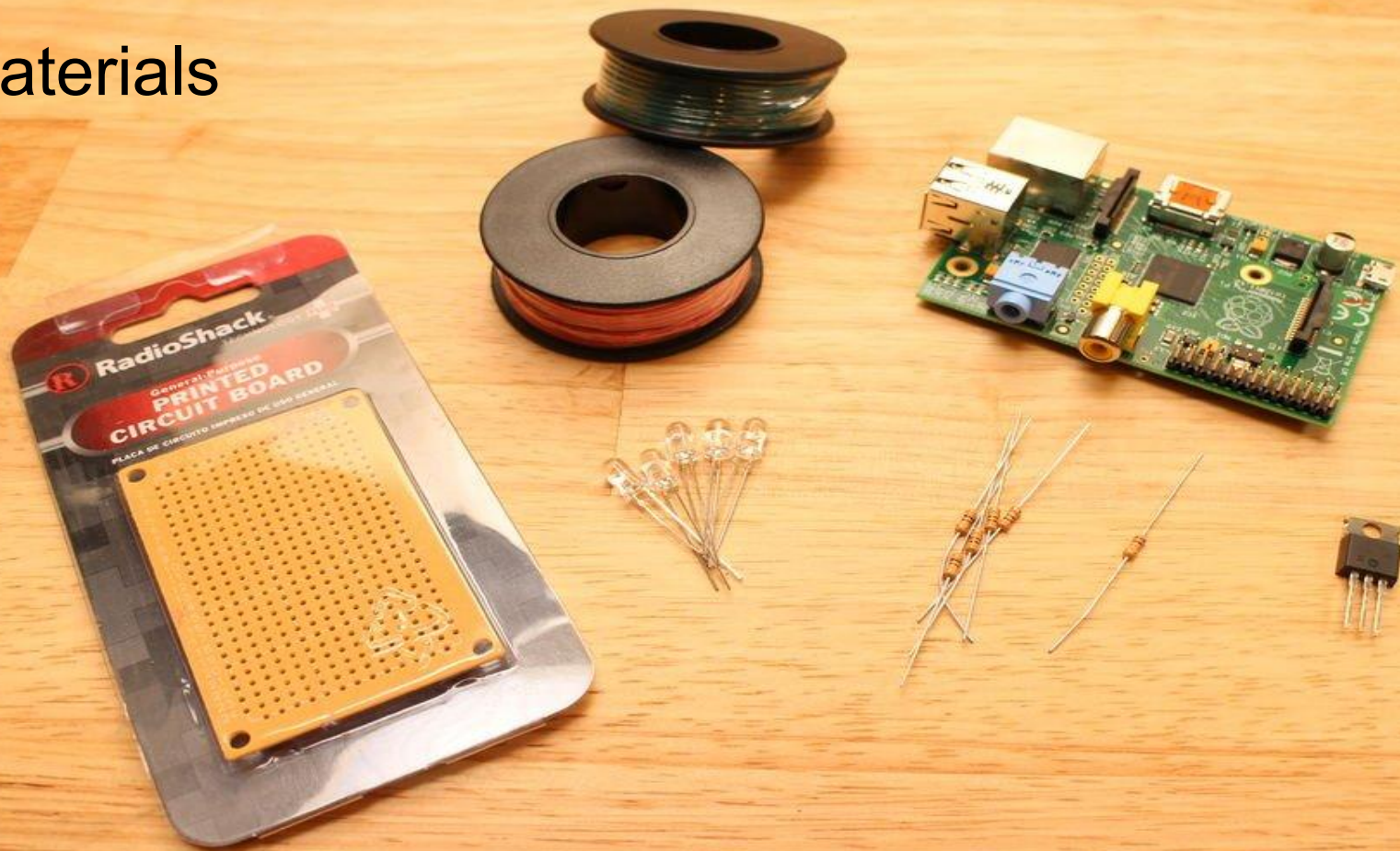# Email Notification Light
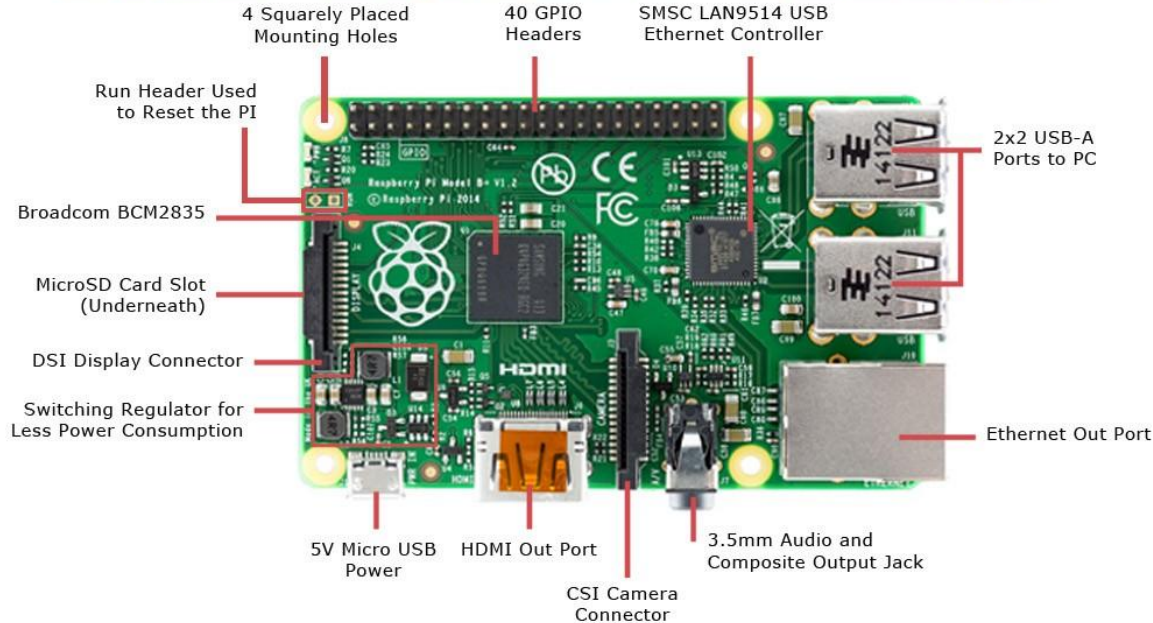