي العزيز)

إلى كل من ساهم في تدريسي . الى كل من ارزقني العلم وأخص بالذكر مشرفتي
الاستاذ الفاضل الاستاذ (علي حسين فاضل)

شكر وتقدير

الهي لا يطيب الليل الا بشورك ولا يطيب النهار الا بطاعتك .. ولا تطيب اللحظات الا بذكرك ..
ولا تطيب الاخرة الا بعفوك .. ولا تطيب الجنة الا برؤية الله ﷻ.

لا بد لنا ونحن نخطوا خطواتنا الاخيرة في الحياة الجامعية من وقفة نعود الى أعوام قضيناها في
رحاب الجامعة مع أساتذتنا الكرام الذين قدموا لنا الكثير باذلين بذلك جهوداً كبيرة في بناء جيل
الغد لتبعث الأمة من جديد ..

وقبل ان نمضي اقدم اسمى آيات الشكر والامتنان والتقدير الى الذين مهدوا لنا طريق العلم
والمعرفة ..

الى جميع أساتذتنا الأفاضل ..

" كن عالماً .. فان لم تستطع فكن متعلماً، فان لم تستطع فأحب العلماء، فان لم تستطع فلا
تبغضهم "

وأخص بالشكر والتقدير (الاستاذ علي حسين فاضل) الذي كان عوناً لي في مشروعي هذا .

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CHAPTER ONE

INTERODECTION

1.1 Database Management System

DBMS stands for **D**atabase **M**anagement **S**ystem. We can break it like this DBMS = Database + Management System. Database is a collection of data and Management System is a set of programs to store and retrieve those data. Based on this we can **define DBMS** like this: DBMS is a collection of inter-related data and set of programs to store & access those data in an easy and effective manner.

- **What is the need of DBMS?**

Database systems are basically developed for large amount of data. When dealing with huge amount of data, there are two things that require optimization[1]: **Storage of data** and **retrieval of data**.

- ✓ **Storage:** According to the principles of database systems, the data is stored in such a way that it acquires lot less space as the redundant data (duplicate data) has been removed before storage. Let's take a layman example to understand this:
In a banking system, suppose a customer is having two accounts, one is saving account and another is salary account. Let's say bank stores saving account data at one place (these places are called tables we will learn them later) and salary account data at another place, in that case if the customer information such as customer name, address etc. are stored at both places then this is just a wastage of storage (redundancy/ duplication of data), to organize the data in a better way the information should be stored at one place and both the accounts should be linked to that information somehow. The same thing we achieve in DBMS.

- ✓ **Fast Retrieval of data:** Along with storing the data in an optimized and systematic manner, it is also important that we retrieve the data quickly when needed. Database systems ensure that the data is retrieved as quickly as possible.

- **Purpose of Database Systems**

The main purpose of database systems is to manage the data. Consider a university that keeps the data of students, teachers, courses, books etc. To manage this data we need to store this data somewhere where we can add new data, delete unused data, update outdated data, retrieve data, to perform these operations on data we need a Database management system that allows us to store the data

in such a way so that all these operations can be performed on the data efficiently

1.2 Database Applications – DBMS

Applications where we use Database Management Systems are:

- **Telecom:** There is a database to keep track of the information regarding calls made, network usage, customer details etc. Without the database systems it is hard to maintain that huge amount of data that keeps updating every millisecond.
- **Industry:** Where it is a manufacturing unit, warehouse or distribution centre, each one needs a database to keep the records of ins and outs. For example distribution centre should keep a track of the product units that supplied into the centre as well as the products that got delivered out from the distribution centre on each day; this is where DBMS comes into picture.
- **Banking System:** For storing customer info, tracking day to day credit and debit transactions, generating bank statements etc. All this work has been done with the help of Database management systems.
- **Sales:** To store customer information, production information and invoice details.
- **Airlines:** To travel through airlines, we make early reservations, this reservation information along with flight schedule is stored in database.
- **Education sector:** Database systems are frequently used in schools and colleges to store and retrieve the data regarding student details, staff details, course details, exam details, payroll data, attendance details, fees details etc. There is a hell lot amount of inter-related data that needs to be stored and retrieved in an efficient manner.
- **Online shopping:** You must be aware of the online shopping websites such as Amazon, Flipkart etc. These sites store the product information, your addresses and preferences, credit details and provide you the relevant list of products based on your query. All this involves a Database management system.

