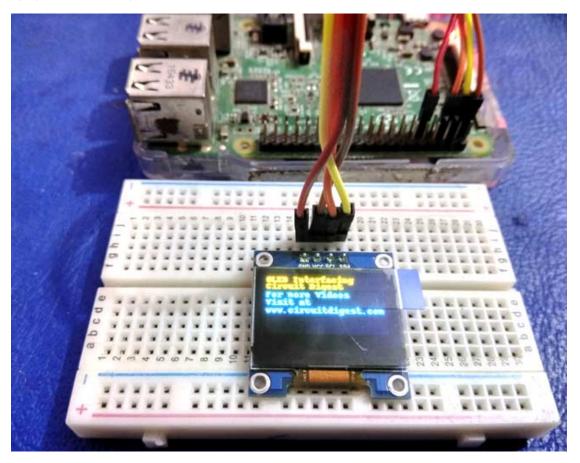
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Interfacing SSD1306 OLED Display with Raspberry Pi (/microcontroller-projects/ssd1306-oled-display-with-raspberry-pi)



Interfacing OLED Display with Raspberry Pi

Most of us would be familiar with the 16×2 Dot matrix LCD display (https://circuitdigest.com/article/16x2-lcd-display-module-pinout-datasheet) that is used in most of the projects to display some information to the user. But these LCD displays have a lot of limitations. In this tutorial, we are going to learn about **OLED display and how to use them with Raspberry Pi**. There are lots of types of OLED displays available in the market and there are lots of ways to get them working. We have already used 7 Pin OLED with Arduino (https://circuitdigest.com/microcontroller-projects/arduino-ssd1306-oledismselsity: uses cookies to improve user experience. By using the website you are giving your consent to set cookies. For more information, read our cookie policy

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• 128×64 OLED display Module (SSD1306)

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- Raspberry Pi
- Breadboard
- Connecting Wires
- Power supply

Getting to know about OLED Displays:

The term OLED stands for "Organic Light emitting diode" it uses the same technology that is used in most of our televisions but has fewer pixels compared to them. It is real fun to have these cool looking display modules to be interfaced with the Raspberry Pi since it will make our projects look cool. We have covered a full Article on OLED displays and its types here (https://circuitdigest.com/article/ssd1306-oled-display). Here, we are using a **Monochrome 4-pin SSD1306 0.96**" **OLED display**. This LCD can only work with the I2C mode.

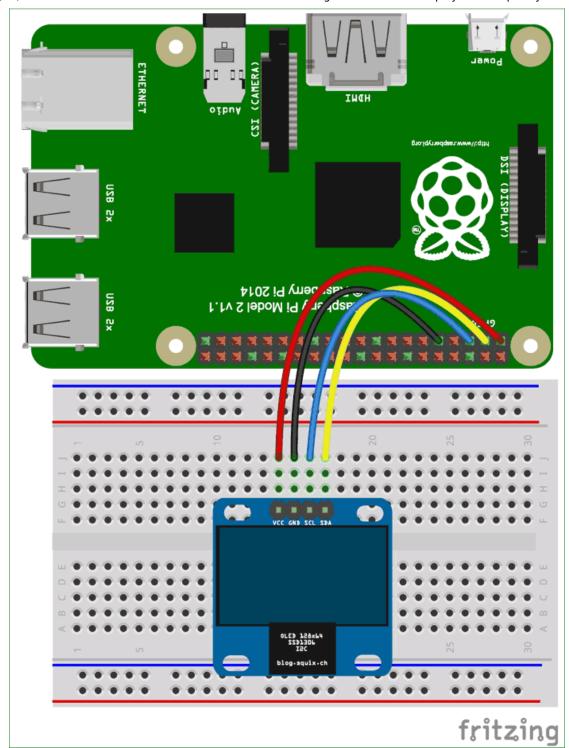


Below are the connections of OLED with Raspberry pi:

OLED Pin	RPI Pin
VCC	3.3v
GND	GND
SDA	SDA (Physical pin 3)
SCL	SCL (Physical pin 5)

