

Offline Database Access

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Abstract— Most of the People around the globe are not familiar with internet, the reason for inaccessible internet may vary region to region, somewhere because of geographical hurdles but internet has become one of the vital elements of survival for them. In such a scenario, there are parts of the Globe that doesn't receive internet facility, or governmental restrictions. In some places, such as rural areas and remote regions, cell towers and Internet cables simply don't exit. The connectivity will be achieved with the help of remote database access through wireless medium. Once the data has been sent to outernet server we can access it at anytime and anywhere by offline database (Without internet).

Index Terms—Outernet ; Remote database ;Raspberry pi WebServer ; Python Language

I. INTRODUCTION

Internet was invented for convenient data transmission, without letting the distance being a barrier. Anything and everything is available online, and thus, the world seems compact now but only one third of the total world's population is able to access the internet. Most of the People around the globe are not familiar with internet, the reason for inaccessible internet may vary region to region, somewhere because of geographical hurdles but internet has become one of the vital elements of survival for them. By transmitting digital content to mobile devices, a basic level of news, information, education, and entertainment will be available to all of humanity. In some places where accessible internet is provided, the facility charges a cost. The offline data base access it gives access to some places, such as rural areas and remote regions, cell towers and Internet cables simply don't exit. The connectivity will be achieved with the help of remote database access through wireless medium. Once the data has been sent to outernet server we can access it at anytime and anywhere by offline database (Without internet).

I. COMPONENTS OF OUTERNET

- A. The Outernet project needs have its own needs to work adequately. The main areas of its components include:
- Raspberry Pi 3 Model B
 - Rip WIFI-Hotspot
 - File sharing Server/Apache Web Server

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A. Raspberry pi 3 Model B

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 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. Which has on-board WiFi / Bluetooth support and an 64bit improved Processor, Raspberry Pi v3

B. Rip WIFI-Hotspot

The Raspberry Pi can be used as a wireless access point, running a standalone network. This can be done using the inbuilt wireless features of the Raspberry Pi 3 or Raspberry Pi Zero W, or by using a suitable USB wireless dongle that supports access points. One common use of the Raspberry Pi as an access point is to provide wireless connections to a wired Ethernet connection, so that anyone logged into the access point can access the internet, providing of course that the wired Ethernet on the Pi can connect to the internet via some sort of router.

C. Apache Web Server

Apache is a freely available Web server that is distributed under an "open source" license. Version 2.0 runs on most UNIX-based operating systems (such as Linux, Solaris, Digital UNIX, and AIX), on other UNIX/POSIX-derived systems (such as Rhapsody, BeOS, and BS2000/OSD), on AmigaOS, and on Windows 2000. Raspberry Pi is an ideal Apache web server for small websites that don't require the capacity or server-side processing.

II. TECHNICAL BACKGROUND

A. Requirements Analysis

B. 1) Functional requirements

- Power board will connect to the Raspberry Pi
- The user will be provided with a username and password to gain access to the web server
- Admin user can upload data's to the server
- A Wi-Fi USB dongle will connect to the Raspberry pi to allow wireless communication.

2) Non functional requirements

• Accessibility

- The power board will be available 24 hours a day, seven days a week depending on the user's choice of mode.

• **Reliability**

The user can connect to any type of smartphone and systems’ to access the web server. The reliability will depend on the connection on the WIFI.

• **Security**

To access the OUTERNET Server it ask for the username and password of the of the web access.

B. System Requirements

C. Hardware.

1. Raspberry Pi Model B
2. SD card
3. Micro USB Power Supply

D. Software

1. PHP - Programming language used in coding the interface and the functions of the power board
2. Web Server - This is used for the power board’s web server to be available online
3. Raspbian - Operating system optimised for Raspberry Pi hardware and precompiled with the software bundled.
4. Web Server - Any update web browser that allows access to the offline server without any need of internet it update through database of the server through connection of the own wifi smartphone or laptop.

