CEN 4010 - Principles of Software Engineering

Term: Summer 2023

Milestone 3: More Detailed Requirements, Architecture and a Vertical Software Prototype

Bizz QR

Group:15

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Revision History

Github Repo:

https://github.com/Kfrancis2018/Group-15-Milestones.git

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# **Executive Summary**

In today's fast-paced business environment, establishing and expanding professional networks is essential for small businesses and students alike. However, traditional methods such as paper resumes and physical business cards can often be inefficient and easily overlooked. Many hiring processes now rely on automated systems that prioritize keyword matching, making it even more challenging for resumes to stand out. Additionally, the inconvenience of carrying and exchanging physical business cards can lead to missed opportunities.

Introducing Bizz QR, a QR code software designed to address these challenges and revolutionize the way professionals connect. Bizz QR is specifically tailored to serve small businesses and students, providing a modern and efficient solution for networking. By transforming contact information into a QR code, Bizz QR enables users to easily share their details and make lasting connections. Bizz QR was designed at FAU and will be made available to FAU students for free wishing to enhance their networking capabilities.

With Bizz QR, the hassle of handling physical resumes is eliminated. Instead, users can input their contact information into the program, which generates a unique QR code representing their details. When networking, all it takes is a simple scan of the QR code using a smartphone or QR code reader to instantly access and save the contact information. Saving that contact information to a personal phone will provide a strong point of contact. Whether you’re a student looking for an employer or a business looking for customers, Bizz QR gets you one step further in prospect.

By leveraging QR codes, Bizz QR ensures that crucial contact information is readily available and easily transferable, enhancing networking opportunities. Whether attending career fairs, conferences, or casual meetups, users can effortlessly share their professional details with others. No longer will individuals miss out on valuable connections due to the absence or loss of physical business cards.

# **Data Definition**

| Name | Type | Usage | Meaning |
| --- | --- | --- | --- |
| BIZZ QR | Actor | Domain Name | Name given that represents all pages on the website. |
| BIZZ QR System | Hardware and Services | Use Case Scenario | Name given to all functional system in the Bizz QR Website including both front and back end |
| User | Actor | Use Case Scenario | The person that is using the QR code System, The creator of the QR code. The person scanning the qr code. |
| Vcard | DATA | Use Case Scenario | Contact information Encoded into the Vcard format |
| QR codes | DATA | Use Case Scenario | Vcard or other information such as websites encoded into a scannable image. |
| social media profiles | DATA | Use Case Scenario | Links to the users Social media Accounts such as facebook, twitter ect. |
| Contact Information | DATA | Use Case Scenario | Contains data including , Name , Phone number , **Social media Profiles** |
| Log in with Google | Service | Use Case Scenarios | Serves as an alternate means for login provided the user has a google account |
| Edit | Service | Site User Service | Allows to user to change contact information |
| Share | Service | Site User Service | Allows users to send Vcard data for QRcodes via email or messages. |
| Log in | Service | Site User Service | Allows users to login and save contact information for Vcard QR Creation |
| Save | Service | Site User Service | Allows users to save the The generated Vcard and QR code data |
| Download | Service | Site User Service | Allows users to download Vcard for QRcode Data directly to the device |
| Contact Sharing | Service | Site User Service | Term used to describe sharing contact information |
| FireBase | Database server | Site User Service | The services used to store user information for later use |
| Application | Actor | Use Case Scenarios | The mobile compact version on BIZZ QR |
| Home Page | User Interface | User Interface | The first page a user will see |
| Dashboard | User Interface | User Interface | Can only be seen once a user has logged in contains saved QR codes and Vcard data |
| Networking | User Interface | Use Case Scenarios | The act of sharing contact information with other people. |
| Website | User Interface | User Interface | The front end for user interaction |
| Github Pages | Live server | Use case | The server that hosts the BIZZ QR live website. Also stores non user data |

**List of initial Functional Specifications**

**Non-Member expectation**

1. **Creating Account**

**○ 1.1** The system shall allow the user to create an account by storing

UserID, Password, Date of Birth, First Name, Last name, Location, and

answer to security question/phone number.

