**7-Day IT Lab Project Plan**  
*Focus: Networking, Scripting, Security, SQL*

**Strengths:** Cisco networking appliances, Windows  
**Improvement Areas:** SQL, scripting, cybersecurity

**Day 1 – VLAN and Inter-VLAN Routing (Cisco)**  
**Goal:** Configure VLANs and enable communication between them.

**Scenario Prompt:**  
A small company is expanding and wants to segment its network for better performance and security. The IT team has been tasked to set up three VLANs:

* VLAN 10: Management (10 hosts)
* VLAN 20: Sales (20 hosts)
* VLAN 30: IT Support (30 hosts)

Each department must have its own VLAN on a Cisco switch, and all VLANs must be able to communicate with each other via a router-on-a-stick configuration. Use Packet Tracer or GNS3 to simulate this environment.

**Tasks:**

* Subnet a Class C network (e.g., 192.168.1.0/24) to accommodate each VLAN’s host requirements.
* Assign IP addressing to each VLAN according to subnetting:
  + VLAN 10: 192.168.1.0/28 (14 usable IPs)
  + VLAN 20: 192.168.1.16/27 (30 usable IPs)
  + VLAN 30: 192.168.1.48/26 (62 usable IPs)
* Set up VLANs on a Cisco switch.
* Assign switchports to appropriate VLANs.
* Configure trunking between the switch and a router.
* Set up sub-interfaces on the router for Inter-VLAN routing.
* Test communication between PCs in different VLANs using ping.
* Verify configuration with show vlan, show ip route, and show interfaces trunk.

**Deliverables:** VLAN diagram, subnetting chart, switch/router configs, test results.

**Day 2 – Windows PowerShell Scripting**  
**Goal:** Automate a basic system audit.

* Create a script to collect:
  + IP settings, hostname
  + List of user accounts
  + Installed software
* Export results to .txt or .csv.

**Deliverables:** PowerShell script, audit report.

**Day 3 – SQL Basics (SQLite or MySQL)**  
**Goal:** Practice CRUD operations.

* Create database with tables: Users, Devices, Logs
* SQL queries to:
  + Insert users/devices
  + Update user info
  + Delete entries
  + Query logs by user/date

**Deliverables:** SQL schema, sample queries, exported database.

**Day 4 – Firewall Rules and ACLs (Cisco)**  
**Goal:** Secure traffic using access control lists.

* Configure ACLs to:
  + Allow HTTP/HTTPS from a subnet
  + Block Telnet
* Apply ACLs on router interfaces and test with ping or telnet

**Deliverables:** ACL configuration, network map, test results.

**Day 5 – Bash Scripting (Ubuntu Server)**  
**Goal:** Create a log parser.

* Script to parse /var/log/auth.log
* Extract failed login attempts
* Display IP, timestamp, username

**Deliverables:** Bash script, sample output, security notes.

**Day 6 – SQL + Scripting Integration**  
**Goal:** Automate SQL tasks.

* Use Python or PowerShell to:
  + Connect to SQL database
  + Insert/query data
  + Output formatted report

**Deliverables:** Script, database, generated report.

**Day 7 – CTF-Style Security Challenge**  
**Goal:** Simulate a small security exploit scenario.

* Host a vulnerable service on Ubuntu Server
* Scan from Kali (using nmap)
* Exploit weak service or creds
* Document the findings in a report

**Deliverables:** Scan results, vulnerability exploited, attack steps, mitigation tips.