Aim: Installation of MetaMask and study spending Ether per transaction

Objective:

- To understand MetaMask.
- To understand how the transaction works on Ethereum.

Requirement:

- Web browser
- MetaMask extension

Ethereum is a decentralized blockchain platform that enables developers to build and deploy smart contracts and decentralized applications (dApps). It was created by Vitalik Buterin and launched in 2015. Ethereum operates on a decentralized network of computers (nodes) that work together to maintain the blockchain, a digital ledger that records all transactions and smart contract executions.

- **Smart Contracts**: Self-executing contracts with the terms of the agreement directly written into code. They automatically execute transactions or operations when certain conditions are met.
- **dApps**: Decentralized applications that run on the Ethereum blockchain, without a central authority controlling them.

Types of networks

Ethereum supports different types of networks, each designed for specific use cases and environments. These networks are primarily distinguished by their purpose, configuration, and the type of data they handle. Here are the main types of networks in Ethereum:

1. Mainnet

- **Purpose**: The Mainnet is the primary public Ethereum network where real transactions occur, and actual Ether (ETH) is used. It's the network where all production dApps (decentralized applications) are deployed and interact with each other.
- **Use Case**: Real-world applications, financial transactions, decentralized finance (DeFi), and non-fungible tokens (NFTs).
- **Security**: Highly secure, decentralized, and immutable. Transactions are irreversible once confirmed.
- **Currency**: ETH (Ether) with real-world value.

2. Testnets

Testnets are networks that simulate the Mainnet but use test Ether, which has no real-world value. These are primarily used for testing smart contracts, dApps, and network upgrades without risking real ETH.

Sepolia Testnet/Linea Sepolia

- **Purpose**: A more streamlined testnet compared to Goerli, often used for development and testing in a simpler environment.
- **Use Case**: Ideal for quick deployments and testing of dApps.
- **Currency**: Test ETH (no real-world value).

3. Private Networks

- **Purpose**: Private networks are isolated Ethereum networks that are not connected to the public Ethereum networks. These are used for development, testing, or running a blockchain within a specific organization.
- **Use Case**: Enterprise applications, internal testing, and experimentation with blockchain technology.
- **Customization**: Allows for custom configurations like consensus mechanisms, gas limits, and more.
- **Security**: Access can be restricted, making it suitable for sensitive data or private applications.

Ether (ETH) is the native cryptocurrency of the Ethereum blockchain. It is used primarily for two purposes:

1. **Transaction Fees (Gas Fees)**: When users perform transactions or execute smart contracts on the Ethereum network, they need to pay a fee called "gas." Ether is used to pay these gas fees.
2. **Value Transfer**: Ether can be sent between users as a form of digital currency, similar to Bitcoin.

MetaMask is a cryptocurrency wallet and gateway to the Ethereum blockchain. It is a browser extension (and also available as a mobile app) that allows users to interact with Ethereum-based dApps directly from their web browser.

- **Wallet Functionality**: MetaMask allows users to store, send, and receive Ether (ETH) and ERC-20 tokens (a type of token standard on Ethereum).

- **dApp Interaction**: MetaMask connects to dApps on the Ethereum blockchain, enabling users to perform actions such as buying NFTs, participating in decentralized finance (DeFi) platforms, and more.

Relation Between Ethereum, Ether, and MetaMask

1. **Ethereum is the underlying platform**: It's the blockchain that hosts smart contracts and dApps.
2. **Ether (ETH) is the currency**: It's used within the Ethereum network to pay for transactions, interact with smart contracts, and serve as a digital asset.
3. **MetaMask is the interface**: It acts as a user-friendly tool that allows people to interact with the Ethereum blockchain. MetaMask provides a secure way to manage Ether, participate in dApps, and send/receive ETH and tokens.

Example of Their Interaction

- **Using MetaMask**: A user might use MetaMask to access a decentralized finance (DeFi) application on the Ethereum network.
- **Spending Ether**: To perform any action, such as trading tokens or lending assets, the user will need to pay gas fees in Ether.
- **Ethereum Blockchain**: The transaction is then processed and recorded on the Ethereum blockchain, where it becomes part of the permanent record.

