



Design and Implementation of Unite Gymnasium Web Application for Daily Routine

Prof. Anuja Ghasad¹,

¹Guide, Assistant Professor, CSE Dept. JDCOEM, Nagpur

Mr. Karankumar Waghmare², Ms. Disha Dhawle³, Ms. Asmita jangle⁴, Mr. Vinay Funde⁵

^{2,3,4,5}Author, UG Scholar, CSE Dept. JDCOEM, Nagpur

Abstract -Many people nowadays are attempting to live a healthier lifestyle. As a result, the demand for health clubs is growing by the day. However, work stress is increasing on a daily basis. People experience difficulties when traveling for an extended period of time. As a result, fitness becomes a challenge in order to preserve health. The paper intends to address all of these issues by consolidating all gym access on a single platform. Registered members can gain access to registered gyms in any area with the help of United Gymnasium. Additionally, he can see if the gym is occupied or empty. All that is required of the user is to scan the United Gymnasium-provided QR code for the gym. The member will then be able to conduct physical workouts when the gym has seen their whole program.

Key Words: Fitness Platform, QR Code, Database, Connected Gyms Network, and Gym.

I. INTRODUCTION

One of the most crucial things you can do for your health is to engage in regular physical activity. Engaging in physical activity has several health benefits, including strengthening bones and muscles, lowering disease risk, helping control weight, enhancing cognitive function, and enhancing daily functioning. Those who engage in moderate-to-intense physical activity and reduce their sitting time as adults can experience some health advantages. Exercise is one of the lifestyle decisions that has the biggest effects on your health. Anybody, regardless of age, ability, ethnicity, shape, or size, can benefit from physical activity in terms of their health.

It is impossible to overstate the significance of fitness in daily living. Being physically active enables us to carry out daily activities with ease and without strain, such as walking upstairs, carrying groceries, and opening drinks. Additionally, it improves our cardiovascular, pulmonary, mental, and physical fitness in later age.

Everyone is becoming more and more conscious of the value of physical fitness. Memberships in running clubs, cycling organizations, and gyms are rather prevalent. Although yoga is growing in popularity, many people mistake it for physical exercise. Asanas, or the physical parts of yoga, are actually only a small portion of the practice. Furthermore, the way these asanas are performed and the outcomes differ greatly from regular physical exercises.

The main emphasis of yoga is on relaxed muscles and stable posture. "A steady and comfortable state" is how Patanjali describes asana. Breathing is linked with slow, controlled movements. Movement and muscular load are prioritized during regular exercise. Although the breathing rhythm can be controlled, exercise often consists of repetitive movements in cases when synchronized breathing is absent. Consequently, yoga's and exercise's benefits are different.

There are numerous reasons to visit the gym. Of course, exercise is a must. People can use the gym's exercise machines to improve various muscle groups. Kulas (para. 1) states in his article "The Benefits of Going to the Gym Every Day" that people should acquire at least 30 minutes of moderate activity five days a week, and that coming to the gym every day will help them achieve this goal. As a result, both physical and mental health will improve. You can make new pals, such as fitness instructors, in addition to exercising. It's beneficial to hang out with individuals who share similar interests so that everyone can motivate each other to keep up with their fitness objectives. When a person exercises, the heart becomes stronger, making it more efficient in pumping blood to the body and keeping the critical organs healthy and in order. For example, blood pressure is maintained rather than spiking, cholesterol and triglyceride levels are kept low, and heart disease is avoided. It means that frequent exercise lowers your risk of having a heart attack, stroke, or other disease.

Fitness gyms varies in terms of location, membership fees, and the demographics they serve. The majority of urban gyms are in the city center and are busiest during lunch and after work. To attract consumers, most gyms market themselves as lifestyle or family-oriented venues, rather than just a plain and effective exercise environment. Depending on its size and intended audience, multi-purpose facilities may stimulate pre- and post-workout activities, such as spas and beauty centers, or plan weekend social activities (Stewart, Smith, & Moroney, 2013). According to Bryman (2004), "hybrid consumption," or the consumption of many

goods and services in one area, tends to enhance the amount of time people spend there. As a result, one may believe that the more time gym customers spend in their gym, the more they engage with and are impacted by its material and social surroundings, transforming the gym into more than just a training facility for them.

