

# EVM Fundamentals

- The EVM (Ethereum Virtual Machine) runs contract code
- Contract code that actually gets executed on every node is EVM code
  - EVM code is a low-level, stack-based bytecode language
  - Similar to JVM's bytecode
- Every Ethereum node runs the EVM as part of its block verification procedure

# EVM Design Goals

- Simplicity
  - Op-codes should be as low-level as possible
  - The number of op-codes should be minimized
- Space Efficiency: EVM assembly should be as compact as possible
- Determinism
  - The execution of EVM code should be deterministic
  - The same input state should always yield the same output state
- Specialization
  - Should easily handle 20-byte addresses and custom cryptography with 32-byte values
  - Modular arithmetic used in custom cryptography
  - Read block and transaction data, interact with state
- Security: Should be easy to create gas cost model for operations so VM is non-exploitable

# EVM Code Compilation

