

# Data Types in Solidity Smart Contract

Part 24 - Function Types

# Function Types

Function types = types (descriptors) of functions

Function type is determined by

- Parameter types
- Function visibility
- State mutability
- Return types (if any)

Function type syntax (condensed form):

```
function (<parameter types>) {internal|external}  
[pure|view|payable] [returns (<return types>)]
```

# Function Type Variants

## Internal functions

- Function calls originate within the contract

## External functions

- Function calls originate from other contracts
- Address
- Function signature

# Function Type Conversions

Function type A is convertible to function type B if:

- Identical parameters, return types and function visibility
- State mutability: A's is more restrictive than B's

# Function Type Calls

Public function `f` can simultaneously act like

- internal: `f()`
- and external: `this.f()`

# Function Type Assignment

An internal function is assignable to an internal function type

Internal function type locations (both contracts):

- Private functions
- Internal functions
- Public functions

An external or public function is assignable to an external function type

- Libraries are excluded - `delegatecall` requirement!

# Function Type Members

External and public functions - two property members:

- `.address` - returns the address of the contract of the function
- `.selector` - returns the ABI function selector