Dietary habits and physical exercise routines are both important in weight management. When you consume more calories from food and drink than you burn, including calories burned during physical activity, you acquire weight.

To keep your weight off: engage in up to 150 minutes of moderate physical exercise per week, which could include dancing or gardening. You can achieve your weekly goal of 150 minutes by exercising for 30 minutes five days a week. The amount of physical exercise required for weight management varies substantially amongst people. To achieve or maintain a healthy weight, you may need to be more active than others.

To lose weight: you will need to engage in a lot of physical activity unless you also change your eating habits and reduce the number of calories you consume. A healthy weight involves both regular physical exercise and a balanced diet to achieve and maintain.

When people travel to the local health club, they encounter a slew of issues. As a result, in order to address all of these issues, we are developing a platform that will assist all fitness enthusiasts. That is why we are launching a platform that will connect all gyms.

II. Existing System

Nowadays, people will go to a neighboring gym, join up for a monthly membership, and exercise on a regular basis. However, when people go to the local health club, they encounter a slew of issues. Most people, for example, are unable to workout while traveling since they belong to another gym. And other people struggle with time management due to their demanding commitments. The following issues were encountered by the fitness freaks.

- Fitness enthusiasts have difficulties when traveling for extended periods of time.
- Many people are dissatisfied with their health club or the environment it provides.
- Some people are unable to combine their spare time with the gym timetable.
- Many gyms do not provide adequate facilities.

Some people are also taking virtual classes in which the computer trains them. They, too, encountered difficulties. The absence of engagement resulted in the accident. Internet concerns are also a serious concern.

The gym's owner is also concerned with low customer turnout, management, and transactions. To manage the gym system, the current system requires paperwork and direct communication in human language. This causes issues with member records and transactions, reducing overall system performance and failing to satisfy requirements. As a result, the workload grows.

Disadvantages of existing systems

- Data security is extremely tough to achieve.
- A file-based system can deceive.
- It is tough to collect data files.
- It is tough to search for and manage records manually.
- The administrator is unable to efficiently manage records.
- The likelihood of errors is high.
- Data redundancy and inconsistency make the current system weird and inefficient.
- The new gyms have a low client turnout.
- Having problems while traveling.
- Lack of equipment or facilities.
- Ineffective marketing
- Member utilizing equipment without authorization or sufficient training
- High operating costs
- Difficulties with membership retention
- Poor customer service

III. PROPOSED SYSTEM

A.Problems

People nowadays encounter a slew of issues when they visit a nearby gym. When traveling for extended periods of time, fitness aficionados encounter comparable difficulties. And they can't go to the gym because they don't have a nearby gym membership. Many people are dissatisfied with the environment of their gym or fitness club. They are visiting this gym, however, because they have already paid the membership fee for the current month, and they are unable to change gyms for the month. Some people find it difficult to reconcile their free time and a gym regimen. The gym will be closed or empty while they are not present. Many gyms do not have adequate equipment.

B.Solution

To address all of these concerns, we are creating a platform that will benefit all fitness aficionados. Unite Gymnasium is a fitness platform that connects all gyms and allows consumers to visit registered gyms in their immediate vicinity. Simply bring your platform membership card with you. It can sort gyms based on their star rating. It can display entire facts about the gym, such as equipment, trainer availability, and many other things. It can tell you if the gym is empty or full.

C.Working

Unite Gymnasium is a platform that allows clients to exercise at any of our partner gyms or fitness studios by purchasing a Unite Gym monthly membership.

Similarly, the user can access or use our platform by first logging in or logging in, and the user's login or login information will be displayed on the main page. The user must next choose a membership card from the available options, which include silver, gold, and platinum membership cards. The Silver Pass includes 7 workouts, the Gold Pass includes unlimited workouts in less than 2 hours, and the Platinum Pass includes unlimited workouts for 2 hours with the correct trainers. It also depends on the quality of the gyms that provide various passes. In one month, 30 things will be available. After successfully registering or purchasing a season ticket, a consumer will be shown the various gyms in their city. The right location is related to the present availability of consumers

in that gym, and customers may determine if the gym is free or not and if the gym is vacant, customers can choose to go to another gym free gym. Customers enter the gym by scanning a QR code; all information is transferred to the gym owner, who grants them access to the facility and its equipment based on their membership level. Customers or customers can then acquire entry to any nearby gym by scanning a QR code on the Unite Gym platform with their mobile device.

