

## Function Reference

Module	Function	Visibility	Type / Behavior	Description
MockERC20.sol	constructor(name, symbol, initialSupply)	public	State-mutating / Setup	Initializes token name, symbol and mints initial supply to owner.
	mint(to, amount)	external	State-mutating / Minting	Allows the owner to create additional tokens.
	*inherited from ERC20*	public/external	State-mutating / ERC-20 standard	Standard ERC-20 functions: transfer, approve, transferFrom, etc.
MockSwapVerifier.sol	addLiquidity(tokenA, tokenB, amountA, amountB)	external	State-mutating / Liquidity	Creates a new pool or adds funds to a token pair.
	removeLiquidity(tokenA, tokenB, liquidity)	external	State-mutating / Liquidity	Burns LP tokens and returns underlying token amounts.
	swap(tokenIn, amountIn, tokenOut, amountOutMin)	external	State-mutating / Swap	Swaps one token for another via constant-product formula.
	getReserves(tokenA, tokenB)	external view	Read / Pool state	Returns current reserves of Token A and Token B.
	getPair(tokenA, tokenB)	external view	Read / Metadata	Returns the address of the LP token contract for the pair.
SimpleSwap.sol	constructor(_verifierAddress)	public	Setup	Stores the address of the pool/verifier contract.
	_quote(amountA, reserveA, reserveB)	internal pure	Utility / Calculation	Calculates optimal ratio for adding liquidity.
	getAmountOut(amountIn, reserveIn, reserveOut)	public pure	Utility / Calculation	Computes swap output amount considering a 0.3% fee.
	getPrice(tokenA, tokenB)	external view	Utility / Read	Returns price of 1 Token A in Token B (18 decimals).
	addLiquidity(...)	external	State-mutating / Liquidity	Orchestrates transfers and calls pool.addLiquidity.
	removeLiquidity(...)	external	State-mutating / Liquidity	Orchestrates LP burn and token return.
	swapExactTokensForTokens(...)	external	State-mutating / Swap	Orchestrates token transfer-in, pool swap, and token transfer-out.
SwapVerifier.sol	verify(swapContract, tokenA, tokenB, amountA, amountB, amountIn, author)	external	Test-harness / Verification	Runs end-to-end checks against your router and logs the author.
	authors(index)	public view	State / Record	Lists all authors who passed the verification.