

# Example Codes

I'll define a few pseudo-code functions and constants to make snippets more concise.

Some are also defined in the [lib/Token.sol](#)

...

Copy // Let's define a function for you to see more comfortably

```
function toTokenInfo(bytes1 _tokenRefIndex, uint8 _method, int128 _amount) pure returns (bytes32) {
    return bytes32(bytes1(_tokenRefIndex)) | bytes32(bytes2(uint16(_method))) | bytes32(uint256(uint128(uint256(int256(_amount))))); }
function toPoolId(uint8 _optype, address _pool) pure returns (bytes32) { return bytes32(bytes1(_optype)) | bytes32(uint256(uint160(address(_pool)))); }
function toToken(ERC20 tok) pure returns (Token) { return Token.wrap(bytes32(uint256(uint160(address(tok))))); }
function toToken(TokenSpecType spec, uint8 id_, address addr_) pure returns (Token) { return Token.wrap(
    TokenSpecType.unwrap(spec_) | bytes32((bytes32(uint256(id_)) << ID_SHIFT) & ID_MASK) | bytes32(uint256(uint160(addr_))) ); } // use
NATIVE_TOKEN for ETH since we don't use weth internally
Token constant NATIVE_TOKEN = Token.wrap(0xEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE); // ref:
lib/Token.sol
uint8 constant SWAP = 0; uint8 constant GAUGE = 1; uint8 constant CONVERT = 2; uint8 constant VOTE = 3; uint8 constant USERBALANCE = 4;

uint8 constant EXACTLY = 0; uint8 constant AT_MOST = 1; uint8 constant ALL = 2;
```

...

The helper functions above will help you populate the Token/poolId/TokenInfo struct.

These 3 components are all you need for execute!

[Swap](#)

[Add Liquidity](#)

[Stake](#)

[Voting](#)

[Multicall operations](#)

[cf\) wrapper functions](#)

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