

# Virtual Queueing System using Cloud Computing

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**Abstract** – Virtual Queueing system automates the manual queues by using cloud computing. The system provides an android based application where a user can create or join a virtual queue. The application provides an effortless and time saving way of managing queues using which organizations can help their customers or clients without making them wait in long queues also users are in turn benefitted by queuing at a place without wasting their precious time and efforts. The application provides various other features such as Sending Notifications to Joined Users, Joining advance Queues etc.

**Key Words:** Queues, Cloud Computing, Queue Management, Tokens, Virtual Systems.

## 1. INTRODUCTION

In today's busy world, time and efforts had become most valuable thing for peoples. It is becoming a necessity to get everything at comfort of home without any wastage of their precious time and efforts. But still there is one major problem which every people want to avoid but still cannot??

Queues are becoming a major real-world problem to be addressed. Though initially in the olden days peoples used to manage standing in long queues but nowadays peoples are having a very busy schedule and cannot afford either time or efforts for waiting in long queues.

Though the world is getting digitalized but we still face problem of standing in long queues over many places such as Ration Shops, Colleges, Light Bills, post office, retail business etc., and it became worsen when the time reached peak hour.

This Application automates the process of manual queue and eliminate the need for standing in such long queues by using virtual tokens. The users can register on the application and choose to either create or join queue or both. The application works by using a live token system using cloud hosted real-time databases.

The service providers or organizations can manage the queuer's in real-time using the cloud server and queuer's can get real-time updates regarding current status of queue Joined using personalized notification.

## 2. EXISTING SYSTEMS

There are many already providing services for digital queue management using various Queue management systems and techniques such as: -

1. Kiosk Based Systems - A kiosk is a small, stand-alone booth typically placed in high-traffic areas for business purposes. In this systems user can enter their details and receive the token either in the form of paper based or digital acknowledgement. However, these systems require users to physically visit the location in order to use the service.

2. Third Party Solutions – These systems consist of third party software solutions which can be used by organizations on subscription bases. The users can digitally obtain their token using their credentials used for respective organization. Although these systems can be directly and easily used but it is not viable for small scale organizations due to subscription charges.

3. Personalised services – These are software or hardware based solutions which are personalized for a specific organization depending on their needs and requirements. These are the systems which are generally offered by IT companies to various vendors which mainly include personalised software based QMS, these systems inculcate a huge amount for retailers to buy such QMS from IT vendors. These systems are usually used by large organizations due to its cost.

## 3. SYSTEM ANALYSIS

### A. Problem Statement

The main purpose of this project is to develop and provide an android based generalized Queue Management System Which can be freely used by any type of industry, groups etc. for managing Queues using Cloud. The System is highly scalable and reliable to be implemented for small to large number of users. This system can be used without the need of physical availability of user for issuing the token, the user can generate tokens using just an android application as per his own convenience.

### B. Scope

The system can be used by large number of organization, shops, retail service providers having a huge number of customers to manage on daily basis. Any registered user can join a queue by using the virtual id of respective organization provided the organization or shop or retail service provider is using the same system to manage queues.

### C. Proposed System

The proposed system uses real time tokens over the cloud servers for managing the queues. The users can conveniently use the system with an android based application which allows a registered user to create or join a queue. The whole system is centralized and hence users can have freedom to access the application from any android device at any location.

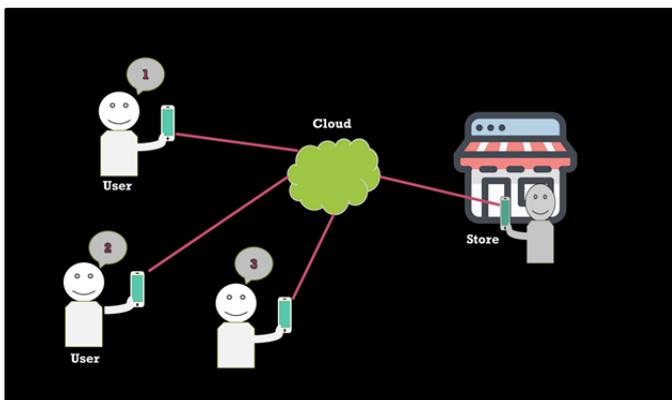


Fig 1: High Level System Overview

### C. Working

#### 1. Queue Creation

Once the user is successfully registered and logged in he/she can either join or create a new queue. In order to create a new queue, the user has to choose a unique identifier tag which will serve as an identity. The user can set the maximum limit per day for queue. Application allows user to delete his/her queue if required. User can view details of members who joined their queue.

