Web3 Security Content

1. **Introduction to Web3**
2. **Blockchain Fundamentals**
    1. Overview of Blockchain Technology
    2. Understanding Smart Contracts
    3. Introduction to Wallets
    4. Fundamentals of Gas
    5. Blockchain Operations
    6. Transaction Signing
    7. In-depth Look at Gas
    8. Layer 1 (L1) vs Layer 2 (L2) Solutions
3. **Solidity Programming**
    1. Introduction to Solidity
    2. Variable Types and Data Structures
    3. Functions in Solidity
    4. Arrays and Structs
    5. Memory, Storage, and Calldata
    6. Mappings
    7. Deploying Your First Smart Contract
    8. Inheritance in Solidity
    9. Sending ETH
    10. Handling Reverts in Solidity

    11. Introduction to Oracles
    12. Interfaces in Solidity
    13. Solidity Math Operations
    14. Understanding `msg.sender`
    15. Safe Math
    16. Loops in Solidity
    17. Function Modifiers

4. **Foundry Framework**
    1. Introduction to Foundry
    2. Foundry Setup
    3. VSCode Solidity Configuration
    4. Foundry Forge
    5. Foundry Cast
    6. Foundry Anvil
    7. Foundry Chisel
5. **Token Standards**
    1. ERC-20: Fungible Tokens
    2. ERC-721: Non-Fungible Tokens (NFTs)
6. **Smart Contract Development Project**
    - Apply Solidity and Foundry knowledge to develop a smart contract (1 week)
7. **Security Vulnerabilities in Smart Contracts**
    1. Authorization through `tx.origin`
    2. Insufficient Access Controls
    3. Untrusted Delegatecall
    4. Signature Malleability

5. Signature Replay Attack Prevention
6. Integer Overflow and Underflow
7. Off-by-One Errors
8. Precision Errors
9. Cross-Site Scripting (XSS)
10. Cross-Site Request Forgery (CSRF)
11. Reentrancy Attacks
12. DoS via Block Gas Limit
13. DoS with Unexpected Revert
14. Using `msg.value` in Loops
15. Transaction-Ordering Dependence
16. Insufficient Gas Griefing
17. Flash Loan Attacks
18. Price Manipulation Attacks
19. Liquidation Risks
20. Unchecked Return Values
21. Arbitrary Storage Write
22. Unbounded Return Data
23. Sybil Attacks
24. 51% Attacks
25. Forking Challenges
26. Uninitialized Storage Pointers
27. Null Address in `ecrecover`
28. Weak Randomness in Chain Attributes
29. Hash Collision with `abi.encodePacked()`
30. Timestamp Dependence