Ethereum & Smart Contracts: Course Preview

INTRO Preview

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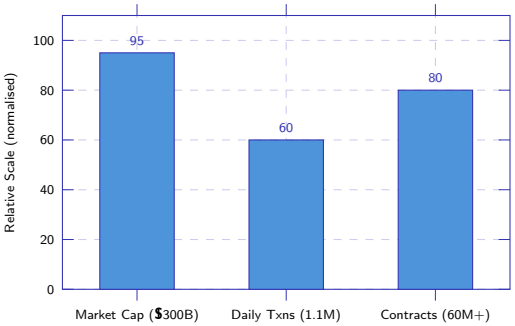
Why Ethereum Matters

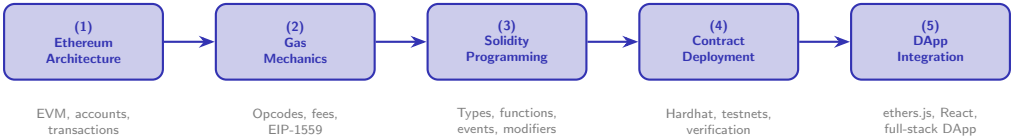


Key Metrics

- ✓ **$300B+** market capitalisation
- ✓ **1.1M+** transactions per day
- ✓ **60M+** smart contracts deployed
- ✓ **$50B+** TVL in DeFi protocols

Ethereum: The backbone of Web3 and decentralised finance

Course Roadmap



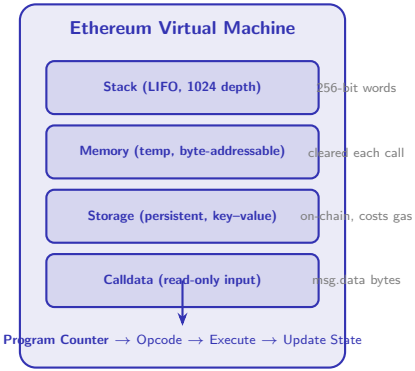
Prerequisites

- ✓ Basic programming knowledge
- ✓ Familiarity with blockchain concepts

Outcomes

- ✓ Write and deploy smart contracts
- ✓ Build end-to-end decentralised apps

EVM Architecture Overview



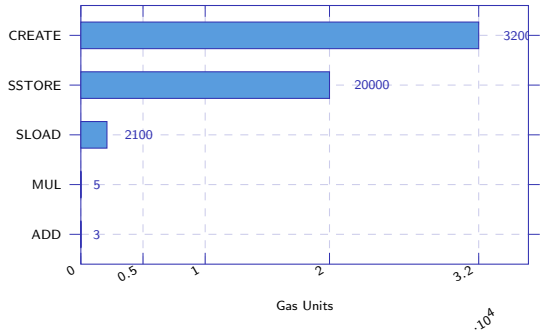
Opcode Execution Cycle

1. **Fetch**: PC reads next opcode byte
2. **Decode**: Map opcode to operation
3. **Execute**: Manipulate stack/memory
4. **Charge**: Deduct gas cost
5. **Advance**: Increment PC

Two Account Types

- ✓ **EOA**: Externally Owned (private key)
- ✓ **Contract**: Code + Storage, no key

Gas Economics at a Glance



EIP-1559 Fee Structure

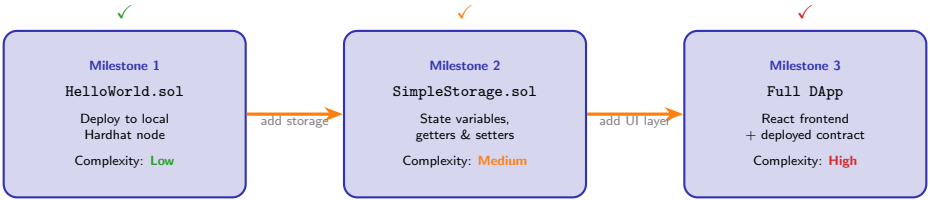
Component	Destination
`base_fee`	Burned (✓ deflationary)
`priority_fee`	Validator tip
Total fee	`base + priority`

Gas Formula

$$\text{Cost} = \text{gas\_used} \times (\text{base\_fee} + \text{priority\_fee})$$

⋆ Storage ops dominate gas costs — minimise SSTORE calls

What You'll Build



By the end: deploy your own contract on a public testnet and interact with it via a live web interface.

You already know more than you think — every expert started with `HelloWorld`. Let's build!