

TinyEpicBrains: VideoQR



BY

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ABSTRACT

Nowadays we are all influenced by "advertising", a cost-effective and efficient marketing approach to products, services and ideas. The goal of this project was to create a web platform for businesses to advertise their business. We created a website for product distributors called "VideoQR" that allows them to insert videos with a hidden QR code that satisfies customer needs, especially useful is the "Embedded" feature. Among the main features of the project is the ability to attach product links to videos with user-friendly functions.

Video advertising accounts for more than 80% of all advertising spend. Neither direct nor slanted promotional videos can persuade potential customers to buy. But it also says nothing more about the customers. VideoQR can drive customers to your chosen destination while our analytics solution gathers customer insights and delivers them to the business. VideoQR produces next generation videos that push the boundaries of advertising.

Keyword: VideoQR, Advertising, Video Advertisement, QR Code

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Without the support and guidance from our parents and friends, no endeavour can be satisfactorily completed at any level.

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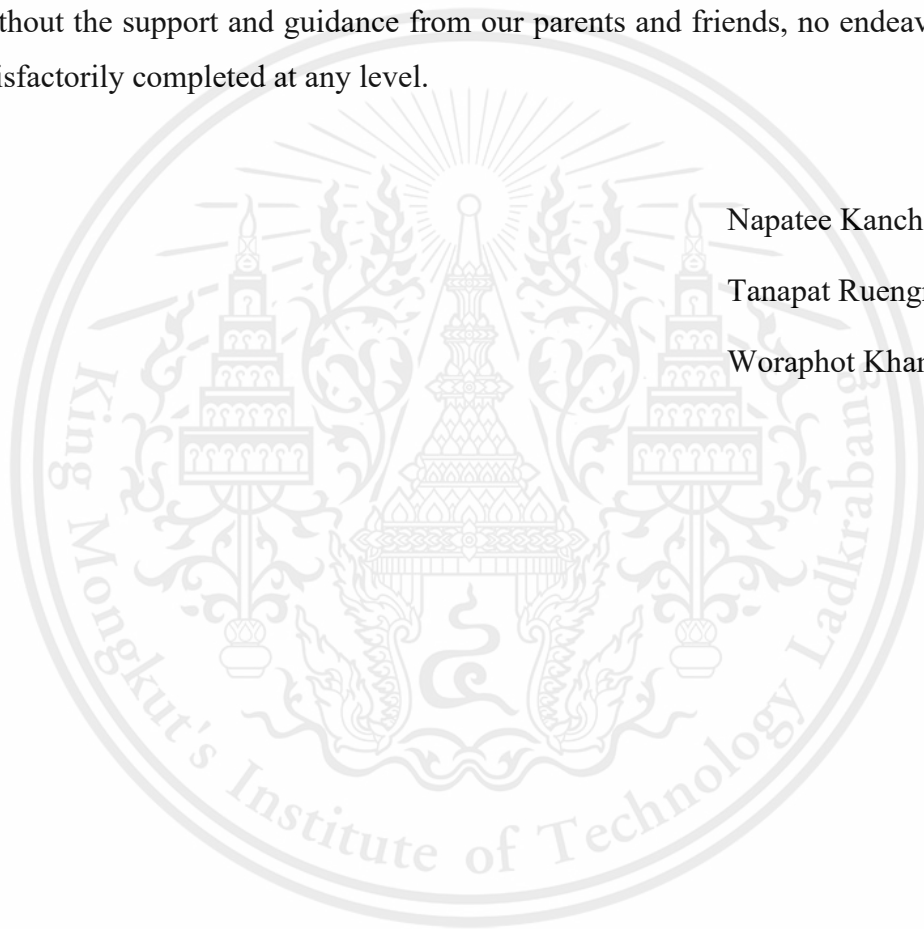


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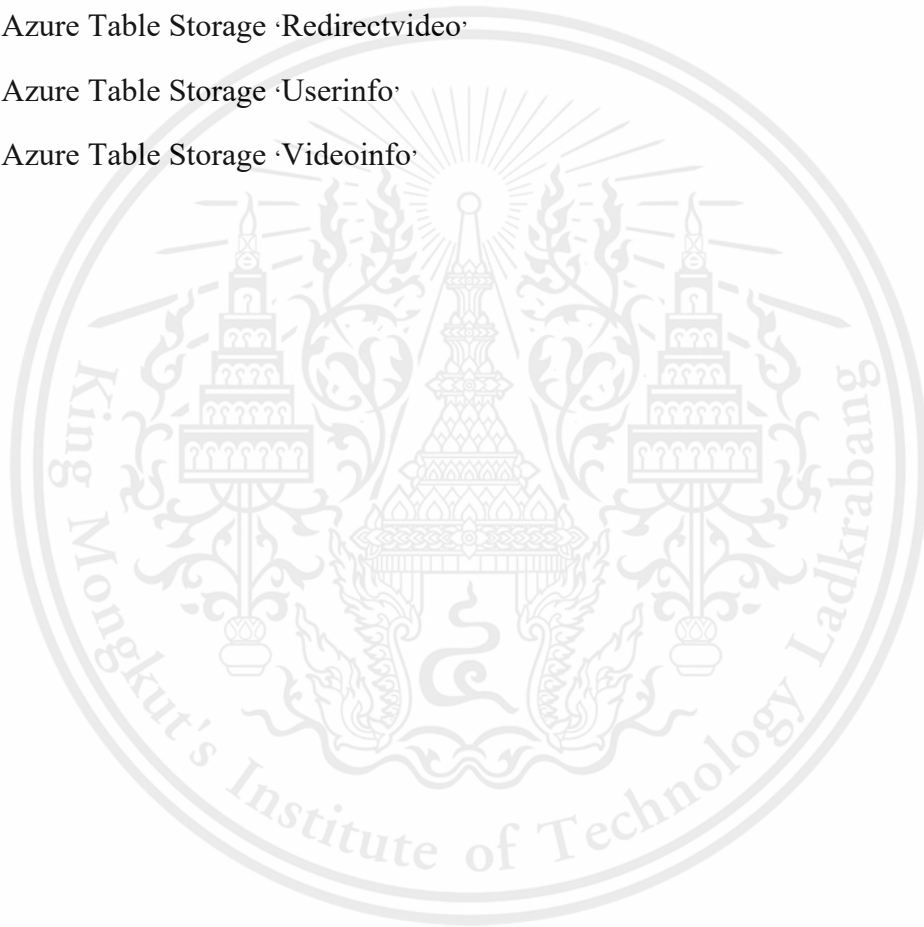
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LIST OF SYMBOLS/ABBREVIATIONS

Symbols/Abbreviations	Terms
CIE	Computer Innovation Engineering
SIIE	School of International Interdisciplinary Engineering Programs



CHAPTER 1

INTRODUCTION

This chapter introduces the overarching themes of this report and contextualises the motivation for the work. It then discusses the rationale and objectives defined for the study of the project, followed by a summary of the overall project. Finally, a chapter-by-chapter overview of the thesis is provided.

In recent decades, advertising has become a significant industry. It is the key to the success of any product. In the early days, it was published in the newspaper and broadcast on television. Companies used a variety of means to advertise their products and persuade customers to buy them. After moving into the digital world, they shifted their marketing to online platforms and social media in the form of videos and photos. This has taken the advertising business to the next level. We have seen that internet marketing plays a crucial role in attracting consumer attention towards a business.

1.1 Advertisement on the display

In the twenty-first century, people watch videos on screens every day, but these videos are not interactive. For example, 12 percent of people are interested in products shown in Korean dramas on the Internet. However, the product page is successfully reached only 2 times out of 10. The main problem is that potential customers were not able to translate their requirements into relevant keywords. It helped to improve the overall search results. They eventually gave up after 15 minutes of searching. Adding QR codes to videos as a solution to this problem can be a viable option, however, it can obstruct viewers' vision, which is not ideal.

1.2 TinyEpicBrains company

TinyEpicBrains is a startup company that has come up with a solution to this problem. They have developed a technology that allows QR codes to be scanned without being seen. Using a mobile phone, the user can simply record a video. There is no image of a QR code to disturb the user. They will be redirected to the manufacturer's website

through this process. This increases the conversion rate for the manufacturer by directing the potential consumer to the right places.

1.3 Objective

- To provide the design user interface and user experience for VideoQR web functions.
- To increase the performance of VideoQR web application.
- To provide the user management and company management function.
- To connect the website data with the company server.

1.4 Scope

- Our website will be used by the product owner and media distributor.
- Create an embedded feature for the product owner as well as the media distributor.
- Increase the performance of the web application.
- Using JavaScript, all functionalities will be retained in the form of a website.
- Test the project with the company.

1.5 Plan

- Create a website by brainstorming and designing it.
- Select a development tool.
- To create the website, use JavaScript.
- Maintain all data in Azure storage.
- System testing and evaluation.

1.6 Table of Operation

Table 2.1 Operating Time

Topic	Month																			
	Jan				Feb				Mar				Apr				May			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Discuss and make decision with the company			■	■																
Embed page: Choose or drag and drop file					■	■														
Embed page: Display preview video with generate thumbnail and URL links input						■	■	■												
Embed page: Add and remove URL links									■	■										
Embed page: Submit button to send data input to company server										■	■									
Video information page: Display data information											■	■								
Video information page: Download video button from Azure blob storage													■	■						
Video information page: Edit button to adjust video information															■	■				
User management																	■	■	■	
Thesis																			■	■

1.7 Report Outline

The remainder of this report is organized as follows:

Chapter 2 reviews the state of the art in advertising, QR codes, and user experience.

Chapter 3 describes the design and implementation of the VideoQR website.

Chapter 4 demonstrates how VideoQR works in practice.

Chapter 5 concludes the report by reviewing the work done and drawing conclusions about important parts of the work done. Finally, future work is discussed with a particular focus on how VideoQR works, taking into account the user interface and user experience.



CHAPTER 2

REVIEW OF LITERATURE

This chapter discusses the state of the art in advertising with QR code and all related technologies considered during the analysis and design phase of this project. The purposes of the research were as follows: We identified the article on Customer Behaviour about advertising in Thailand (Section 2.1), we reviewed the background of QR code (Section 2.2), we informed about related concepts (Section 2.3) and related technologies (Section 2.4), we reviewed User Experience (UX) and User Interfaces (UI) in (Section 2.5), Benefit of User Experience (UX) and User Interface (UI) (Section 2.6), we reviewed User Interface Design and Screen Design Principles (Section 2.7) Finally, the summary of the chapter (Section 2.8).

2.1 Customer Behavior on Advertisement in Thailand

For decades, advertising has been the most popular means of disseminating information about any product around the world. In Thailand, online and television advertisements are the most widely used advertising media.

According to a survey conducted by National Broadcasting and Telecommunications Commission (NBTC), the survey also revealed some important points to consider among Thai media consumers.

1. Consumer behavior in terms of how they acquire information differs by age. Older people aged 57 and older are more likely to obtain information through traditional media and read newspapers, while people aged 41 and younger are more likely to use content from a variety of media, especially online media. The actions of people aged 43 to 56 are often a mixture of the first and second groups mentioned.
2. The majority of people do not have certain programs in mind, which indicates that they are not faithful to their broadcasts.
3. People with more money trust advertising from online media more than media from TV, which gives them access to landlines in every home.

