

Deploy Your First Crypto Token

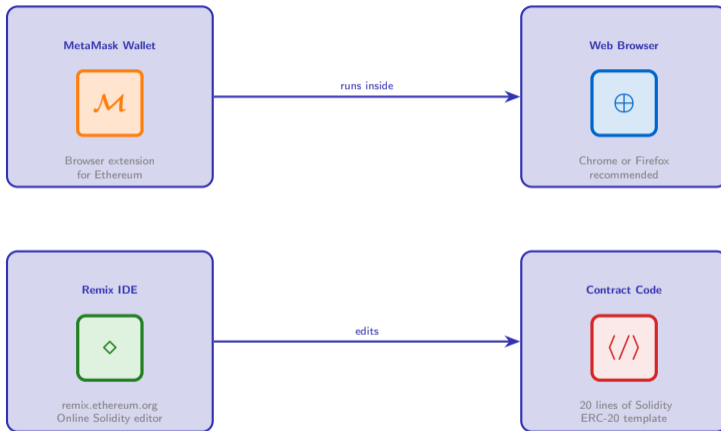
A Visual Recipe



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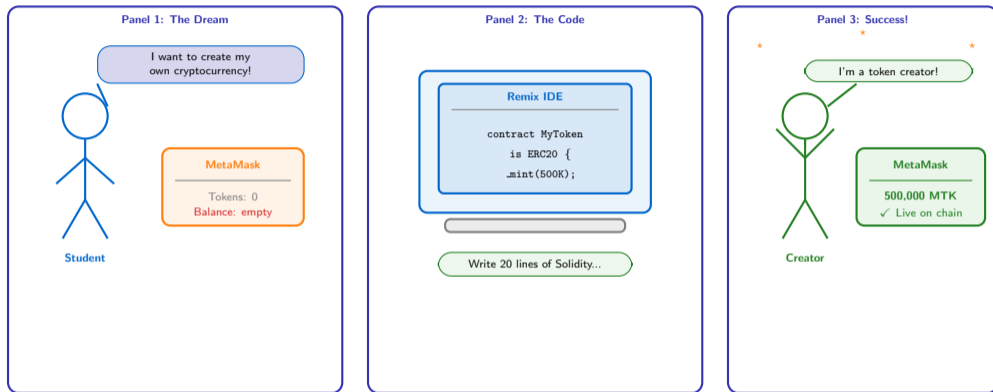
University Lecture Series

What You'll Need



All tools are free — MetaMask is a browser extension, Remix is a web app, and testnet ETH costs nothing.

The Mission



Creating a token is writing a smart contract — anyone can do it in minutes.