The system shall not allow the User to Create an account if the UserID

choose by the User already exist in the System’s Database Also the

system shall prevent the user from creating an account if the User’s

chosen password does not match the re-enter password field. System

shall prevent the creation of the user’s account following fields is not filled.

Fields that have to be filled are First Name, Last Name, Location, UserID,

Password, Re-enter Password, Security Answer Security Question or

Phone number, and Date of Birth.

**○ 1.2 Stimulus/Response Sequence**

* + i. User enters a UserID (same as email)
  + ii. User enters a Password
  + iii. User re-enters Password for confirmation
  + iv. User shall enter their First and Last Name
  + v. User shall enter their Location
  + vi. User shall enter their date of birth
  + vii. User shall provide to an answer to given Security Question Or
  + provide their phone number
  + viii. System shall check if UserID is available
  + ix. System shall validate Password
  + x. System shall store user Name, date of birth, and answer to
  + selected security question/phone number
  + xi. System shall confirm that the account was created to the User
  + xii. System will have a button to redirect the user back to the home
  + page at will

**○ 1.3 Function requirement label**

i. REQ 1.1 Creating Account

1. **Information** 
   * Users will be able to view Info about Bizz QR on the homepage about the functionality.

**Members expectations**

1. **2. Edit Profile**

**○ 2.1** Users shall be able to edit their profile by providing a name, business name,address, phone number, email, any social media , and date of Birth. The System shall store that information when the user clicks the save button.This information will be used to generate and manage the QR code. The System shall prevent any changes to the User’s profile if any of the fields are left blank. The user has to type the information in a valid format in order for the system to store the information.

1. **QR Code Generation:**
   * The system should be capable of generating QR codes from user-provided contact information.
   * It should support various formats, such as vCard, to encode contact details efficiently.
   * The generated QR codes should be visually appealing and scannable by popular QR code scanning apps.
2. **QR Code Sharing:**

* Users should be able to download the QR code image or generate a shareable link.
* Users should be able to view QR code on device that will be scanned by another phone device with supporting camera

1. **Help and Support:**
   * The system should include comprehensive documentation or tutorials to assist users in using the platform effectively.
2. **User Management:**
   * User authentication and password reset functionalities should be implemented to ensure data security and privacy

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# **List of Non-Functional Specifications**

**Performance Requirements**.

1. **Responsiveness:** The website will be performant on a wide range of devices. Website elements will dynamically scale to fit both screen size aspect ratio and resolutions.
2. **User/event response time**: The website shall load and update with new information between 100-500 milliseconds and be able to update the database and change website elements within 500 milliseconds
3. **Screen refresh time:** System takes no more than 100 milliseconds to load the home page of the website provided there is adequate bandwidth on the user end.
4. **Reliability:** The system endeavors to be available at all times Regardless if the database is experiencing failure or slow downs.
5. **Executions speed:**

**Usability Requirements:**

1. The system will be able to be used by anyone with basic understanding of computers; this is done through minimal nested menus, large , clear buttons and prompts that allow users to produce the type of QR code they desire.
2. Mobile Compatibility:
   * Bizz QR should be accessible and optimized for mobile devices, including smartphones and tablets.
   * The application should have a responsive design and provide a seamless user experience across different screen sizes and resolutions.

**Availability** **Requirements**:

1. **Operational Time:** The website will be available 24 hours a day 365 days a year and so long as there are no interruptions from Github pages there will be no interruptions in the website operation.
2. In the case that there is interruption from the firebase, there will be a clear message stating that there is an interruption. Users can create and change QR code information stored locally on the device and when firebase services are online again users will be prompted if they wish to commit these new changes.