Consumers have started reading digital media instead of newspapers, which has led to an upheaval in the newspaper industry.

2.2 Background of QR Codes

A QR (Quick Response) code is a type of barcode that can contain a lot of information in square grids and is designed to be easily read by smartphones. QR codes are widely used in the supply chain to track product information, as well as in marketing and advertising. [1]

All QR codes are composed of three-square shapes. They represent the fine-tuning of the code. The dots in a QR code contain information about the version, format, and content of the code. QR codes contain a built-in error correction system. QR codes. For example, a low error correction (L) allows more data to be transmitted and a higher error correction (H) makes the code easier to scan. [2]

Compared to ordinary barcodes, QR codes can contain much more information, such as words, URL links, and geo-locations, which makes them more valuable. The most important feature that makes QR codes more popular than traditional barcodes is that they can be scanned without a barcode scanner. Any smartphone that is accessible nowadays can be used to scan them. [3]

2.3 Related Concept

Using QR codes, Shin, Jung, Chang (2012) study user motivation. They strive to find a relationship between perceived information quality, perceived system quality, perceived ease of use, perceived usefulness, perceived interaction, subjective norm, customer attitude, intention and behavior. The technology acceptance model is used to build this study model (TAM). This study found that the quality of QR codes has an impact on users' intentions and behavior when using it. [4]

2.4 Related Technologies

2.4.1 Eclipse

Eclipse is an integrated development environment for computer programming (IDE) that includes a basic workspace and a freely modifiable plug-in. The software mainly writes in JAVA related application, but users can also write with other languages with plug-ins. [5]

2.4.2 Microsoft Azure Storage

With Azure Storage, a cloud service from Microsoft, users can access highly available, secure, stable and scalable storage. The data in this service must be able to be stored easily so that the user can access it for analysis purposes, whether it is images, audio, videos, or information logs, etc. [6]

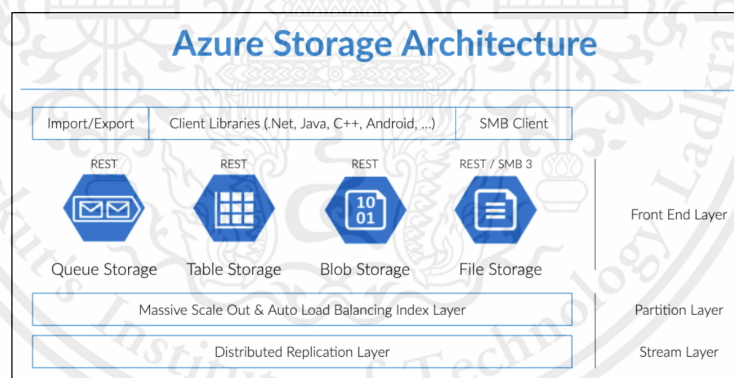
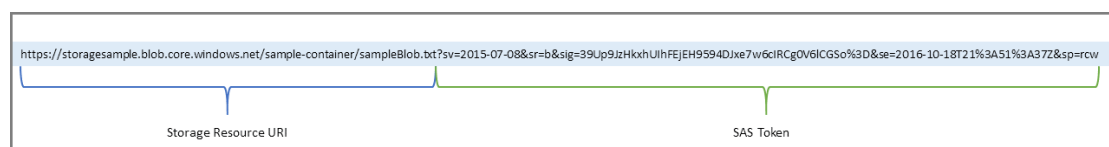


Figure 2.1 Azure Storage Architecture

The connection between the application and the storage is made using a SAS token. The token is generated to establish the HTTPS connection for read/write access to the storage. For example, in Figure 2.2, to access the blob storage, the HTTPS request will be in this form.



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Figure 2.2 Azure REST API

2.4.3 Firebase

Firebase is a tool that helps developers create and improve their application, and it is a tool that Firebase provides to help developers in every way possible so that they do not have to create their own services from scratch, and they can focus solely on their proposed server. The services that Firebase provides are known for tracking analytics, authentication for login, system configuration, database and etc. [7].

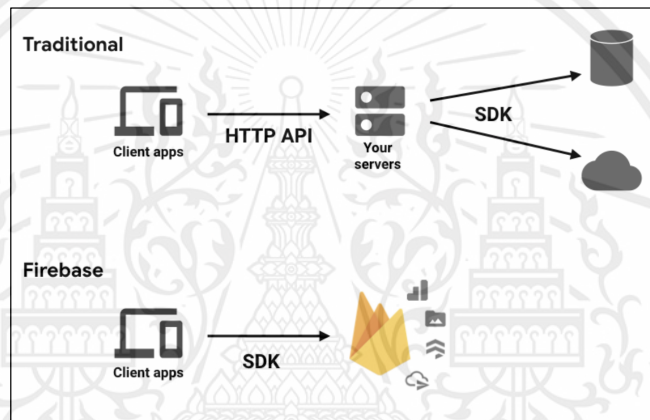
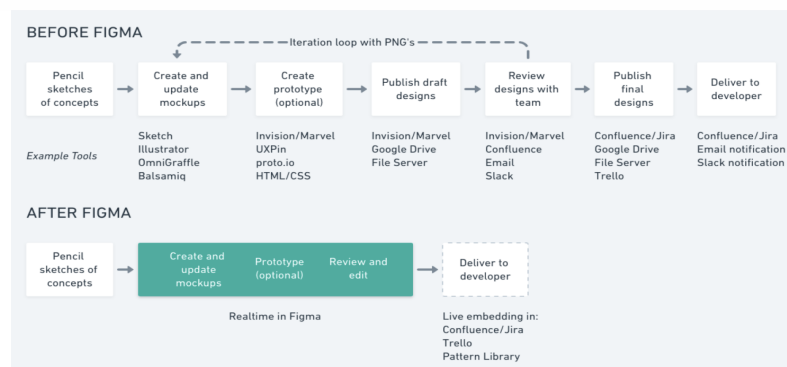


Figure 2.3 Firebase Advantage

2.4.4 Figma

Figma is a cloud-based design tool that helps developers create and test their prototypes, but the main feature that sets Figma apart from other similar design tools is the team collaboration that helps everyone work at the same time. Figma simplifies and streamlines the creative process more than any other tool, allowing many designers to work more efficiently. [8]



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Figure 2.4 Figma Advantage

2.4.5 Postman

Postman is an API development software that helps many developers to create, test and configure APIs. The tool can include a variety of features that developers need to do their work. It can perform a large number of HTTP queries, save space and use late environments, and translate APIs of other languages into code. [9]

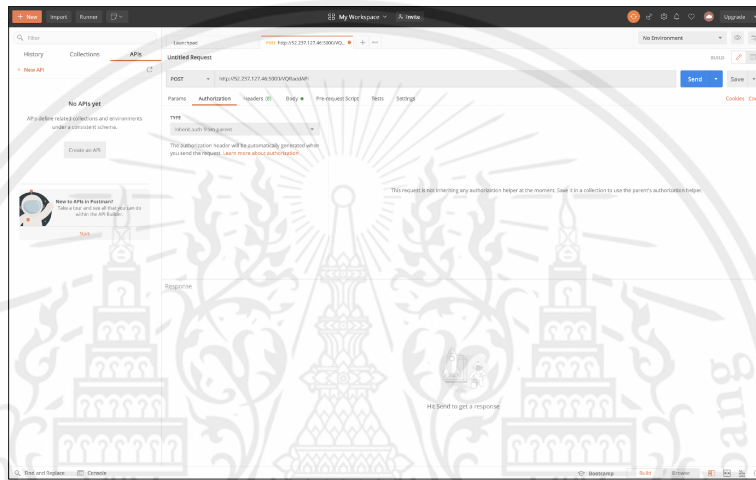


Figure 2.5 Postman Interface

2.5 User Experience (UX) and User Interface (UI)

- 1) User Experience (UX) is the expected outcome that results from the solution. It could be comfort, pleasure, luxury, or something else. This is determined by the context in which the event occurred when confronted with a problem. Also, what prior experience do you have? If you want to make a new app for people who have used a QR code-based money transfer app, they need to stop feeling the need to push it. There is less pressure here. Also, Apple Pay and Google Pay make it easier to work or order.
- 2) User Interface (UI) is the design of various platforms that companies create to interact with users, such as websites, applications, games, etc., and the design must be beautiful, clear, and concrete for application developers. Alternatively, programmers can also be used to enhance immediately. Most importantly, the design must be outstanding while being easy to understand.



Figure2.6 The difference between User Interface (UI) and User Experience (UX)

2.6 Benefit of User Experience (UX) and User Interface (UI)

- 1) It's not hard to create content, but the real challenge is to create content that can convince people to interact with it. Whatever pattern that content is created in, everything on your website needs to attract the user. There are many ways to convince users to interact with your site, such as creating content that targets a specific group of people or creating content that customises its features based on user behaviour or things that appeal to them. Many users prefer a website that has a consistent design and that they can comfortably navigate.
- 2) A website that provides a good user experience for its users usually gets their loyalty back to your brand. A website that provides easy functionality and good service to its users will keep them coming back and using your website again. You can use a Customer Journey or a CJM Map to track user behaviour while using your website. If you use this CJM Map, it must be thoroughly tested to ensure that users can interact with your website as easily and smoothly as possible. In this method, designers should put themselves in the shoes of the users and think from their perspective.

- 3) Word-of-mouth from users means they feel good about using your website, and the key is interactive user experience design. The websites that offer great features and usefulness with the user experience will encourage users to continue their word of mouth to others about your services. The user experience should make the users feel that they can share and recommend the website as this way has more impact as compared to paid advertising.
- 4) Using stellar user experience helps designers reduce their development costs, as does usability testing, prototyping, and extensive user research. This allows designers to know the exact time for their development and can plan which functionality should be prioritized first. This method helps designers create better initial designs as well as reduce the risk of excessive ongoing enhancements and provide more relevant content. This method also helps to greatly reduce the need for last-minute enhancements or redesigns.
- 5) User Experience focuses on the end-user approach to developing and designing your website, thinking about what users want, not what designers think users want. In this way, it can help businesses use their resources wisely and also save on development costs. The design will help the designers to know whether the users like their product or not. This method can also help the marketing department of the company to focus on profitable products instead. It can reduce support costs as less manual intervention is required.

2.7 User Interface Design and Screen Design Principles

2.7.1 Universal Usability

User interface or interface design should follow the principles of the eight caveats.

- 1) User diversity Physical as well as environmental.
- 2) Variations in user personality.
- 3) Intelligence and cognitive ability differences.
- 4) Racial and cultural differences.
- 5) Users who are incompetent or disabled.
- 6) Age of users.
- 7) Children's design Children need a design that is different from that of adults. It needs to arouse a lot of curiosity.
- 8) Compatibility with existing software and hardware Prevent incompatibility issues from occurring.

2.8 Chapter Summary

In Chapter 1, we presented the background of TinyEpicBrains with VideoQR, the goal and scope of this project.