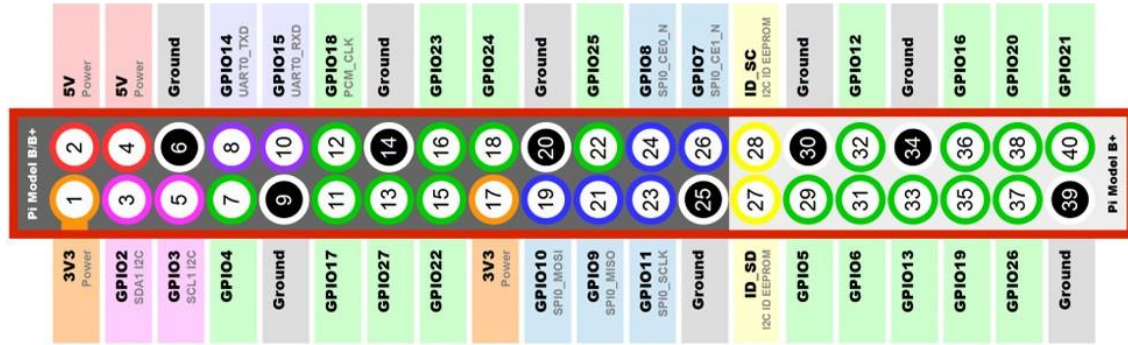
Jeremy, Peter
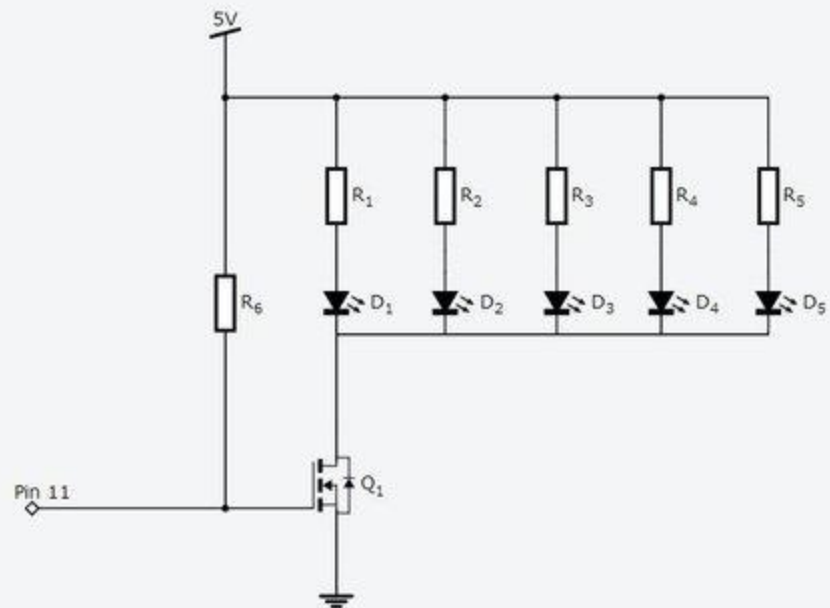
Materials

