# IT2143 Visual Computing

## Group Project

Group L1

# Code Generator

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# 1. Introduction

Welcome to the world of barcodes, let’s make it invisible!

This application puts the power of barcode and QRcode creation right at your fingertips. Whether you're managing inventory, tracking assets, organizing events, or streamlining business processes, this tool is here to make your life easier.

Create professional-looking barcodes in just a few clicks

Enter the information you want to encode, such as product codes, serial numbers, or URLs.

Save and manage your barcodes for easy access and future use.

## 2. Objectives

### 1. Streamlining Data Entry and Management:

- Eliminate manual data entry errors and boost accuracy by automating information capture through barcode scanning.
- Enhance inventory management, asset tracking, product identification, and record-keeping with reliable data encoding.

### 2. Enhancing Data Organization and Accessibility:

- Organize and store information efficiently within barcodes for easy retrieval and management.
- Facilitate quick searches, filtering, and sorting of data based on barcode content.

### 3. Ensuring Traceability and Tracking:

- Track items throughout their lifecycle, from manufacturing to sales and distribution, for better visibility and control.
- Monitor stock levels, locate assets, and trace product movements for improved supply chain management.

### 4. Promoting Cost-Effectiveness and Resource Optimization:

- Reduce costs associated with manual data entry, printing errors, and inventory discrepancies.
- Minimize paper usage and printing expenses by generating digital barcodes.

# 3. Methodology

## I. Requirement Gathering

## II. Tools and Technologies

**Development Platform**

- Visual Studio was chosen as the primary development platform due to its versatility, robust integrated development environment (IDE), and compatibility with relevant programming languages.

**Programming Languages**

- The project utilizes a combination of programming languages, including C# for backend and frontend design, and SQL management server for database management, ensuring a cohesive and efficient development process.

**Packages**

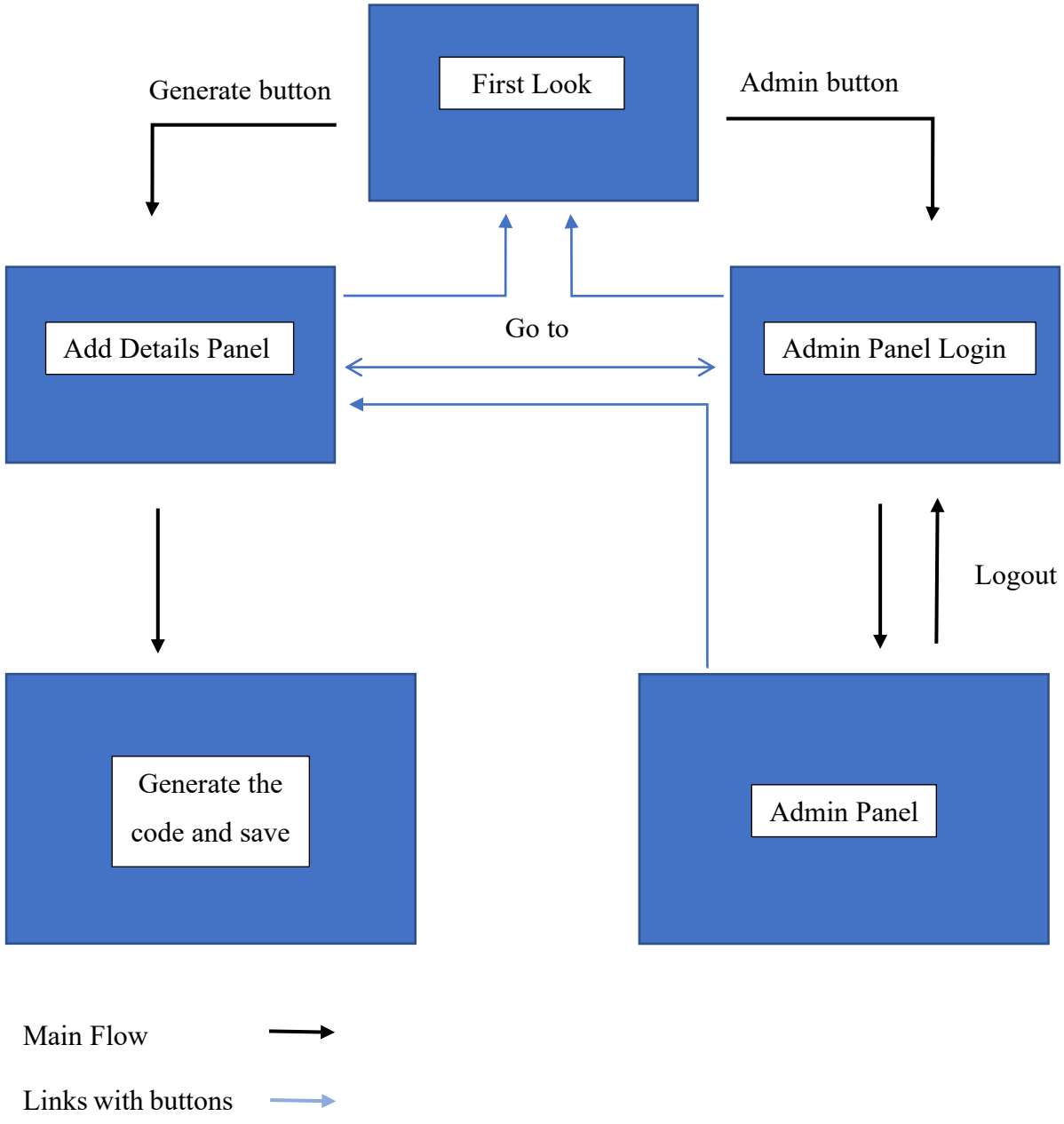
- Zen Barcode Rendering Framework – Generate the Barcode or QRcode

**Database Management System (DBMS)**

- Microsoft SQL Server Management is employed as the database management system to store and retrieve code details. Its scalability and reliability align with the project's requirements for data management.