D.How Gyms are Connected

When a user or customer visits the platform or website, they will be given two options: log in as a user or as a gym owner. After successfully logging in and registering, the gym owner selects the second option and receives information about the gym, including its specific location and quality ratings. After successfully registering, please wait for confirmation from Unite Gymnasium.

The Unite Gymnasium team will close them and let you know whether or not your registration was accepted. If the offer is accepted, the owner will receive a code. This code allows the gym owner to access the Unite Gymnasium platform's gym owner interface. This interface requires the owner to provide continually updated client location and availability data, as well as thorough quality information. The owner will be given a QR code to allow clients with access. At the end of the month, he will receive information on the members who join his gym, as well as the terms under which Unite Gymnasium will pay his profit, which is decided by the number of members who join through Unite Gymnasium in that month.

E.Outcomes

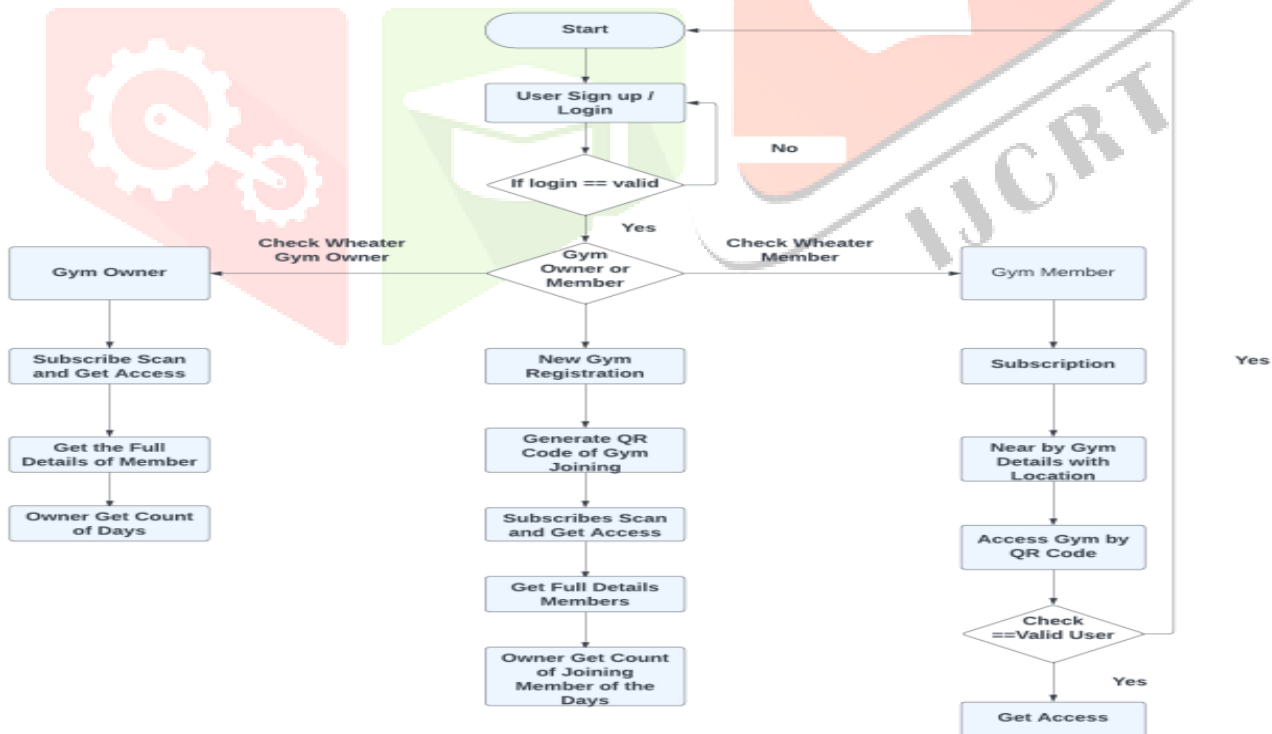
People may move gyms if their expectations are not met or they are dissatisfied with their current gym. People will prefer the gym with the best facilities and environment, therefore gyms will compete to be the best in their area. It will promote new and underrated gyms because new gyms must be marketed in order for people to learn about them, and many people are already aware of new gyms thanks to Unite Gym. People can utilize any gym while on extended trips, at any time and from any location. People will be able to see whether or not the gym is full. Users can look up nearby fitness clubs or gyms based on their location.

