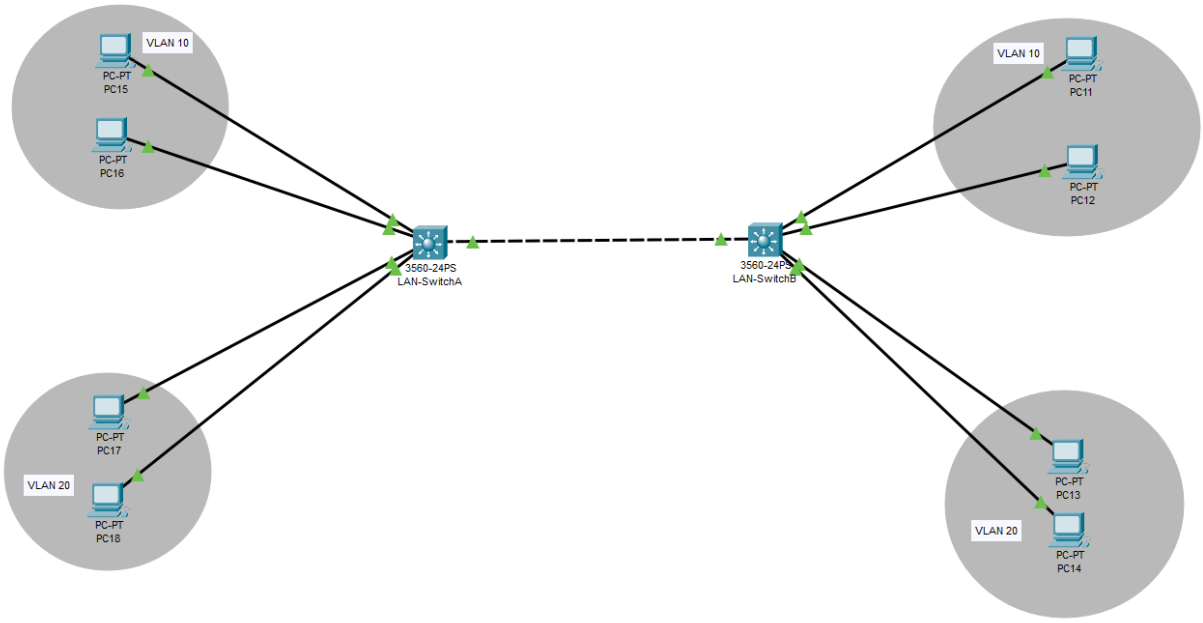
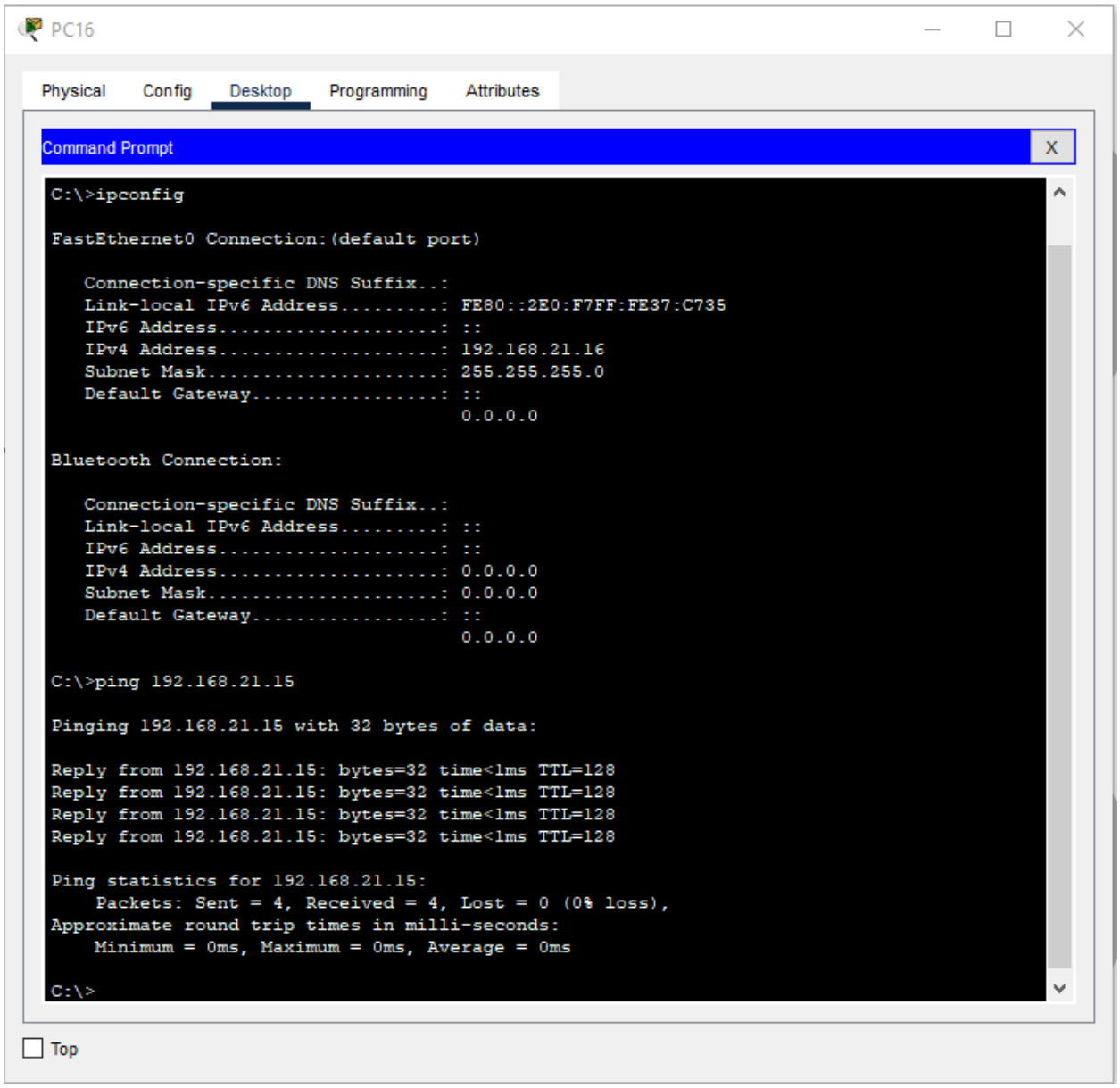
Lawton Pittenger
Lab 4 - CNT 4703
LAB COMPLETED REMOTELY