1.3 Advantage of DBMS over file system

There are several advantages of Database management system over file system. Few of them are as follows[2]:

- **No redundant data:** Redundancy removed by data normalization. No data duplication saves storage and improves access time.
- **Data Consistency and Integrity:** As we discussed earlier the root cause of data inconsistency is data redundancy, since data normalization takes care of the data redundancy, data inconsistency also been taken care of as part of it
- **Data Security:** It is easier to apply access constraints in database systems so that only authorized user is able to access the data. Each user has a different set of access thus data is secured from the issues such as identity theft, data leaks and misuse of data.
- **Privacy:** Limited access means privacy of data.
- **Easy access to data** – Database systems manages data in such a way so that the data is easily accessible with fast response times.
- **Easy recovery:** Since database systems keeps the backup of data, it is easier to do a full recovery of data in case of a failure.
- **Flexible:** Database systems are more flexible than file processing systems.

Disadvantages of DBMS:

- DBMS implementation cost is high compared to the file system
- Complexity: Database systems are complex to understand
- Performance: Database systems are generic, making them suitable for various applications. However this feature affect their performance for some applications

1.4 Entity Relationship Diagram – ER Diagram in DBMS

An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of E-R model are: entity set and relationship set.

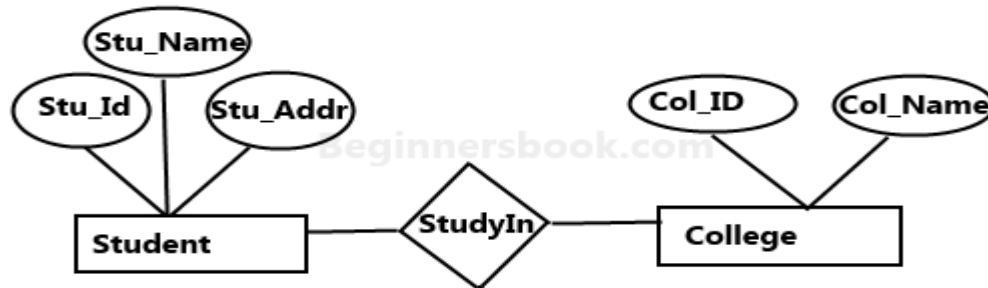
✓ **What is an Entity Relationship Diagram (ER Diagram)?**

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. Lets have a look at a simple ER diagram to understand this concept.

✓ **A simple ER Diagram:**

In the following diagram we have two entities Student and College and their relationship. The relationship between Student and College is many to one as a college can have many students however a student cannot study in multiple colleges at the same time. Student entity has

attributes such as Stu_Id, Stu_Name & Stu_Addr and College entity has attributes such as Col_ID & Col_Name.



Sample E-R Diagram

1.5 RDBMS Concepts

RDBMS stands for relational database management system. A relational model can be represented as a table of rows and columns. A relational database has following major components:

- **Table**

A table is a collection of data represented in rows and columns. Each table has a name in database. For example, the following table "STUDENT" stores the information of students in database.

Table: STUDENT

Student_Id	Student_Name	Student_Addr	Student_Age
101	Chaitanya	Dayal Bagh, Agra	27
102	Ajeet	Delhi	26
103	Rahul	Gurgaon	24
104	Shubham	Chennai	25

- **Record or Tuple**

Each row of a table is known as record. It is also known as tuple. For example, the following row is a record that we have taken from the above table.

02	Ajeet	Delhi	26
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- **Field or Column name or Attribute**

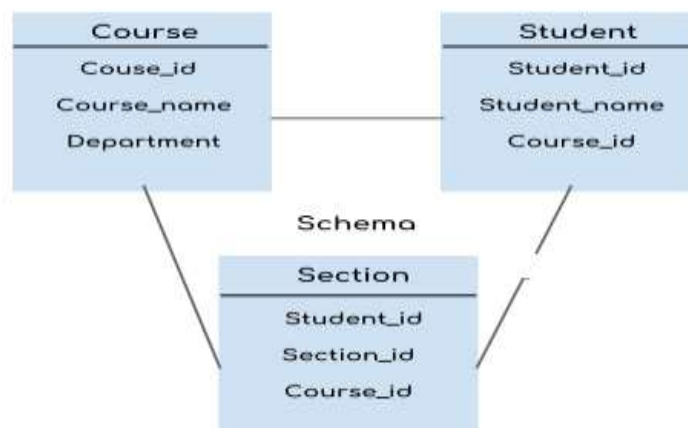
The above table "STUDENT" has four fields (or attributes): Student_Id, Student_Name, Student_Addr & Student_Age.

- **Domain**

A domain is a set of permitted values for an attribute in table. For example, a domain of month-of-year can accept January, February,...December as values, a domain of dates can accept all possible valid dates etc. We specify domain of attribute while creating a table. An attribute cannot accept values that are outside of their domains. For example, In the above table “STUDENT”, the Student_Id field has integer domain so that field cannot accept values that are not integers for example, Student_Id cannot has values like, “First”, 10.11 etc.

