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Qualitative Analysis of Networked Blood Bank System for Donors and Receptors for Easy Blood Transfusion Service using Android 9.0

Shailendra Singh[1], Akshay Kumar[2], Anushka Singh[3], Ananya Singh[4], Vaishali Garg[5]
[1]*Assistant Professor,* [2, 3, 4, 5]*B.Tech Student, Dept. of Computer Science and Engineering, Inderprastha Engineering College Ghaziabad, India*

Abstract: ***RedDrop offers new horizons for health that offers healthcare services by utilizing the mobile devices and communication technologies. The existing blood banking system includes a lot of work which takes a lot of time and human effort. This is an android based application. This application is adaptable to meet complex and dire need for blood. This app enables users to find blood in emergency situations. The proposed system has a login page where the user is required to register and only then can view the blood availability and may also register if he/she wants to donate blood .Thus this blood donation application helps to select the right donor online instantly using medical details along with the blood group. This project acts majorly in saving life of human beings and which is also its main aim. The RED DROP application is developed so that users can sight the information about registered blood donors such as their name, locality, and some other personal information along with their blood group details and other medical information of the donor. The GPS methodology will be used so that location of the nearby donors will also be indicated. Thus this application provides the required information in no time and also helps in quicker decision making. The application is designed in such a way to avoid possible errors while entering the data.It also provides error messages while entering invalid data.***

Keywords: RedDrop, Health care Services, Blood bank application, GPS, Donor.

I. INTRODUCTION

The chore of our blood bank application is to preserve information about donors, and to monitor the blood groups as well as to help users in need of blood**.** The problem is to find a number of donors who are willing to donate at the right time. A network of people who can help each other during an emergency is the main aim of our application. This system is used to store data which consists of a database where the individuals' information cannot be accessed by a third party since the database will be encrypted.

The main intention of the proposed system is to provide fastest searching of blood donors in case of emergency**.** In the given system, we have tried to provide the solutions for the non-trustable and system vulnerabilities and have tried to overcome all of them.

Red Drop allows user who are in need of blood, to view the details of the donor such as their name, their address, their phone number and their blood group.

The user who is in the need of blood will be asked to login to the application which will hardly take few seconds of time and then the user gets access to all the available blood groups using details of those who can donate blood urgently.

No formal knowledge is needed for the user to use this application. Thus, by all this it proves it as a user-friendly system. RedDrop, as described above, can lead to error free, secure, reliable and fast management systems.

II. LITERATURE REVIEW

In today's world, Supply chains are more complex than ever before. There has been an increased demand for blood in India and its needs are also growing rapidly. The annual requirement for blood in India is around 11 million units, with only 8 million units available at any point of time. Though India has a large number of blood banks established all over the country, there is only 52% voluntary blood donation which is far below the replacement level of the blood required. There are many studies on voluntary blood donations documented at hospitals and blood banks where the majority is of replacement donors, still there are less studies done in the community which is a potential area for voluntary blood donors who can donate blood by just a little motivation in the right direction. A South India conducted hospital-based study and found that there is only 22.8% of voluntary blood donation at the hospital .

In Optimization of Blood Donor Information, many authors have proposed a systematic and reliable blood donor management system in android application. The assistance provided by the proposed system is needed and the safety of the patient through a planned process by the blood management system is of utmost importance to the health sector **.** This application solves the problems such as wrong donor information, misuse by external people i.e. people who are not related to this in any way and the process involved when the donor updates the donated blood data replacing the older systems. The proposed system is an android application that helps us to reduce the mistakes at human level in the existing system. The internet technique enables the flow of data to work more rapidly and conveniently.

The SMS services will be used to extend the future work of this application. We can hide the contact from other members by this process. This can be done without using the internet where the acceptor sends blood requests to donors by using the internet but the donor receives the request as a SMS in his mobile phone. By this the system can make sure that the strangers can't access the private details of the donor and everyone can contribute at the time of need.[1] In "MBB: A Life Saving Application" have proposed the system that will link all donors.

The system will link all donors, create a database to hold data on stocks of blood in each area and control a blood transfusion service. Also, this Application will show which patients require blood urgently. Here the donor will be able to register and in case any local client needs blood, donors will receive requests and can donate blood in cases of need.[2]

For increasing accessibility and readiness, the volunteer blood donor is used in an android application of providing a continuous blood supply. This application helps health care centers and hospitals to provide the blood as quickly as possible to the required person when their stocks are insufficient.

