Mawlana Bhashani Science and Technology University

Lab-Report

Report No: 01

Course code: ICT-3208

Course title: Computer Network Lab

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SUBMITTED BY

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Experiment No: 01

Experiment Name: Basic mininet commands

Objectives:

- Learn the basic commands in Mininet
- Learn how to create basic network topologies in Mininet
- Learn Mininet API

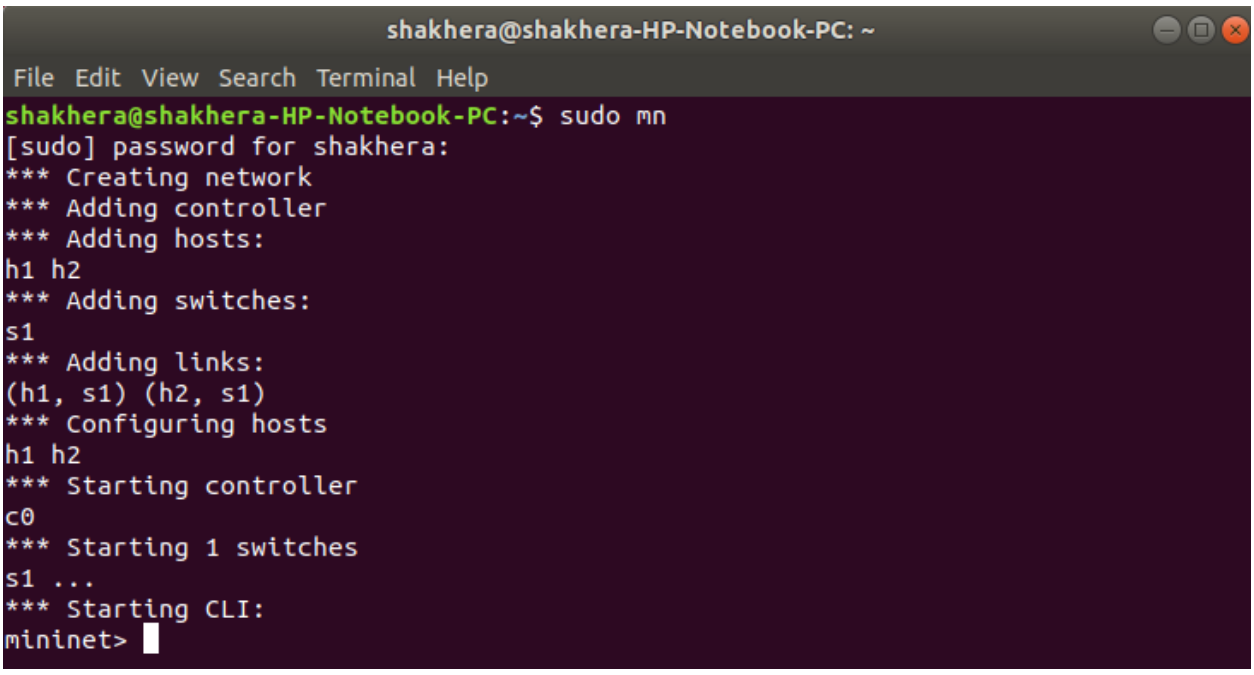
Create Virtual Network:

We will be using CLI(**sudo mn command**) to manage our virtual network. The default topology includes two hosts (h1,h2), OpenFlow Switch(s1) and OpenFlow controller(c0).

Step 1:

To start a minimal topology, enter the command shown below. When prompted for a password, type password and hit enter. Note that the password will not be visible as you type it.

