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E-NOTICE BOARD USING RASPBERRY PI AND IOT

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Abstract - *A notice board is a primary thing in any institution. The traditional method is very difficult to print many notices which are require more paper and man working to display a notice, also in modern era the wired notice boards are used to convey the information among peoples, but it is difficult to maintaining and implementing in larger areas. In this project we are decided to implement a E-notice board which is an IoT enabled system using Raspberry pi. There will be an application at the side of users who has access or control over these notice board and can post notices in various format like .jpg, .txt,.pdf etc. There will be a Wi-Fi module in order to pass these notices to the server and finally to display on monitor. The E-Notice board can be accessible at anytime and anywhere from the world. It will be mainly helpful in larger area which has difficult to distribute*

***Key Words*: Notice board, Raspberry Pi, Flutter, LCD monitors, Smartphones**

1. INTRODUCTION

In the current century people want quick access to information, through the internet or television, and they always wants to be updated with the latest events happening around the world. Today people opt for wireless communication to interact with people as it is easy and it require less time, wireless technology is preferred by the people due to its high speed of data transmission. Maintaining manually creates a lot of wastage in natural resource like paper, ink and manpower. In this project the message sent by authorized user is displayed on the digital notice board, the system developed will receive and display the notice along with the time and date that will update the user with latest. Digital notice board can be implemented by using raspberry pi board. An android application is developed and installed in the smart phone of user .A web server and a raspberry pi card is used to display text on display device. Digital notice board is done by using raspberry pi board. The application which will be used by users has to be installed on a Smartphone, a web server and a raspberry pi card to display text on display device. More than 85 Million Tons of paper is wasted every year just by issuing paper notices. We can use technology to reduce the usage of paper to give notices and hence help to reduce the number of trees cut down to meet the paper requirement of today's era , also reduce the expenses met to purchase the paper in the organization.42% trees are cut every year to meet.

2. LITERATURE SURVEY

The manual job in the printing and putting up the notices on the notice board is time consuming also it requires large quantity of paper, printer, toner etc. which is very costly. The use of "Embedded System in Communication" has given rise to many applications that ensures comfort and safety to human life. An embedded system is a combination of hardware and software and perhaps other mechanical parts designed to perform a specific function. A Notice Board is a very essential device in any institution / organization, Industries or public utility place like bus stations, railway stations and parks. E- Notice boards enables people to wireless transmit notices on notice board using IoT. Here only the authenticated person can handle the notice board. This system requires less time due to fast data transmission through internet, less development cost and helps in saving the resources like paper etc. These notices are changed dynamically .The notices are send using app for displaying on display screen. Raspberry pi is used to connect the system and the display screen. Another advantage is that the notices can be scrolled and more than one message can be displayed

ForamKamdar, et.al (2016). Proposed an SMS based notice board using GSM to display message on notice board using the Smartphone. Here the micro controller ATMEGA32 is used. . ASIM300 GSM modem with a SIM card is interfaced to the ports of the micro controller with the help of AT commands. The message send from the smart phone which is authenticated is received by the SIM300 GSM modem.

Anuradha Mujumdar, et.al, they implemented a wireless transmission system in which they used RF based transmission for sending the message to be displayed. The system also pro- videos an idea of how to make the connection between the LED while connecting in matrix, the system uses 5x7 LED dot matrix to display a single character on the board. It uses 8051 micro-controllers in which the memory capacity is less so it requires an external EEPROM for storing the code and message. It also gives an idea of character coding.

C.Anitha, et.al, proposed an system to display the desired message of the user through an SMS using Wi-Fi module and Bluetooth connected to it. Android Phone Speech Recognition Sensed Notice Board Display in this paper, the main objective is to convert voice data to text. The text is send over the microcontroller via blue tooth for displaying on notice board. It also has many drawbacks to implement.

Vinod B. Jadhav,et.al, (2016) had proposed system which can send notice to a remotely placed a remotely Digital Monitor from authorized PC on Raspberry pi card. Wi-Fi is used for Data transmission. At any time we can add or remove or alter the text according to our requirement. A transmitter authorized PC is used for sending a notices. At receiving end Wi-Fi is connected to raspberry pi. When an authorized user sends a notice from his system, it is received by receiver. Wireless is a popular technology that allows an electronic device to exchange data wireless over a computer network, including high speed wireless connections. The data is received from authenticated user.

