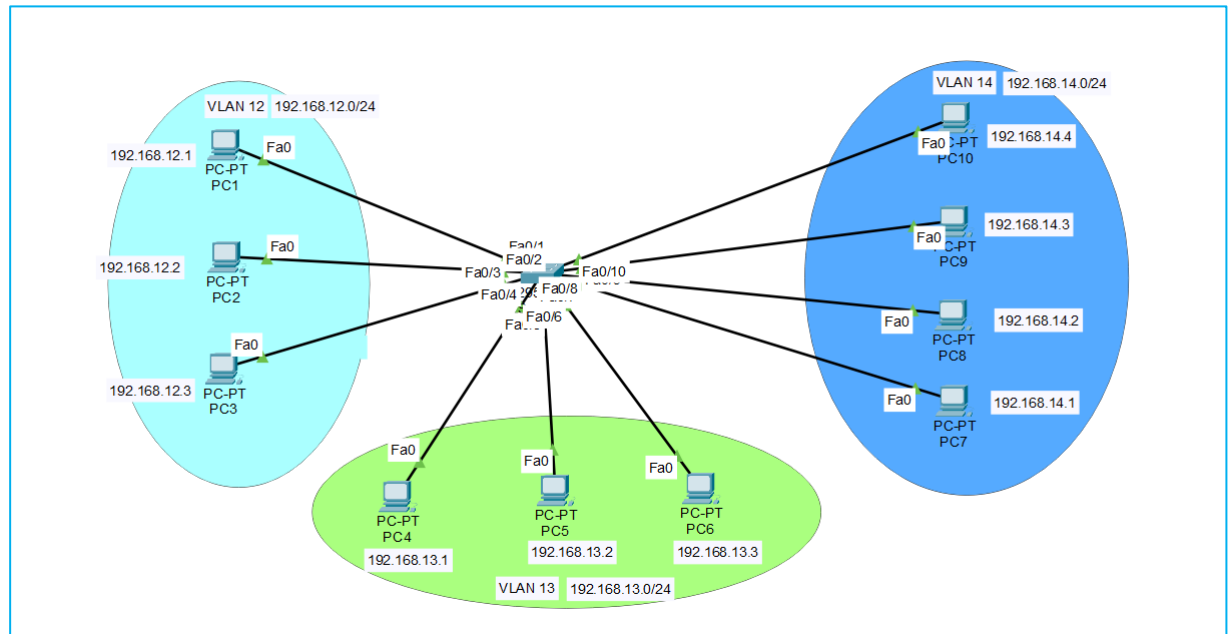


Computer Networks  
2<sup>nd</sup> Year, 1<sup>st</sup> Semester

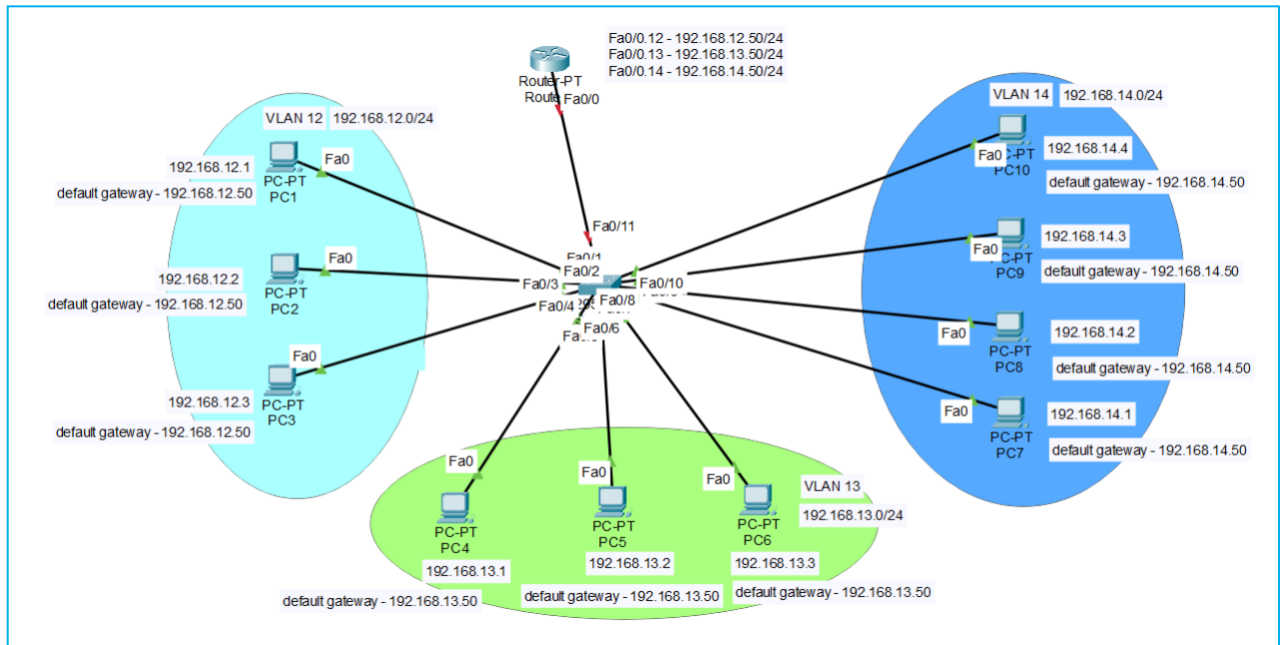
Tutorial 7 - VLAN

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1. If six computers are connected by a switch, how many collision domains and broadcast domain are there?
  - I. Collision domains – 6
  - II. Broadcast domains – 1
2. If a switch has 12 ports and 10 of them are in VLAN 12, VLAN 13 and VLAN 14, how many broadcast domains are there?
  - I. Broadcast domains – 3
  - II. Collision domains – 10
3. Following the previous question, draw how 10 computers are connected to the 10 switch ports. Give them proper IP addresses.



4. Fix a router to enable inter VLAN communication using one router interface.  
Show how you assign gateways for each VLAN using sub interfaces.



5. According to the diagram drawn in question 2, write down the switch commands to assign those ports to relevant VLANs. (One example for each VLAN is adequate)

- I. Assign VLAN 12
  - int range fa0/1-3
  - switchport mode access
  - switchport access vlan 12
- II. Assign VLAN 13
  - int range fa0/4-6
  - switchport mode access
  - switchport access vlan 13
- III. Assign VLAN 14
  - int range fa0/7-10
  - switchport mode access
  - switchport access vlan 14
- IV. Make fa0/11 port as a trunk port
  - int fa0/11
  - switchport mode trunk
- V. Here we are using Router-on-a-Stick Inter-VLAN routing
  - Change fa0/0 port status to up
    - int fa0/0
    - no shutdown

- Routing for VLAN 12
  - int fa0/0.12
  - encapsulation dot1q 12
  - ip address 192.168.12.50 255.255.255.0
- Routing for VLAN 13
  - int fa0/0.13
  - encapsulation dot1q 13
  - ip address 192.168.13.50 255.255.255.0
- Routing for VLAN 14
  - int fa0/0.14
  - encapsulation dot1q 14
  - ip address 192.168.14.50 255.255.255.0

6. What do you understand by trunk port and access port? (in switches)

- Access Port - An access port is used to connect end devices like computers, printers, or IP phones to a switch. It carries traffic only for the specific VLAN assigned to the port. **An access port connects one device to one VLAN.**
- Trunk Port - A trunk port is used to carry traffic for multiple VLANs across a single link. Trunk ports are typically used to connect switches together or to connect a switch to a router. **A trunk port connects multiple VLANs together.**