In this chapter, the state of the art was categorized into Customer Behaviour about advertising in Thailand (Section 2.1) and background of QR codes (Section 2.2). Observations were made on the studied systems in related concepts (Section 2.3), the relevance of the state of the art to related technologies (Section 2.4). We learn more about our user by considering User Experience (UX) and User Interfaces (UI) (Section 2.5) along with its advantages (Section 2.6) and principles (Section 2.7). At the end, we provided a summary (Section 2.8).

In the next section, the design of the methodology is presented, which is a system for the VideoQR website.

CHAPTER 3

METHODOLOGY

3.1 Introduction

In Chapter 2, we noted that advertising based on customer behaviour involves the background of QR code that relates to concepts and technology.

This chapter describes the design of the system development, a system that implements the VideoQR website. First, the chapter describes the design methodology of the project (Section 3.2) and the system requirements (Section 3.3). Then, a proposed solution is discussed (Section 3.4), followed by the client and technology requirements.

3.2 Design Methodology

3.2.1 System Architecture

According to Figure 3.1, the website can be accessed by logging in with one's email or Google account. Firebase authentication inserts new user information into Azure Storage. This is done to store user information for further use. If Google Firebase authentication was previously saved via email/Gmail, it returns a user UID or access token to the website.

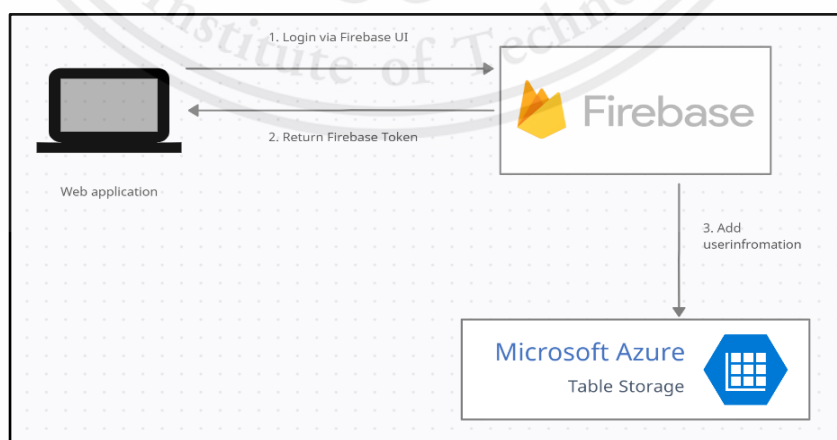


Figure 3.1 VideoQR Authentication design

The web application communicates with the Azure Storage using the Azure REST API and it responds the data back to the web application accordingly. When the request is sent to the store Azure Blob, the file is returned but when the request is sent to the store Azure Table, the json packet containing the data of the particular table is returned.

Retain the process of sending video information to the enterprise API server in this chapter. When the user completes the embedded process, the web application sends a table query to Microsoft Azure Table Storage and returns JSON table data. In this process, the web application uploads a video file to Blob Storage "itemvdo-in" and then sends a request with video information to the API Embed Video, which queries the video information in the Microsoft Azure table storage "videoinfo" and returns the video information to the API Embed Video. When the API completes the embedding process, it uploads the embedded video as "itemvdo-out" to the Microsoft Azure Blob Storage, and the user can download the video file from the web application.

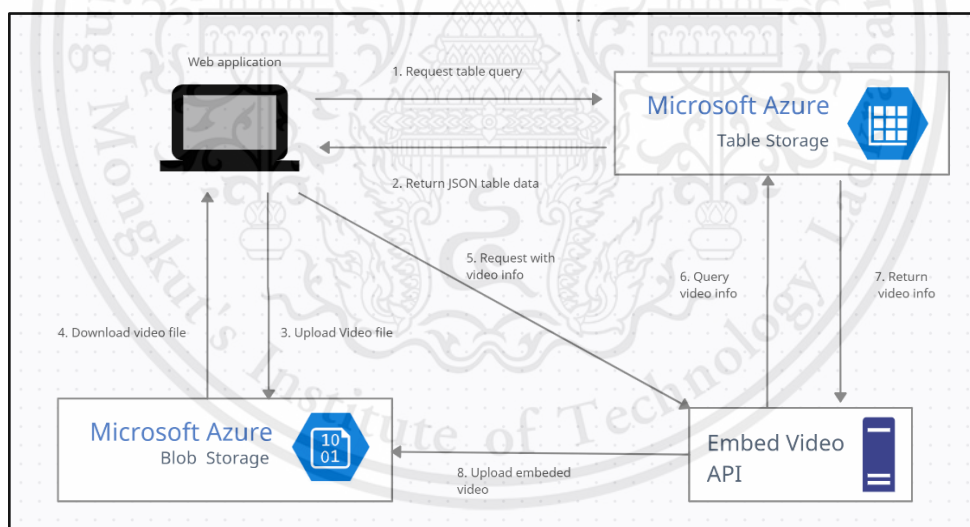


Figure 3.2 VideoQR System Architecture design

3.2.2 Use Case Diagram

There are features on the VideoQR web app that 'QR code generators', 'list embedded videos', 'list videos' and 'list users'. The QR code generator is a function that uses the URL passed in to create a new, shorter link. The primary function of the website application is embedded links. It takes as input a video file, links, and the time of each link in the video, and then uploads them to generate an output video with a hidden QR code. List videos is a function that contains the list of each user's past embedded videos, which they can use to edit the information of those videos. List users is a function that contains the list of users who are not administrators and with which they can edit the user information or delete users. There are 4 levels of access namely 'Super Admin', 'Admin', 'Free User' and 'Paid User'. They interact with the website differently. Super Admin is for the employees of TinyEpicBrains to classify the users into their respective companies. Admin is the supervisor of the company, who can manage other users in the same company and have access to all features except managing other companies. Free users only have access to QR code generators. Paid users have access to QR code generators, embedded videos and list video.

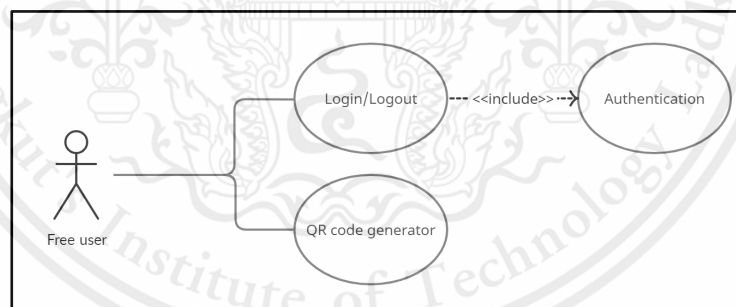


Figure 3.3 Use Case Diagram of Free user

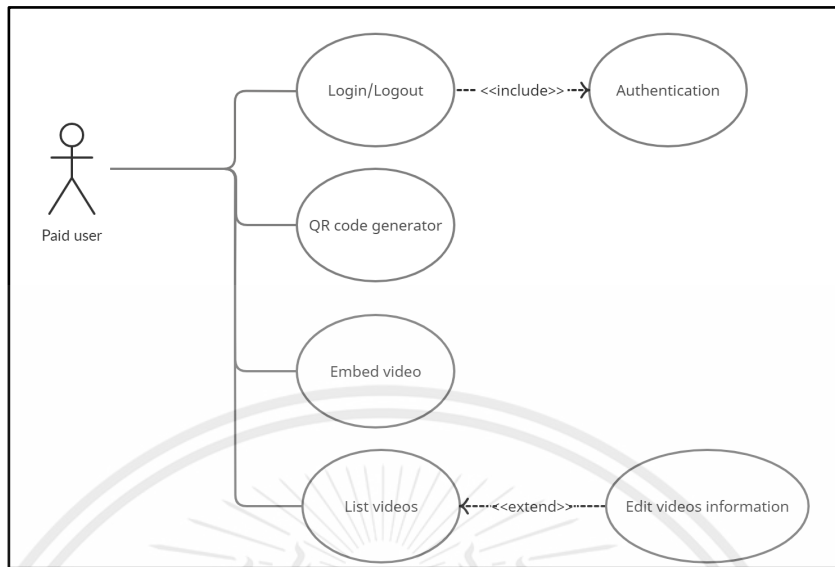


Figure 3.4 Use Case Diagram of Paid user

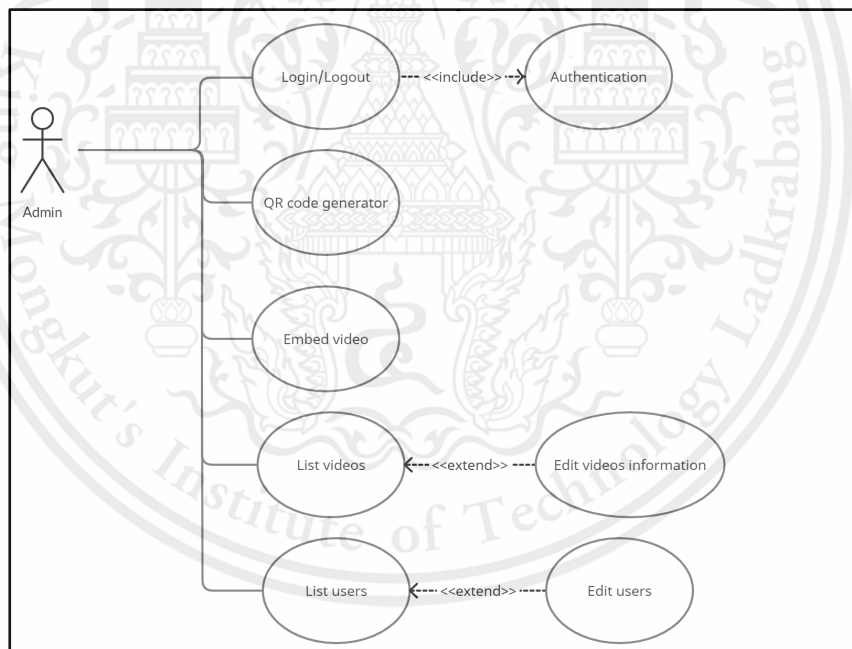


Figure 3.5 Use Case Diagram of Admin

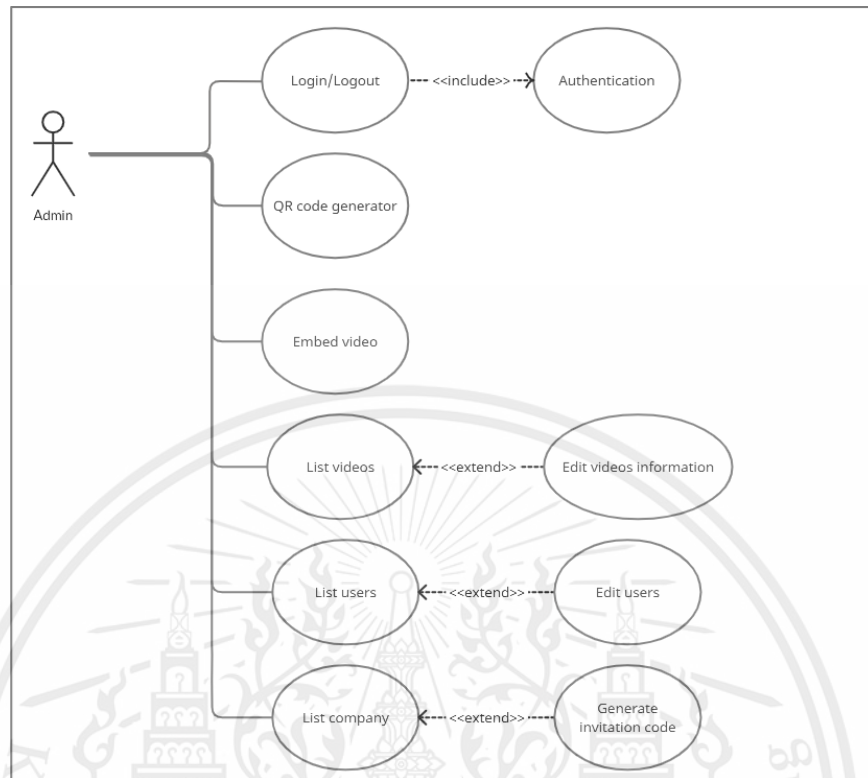


Figure 3.6 Use Case Diagram of Super Admin

3.2.3 Sequence Diagram

From Figure When the web user enters the site, he must log in to proceed with a function. Authentication is done by Firebase using the user account, which returns the user ID to the web application. The web application uses the user id parameters to retrieve the user's role from the Azure table store. Then Azure returns the user's role to the web application. The web user accesses the resource according to his role.