- **Instance and schema in DBMS**

Definition of schema: Design of a database is called the schema. Schema is of three types: Physical schema, logical schema and view schema. For example: In the following diagram, we have a schema that shows the relationship between three tables: Course, Student and Section. The diagram only shows the design of the database, it doesn't show the data present in those tables. Schema is only a structural view(design) of a database as shown in the diagram below.



The design of a database at physical level is called physical schema, how the data stored in blocks of storage is described at this level.

Definition of instance: The data stored in database at a particular moment of time is called instance of database. Database schema defines the variable declarations in tables that belong to a particular database; the value of these variables at a moment of time is called the instance of that database.

For example, lets say we have a single table student in the database, today the table has 100 records, so today the instance of the database has 100 records. Lets say we are going to add another 100 records in this table by tomorrow so the instance of database tomorrow will have 200 records in table. In short, at a particular moment the data stored in

database is called the instance, that changes over time when we add or delete data from the database.

- **keys in DBMS**

Key plays an important role in relational database; it is used for identifying unique rows from table[3]. It also establishes relationship among tables.

Types of keys in DBMS

- 1- Primary Key – A primary is a column or set of columns in a table that uniquely identifies tuples (rows) in that table.
- 2- Super Key – A super key is a set of one or more columns (attributes) to uniquely identify rows in a table.
- 3- Candidate Key – A super key with no redundant attribute is known as candidate key
- 4- Alternate Key – Out of all candidate keys, only one gets selected as primary key, remaining keys are known as alternate or secondary keys.
- 5- Composite Key – A key that consists of more than one attribute to uniquely identify rows (also known as records & tuples) in a table is called composite key.
- 6- Foreign Key – Foreign keys are the columns of a table that points to the primary key of another table. They act as a cross-reference between tables.

1.6 Database functions:

- a. Data organization: Data is organized or formed according to the data interpretation language specifications. These specifications are entered by the Data Base Administrator at the time of the database creation. It may be re-entered when changing its components.
- b. Data integrity: Data is required or connected together on the basis of the level of the data element or data field, which can be collected in many groups. Database management is a tool used to collect, link and integrate parts of the data available to the user.
- c. Data separation: The database management system serves as a filter between application programs and related data. The application logic separates the input and output pronunciation needed for calculating addresses, following data links or episodes, locating records, and selecting data items.
- d. Data settings: The programmer sees that the database is only an extension or expansion of the operating system program. When it receives requests to store data from the host program, it performs a control process of how and where the data itself is stored. When

retrieving data, it determines the location of the data and retrieves the data items it asks for about the programs.

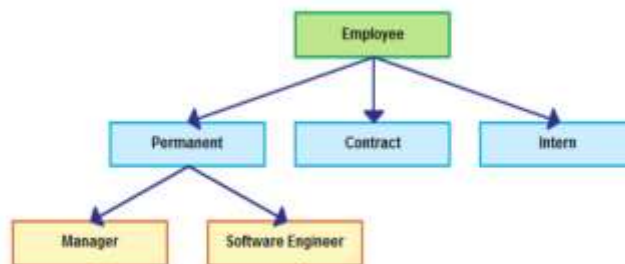
- e. Retrieve data: The data log can be obtained through the database management system by any of the following methods: Sequence in physical storage sequence. Sequence according to the value of the assigned user key. Randomly by the key. Randomly by address or by structural connector.
- f. Data protection: The database management system protects and secures both database content and data object relationships. It protects data from unauthorized access to users, from physical damage, shutdown and simultaneous updating, and some interference by the host software.
- g. Delivery and transmission of information: An essential component of any information system is the information delivery and transmission function for users and users of the system. Thus, the information system must have formal and informal lines of communication that all work within the framework of the organization in which you are present and serve it and its purpose is to identify workers' information needs and meet these needs using communication channels that are prepared for that.
- h. Database uses: The system for registering students in universities, so that it includes all information about students, registered materials, transcript, etc. Hospital records keeping system that contains all patient information, review dates and insurance degree.

1.10 Database types:

- a. Relational Database: This type of database is one of the most used types for coordinating information. It relies on linking tables and information in an easier way in order to quickly access the required information. It is one of the methods that the human mind uses a lot in its attempts to remember ancient events. A simple relationship can make you remember big events[4].

