**Project: In This project we are doing In Raspberry pi openwrt (OS) inserting NFT Firewall Rules to block the ip address of different website via Flask server using GET, POST Request method in Python:**

**Requirements:**

1. Raspberrypi 4 With OpenWrt Os
2. Lan cable + power supply cable + Desktop to raspberry pi HDMI cable

**Instructions:**

1. First we need to install the Raspberry pi openwrt os in the memory card with the help of raspberry pi imager in the laptop.
2. Then we need to insert the memory card in raspberrypi and connect power hdmi and power cable lan cable. Then power on the raspberrypi.
3. We need to login the raspberry pi with new password and go the configuration settings of network , firewall, wireless setting and assign the static ip address for raspberrypi openwrt in the network settings, Ethernet settings and then after login to web page with the user id :root , password : xxx of open wrt.
4. After logging the web page of open wrt scan the wireless network it shows the all wireless networks of all our routers beside the raspberrypi. Then connect one of our networks.

5.After wifi coming to raspberry pi connect it with lan cable to the laptop and change to wired connections so laptop have to access the internet from raspberrypi via lan cable.

6. After connecting the internet to laptop via ethernet cable, ssh from laptop to raspberry pi connect to it, install python, python3 , pip libraries and flask packages in the openwrt raspberry pi via ethernet connections.

7. Install nftables in openwrt, prepare in the text sheet nft tables, chains , rules and give some example ip of website to block it and then save as file TextFirewall.nft and kept in Desktop and send file to raspberry pi openwrt using **SCP command**  ( it move the file from laptop to raspberry pi terminal.

8. Prepare a flask server program using GET POST method :

* The nft firewall rules of a TEXT file command has to run in the openwrt terminal using os method in the GET request ( which I have explained in No7.)
* And also in Get Request we need to replace the Ip address Using regex method here we need to insert the pattern of ip address which is getting through the post request from outside of openwrt for Blocking purpose & has to post in the server and close the file.
* In The Post Request server has to receive the incoming request which is coming outside the openwrt raspberrypi, In that incoming Request sending the ip address of the website which has to Replace & block coming from the outside of openwrt raspberry pi.

9. From outside we need to prepare the python program for sending a request for an ip address which has to be blocked using the post method.

* In this post request method of the python program we need to write to post the URL of running the flask server and data which has to be posted, in that data we have to assign the ip address of a website to be blocked.

10. After Writing the programs of flask server and python requests.

Run the program of flask server and check the server is running or not on the openwrt raspberrypi terminal, its running means it shows like this as given below:

Running on <http://127.0.0.1:5000>

* After running u need check the open wrt raspberrypi textfirewall.nft file firewall rules are inserted or not & also check the webpage of the server.
* If inserted the send post request of python from outside of openwrt terminal.

11. Run the program from outside terminal of raspberrypi and sending the post request to the server and check the servers of recieving post requests and must be check in the Nft file ip address is replaced or not and posted in the servers or not.

For checking ip address replaced or not pls enter **“nft list ruleset”**

For checking ip address replaced in the servers as given below:

Running on <http://127.0.0.1:5000>/process.

**Note:** 1.if the ip address is replaced and inserted in the rules of nf tables after posting the incoming request automatically firewall will act according to the openwrt raspberrypi and check if the website is opening or not in ur server check in the terminal also via pinging.

2. Before running the program of the flask server and and we need to delete the default firewall in the openwrt and also check the websites which we need to block whether the page is open or not in our server.

References:

1.<https://regex-generator.olafneumann.org/?sampleText=22.686.89.188&flags=i&selection=0%7CCombination%20%5BAlphanumeric%20characters%20%2B%20Character%5D>

2.<https://www.freecodecamp.org/news/how-to-interact-with-web-services-using-python/>

3.<https://www.geeksforgeeks.org/extract-ip-address-from-file-using-python/>