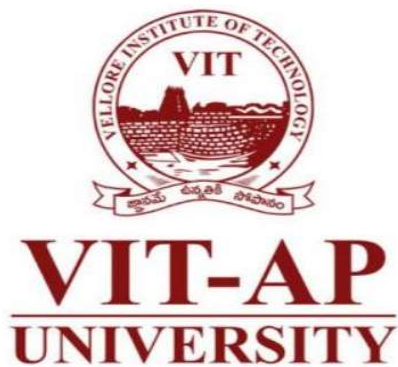


# Converting Emails from Text to speech Using Raspberry pi



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## **Abstract**

The main aim of the project is to reading emails and convert the received emails to voice using Raspberry Pi.

Raspberry pi is a credit card sized single board computer developed by the Raspberry Pi Foundation in the UK with the intention of promoting the teaching of basic computer science in the schools.

The Raspberry Pi 3 is equipped with a quad-core 64-bit Broadcom BCM2837 ARM Cortex-A53 SoC Processor running at 1.2GHz, it is having 400MHz VideoCore IV multimedia. Raspberry Pi was shipped originally with 1GB RAM. It does not have a build in hard disk or any other kind of drive, so it uses an External SD card for booting and persistent storage.

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## **Introduction**

The main aim of the project is reading emails and converting the received emails to voice using Raspberry Pi.

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The system has Secure Digital (SD) (models A and B) or Micro SD (Models A+ and B+) sockets for boot media and persistent storage.

In 2014, the Raspberry Pi Foundation launched the compute Module, which packages a BCM2837 with 1GB RAM and an eMMC flash chip into a module for use as a part of embedded systems. The Foundation provides Debian and Arch Linux ARM Distributions for download.

The architecture of Raspberry Pi and is understood including the ports and GPIO pins. The pin descriptions and architecture of ARM11 and ATmega328 are understood. The Raspberry Pi board is initialized using IP address of the board. The raspberry Pi is activated using a login Id and Password. The python codes is written and executed in Raspberry Pi.

## Background

As a part of our curriculum this project we made using raspberry pi using python programming language. We have seen many people who have disabilities and not much educated.

### **EXSISTING SYSTEM:**

To know the information of the emails in those days people should go through the netcenter or open there account and they need to check there mails every time.

### **PROPOSED SYSTEM:**

In this we are proposed that, reading emails received using text to voice converter by using Raspberry pi. When mail is received instantly that will convert in to text to voice so that we can here the mails which we received. We can also implement in real time also. The Raspberry Pi is a credit card-sized single-board computer developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools.

## **Problem Definition**

Many blind people and illiterate people struggle to read emails due to the accessibility issues of email clients. This can lead to missed opportunities, important messages, and other benefits that come with reading emails, such as job offers, financial information, and healthcare updates.

**We are trying to solve the problem which is not even done by many search Engines (Google, Siri).**

### **Objective:**

We tried to create a solution that allows blind people and uneducated people to access and read their unread emails using Raspberry pi(Python).

### **EXSISTING SYSTEM:**

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**Procedure:**

Initialization of Raspberry Pi Board:

Raspberry Pi board is initialized using Extra PuTTY, by entering the IP address of the board. PuTTY is a free and open-source terminal emulator, serial console and network file transfer application. It supports several network protocols, including Secure Copy (SCP), Secure Shell (SSH), Telnet, rlogin, and raw socket connection. It can also connect to a serial port (since version 0.59).

PuTTY supports many variations on the secure remote terminal, and provides user control over the SSH encryption key and protocol version, alternate ciphers such as 3DES, Arcfour, Blowfish, and DES, and Public-key authentication. It also can emulate control sequences from xterm, VT102 or ECMA-48 terminal emulation, and allows local, remote, or dynamic port forwarding with SSH (including X11 forwarding). The network communication layer supports IPv6, and the SSH protocol supports the zlib@openssh.com delayed compression scheme. It can also be used with local serial port connections. (Website 1)

**STEP 1:****Establish an SSH Connection to your Raspberry Pi**

In order to access the Raspberry Pi via remote SSH, we need to know the local IP address your router has given to it. If you are able to access this information from your router's configuration menu, go ahead and do it. If not, use Advanced IP Scanner to scan your home network and generate a list of all connected devices and their local IP addresses. Just click "Scan" in the upper left hand area of the window, and a list of all connected devices will be generated with their associated local IP addresses:

**Putty software:**

1. Click on the new software on the desktop.

2. the following will appear

Write down the IP address for the device that says Raspberry Pi Foundation in the “Manufacturer” column. In my case it is . We will need the local IP address to establish an SSH connection from our home computer to the Raspberry Pi.