1. CISCO Packet Tracer File: CNT4703C-Lab4-LawtonPittenger
    - File is attached to this assignment.
2. Screenshots of Packet Tracer Model

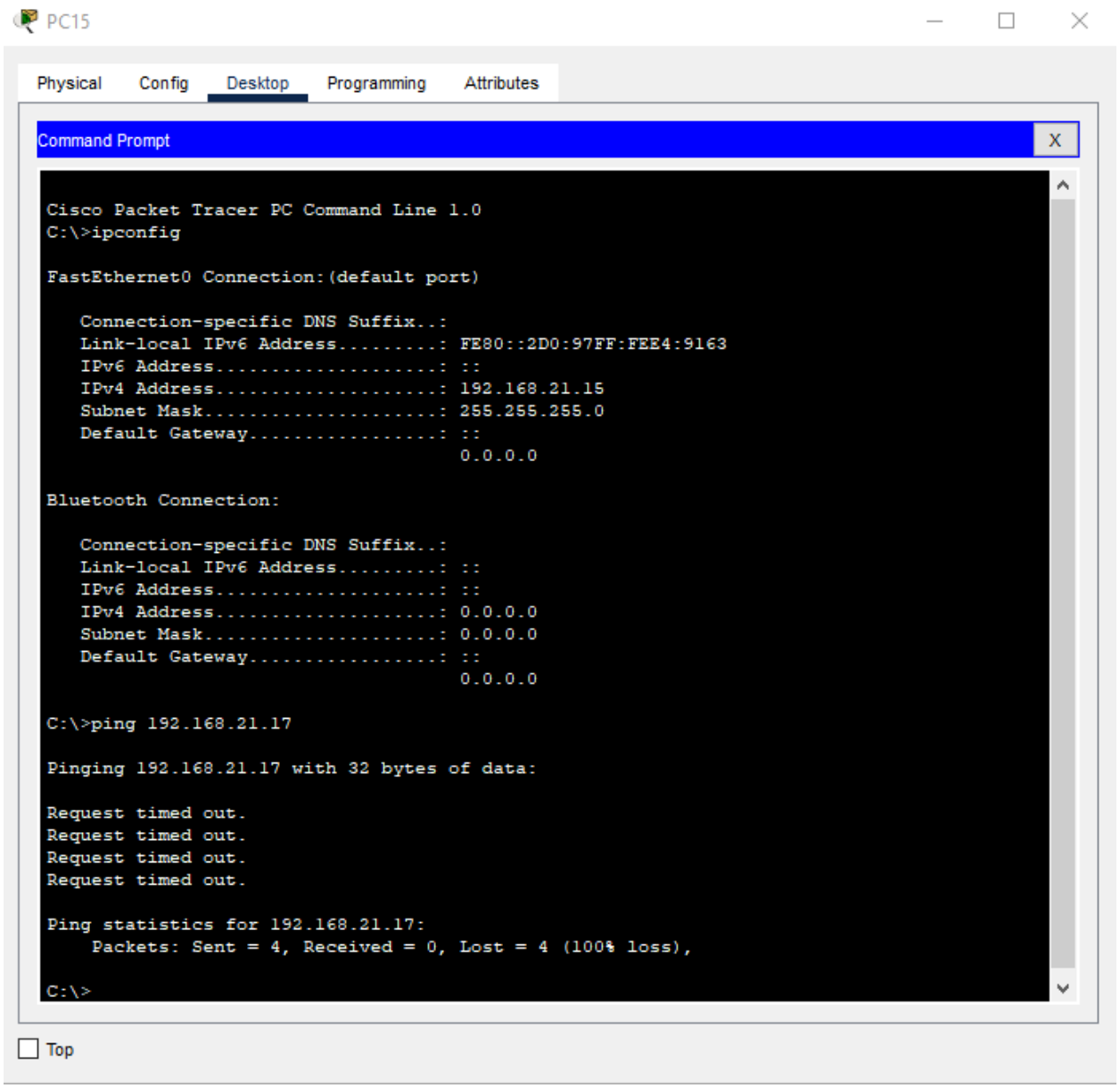
a. Network Topology (Logical)



b. Successful Ping from PC to PC



c. Unsuccessful Ping from PC to PC (between VLANs)



