

**SUBJECT:** CN LAB

**TASK-1**

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Section: 5A

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**1. Difference between Routers in Cisco Packet Tracer**

* **ISR 4331 and ISR 4321:**
  + **Purpose:** Part of the Cisco Integrated Services Routers (ISR) 4000 series, these routers offer high performance and versatility, integrating advanced features like security, WAN optimization, and cloud connectivity.
  + **Usage:** Suitable for medium to large enterprise networks where advanced routing, security, and high throughput are required.
* **ISR 1941:**
  + **Purpose:** A member of the ISR G2 (Generation 2) family, this router is designed for small to medium-sized businesses, offering basic routing with integrated security and wireless options.
  + **Usage:** Ideal for small branch offices or small businesses that need reliable connectivity with some advanced features.
* **ISR 2901, 2911:**
  + **Purpose:** These are also part of the ISR G2 family, offering more performance and modularity than the 1941, with support for additional interfaces and services.
  + **Usage:** Suitable for medium-sized businesses or branch offices that require more processing power and flexibility in their network design.
* **819HG-4G-IOX and 829:**
  + **Purpose:** These are ruggedized routers designed for industrial environments with support for 4G LTE connectivity and M2M (Machine-to-Machine) communication.
  + **Usage:** Best for IoT deployments, remote monitoring, and mobile networks where durability and wireless connectivity are critical.
* **CGR 1240:**
  + **Purpose:** Cisco Connected Grid Router, designed for utility networks, offering robust, secure, and scalable communication in harsh environments.
  + **Usage:** Ideal for energy and utility companies needing reliable routing in substations or similar environments.
* **Router-PT-Empty:**
  + **Purpose:** A customizable router with no default modules. Users can add different modules to configure the router as needed.
  + **Usage:** Useful for learning and practicing how to customize routers with various interfaces and capabilities.
* **1841:**
  + **Purpose:** A router from the ISR G1 series, designed for small offices or branch offices, offering basic routing with some advanced services.
  + **Usage:** Suitable for small networks with limited demands on performance and services.
* **2620XM and 2621XM:**
  + **Purpose:** Older models from the 2600 series, these routers are still used for educational purposes, providing basic routing capabilities.
  + **Usage:** Best for learning environments or small networks where advanced features are not necessary.
* **2811:**
  + **Purpose:** Another ISR G1 router, offering more power than the 1841, with support for additional modules and services.
  + **Usage:** Suitable for medium-sized networks where more flexibility and performance are required.

**2. Difference between Switches in Cisco Packet Tracer**

* **2960-24TT:**
  + **Purpose:** A Layer 2 managed switch, part of the Catalyst 2960 series, offering features like VLANs, QoS, and basic security.
  + **Usage:** Ideal for small to medium-sized networks requiring basic management and security features.
* **Switch-PT and Switch-PT-Empty:**
  + **Purpose:** The Switch-PT is a basic Layer 2 switch with no advanced features, while the Switch-PT-Empty is a customizable switch that allows users to add and configure modules.
  + **Usage:** Use the Switch-PT for simple networks, and the Switch-PT-Empty for learning about switch customization.
* **3560-24PS:**
  + **Purpose:** A Layer 3 switch that supports routing between VLANs and comes with Power over Ethernet (PoE) capabilities.
  + **Usage:** Suitable for medium to large networks requiring both switching and routing, along with PoE for powering devices like IP phones or wireless access points.
* **IE-2000:**
  + **Purpose:** An industrial Ethernet switch designed for rugged environments, offering robust performance and reliability.
  + **Usage:** Best for industrial networks, particularly in manufacturing or utilities where environmental conditions are harsh.
* **Bridge-PT:**
  + **Purpose:** A basic network bridge used to connect two segments of a network, allowing them to communicate as a single network.
  + **Usage:** Typically used in simple or legacy network environments.
* **2950-24 and 2950T-24:**
  + **Purpose:** Older models of Cisco managed switches, offering basic Layer 2 switching with limited features compared to newer models.
  + **Usage:** Useful in small networks or educational environments for learning about basic switch configuration.

**3. Difference between Connections Wires in Cisco Packet Tracer**

* **Console Cable:**
  + **Purpose:** Used to connect a computer’s serial port to the console port of a network device for initial configuration.
  + **Usage:** Essential for direct device configuration, especially when setting up or troubleshooting devices.
* **Copper Straight-Through Cable:**
  + **Purpose:** Standard Ethernet cable used to connect different types of devices, such as a computer to a switch.
  + **Usage:** Most commonly used in network setups for connecting end devices to network infrastructure.
* **Copper Cross-Over Cable:**
  + **Purpose:** Used to connect similar devices directly, such as switch to switch or router to router.
  + **Usage:** Typically used in older networks or in specific scenarios requiring direct device connections.
* **Fiber Optic Cable:**
  + **Purpose:** Used for high-speed, long-distance connections with minimal signal degradation.
  + **Usage:** Suitable for backbone connections or linking distant network segments in a high-performance network.
* **Phone Cable:**
  + **Purpose:** Used to connect analog phones to a network or for dial-up connections.
  + **Usage:** Typically used in VoIP setups or legacy phone systems.
* **Coaxial Cable:**
  + **Purpose:** Used for cable Internet connections or older Ethernet networks.
  + **Usage:** Primarily found in older network setups or specific applications requiring coaxial connections.
* **Serial DCE and Serial DTE Cables:**
  + **Purpose:** Used for point-to-point WAN connections between routers, where one side acts as the Data Communications Equipment (DCE) and the other as Data Terminal Equipment (DTE).
  + **Usage:** Ideal for simulating WAN links in lab environments.
* **Octal Cable:**
  + **Purpose:** Used to connect multiple devices to a single router or switch console port for management.
  + **Usage:** Useful in environments where multiple devices need to be managed from a central location.
* **IoT Custom Cable:**
  + **Purpose:** Special cable used to connect IoT devices with custom pinouts.
  + **Usage:** Best for IoT networks where standard cables don’t meet the specific connection requirements.
* **USB Cable:**
  + **Purpose:** Used to connect devices via USB ports, typically for management or data transfer.
  + **Usage:** Often used in modern devices for configuration or file transfer purposes.