# Project1: Building and Securing a Small Network

**Names:**

Omar Adel Elkassas

Aya Mohamed Elgendy

Mariam Ehab Hagras

Mahmoud Mohamed Ramadan

Yassmen Ahmed

**Code:** [GHR_ISSI_M1]

---

# Week 1: Network Design and Configuration

## Task

Design a small network using Cisco devices. Define the network topology, IP addressing scheme, and device configurations.

## Deliverables

1. **Network Design Diagram**
   - [Insert the network topology diagram]
2. **IP Addressing Table**
   - [Insert a table detailing the IP addresses, subnet masks, and device assignments]
3. **Initial Configuration Scripts for Routers and Switches**
   - Example Router Configuration:

```
Router(config)# hostname Router1
Router(config)# interface g0/0
Router(config-if)# ip address [IP Address] [Subnet Mask]
Router(config-if)# no shutdown
```

   - Example Switch Configuration:

```
Switch(config)# hostname Switch1
Switch(config)# interface g0/1
Switch(config-if)# switchport mode access
```

## Week 2: VLANs and Inter-VLAN Routing

### Task

Implement VLANs in the network. Configure VLANs, VLAN trunks, and Inter-VLAN routing using Router-on-a-Stick.

### Deliverables

1. **VLAN Configuration Scripts**
   Example:

```
Switch(config)# vlan 10
Switch(config-vlan)# name HR
Switch(config)# vlan 20
Switch(config-vlan)# name IT
```

2. **Inter-VLAN Routing Setup Documentation**
   Router-on-a-Stick Configuration Example:

```
Router(config)# interface g0/0.10
Router(config-subif)# encapsulation dot1Q 10
Router(config-subif)# ip address [IP Address] [Subnet Mask]
Router(config)# interface g0/0.20
Router(config-subif)# encapsulation dot1Q 20
Router(config-subif)# ip address [IP Address] [Subnet Mask]
```

3. **VLAN Troubleshooting Report**
   [Include steps for troubleshooting VLAN-related issues]

## Week 3: Network Security Implementation

## Task

Implement security features including port security and ACLs. Configure network security on switches and routers.

## Deliverables

1. **Security Configuration Scripts**
    - Example Port Security Configuration:

```
Switch(config)# interface g0/1
Switch(config-if)# switchport mode access
Switch(config-if)# switchport port-security
Switch(config-if)# switchport port-security maximum 2
Switch(config-if)# switchport port-security violation shutdown
```

2. **ACL Configuration on Packet Tracer (Between 192.168.10.2 and 192.168.30.6)**

### 1. Create ACL:

1. In Packet Tracer, access the main office router CLI.
2. Write the ACL rule to control access between the devices in VLAN 10 and VLAN 30.

```
access-list 101 deny ip host 192.168.10.2 host 192.168.30.6
access-list 101 permit ip any any
```

### 2.Apply ACL on the Router Interface:

• Apply the ACL on the interface that connects the main office to the branch office.

```
interface gigabitEthernet 0/0
ip access-group 101 in
```

- **Security Policy Document**
  - [Describe the security policies you implemented, such as port security, restricting unauthorized devices, and ACLs]
- **Security Effectiveness Report**
  - [Provide a summary of the effectiveness of your security configurations and any potential improvements]

## Week 4: Final Testing and Reporting

### Task

Test network functionality, security, and connectivity. Prepare a final report including network performance, security assessment, and a presentation.

### Deliverables

1. **Final Report**
   - [Provide a comprehensive report detailing the network design, VLAN implementation, security measures, and test results]
2. **Presentation Slides**
   - [Attach presentation slides summarizing the project work]
3. **Test Results**
   - [Include results from testing connectivity, security features, and network performance]

---