```
EXPLORER                                  PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS
LAB5-2023SPRING-KARENNTAYY [SSH: LOC...   mininet@mininet-vm:~/Lab5-2023Spring-karenntayy$ cd 00-broadcast
  .github                                 mininet@mininet-vm:~/Lab5-2023Spring-karenntayy/00-broadcast$ sudo ./three_nodes_bw.py
  00-broadcast                            mininet> dump
    example                               <Host b1: b1-eth0:10.0.0.1,b1-eth1:None,b1-eth2:None pid=20186>
    include                               <Host h1: h1-eth0:10.0.0.2 pid=20188>
    scripts                               <Host h2: h2-eth0:10.0.0.3 pid=20193>
    broadcast.c                           <Host h3: h3-eth0:10.0.0.4 pid=20195>
    device_internal.c                     mininet> pingall
    hub                                   *** Ping: testing ping reachability
    hub-reference                         b1 -> X X X
    hub-reference.32                      h1 -> b1 h2 X
    lab5_00_report.pdf                    h2 -> b1 h1 X
    main.c                                h3 -> b1 h1 h2
    Makefile                              *** Results: 41% dropped (7/12 received)
    three_nodes_bw.py                     mininet> h1 ping h2
    tutorial.pdf                          PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
    writeups.md                           64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.096 ms
  01-switching                            64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.210 ms
  README.md                               64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.166 ms
                                          64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.198 ms
                                          64 bytes from 10.0.0.2: icmp_seq=5 ttl=64 time=0.199 ms
                                          ^C
                                          --- 10.0.0.2 ping statistics ---
                                          5 packets transmitted, 5 received, 0% packet loss, time 4072ms
                                          rtt min/avg/max/mdev = 0.096/0.173/0.210/0.041 ms
                                          mininet> h1 ping -c 5 h3
                                          PING 10.0.0.3 (10.0.0.3) 56(84) bytes of data.
                                          64 bytes from 10.0.0.3: icmp_seq=1 ttl=64 time=0.106 ms
                                          64 bytes from 10.0.0.3: icmp_seq=2 ttl=64 time=0.160 ms
                                          64 bytes from 10.0.0.3: icmp_seq=3 ttl=64 time=0.204 ms
                                          64 bytes from 10.0.0.3: icmp_seq=4 ttl=64 time=0.186 ms
                                          64 bytes from 10.0.0.3: icmp_seq=5 ttl=64 time=0.103 ms
```

```
  include                                 --- 10.0.0.3 ping statistics ---
  scripts                                 5 packets transmitted, 5 received, 0% packet loss, time 4095ms
  broadcast.c                             rtt min/avg/max/mdev = 0.103/0.151/0.204/0.041 ms
  device_internal.c                       mininet> h2 ping -c 5 h3
  hub                                     PING 10.0.0.3 (10.0.0.3) 56(84) bytes of data.
  hub-reference                           64 bytes from 10.0.0.3: icmp_seq=1 ttl=64 time=0.104 ms
  hub-reference.32                        64 bytes from 10.0.0.3: icmp_seq=2 ttl=64 time=0.170 ms
  lab5_00_report.pdf                      64 bytes from 10.0.0.3: icmp_seq=3 ttl=64 time=0.228 ms
  main.c                                  64 bytes from 10.0.0.3: icmp_seq=4 ttl=64 time=0.222 ms
  Makefile                                64 bytes from 10.0.0.3: icmp_seq=5 ttl=64 time=0.214 ms
  three_nodes_bw.py
  tutorial.pdf                            --- 10.0.0.3 ping statistics ---
  writeups.md                             5 packets transmitted, 5 received, 0% packet loss, time 4079ms
  01-switching                            rtt min/avg/max/mdev = 0.104/0.187/0.228/0.046 ms
  README.md                               mininet> pingall
                                          *** Ping: testing ping reachability
                                          b1 -> X X X
                                          h1 -> b1 h2 h3
                                          h2 -> b1 h1 h3
                                          h3 -> b1 h1 h2
                                          *** Results: 25% dropped (9/12 received)
```

Another Terminal:

```
EXPLORER                                  PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS
LAB5-2023SPRING-KARENNTAYY [SSH: LOC...   mininet@mininet-vm:~/Lab5-2023Spring-karenntayy$ cd 00-broadcast
  .github                                 mininet@mininet-vm:~/Lab5-2023Spring-karenntayy/00-broadcast$ sudo mnexec -a 20186 ./hub
  00-broadcast                            DEBUG: find the following interfaces:  b1-eth0 b1-eth1 b1-eth2.
    example                               TODO: broadcast packet.
    include                               TODO: broadcast packet.
    scripts                               TODO: broadcast packet.
    broadcast.c                           TODO: broadcast packet.
    device_internal.c                     TODO: broadcast packet.
    hub                                   TODO: broadcast packet.
    hub-reference                         TODO: broadcast packet.
    hub-reference.32                      TODO: broadcast packet.
    lab5_00_report.pdf                    TODO: broadcast packet.
    main.c                                TODO: broadcast packet.
    Makefile                              TODO: broadcast packet.
    three_nodes_bw.py                     TODO: broadcast packet.
    tutorial.pdf                          TODO: broadcast packet.
    writeups.md                           TODO: broadcast packet.
  01-switching                            TODO: broadcast packet.
  README.md                               TODO: broadcast packet.
                                          TODO: broadcast packet.
                                          TODO: broadcast packet.
                                          
```