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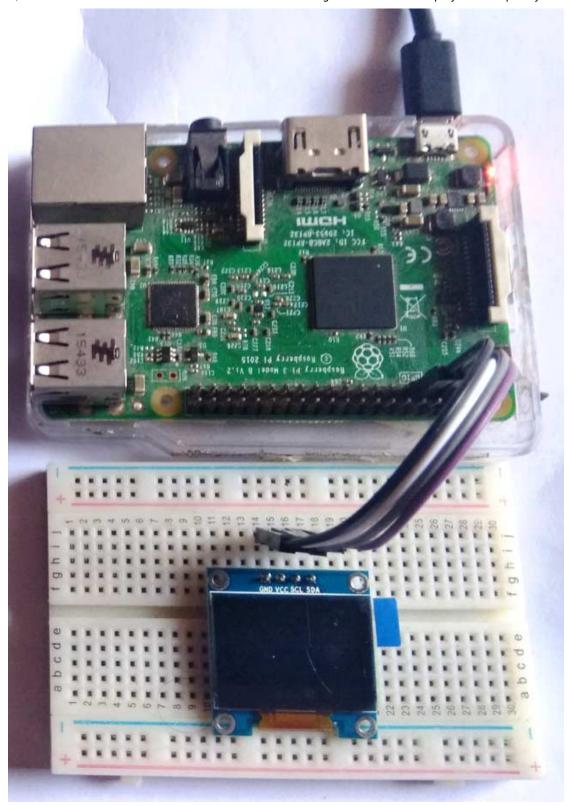


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i=circuitdiagram_mic/Interfacing-circuit-diagram-of-OLED-Display-with-Raspberry-Pi.png)

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Connecting OLED with Raspberry Pi:

RPI community has already given us a lot of Libraries which can be directly used to make this a lot simpler. I tried out a few This website uses cookies to improve user experience. By using the website you are libraries and interpretable of the hast the hast time with the same in this tutorial. (http://circuitdigest.com/privacy-policy).

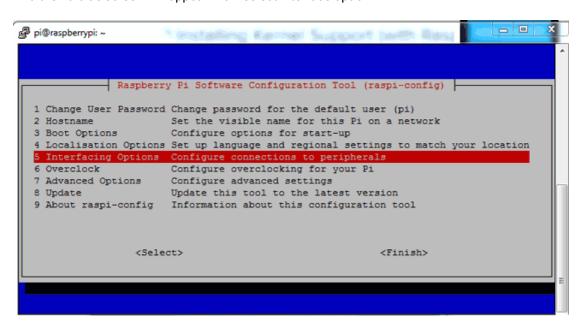
Step 1r. E♣ble I2C communication

Before installing Adafruit SSD1306 library we need to enable I2C communication in Raspberry Pi.

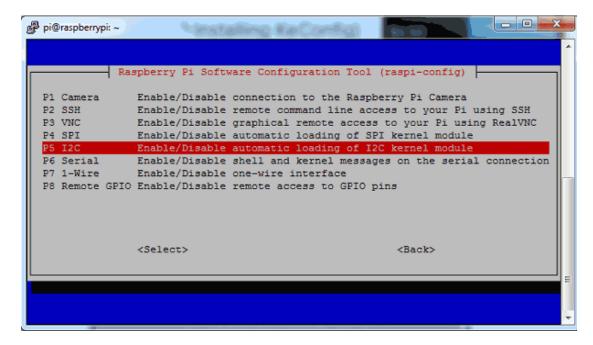
To do this type in Raspberry Pi console:

```
sudo raspi-config
```

And then a blue screen will appear. Now select interface option



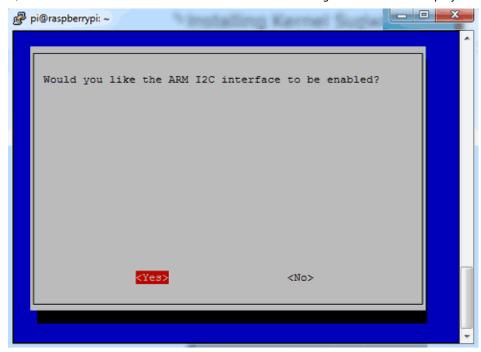
After this, we need to need to select I2C



