

Optimization of Gym Check In and Membership Information System QR Code Scanner Based

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ABSTRACT

The development of information technology provides opportunities to improve operational efficiency in various fields, including membership management at gyms. A QR code scanner-based information system is an effective solution for managing gym member check in. Users can check in simply by scanning a QR code that is linked to their membership data. This system not only facilitates the attendance process but also helps managers monitor the number of member check in, remaining attendance quota, and attendance time. This research aims to design and implement a QR code scanner-based check in system at the gym, as well as analyze the impact of the system on operational efficiency.

KEYWORDS: information system, QR code, check in, gym, membership management.

1. Introduction

In recent years, there has been a significant increase in people's interest in maintaining health and fitness, leading to an increase in the use of gym facilities. Effective gym management includes not only the provision of adequate fitness equipment but also the efficient handling of attendance and membership records. Traditional manual methods of recording attendance, such as using punch cards or sign-in sheets, often prove to be inefficient and prone to errors.

To improve the efficiency and accuracy of gym membership management, the implementation of QR code technology presents a promising solution. QR codes, or Quick Response codes, are a type of matrix barcode that can quickly encode and decode data. By using QR codes, gym members can check in by simply scanning the code linked to their membership data. This technology allows fitness center administrators to monitor attendance and track membership usage more effectively and accurately.

2. Literature Review

2.1 Information System

An information system is defined as a set of organizational procedures, that is implemented to provide information for decision makers to control the organization (Ladjamudin, 2013).

2.2. Membership Information System

An information system created to maintain the efficiency of member activity management and ease of access for members with a better level of security.

2.2 QR Code Check in Attendance System

Attendance is a data collection activity used to determine the number of participants in an event. QR Code Check in Attendance means a process of check in activity. Member had a QR code generated by system and scan the code by its scanners on receptionist gate to proof that the person is member and to automate input for faster and more accurate attendance recording.

3. Research Methods

This research uses a software development method with a waterfall model, which includes the stages of needs analysis, system design, implementation, and testing. Data was collected through observations and interviews with gym managers and members. The system was tested at a gym with a medium membership size to evaluate effectiveness and ease of use.

4. System Development

The information system developed is web-based and equipped with a mobile application to facilitate check in using QR codes. The main features of this system include:

4.1 QR Code Generator for Members

Each member will be given a unique QR code stored in their account. This QR code is used every time the member checks in at the gym.

4.2. QR Code Scanner at the Gym

Gyms are equipped with QR code scanners that are directly connected to the attendance system. When the member scans, the system will automatically verify the membership and deduct the available check in balance.

4.3. Automatic Check In Deduction

Every time a member scans, the system will automatically deduct the check in balance according to their membership plan.

4.4. Membership Data Management

The system stores members' attendance history, number of remaining checks in, as well as notifications when the check in balance is running low.

4.5. Reports and Analytics

Gym managers can monitor daily and monthly reports on the number of checks in, as well as evaluate the use of facilities by members.

5. System Design

5.1. Model

Manages data and business logic. In the context of this system, the model will include membership data, including QR code information. Each gym member has data that includes member ID, name, and membership plan. Membership Data: Stores member information, including member ID and membership plan. QR Code Generation: Uses a library or API to generate QR codes based on membership data.

5.2. View

Provides the user interface. Here, the view includes views for QR code scanning and attendance reports. Users can view their QR codes on the mobile app or in print format. User Interface: Provides a view on the mobile app or web platform where the member's QR code is displayed. Attendance Report: Displays attendance data and remaining membership quota after successful check in.

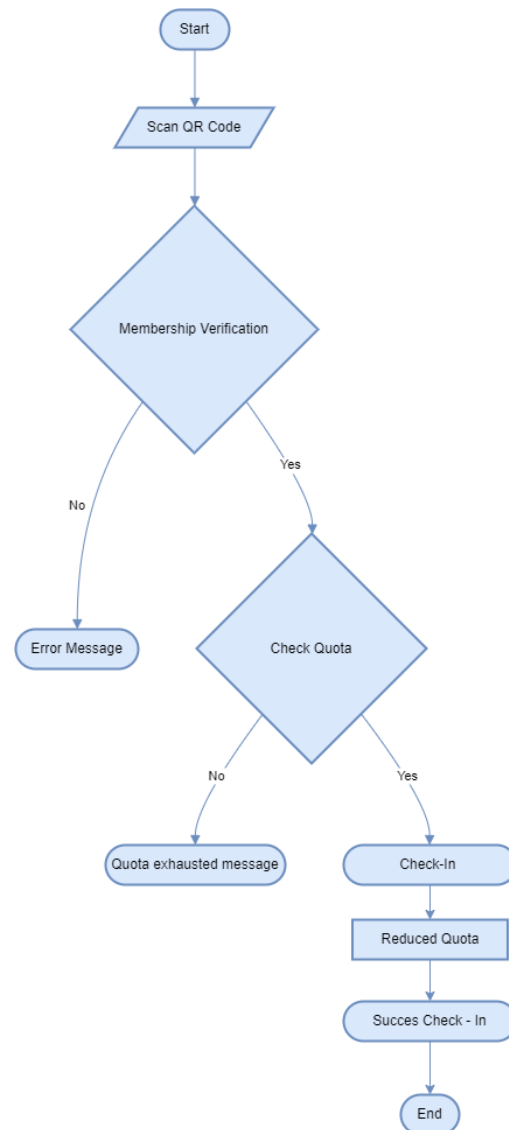


Figure 1. System usage flow

5.3. Controller

Manages the flow between the model and the view. The controller will handle requests from users to create QR codes, process QR code scans, and update attendance data in the database. For example, when a QR code is scanned, the controller verifies the membership data, checks the attendance quota, and processes the check in. QR Code Generation Request: Generates a QR code when a member registers or renews a membership. QR Code Scanning: Manage the QR code scanning process using a scanner, verify membership, and update attendance status. Verification and Update: Check QR code validity,

verify attendance quota, and update attendance database.

Figure 1. Flowchart Gym Check In and Membership Information System

6. Results

The implementation of a QR code-based information system at the gym showed significant improvements in the efficiency of attendance and check in management. Members no longer have to queue up to manually record their attendance, and gym staff can focus on other tasks. This automated system also reduces the potential for errors in recording, both from the customer and manager side.

Furthermore, the use of QR code scanners also minimizes the risk of unauthorized use, where members can easily verify their own attendance without the need for staff intervention. From an operational standpoint, gym managers benefit from accurate reporting of membership activity, including attendance counts and remaining check in balances for each member.

7. Conclusions

A QR code scanner-based check in management information system has successfully improved attendance efficiency and reduced check in balances at the gym. This system provides tangible benefits for both managers and members, by facilitating the process of recording attendance, reducing the risk of errors, and increasing transparency in the use of membership packages.

In the future, this system can be further developed with additional features, such as integration with fitness tracking applications to provide a more personalized experience for members. In addition, the use of a similar system can be adopted by other fitness centers that require digital solutions to manage attendance and membership.

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