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|  | BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI  WORK INTEGRATED LEARNING PROGRAMS |

**SOFTWARE DEFINED NETWORKING**

**SSZG580**

ASSIGNMENT 1

STUDENT DETAILS:

K RAVI KUMAR REDDY

2020MT13010

Program to create following Virtual Topology using mininet

Chart, line chart

Description automatically generated

Python Code:

"""

Software Defined Networking (SSZG580)

Assignment 1

Student Name: K Ravi Kumar Reddy

Student ID: 2020MT13010

"""

from mininet.net import Mininet

from mininet.node import Host, OVSSwitch, Controller, RemoteController

from mininet.cli import CLI

from mininet.link import TCLink

from mininet.log import setLogLevel, info

from mininet.topolib import TreeTopo

def SDN\_Asgmt():

net = Mininet(topo=None, build=False, ipBase='10.0.0.0/8', controller=RemoteController)

info("\n> Adding Controller\n")

c0 = net.addController(name='c0', controller=RemoteController, ip="10.0.0.200/8", port=6633)

info("\n>> Adding Switches\n")

s1\_switch = net.addSwitch('s1', cls=OVSSwitch, stp=1)

s2\_switch = net.addSwitch('s2', cls=OVSSwitch, stp=1)

s3\_switch = net.addSwitch('s3', cls=OVSSwitch, stp=1)

info("\n>> Adding Hosts\n")

h1\_node = net.addHost('h1', cls=Host, ip='10.0.0.2/8', defaultRoute='h1-eth0')

h2\_node = net.addHost('h2', cls=Host, ip='10.0.0.3/8', defaultRoute='h2-eth0')

info("\n>> Adding Links\n")

net.addLink(h1\_node, s1\_switch, cls=TCLink)

net.addLink(s1\_switch, s3\_switch, cls=TCLink)

net.addLink(s3\_switch, h2\_node, cls=TCLink)

net.addLink(s1\_switch, s2\_switch, cls=TCLink)

net.addLink(s2\_switch, s3\_switch, cls=TCLink)

net.build()

c0.start()

s1\_switch.start([c0])

s2\_switch.start([c0])

s3\_switch.start([c0])

net.start()

CLI(net)

if \_\_name\_\_ == '\_\_main\_\_':

print ("--------------------------------------")

print ("SDN Assignment 1 | BITS WILP Program")

print ("--------------------------------------")

print ("Student Name: K Ravi Kumar Reddy")

print ("Student ID: 2020MT13010")

print ("--------------------------------------\n")

setLogLevel('info')

SDN\_Asgmt()

Output:

mininet@rreddyk-ubuntu-net:~$ sudo python sdn-assignment.py

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SDN Assignment 1 | BITS WILP Program

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Student Name: K Ravi Kumar Reddy

Student ID: 2020MT13010

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> Adding Controller

Unable to contact the remote controller at 10.0.0.200/8:6633

>> Adding Switches

>> Adding Hosts

>> Adding Links

\*\*\* Configuring hosts

h1 h2

\*\*\* Starting controller

c0

\*\*\* Starting 3 switches

s1 s2 s3 ...

\*\*\* Starting CLI:

mininet>

mininet>

mininet> net

h1 h1-eth0:s1-eth1

h2 h2-eth0:s3-eth2

s1 lo: s1-eth1:h1-eth0 s1-eth2:s3-eth1 s1-eth3:s2-eth1

s2 lo: s2-eth1:s1-eth3 s2-eth2:s3-eth3

s3 lo: s3-eth1:s1-eth2 s3-eth2:h2-eth0 s3-eth3:s2-eth2

c0

mininet>

mininet> nodes

available nodes are:

c0 h1 h2 s1 s2 s3

mininet>

mininet> links

h1-eth0<->s1-eth1 (OK OK)

s1-eth2<->s3-eth1 (OK OK)

s3-eth2<->h2-eth0 (OK OK)

s1-eth3<->s2-eth1 (OK OK)

s2-eth2<->s3-eth3 (OK OK)

mininet>

mininet> dump

<Host h1: h1-eth0:10.0.0.2 pid=1692>

<Host h2: h2-eth0:10.0.0.3 pid=1694>

<OVSSwitch s1: lo:127.0.0.1,s1-eth1:None,s1-eth2:None,s1-eth3:None pid=1681>

<OVSSwitch s2: lo:127.0.0.1,s2-eth1:None,s2-eth2:None pid=1684>

<OVSSwitch s3: lo:127.0.0.1,s3-eth1:None,s3-eth2:None,s3-eth3:None pid=1687>

<RemoteController c0: 10.0.0.200/8:6633 pid=1674>

mininet>

mininet>

mininet> pingall

\*\*\* Ping: testing ping reachability

h1 -> h2

h2 -> h1

\*\*\* Results: 0% dropped (2/2 received)

mininet>

mininet> exit

mininet@rreddyk-ubuntu-net:~$