Sudo mn



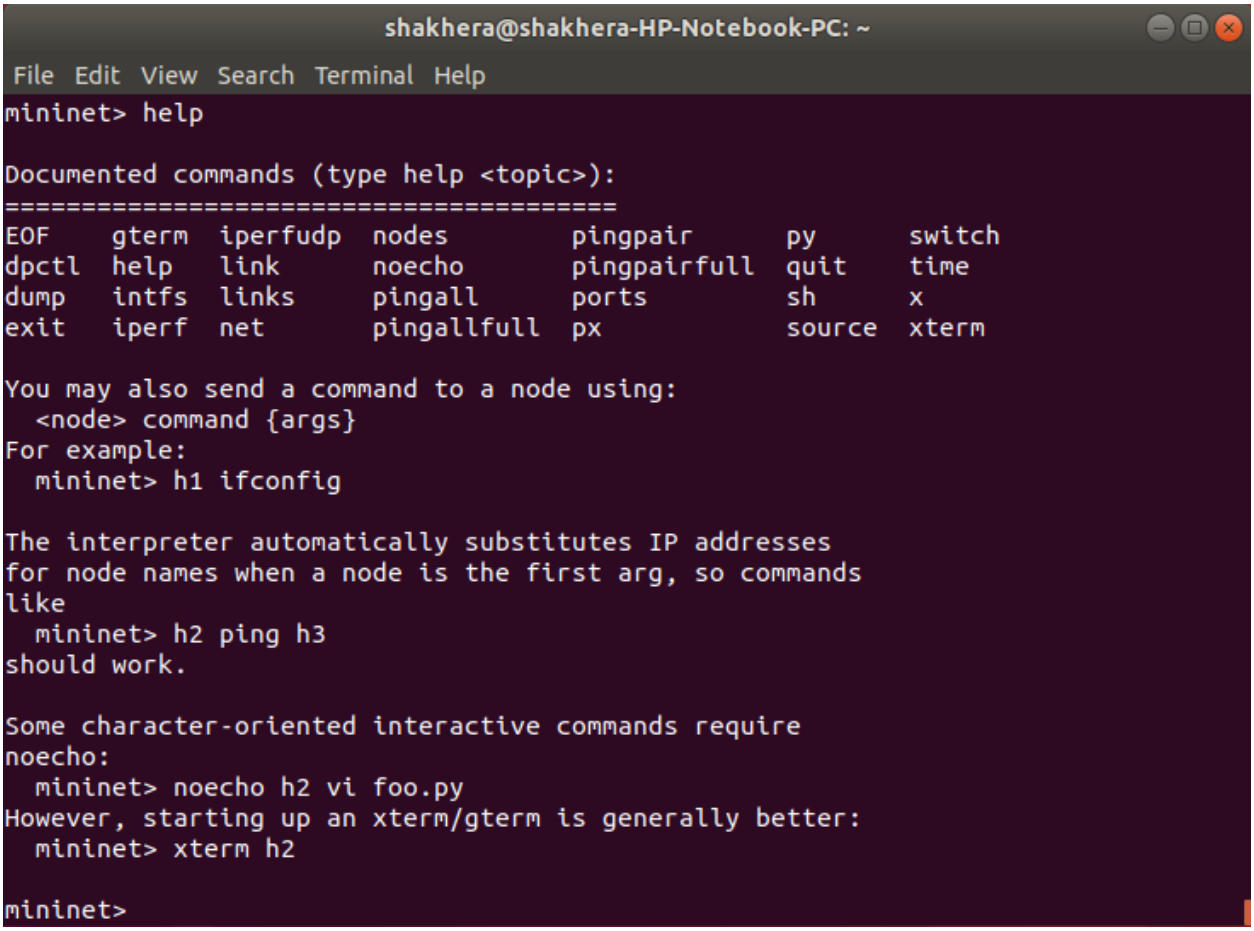
When issuing the sudo mn command, Mininet initializes the topology and launches its command line interface which looks like this:

mininet>

Step 2:

To display the list of Mininet CLI commands and examples on their usage, type the following command:

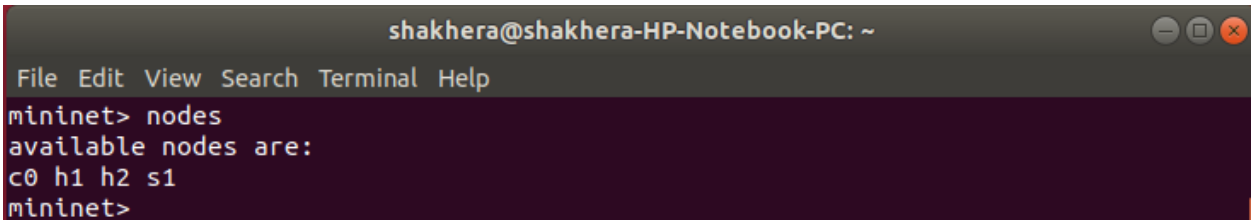
help



Step 3:

To display the available nodes, type the following command:

nodes

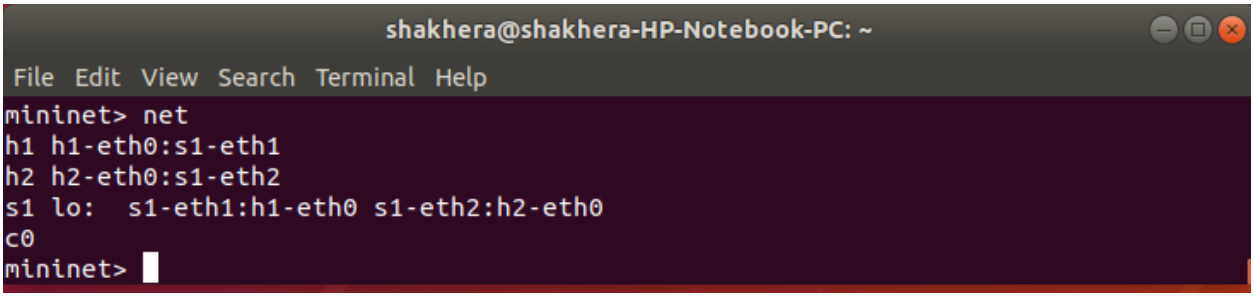


The output of this command shows that there are two hosts (host h1 and host h2) and a switch (s1).

Step 4:

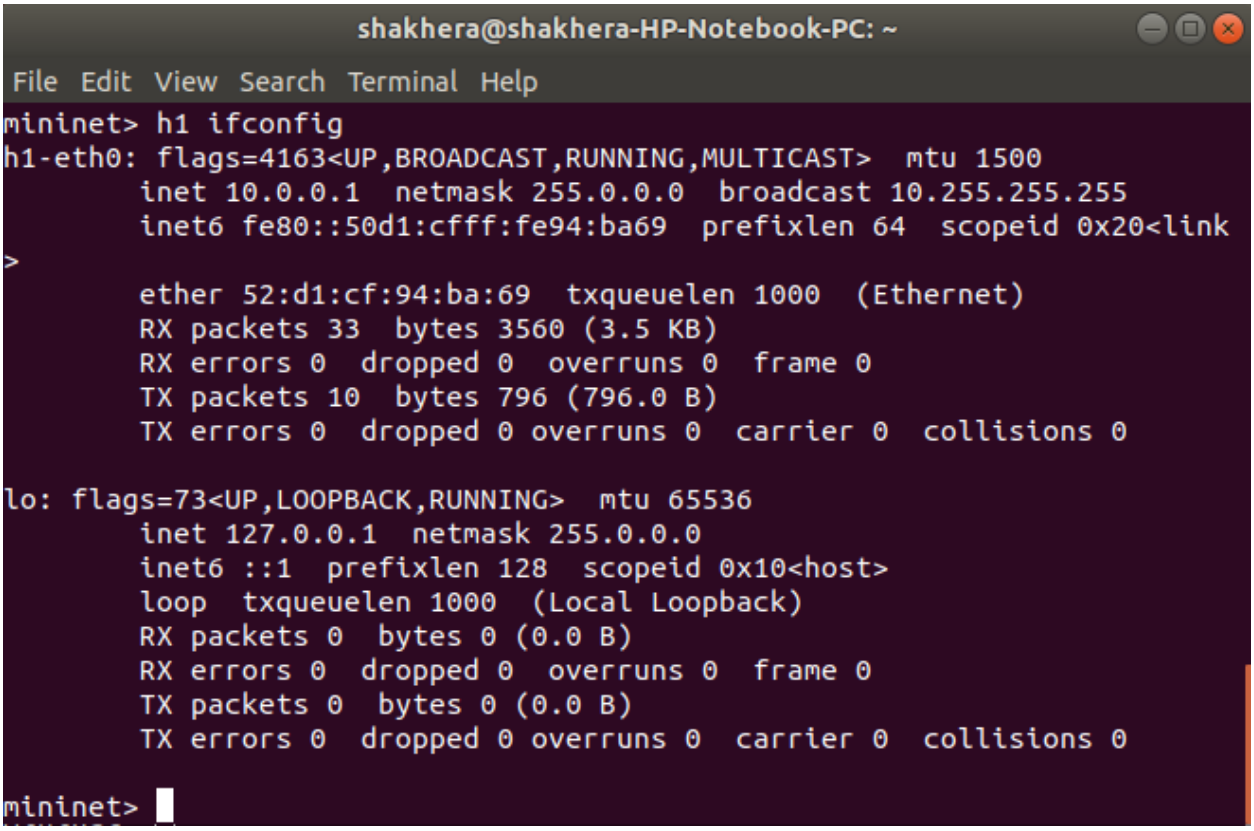
It is useful sometimes to display the links between the devices in Mininet to understand the topology. Issue the command shown below to see the available links.