**Expected load.Security requirements.**

1. **Username And Password**
   * A username and password will be required to enable the save information used to generate the users QR codes. This password will require A capital letter in the beginning and with a number at the end .The password will have a minimum length of 8 and a maximum length of 20 characters.
   * At no point will BIZZ QR disclose or share username and password and if there is any indication of a breach there will be announcements on the homepage alerting users to change passwords if a breach is detected. And until the password is reset no one can access or change the user's information.
2. **User Data:**BIZZ QR shall not share or use any information added to the users database. This information will remain private and will only be able to be accessed by the user.
3. **Encryption:** No end to end encryption is not needed since no critical data such as credit card information or social security numbers will be transferred or hosted

**Storage:** QR Code Storage and Management:

* + Bizz QR should have a storage system to save and organize generated QR codes.
  + The application should provide options to edit, delete, or update QR codes as needed.

**Expected Load:** Since the scale of the project is not large we will expect no more than 5 - 20 users using the website and either accessing or making changes to the database at once. The application will be built with functionality to account for this.

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# **High-Level System Architecture**

1. **Discord:**Discord is used for vocal communication for each team member all communication both voice and text will be done through discord.
2. **Google Docs:**Google Docs was used to coordinate the creation of the requirement documentation allowing for developers to make changes and add to the documentation in real time.
3. **Vcard.js:** A library used as an extension of javascript that allows for the easy creation of Vcards using java script. **License** (https://github.com/enesser/vCards-js/blob/master/README.md).
4. **QRcode.js**: QRcode.js is also an extension of javascript that can be used to generate QRcode images using proper test input. Well be paired with Vcard.js for QRcode based vcards. QRcode uses the standard MIT **License** (https://opensource.org/license/mit/)
5. **QR API Google charts** : The QRcode functionality of the google charts api will also extend QR code creation to more than just vcards and offer more customization if needed.
6. **Google Maps: api**
7. **Trello:** Trello workspace will be used to keep track of current sprints and objectives using a to do list.
8. **Development environment**: Visual Studio Code is the code editor that will be used to develop the code for the website. To do this we will utilize the Live Server extension provided by Ritwick Dey. This is also covered by the MIT License(https://github.com/ritwickdey/vscode-live-server/blob/HEAD/LICENSE)
9. **Firebase:** Firebase realtime database will be used to store userdata
10. **Github pages:** Github pages will be used to host the website and its functionality.
11. **Github Repositories**: Using a central repository for the project developers will be able to work on several aspects of the website in parallel by forking from the main repo. These forks can then be merged with the main file once it has undergone extensive testing. It also allows developers to view the changes made to the code made by other programmers.
12. **Languages:** The programming languages that will be used will be.
    1. **HTML:** Will provide the basic structure of the website and allow the browsers to view the website.
    2. **CSS :**CSS will allow the website to create a pleasing visual appearance including colors and other visual functionality.
    3. **Javascript :**Javascript will enable dynamic interaction of the elements in the html and we will also use javascript to communicate with the firebase database.
13. **Browsers:** BIZZ QR will be compatible with most major browsers that support javascript such as Google Chrome Safari FireFox and Microsoft Edge.

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# **UML CLASS DIAGRAM**

# **Competitive Analysis**

In this competitive analysis we wish to see how our proposed idea for BIZZ QO stacks up against the competition. These will be done in specific sections

1. **QR code creation:** How easy is it to understand the process of creating QR code.
2. **VCard Creation:** how easy is it to create a Vcard.
3. **QR Code Creation Speed:** How fast the QR code can be created and deployed for use.
4. **QR Code editing:** How easily can a user edit a already existing qr code on their account
5. **QR Code Customization:** How much personalization can be done on the QR Code e.g. colors themes backgrounds images.
6. **QR Code diversity**. How many kinds of qr codes can be created .
7. **QR Code quantity**. How many QR codes can be stored.

