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Automated Village Council System Using RFID

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Abstract: Village council system is a computer based application that automates the village council's work. Village council system using RFID really helps in minimizing heavy work load caused in today's traditional village system. Every individual is identified by unique identification number which is being embedded in RFID tag. The old and traditional process of working is being totally replaced by atomizing village council system. This system is quite efficient and time and cost of people can be saved. For any village council system, it requires RFID reader and RFID tags. Radiofrequency identification (RFID) is an identification method which enables storing and retrieving of data at remote places can be done using devices called RFID tag or transponder.

Keywords: RFID, RFID tag, Council System, etc.

I. INTRODUCTION

The existing system the work done is Total manually for finding any of the records here is bit difficult because the person or officer needs to search every book of that particular record and find the needed one .This whole process is time consuming, due to this 60% of human hours are being wasted. In order to overcome such problems a new system is needed which is completely computerized. Using the RFID technology in our proposed system we can manage all the information of a particular person in a efficient manner, because of which searching a particular record of person can be easily done. RFID is an upcoming and is a Auto identification and data collection (AIDC) technology which helps us to provide security and also atomization of process. Computerization of this system can give accurate and timely information .RFID today is used in many Industries. RFID are easy to conceal or in corporate in other items. The main idea is to develop the village council system that can store all information of a person in centralized database RFID reader reads that tag and gives that tag number which is unique through which all needed information like name, DOB, documents, photo can be retrieved from database and on side itself the information can be checked by person through LCD.RFID technology is not just there to tags personal information and other council assets, it will provide a comprehensive for enhancing all village councils services A upgrade operations for everyone concerned with the village council. In this system we need two things 1) RFID Reader 2)RFID tag .An RFID tag is used for purpose of identification of person and can be in product or animal. Radio waves are used for tracking of RFID tag. RFID readers are used to generate radio waves and the tags if particular tags are in specified range.

II. WORK DONE TILL DATE

In existing village council system total work done is manually. A council officer does all the work by hand. Due to this a stack of certificates and information is piled up. If any person needs any of documents such as birth certificate, water bill, tax certificates, death certificate, etc. The officer present there provides all needed certificates but lots of time is wasted in searching the documents.

A. Mahaonline System – Only Marathi language is used, because of which language concern occur, this system is automatic and centrally database is maintained. Internet connection is required; if internet fails no work can be possible. Security is very low.

B. Aadhar Portal – Government of India has come up with Aadhar card a unique identification for a person. All documents can be issued using aadhar card. The major drawback of Aadhar card is that the barcode system is used and any person can get aadhar number and can issue document from government offices.

C.Security and Authentication – In proposed system for security related issues can deal using photo identifier and digital watermarking .Photo identifier – The photo identifier is used in this system. The photo of a particular person is uploaded here and while issuing documents the photo can be seen on screen. The council officer checks the real person with photo. Officer can reject if he finds the some dissimilarities between the two securities can be maintained using photo identifier.

III. PROPOSED SYSTEM

A. Features - The main intension of this software is To reduce human workload and timely organize all the data in digital format. This software is needed to be connected with RFID reader, the radio waves and signals will be sent from this component to computer. When any RFID card is scanned the RFID number is being sent to computer from where particular information can be checked. This village council system can be extended to mass Surveillance system .Automated village council system really helps in reducing human efforts and manually work can be totally stopped. A person when goes to village council the RFID card is being carried by him, he simply gives card to officer , Then officer scans the card and checks the authorization of that person with help of photo stored in system . After authorization the council officer provides required documents to that person stored in system. This system is reliable because the time and cost of people is saved.

B. Digital Watermarking - *A* digital watermarking is a kind of marker covertly embedded in a noise tolerant signal such as audio or image data. Watermarking is a process of hiding digital information in a carrier signal.

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Digital watermarks are used for to maintain integrity of data. In our proposed system the digital watermarking is also used.

TABLE 1
User classes and characteristics

Modules	Characteristics
Operator	1. Login. 2. Enter the detail information of user. 3. Store the information to local database.
User	1. Insert RFID card. 2. Give detail of document.
Admin	1. Login. 2. Edit, update or delete the information. 3. Authenticate
Database	1. Check Validation of Login. 2. Store the information.

IV. SYSTEM DESIGN

A hierarchical model is used for storing information of particular person. Firstly the information is stored in local database, and then it is updated to centralized database. If suppose the local database fails then from centralized server the data can be recovered and vice-versa for centralized database. The RFID card contains the detailed information of user. For village council the system has been made. RFID card is being provided to the citizens for issuing their documents. The following figure shows the architecture of this system.