After this, we need to select yes and press enter and then ok

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After this, we need to reboot raspberry pi by issuing below command:

sodo reboot

Step 2: Find OLED I2C address and update it

Then we need to find OLED I2C address by using given command and you will see a hex address.

```
sudo i2cdetect -y 1
```

Then update Raspberry Pi using given command:

sudo apt-get update

Step 3: Install python-pip and GPIO Library

After this wangened stiested pipokes in a pivoke as many dience. By using the website you are giving your consent to set cookies. For more information, read our cookie policy

sudo apt (https://circuitdigest.com/cookie-policy) and privacy policy pip (http://circuitdigest.com/privacy-policy).

And install Raspberry Pi GPIO library

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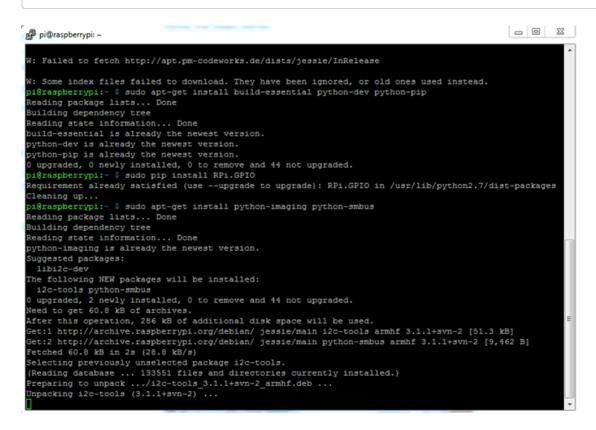
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sudo pip installs RPi.GPIO

Step 4: Install the Python Imaging Library and smbus library

Finally, we need to install the Python Imaging Library and smbus library in Raspberry Pi by using given command:

sudo apt-get install python-imaging python-smbus



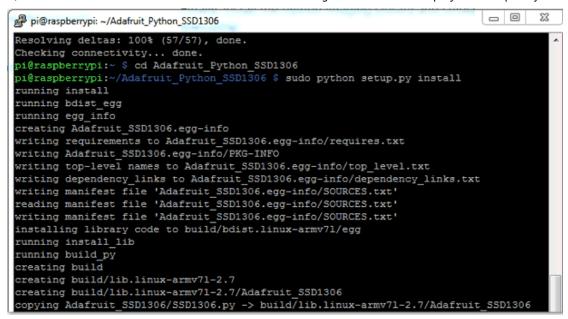
Step 5: install the Adafruit SSD1306 python library

Now its time to install the Adafruit SSD1306 python library code and examples by using given commands:

```
sudo apt-get install git
git clone https://github.com/adafruit/Adafruit_Python_SSD1306.git (https://github.com/adafruit/Adafruit_
cd Adafruit_Python_SSD1306
sudo python setup.py install
```

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Now user can find the code of **OLED interfacing in Raspberry Pi** and you can play directly or customize it yourself. Here we have customized a example code for demonstration. You can find **full Python code** at the end of the article.



Programming Explanation:

Programming part for interfacing QLED with RPi project is easy first, we need to import some necessary libraries. giving your consent to set cookies. For more information, read our cookie policy (https://circuitdigest.com/cookie-policy) and privacy-policy). (http://circuitdigest.com/privacy-policy).

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```
import time
import Adafruit_GPIO.SPI as SPI
import Adafruit_SSD1306
from PIL import Image
from PIL import ImageDraw
from PIL import ImageFont
import subprocess
```

After this initialize the display