These will be quantified from a value rom **1-5**

**1**=Poor

**2**=Subpar

**3**=Fair

**4**=Acceptable

**5**=Great

| **Features** | Bizz QR | **.qrcode-tiger.com** | **.flowcode.com** | **myqrcode.com** | **qrcodechimp.com** |
| --- | --- | --- | --- | --- | --- |
| **QR code Creation** | 5 | 3 | 2 | 5 | 5 |
| **VCard Creation** | 5 | 3 | 1 | 4 | 4 |
| **QR Code Creation Speed** | 5 | 2 | 3 | 3 | 5 |
| **QRcode Editing** | 5 | 4 | 3 | 4 | 4 |
| **QR Customization** | 3 | 5 | 4 | 3 | 4 |
| **QR Code diversity** | 3 | 5 | 5 | 4 | 3 |
| **QR code quantity.** | 5 | 2 | 1 | 1 | 2 |

**BIZZ QR:**

Bizz Qr shall have an easy to understand and effective design that offers users an easy method of creating, saving and editing QR codes. The services provided by BIZZ QR will be completely free and with no limitations on the amount of QR codes that a person can save to their account. Since the design and interface of the website will be simple the time it takes to learn the functions of the website will be minimal.

**Qr Tyger:**

Qr Tyger features a cluttered design, offering a wide range of customization options for QR codes, including the ability to encode images into dynamic QR codes. Users can save their QR codes as templates for future reference. However, it is important to note that this service is not free, and user accounts are valid for only one year. To view a QR code, users need to navigate through their account, access the dashboard, and then view or edit the desired QR code.

**Flowcode:**

Flowcode provides impressive customization options, particularly in the realm of background art. Users can choose from various themes, such as Father's Day or Pride Day. The platform offers an intuitive interface, but it appears to lack the option for vCard creation. Additionally, there is a limitation on the number of vCards it can store, allowing only two unless users opt for a paid plan.

**Myqrcode.com:**

Myqrcode.com presents a user-friendly website with straightforward navigation. It offers a moderate level of customization for QR codes, allowing users to choose colors, add or remove text, and incorporate borders. However, this service is not free, and users are limited to a single QR code creation during the 14-day free trial period. The website demonstrates fast response times, enabling convenient and instant QR code editing.

**QR code chimp:**

QR code chimp stands out with its professional design and user-friendly interface. It facilitates quick QR code creation and even allows users to scan images. However, when scanned, the image redirects to another website containing the vCard data, which can then be saved to the user's contacts. It is worth noting that QR code chimp imposes a monthly scan limit of 1000, and the process of adding information to contacts involves an additional step. Furthermore, the website does not offer the option to log in with Google credentials.

**Planned Advantages:**

The major focus of BIZZ QR is ease of use. Many QR code sites over expose the user with large amounts of options and at times it is not clear if the information is required for creation. While a seasoned user of these websites might find it easier to deal with, new users are likely to be overwhelmed by the amount of options. Most are unlikely to need such a diverse amount of QR Codes. Another aspect is the limitations placed on non paying users such as limited scanning and a cap on the amount of qr codes that can be stored on the users account. These problems are something that BIZZ QR shall aim to fix. It shall have a very simple to understand interface and no caps on QR storage. These features will be more beneficial to users who prefer to have a simple and fast method of QR code creation without dozens of unnecessary features that clutter the interface. Most of which the user is unlikely to use.

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# **Team Roles:**

· Jacob Khan, [Team Leader, Front end Developer]

**Scrum Master, Github Master**

· Keanu Francis[Back end Developer]

**Front End Developers:**

· Jacob Kahn

· Milot Jeune

**Back End Developers**

· Sunny Chen

· Keanu Francis

· Temel Durak

# **Checklist**

a) Communication[DONE]

b) Timeslot [DONE]

Monday and Thursday After 5pm

c) Front and Back end Team [DONE]

d) Github master [DONE]

e) Ready to use front and back end frameworks [ON TRACK]

f) Skills defined [DONE]

g) All members read and approve final M1 [ON TRACK]