net



Step 5: To proceed, issue the command:

h1 ifconfig



This command executes the ifconfig Linux command on host h1. The command shows host h1's interfaces. The display indicates that host h1 has an interface h1-eth0 configured with IP address 10.0.0.1, and another interface lo configured with IP address 127.0.0.1 (loopback interface).

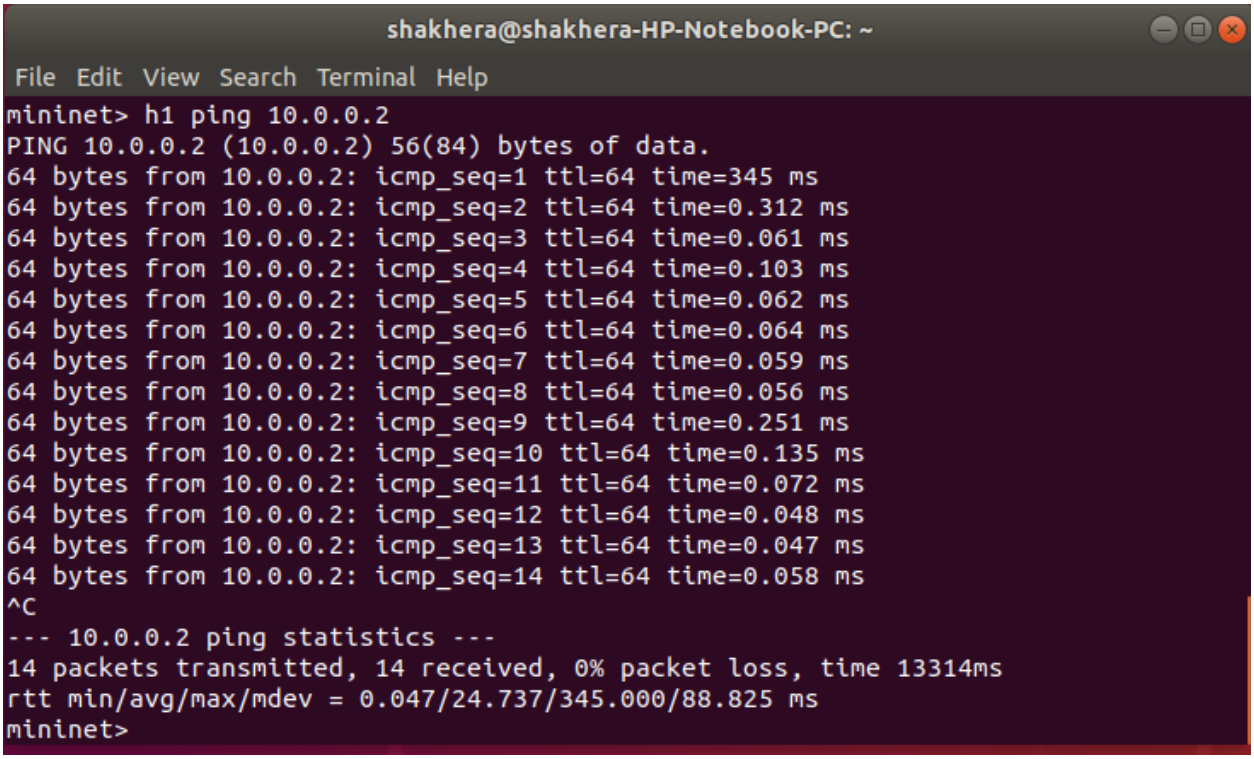
Test connectivity

Mininet's default topology assigns the IP addresses 10.0.0.1/8 and 10.0.0.2/8 to host h1 and host h2 respectively. To test connectivity between them, you can use the command ping. The ping command operates by sending Internet Control Message Protocol (ICMP) Echo Request messages to the remote computer and waiting for a response. Information available includes how many responses are returned and how long it takes for them to return.

Step 1:

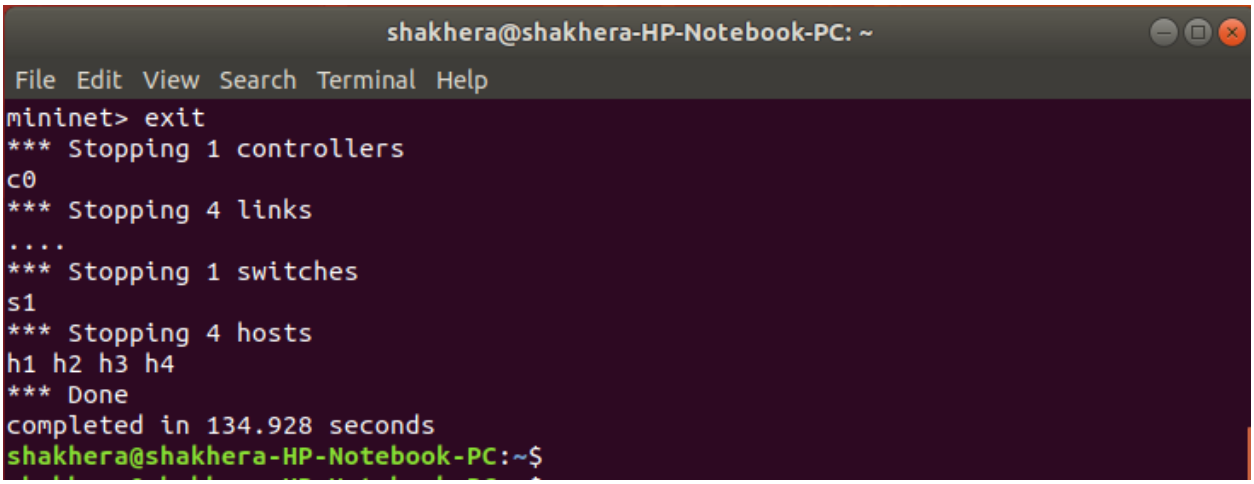
On the CLI, type the command shown below. This command tests the connectivity between host h1 and host h2. To stop the test, press Ctrl+c. The figure below shows a successful connectivity test. Host h1 (10.0.0.1) sent four packets to host h2 (10.0.0.2) and successfully received the expected responses.

