# A REVIEW ON QUEUE MANAGEMENT SYSTEM

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***Abstract*- At a recent time, a queue machine, which is used as both a client and a server, is rated to be less practical and inefficient. The Queue Management system is a project to eliminate the traditional physical queue and replace it with a convenient management system. This project is designed to help the devotee who suffers from long queues in the temple. The main system functionalities which are constructed online/offline are ready for temple queue services; hence the people can view a queue status. In the development of this system, Adapting Raspberry Pi 3 as a server, this queue system was expected to solve the problem before.**

**In addition, to build the webpage, this queue system is using HTML, JAVA Script, CSS, PHP, MySQL as the language and Visual studio code IDE, Xampp, PhpMyAdmin, Apache friends.**

**Keywords- Raspberry Pi, GSM Modem, LCD Display, RFID Reader.**

## I. INTRODUCTION

This is one type of management service so people can book an appointment. People can get service without waiting in the queue. The contribution of this system does not only serve the people requesting the service in the temple but also utilize their time to do another activity. Not only can one temple benefit from the current system design, but many temples can be distributed simultaneously. Queue occurs in the temple when there are more people to take darshan at the same time, this means that people have to wait for their turn. In the end, this issue turned into public accidents, an unhygienic environment, and security problems. A queue management system brings a lot of value to service providers and customers. Among other things, it can significantly improve customer experience, increase operational efficiency, and provide businesses and organizations with data to make informed decisions.

The queue management system is a set of tools and sub-systems that assist in controlling customers' flow, managing the waiting time, and enhancing customers' experience for multiple industries including banking, healthcare, retails, education, government, and telecom. but also reduces the customer complaints. Shorter check-out queues mean happy customers; happy customers mean happy staff. Happy staff means a better and more productive workforce.

## II. LITERATURE REVIEW

[1] An efficient way of Darshan of the Lord Venkateshwara of Tirupati Balaji Temple, this paper was published in the year 2014 at Journal of Business Management & Social Sciences Research, By-T Hari Narayana purpose of this paper is, many temples in India are not well organized for the general public. The temples located in south India are much better compared to the northern part of the temples. Although south Indian temples, in general, are better organized there is still a vast scope for improvement. In this paper, the queue system kept in Tirupati Balaji temple is analytically tested and an innovative procedure is suggested considering the safety and comfort of the visitors to the temple.

[2] Md Nasir Uddin, Mg Mostafa purpose of this paper is, all Automated Queue Management System this paper published in 2016 at Global Journal of Management and Business Research, the system can ease the customer flow management which is useful for the manager of the service provider. The purpose of this project is to develop an Automated Queue Management System for organizing queuing systems that can analyze the queue status and take a decision on which customer to be served first. This project focuses more on the bank queuing system, different queuing algorithm approaches which are used in banks to serve the customers, and the average waiting time. This queuing architecture model can switch between different schedule algorithms according to the testing result i.e., the average waiting time by using two different queue control systems, which has developed there are several processes undergo, which controlled by intel Galileo Microcontroller that is software/compatible with the Arduino software development environment. Finally, the systems have been tested under different conditions to evaluate their performance.

[3] Jeff Rassle, Srikant K purpose of this paper is Efficient Queue Management for Cluster Scheduling this paper was published in 2016 at Proceedings of the Eleventh European Conference on Computer Systems, By-Jeff Rasley Job scheduling in Big Data clusters is crucial both for cluster operator's return on investment and for overall user experience. In this context, we observe several anomalies in
how modern cluster schedulers manage queues and argue that maintaining queues of tasks at worker nodes has significant benefits, on one hand, centralized approaches do not use worker-side queues. Given the inherent feedback delays that these systems incur, they achieve suboptimal cluster utilization, particularly for workloads dominated by short tasks. On the other hand, distributed schedulers typically do employ worker-side queuing, and achieve higher cluster utilization.

[4] Radoslaw Klimek purpose of this paper is Pro-Active Queue Management System in Intelligent Environments, By-
Radoslaw Klimek, this paper was published in 2020 at Sensors IEEE, from this, we understood Queue systems are practically used in various institutions and commercial enterprises constituting a challenge for the intelligent environments in smart cities. The management of the flow of customers guarantees the elimination or reduction of the queues as well as the economic benefits which follow the client's satisfaction of a better quality of service.

[5] Summit Soman, Sudeep Rai, Amarjit Singh purpose of this paper is Mobile Augmented Smart Queue System for Hospitals this paper was published in 2020 at IEEE 33rd International Symposium on Computer-Based Medical Systems (CBMS), By- Md Nasir Uddin, we understood that Management of high patient loads at tertiary hospitals presents a significant challenge in streamlining healthcare service delivery. Patients often need to queue up at various service areas in hospitals such as at registration, laboratory test, and bill payment counters. Queue Management systems present a viable solution for patient management in such scenarios.

[6] R Hamoud purpose of this paper is Performance evaluation of active queue management algorithms in the large network this paper was published in 2018 at the IEEE 4th International Symposium on Telecommunication Technologies (ISTT), By-Mustafa Maad Hamdi from that, the large network architecture of today consists of thousands of computers connected through many interconnecting router and switches. As many of them communicate concurrently, congestion over the channels may increase.