3. PROPOSED SYSTEM

The proposed system consists of a application for authenticated users and they can send the notices to cloud using these application. A Raspberry pi is connected with display frequently check with the fire base whether a new notice is arrived if so it directly display to screen connected with them. Here we use flutter for efficient development of app such that both iPhone and android can work with them. This is a digitized notice board where application and web app are connected with fire base which help to post

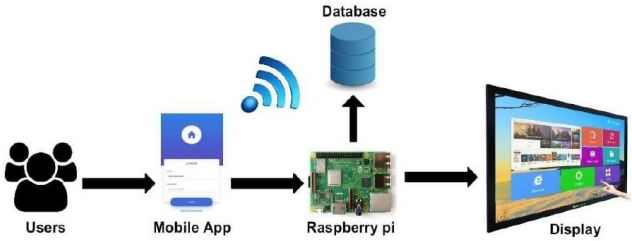

Fig -1: System Architecture

notices even remotely. This has been developed using low cost embedded device like raspberry pi and a screen. Usage of cloud facilitates fast processing, flexibility and is cost effective.

4. SYSTEM DESIGN

4.1 Raspberry Pi

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It's capable of doing everything like a desktop computer can do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python.

Fig -2: Raspberry Pi

It uses a many different kinds of processors and it can install several versions of the Linux operating system. Raspberry Pi is small computer that features remarkable HD (high-definition) quality, video playback and supports high quality audio and has the capacity to play 3D games. It has ARM processor which does the work to run the Raspberry Pi. RASPBIAN, PIDORA, OPENELEC, RASPBMC, RISC OS, and ARCH LINUX these are few software's which are used. The board is very simple to use such that it can be used by small kids too. And so it is very. The

Raspberry Pi board encompasses a processor and graphics chip, program memory (RAM) and various interfaces, and connectors for external devices. RPi operates in the same way as a standard PC, demanding a keyboard used for command entry, a display unit, a power supply. RPi use a SD Flash memory card generally used in digital cameras, configured in a same as a hard drive used in PC. RPi will 'load the Operating System into RAM'(boot)from this card in the same way as a PC 'boots up' into Windows from its hard disk.

4.2 Flutter

Flutter is an open-source UI software development kit created by Google. Flutter is a useful tool for developing applications for Android, iOS, Linux, Mac, Windows, and the web from a single code- base. Flutter includes a modern react-style framework, a 2D rendering engine, ready-made widgets, and development tools. These components work together to help you design, build, test, and debug apps. Everything is organized around a few core principles. Widgets are the basic building blocks of a Flutter app's user interface. Each widget is an immutable declaration of part of the user interface. Unlike other frameworks that separate views, view controllers, lay- outs, and other properties, Flutter has a consistent, unified object model: the widget. A widget can define: a structural element (like a button or menu) a stylistic element (like a font or color scheme) an aspect of layout (like padding).

4.3 Algorithm

1. Start
2. Login notice board.
3. Check for user authenticity, if authentic then go to step 4 otherwise goes to step 2.
4. Select the notices in the form of image, pdf and text files
5. Upload files.
6. Store the message.
7. Set the time duration for the displayed messages.
8. Set maximum limit for the size of image to be displayed.
9. If the received image is less than the limit it will directly displayed. Otherwise image will be resized.
10. Convert pdf to image..
11. Received image and text files
12. Display stored messages in First in first out order (FIFO)
13. Check for new notice. If it occurs go to step 8 else go to step 9
14. Continue the above steps until power is on.
15. Stop

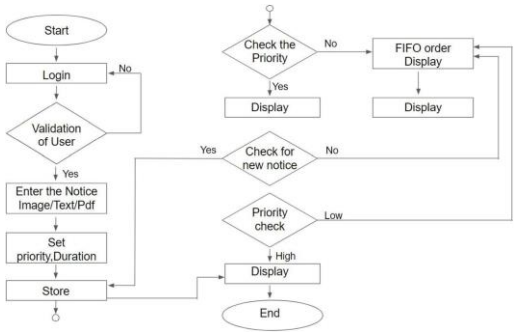

Fig -3: Flow Diagram

By Starting with application user must register with their details after that user need to login with that details if their details are authenticated users get the permission to enter the app after entering into application they have option to upload files of various format and choose the appropriate format and pick the file from their phone connected with display monitor

Will frequently check the newly available notices if so that will be printed on the display also each user can delete their notices from the application. The most important feature is that user can post the notices remotely.

4.3 Application Design

1) User Registration: In-order to authenticate into application user first needs to register their details using sign-in provide in the login page. After that they enter the detailsin login page, fire store the user details when each of them registers, when user try to login fire base authenticate the user by verifying their email and password with which they registered if it validate they redirect to home page

otherwise an error message will be shown. After each user registration admin can send confirmation email to verify their registered email address as shown in figure 4.

