

README

Lab Hw3

Question 2: Python programming

----- Input -----

No arguments

During script running, user will be prompted for additional input regarding which switch to make the root bridge

```

#####
#####
List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']
For vlan 1, specify root node by IP address: 192.168.1.30
Edges: [('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10'), ('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.20', '192.168.1.30'), ('192.168.1.20', '192.168.1.10')]
Tree: (start_node, dest_node) [('192.168.1.30', '192.168.1.10'), ('192.168.1.30', '192.168.1.20')]
BEFORE CONFIG
middle_switch>terminal length 0
middle_switch>en
Password:
middle_switch#show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
            Address    0015.6285.aa80
            Cost       19
            Port       8 (FastEthernet0/6)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
            Address    001a.e37d.7b00
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7    P2p
Fa0/6                    Root FWD 19        128.8    P2p

middle_switch#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
middle_switch(config)#spanning-tree vlan 1 root primary
middle_switch(config)#end
middle_switch#show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    20481
            Address    001a.e37d.7b00
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20481 (priority 20480 sys-id-ext 1)
            Address    001a.e37d.7b00
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 15 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7    P2p
Fa0/6                    Desg FWD 19        128.8    P2p

middle_switch#

```

----- Output -----

Print out of edges, tree, before configuration spanning tree, and after configuration spanning tree for each vlan

----- Instructions -----

Setup

Install packages:

- sys
- time
- paramiko
- os
- networkx

Linux command line: (in directory that contains Python source files)

1. 577_ip_list.txt must be in same directory as Python source file and be pre-populated with switch management IP addresses
2. python Lab3_q2.py
3. (no arguments)

----- Source Code Files -----

readme

Lab3_q2.py

577_ip_list.txt

----- Environment -----

Linux

VCL: Ubuntu 16.04 LTS Base

Python: 3.5.2

Windows 10

Python: 3.6.5

----- Example -----

Linux command line: (in directory that contains Python source files)

1. python Lab3_q2.py
2. ..

3. As script runs, user will be prompted for additional input regarding which switch to make the root bridge for each vlan

```
#####
#####
List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']
For vlan 1, specify root node by IP address: 192.168.1.30
Edges: [('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10'), ('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.20', '192.168.1.30'), ('192.168.1.20', '192.168.1.10')]
Tree: (start_node, dest_node) [(('192.168.1.30', '192.168.1.10'), ('192.168.1.30', '192.168.1.20'))]

BEFORE CONFIG
middle_switch>terminal length 0
middle_switch>en
Password:
middle_switch#show spanning-tree vlan 1

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address    0015.6285.aa80
             Cost        19
             Port        8 (FastEthernet0/6)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
             Address    001a.e37d.7b00
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7    P2p
Fa0/6                    Root FWD 19        128.8    P2p

middle_switch#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
middle_switch(config)#spanning-tree vlan 1 root primary
middle_switch(config)#end
middle_switch#show spanning-tree vlan 1

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    20481
             Address    001a.e37d.7b00
             This bridge is the root
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20481 (priority 20480 sys-id-ext 1)
             Address    001a.e37d.7b00
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  15 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7    P2p
Fa0/6                    Desg FWD 19        128.8    P2p

middle_switch#
```

```

#####
#####
List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']
For vlan 1, specify root node by IP address: 192.168.1.30
Edges: [('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10'), ('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.20', '192.168.1.30'), ('192.168.1.20', '192.168.1.10')]
Tree: (start_node, dest_node) [('192.168.1.30', '192.168.1.10'), ('192.168.1.30', '192.168.1.20')]
BEFORE CONFIG
middle_switch>terminal length 0
middle_switch>en
Password:
middle_switch#show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
            Address    0015.6285.aa80
            Cost       19
            Port       8 (FastEthernet0/6)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
            Address    001a.e37d.7b00
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7   P2p
Fa0/6                    Root FWD 19        128.8   P2p

middle_switch#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
middle_switch(config)#spanning-tree vlan 1 root primary
middle_switch(config)#end
middle_switch#show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    20481
            Address    001a.e37d.7b00
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20481 (priority 20480 sys-id-ext 1)
            Address    001a.e37d.7b00
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 15 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Fa0/5                    Desg FWD 19        128.7   P2p
Fa0/6                    Desg FWD 19        128.8   P2p

middle_switch#

```

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#####

#####

List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']

For vlan 10, specify root node by IP address: 192.168.1.10

Edges: [('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.20', '192.168.1.30'), ('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10')]