3. Photos of Switch/PC Configuration
   a. Switch Command Results
      i. #show ip interface

```
LAN-SwitchA>show ip interface
FastEthernet0/1 is up, line protocol is up
  Internet protocol processing disabled
FastEthernet0/2 is up, line protocol is up
  Internet protocol processing disabled
FastEthernet0/3 is up, line protocol is up
  Internet protocol processing disabled
FastEthernet0/4 is up, line protocol is up
  Internet protocol processing disabled
FastEthernet0/5 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/6 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/7 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/8 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/9 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/10 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/11 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/12 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/13 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/14 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/15 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/16 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/17 is administratively down, line protocol is down
```

```
FastEthernet0/18 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/19 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/20 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/21 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/22 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/23 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/24 is up, line protocol is up
  Internet protocol processing disabled
GigabitEthernet0/1 is down, line protocol is down
  Internet protocol processing disabled
GigabitEthernet0/2 is down, line protocol is down
  Internet protocol processing disabled
Vlan1 is administratively down, line protocol is down
  Internet protocol processing disabled
```

ii. #show vlan

```
LAN-SwitchA>show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Gig0/1
                                                 Gig0/2
10   zone10                            active    Fa0/1, Fa0/2
20   zone20                            active    Fa0/3, Fa0/4
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
1003 tr    101003     1500  -      -      -        -    -        0      0
1004 fdnet 101004     1500  -      -      -        ieee -        0      0
1005 trnet 101005     1500  -      -      -        ibm  -        0      0

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------

Remote SPAN VLANs
------------------------------------------------------------------------------
 --More--
```

```
Remote SPAN VLANs
------------------------------------------------------------------------------

Primary Secondary Type              Ports
------- --------- ----------------- ------------------------------------------
LAN-SwitchA>
```

b. Lab computer IPv4 interface configuration
   - LAB COMPLETED REMOTELY

c. Lab computer ICMP results
   - LAB COMPLETED REMOTELY

4. Answers to LAB 5 questions 1-5

1. **What VLAN number value is an assigned to the default VLAN?**
   - The VLAN number value of 1 is assigned to the default VLAN.
2. **What is the term used to describe a port that can access multiple VLANs?**
   - Trunk port

a. Why is this type of port necessary?

- With VLAN trunking, it's possible to extend a VLAN across the network. When you implement multiple VLANs across a network, trunk links are necessary to ensure that VLAN signals remain properly segregated for each to reach their intended destination. This is also more efficient, as multiple VLANs can be configured on a single port.

3. **What does IEEE stand for?**
    - Institute of Electrical and Electronics Engineers

a. What IEEE standard covers VLANs?

- The IEEE 802.1Q standard covers VLANs (Virtual Local Area Networks). This standard defines a protocol for inserting a VLAN identification tag into Ethernet frames, which allows the creation of logical subnetworks within a physical network infrastructure.

4. **What layer of the OSI Model does VLAN tagging take place?**
    - VLAN tagging takes place at the Data Link layer (Layer 2) of the OSI model. More specifically, VLAN tagging is done at the Ethernet frame level, where a VLAN tag is inserted into the Ethernet frame header. This allows the Ethernet frames to be identified and forwarded to the appropriate VLANs within the network. The VLAN tag contains information such as the VLAN ID, which is used by switches to determine which VLAN the frame belongs to.
5. **How and why would this technology be useful in a networking scenario?**
    - VLANs (Virtual Local Area Networks) and trunking are useful in a networking scenario for several reasons:
        - Network Segmentation: VLANs allow for network segmentation, which is the process of dividing a larger network into smaller, more manageable subnetworks. This can help to reduce network congestion, improve network performance, and increase network security by limiting the scope of broadcast traffic and reducing the risk of unauthorized access.
        - Traffic Isolation: VLANs can be used to isolate network traffic between different groups of users or devices. For example, VLANs can be used to separate guest traffic from corporate traffic, or to separate different departments within an organization.
        - Flexibility: VLANs allow for greater flexibility in network design and management. They allow network administrators to group devices logically rather than physically, which can simplify network management and make it easier to make changes to the network.
        - Trunking: Trunking is the process of carrying traffic from multiple VLANs over a single physical link between switches. Trunking allows for more efficient use of network resources by reducing the number of physical connections required between switches.

    Overall, VLANs and trunking provide a more flexible and scalable approach to network design and management, allowing for greater control and security over network traffic while also reducing network complexity and improving performance.