The admin will get the actual location of the available donor periodically from this application and will send requests to the donors. In this way, the system provides a flawless and efficient communication between the hospitals and the donors. The donors are determined by taking in account the distance of the potential donors from the health care center. Therefore an upsurge is also realized in this process.

In the initial system, the distance calculation is made by taking the distance as straight as an arrow**.** This is converted into actual distance in the optimized system.. This upsurge makes the system more realistic. The second improvement is accomplished on the system's infrastructure.

Especially, by considering the rapid development of mobile device technology which uses Android operating systems, the system has been carried from the ANT building environment onto the Grade build automation platform. In further studies, we aim to add estimation of traffic density between donors' locations and healthcare centers.[3]

The review of main features, advantages and disadvantages provided by the existing internet based Information System for Blood Banks as introduced in "Blood Bank Management Information System in India" Introduces. This study compares the various existing systems and provides some more ideas for improving the existing system.[4]

The explanation about the web application , which will be hosted on cloud is explained in "Smart blood bank as a service on cloud"**.** Their project principle is to take traditional websites on cloud , which provides the user the application in the form of software as a service.they used rad(rapid application development) methodology model. In this system the authorized user(seeker) can search for requested blood group and view the profile. The system does include large database to filter out correct donor and no gps system is included .[5]

The whole information about the blood bank management system will be accessed by admin only as narrated in "Android Blood Bank" about the android application which will prompt updates regarding donors. By depending upon the user's location this application provides records of blood banks.[6]

The records of donors at a blood bank is organised by the management system as stated in"A Study on Blood Bank Management System"**.** The system will allow the sanction of blood bank officers to login using a secret username and password to easily manage the records of the blood donors and the patients who need blood.[7]

The main aim of our application is to save the lives of the people by providing the blood in emergency.Our application is developed so that the users can fetch the details of nearby hospitals. We have provided security for the hospitals.We have provided security for the authentic user, as new users have to register and the existing user has to login.

This application reduces the time to a greater expense that is searching for the required blood through blood banks and hospitals. Thus, this application provides required information in a short interval of time.

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III. WORKFLOW

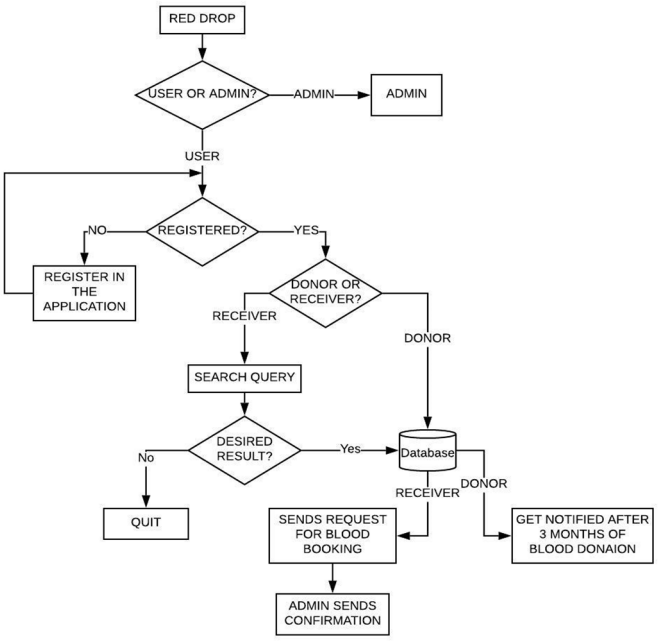

Fig 1: Workflow of Proposed System

The following is the systematic workflow of our application:

1) The person who will open our application ,has to specify whether he/she is a user or admin.
2) If the person is a user, he/she has to register herself/himself with our application
3) If the person is an admin, then he/she will be directed to the admin page.
4) If the person who has already registered himself/herself then he/she will be directly directed to a page where they will be asked whether they are donor or receiver.
5) If he/she is a donor, then all the details of the person will be stored in the database.
6) If he/she is a receiver then they have to mention all the desired query.
7) If the desired queries doesn't exist in our database, then he/she will be moved out of the application.
8) If the desired queries exist in our database then the request for the blood booking will be sent.
9) If the details of the donor are present in the database, then he/she will be get notified after 3 months of blood donation

IV. PROPOSED WORK

This is a mobile-based project developed in android platform. This android project provides a rapid and efficient way to search for blood. This application enables users to find blood in emergency situations. This application stores information about the blood donor and requester. This application provides clarity in this field, making the blood donation process easy and effective. The main goal of this project is creation of a database to hold the data on stocks of available blood in each area, develop a networked blood bank system that will link all the donors and control a blood transfusion service.