```
RST = 0

disp = Adafruit_SSD1306.SSD1306_128_64(rst=RST)
disp.begin()
disp.clear()
disp.display()

width = disp.width
height = disp.height

image1 = Image.new('1', (width, height))

draw = ImageDraw.Draw(image1)
draw.rectangle((0,0,width,height), outline=0, fill=0)

padding = -2
top = padding

bottom = height-padding
x = 0
font = ImageFont.load_default()
```

After this, we can send data or image to OLED by using given code

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```
# Write two lines of text.
disp.clear()
disp.display()
                          "OLED Interfacing " , font=font, fill=255)
draw.text((x, top),
                          "Circuit Digest", font=font, fill=255)
draw.text((x, top+8),
                          "For more Videos", font=font, fill=255)
draw.text((x, top+16),
                          "Visit at", font=font, fill=255)
draw.text((x, top+25),
                          "www.circuitdigest.com", font=font, fill=255)
draw.text((x, top+34),
# Display image.
disp.image(image1)
disp.display()
time.sleep(2)
if disp.height == 64:
  image = Image.open('img1.png').convert('1')
else:
  image = Image.open('img1.png').convert('1')
disp.image(image)
disp.display()
time.sleep(2)
if disp.height == 64:
  image = Image.open('img3.jpg').convert('1')
else:
   image = Image.open('img3.jpg').convert('1')
```

This **OLED comes in two variants** one is 128*32 and other is 128*64 so the user can select anyone accordingly while initializing OLED. Here we have written this code for both. The user needs to only initialize OLED for 128*64 pixel like:

```
disp = Adafruit_SSD1306.SSD1306_128_64(rst=RST)
```

All the code and functions are easy to understand and no further explanation is needed. Just start and try playing with height, width & images and try some other functions to create some more cool geometric figures.

Full python code and Demonstration Video is given below and here you find the images which we have used (sites/default/files/OLED-Raspberry-Pi-interfacing-pics.zip) in this program.

Also check OLED Interfacing with Arduino (https://circuitdigest.com/microcontroller-projects/arduino-ssd1306-oled-display).

Code

```
from PIL import ImageDraw
from PIL import ImageFont
import subprocess
RST = 0
disp = Adafruit_SSD1306.SSD1306_128_64(rst=RST)
disp.begin()
disp.clear()
disp.display()
width = disp.width
height = disp.height
image1 = Image.new('1', (width, height))
draw = ImageDraw.Draw(image1)
draw.rectangle((0,0,width,height), outline=0, fill=0)
padding = -2
top = padding
bottom = height-padding
x = 0
font = ImageFont.load_default()
while True:
  draw.rectangle((0,0,width,height), outline=0, fill=0)
  # Write two lines of text.
  disp.clear()
  disp.display()
                       "OLED Interfacing", font=font, fill=255)
  draw.text((x, top),
  draw.text((x, top+8), "Circuit Digest", font=font, fill=255)
  draw.text((x, top+16), "For more Videos", font=font, fill=255)
  draw.text((x, top+25), "Visit at", font=font, fill=255)
  draw.text((x, top+34), "www.circuitdigest.com (http://www.circuitdigest.com)", font=font, fill=255)
  # Display image.
  disp.image(image1)
  disp.display()
  time.sleep(2)
            This website uses cookies to improve user experience. By using the website you are
  if disp.height == 64:
giving your consent to set cookies. For more information, read our cookie policy
    image =(https://ocira@intdigestgcom/weakir/policy) and privacy policy
            (http://circuitdigest.com/privacy-policy).
  else:
    image= Image.open('img1.png').convert('1')
                                                                                                             OK, I Understand
```

```
disp.image(image)
disp.display()
time.sleep(2)
if disp.height == 64:
  image = Image.open('img3.jpg').convert('1')
else:
  image = Image.open('img3.jpg').convert('1')
disp.image(image)
disp.display()
time.sleep(2)
if disp.height == 64:
  image = Image.open('img4.jpg').convert('1')
else:
  image = Image.open('img4.jpg').convert('1')
disp.image(image)
disp.display()
time.sleep(2)
```

Video





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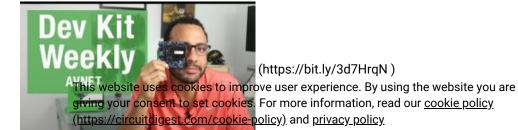
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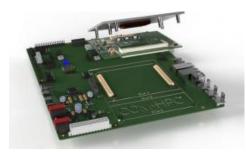


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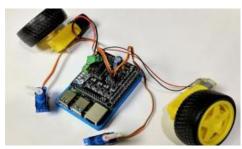
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Nov 25, 2019

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python code. Any ideas on how to resolve?

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