F.Flow chart

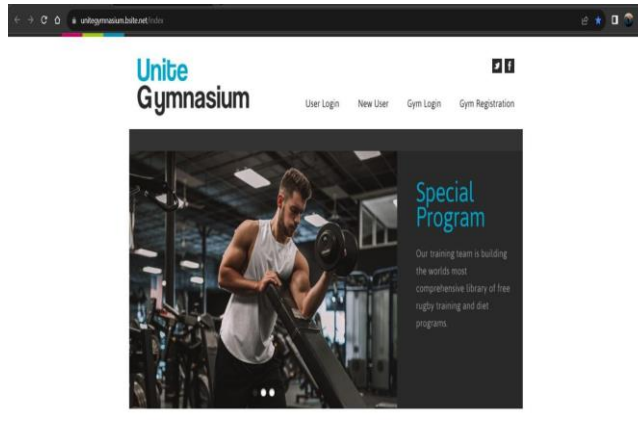
When you first access the Unite gym, you must log in. When signing in or registering at Unite Gym, you have two options: gym owner or member. If this is your first visit to Unite Gym, you must register. If you enter incorrect information, you will be directed back to the main screen.

If you own a gym, you need to register it. To begin, enter all of the needed information, including the gym's name, location, photos, and contact information. It will then create a QR code for the gym owner. A registered member who has purchased a Unite Gym membership can easily gain access to the gym by scanning the QR code. Then you will see the full details of the gym member, and after viewing the individual's entire weekly schedule, you will need to direct your trainer to assist the member. And he needs to include how many seats are available in the gym on the app. At the end of the day, the gym owner will receive a daily count of the persons who exercised in the gym.

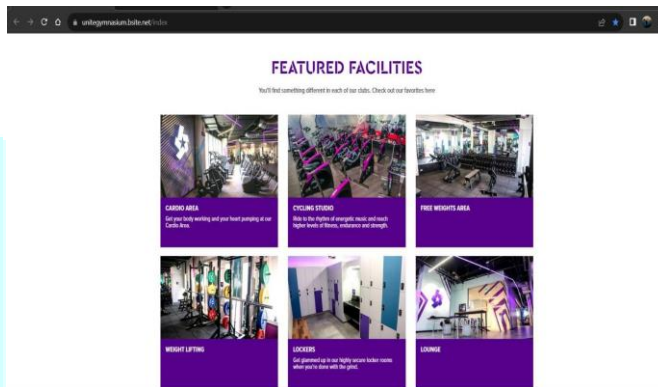
You must register as a member if you are a gym member. Then you must fill up your personal information, such as your name, contact information, ID proof, health status, and anything else. It will also inquire about your previous experiences. Then, you must choose the subscription plan that best meets your needs. Following that, you simply relax, locate the local gym, and proceed there. Simply scan the QR code to gain access. simply relax, find the nearest gym,



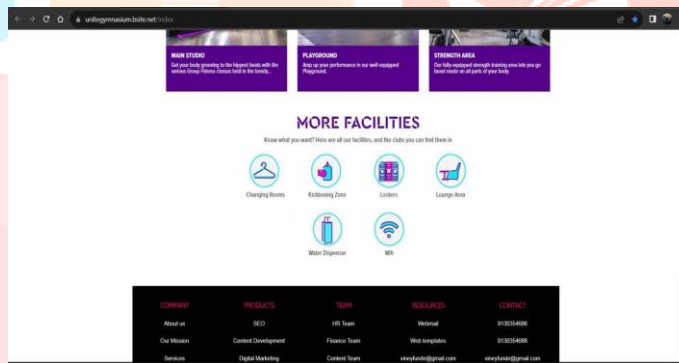
1. Home-Page:



When the user opens our website, the user interface is presented to the user, where the user can be a member or have a gym and can use the following facilities: user login, new user registration, gym login and gym registration.

