Lab 3
NETWORKING WITH RASPBERRY PI

- Looking back at lab 2
- Create topologies in Mininet by writing a Python program
  - configuring a switch
  - configuring switch as a router
  - observing TTL
  - iperf
  - Priority based packet routing

Mininet exercises

- Build a network on Mininet with a controller (C0), two switch (S1), switch (S2) and two hosts (h1 and h2)

- Assign IP address 10.0.0.10 and a netmask of 255.255.255.0 to h1

- Assign IP address 10.0.0.20 and a netmask of 255.255.255.0 to h2

- Run the network
  - `sudo mn --custom lab3custom.py --topo lab3switchtopology`
  - `gedit lab3custom.py`

Mininet exercises

- Build a network on Mininet with a controller (C0), three routers (r1, r2, r3) and two hosts (h1 and h2)

- Assign IP address h1 and h2

- Configure r1, r2, r3

- Enable IP forwarding

- Run the network
  - `mn --custom router3.py --topo rtopo`

- Program with N routers
  - `sudo python3 router_n.py -N 5`
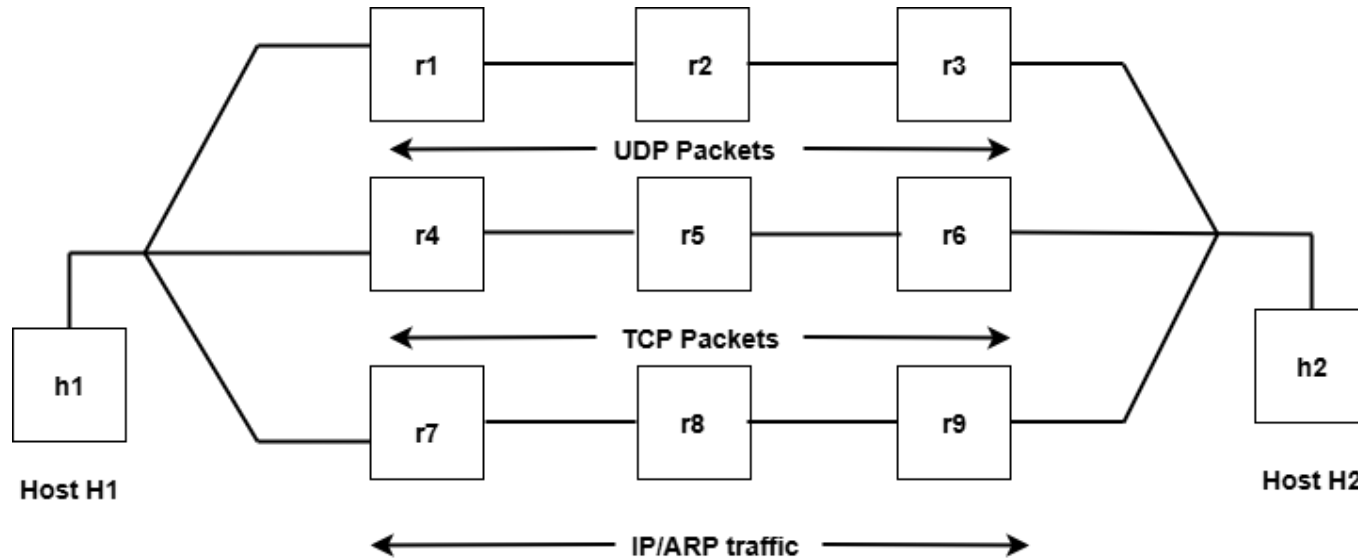
Mininet exercises – Packet routing

Figure 1

- Route UDP packets via r1-r2-r3

- Route TCP packets via r4-r5-r6

- Route other traffic on r7-r8-r9

Lab3 Assignment

- Q1 Write a program to route data packets from host h1 to host h2 as shown in figure 1. Route the UDP via r1-r2-r3, TCP packets via r4-r5-r6, and any other traffic via r7-r8-r9.

- Q2 Create a network with two VLANs – VLAN1 and VLAN2 in the subnet. Show that arp broadcasts are limited to the VLANs. Make necessary modifications when a host in VLAN1 wishes to reach a host in VLAN2. (https://github.com/mininet/mininet/wiki/Documentation, and https://mininet.org/)