E. Design of software and Processes

This section describes the hardware details of the system namely the block diagram (Fig 1)

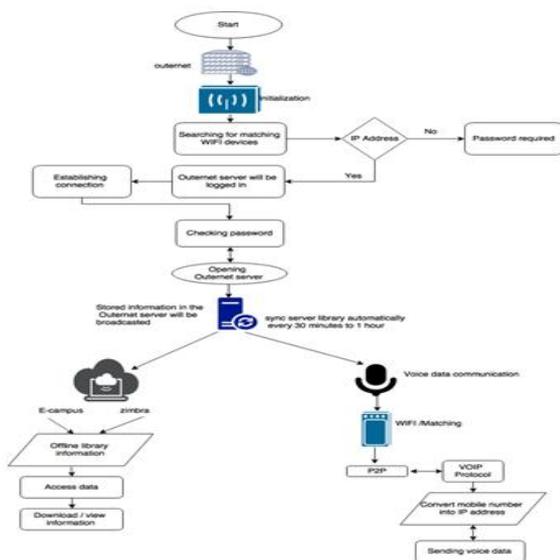


Figure 1. System Flowchart of offline database

IV. THE PROPOSED SYSTEM

The proposed design aims at free access of internet from a local server just like like share database from single point outernet (offline database access) server from raspberry pi through Wifi. The use of offline database access (outernet). This Project facilitates the students to re-read the lectures that is taken in the class room. The students can download an offline copy of the lectures to their computers or mobiles so that they can learn it with the help of their Outernet Server. By creating a broadcast, one to many system, it can provide geography coverage .The main motive of the outernet, is to provide free access to the media archive, through outernet in college campus and rural areas without having internet access. This system is designed based on the IoT technology which has a tremendous development in many fields (Cloud computing). Which helpful in rural areas. Outernet will provide ample of information. Broadcast information at free of cost.

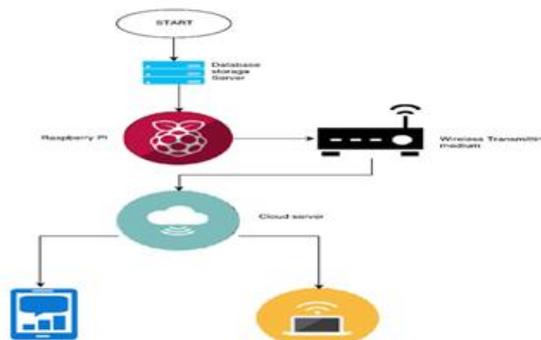


Fig.2: Block diagram

The designed system is divided into two blocks. One block comprises the server and Raspberry Pi module. Second one comprises of Ethernet/Wi-Fi and client interface. The clients send the data directly using the web page developed as it provides direct interface to the pi module .

After this combination there is need of installing the packages and configure accordingly .The client need to log in to the page to get the access of the offline database server.

A. Prototype



Fig.3: Actual prototype.