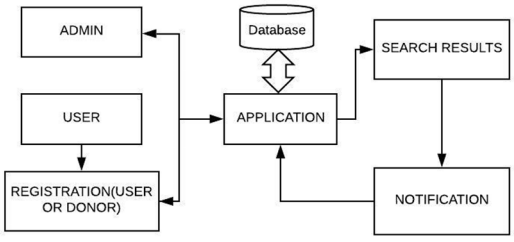

Fig. 2: System Architecture of Proposed System

1) *User & Admin Login:* The application starts with a login page where the user has login with registered username and password .In case if the user is not registered then he/she has to register himself/herself . The process for admin login is similar and just a simple login is required to access the app from the Admin's side.
2) *User Registration:* The registration page asks users to enter their details like name , address ,mobile number , aadhar card number/ pan card number / driving license, gender ,age. The user has to create their username and password, so that he/ she can login in application .after login the user have to another page to select whether he/ she is receiver or donor.
3) *GPS Based:* The proposed system will be GPS based which will help users to locate the nearest blood banks or blood donors.
4) *Aadhar Card Linking:* To avoid the misuse of the blood, the user will have to enter their Aadhar card number while logging into the system. This way the system will be unique and secure and all the user's information will be available if needed by the admin.
5) *Blood Donor Reminder:* If there are users who donate blood regularly, then will send a reminder every three months after donating the blood, that they can now donate the blood.
6) *Rare Blood Group:* There are some blood groups which are rare in nature and it is hard to discover them.our proposed system is easy to use, here users can locate rare blood groups' blood available near them. For example: AB-ve is the rarest blood group.
7) *Blood Donation Camps:* All users will get notification when there is a blood camp around or near their area.

A. *Software Requirements*
1) *Front End:-* Android Studio 2.3.1,JDK 1.7
2) *Back End:-* MYSQL 5.0

B. *Hardware Requirements*
1) *Processor:* Intel core i3 or above
2) *Clock Speed:* 2 GHZ
3) *Ram:* 4 GB or more
4) *Hard Disk:* 512 GB

C. *Medical form Details*

Here we can find the medical details that we'll take as input from users.

We can see various attribute features in Fig 3, Fig 4, Fig 5 and Fig 6 that we have used here to collect basic viable data from the users especially donors as well as receptors .

