# Task 1: What is the difference between all the routers, and when to use them?

Routers in Cisco Packet Tracer vary in terms of their capabilities, interfaces, and performance. Here's a general breakdown:

# Cisco 1841 Router:

* **Use**: Suitable for small to medium-sized networks.
* **Features**: It has two Fast Ethernet interfaces, supports limited modularity with WAN and LAN interfaces, and provides basic routing capabilities.
* **When to use**: Use this router in environments where basic WAN connections or inter-VLAN routing is needed.

# Cisco 2911 Router:

* **Use**: Ideal for medium-sized to large networks, supporting multiple services like data, voice, and video.
* **Features**: This router has higher performance, supporting Gigabit Ethernet ports, advanced routing, and security features (VPN, firewall).
* **When to use**: Use it for more complex networks needing scalability, security, and higher throughput.

# Cisco 819 Router:

* **Use**: Designed for small networks, mobile networks, or IoT applications.
* **Features**: It offers cellular connectivity options in addition to basic routing capabilities.
* **When to use**: Best for mobile or remote deployments where cellular connections are needed.

# Task 2: What is the difference between all the switches, and when to use them?

Switches are critical for connecting devices within the same local network, but their performance and functionality differ:

# Cisco 2950T Switch:

* **Use**: A Layer 2 switch for small to medium-sized networks.
* **Features**: Supports Fast Ethernet (10/100 Mbps) ports.
* **When to use**: Use this for simple LAN environments where basic switching and bandwidth are sufficient.

# Cisco 2960 Switch:

* **Use**: Another Layer 2 switch with more advanced capabilities.
* **Features**: Provides Gigabit Ethernet (10/100/1000 Mbps) ports.
* **When to use**: Use this for networks requiring higher speed and more advanced features like QoS and enhanced security.

# Cisco 3560 Switch:

* **Use**: A Layer 3 switch, providing both switching and routing functionalities.
* **Features**: Supports both routing protocols and switching operations, offering high performance for data-intensive tasks.
* **When to use**: Use in networks where you need advanced routing features within the LAN, like inter-VLAN routing.

# Task 3: What is the difference between all the connection wires, and when to use them?

# Straight-Through Cable:

* **Use**: Connect different types of devices (e.g., PC to switch or switch to router).
* **When to use**: Use this cable for connecting devices like a PC to a switch or a switch to a router.

# Copper Crossover Cable:

* **Use**: Connect similar types of devices (e.g., switch to switch or PC to PC).
* **When to use**: Use it when connecting two similar devices directly, such as between two switches or between two computers.

# Fiber Optic Cable:

* **Use**: Connect devices over long distances or in high-speed environments (e.g., WAN links).
* **When to use**: Typically used in environments needing high-speed, long-distance connections, such as between buildings or data centers.

# Console Cable:

* **Use**: Connect a PC to a router or switch for configuration.
* **When to use**: This cable is used for accessing and configuring routers or switches through the console port.