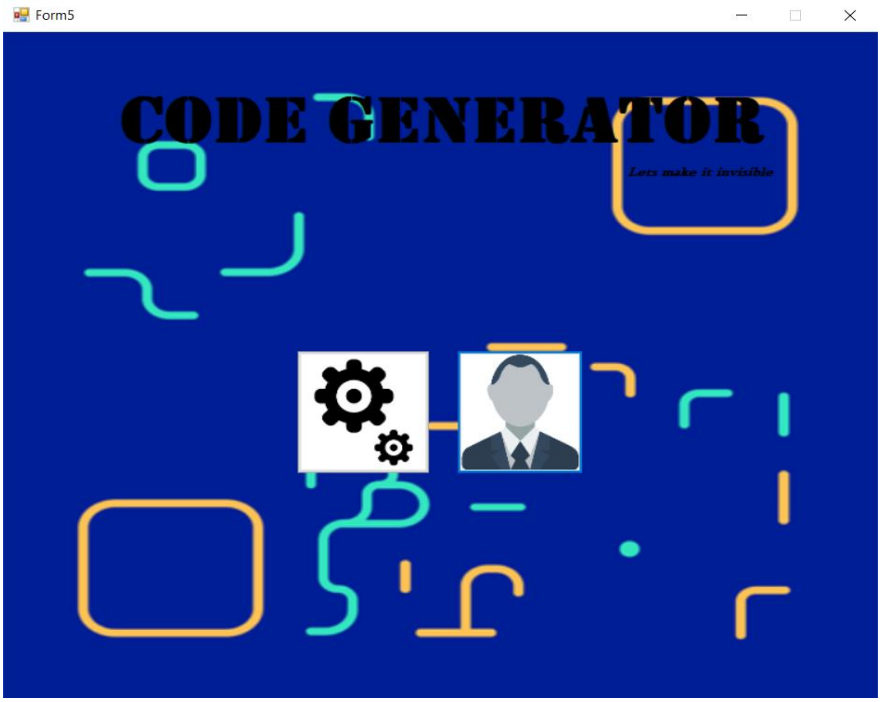
# 4. Implementation

In executing the Code Generator application, we adopted a scalable system architecture, prioritizing data security and seamless integration. Utilizing Visual Studio and C#, was developed to create and store QRcode and Barcode details. Microsoft SQL Server Management served as the database backend for secure data storage. Anyone can create their own QR or Barcode using their own details but only admin is able to see the code details (access the database) through the admin panel. Application architecture,



## I. Interface Design

First window, It has divided into two parts using button. These buttons will lead user to directly into admin panel or add code information panel.




## II. Database

In implementing the database backbone, Microsoft SQL Server Management played a pivotal role, ensuring a robust and secure foundation for our Code Generator application. Leveraging the capabilities of SQL Server within the C# development environment, we structured the database to efficiently store and manage code details. This database management system allows for seamless integration with our C# backend, enabling quick and secure retrieval of information. The choice of SQL Server aligns with our commitment to data security and scalability, ensuring the reliable storage and retrieval of code details.

- Database - codeDatabase
- Tables – codeDetails

# III. Output

**table - codeDetails**

| id | codeType | name | price | weight | comName | conNumber | website | manufacDate |
|---|---|---|---|---|---|---|---|---|

| expaire | description | imageURL |
|---|---|---|

codeDetails - fields

- id = integer primary key (auto_increment)
- codeType = varchar
- name = varchar
- price = varchar
- weight = varchar
- comName = varchar
- conNumber = varchar
- website = varchar
- manufactureDate = varchar
- expairedate = varchar
- description = varchar
- imageURL = varchar

## 5. Conclusion

Barcode and QR code generator applications have emerged as powerful tools for streamlining data encoding, storage, and access within the mobile realm.

Key benefits:

- Convenience: Empower users to create and scan codes effortlessly from their smartphones or tablets.
- User-friendliness: Offer intuitive interfaces and straightforward workflows for effortless code generation.
- Customization: Enable personalization of codes with colors, logos, and designs for branding or specific needs.
- Versatility: Support a wide range of barcode and QR code formats to meet diverse application requirements.
- Offline functionality: Often operate without internet connectivity, ensuring accessibility even in remote settings.
- In essence, these applications have revolutionized the use of barcodes and QR codes by making them accessible to a wider audience, driving efficiency and connectivity across various industries and personal uses.

## 6. References

YouTube - https://www.youtube.com/watch?v=UnGa0091QOo