

RFID based GYM Monitoring System

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Abstract – RFID innovative application daily happened. In the study, we propose a “RFID based GYM Monitoring System “. By the system, the manager of gym can trace and track the exercise status of member. For the purpose of gym, it can apply an exercise recommendation for each member when they come in fitness. The system not only can reduce the waste of human resources and extend the efficiency of management levels, but also to enhance the welfare of members of gym.

Key Words: Gym, Exercise recommendation, RFID, Monitoring, Fitness

1. INTRODUCTION

Due to the rapid development of city, busier modern life and lived in urban area without space to exercise, the gymnasium leads to exercise development. When people go to the gym, they don't know training which part to choose the right equipment, where the fitness equipment, or should spend how much time to exercise this part when start fitness. With RFID technology's development, many innovative and sweet applications for our life, food, clothing, housing, transportation, education, and recreation are more convenient. The RFID system mainly contains three major parts tags, readers, antenna and the computer application system. This study proposes a RFID based GYM Monitoring System, through this system when member enter the gym, it will according to personal situation give exclusive exercise prescription. According to exercise prescription, members do relative fitness. In whole process of exercise, the RFID tag on the card automatically collect and record the related data of membership. When the member leaves, according to the actual exercise to inform member and content of exercise prescription whether reaches the recommendation of exercise prescription to meet the purpose of fitness; furthermore, can know the number of times of using equipment to control the equipment used times and as the maintenance basis for emphasize the management efficiency.

2. EXISTING SYSTEM:

Member entry control in traditional gym is controlled by counter attendants. Member first shows the membership card to the attendant for computer checking the personal information and contract expired for confirming correct, the membership card is kept by the assistant who will give the hand-ring safe key to the member and then member can start using the gym facility. In the weight training room usually have two staff for providing service and examining machine, in the security have training coaches to give protection and guidance.

3. PROPOSED SYSTEM:

To manage the working system in the gym the virtual trainer helps to maintain the management of the gym, whole process of exercise, the RFID tag automatically record and collect the related fitness data of membership. When the member leaves, according to the content of exercise prescription and actual exercise to inform member whether reaches the advice of exercise prescription to meet the purpose of fitness; furthermore, can know the number of times of using equipment to control the equipment used times and as the maintenance basis for raise the management efficiency.

4. WHY RFID?

Radio-frequency identification (RFID) may be a technology that uses radio waves to transfer information from associate electronic tag, known as RFID tag or label, connected to associate object, through a reader for the motive of identifying and tracking the object. RFID Tag may be a special sort wireless card that has built-in the embedded chip beside loop antenna. The built-in embedded chip represents the twelve-digit card variation. RFID reader is that the circuit that produce 125KHZ magnetic signal.

Some major applications of RFID:

1. Access control (keyless entry)
2. Asset tracking (self-check-in and self-check-out)
3. Asset tagging and identification (inventory and shelving)
4. Authentication (counterfeit prevention)
5. Point-of-sale (POS) (Fast Track)

5. HARDWARE

5.1. RFID Reader Module

EM-18 RFID scanner module uses a RFID reader which will read a 125KHZ tags. So, it will be called as a low frequency RFID reader. It offers out a serial output and contains a range of regarding eight hundred twelve cm. There is an inbuilt antenna and it are often connected to the laptop with the assistance of RS two hundred thirty-two. RFID Reader Module, are also known as interrogators. They convert radio waves returned from the RFID tag into a type which will be passed on to Controllers, which can make use of it. RFID tags and readers need to be tune up similar frequency so as to communicate.

5.2. LCD Display

LCD screen is an electronic display module and notice a wide vary of applications. A 16x2 display is extremely basic module and is very ordinarily utilized in various devices and circuits. These modules are most well-liked different multi segment LEDs and over seven phases.

5.3. RFID Card

A radio frequency identification reader is a device accustomed gather data from an RFID tag that is employed to trace individual objects. Radio waves are accustomed transfer knowledge from the tag to a reader. RFID technology similar in theory to bar codes

5.4. NODEMCU

The ESP8266 is a low-cost Wi-Fi microchip, with microcontroller capability and a full TCP/IP stack. This small module allows microcontrollers to attach to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first there was nearly no English-language documentation on the chip and the commands it accepted. The fact that there were very few external components on the module and the very low price, which suggested that it could eventually be very cheap in volume, attracted multiple hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.

6. WORKING:

The RFID detect the tag and mark entry on the cloud server w.r.t time & date

On the Left section the webpage is built to set the timer for each tag machine to run that sends the signal to Right side NodeMCU that is on the machine.

When Tag is scanned on machine it will start as the time set in it and stop when the time limit ends

Block Diagram:

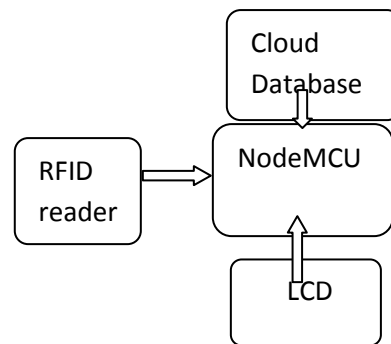
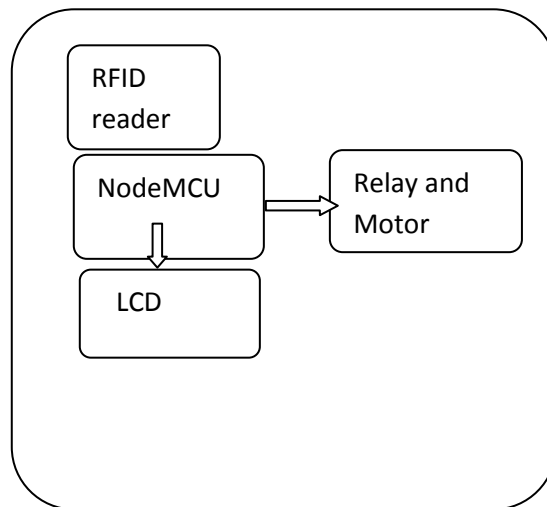


Fig Machine 1



7. CONCLUSION:

Recently RFID technology has been widely applied in many manufacturing and service sectors, such as optical communications, identify security, education information technology, medical, management, communications, identify security, education information technology, medical, management, transportation, logistics, etc. Unmanned management become a key point of current management, RFID have been a huge development in management application like elevator households control, personnel access control, and items anti-theft control etc. to reduce labor, make management almost altered, and RFID just provide the best way for unmanned management.

Owing to current society everyone busy work to neglect exercise tricky, few people exercise in the stadium, but use gym instead. Because gym provide equipment that people need, the right exercise. make the demand of gym raise. But gym management need many staff to confirm the identity of member help and control member how to right use exercise equipment.

There are a lot people who want to exercise but don't dare go to the gym, because the gym staff are to many, many people who do exercise don't like be undemonstrative, so the idea of exercise is reduced, or want to gym but don't know how to correctly use the exercise equipment make the body

more perfect and fit, thus people banish the idea that continue go to the gym.

In the study, we propose a RFID-virtual gym trainer. By the system, the trainer of gym can track and trace the exercise status of member. For the purpose of gym, it can apply an exercise instruction for each member when they come in fitness. The system not only enhance the efficiency of management levels and reduce the waste of human resources, but also to enhance the welfare of members of gym.

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