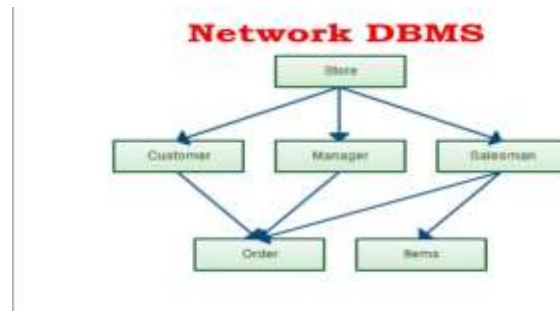


- b. Non-relational database: In this system a large table is created containing all the data. As if all the information you have in a single sheet. This strange method is not hidden from you, and you may have imagined several disadvantages to it, because in this type of database, the data is repeated frequently, so if you enter a product 10 times, the supplier's phone number will be written 10 times as well !! It does not hide you when the amendment will also adjust the number 10 times !!
- c. Hierarchy Database: This rule depends on the principle of the hierarchy at work, as it makes a sequence from the original, or root, as this system begins to branch in the form of sections, and the principle of its work is based on accessing data in a sequential and branched manner, and it is either from the bottom up or from Top to bottom.



- d. Network Database: This type of database appeared at the time of the popularity of databases with a hierarchical form, the hierarchical form depends on the father being single and having several children,

but it was found that some data are linked in a way that many children with several parents and vice versa.



1.11 Database Features:

- 1- Speed of data access and retrieval: We do not have any shelves as soon as you write a customer's information, such as his number, his name, or even part of his name on the system. You can access everything related to the customer.
- 2- Reduce used spaces: By using databases instead of using traditional storage methods, we provide the enormous amount of space occupied by archive offices.
- 3- Data integrity: You can take advantage of other systems that benefit you in your banking system, such as linking the banking system with the civil registry to bring in customer-related data related to creating an account, for example. And his account is linked to his national record so that the data comes on a gold block from a trusted authority, it is data integrity.
- 4- Share data: It is easier to share digital data compared to paper data, a few clicks and then your bank account details are in front of you while sipping coffee in Panama.
- 5- Confidentiality and security of the data: I consider it one of the most important benefits of using databases, and compared to the paper system again, a fire in the paper store can make the customer or the bank completely bankrupt, but in the databases there are many methods that enable storing backup copies of data to ensure that data is not lost even in the event of a bomb Nuclear.

6- Reports: It is almost one of the most important benefits that we find when we rely on databases, all institutions are trying to get a good profit return, and one of the ways that enables any institution to develop is its possession of optimal reports, which makes it easier for them to study the weaknesses and strengths in the work of the organization to be able to develop performance on Different levels of accounting, administration or productivity. Reports are a key factor that organizations need to carry out these operations.

1.12 Database disadvantages:

The following disadvantages can be found including:

1. Complexity Database management system is an extremely complex piece of software. All parties must be familiar with its functionality and take full advantage of it. Therefore, training for the administrators, designers and users is required.
2. Size The database management system consumes a substantial amount of main memory as well as a large number amount of disk space in order to make it run efficiently.
3. Cost of DBMS A multi-user database management system may be very expensive. Even after the installation, there is a high recurrent annual maintenance cost on the software.
4. Cost of conversion When moving from a file-base system to a database system, the company is required to have additional expenses on hardware acquisition and training cost.
5. Performance As the database approach is to cater for many applications rather than exclusively for a particular one, some applications may not run as fast as before.
6. Higher impact of a failure The database approach increases the vulnerability of the system due to the centralization. As all users and applications rely on the database availability, the failure of any

component can bring operations to a halt and affect the services to the customer seriously.

1-13 Authentication and Authorization

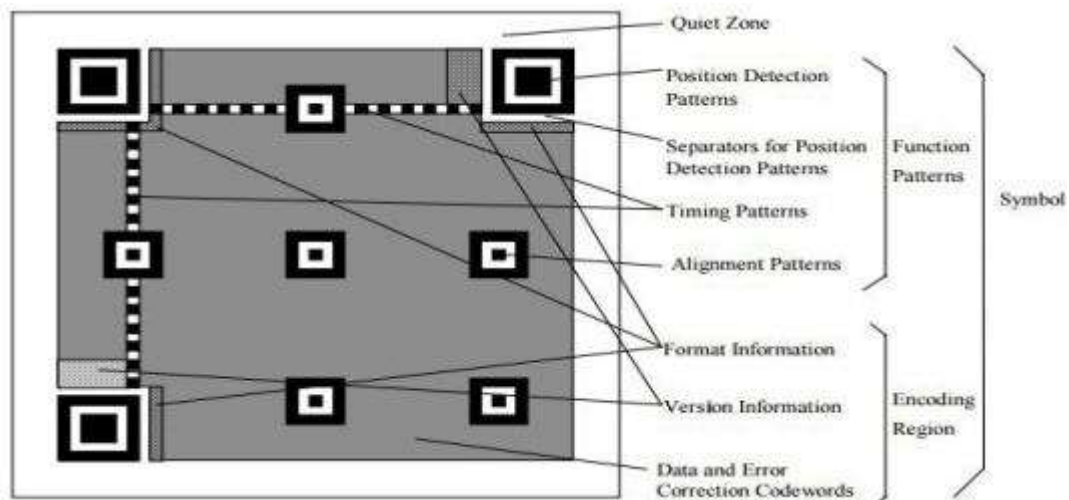
While often used interchangeably, authentication and authorization represent fundamentally different functions. In this article, we compare and contrast the two to show how they protect applications in complementary ways. In simple terms, authentication is the process of verifying who a user is, while authorization is the process of verifying what they have access to. Comparing these processes to a real-world example, when you go through security in an airport, you show your ID to authenticate your identity. Then, when you arrive at the gate, you present your boarding pass to the flight attendant, so they can authorize you to board your flight and allow access to the plane. the differences between authentication and authorization[9]:

Authentication	Authorization
Determines whether users are who they claim to be	Determines what users can and cannot access
Challenges the user to validate credentials (for example, through passwords, answers to security questions, or facial recognition)	Verifies whether access is allowed through policies and rules
Usually done before authorization	Usually done after successful authentication
Generally, transmits info through an ID Token	Generally, transmits info through an Access Token
Generally governed by the OpenID Connect (OIDC) protocol	Generally governed by the OAuth 2.0 framework
Example: Employees in a company are required to authenticate through the network before accessing their company email	Example: After an employee successfully authenticates, the system determines what information the employees are allowed to access

CHAPTER TWO

2.1 What Is a QR cod?

A QR code is much like a bar code, except that because it carries data in two dimensions (horizontally and vertically), it is able to hold much more information than a one-dimensional bar code. In fact, compared to a bar code's 20 alphanumeric character limit, a QR code can hold thousands of characters of data. As a result, a QR code can be used to share multimedia content, a landing page or an entire e-book. However, QR codes can do much more than that – they can actually direct a phone to perform certain actions[5]. For example, a theatre company might provide a QR code that not only sends the person who scans it to the company's website for show times and ticket information, but also embeds information about the dates, times and locations of upcoming shows into the phone's calendar.



QR codes were designed by DENSO WAVE in Japan and first came into use in 1994. Although the term “QR code” is a registered trademark, the technology itself has not been patented and is therefore available for anyone to use. One key benefit of these codes for the Japanese is that they are one of the most efficient ways of encoding Japanese characters. However, their high data capacity, small print-out size and resistance to dirt and damage (QR codes can still be read when up to 30 percent of the code has been corrupted) ensured the proliferation of this technology to other applications. In addition, unlike bar codes, which can only be read by a special scanner, many smartphones are able to scan QR codes, making them an excellent way to provide large amounts of information in a very small space. (To learn more about mobile computing, see *Should Your Business Go Mobile*)

2.2 How QR Codes Work

In the simplest terms, data can be translated into a QR code through a QR code generator, many of which are available online for free. Users enter the data they wish the QR code to display, and the generator turns it into a symbol that can be printed or displayed in electronic form. Scanning applications for reading QR codes can be downloaded (often for free) to smartphones, allowing users to simply point the phone's camera at the code to scan it. The application then interprets the code and implements the data from the QR code by displaying a web page, playing a video or providing some other type of content.

2.3 How QR Codes Are Used.

So far, QR codes have generally been applied to marketing and building online community, but they are also being tested in more formal settings such as government and academ[6].

For example, a business can produce a QR code that links a mobile device to a fully-functioning Facebook "Like" page. For brick-and-mortar businesses, this can be a good way to build online presence and provide a contextual call to action to customers. (QR codes can even be used in payments now. For more on mobile payments, see Cache, Text or Direct Bill: The Truth About Mobile Payment Systems) Another way QR codes have frequently been used by brick-and-mortar businesses is to provide an additional digital component to a customer's experience in a brick-and-mortar store. For example, one retailer of Christmas merchandise provided a QR code on its storefront window, behind which a moving display of toys, trains and teddy bears was featured. The QR code launched the soundtrack for the visual display, providing a more integrated and interactive experience for window shoppers – and hopefully one that would move them to come inside!

According to a report by Educase Learning Initiative, a community of universities, colleges and other organizations committed to advancing learning through innovations in IT, QR codes support "experiential learning" by providing students with referential online resources outside the classroom. QR codes may also be used on campus such as in equipment rooms, where they might be used to access a how-to manual for the equipment, or in

libraries, where the QR code could be included in a book and encode a phone number or web page for renewing the book.

2.4 QR code payment:

QR codes can be used to store bank account information or credit card information, or they can be specifically designed to work with particular payment provider applications. There are several trial applications of QR code payments across the world. In developing countries like India and China, QR code payment is a very popular and convenient method of making payments. In November 2012, QR code payments were deployed . when an open format for payment information exchange was introduced and endorsed by the Czech Banking Association as the official local solution for QR payments. In 2013, the European Payment Council provided guidelines for the EPC QR code enabling SCT initiation within the Eurozone.

