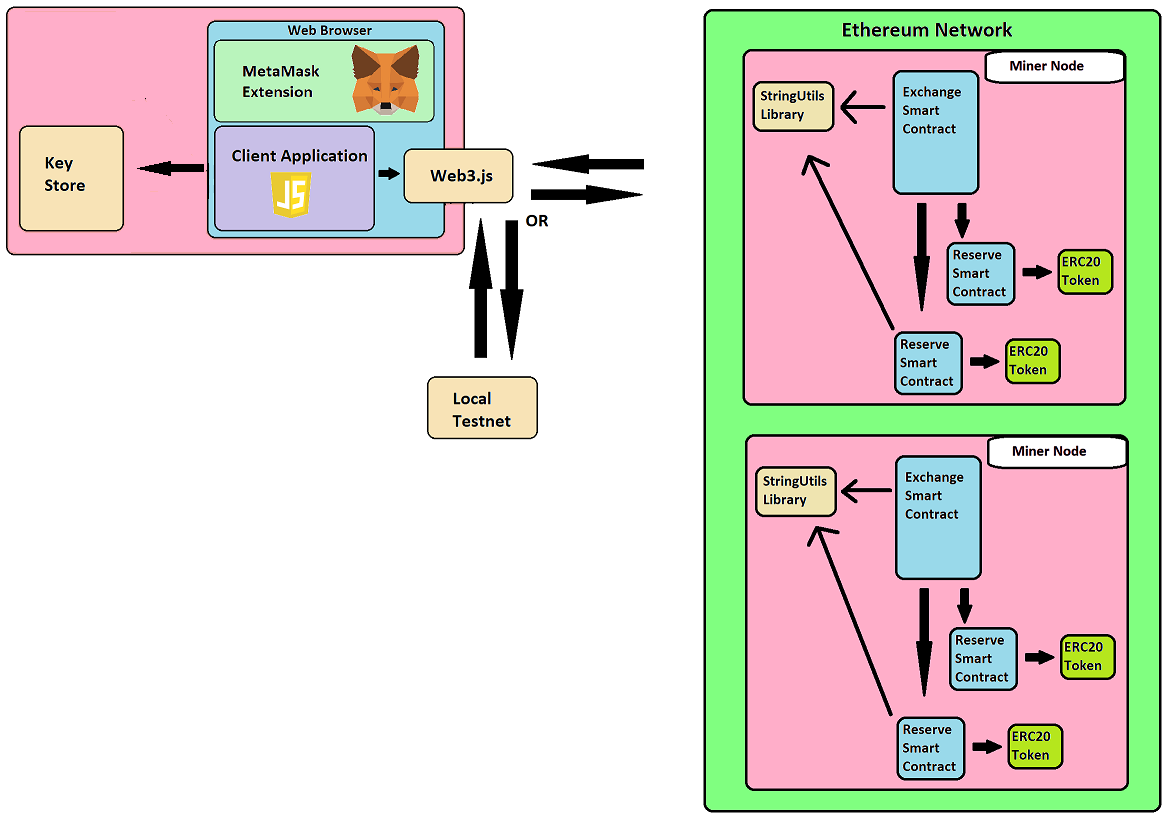
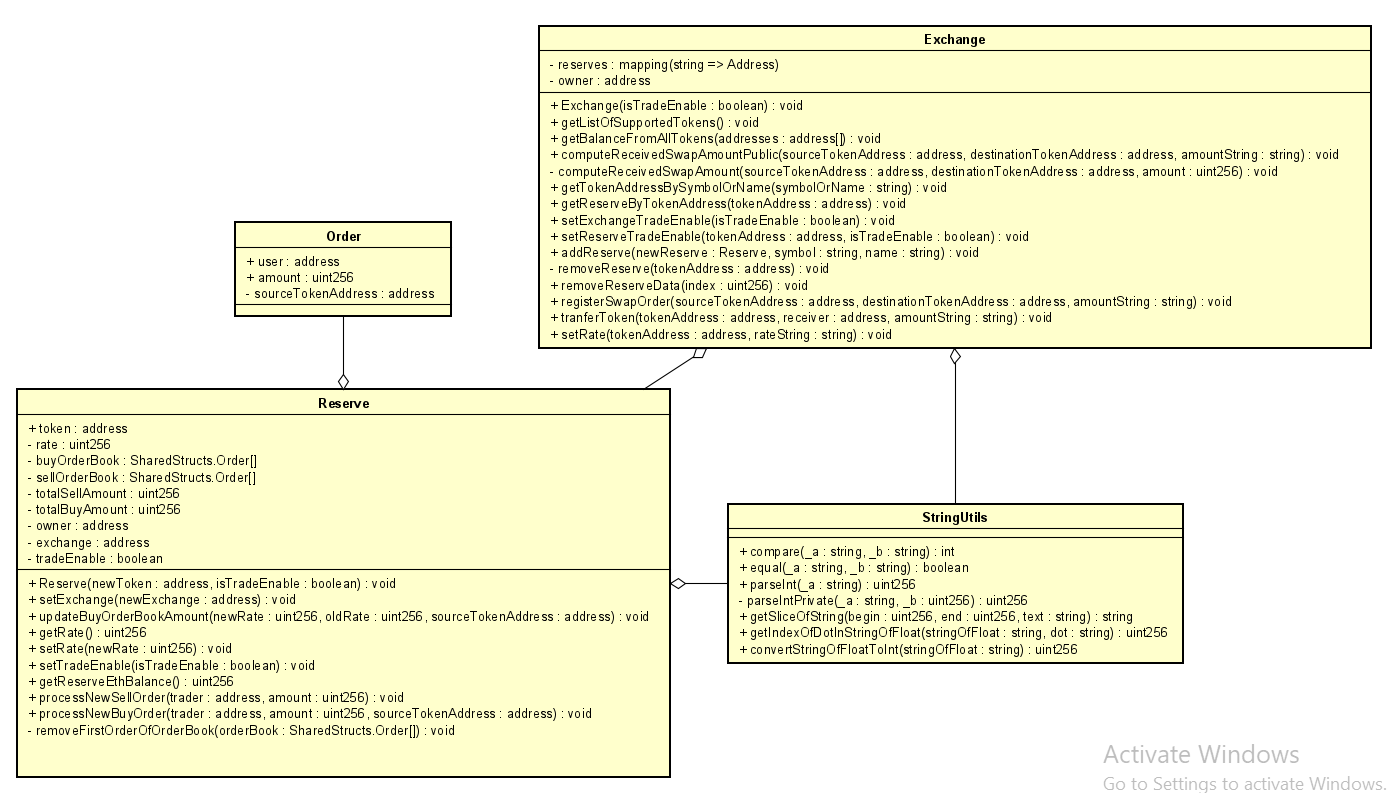
**SOFTWARE DESIGN**