h1 ping 10.0.0.2

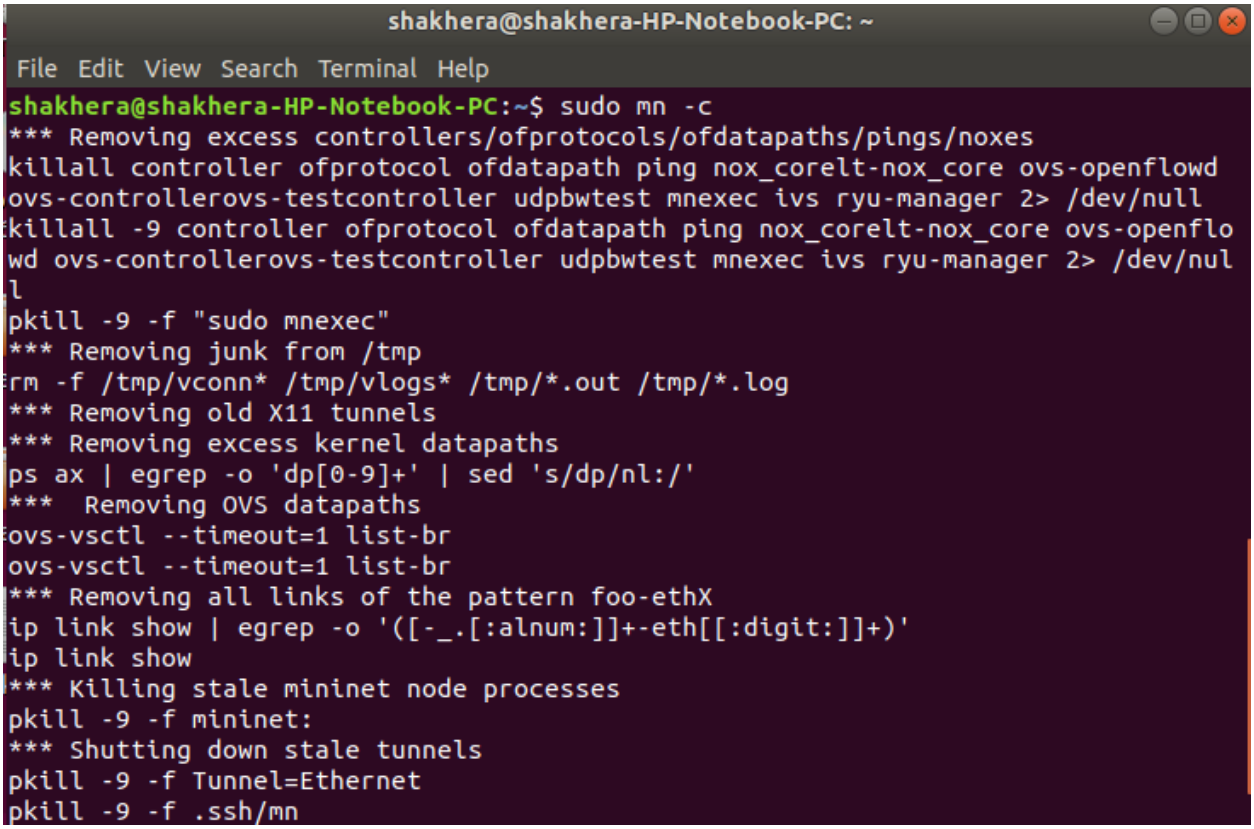


Step 2: Stop the emulation by typing the following command:

exit



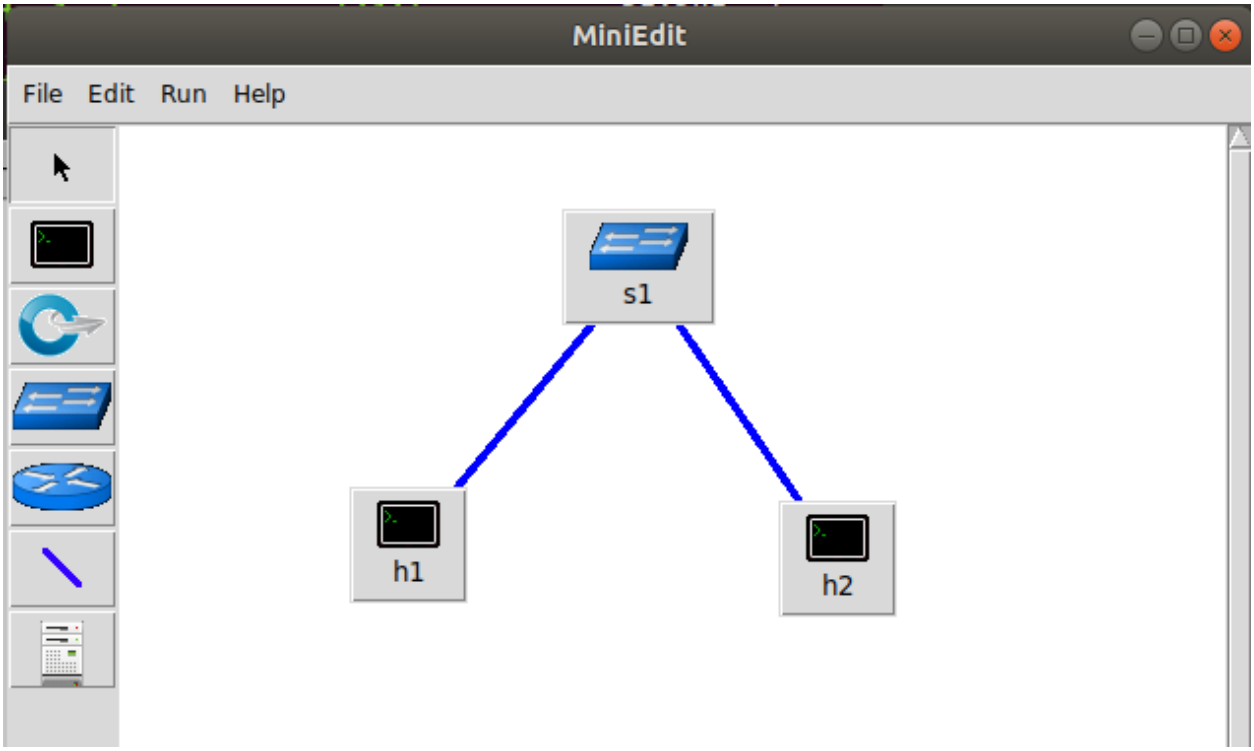
Step 3: Mininet crashes for some reason, clean it up by the following command:



Build the network topology:

Step 1:

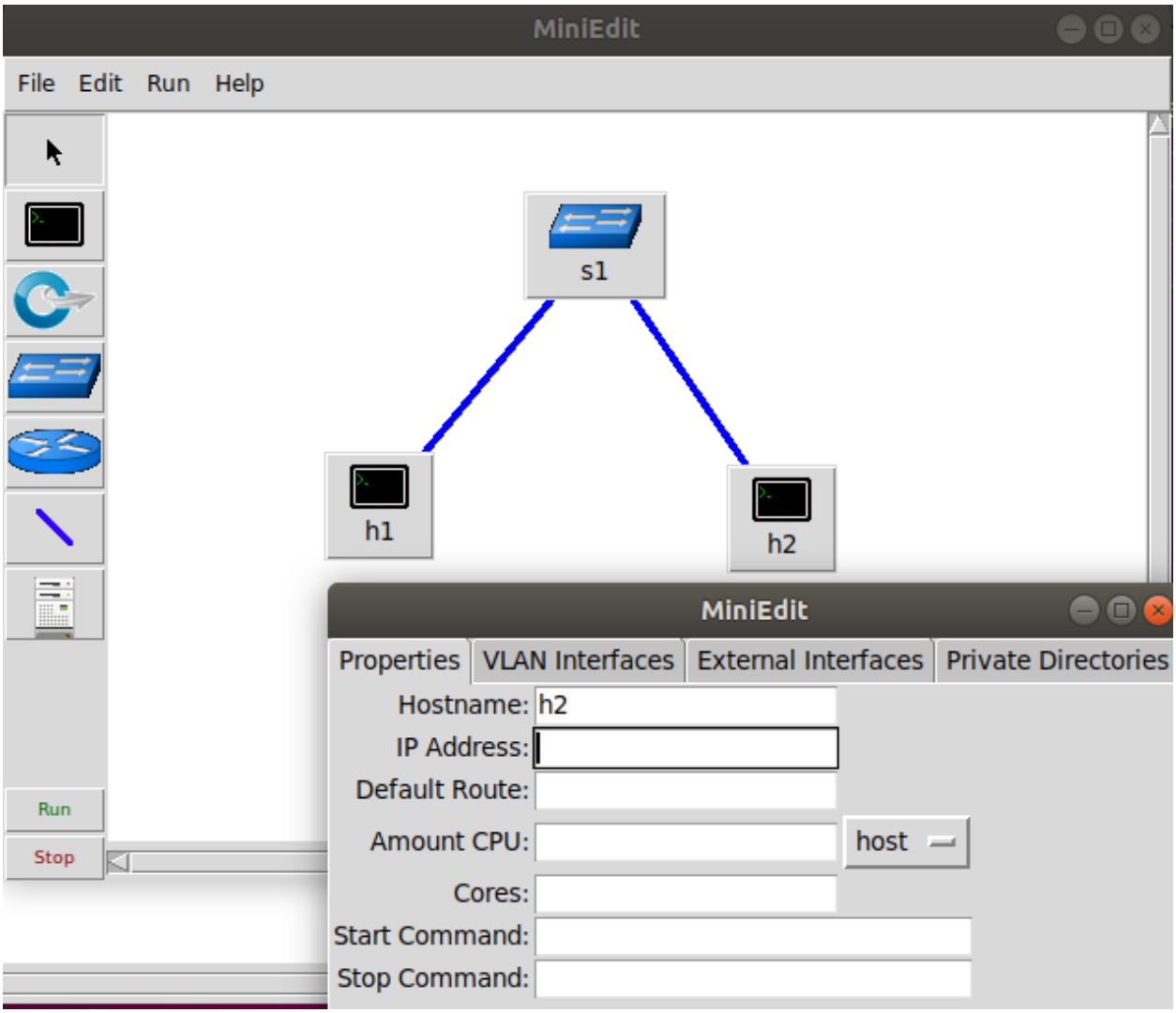
To build the topology illustrated two hosts and one switch must be deployed. Deploy these devices in MiniEdit, as shown below.