## III. NEED FOR QUEUE MANAGEMENT SYSTEM

Keeping the customers waiting in a long queue is not the best idea if you are aiming for a positive impact on anyone's experience about your business. Retailers experience revenue losses of up to 39% due to long queues. To cater to this problem, we provide a queue management solution with our Queue unit that accurately counts the number of people at checkout

desks and changing rooms and the average time they spend waiting. This helps in accelerating the payment process and increasing the number of transactions.

With our real-time queue alert system, get notified when your queues exceed a certain number of people to increase service at the right time, decrease abandonment rate, and increase loyalty. Queue management systems analyze and improve the flow of visitors, generating significant benefits. Customers value their time, hence, to create a better experience and obtain loyalty, it is of great importance to make them leave your store happy by improving the experience Therefore, tracking the queues and customer flow throughout the store is very important.

## IV. HOW HAS THE PANDEMIC IMPACTED QUEUE LINES?

With the emergence of the COVID-19 pandemic, new concerns about public safety have emerged. Retailers have had to introduce new policies to ensure social distancing protocols such as maintaining six feet between customers and limiting capacity within stores – while maintaining a positive cash flow for their operations.

To adapt, retailers have introduced new solutions that rely on innovative technology. Stores such as Wegman's have installed live camera feeds to enable shoppers to view lines before visiting, while other stores such as target allow customers to schedule a time to visit, thus guaranteeing entrance while supporting limited capacity restrictions. Restaurants, which depend on customer turnover, have implemented time limits for guests. In addition, many stores have turned to digital queue management systems such as pre-ordering options and checkout management, to reduce customer-employee interaction. Omori queue line management systems have aided in the transition, helping companies adapt to the unprecedented shift caused by COVID-19 while ensuring ongoing customer service and satisfaction.

## V. ISSUES & CHALLENGES RELATED TO QMS

Crowded waiting areas are haunting every sector of the industry, but it can easily be avoided by implementing an efficient digital queue management system.

By mainstreaming your visitor's and customer's flow, you can easily avoid the crowded formation in your waiting areas and lobbies. A managed customer flow also prevents the unorganized crowd in the branch. This also helps to improve the efficiency of the branch staff.

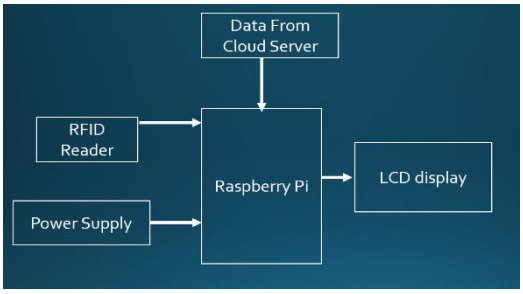
This not only reduces the wait time but also helps improve customer happiness. The queue management system can further enhance the customer experience by providing regular updates and information in the waiting area. Usually, large screens or digital signage are connected with the queue management system which displays the ticketing information along with the multimedia content.

## VI. PROPOSED SYSTEM ARCHITECTURE

**How to overcome these issues:**

1. Assess and improve your queue management strategy.
2. Keep the rules of queuing fair and consistent.
3. Design your space to accommodate queues.
4. Inform customers of the duration of their wait.
5. Distract and entertain customers in a queue.

Proposed System Architecture (Draw & explain block diagram)



1. The system will generate access that will show the complete details of the user.

2. System captures the RFID tag and processes it ahead using an online and offline process, which further recognizes the presence of person-time slotting for darshan.

3. RFID at the entrance of the gate detects the information and sends a signal to the user.

4. Similarly, Raspberry Pi is attached to the interface for security, and all the configuration setting is done remotely from the server.

5. The cloud platform unit is portable so it can be fixed as per the need.

6. Initially, LCD which is the heart of the system will get a supply that will further provide it to the confirmation message of the system.

7. The Raspberry Pi is a capable little device that enables people of all ages to explore computing and to obtain how to program in languages like Python.

## VII. WHAT MODIFICATIONS ARE REQUIRED IN QMS

1) Keep the customer busy and informed.
2) Start the service process as soon as possible.

## VIII. APPLICATIONS

Proposed reviews of this paper can be considered for application where Que management is an important aspect, Temple, traffic flow (vehicles, aircraft, people, communications, patients in hospitals, jobs on machines, programs on computer).

## IX. CONCLUSION

The Review paper represents the need for a Queue management system. The proposed systems architecture helps to provide hygiene methods for entrance which is entirely based on temples safety and security. It provides eco-friendly service and avoids the crowd of people. It prevents any public accident and theft. It provides a calm, relaxed experience and saves much more time than crowd management. The purpose of this system is going to provide a track of all the services in one place which can be managed with immense ease. The purpose of this system is going to provide a track of all the services in one place which can be managed with immense ease.

Online registration, as well as offline registration, detect the authenticated person, and the system will allow the person to pass through the queue system.
The whole process would be feasible with the help of an RFID reader which will provide authentication of the person.

## X. REFERENCES

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[7] GY Jiu, S Siao, IEEE.2019, Most of the existing queue management systems are based on printed paper tickets with a queue number.

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