



SPYPRO SECURITY SOLUTIONS Pvt. Ltd.,

C Y B E R S E C U R I T Y

3-Day Workshop on IoT Integrated with Cybersecurity

Day 1: Introduction and Fundamentals

Session 1: Basics of IoT

- Overview of IoT and its applications
- IoT architecture: Sensors, actuators, gateways, and cloud
- Key technologies enabling IoT

Hands-On Activity

- Setting up an IoT device (e.g., ESP8266/NodeMCU)
- Connecting IoT devices to the cloud using Blynk or ThingSpeak

Session 2: Cybersecurity Fundamentals

- Importance of cybersecurity in IoT
- Common threats to IoT systems (e.g., DDoS attacks, data breaches)
- Basics of cryptography, authentication, and encryption

Hands-On Activity

- Generating secure keys and encrypting communication between devices

Day 2: Securing IoT Systems

Session 1: IoT Network Security

- Threat modeling for IoT networks
- Role of firewalls and intrusion detection systems (IDS)
- Securing communication protocols: MQTT, HTTPS

Hands-On Activity

- Configuring secure communication using MQTT with TLS/SSL

Session 2: Device-Level Security

- Secure firmware updates
- Protecting device integrity with hashing (e.g., SHA-256)
- Implementing access control in IoT devices

Hands-On Activity

- Setting up role-based access control (RBAC) for an IoT device

Day 3: Advanced Topics and Project

Session 1: Data Privacy and IoT Compliance

- Ensuring data privacy in IoT systems
- Compliance with regulations (e.g., GDPR, HIPAA)
- Introduction to blockchain in IoT security

Hands-On Activity

- Integrating a blockchain-based solution for IoT data logging

Session 2: Real-World Application and Project Building

- Overview of real-world applications (e.g., smart cities, healthcare)
- Guidelines for designing a secure IoT system

Project

- **Task:** Build a secure IoT-based home automation system
 - Devices: Sensors, actuators, and microcontroller (e.g., NodeMCU)
 - Features: Secure login, encrypted data transmission, real-time alerts
 - Tools: Arduino IDE, MQTT broker, and cloud platforms

Closing Session

- Presenting projects
- Q&A and feedback