**FunixSwap**

**1. Architecture**



**2. Class Design**



1. **Functional Design**
2. **Exchange Smart Contract**

|  |  |
| --- | --- |
| **ID:** | F1 |
| **Function name:** | Exchange |
| **Return type:** | void |
| **Purpose:** | Constructor |
| **Signature:** | function Exchange (bool isTradeEnable) public {} |

|  |  |
| --- | --- |
| **ID:** | F2 |
| **Function name:** | getListOfSupportedTokens |
| **Return type:** | address[] |
| **Purpose:** | Get list of supported tokens |
| **Signature:** | function getListOfSupportedTokens() public view returns (address[]) {} |

|  |  |
| --- | --- |
| **ID:** | F3 |
| **Function name:** | computeReceivedSwapAmountPublic |
| **Return type:** | uint256 |
| **Purpose:** | Get amount of destination token will received, used for web3 call |
| **Signature:** | function computeReceivedSwapAmountPublic(address sourceTokenAddress, address destinationTokenAddress, string amountString) public view returns (uint256){} |

|  |  |
| --- | --- |
| **ID:** | F4 |
| **Function name:** | computeReceivedSwapAmount |
| **Return type:** | uint256 |
| **Purpose:** | Get amount of destination token will received, used private in contract |
| **Signature:** | function computeReceivedSwapAmount(address sourceTokenAddress, address destinationTokenAddress, uint256 amount) private view returns (uint256){} |

|  |  |
| --- | --- |
| **ID:** | F5 |
| **Function name:** | getTokenAddressBySymbolOrName |
| **Return type:** | address |
| **Purpose:** | Get token address by token's symbol or name |
| **Signature:** | function getTokenAddressBySymbolOrName(string symbolOrName) public view returns (address) {} |

|  |  |
| --- | --- |
| **ID:** | F6 |
| **Function name:** | getReserveByTokenAddress |
| **Return type:** | address |
| **Purpose:** | Get reserve by token address |
| **Signature:** | function getReserveByTokenAddress(address tokenAddress) public view returns (address) {} |

|  |  |
| --- | --- |
| **ID:** | F7 |
| **Function name:** | setExchangeTradeEnable |
| **Return type:** | void |
| **Purpose:** | Set ‘tradeEnable’ flag of reserve |
| **Signature:** | function setExchangeTradeEnable(bool isTradeEnable) public onlyOwner {} |

|  |  |
| --- | --- |
| **ID:** | F8 |
| **Function name:** | addReserve |
| **Return type:** | void |
| **Purpose:** | Add new reserve |
| **Signature:** | function addReserve(Reserve newReserve, string symbol, string name) public onlyOwner{} |

|  |  |
| --- | --- |
| **ID:** | F9 |
| **Function name:** | removeReserve |
| **Return type:** | void |
| **Purpose:** | Remove reserve |
| **Signature:** | function removeReserve(address tokenAddress) public onlyOwner {} |