GPIO Pinout Diagram

5V Power	**1** / **2**	**3V3** Power

Top row (pins 2,4,6...40):

5V Power	5V Power	Ground	GPIO14 UART0_TXD	GPIO15 UART0_RXD	GPIO18 PCM_CLK	Ground	GPIO23	GPIO24	Ground	GPIO25	GPIO8 SPI0_CE0_N	GPIO7 SPI0_CE1_N	ID_SC I2C ID EEPROM	Ground	GPIO12	Ground	GPIO16	GPIO20	GPIO21
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40

Bottom row (pins 1,3,5...39):

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
3V3 Power	GPIO2 SDA1 I2C	GPIO3 SCL1 I2C	GPIO4	Ground	GPIO17	GPIO27	GPIO22	3V3 Power	GPIO10 SPI0_MOSI	GPIO9 SPI0_MISO	GPIO11 SPI0_SCLK	Ground	ID_SD I2C ID EEPROM	GPIO5	GPIO6	GPIO13	GPIO19	GPIO26	Ground

Pi Model B/B+ — Pi Model B+

4 Squarely Placed Mounting Holes

40 GPIO Headers

SMSC LAN9514 USB Ethernet Controller

Run Header Used to Reset the PI

2x2 USB-A Ports to PC

Broadcom BCM2835

MicroSD Card Slot (Underneath)