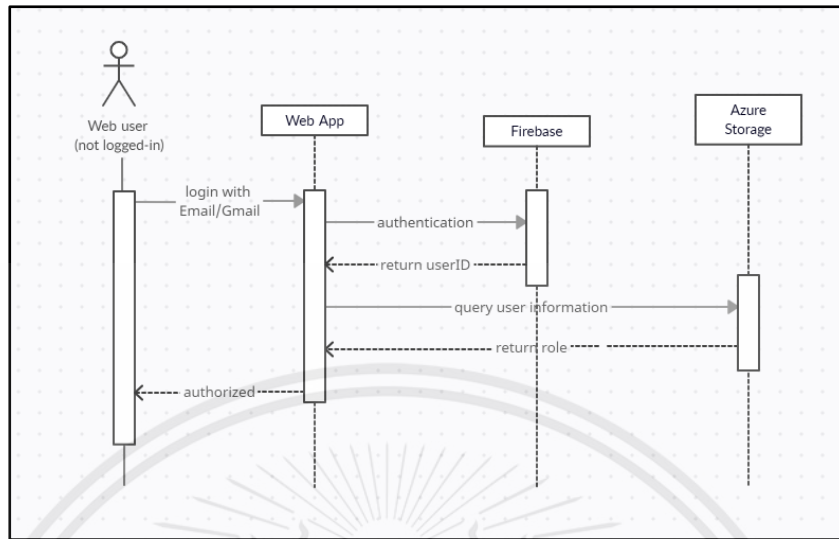


Figure 3.7 Authentication and Authorization

As shown in Figure 3.8, an already logged-in user selects a file to upload in the website application, as well as a URL and video descriptions. The data (video file) is uploaded to the Azure blob storage, and the video data (embedded time and URL) is modified in the Azure table. Then, the website application transmits the JSON API key to the embedded server, which then notifies the web application that it has received the JSON packet indicating the waiting status of the website. To proceed with the embedded process, the embedded server queries the video information from the "rediectvdo" database during asynchronization. After that, the embedded server transfers the video along with a hidden QR code to the Azure blob storage. The process is complete when the web app can find videos with the same information in both the input and output stores. The video can be downloaded from the website by the user.

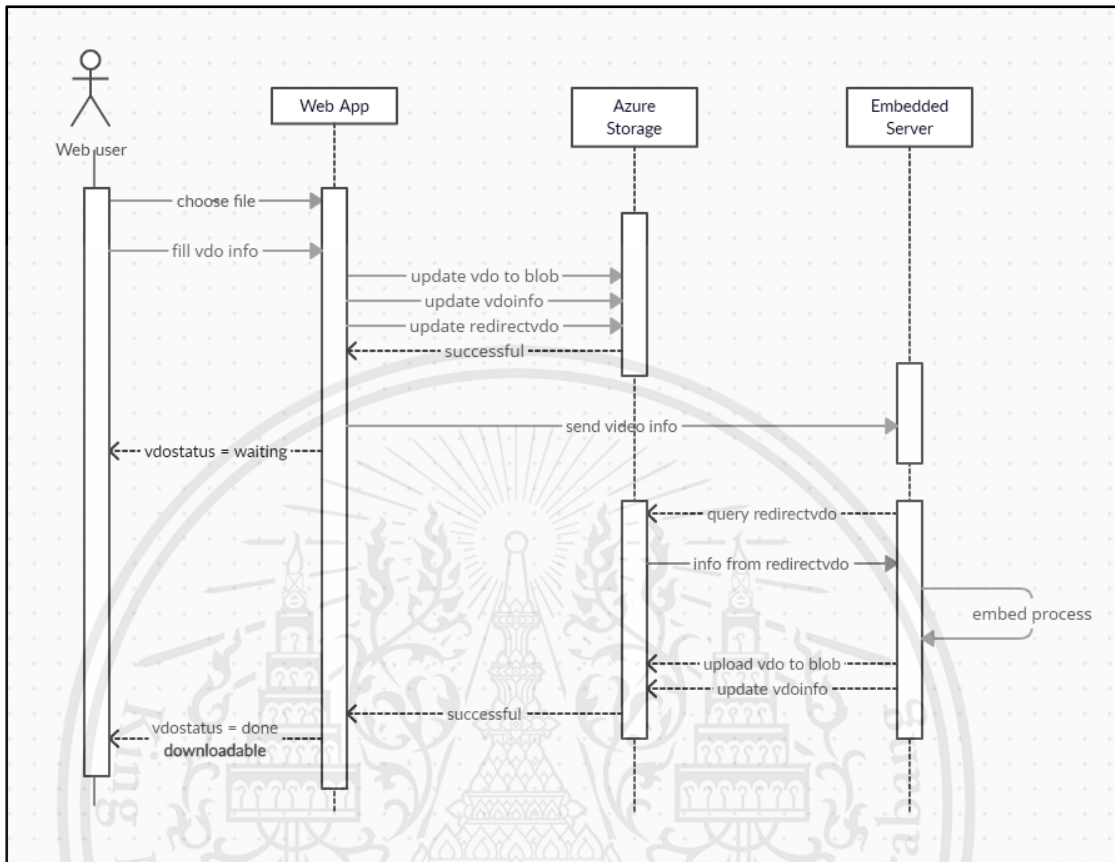


Figure 3.8 Embedded link process Sequence Diagram

After the logged-in user selects the List Video feature in Figure 3.9, the site queries data from the Azure table store "videoinfo" using the current user's uid. Azure receives the request and responds to the website with information about the videos. The information from "videoinfo" that is displayed on the website is owned exclusively by that user. Each video can be edited by the user if they need to update the details of the video (URL/ or redirect time).

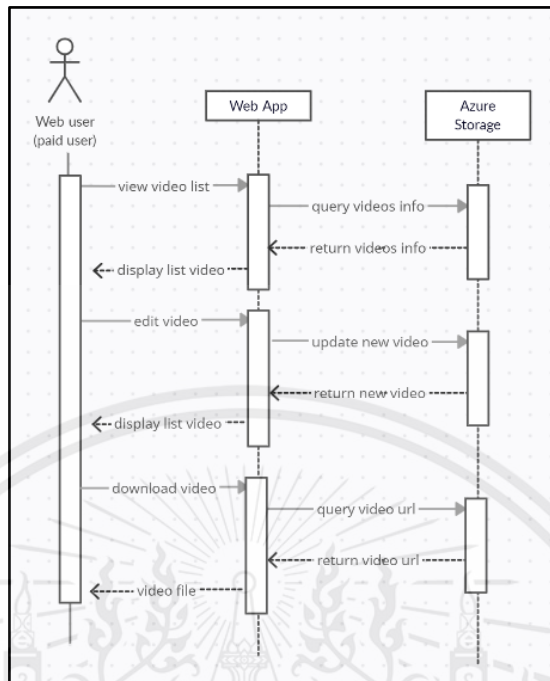


Figure 3.9 List video Sequence Diagram

Similarly, the User Management page in Figure 3.10, accessed by the administrator, will retrieve data from the Azure table store "userinfo" with the property "company name" to list a video. The returned package contains only the user information within the same company. The admin of the company can view and manage (edit information, change role, and delete) its users.

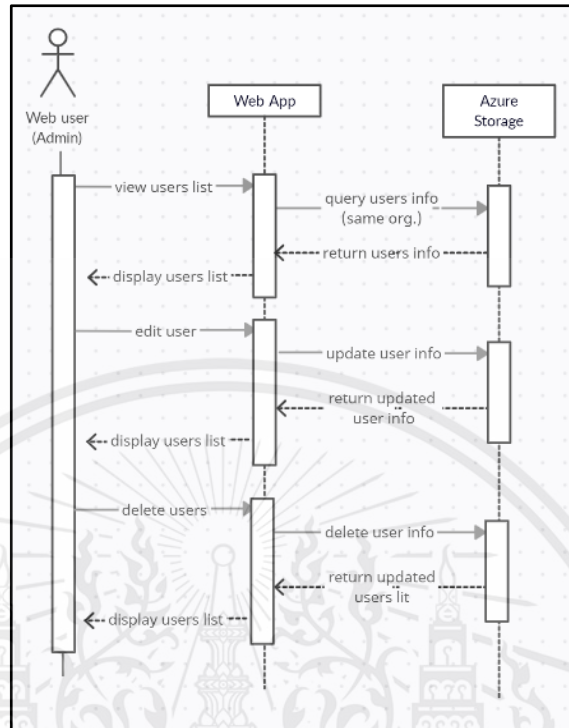


Figure 3.10 List users Sequence Diagram

3.2.4 Storage System

For the storage system, we use the existing data storage system from TinyEpicsBrains. Azure Blob storage and Azure Table storage are the main storage types they use. Both are used for a different purpose and are designed to handle different types of data. Embedded links use Azure blob storage to store videos from website applications. Also use Blob to create a short URL to store QR codes generated by a website application. It is used to store information data (email, user ID, timestamp, etc.) and user generated long/short URLs in Azure table store.