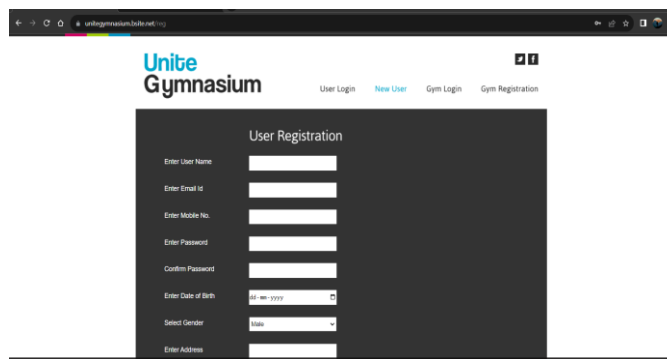


When the user scrolls down, they find the feature facility information as shown.



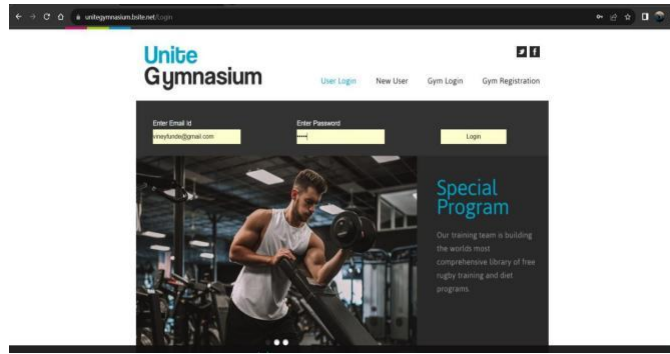
When the user finally scrolls down, they find more information as shown. Finally, the navigation panel is available to display the available information about us.

2. User-Registration



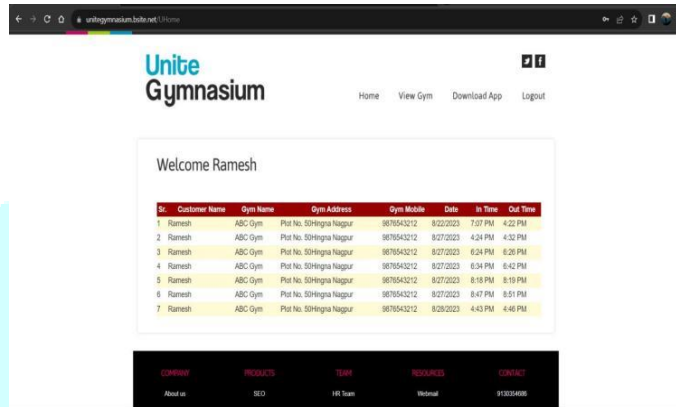
When the user clicks on the new user option, the new user registration options are available to the user after filling in the correct details.

3. User-Login



After successful user registration, user can login and access all unite gym facilities.

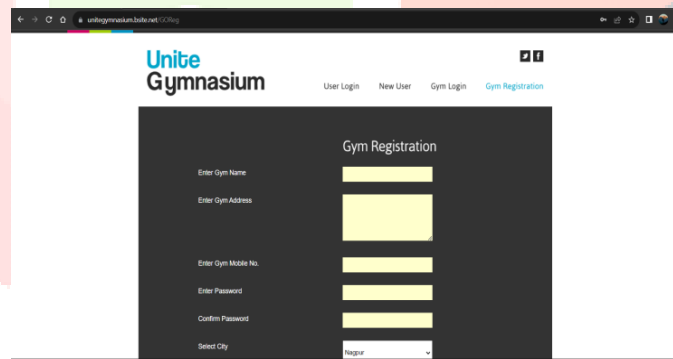
4. Login Home-Page



After successful registration, the user has three options.