2.5 Design:

Unlike the older, one-dimensional barcodes that were designed to be mechanically scanned by a narrow beam of light, a QR code is detected by a 2-dimensional digital image sensor and then digitally analyzed by a programmed processor. The processor locates the three distinctive squares at the corners of the QR code image, using a smaller square (or multiple squares) near the fourth corner to normalize the image for size, orientation, and angle of viewing. The small dots throughout the QR code are then converted to binary numbers and validated with an error-correcting algorithm.

2.6 Storage:

The amount of data that can be stored in the QR code symbol depends on the datatype (mode, or input character set), version (1, ..., 40, indicating the overall dimensions of the symbol, i.e. $4 \times$ version number + 17 dots on each side), and error correction level. The maximum storage capacities occur for version 40 and error correction level L (low), denoted by 40-L[7]:

Maximum character storage capacity (40-L) <i>character refers to individual values of the input mode/datatype</i>			
1. Input mode	Max. characters	Bits/char.	Possible characters, default encoding
2. Numeric only	7,089	3 $\frac{1}{3}$	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
3. Alphanumeric	4,296	5 $\frac{1}{2}$	0–9, A–Z (upper-case only), space, \$, %, *, +, -, ., /, :
4. Binary/byte	2,953	8	ISO 8859-1
5. Kanji/kana	1,817	13	Shift JIS X 0208

Here are some sample QR code symbols:

✓ IQR code

IQR Code is an alternative to existing QR codes developed by Denso Wave. IQR codes can be created in square or rectangular formations; this is intended for situations where a rectangular barcode would otherwise be more appropriate, such as cylindrical objects. IQR codes can fit the same amount of information in 30% less space. There are 61 versions of square IQR codes, and 15 versions of rectangular codes. For squares, the minimum size is 9x9 modules; rectangles have a minimum of 19x5 modules. IQR codes add error correction level S, which allows for 50% error correction. IQR Codes have not yet been given an ISO specification, and only proprietary Denso Wave products can create or read IQR codes[8].

✓ SQRC

Main article: simple:SQR codes Secure Quick Response code (SQRC) is a type of QR code that contains a "private data" segment after the terminator instead of the specified filler bytes "ec 11". This private data segment must be deciphered with an encryption key. This can be used to store private information and to manage company's internal information

FrameQR is a QR code with a “canvas area” that can be flexibly used. In the center of this code is the canvas area, where graphics, letters, and more can be flexibly arranged, making it possible to lay out the code without losing the design of illustrations, photos, etc.

✓ **HCC2D**

Samples of the High Capacity Colored 2-Dimensional (HCC2D) code:

(a) 4-color HCC2D code

(b) 8-color HCC2D code

Introducing colors into QR codes requires addressing additional issues. In particular, during QR code reading only the brightness information is taken into account, while HCC2D codes have to cope with chromatic distortions during the decoding phase. In order to ensure adaptation to chromatic distortions which arise in each scanned code, HCC2D codes make use of an additional field: the Color Palette Pattern. This is because color cells of a Color Palette Pattern are supposed to be distorted in the same way as color cells of the Encoding Region. Replicated color palettes are used for training machine learning classifiers.

✓ **JAB code**

It is a color 2D matrix symbology made of colorful square modules arranged in either square or rectangle grids made by Fraunhofer SIT. JAB code contains one master symbol and optionally multiple slave symbols. Master one contains four finder patterns located at the corners of the symbol. This project is open source with source code released under GNU LGPL v2.1 license.

CHAPTER THREE

3.1 introduction

In this chapter, we shall offer the practical application for this project, we used "Microsoft Visual Studio 2017.net" and "android studio 5.2" to design and implementation this project, the system mainly depend on the student information. In this system, it helps to determine the membership of students to the college in which he is taught, where three colleges have been applied, namely the College of Science, the College of Engineering, and the College of Pure Sciences

3.2 System Implementation

System Implementation is one of the important steps for developing student's identification. The system implementation comprises for the following:

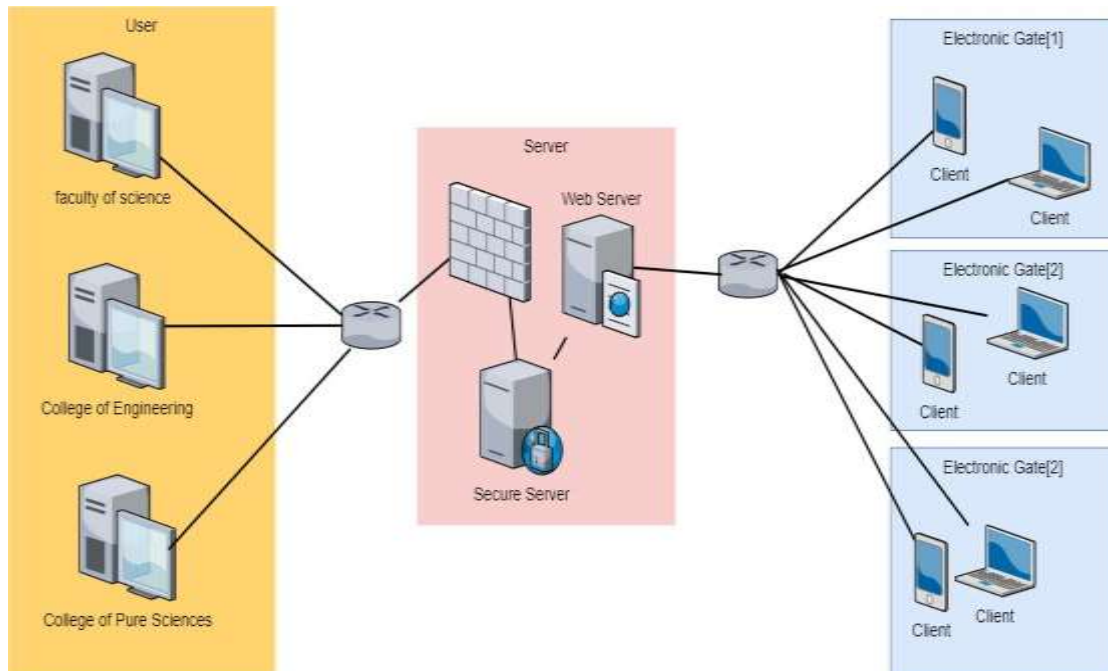
- 1- **Operation System:** windows 2012 server
- 2- **Web Server:** Microsoft IIS 8.5 (Microsoft Internet Information Server) that supports ASP can be used both as management system server and the testing platform.
- 3- **Database Server:** Microsoft SQL Server 2012 that provides efficient storage is a flexible user- defined application with function to support data integrity control in the core layer.
- 4- **C#** (pronounced see sharp, like the musical note C#, but written with the number sign)[b] is a general-purpose, multi-paradigm programming language encompassing strong typing, lexically scoped, imperative, declarative, functional, generic, object-oriented (class-based), and component-oriented programming disciplines.[17] It was developed around 2000 by Microsoft as part of its .NET initiative and later approved as an international standard by Ecma (ECMA-334) in 2002 and ISO (ISO/IEC 23270) in 2003. Mono is the name of the free and open-source project to develop a compiler and runtime for the language. C# is one of the programming languages designed for the Common Language Infrastructure (CLI).

5- Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA . On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

- ✓ A flexible Gradle-based build system
- ✓ A fast and feature-rich emulator
- ✓ A unified environment where you can develop for all Android devices
- ✓ Apply Changes to push code and resource changes to your running app without restarting your app
- ✓ Code templates and GitHub integration to help you build common app features and import sample code
- ✓ Extensive testing tools and frameworks
- ✓ Lint tools to catch performance, usability, version compatibility, and other problems
- ✓ C++ and NDK support
- ✓ Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine

3.3 proposed system

The diagram below is the structure of the proposed system



The proposed system consists of third stages

Step1:- In the first stage, which is entering data for students of the college to which it belongs, which is basic information for the student and image for each student such as (College of Science, College of Engineering and College of Pure Sciences)

Step2:- In the second stage, this data is stored from the terminals (colleges) in a local server

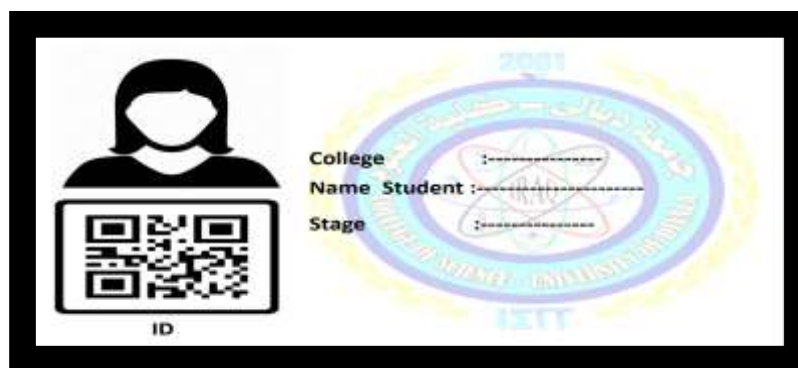
Step3: In the third stage, which is setting a terminal such as the mobile, through which the student's information is verified whether it is authorized or not authorized.