3.2.4.1 Azure Blob Storage

Azure blob storage is a block blob type optimized for storing large amounts of data and files. When a file is uploaded, one of the beneficial features of Azure Blob Storage is that it generates a blob URL for users. This blob URL is used to access Azure Table and to effectively use two types of Azure storage. Each

application can be easily implemented by a developer as it takes less time. The following are the three types of Azure blob storage:

- **Itemsqr**

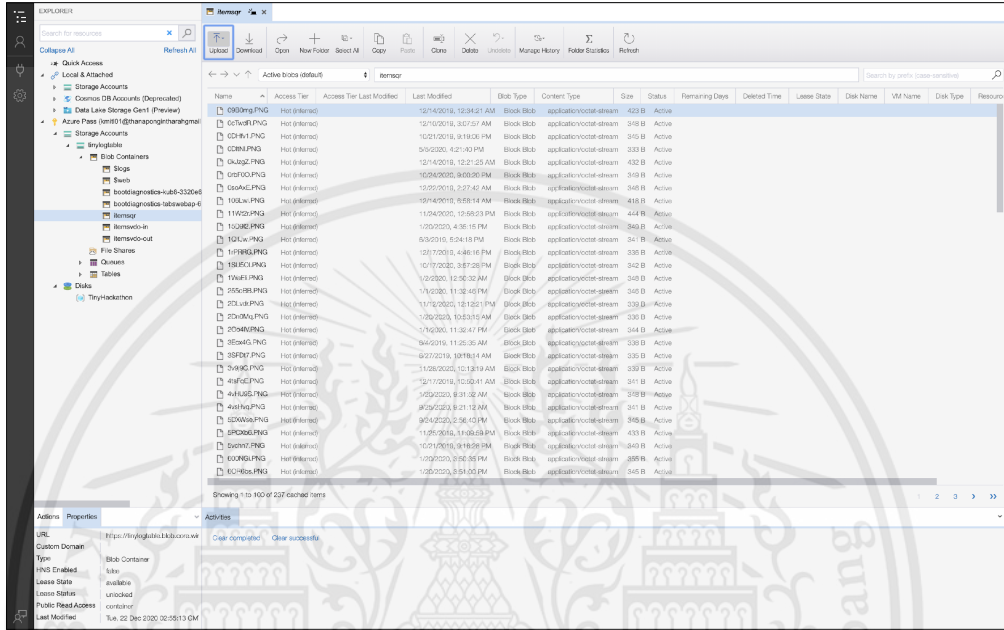


Figure 3.11 Blob Storage -Itemsqr

- **Itemvdo-in**

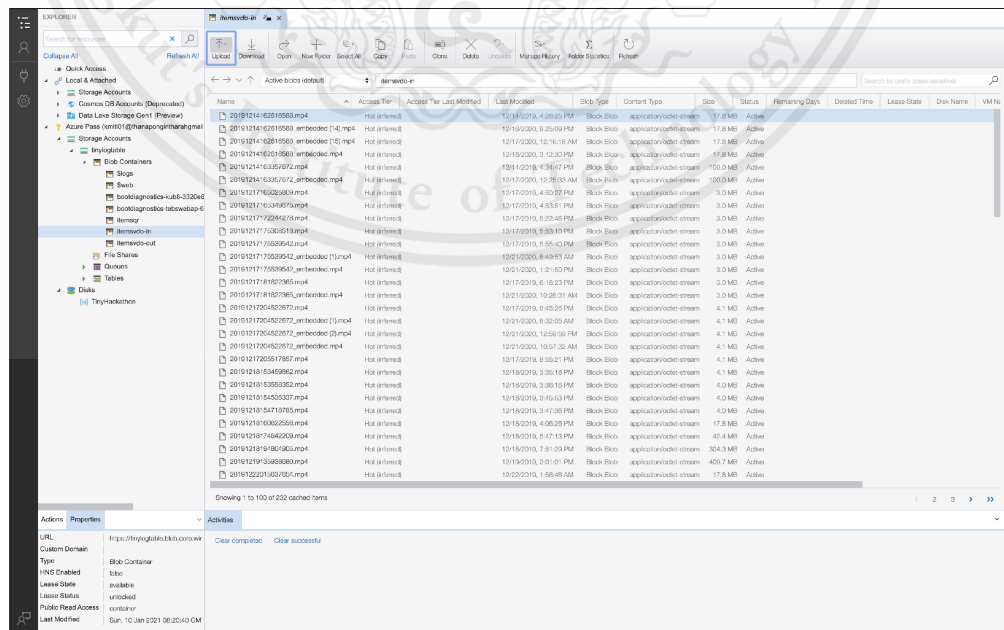


Figure 3.12 Blob Storage -Itemvdo-in

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Itemvideo-out

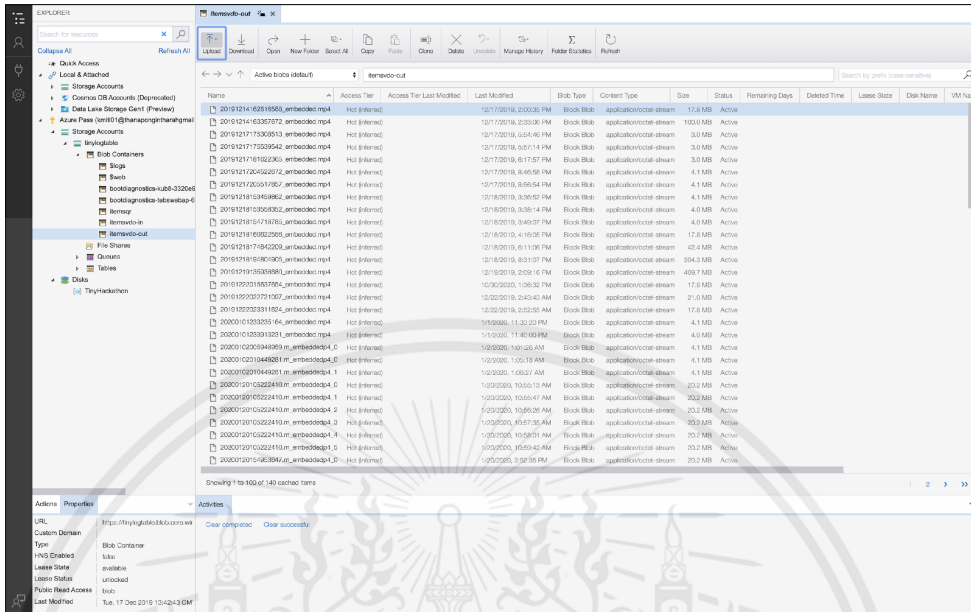


Figure 3.13 Blob Storage 'Itemvideo-out'

3.2.4.2 Azure Table Storage

TinyEpicBrains stores user information and video details such as user ID, token ID, URL and time in Azure Table Storage. These details are used to create embedded links and shorten QR codes. The following are the five tables that make up the Azure Table storage:

- Menuauthrole
- Redirect
- Redirectvideo
- Userinfo
- Videoinfo

Table 3.1 Azure Table Storage 'Menuauthrole'

Attribute	Type	Description
Menucodejs	String	Access to menu (JSON)
Rolename	String	Name of role for user
Roleid	String	ID of user's role

Table 3.2 Azure Table Storage 'Redirect'

Attribute	Type	Description
QrItemUri	String	QR Blob URL
Userid	String	UID (token) of each user
RedirectUrl	String	Long URL
Token	String	Token for using in Short URL
GroupToken	String	Token that uses in many Short URL

Table 3.3 Azure Table Storage 'Redirectvideo'

Attribute	Type	Description
Video_ID	String	ID of the video
RedirectUrl	String	URL that user wants to show product on video
RedirectNo	String	How many links are there in each video
Image Uri	String	Image of the thumbnail is converted into base 64.

Table 3.4 Azure Table Storage 'Userinfo'

Attribute	Type	Description
DisplayName	String	Username
Email	String	Email/Gmail of user
Roleid	String	ID of user's role
Userid	String	UID (token) of each user
Company	String	The name of the company to group users together

Table 3.5 Azure Table Storage 'Videoinfo'

Attribute	Type	Description
FileStatus	String	Status of embedded process
FileItemUri	String	Blob URL
Userid	String	UID (token) of each user
FileNameOri	String	Video filename from user
FileSize	Int64	Value of video file size
Redirect_Count	Int32	Sequence of link in each video
VideoName	String	The name user want to give to the project

3.3 Interesting Problems

The company TinyEpicBrains has developed a hidden QR code technology that is integrated into the video. The website interface created by the company so far is very difficult to use as it has no instructions and contains only the main function. They create websites using JavaServer Pages (JSP), which we are not familiar with. As a result, we discussed with the company how we can implement our website using javascript (jquery), Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS).

3.4 Proposed Solution

We want to create a website that interacts with both the company's embed system and Azure Storage. The website should be able to upload a video to Azure Blob Storage (input) and associated data to Azure Table Storage. Then send a request from the website to the company's embed API. The embedded video will be uploaded to Azure Blob Storage (output). Website users should be able to save the finished video to their devices.

3.5 Summary

This chapter described the high-level requirements and design of a system that implements the VideoQR website. The chapter began by describing the design methodology. The proposed solution was then discussed in Section 3.5, followed by the problem statement and customer requirements in Section 3.5.

This chapter is further elaborated in Chapter 4, which describes the implementation of the VideoQR website.

CHAPTER 4

EXPERIMENTAL RESULT

The end product of this project is a website application called VideoQR. This application is used by commercial advertisers or influencers who want to add hidden links to their video. Our team provides a web interface to fill in the necessary information and the company TinyEpicBrains uses this information to perform the hidden QR process.

4.1 User Interface of the web application

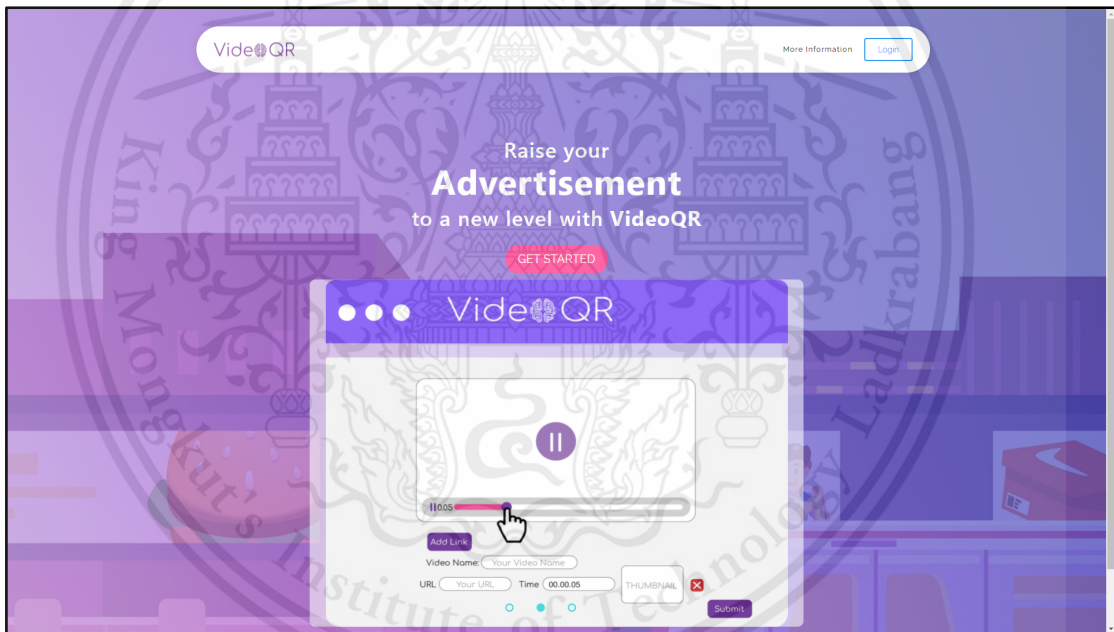


Figure 4.1 Home page

When users (commercial advertisers or influencers) first enter the site, they see the landing page that contains the main feature instructions. They must log in to use all the features.

