Lab Session: Wallet Setup and First Transaction

BSc Blockchain, Crypto Economy & NFTs

Course Instructor

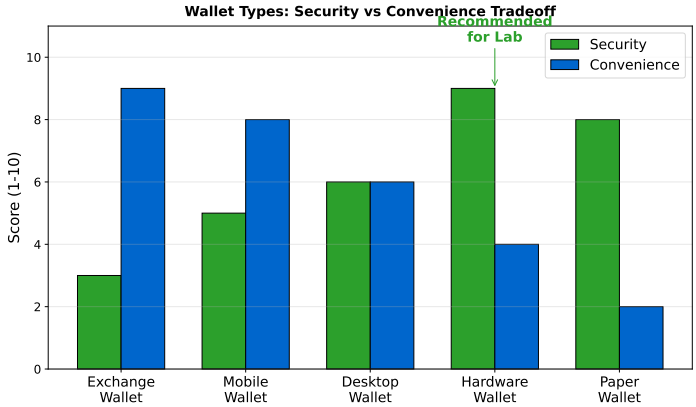
Module A: Blockchain Foundations

Learning Objectives

By the end of this lab session, you will be able to:

- Install and configure MetaMask wallet extension
- Understand seed phrase importance and backup procedures
- Connect to Ethereum testnets (Sepolia)
- Obtain testnet ETH from faucets
- Send and receive testnet transactions
- Apply security best practices for wallet protection

Wallet Types: Security vs Convenience



Hardware wallets offer best security; MetaMask provides good balance for learning

What is MetaMask?

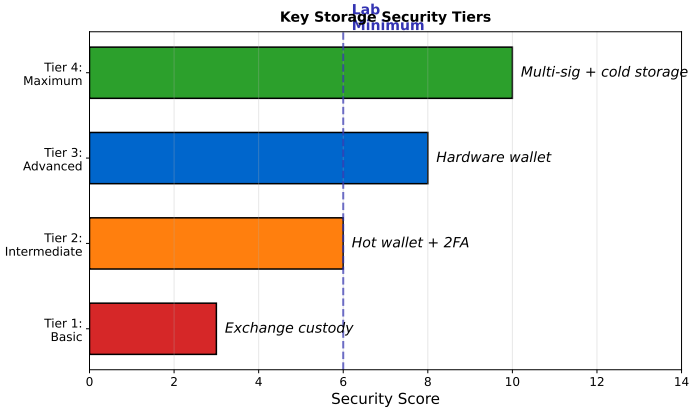
Overview:

- Browser extension and mobile app cryptocurrency wallet
- Supports Ethereum and EVM-compatible blockchains
- Non-custodial: you control private keys
- Most popular Ethereum wallet (30 million users)

Key Features:

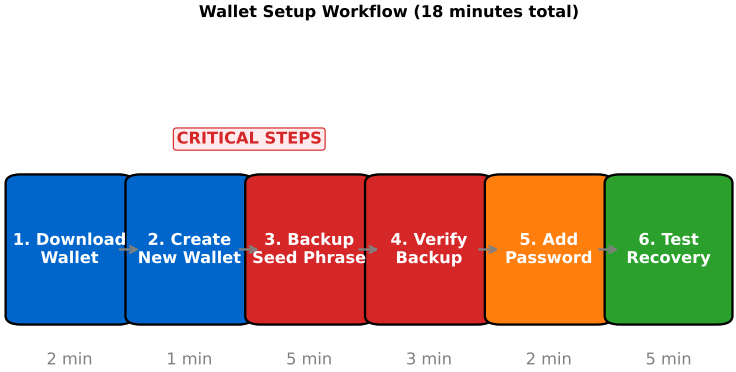
- Send and receive ETH and ERC-20 tokens
- Interact with decentralized applications (dApps)
- Multiple account management
- Network switching (Mainnet, testnets, custom networks)

Security Levels for Key Storage



For this lab, Tier 2 (hot wallet + 2FA) is the minimum acceptable level

Wallet Setup Workflow



Seed phrase backup (steps 3-4) is the most critical part of wallet setup

Exercise 1: Installing MetaMask

Installation Steps:

1. Visit official website: `https://metamask.io`
2. Click "Download" and select your browser
3. Install extension from official browser store
4. Pin extension to browser toolbar
5. Click MetaMask icon to launch setup wizard

Security Warning:

- Only install from official sources
- Beware of phishing sites (check URL carefully)
- Fake extensions exist in browser stores

Exercise 2: Creating Your Wallet

Setup Wizard Steps:

1. Click "Create a new wallet"
2. Set a strong password (8+ characters)
3. Reveal and record your 12-word seed phrase
4. Confirm seed phrase by selecting words in correct order

Critical: Seed Phrase vs. Password

- Seed phrase = master backup (recovers wallet on any device)
- Password = local device protection (cannot recover wallet)
- **Lose seed phrase -¿ lose wallet permanently**

Exercise 3: Adding Sepolia Testnet

Why Use Testnets?

- Practice without risking real money
- Free testnet ETH available from faucets
- Identical functionality to mainnet

Adding Sepolia Network:

1. Click network selector (top-right dropdown)
2. Settings -¿ Advanced -¿ Show test networks (enable)
3. Select “Sepolia test network”

Sepolia Faucets:

- Alchemy: `https://sepoliafaucet.com`
- Infura: `https://www.infura.io/faucet/sepolia`

Exercise 4: Sending Your First Transaction

Transaction Steps:

1. Ensure you have Sepolia ETH (from faucet)
2. Click "Send" button in MetaMask
3. Enter recipient address (create second account or use classmate's)
4. Enter amount (e.g., 0.1 Sepolia ETH)
5. Review transaction details (gas fee, total)
6. Click "Confirm"
7. View in Activity tab

Understanding Gas Fees:

- Fee = gas units $\times$ gas price (in gwei)
- Sepolia: fees are negligible (testnet)

Security Best Practices

Critical Security Rules:

1. **Seed Phrase:** Never share, never store digitally
2. **Phishing Protection:** Verify URLs, bookmark trusted sites
3. **Network Verification:** Confirm correct network before transacting
4. **Transaction Approval:** Review recipient and amounts carefully

Common Threats:

- Phishing websites requesting seed phrase
- Malicious dApps with unlimited token approvals
- Clipboard malware replacing copied addresses
- Fake support scams via DM

Lab Deliverables

Submit the following:

1. **Screenshot Collection:**
   - MetaMask wallet showing Sepolia network
   - Transaction details from Activity tab
   - Etherscan transaction page (confirmed)
2. **Lab Report (1-2 pages):**
   - Your Sepolia address
   - Transaction hash of sent transaction
   - Reflection on seed phrase security

Submission Deadline: One week from lab session

Key Takeaways

- MetaMask is a non-custodial wallet (you control private keys)
- Seed phrase is the master backup for all accounts
- Testnets provide safe environment for learning
- Gas fees vary by network congestion
- Blockchain transactions are irreversible
- Security requires vigilance against phishing and scams