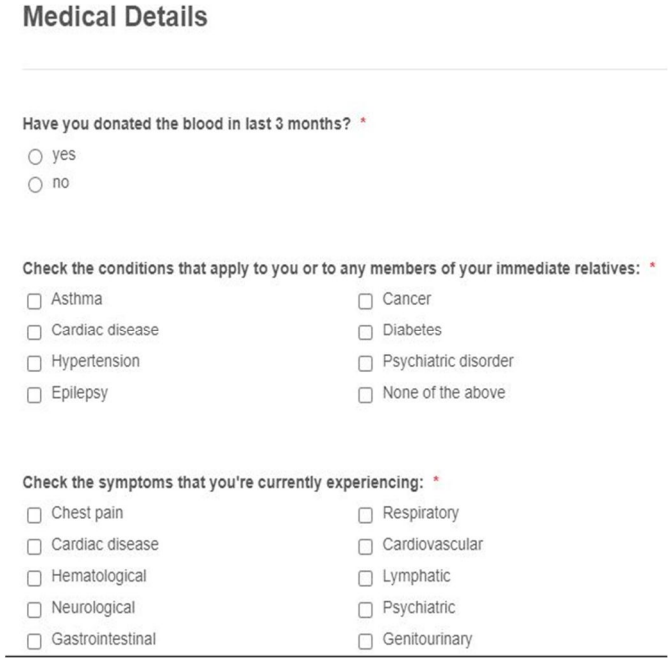

Fig 3

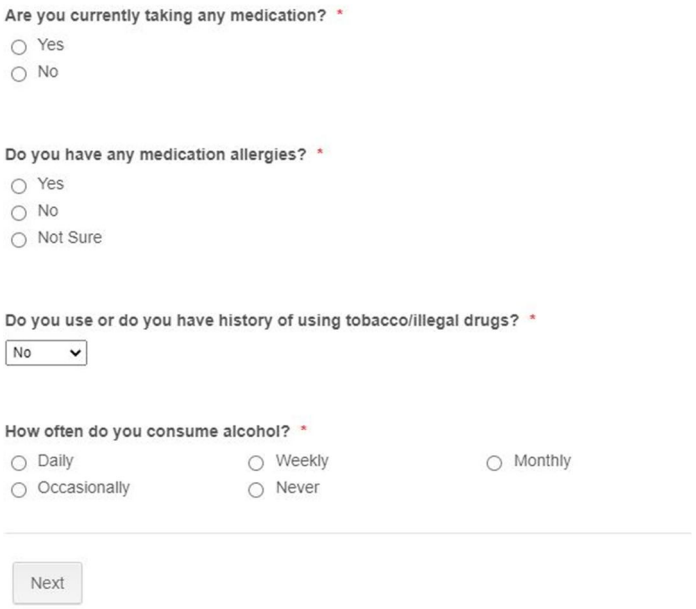

Fig 4

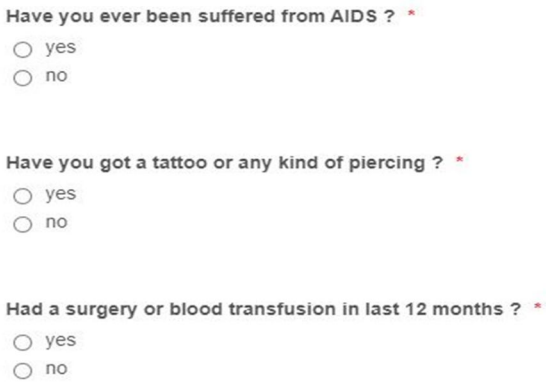

Fig 5

Fig 6

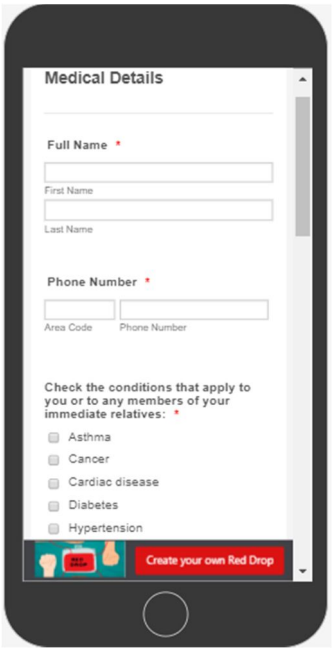

Fig 7: The UI representation of a module in Android 9.0

Data that will be visible to the admin and will be stored in the database.

Name	Email	Gender	Blood Group	Date of Birth	Address	Mobile no.
Jai jagwani	jai123@gmail.com	M	A+	10/10/1998	Lucknow,UP	7037347890
Ram Kumar	ram123@gmail.com	M	B+	13/01/1996	Agra,UP	7447479789
Amit Kumar	amit123@gmail.com	M	AB+	29/03/1990	Kanpur,UP	7958704334
Anshul Singh	anshul123@gmail.com	M	O+	21/09/1984	Mayanpuri,UP	8077667708
Anita Mishra	anita123@gmail.com	F	A-	01/02/1992	Orai,UP	9929929900
Rohan Tiwari	rohan123@gmail.com	M	B-	12/05/1994	Varanasi,UP	6745890132
Kritika Nazkani	kritika123@gmail.com	F	AB-	11/10/1998	Meerut,UP	9087563412
Naman Gupta	naman123@gmail.com	M	O-	30/08/2000	Hardoi,UP	9854763201
Akriti Singh	akriti123@gmail.com	F	A+	10/08/2001	Ghaziabad,UP	9876543210

Fig 8: Database of the Donor

Name	Gender	Blood group	Age	Location
Sagar rai	M	O-	45	Ghaziabad,UP
Sita pandey	F	A+	36	Lucknow,UP
Ravi dubey	M	O+	24	Mainpuri,UP
Ajit tripathi	M	AB+	29	Agra,UP
Rajat gupta	M	O+	40	Noida,UP

Fig 9: Database of the Receiver

V. FUTURE SCOPE

The Emergency SoS feature will let users broadcast an emergency message to all the users of the system.Our future work would be to integrate this blood bank application with health care provider centres, so that they can make use of data and we will add new features as and when required.

VI. CONCLUSION

Proposed system enables users to find the blood in emergency situations. In the present scenario searching for blood donors can take place through blood bank centres or by the toll free numbers. This process takes a lot of time. Because it consists of a lot of human work. If the blood of a particular group is not available then going to the blood bank is a waste of critical time. And also most of the time it may be possible that the user has to wait in a queue for a long time. There are two major parts in the Proposed System activities **,** User & Admin. The Proposed System of our application focuses on maintaining a database of the donors which includes their information so that we can make use of it for future purposes**.** Our application is adaptable to meet the emergency and complex requirement of blood. If required we will add more features and improve the productivity of the application.