Now we can set up our SSH connection to the Raspberry Pi with our SSH client, PuTTY. Open up PuTTY, and enter the local IP address of the Raspberry Pi into the “Host Name (or IP address)” field. Don’t worry about the port for now, keep it as is:

After you have entered the local IP address of your Raspberry Pi, click “Open” to initiate the connection. On the first connection attempt, an error message will appear, but press yes anyway since you are connecting to your own Raspberry Pi so the security risk is minimal here:

5. Enter the IP address in the host name box.

6.click on to the open.

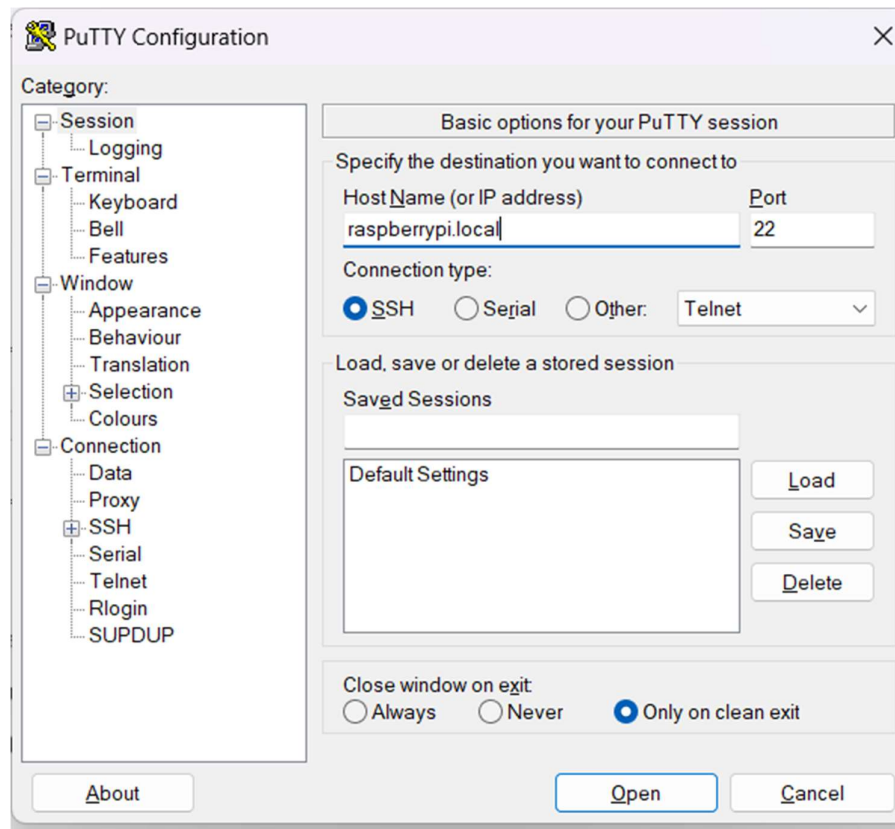
## **Components:**

PuTTY consists of several components:

- PuTTY: the Telnet, rlogin, and SSH client itself, which can also connect to a serial port (since version 0.59).
- PSCP: an SCP client, i.e. command-line secure file copy.
- PSFTP: an SFTP client, i.e. general file transfer sessions much like FTP.
- PuTTYtel: a Telnet-only client.
- Plink: a command-line interface to the PuTTY back ends.
- Pageant: an SSH authentication agent for PuTTY, PSCP and Plink.
- PuTTYgen: an RSA and DSA key generation utility.



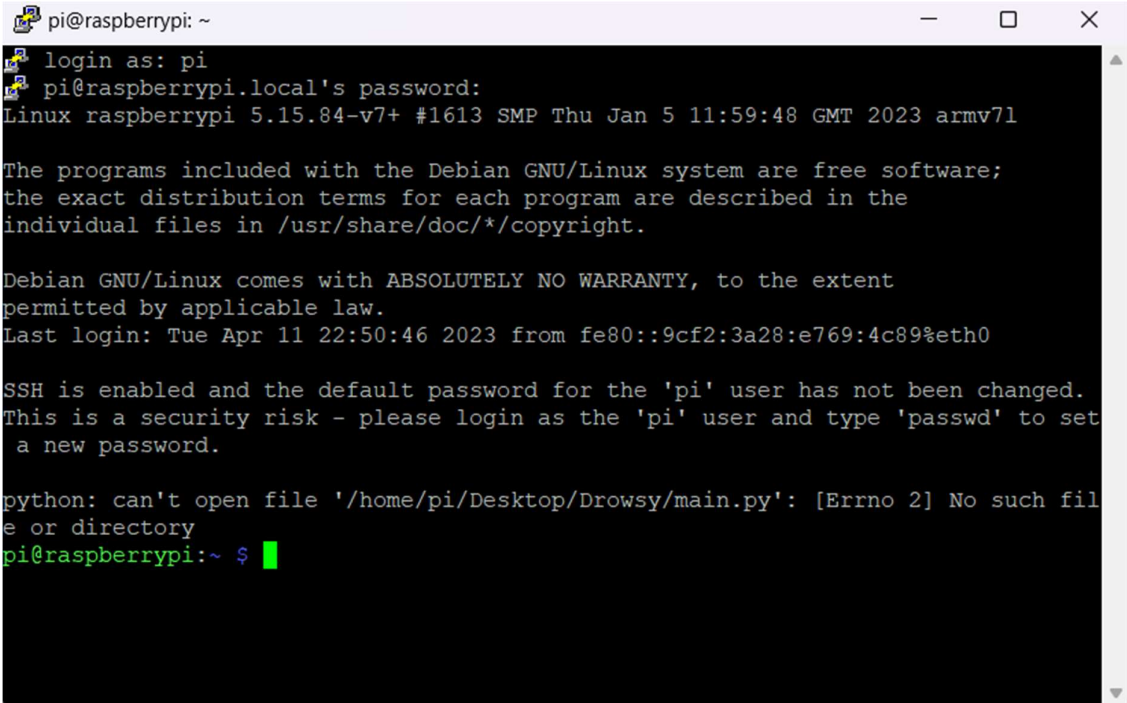
- pterm: a standalone terminal emulator (Website 2).