#### 2. Queue Joining

A registered user can join any of the already existing queues using his/he authentication details (username, password). The Application Issues Tokens to users for respective chosen queue and wait for confirmation from user. Once the user verifies the details he/she can join the queue by just confirming. The application allows users to join multiple queues simultaneously. User will be send a separate notification for each queue once it is near the arrival token.

#### 3. Managing Queue Flow

Once a queue is created the admin (creator of queue) Can access the queue managing console where he/she can view the list of all the users who joined the queue along with their token numbers. The users are by default sequentially ordered by their token number. Admin can take actions such as marking user as reached when he reaches or skip a user if he is not reached till his token number comes.

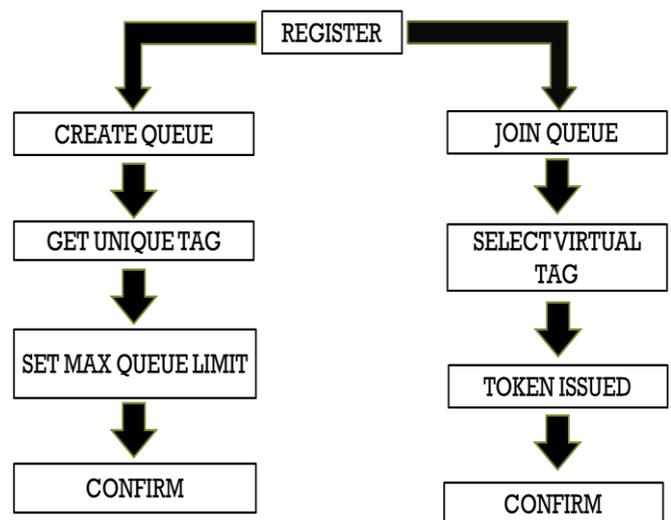


Fig 2: System Flow Diagram

The application allows a single user to join multiple queues simultaneously also any number of organisations can create their queues in the system. The interaction between users and organization can be understood by following use case diagram-