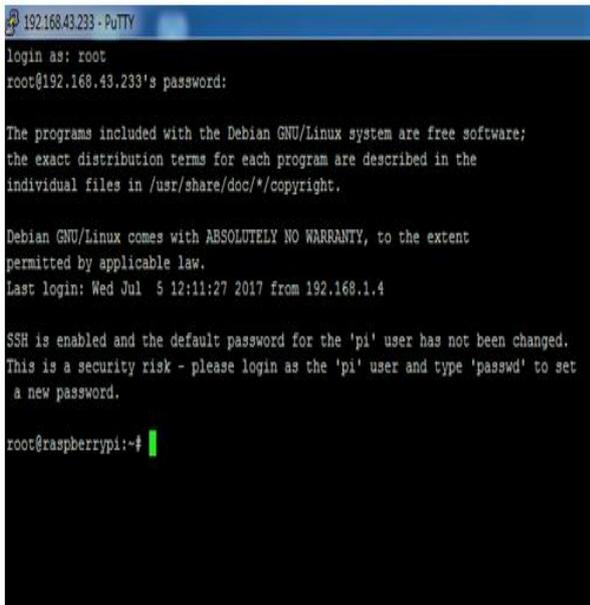


Fig.4:Putty software

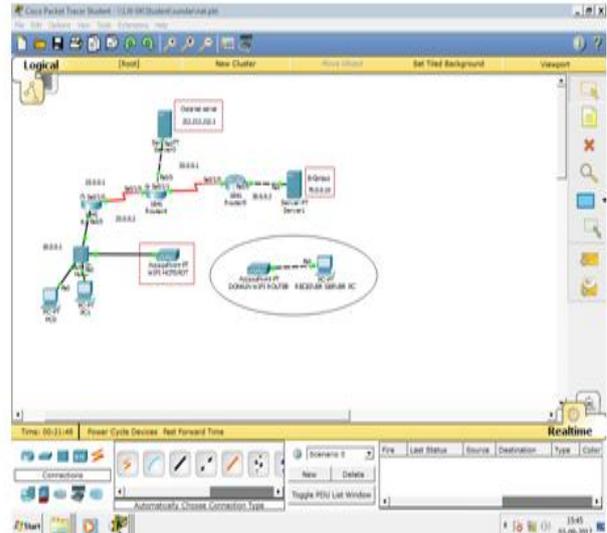


Fig.7: Cisco packet Tracer Simulation of offline database access

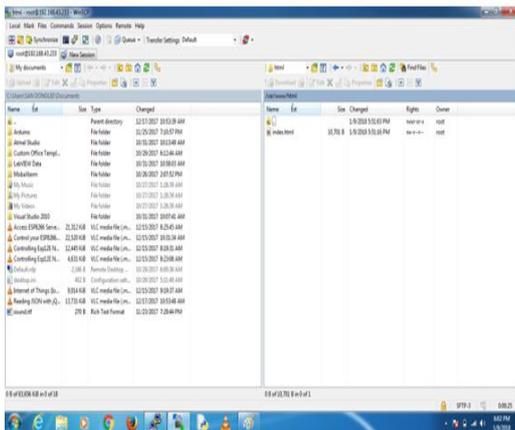


Fig.5: WinSCP software

It gives the root access of the html of our server ip 192.168.43.234/233.



Fig.6: Web page for downloading data server

B. Cisco packet Tracer

Packet Tracer is a cross-platform visual simulation tool designed by Cisco Systems that allows users to create network topologies and imitate modern computer networks. The software allows users to simulate the configuration of Cisco routers and switches using a simulated command line interface. We have simulated the offline database access through packet tracer which is an efficient server.

C. OBJECTIVE

1. To implement outernet server.
2. To introduce the Cloud management system in offline access.
3. Transmitting digital content data into VHF (Very High Frequency) range.
4. To apply emergency data communication through peer to peer wireless medium.

Summary

Multiple test cases performed to prove features of the project. Both low and high voltage devices were tested. Initially electronic appliances connected one at a time to check if the outlets are working. After which, multiple appliances plugged at the same time were tested. On the process of creating and testing the prototype, errors were attributed to wrong wiring. On the software side, wrong mapping of links in the web app caused errors.

Almost all test cases were successful, 93% for the hardware and 91.6% for the software. The response time of the test cases ranged from .5 second to 1 second depending on the Wifi connection. Averaging the results of both the

hardware and software gave the project a total reliability of **92.3%**.

CONCLUSION & FUTURE SCOPE

In the proposed work a system is developed where a traditional local offline database attached with Raspberry Pi module working as a offline Server performs operation through web services .The designed embedded system which behaves as a Server can be used from anywhere where local database is present irrespective of any make for internet. Offline Database is an ambitious project that seeks to create a global WI-FI would provide free access to the internet .It will offer a humanitarian notification system during emergencies such as disaster relief . It will deliver web data to the two-thirds of the planet that has never accessed the Internet.It helps in providing free flow of information in dictatorial countries.

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