7. After we connected with the IP address.

8. The login ID will be asked.

## 9. Login ID is pi and password is raspberry



```
pi@raspberrypi: ~  
login as: pi  
pi@raspberrypi.local's password:  
Linux raspberrypi 5.15.84-v7+ #1613 SMP Thu Jan 5 11:59:48 GMT 2023 armv7l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Tue Apr 11 22:50:46 2023 from fe80::9cf2:3a28:e769:4c89%eth0  
  
SSH is enabled and the default password for the 'pi' user has not been changed.  
This is a security risk - please login as the 'pi' user and type 'passwd' to set  
a new password.  
  
python: can't open file '/home/pi/Desktop/Drowsy/main.py': [Errno 2] No such file  
or directory  
pi@raspberrypi:~ $
```

10. After this login, VNC viewer is the tool used to operate RASPBERRY PI.

### Methodology:

#### Step1:

We researched and analysed to understand the needs and challenges of blind people and uneducated people when it comes to reading emails. We got to know what's exact problem.

#### Step2:

After analysing the causes and issues we brainstormed idea to over this difficulty using our technical knowledge. We collected the required parts and elements to overcome this problem.

#### step3:

With the requirements in hand, the next step would be to design and prototype the solution. In this step we will make a rough product and test with user to ensure they are accessible and easy to use.

Step4:

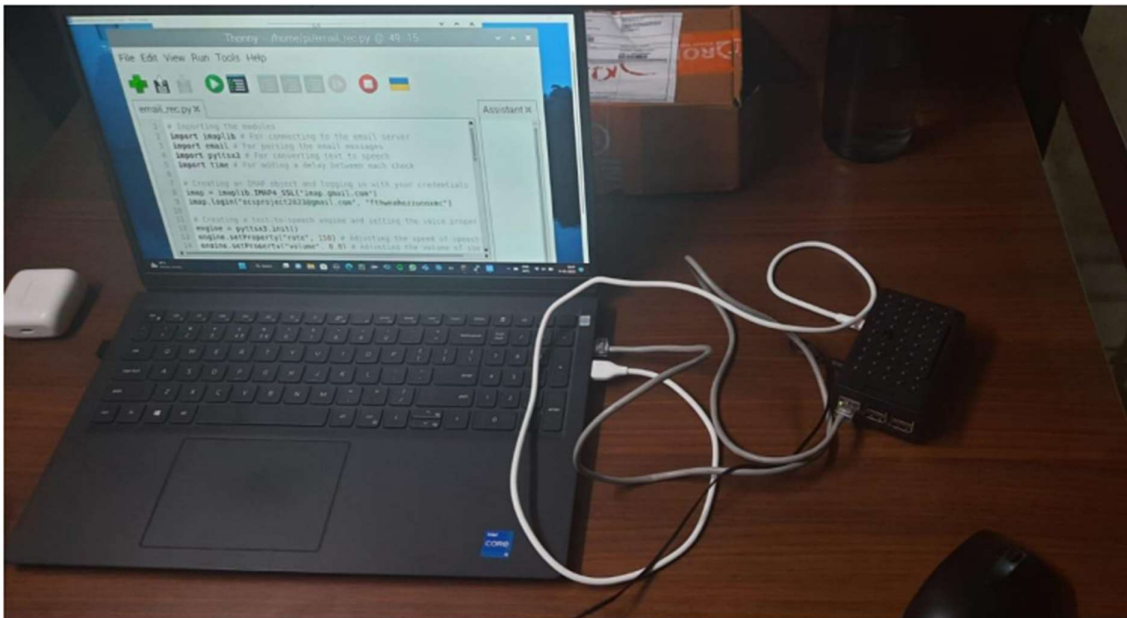
Once our design is finalized, we made a testing product which includes the coding part and necessary steps to overcome the problem.