Summary

- **Ethereum**: A blockchain platform for dApps and smart contracts.
- **Ether (ETH)**: The cryptocurrency used within the Ethereum network.
- **MetaMask**: A wallet and browser extension that enables users to interact with the Ethereum blockchain, manage Ether and use dApps.

Together, these elements provide a robust ecosystem for decentralized applications and financial transactions on the blockchain.

To install MetaMask and perform a test transfer of Ether (ETH), follow these steps:

1. Install MetaMask

On a Web Browser (e.g., Chrome, Firefox, Brave)

1. **Go to the MetaMask Website**:
    - Visit the official MetaMask website: https://metamask.io/.
2. **Download the MetaMask Extension**:

- Click on “Download” and choose your browser (Chrome, Firefox, Brave, or Edge).
- You’ll be directed to the browser’s extension store (e.g., Chrome Web Store).
- Click “Add to Chrome” (or the equivalent button for your browser) to install the extension.

3. **Set Up MetaMask**:
   - After installation, click on the MetaMask icon in your browser's toolbar.
   - Click “Get Started.”
   - Choose “Create a Wallet” since you are new to MetaMask.
   - Create a strong password.
   - **Backup Your Recovery Phrase**: You’ll be shown a 12-word recovery phrase. Write it down and store it securely. This phrase is crucial for recovering your wallet if you forget your password or lose access to your device.
   - Confirm your recovery phrase to complete the setup.

On a Mobile Device

1. **Download MetaMask**:
   - Open the App Store (iOS) or Google Play Store (Android).
   - Search for “MetaMask” and download the app.
2. **Set Up MetaMask**:
   - Follow the same setup process as the browser extension (Create a Wallet, set a password, backup your recovery phrase, etc.).

2. Get Test Ether (ETH)

For testing purposes, you can use a test network like the **Sepolia** or **Linea Sepolia** test networks where you can receive test ETH, which has no real-world value but can be used for practice.

1. **Switch to a Test Network**:
   - Click on the network dropdown at the top of the MetaMask interface (it might show "Ethereum Mainnet" by default).
   - Select a test network like **Sepolia** or **Linea Sepolia.**
2. **Get Test ETH**:
   - Visit an ethereum faucet site that provides free test ETH.
   - Enter your MetaMask wallet address (click on the account name at the top of MetaMask to copy your address).
   - Request a small amount of test ETH, which will be sent to your MetaMask wallet.