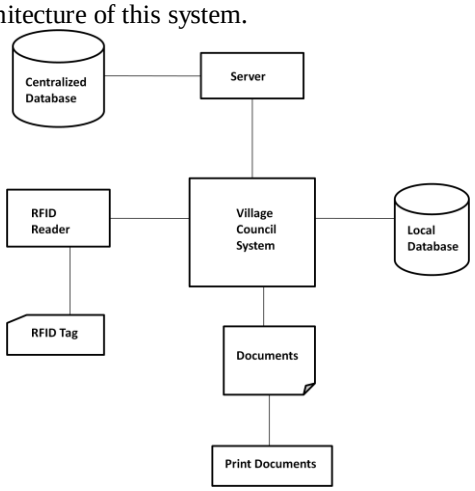

Figure.1 System Block Diagram

V. MATHEMATICAL MODEL

System *S*=Village Council System
System *S*= {*I, P, O, C*}

For Login: *I*= {username, password}
P= Check username and password.
O= {Login Successful/incorrect username or password}

For Registration:
I= {pre-enrollment id, full name, gender, DOB, address, mobile no., details of father, account no., }
P= Check validation.
O= {RFID tag, Local database, Centralized database}

Request for document:
I= {Address proof, Birth certificate, Death certificate, Ration card, Property paper, Landmark paper, Income paper, Stamp Vendor, Voter card, etc}
P= Check for RFID tag validation.
O= {Printout of requested document and signature of administrator.}

$$\begin{cases} n & if\ k = 0 \\ \frac{n+1}{k+1} & if\ 1 \le k \le n \end{cases}$$

We can find the record of particular person using user ID using Linear Search method. For n users, the best case is when the value is equal to the first element of the list, in which case only one comparison is needed. The worst case is when the value is not in the list (or occurs only once at the end of the list), in which case n comparisons are needed. If the value being sought occurs k times in the list, and all orderings of the list are equally likely, the expected number of comparisons is for example, if the value being sought occurs once in the list, and all orderings of the list are equally likely, the expected number of comparisons is.

$$\frac{n+1}{2}$$

However, if it is known that it occurs once, then at most n - 1 comparisons are needed. The time complexity of Linear Search method is O(n).

ADVANTAGES

- *Provides security* - This system provides more security than existing system as there is a tag reader.
- *Time saving* -As this system is fully automated it takes less time for performing operations.
- *Fast & easy to operate & calculation* - The automated panchayat system is user friendly. So it is easy to handle.
- *More accurate* - This system having more accuracy than the existing system or manual working system.

DISADVANTAGES

- *Reader collision* - Reader collision occurs when the signals from two or more readers overlap. The tag is unable to respond to simultaneous queries. Systems must be carefully set up to avoid this problem.
- *Tag collision* - *Tag* collision occurs when many tags are present in a small area; but since the read time is very fast, it is easier for vendors to develop systems that ensure that tags respond one at time.

VI. APPLICATIONS

A. Automated Panchayat system - Using RFID Technology are used in the Grampanchayat. This system is made for the Grampanchayat system. This system is reducing the working time. The Grampanchayat system is provide the RFID card to the citizen for finding their documents.

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B. Taluka/Zillha Parishad level - Automated panchayat system are also used in the Taluka level. In taluka level system all villages' data are stored in their database. They have no need for the manual survey for the villages. In district level i.e.in Zillha parishad all taluka's data are stored in their system.

C. Municipal Corporation - This system is also used for the Municipal Corporation. The municipal corporation is provide the RFID card to the citizen for finding their documents and stored the data in Database.

VII . EXPERIMENTAL RESULTS

Experimental results describe result of the village council system, in the form of input-output. i.e., it shows, after giving the specific input to the system, what kind of output is provided by the system, to the user.

Figure 2. Main GUI

Figure 3RFID Detection

Figure 4.Issue Documents

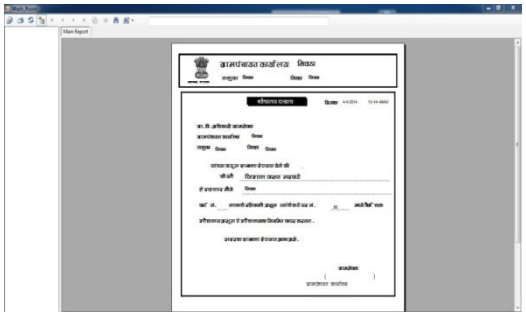

Figure 5. Document Template

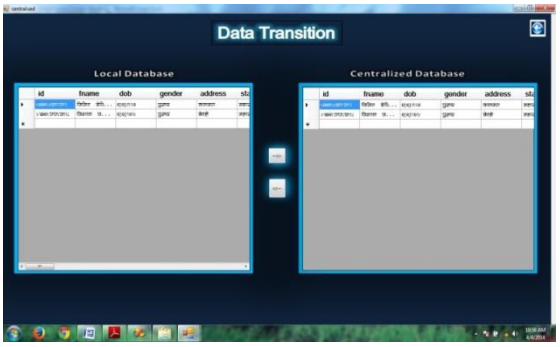

Figure 6. Data Transition

INPUT	OUTPUT
User can scan the RFID tag	It will generate an unique identification number to that user and assigns RFID tag to that user.
Users have to fill all the details and click on save button.	It will save details of user in database in local and centralized server.
User can scan RFID tag for getting the documents.	It will display the photo and name of that particular user.
User can click on the next	It will generate a documents then user have to select any one as per users wish.
User can print document by click on print option .	It will generate a document with a particular user name and user can take a print out of that document.

Table 2: Inputs and their Corresponding Outputs

VIII. CONCLUSION

The existing system is manual and all work of village council is done by humans, so there arises possibility that errors can be done and unexpected result would come. The time also is get wasted, The automated village council system is user friendly and the language concern is not there because English language is also used there. Any person can easily handle the system. In case of Internet connection gets lost then person can work manually also. Identification of record can be immediately done because of RFID .

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