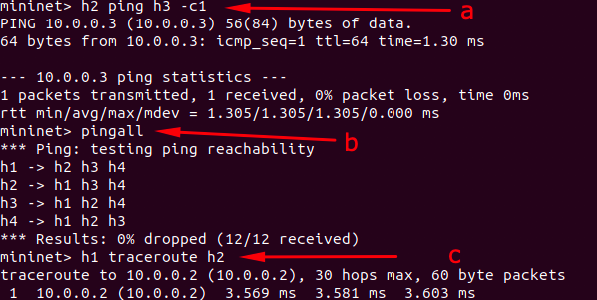
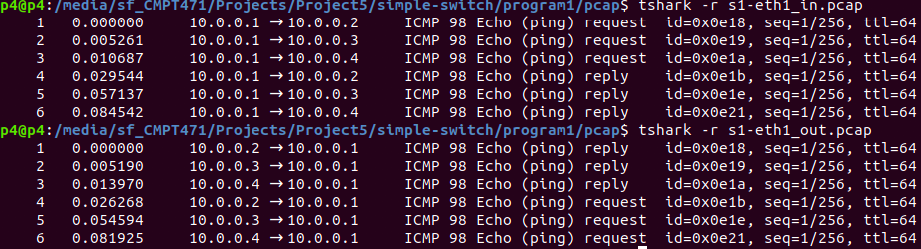
1.a

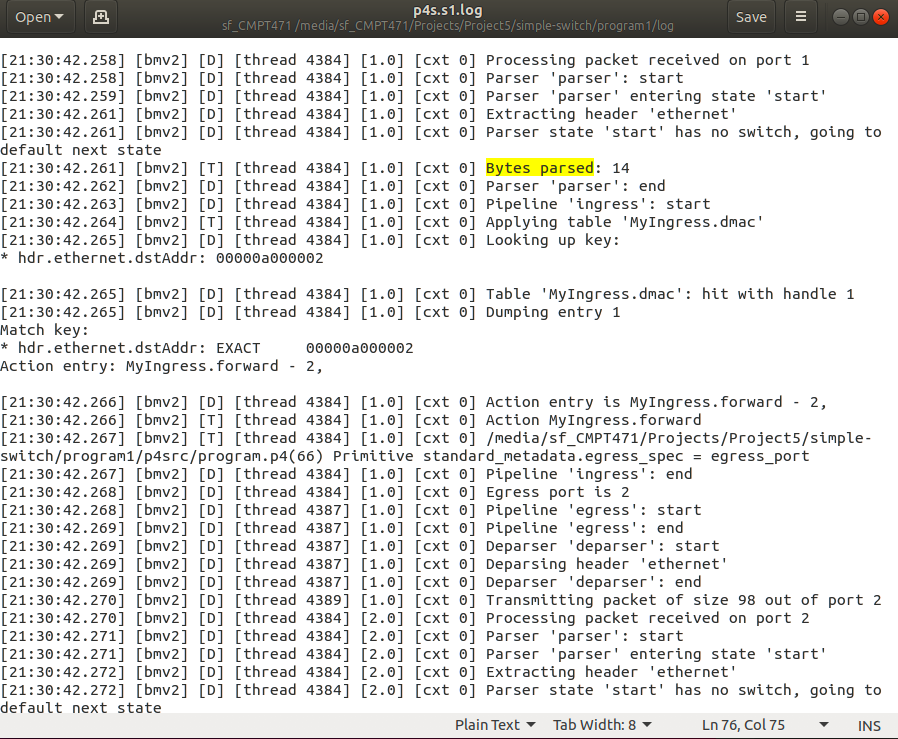


1.b

s1-eth1\_in.pcap captures all the packets that are ingress with respect to port s1-eth1. I.e., they are being sent from h1 into s1 via s1-eth1. s1-eth1\_out.pcap captures all the packets that are egress with respect to port s1-eth1. I.e., the packets are being sent from s1 outwards towards h1 via s1-eth1.



1.c



28 total bytes were parsed during the ping process – 14 bytes parsed for each request and response packet, sent to and from h2. We know this due to 2 “Bytes Parsed: 14” log entries that were populated in the log file. There was an additional Bytes Parsed entry, but this occurred before we initiated the ping process, so these bytes were not considered. The reason why only 14 bytes were parsed is because only the ethernet header is parsed in the pipeline, as is apparent by checking program.p4.

The packet size is 98. After the Bytes Parsed log entry, there is a “transmitting packet of size 98 out of port X” log entry, which reveals the packet size to us. This entry appears twice, corresponding to the request and reply packets sent throughout the ping process. The packet includes more bytes than just the ethernet header, hence why the packet size is larger than the amount of bytes processed.

2.a

Text

Description automatically generated

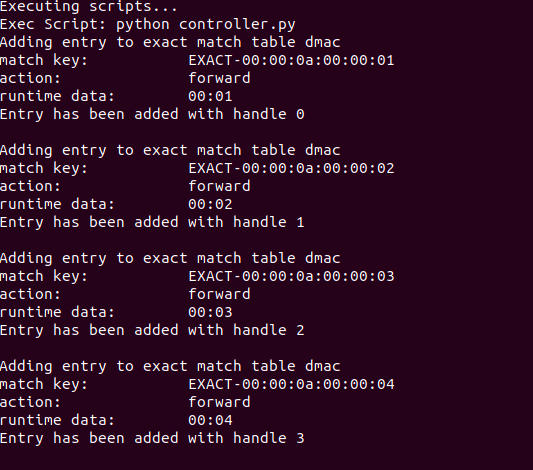
2.b

The commands s1-commands.txt are used to add entries to the table. For example,

table\_add dmac forward 00:00:0a:00:00:01 => 1

adds a match + action rule that forwards all packets with the described destination MAC address to output port 1.

2.c



The switch accepted both entries because we never explicitly prohibited the acceptance of duplicate entries by the switch. The switch itself does not create a new entry in the table for the duplicate entries as it detects that they are indeed duplicates.

We could modify the fill\_table function to query the switch and verify whether the table entry that we are attempting to add has already been added. If the entry is a duplicate, we can relay an error message.

# I.2

1.

a) This will not result in a compilation error. It just means that the switch will not apply the match + action table to any packets that arrive into one of its ports.

b)