DSI Display Connector

Switching Regulator for Less Power Consumption

Ethernet Out Port

5V Micro USB Power

HDMI Out Port

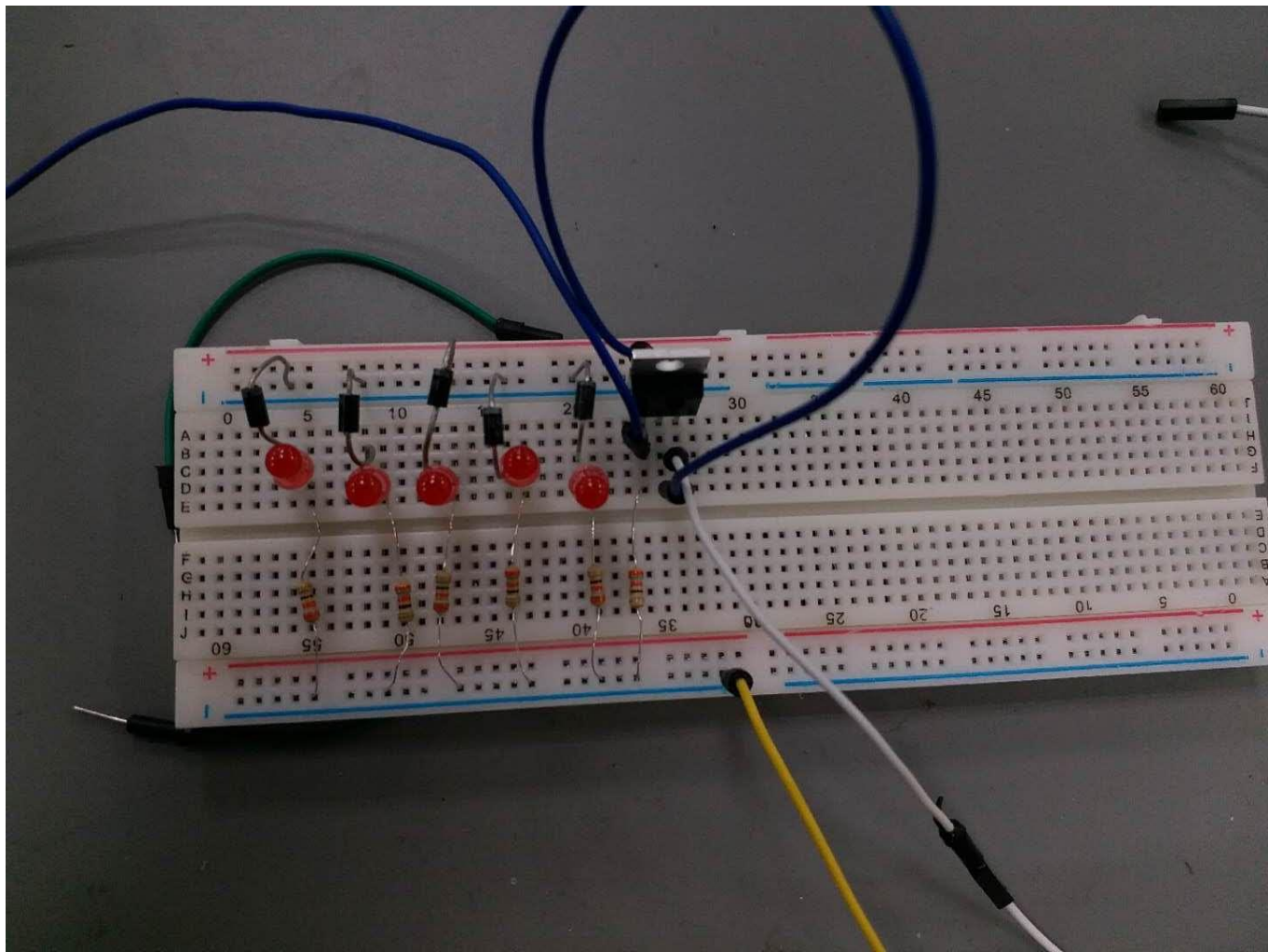**CSI Camera Connector**

3.5mm Audio and Composite Output Jack

Software

Modules

Pickle

Os.path

RPi.GPIO

Googleapiclient

Code Explanation

```python
from __future__ import print_function
import pickle
import os.path
import RPi.GPIO as GPIO, feedparser, time, os.path
from googleapiclient.discovery import build
from google_auth_oauthlib.flow import InstalledAppFlow
from google.auth.transport.requests import Request

GPIO.setmode(GPIO.BCM)
LIGHTS = 18
GPIO.setup(LIGHTS, GPIO.OUT)

SCOPES = ['https://www.googleapis.com/auth/gmail.readonly']
```

Code Explanation

```python
def main():
    creds = None
    if os.path.exists('/home/pi/token.pickle'):
        with open('/home/pi/token.pickle','rb') as token:
            creds = pickle.load(token)
    if not creds or not creds.valid:
        if creds and creds.expired and creds.refresh_token:
            creds.refresh(Request())
        else:
            flow = InstalledAppFlow.from_client_secrets_file(
                'credentials.json', SCOPES)
            creds = flow.run_local_server()
        with open('/home/pi/token.pickle','wb') as token:
            pickle.dump(creds,token)
    service = build('gmail','v1',credentials=creds)
    results = service.users().messages().list(userId='me', labelIds = 'UNREAD',maxResults = 110).execute()
    msgs = results.get('messages',[])
```

Code Explanation

```python
if not msgs:
    print('No msgs found')
    GPIO.output(LIGHTS, False)
    print("ho")
else:
    print('msgs:')
    unread_msgs = 0
    for msg in msgs:
        print(msg)
        unread_msgs +=1
    print("Total of " + str(unread_msgs) + " unread_messages")
    if unread_msgs > 0:
        GPIO.output(LIGHTS, True)
        time.sleep(0.4)
        GPIO.output(LIGHTS, False)
        time.sleep(0.4)
        print("hey")
```

```python
if __name__ == '__main__':
    while True:
        main()
```

Software Challenges

-SSLHandshakeError getrandom() initialization failed:

Raspberry Pi wouldn't run the program when it boots

-Accessing Emails

Hardware Challenges

-Laser Cut parts wouldn't come out properly

-A more professional "NEW MAIL" sign

Demonstration