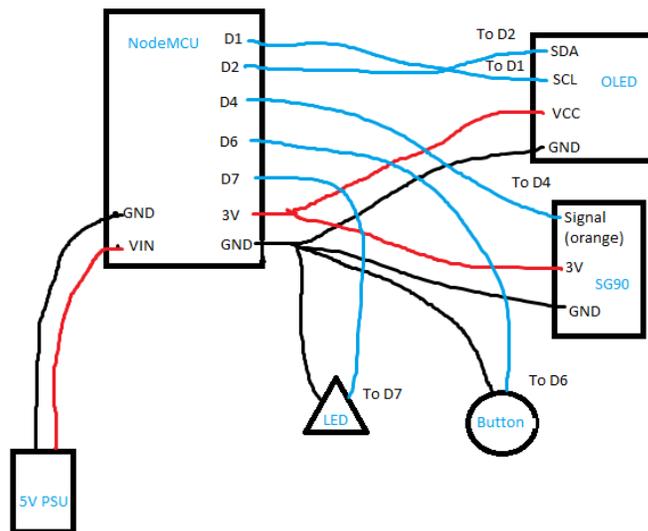


Saibamaze December 2022  
**Mailbot Instruction Guide**

**PARTS**

1. Hot Glue/Super Glue
2. NodeMCU
3. 3D Printer
4. Wiring
5. SSD1306 OLED Screen
6. 1 LED
7. 5v PSU
8. SG90 Servo
9. 2 prong momentary button

**CIRCUIT**



**STEPS**

1. Create an email account to use for retrieving messages to display. I used gmail, as they have good IMAP services. You can use any email service though, just try not to use your personal information for security reasons. The next steps will be for gmail only, as that's what I used. If you use another email service, find out how to enable IMAP and the equivalent of "allow less secure apps" to access the account.

2. Create an app password. For gmail, go to “manage account”. Then click “Security”. Enable 2FA, and then create an app password. Select “mail” for the first option, then “other” for the device. Name it ESP32. Copy the app password. You will be using this password to retrieve emails.
3. Go into your inbox. Click “Settings” then “See all settings” in the top right. Click the “Forwarding and POP/IMAP” tab. Enable IMAP and save changes. Your email should be good to use now!
4. In the code, change your account information to your gmail account you just created, and for the password use the app password (no spaces). Then change the SSID/WiFi information to your network. If you aren't using gmail, change the IMAP host information as well, and the port if need be.

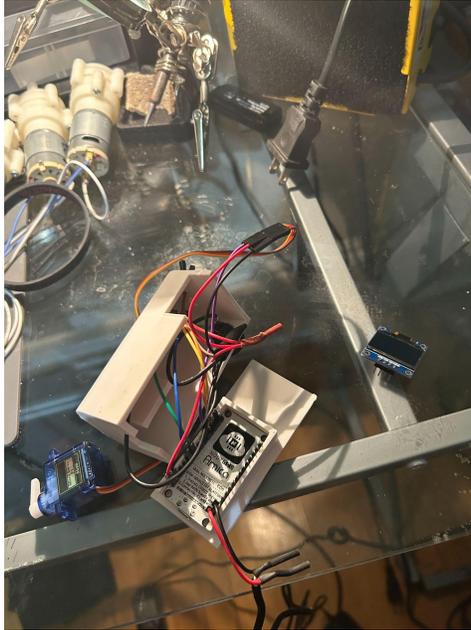
NOTE: Use a NodeMCU, ESP32, or ESP8266 board for this project. Also include the ESP-mail-client library by mobizt to have code run.

### **CONSTRUCTION**

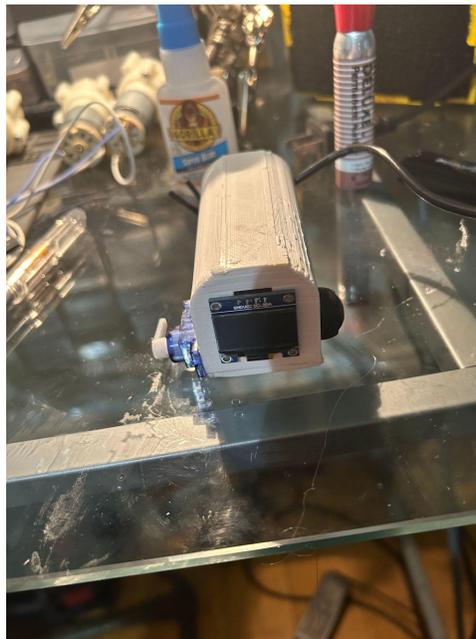
Print out all parts and solder the circuit together. Make sure to insert the button into the case before soldering. DO NOT use the PSU to power at this stage, just use the USB power from your computer. Upload the code and test the circuit. Open the serial monitor in the IDE and ensure code is running correctly. The subject of the email is what should be printed to the OLED (see OPERATION).



Once the circuit and code are good to go, unplug the USB power and disconnect the OLED screen (you will need to feed wires through the slot at the front). Insert the NodeMCU upside down into the configured slot like this, it should be a snug fit. Re-connect the OLED after pushing the wires through the slot in the front. Attach the PSU to the NodeMCU and test that everything is working and ready to complete.



There's no perfect way to make everything fit right, I just pushed the wires all to one side separated by the middle bar of the top of the print. I used a mix of hot glue and super glue to make everything stick together.



I used a red marker to color the flag and super glued it to the side of the servo. And you are done!



## OPERATION

-To use, send an email to the email you created and used in the code. The subject is what the message is and what's displayed on the OLED, so you can leave the email body blank.

-When the email is received, it should display the emails subject on the OLED, the SG90 servo should raise the flag, and the led should turn on. The message will continue to be displayed until the button is pressed, in which case it will reset and wait for the next email.

## NOTES

-The serial monitor in your IDE is a great debugging window. It can show you if you're having issues connecting to your wifi or to the email server. When turned on, it will print "Connecting to AP" and then some numbers, which are the return codes if the operation was successful. Mine prints a bunch of 7's and then 1's if it fails, or 7's and then connects if successful.

-When the message is received, it will print "PRINTED" to the serial monitor until the button is pressed in which it will display "pressed".

-I had some major issues switching between networks. It worked fine on the first try on my home network, but when I went to a different network and entered the WiFi credentials, I couldn't retrieve the NIST time or connect to the gmail IMAP server. I'm not sure if this was the apple router's fault, or maybe some firewall issue. It was able to connect to the network just not do any IMAP processes or get the time and date information. I have not found a workaround for this. When I went back to my home

network and entered the credentials it worked fine again though. So, just upload the code the first time to the network you intend to use the device on.