



Student Engagement & Mentoring in Technology

Assignment: Understanding Wireless Networking – 9 Real-World Scenarios

Objective:

Read the scenario and answer the question(s) that follows. Each scenario is based on something you might experience at home, at school, or in a public place with Wi-Fi. Explain your answers in a sentence or two using what you've learned about wireless networking.

Instructions:

- Read each scenario:
 - Write a clear answer using your own words.
 - You can look up anything you need to.
 - Try to keep each answer to 1–3 sentences.
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Scenario 1 – Frequency Ranges

Jayden notices that the Wi-Fi in his house works well upstairs but slows down in the basement. He's using a fast 5 GHz Wi-Fi signal.

Question:

Why might Jayden's Wi-Fi be slower in the basement?

Scenario 2 – Device Placement

Maya set up her Wi-Fi router in the corner of her living room behind a big TV. Some rooms in her house get almost no signal.

Question:

What could Maya change about her Wi-Fi setup to improve the signal?



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Scenario 3 – SSID (Network Name)

At a coffee shop, Priya sees three networks pop up: “CoffeeGuest,” “CoffeeSecure,” and “NETGEAR123.” She doesn’t know which to connect to.

Question:

What does SSID mean, and how could Priya use it to help pick the right network?

Scenario 4 – Interference

When Leo uses the microwave in the kitchen, his Zoom calls freeze and the Wi-Fi signal drops.

Question:

Why does this happen, and what kind of interference is causing the problem?

Scenario 5 – Wireless Antennas

A school technician is installing a new Wi-Fi system between two buildings. They want a strong connection going in one direction only.

Question:

What kind of wireless antenna should they use for this setup?

Scenario 6 – WEP (Insecure Wi-Fi)

Isabella connects to an old public network while traveling. She sees that it says “WEP Security.”

Question:

Should Isabella trust this network for personal activities like checking her bank account? Why or why not?



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Scenario 7 – WPA3 (Secure Wi-Fi)

A new laptop Isabella buys says it supports WPA3 encryption.

Question:

What is WPA3, and why is it better than older types of Wi-Fi protection?

Scenario 8 – Wireless Access Control

Mr. Tran runs a small business and wants to give Wi-Fi to his employees but not to customers who visit the store.

Question:

What kind of wireless access control could Mr. Tran use to limit who connects?

Scenario 9 – 802.11ac Standard

A student hears that their school just upgraded to 802.11ac Wi-Fi, and now their internet is much faster.

Question:

What does 802.11ac mean, and why might it improve Wi-Fi speed?