3.4 System user interface

System consists of the following page will explain how uses it as follows: -

1- Design Student ID

At this stage a template is designed for all students that contains QRcode



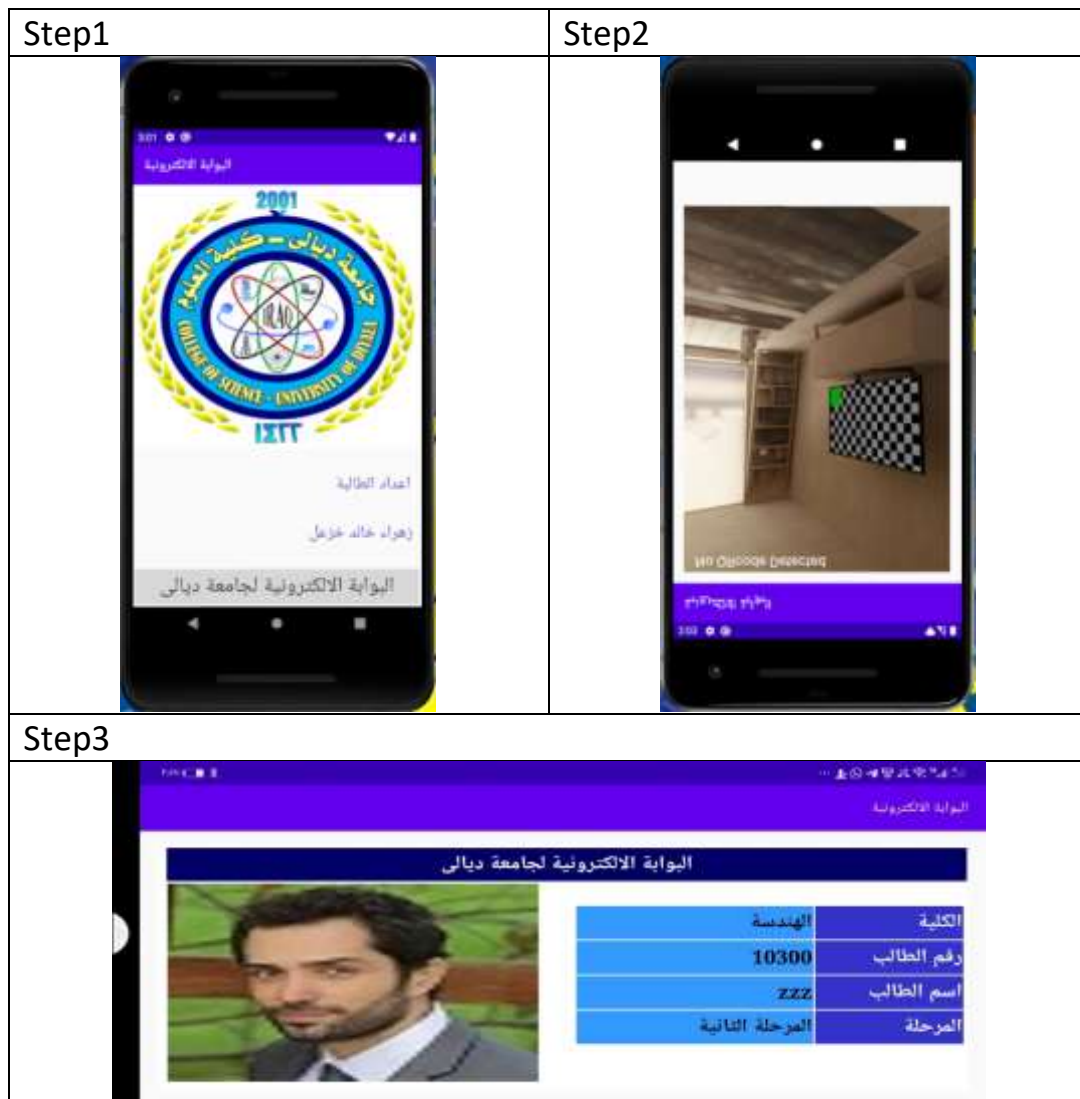
2- Input interface

In this interface through which the requesting data is entered through an entry on this site ("<http://cv2.uodiyala.edu.iq/>")



3- mobile application interface

On Android interfaces, the information is retrieved for the student according to the reading of the barcode in the student ID



CHAPTER FOUR

CONCLUSION AND FUTURE

WORK

4-1 Conclusion

There are many authentication schemes that are in practice today. If they are categorized based on usability and security than most of them fall into the category of security that ensures the safety of the entering students to college using second factor, but they lack proper usability. During the smart student identity is designed It is based on a QRcode that contains the non-duplicate student number. The advantage of this QRcode is unchangeable information. The speed of the network is designed for the safe retrieval of information 4-2 Future Work

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