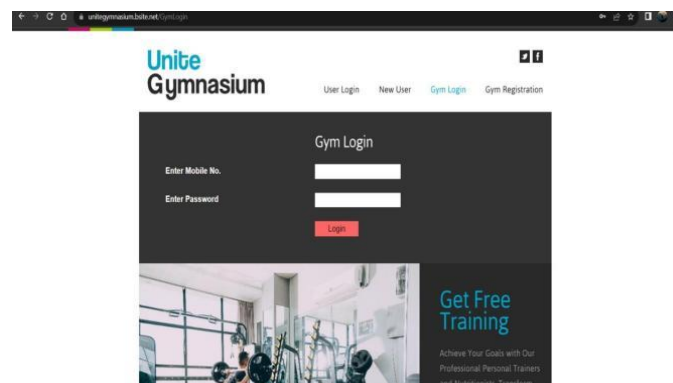
- 1) Home: Show user gym records, records and information
- 2) find gyms: users can find nearby gyms with their details and multiple subscriptions.
- 3) Download the app: users can directly download our app to access nearby gyms by scanning the QR code.

5. Gym-Registration-Page



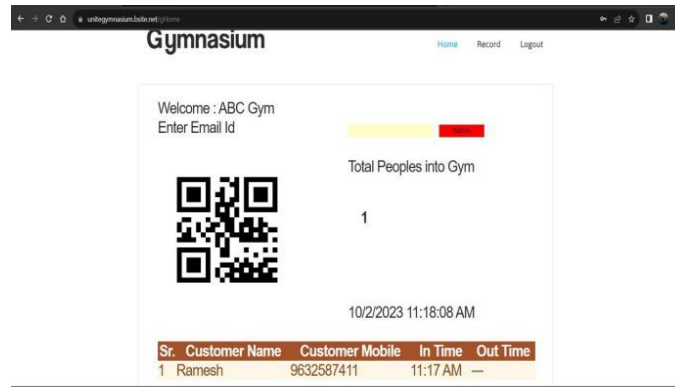
Gym registration is available for gym owners to register their gym with correct details and equipment and add specific facility based subscription option

6. Gym-Login



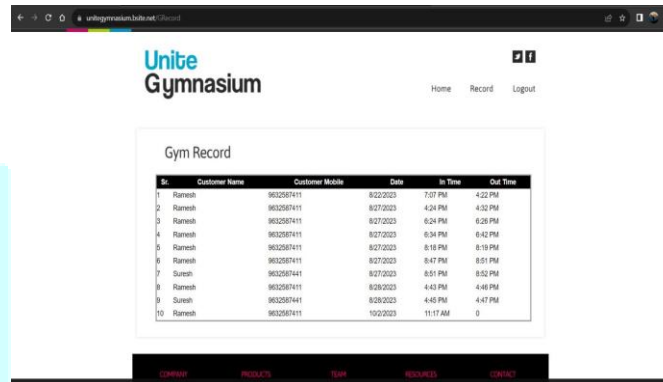
After successful gym registration, the user can login and get all the facilities available in the unit gymnasium

7.Gym-Home-Page



Once the owner of the gym has successfully logged in the user, a QR code is generated on the home page that the user can scan and access, as well as access to the gym and the total number of customers. and in time.

8.Gym-Record Page



This is the gym registration interface available at the end of gym owner, gym customer seep, customer ID etc. show all the details like

VI. MOBILE-TO-WEB QR CODE AUTHENTICATION WORKS

Although the basic idea of mobile web QR code validation is very simple, I will try to explain each step as best I can. Below are the steps in using QR code authentication to verify a web application using an authenticated mobile application without further steps:

A. Web applications require QR code generation

Our web application login page requests a QR code from the server when opened. This is a typical client-server interaction.

B. Server-side QR code generation

After receiving our request in the first step, the server responds with the generated QR code. Generating a raw QR code is pointless; instead, we must encode it with a unique value to use for authentication. In this case it will be the name of the channel. The unique identifier and timestamp will be combined to create a channel name to guarantee the highest quality. By extending the length of the code, we can make it invalid. Ten seconds, let's say. In other words, a new QR code will be generated every ten seconds.

C. the server responds to the web application

A web application will wait for a response from the server after making a request. The web application will download the generated QR code on the web page as soon as the server responds.

D. Sending temporary information through the messaging channel connected to the web application

A web application that waits for a message from a mobile application establishes a connection to the messaging channel.

E. The web application displays a QR code that is scanned by the mobile application

The user scans the QR code displayed by the web application on the screen using the mobile application. It takes the unique value from the QR code and sends it to the server along with the user's session information. The server can then validate the unique value in various ways and provide the user with the information they need to access the web application. Note that this is possible with a unique value acting as a channel name. that the web application is currently listening.