Step 1 — Write the Contract

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity ^0.8.20;
3
4 import "@openzeppelin/contracts/token/ERC20/ERC20.sol";
5 import "@openzeppelin/contracts/access/Ownable.sol";
6
7 contract MyToken is ERC20, Ownable {
8     uint256 public constant MAX_SUPPLY
9         = 1_000_000 * 10**18;
10
11     constructor()
12         ERC20("MyToken", "MTK")
13         Ownable(msg.sender)
14     {
15         _mint(msg.sender, 500_000 * 10**18);
16     }
17
18     function mint(address to, uint256 amount)
19         public onlyOwner
20     {
21         require(
22             totalSupply() + amount <= MAX_SUPPLY,
23             "Exceeds cap"
24         );
25         _mint(to, amount);
26     }
27
28     function burn(uint256 amount) public {
29         _burn(msg.sender, amount);
30     }
31 }
```

Name & Symbol

"MyToken", "MTK"
Human-readable identity

Initial Supply

500K of 1M cap (50%)
Minted to deployer

Mint (Owner Only)

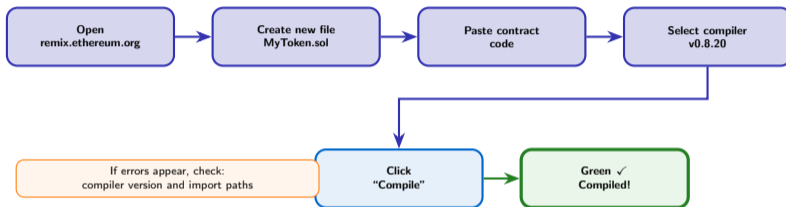
Can mint remaining 500K
Enforces MAX_SUPPLY cap

Burn (Anyone)

Any holder can burn
their own tokens

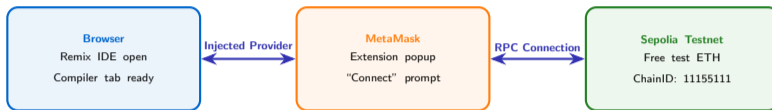
This contract gives you a capped, mintable, burnable ERC-20 token — 500K minted now, 500K mintable later.

Step 2 — Compile in Remix



Remix compiles Solidity in your browser — no installation needed. A green checkmark means success.

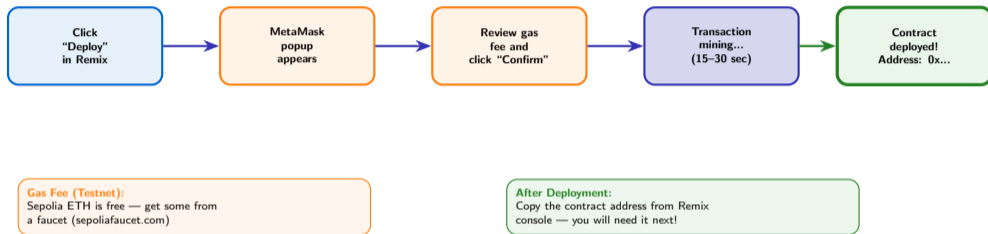
Step 3 — Connect MetaMask



Steps: 1. Click MetaMask icon in browser toolbar 2. Select "Sepolia test network" from network dropdown 3. In Remix: Environment → "Injected Provider – MetaMask" 4. MetaMask pops up → click "Connect" 5. Verify: Remix shows your Sepolia address and balance

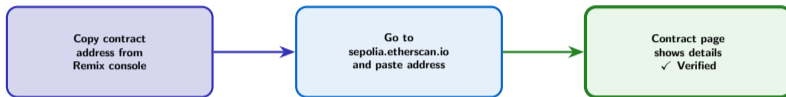
MetaMask bridges your browser to the blockchain — Remix talks to Sepolia through it.

Step 4 — Deploy!



Deployment sends your compiled bytecode to the blockchain — MetaMask signs the transaction for you.

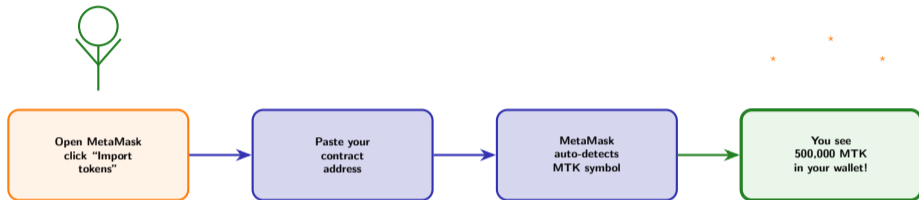
Step 5 — Verify on Etherscan



On Etherscan you will see: Contract address • Creator address • Transaction hash • Token name (MTK) • Total supply (500,000) • Token transfers

Etherscan is the blockchain explorer — it confirms your contract is live and lets anyone inspect it.

Step 6 — Add Token to MetaMask



Tip: If the token doesn't appear automatically, click "Import tokens" at the bottom of your asset list and paste the contract address. MetaMask will fill in the name and decimals.

MetaMask needs to "know" about custom tokens — importing by address links your token to your wallet view.



Token Deployment Recipe

Ingredients:

✓ MetaMask wallet
(with Sepolia test ETH)

✓ Web browser
(Chrome or Firefox)

✓ Remix IDE
(remix.ethereum.org)

✓ Contract code
(from Step 1)

Steps:

1. Open remix.ethereum.org in your browser
2. Create a new file → name it `MyToken.sol`
3. Paste the complete contract code
4. Select Solidity compiler version 0.8.20
5. Click "Compile `MyToken.sol`" → wait for ✓
6. Switch Environment to "Injected Provider – MetaMask"
7. Ensure MetaMask is on **Sepolia** testnet
8. Click "Deploy" → confirm transaction in MetaMask
9. Copy your contract address from the console
10. Go to sepolia.etherscan.io → verify it's live!

Yield:

1 fully functional ERC-20 token on Sepolia testnet

Prep time: 5 min • Deploy time: 2 min • Verification: 1 min • Total: under 15 minutes

Difficulty: Beginner • Cost: Free (testnet) • Serves: unlimited tokens

Follow this recipe step by step — you will have your own token deployed in under 15 minutes.

What Can Go Wrong?

Common Error	Fix
Compiler version mismatch "ParserError: Source not found"	Select 0.8.20 in Remix compiler dropdown Remix auto-imports OpenZeppelin — ensure you are online
MetaMask not connecting "Insufficient funds for gas"	Refresh page, then Environment → "Injected Provider" Get free Sepolia ETH from sepoliafaucet.com
Transaction stuck / pending	Speed up in MetaMask or wait — Sepolia can be slow
Wrong network (Mainnet!)	STOP — switch to Sepolia immediately. Mainnet costs real money
Token not visible in wallet	Import token manually: paste contract address in MetaMask
"Exceeds cap" on mint	You hit MAX_SUPPLY (1M). Burn tokens first or adjust cap

Most errors come from wrong network or compiler version — always double-check these two settings first.

Key Takeaways

1. An ERC-20 token is just a **smart contract** — about 20 lines of Solidity code.
2. You need only **four free tools**: MetaMask, a browser, Remix IDE, and the contract code.
3. The full deploy cycle takes **under 15 minutes**: write, compile, connect, deploy, verify.
4. Always use a **testnet first** (Sepolia) — deploying on mainnet costs real ETH.
5. A token alone is **not a cryptocurrency** — it needs liquidity, utility, and a community.

Creating a token is the easy part — making it valuable requires real-world adoption and utility.