3. Perform a Test Transfer

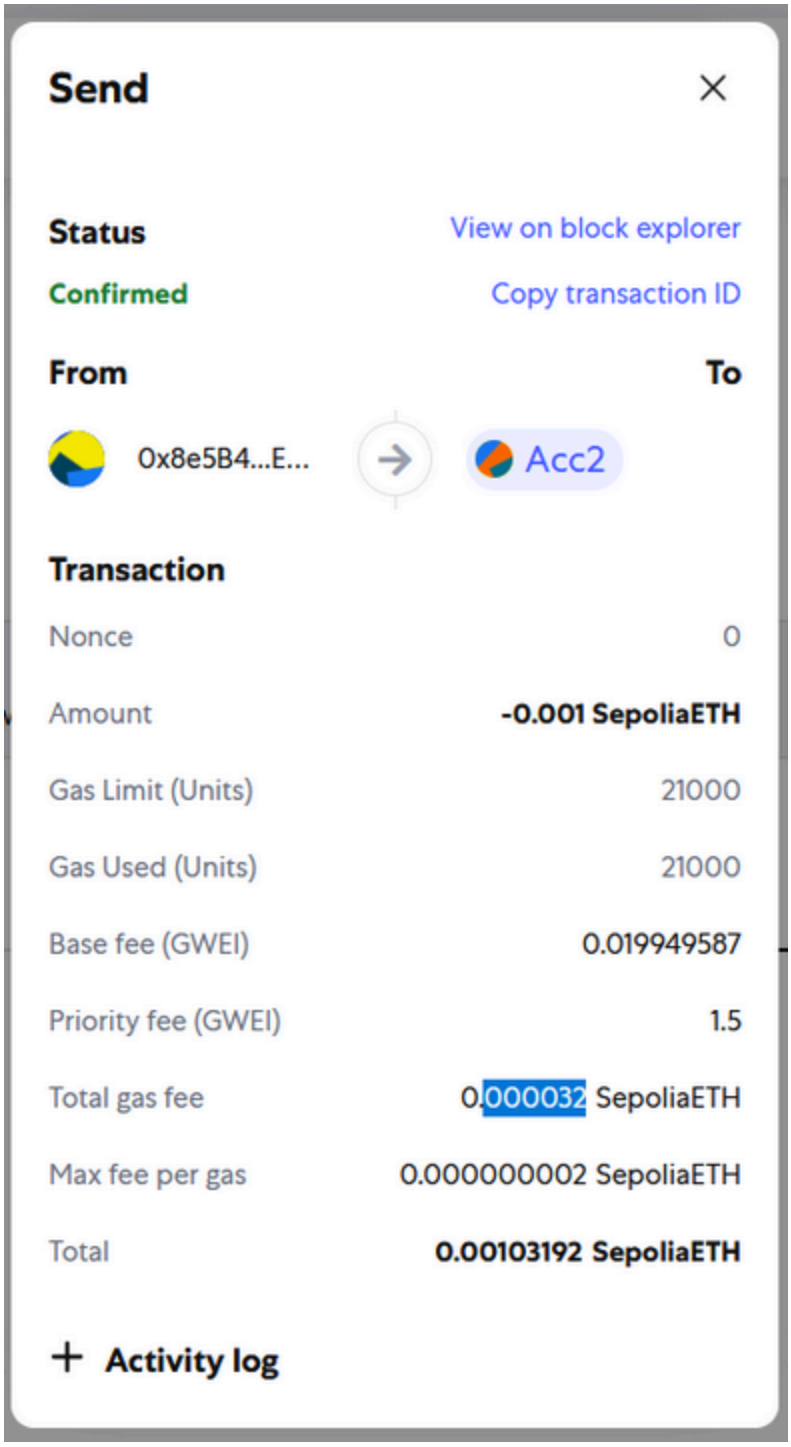
1. **Initiate a Transfer**:
    - In MetaMask, click on “Send.”
    - Enter the recipient’s wallet address (you can send to another MetaMask wallet or even your own address for testing).
2. **Confirm the Transaction**:
    - Review the details of your transaction.
    - Click “Confirm” to send the test ETH.
3. **Check Transaction Status**:
    - MetaMask will display the transaction status in your activity tab.

Summary

1. **Install MetaMask** on your browser or mobile device.
2. **Set up MetaMask** by creating a wallet and securing your recovery phrase.
3. **Switch to a Test Network**
4. **Get a test ETH** from a faucet.
5. **Send test ETH** to another wallet address using the “Send” function in MetaMask.

This process will allow us to familiarize ourselves with using MetaMask and Ethereum without risking real funds

Example:



Details:

Gas Fees (Costs associated with processing the transaction on the blockchain):

- **Gas Limit (Units): 21000:** The maximum amount of gas units the sender was willing to pay for this transaction.

- **Gas Used (Units): 21000:** The actual amount of gas units consumed by the transaction. In this case, the transaction used the entire gas limit.
- **Base fee (GWEI): 0.019949587:** The base fee is a portion of the transaction fee that is burned (removed from circulation) and is determined by network congestion. GWEI is a small denomination of Ether (1 Ether = 109 GWEI).
- **Priority fee (GWEI): 1.5:** Also known as the "miner tip," this is an optional fee paid to validators/miners to prioritize your transaction.
- **Total gas fee: 0.000032 SepoliaETH:** This is the total cost of gas for this transaction, converted to SepoliaETH. This is calculated based on the gas used and the effective gas price (base fee + priority fee).
- **Max fee per gas: 0.00000002 SepoliaETH:** This is the maximum amount the sender was willing to pay per unit of gas.

Summary:

- **Total: 0.00103192 SepoliaETH:** This is the total amount deducted from the sender's wallet, which includes the amount sent (0.001 SepoliaETH) plus the total gas fee (0.000032 SepoliaETH).

0xCb58F6be93b00268C0eF306038c124eFAe95ba28

1. mom	2. between	3. indoor
4. patient	5. congress	6. under
7. loud	8. strategy	9. danger
10. shoulder	11. float	12. suffer

0xb13eC3E3c769F07acD8eD18Bc9e030b82434B25b