Step5:

Displaying the product in front of the mentor for valuation and then making any changes that can be needed. We are trying to fulfil every need of people who are facing problems.

## RESULTS AND DISCUSSION

This is the setup for the respective output of the project using raspberry pi (python)



We got the result as we expected, we are able to get the voice from the raspberry in Our native Language **TELUGU** it helps the both blind people and uneducated people. So that they were benefitted with Emails.

To convert English to Telugu we have used gTTS (Google Text To Speech). By using these unread emails will be listed out and each one will convert into a mp3 file on a temporary basis.

## Conclusions and future scope

The Raspberry pi offers better home automation system than other micro controllers. The Raspberry pi chip operated at 700 MHz by default and did not become hot enough to need a heat sink or special cooling. ARM processors require significantly fewer transistors than typical CISC x86 processors in most personal computers. This approach reduces costs, heat and power use. Such reductions are desirable traits for light, portable, battery-powered devices—including smart phones, laptops, tablet and notepad computers, and other embedded systems. A simpler design facilitates more efficient multi-core CPUs and higher core counts at lower cost, providing improved energy efficiency for servers.

### Future Scope

We are trying to get the output in multiple languages and even we are trying to read the HTML, Images, which are attached in the emails.

This email reading will be used widely such as in personal cabins, school cabins, institutions etc. The Raspberry pi offers better home automation system than other micro controllers.

## REFERENCES

The sites which were used while doing this project

1. [www.wikipedia.com](http://www.wikipedia.com)
2. [www.allaboutcircuits.com](http://www.allaboutcircuits.com)
3. [www.microchip.com](http://www.microchip.com)
4. [www.howstuffworks.com](http://www.howstuffworks.com)
5. <http://www.zdnet.com/raspberry-pi-designer-hints-at-future-version-4010025712/>
6. <http://janbierens.com/2012/05/22/raspberry-pi-and-the-future/>
7. [http://en.wikipedia.org/wiki/Raspberry\\_Pi](http://en.wikipedia.org/wiki/Raspberry_Pi)
8. <http://www.pcpro.co.uk/reviews/desktops/374290/raspberry-pi-model-b>
9. <http://www.techrepublic.com/blog/european-technology/raspberry-pi-five-ways-business-can-use-it/610>

## BOOKS REFERRED:

1. Raj kamal –Microcontrollers Architecture, Programming, Interfacing and System Design.
2. Muhammad Ali Mazidi –Embedded Systems.
3. PCB Design Tutorial –David.L.Jones.
4. Embedded C –Michael.J.Pont.

## Appendix

We implemented the following code below to get the desired output.

### Code

```
# Python 3.8.0
import smtplib
import time
import imaplib
import email
import traceback
from gtts import gTTS
```

```

import os

# -----
#
# Utility to read email from Gmail Using Python
#
# -----
ORG_EMAIL = "@gmail.com"
FROM_EMAIL = "ecspj2023" + ORG_EMAIL
FROM_PWD = "fthwnahozzuooxmc"
SMTP_SERVER = "imap.gmail.com"
SMTP_PORT = 993

def read_email_from_gmail():
    try:
        mail = imaplib.IMAP4_SSL(SMTP_SERVER)
        mail.login(FROM_EMAIL, FROM_PWD)
        mail.select('inbox')

        data = mail.search(None, 'UNSEEN')
        mail_ids = data[1]
        id_list = mail_ids[0].split()
        first_email_id = int(id_list[0])
        latest_email_id = int(id_list[-1])

        for i in range(latest_email_id, first_email_id, -1):
            data = mail.fetch(str(i), '(RFC822)')
            for response_part in data:
                arr = response_part[0]
                if isinstance(arr, tuple):
                    msg = email.message_from_string(str(arr[1], 'utf-8'))
                    email_subject = msg['subject']
                    email_from = msg['from']
                    print('From : ' + email_from + '\n')
                    print('Subject : ' + email_subject + '\n')

                    # Convert output to Telugu using gTTS
                    telugu_text = "సూచి: " + email_from + "\nవిషయం: " + email_subject + "\n"
                    telugu_audio = gTTS(text=telugu_text, lang='te',
slow=False)
                    telugu_audio.save("email_telugu.mp3")
                    os.system("mpg123 email_telugu.mp3") # Play the audio
file

    except Exception as e:
        traceback.print_exc()
        print(str(e))

read_email_from_gmail()

```