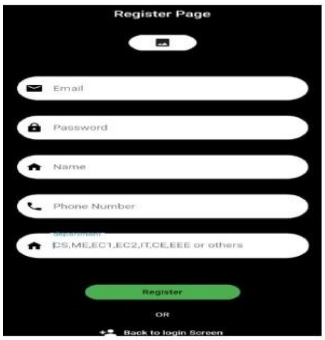

Fig -4: Registration Page

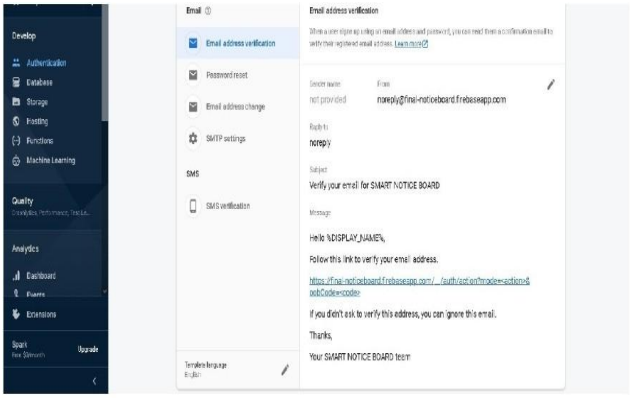

Fig -5: Email confirmation

2)File Upload: After Authentication is done user directly enter to home page from there they can choose "File" as shownin home page in figure 4.6, by clicking to "File" they have a choice to pick a file, it can be any of format like image, text etc.as shown in figure 6.

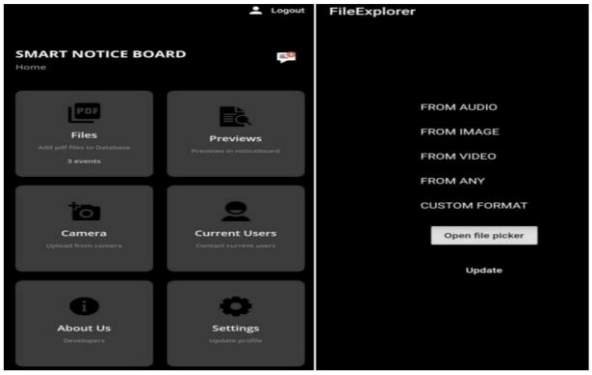

Fig -6: File selection and uploading

3)Storage: By clicking in upload after file selection the files are get stored in database provided by fire-base. Differentfile format will be stored on difference file as shown in Fig 7

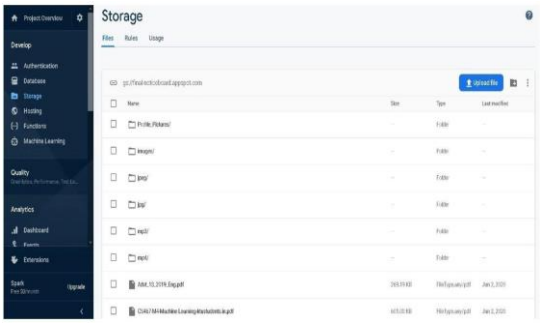

Fig -7: File storage

4) Retrieval: After the file get stored in database next isit want to display in screen for that raspberry pi frequently check the file and if there is a new file it will be retrievedfrom database and shown it to display, retrieved file can be even viewed in application as shown in Fig 8 and there willbe a option to delete their own notice.

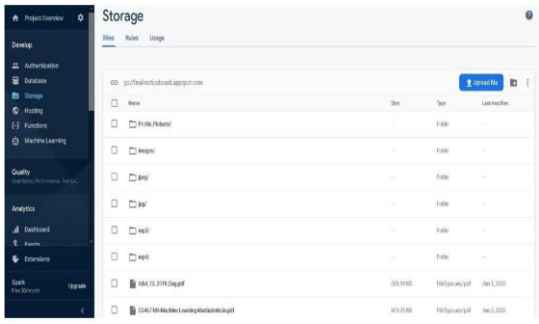

Fig -8: File retrieval

5. CONCLUSION

All the day to day work are automated and to make changes all the system are made wireless as it will be having a long range of transmission and much faster. Data can be sent from remote location also resources and time is saved, Noticescan be displayed in many forms using this technology. The notice board will be more efficient in displaying the accurate messages at low cost also we can save lot of paper fromprinting Notices thus reduce a paper waste at greater extent.

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