Use the buttons described in the previous step to add and connect devices. The configuration of IP addresses is described in Step 2.

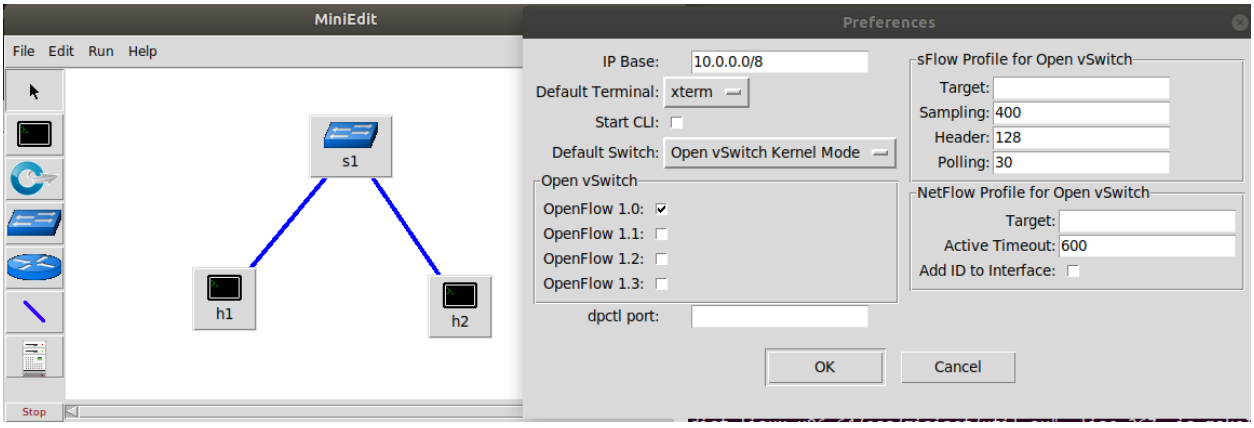
Step 2:

Configure the IP addresses of host h1 and host h2. Host h1's IP address is 10.0.0.1/8 and host h2's IP address is 10.0.0.2/8. A host can be configured by holding the right click and selecting properties on the device. For example, host h2 is assigned the IP address 10.0.0.2/8 in the figure below.



Automatic assignment of IP addresses

Click on Edit, Preferences button. The default IP base is 10.0.0.0/8. Modify this value to 15.0.0.0/8, and then press the OK button.



Discussion:

In this lab we learned how to install and perform basic tasks in Mininet emulator.