Tree: (start_node, dest_node) [('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30')]

BEFORE CONFIG

TOP>terminal length 0
TOP>en
Password:
TOP#show spanning-tree vlan 10

VLAN0010
  Spanning tree enabled protocol ieee
  Root ID    Priority    20490
            Address    0015.6286.6e00
            This bridge is the root
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20490 (priority 20480 sys-id-ext 10)
            Address    0015.6286.6e00
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
-----
Fa0/1            Desg FwD 100      128.3    P2p
Fa0/2            Desg FwD 100      128.4    P2p
Fa0/5            Desg FwD 19       128.7    P2p

TOP#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
TOP(config)#spanning-tree vlan 10 root primary
TOP(config)#end
TOP#show spanning-tree vlan 10

VLAN0010
  Spanning tree enabled protocol ieee
  Root ID    Priority    20490
            Address    0015.6286.6e00
            This bridge is the root
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20490 (priority 20480 sys-id-ext 10)
            Address    0015.6286.6e00
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
-----
Fa0/1            Desg FwD 100      128.3    P2p
Fa0/2            Desg FwD 100      128.4    P2p
Fa0/5            Desg FwD 19       128.7    P2p

TOP#

#####

```



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#####
#####
#####
List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']
For vlan 20, specify root node by IP address: 192.168.1.20
Edges: [('192.168.1.20', '192.168.1.30'), ('192.168.1.20', '192.168.1.10'), ('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10')]
Tree: (start_node, dest_node) [('192.168.1.20', '192.168.1.10'), ('192.168.1.20', '192.168.1.30')]
BEFORE CONFIG
Bottom>terminal length 0
Bottom>en
Password:
Bottom#show spanning-tree vlan 20
VLAN0020
  Spanning tree enabled protocol ieee
  Root ID    Priority    20500
            Address    0015.6286.6e00
            Cost       38
            Port       8 (FastEthernet0/6)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24596 (priority 24576 sys-id-ext 20)
            Address    0015.6285.aa80
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/1              Altn BLK 100      128.3    P2p
Fa0/6              Root FWD 19       128.8    P2p

Bottom#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bottom(config)#spanning-tree vlan 20 root primary
Bottom(config)#end
Bottom#show spanning-tree vlan 20
VLAN0020
  Spanning tree enabled protocol ieee
  Root ID    Priority    20500
            Address    0015.6285.aa80
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20500 (priority 20480 sys-id-ext 20)
            Address    0015.6285.aa80
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 15

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/1              Desg LIS 100      128.3    P2p
Fa0/6              Desg FWD 19       128.8    P2p

Bottom#
PS C:\Users\micha\PycharmProjects\ECE 577\Lab Hw3>

```

```

#####
#####
#####
List of nodes by IP address: ['192.168.1.10', '192.168.1.20', '192.168.1.30']
For vlan 20, specify root node by IP address: 192.168.1.20
Edges: [('192.168.1.20', '192.168.1.30'), ('192.168.1.20', '192.168.1.10'), ('192.168.1.10', '192.168.1.20'), ('192.168.1.10', '192.168.1.30'), ('192.168.1.30', '192.168.1.20'), ('192.168.1.30', '192.168.1.10')]
Tree: (start_node, dest_node) [('192.168.1.20', '192.168.1.10'), ('192.168.1.20', '192.168.1.30')]
BEFORE CONFIG
Bottom>terminal length 0
Bottom>en
Password:
Bottom#show spanning-tree vlan 20
VLAN0020
  Spanning tree enabled protocol ieee
  Root ID    Priority    20500
            Address    0015.6286.6e00
            Cost       38
            Port       8 (FastEthernet0/6)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24596 (priority 24576 sys-id-ext 20)
            Address    0015.6285.aa80
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 300

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/1              Altn BLK 100      128.3   P2p
Fa0/6              Root FWD 19       128.8   P2p

Bottom#

#####

AFTER CONFIG
conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bottom(config)#spanning-tree vlan 20 root primary
Bottom(config)#end
Bottom#show spanning-tree vlan 20
VLAN0020
  Spanning tree enabled protocol ieee
  Root ID    Priority    20500
            Address    0015.6285.aa80
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    20500 (priority 20480 sys-id-ext 20)
            Address    0015.6285.aa80
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 15

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/1              Desg LIS 100      128.3   P2p
Fa0/6              Desg FWD 19       128.8   P2p

Bottom#
PS C:\Users\micha\PycharmProjects\ECE 577\Lab Hw3>

```