Structure of a Solidity Smart Contract

Part 18 - Basic Elements of Solidity

Basic Elements of Solidity

Similarity to Object-Oriented Languages

- Inheritance

Variables

- State variables, memory areas

Functions

Function modifiers and visibility

Events, Errors

Struct types, Enum types

State variables

Located in a memory area called *storage*

Other memory areas (reminder): memory, calldata; stack

Used for permanent storage of contract variables

- Together they represent the contract state

Functions, function modifiers and visibility

Define contract behavior

Defined inside or outside of the contract (body)

Function modifiers

- Modify function behavior
- State variable access (read/write, read-only, no-read/no-write)

Function visibility

- Public, private, internal, external

Events, Errors

Events

- Convenience interfaces with EVM logging facilities
- Signals sent from functions
- Enable monitoring and debugging

Errors

- Introduce descriptive names and data
- Very helpful during debugging
- Commonly used with `revert` statements

Struct types, enum types

Struct types

- More complex, custom data types
- Grouped variables
- Used by instancing later in the source code

Enum types

- Special custom types
- Contain a finite set of states
- Commonly used for tracking the contract state