V. REED-SOLOMON IS A FORWARD ERROR CORRECTION ALGORITHM THAT IS WIDELY USED FOR ERROR DETECTION AND CORRECTION IN VARIOUS COMMUNICATION SYSTEMS AND STORAGE DEVICES

A. Data Representation:

Reed-Solomon operation characters can be bytes, characters, or other data units. Each data block consists of the same message and symbol. Data is divided into blocks.

B. Generate (encode) Parity token:

Message Symbol: This is the original message symbol. Parity Symbol: This is added to the message to create the ciphertext and is counted against the message symbol. The level of error correction required determines how many parity symbols are included. For example, you would add two equal signs to correct an error.

C. Error Correction (Decoding):

Reed-Suleiman can correct the errors using a series of equations derived from the source code. The received code may contain errors caused by noise or other sources. Errors in the obtained data can be detected and corrected by solving the system of equations.

D. Calculation of Syndrome:

The received code was used to calculate the syndrome. It helps to find and evaluate common code errors.

E. Calculate the location of the error and the magnitude of the error:

The error detection method uses a syndrome.

The program also determines the magnitude of the error at this point.

F. Error correction: The method corrects the error by modifying the received code.

The updated code used to extract the corrected data. The Reed-Solomon code is widely used because it offers a good compromise between efficiency and error correction capability. It is very useful if you need a reliable channel code or if there is a possibility of error. Although there are libraries and built-in functions in many programming languages (Python, Java, C++, etc.) that provide Reed-Solomon coding and coding capabilities, implementing Reed-Solomon from scratch can be difficult.

VI. DATA EXCHANGE MECHANISMS AND CONSIDERATIONS

Examples of information sharing

It should be noted that the above-mentioned method of data exchange is divided into three parts:

1. architectural style
2. data format and
3. communication mechanism

The appendix contains examples of communication protocols and data formats. Although these three components can be used individually, there are combs that are preferred and commonly used. For example, the secure HTTPS protocol, the JavaScript Object Notation (JSON) format, and the Representation State Transfer architectural style are commonly used in popular RESTful API techniques. While there are some frequent pairs, there are other combinations that can be used to build an information exchange mechanism; This combination is not defined.

Also, although it is beyond the scope of this guide, it is important to weigh the benefits and drawbacks of each architectural pattern against the needs of the specific application. When choosing a pattern, synchronous versus asynchronous calls, blocking, error rate, and service connectivity are important factors to consider.

Application Programming Interface (API)

Web services use APIs to communicate through the HTTP protocol. Web services, standard application-to-application (APP-to-APP) interface. Web services often take the form of:

- SOAP is a standard protocol that uses SMTP and HTTP to send messages. The SOAP specification is an official web standard supported and developed by the World Wide Web Consortium (W3C).
- REST is an architectural style, not a protocol. Using HTTP status code and statelessness are two examples of rules that must be followed to provide RESTful web services as defined by the REST architecture.
- The query and manipulation language, along with the associated runtime, is part of the API design architecture represented by GraphQL and some other similar tools.

The advantages and disadvantages of each type of web service API are beyond the scope of this article.

B. ETL stands for Extract, Transform and Load.

Allowing an application to make a direct connection to another application's database to read and write data is how data is transferred. The direct database connection method is extended by extraction, translation, and loading (ETL), which includes tools for planning, transforming, and classifying data.

C. Transfer Files

The data is stored in a file that is copied into the program and then uploaded to the existing system. This can be any of a variety of text-based or binary file formats, including JSON, XML, CSV, and more.

D. Call to work long distance

A computer program is usually directed to run in an alternate address space on a separate machine connected to a public network.

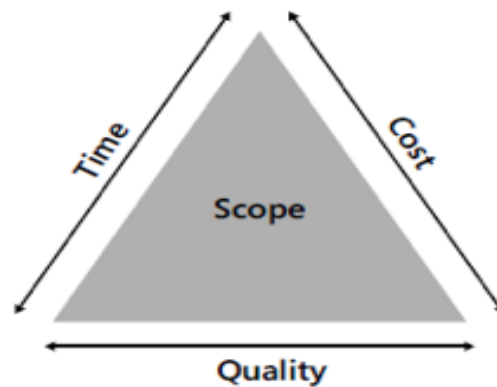
E. Brokered / Event Based Messaging

Messages containing data generated by the application and sent to the service for delivery. This approach often requires a business rules engine to manage publishing and subscription services, and some technical components to manage queues and caches.