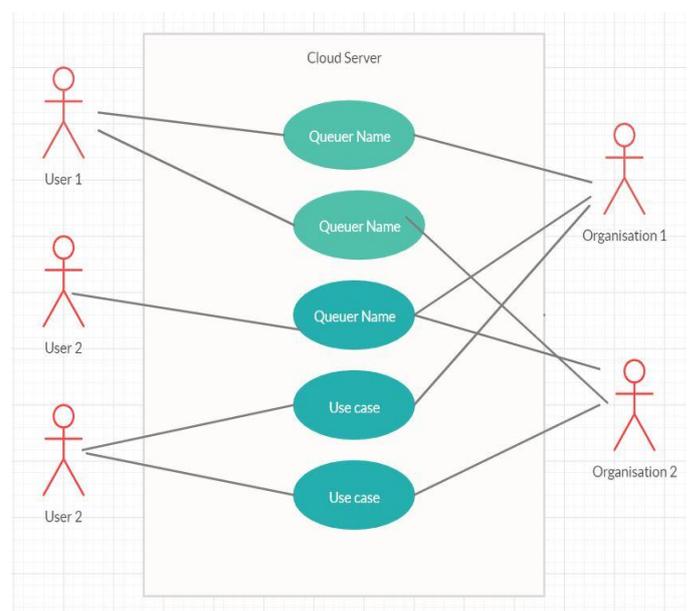


Fig 3: Use case Diagram

Mobile Application User Interface

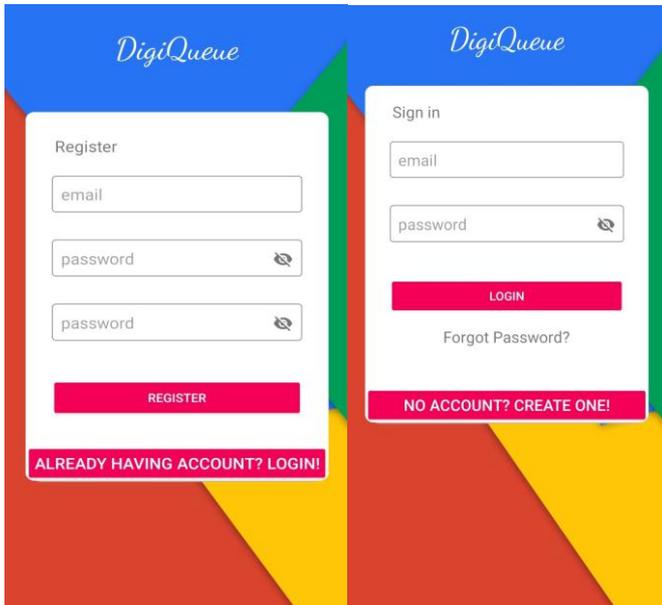


Fig 4: Register

Fig 5: Sign In

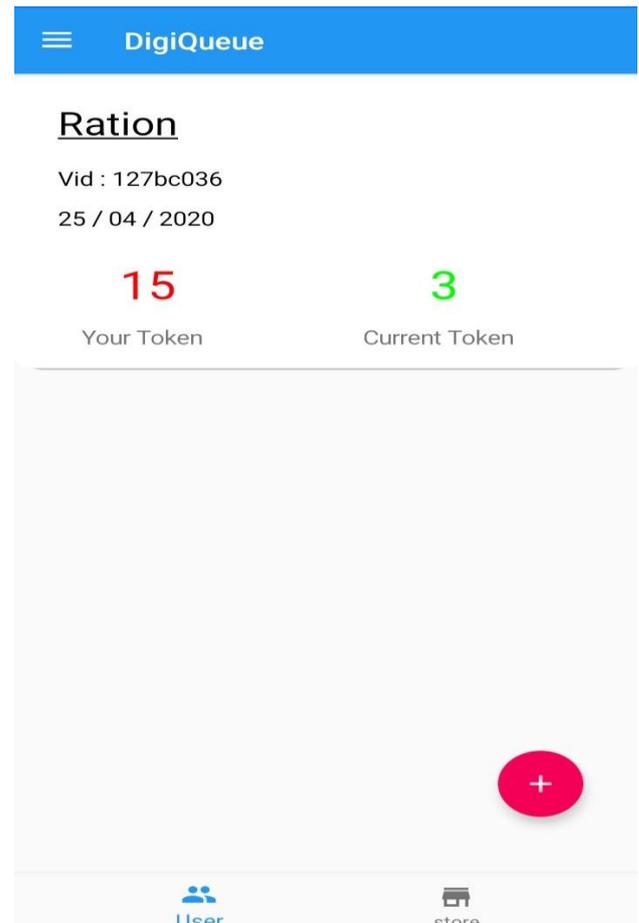


Fig 8: Queue Joined

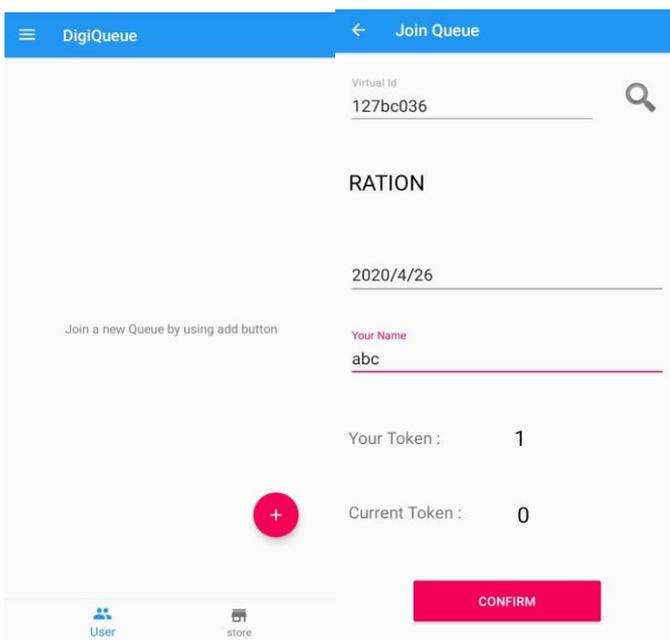


Fig 6: User Menu

Fig 7: Join Queue

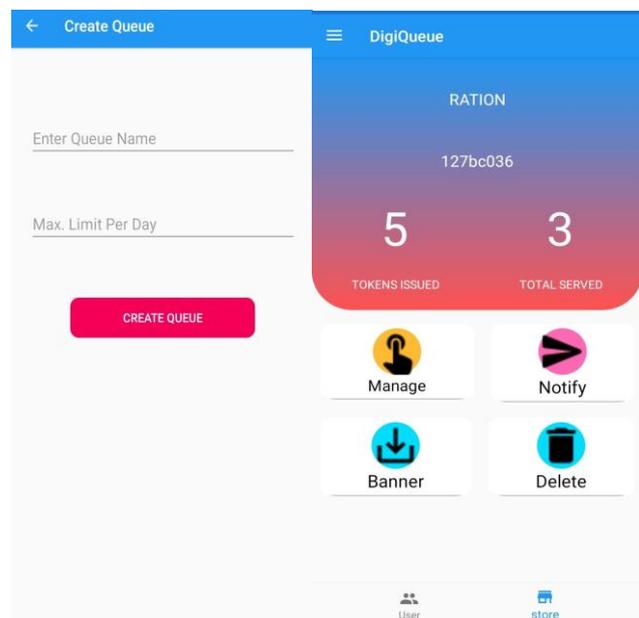
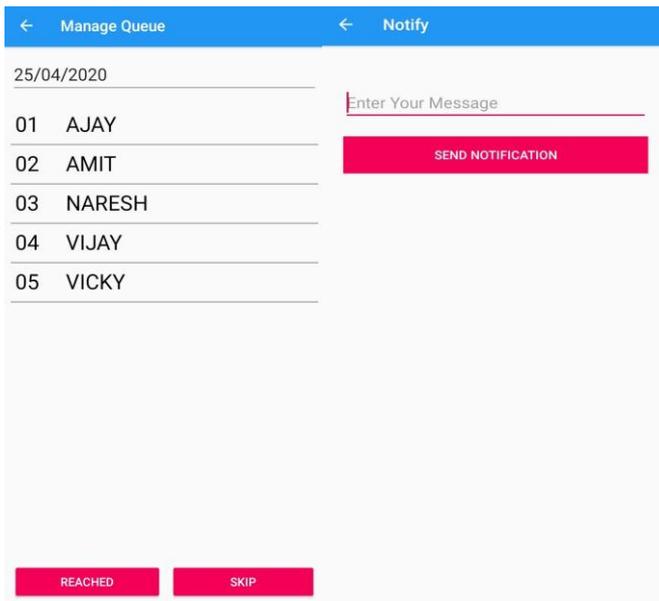


Fig 9: Create Queue

Fig 10: Creator Console



**Fig 11:** Manage Queue

**Fig 12:** Send Notification

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#### 4. CONCLUSION

The application will be helpful to save time and efforts of standing in long waiting queues, the application will also be helpful for organizations to serve better to the customers without making them wait in queues this in turn can boost profit and increase the quality of Service. The system is very viable since it can be used by almost everyone who have an access to smartphone with android.

#### 5. REFERENCES

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