Once the "Login" button is clicked, they will need to sign in using a Google account or email. No login is required as anyone can sign up on the site, but the new user is considered a "free user".

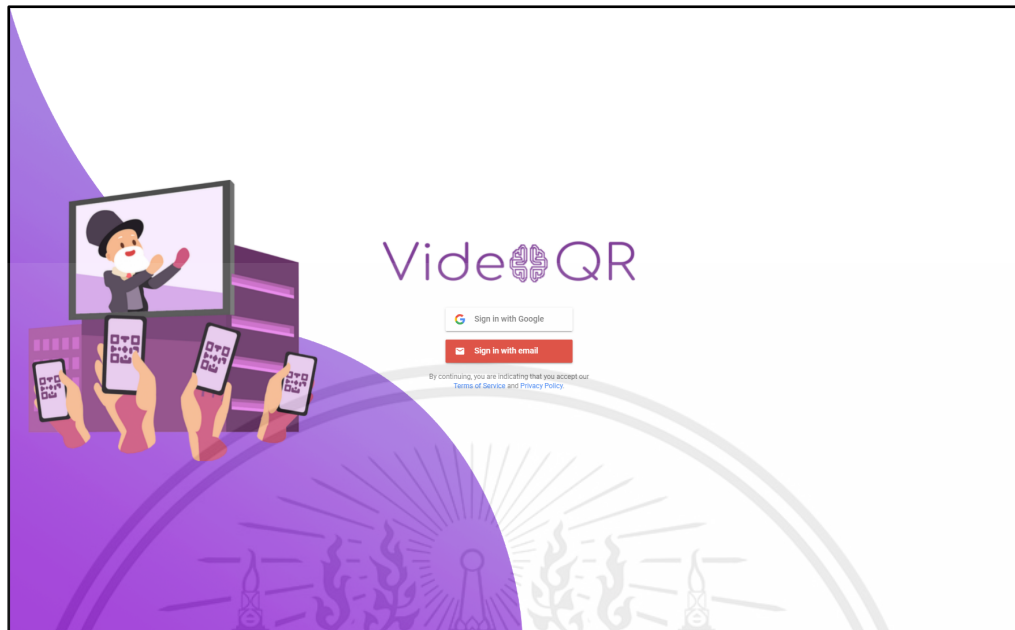


Figure 4.2 Login page

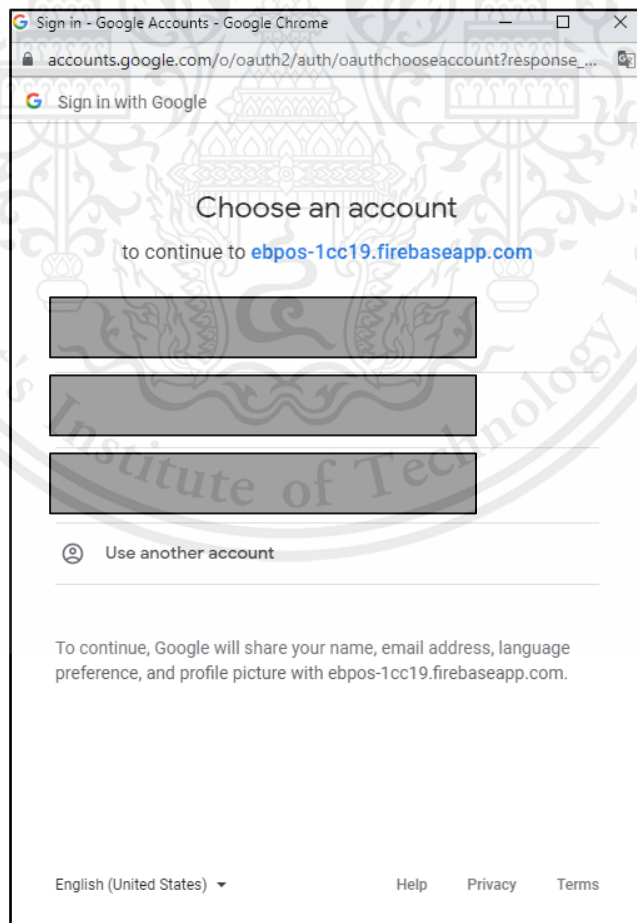


Figure 4.3 Login page (pop-up)

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After logging in, if they are "free users", the only available page function is the QR code generator, as shown in Figure 4.4. The web user enters any link, and it is generated on the page. The user can enter the code they receive from the administrator to log in to their company.



Figure 4.4 Free user QR generator

If the user is identified as a "paid user", they will be directed to the list of videos they have embedded. They can use the code generators from QR and also embed videos, which is the main function in Figure 4.5.

Project Name	Links count	Last modified	Status	Edit
		Tue Dec 15 2020 14:45:58 GMT+0700 (Indochina Time)	waiting	Edit
		Tue Dec 15 2020 14:50:32 GMT+0700 (Indochina Time)	waiting	Edit
SALT video	2	Mon May 31 2021 22:59:32 GMT+0700 (Indochina Time)	waiting	Edit
Salty honkas	1	Mon May 31 2021 23:24:40 GMT+0700 (Indochina Time)	waiting	Edit
Some Presentation	4	Tue Jun 01 2021 23:20:15 GMT+0700 (Indochina Time)	waiting	Edit
Sum Lyrics Video	4	Tue Jun 01 2021 23:25:01 GMT+0700 (Indochina Time)	waiting	Edit
Test Agam and Agam	5	Tue Jun 01 2021 23:09:04 GMT+0700 (Indochina Time)	waiting	Edit
Test Vid	3	Mon May 31 2021 23:29:41 GMT+0700 (Indochina Time)	waiting	Edit
Test VideoQR	9	Mon May 31 2021 23:03:40 GMT+0700 (Indochina Time)	waiting	Edit
test1	1	Thu May 27 2021 00:42:31 GMT+0700 (Indochina Time)	waiting	Edit

Figure 4.5 Video information

When you click on the Embed Video page, you must upload a video file by clicking on the square or dragging and dropping the file here, as shown in Figure 4.6. After a video is selected, they can select a specific time of the video and click "Add Link," after which an input box will appear with the thumbnail of the selected duration in Figure 4.7. You need to enter the URL of the hidden code QR that will be displayed from the beginning of the video until the first URL time. You can add multiple links to the video. If they change their mind, they can delete any link without following any particular order.

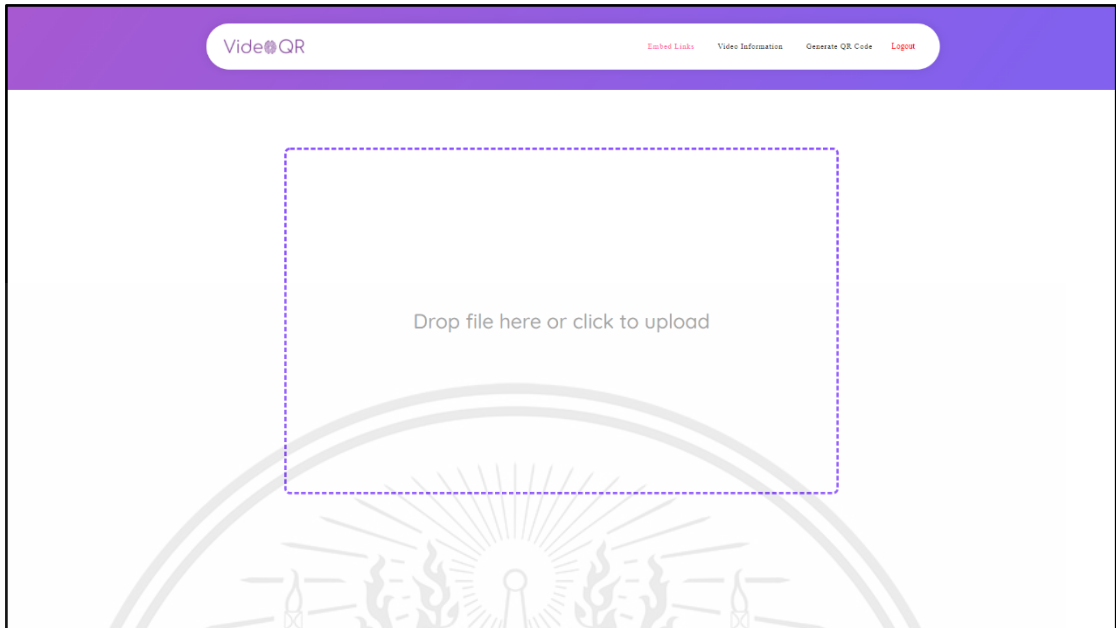


Figure 4.6 Embed Links 1(choose file)

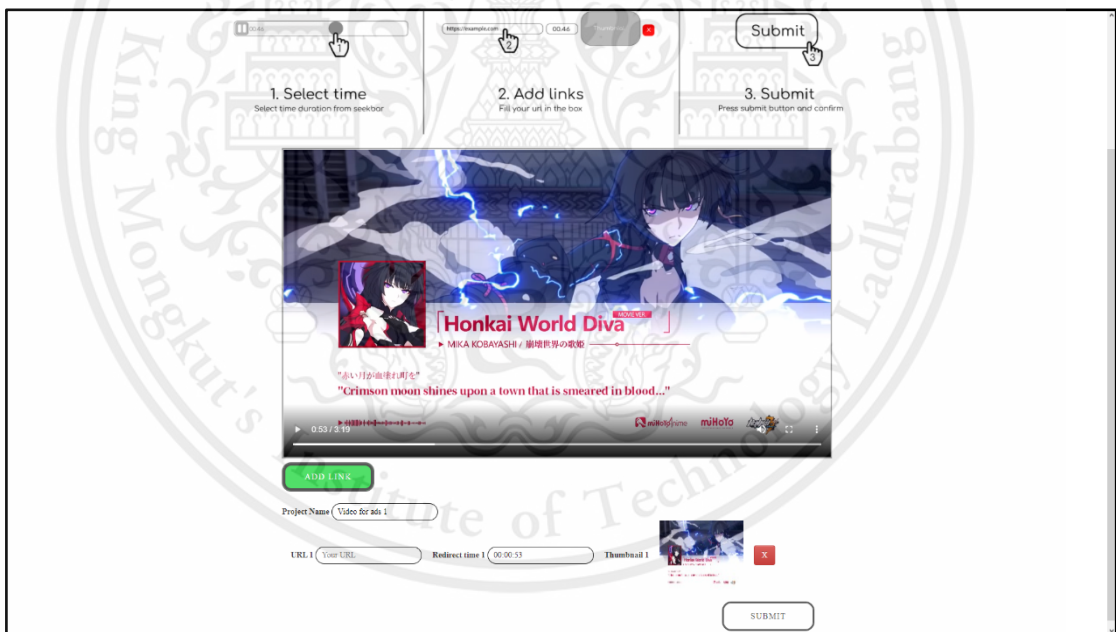


Figure 4.7 Embed Links 2

When they click the Submit button, a confirmation window appears before the data is sent to the database in Figure 4.8.