F. Data flow

Data is transferred continuously from multiple data sources to receiving processes. After receiving each new data record, stream processing learns the data sequence and continuously updates the metrics. It works efficiently for real-time response and monitoring. Limitation of use

There are limitations to any project, and the choice of data transfer technology is no exception. The basic "triangle" of price, time and quality is generally ignored. Time - the time required to complete the project; cost is the amount of money or resources needed; and quality is the level necessary for the project to be successful. Usually, some of these variables are constant and others are variable. For example, reducing the turnaround time will affect the price and/or quality.



VII. Conclusion

Unite Gymnasium is a fitness network that connects all gyms and allows users to find nearby registered gyms. Using the unit gymnasium. People may move gyms if their expectations are not met or they are dissatisfied with their current gym. People will choose the gym with the best facilities and environment, therefore gyms will compete to be the best in their area. It will promote new and underrated gyms because new gyms must be marketed in order for people to learn about them, and many people are already aware of new gyms thanks to Unite Gym. People can utilize any gym while on extended trips, at any time and from any location. People will be able to see whether or not the gym is full. Users can look up nearby fitness clubs or gyms based on their location. People may move gyms if their expectations are not met or they are dissatisfied with their current gym. People will choose the gym with the best facilities and environment, therefore gyms will compete to be the best in their area. It will promote new and underrated gyms because new gyms must be marketed in order for people to learn about them, and many people are already aware of new gyms thanks to Unite Gym. People can utilize any gym while on extended trips, at any time and from any location. People will be able to see whether or not the gym is full. Users can look up nearby fitness clubs or gyms based on their location. In the future, we want to leverage additional feature sets to improve forecast accuracy. This method can potentially be broadened to include additional indoor exercises.

VIII. REFERENCES

1. L. Bonati, M. Polese, S. D'Oro, S. Basagni, and T. Melodia, "Open, programmable, and virtualized 5G networks: State-of-the-art and the road ahead," *Computer Networks*, vol. 182, pp. 1–28, December 2020.
2. Z. Liu, X. Liu and K. Li, "Deeper Exercise Monitoring for Smart Gym using Fused RFID and CV Data," *IEEE INFOCOM 2020 - IEEE Conference on Computer Communications*, Toronto, ON, Canada, 2020, pp. 1119, doi: 10.1109/INFOCOM41043.2020.9155360
3. I. Khaghani-Far et al., "The Interplay of Physical and Social Wellbeing in Older Adults: Investigating the Relationship between Physical Training and Social Interactions with Virtual Social Environments," *Peer J. Computer Science*, Nov. 2015, doi: <https://doi.org/10.7717/peerj-cs.30>.
4. Xiaohu Cao, Liuping Feng, Peng Cao, Jianhua Hu, "Secure QR Code Scheme Based on Visual Cryptography", 2nd International Conference on Artificial Intelligence and Indus Engineering, 2016 .
5. Jonathan Tompson, Ross Goroshin, Arjun Jain, Yann LeCun, Christoph Bregler New York University Efficient Object Localization Using Convolutional Networks (CVPR'15)
6. F. Cassola, L. Morgado, F. De Carvalho, H. Paredes, B. Fonseca, And P. Martins, "Online-Gym: A 3d Virtual Gymnasium Using Kinect Interaction," *Procedia Technology*, 13, Pp. 130-138, 2014
7. QR CODE GENERATOR USING PYTHON - IJARCCCE
8. 2012 International Conference on Communication, Information & Computing Technology (ICCICT) 2012 International Conference on Communication, Information & Computing Technology (ICCICT)
9. M.Z. Hossain, F. Sohel, M.F. Shiratuddin, H. Laga, "A Comprehensive Survey of Deep Learning for Image Captioning", *ACM Computing Surveys*, Vol. 51, No. 6, pp. 1-36, 2019
10. R. Staniute, D. Sesok, "A Systematic Literature Review on Image Captioning," *Applied Sciences*, Vol. 9, pp. 1-20, 2019