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[5] "Smart blood bank as a service on cloud" by UG scholar,terna engineering college.
[6] "Android Blood Bank" by Prof.Snigdha1, Varsha Anabhavane2, Pratiksha lokhande3, Siddhi Kasar4, Pranita More5 Lecturer, Information Technology, Atharva College of Engineering, Mumbai, India 1 Student, Information Technology, Atharva College of Engineering, Mumbai, India 2,3,4,5.
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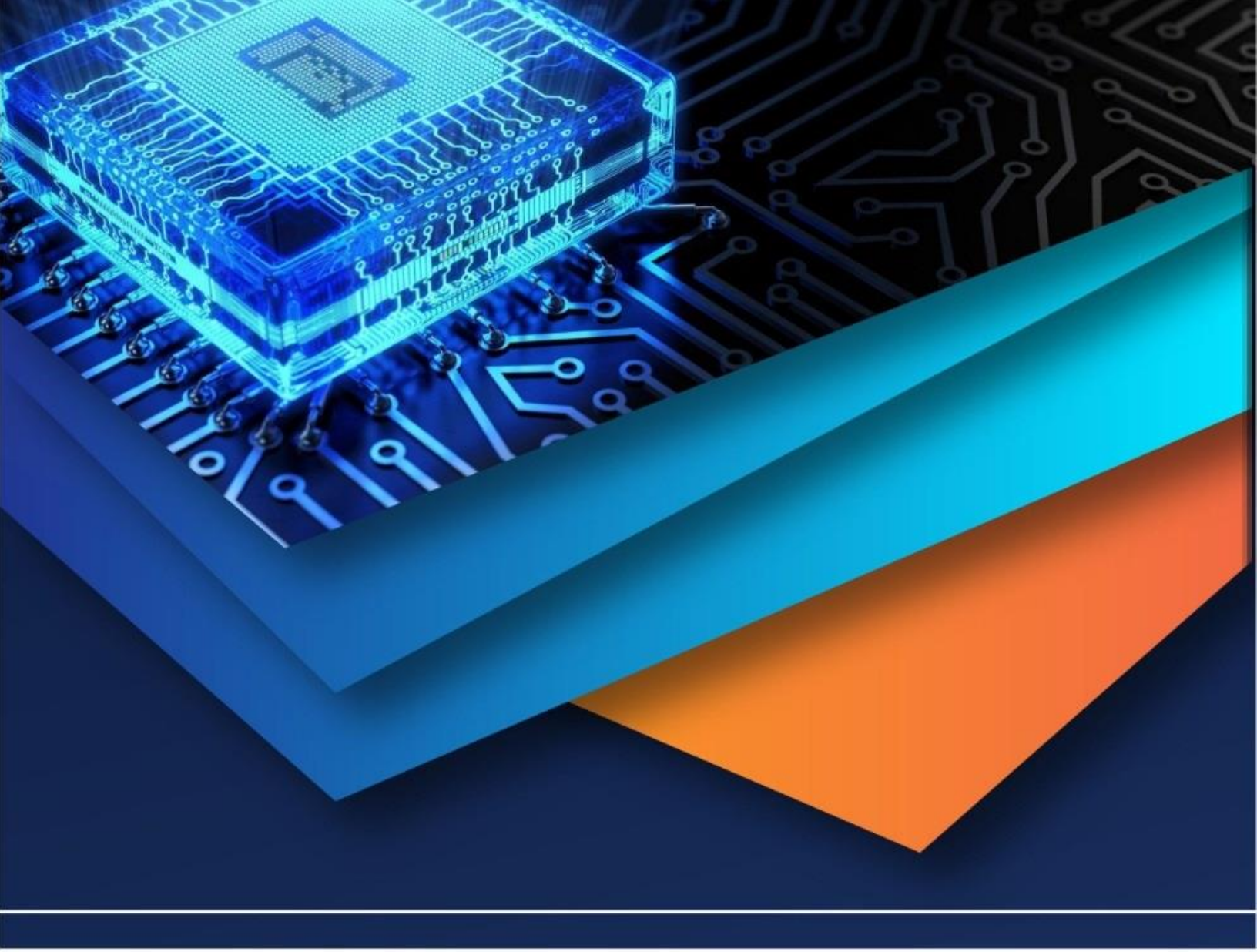

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