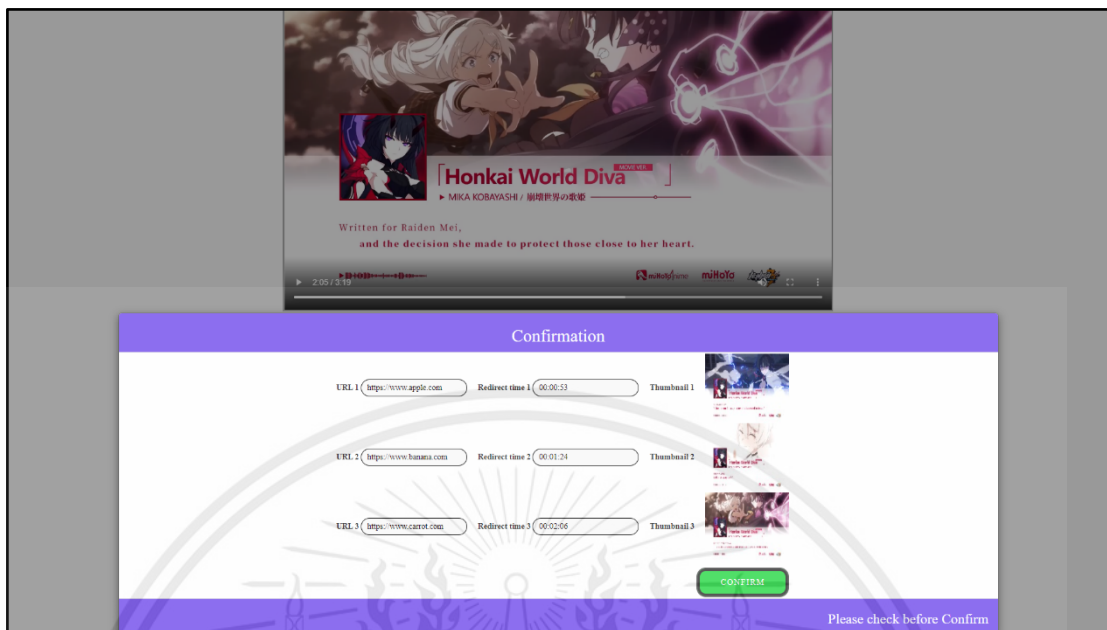


Figure 4.8 Validate before submit

After validation, the user is redirected to the video information page in Figure 4.5, which contains the list of past video projects. He can edit any video later by clicking the Edit button, as shown in Figure 4.9. On the video information page, the table shows the video name for the project name, the number of redirects for the number of links or hidden QR codes in the video, the timestamp when the embedding process was performed, and the file status is shown as waiting when we sent the request to the TinyEpicBrains API. The waiting status changes to the Download button when the embed API sends the video back to the database, as shown in Figure 4.11.

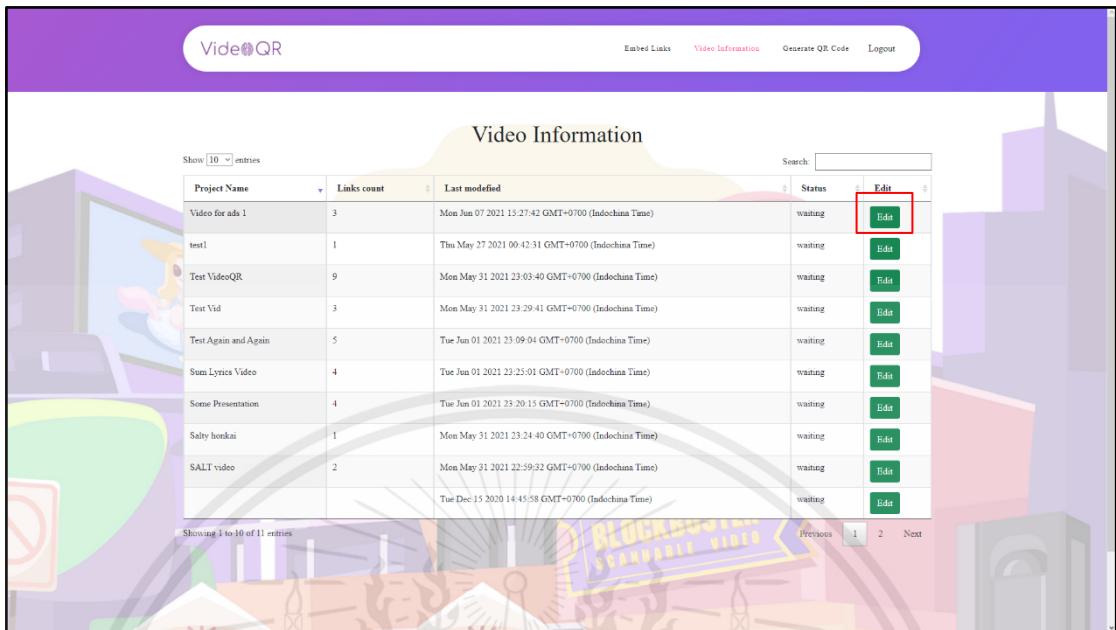


Figure 4.9 Edit video 1

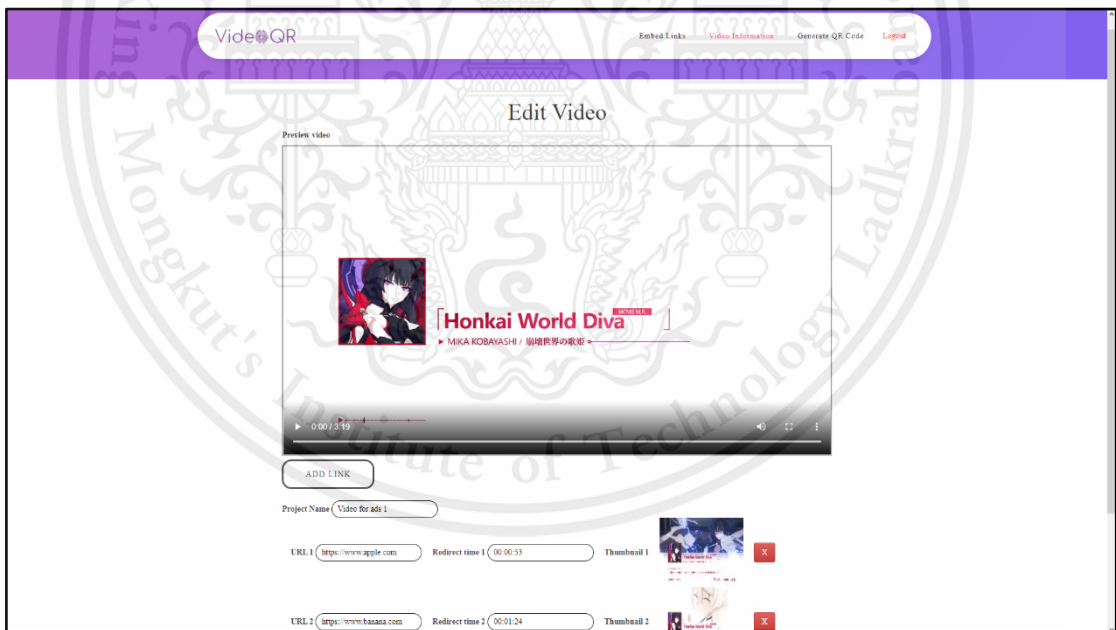


Figure 4.10 Edit video 2

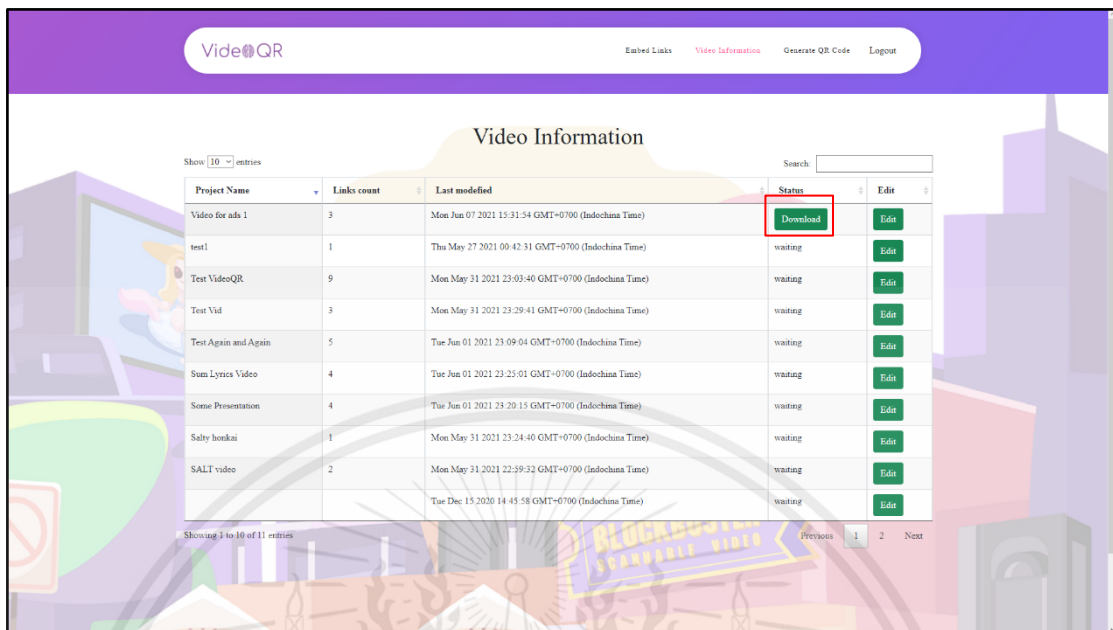


Figure 4.11 Downloadable

Once downloaded, the advertisement consumer (not the web user) can use the existing TinyEpicBrains mobile app to scan the video.

After a user is identified as an "admin", they can use all of the above features plus a user management page in Figure 4.12. Admin users can manage the other users except admin by clicking the "Edit" button. They can edit a user's display name, change their role, and delete their account from the company, as shown in Figure 4.13.

Admin users can share their company code with free users so they can join their company by accessing the code, as shown in Figure 4.14. After free users access the code, the admin can manage the free users' account accordingly.

