Memory updated

Here’s a detailed write-up for your **home network setup** project. This can be added to your "Projects" page to showcase your hands-on technical skills.

**Title: Home Network Setup for a 1200 sq ft Ranch**

**Project Overview**

In this project, I designed and implemented a home network to provide reliable, wired internet access throughout my 1200 sq ft ranch-style house. Frustrated with renting a modem from Comcast, I decided to build my own network with a focus on efficiency, cost-effectiveness, and scalability.

The network setup provides wired connections to all bedrooms, the basement office, and supports multiple users, including two teens and myself, who all require stable connections for work, study, and entertainment.

**Plan and Requirements**

1. **Goal:**
   * Eliminate reliance on rented modem equipment.
   * Provide wired internet access to multiple rooms for stable and high-speed connectivity.
   * Ensure scalability for future network expansions or upgrades.
2. **Equipment:**
   * **Modem:** Purchased an Arris modem-router combo.
   * **Switch:** Netgear 8-port gigabit Ethernet switch for network expansion.
   * **Cables:** Large spool of Cat 5 Ethernet cable.
   * **Tools:** Cable crimper, RJ45 connectors, cable tester, and a drill for wall access.
3. **Design Considerations:**
   * Centralize the router for optimal coverage.
   * Minimize cable clutter by using wall-mounted Ethernet ports.
   * Ensure proper cable management for durability and future upgrades.

**Steps Taken**

1. **Planning the Network:**
   * Mapped out the house layout to determine the best router location (central point in the living room).
   * Identified rooms requiring wired connections: two bedrooms, the basement office, and the living room.
   * Sketched a wiring plan to minimize cable runs and avoid obstacles.
2. **Purchasing Equipment:**
   * Selected an Arris modem-router combo for reliable connectivity and ease of setup.
   * Chose a Netgear switch to expand the number of Ethernet ports for multiple wired connections.
   * Purchased Cat 5 Ethernet cable for cost-effectiveness and sufficient speed for home use.
3. **Running the Wires:**
   * Drilled access points through walls and floors to route cables from the router to each room.
   * Measured and cut the Ethernet cables to appropriate lengths for each run.
   * Crimped RJ45 connectors to both ends of the cables and tested each cable with a network tester.
4. **Installing Wall Plates:**
   * Mounted wall plates with Ethernet jacks in each room for a clean and professional look.
   * Connected cables to the back of the wall plates using punch-down tools.
5. **Setting Up the Equipment:**
   * Connected the modem-router to the main internet line and configured it with the ISP settings.
   * Attached the Netgear switch to the router to expand available ports.
   * Connected the wired runs from each room to the switch, ensuring proper labeling for troubleshooting.
6. **Testing and Optimization:**
   * Verified all wired connections were active using the cable tester and connected devices in each room.
   * Ran speed tests to confirm consistent internet speeds across all connections.
   * Adjusted cable management for aesthetics and accessibility.

**Challenges and Solutions**

1. **Challenge:** Running cables through walls and floors without damaging existing infrastructure.
   * **Solution:** Used fish tape and carefully planned entry and exit points for clean cable routing.
2. **Challenge:** Testing and troubleshooting cable connections.
   * **Solution:** Used a cable tester after crimping to ensure proper pin configuration and avoid wasted time.

**Outcome**

* Successfully set up a reliable wired home network with connections in all required rooms and the basement office.
* Improved internet stability for work, gaming, and streaming for the entire family.
* Saved money on modem rental fees and ensured long-term scalability for future upgrades.

**Conclusion**

This project demonstrates my ability to plan, design, and execute a home networking solution from scratch. It highlights my skills in problem-solving, cable management, and leveraging technology for practical applications.