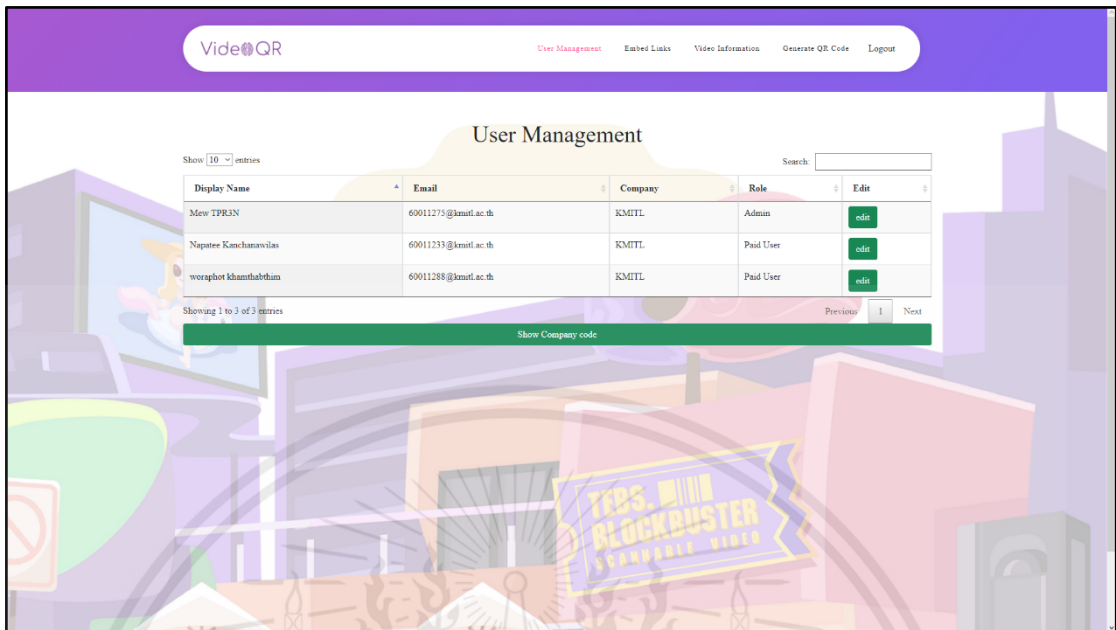


Figure 4.12 User Management

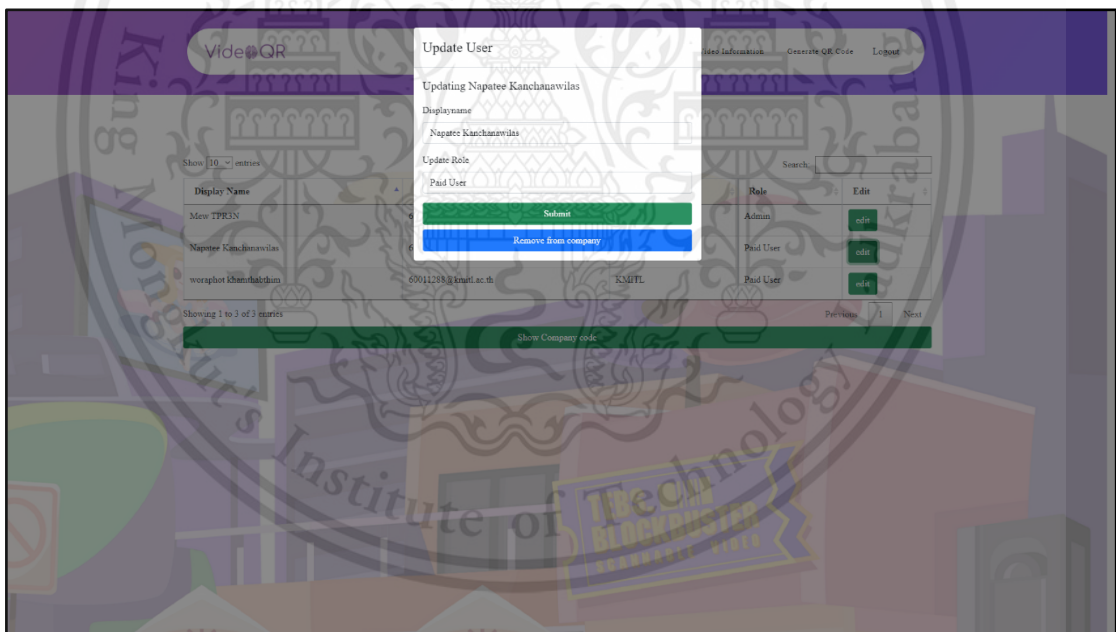


Figure 4.13 Edit User

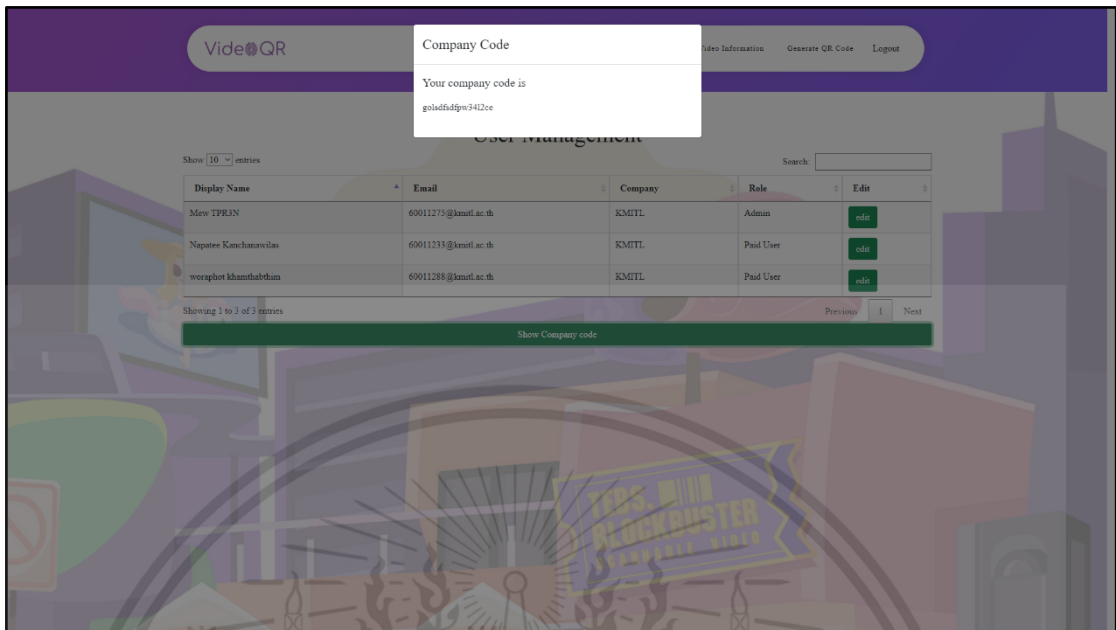


Figure 4.14 Show Company Code

Super Admin is a role assigned to the TinyEpicBrains admin. Super Admin can see all users of each company and, like the admin, edit each user of each company, as shown in Figure 4.15.

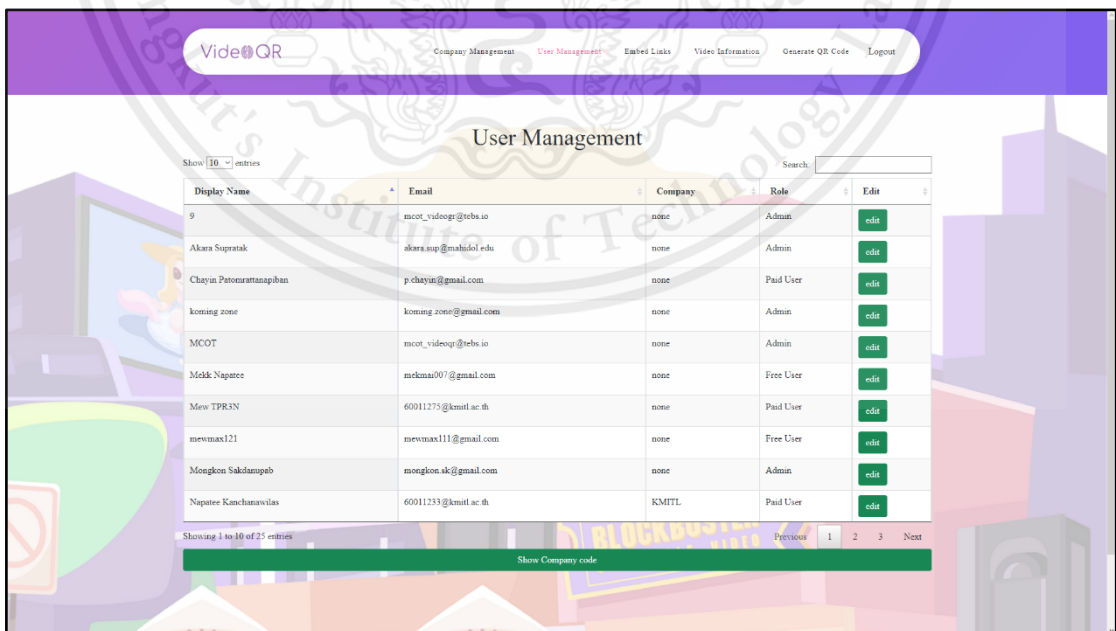


Figure 4.14 Super Admin User Management Page

This chapter concludes the result of the VideoQR website interface. Section 4.2 described a series of tests that demonstrated the web application user interface, including function. Finally, the aspects of the evaluation compared to the original website were discussed with the company and according to the design according to the use cases.



CHAPTER 5

CONCLUSION

In this chapter, we first summarise the work described in this report (Section 5.2). Then, in Section 5.3, we draw a number of conclusions about important parts of the work done, and finally, in Section 5.3.1, we discuss future work and how we envision Semantic Web technologies can support projects like this one.

5.2 Summary

The goal of this report is to provide VideoQR for products advertised via video on a screen. The goal of this project was to provide an advertising experience to the product owner via a hidden QR code in the video, as well as develop user roles. We create user experiences that are tailored to the needs of our clients. The embedding feature, user login, user management, and enterprise management are all features of the VideoQR web application that enhance the performance of the web application.

The company's previous website interface is extremely difficult to use, lacking instructions and containing only the main function. The web pages are built using JavaServer Pages (JSP), which we are not familiar with. Therefore, we discussed with the company how we can create our website using JavaScript (jQuery), Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). In the future, we plan to expand the customer analytics to meet the company's needs for customer insights and business direction.

Chapter 1 introduced the overarching themes of this report and placed the motivation for the work in context.

Chapter 2 provided an overview of the state of the art in advertising, QR codes and user experience. Advertising was introduced and QR code was described. The potential for the development of the VideoQR website was highlighted.

Chapter 3 describes the design of the system development, a system that implements the VideoQR website. The individual features of VideoQR that support customer

requirements were then described in detail, including system architecture and diagrams.

Chapter 4 described the implementation of the VideoQR website.

Chapter 5 presented a series of tests demonstrating the vividness of the VideoQR website.

The goal of this project is to create a user-friendly website that is considered by the user experience and user interface. We have chosen to focus on elements of the VideoQR website.

We then designed and implemented a system that could do the following:

- Authentication and authorization
- Embedded links function
- Video information
- Download and edit videos
- User management

These combined features provide more accessibility for users required by customer needs and increase the performance of the VideoQR website.

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APPENDIX A

Copy of the VideoQR Website Satisfaction Survey

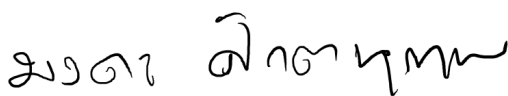
	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
VideoQR Website Design					
Did you like the design of the website?		X			
Did you like the color of the website?	X				
How was the experience with embed links function?		X			
How was the experience with user management function?		X			
VideoQR Website Performance					
Did it take too long to load the website?		X			
Did it take too long to fetch your details on our website?		X			
Did it take too long to send the data input?		X			
<p>Suggestion:1.Upload video screen: We are satisfied with upload video screen. It is much easier to use.</p> <p>2.We think it's good and it would be nice if you could add the group access right such as company name.....</p> <div style="text-align: right; margin-top: 10px;">  </div>					

Figure A-34 Evaluation Result

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BIOGRAPHY

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