|  |  |
| --- | --- |
| **ID:** | F10 |
| **Function name:** | removeReserveData |
| **Return type:** | void |
| **Purpose:** | Called by function “removeReserve” to execute removing detail data of reserve which being removed |
| **Signature:** | function removeReserveData(uint256 index) private {} |

|  |  |
| --- | --- |
| **ID:** | F11 |
| **Function name:** | registerSwapOrder |
| **Return type:** | void |
| **Purpose:** | Register Swap Order |
| **Signature:** | function registerSwapOrder(address sourceTokenAddress, address destinationTokenAddress, string amountString) public payable {} |

|  |  |
| --- | --- |
| **ID:** | F12 |
| **Function name:** | tranferToken |
| **Return type:** | void |
| **Purpose:** | Transfer Token |
| **Signature:** | function tranferToken(address tokenAddress, address receiver, string amountString) public payable {} |

|  |  |
| --- | --- |
| **ID:** | F13 |
| **Function name:** | setRate |
| **Return type:** | void |
| **Purpose:** | Set new rate for a token |
| **Signature:** | function setRate(address tokenAddress, string rateString) public onlyOwner {} |

1. **Reserve Smart Contract.**

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| --- | --- |
| **ID:** | F14 |
| **Function name:** | Reserve |
| **Return type:** | void |
| **Purpose:** | Constructor |
| **Signature:** | function Reserve (address newToken, bool isTradeEnable, string rateString) public {} |

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| --- | --- |
| **ID:** | F15 |
| **Function name:** | N/A |
| **Return type:** | void |
| **Purpose:** | Empty payable fallback method just to receive some |
| **Signature:** | function() payable{} |

|  |  |
| --- | --- |
| **ID:** | F16 |
| **Function name:** | setExchange |
| **Return type:** | void |
| **Purpose:** | Set exchange address for reserve |
| **Signature:** | function setExchange(address newExchange) public onlyOwner {} |

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| --- | --- |
| **ID:** | F17 |
| **Function name:** | updateBuyOrderBookAmount |
| **Return type:** | void |
| **Purpose:** | Update amount in buyOrderBook due to changes of rate |
| **Signature:** | function updateBuyOrderBookAmount(uint256 newRate, uint256 oldRate, address sourceTokenAddress) public onlyExchange {} |

|  |  |
| --- | --- |
| **ID:** | F18 |
| **Function name:** | getRate |
| **Return type:** | uint256 |
| **Purpose:** | Get rate |
| **Signature:** | function getRate() public view returns (uint256){} |

|  |  |
| --- | --- |
| **ID:** | F19 |
| **Function name:** | setRate |
| **Return type:** | uint256 |
| **Purpose:** | Set rate |
| **Signature:** | function setRate(uint256 newRate) public onlyExchange {} |

|  |  |
| --- | --- |
| **ID:** | F20 |
| **Function name:** | setTradeEnable |
| **Return type:** | void |
| **Purpose:** | Set ‘tradeEnable’ flag |
| **Signature:** | function setTradeEnable(bool isTradeEnable) public onlyExchange {} |

|  |  |
| --- | --- |
| **ID:** | F21 |
| **Function name:** | getReserveEthBalance |
| **Return type:** | uint256 |
| **Purpose:** | Get balance of ether of this reserve |
| **Signature:** | function getReserveEthBalance() public view returns(uint256) {} |

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| --- | --- |
| **ID:** | F22 |
| **Function name:** | processNewSellOrder |
| **Return type:** | void |
| **Purpose:** | Process new sell order |
| **Signature:** | function processNewSellOrder(address trader, uint256 amount) public onlyExchange {} |

|  |  |
| --- | --- |
| **ID:** | F23 |
| **Function name:** | processNewBuyOrder |
| **Return type:** | void |
| **Purpose:** | Process new buy order |
| **Signature:** | function processNewBuyOrder (address trader, uint256 amount, address sourceTokenAddress) public onlyExchange {} |

|  |  |
| --- | --- |
| **ID:** | F24 |
| **Function name:** | removeFirstOrderOfOrderBook |
| **Return type:** | void |
| **Purpose:** | Remove first item of OrderBook |
| **Signature:** | function removeFirstOrderOfOrderBook (SharedStructs.Order[] storage orderBook) private {} |

1. **StringUtils Library.**

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| --- | --- |
| **ID:** | F25 |
| **Function name:** | compare |
| **Return type:** | int |
| **Purpose:** | Compare two string |
| **Signature:** | function compare(string \_a, string \_b) returns (int) {} |

|  |  |
| --- | --- |
| **ID:** | F26 |
| **Function name:** | equal |
| **Return type:** | bool |
| **Purpose:** | Check is two string equal |
| **Signature:** | function equal(string \_a, string \_b) returns (bool) {} |

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| --- | --- |
| **ID:** | F27 |
| **Function name:** | parseInt |
| **Return type:** | uint |
| **Purpose:** | Parse string to int |
| **Signature:** | function parseInt(string \_a) public view returns (uint) {} |

|  |  |
| --- | --- |
| **ID:** | F28 |
| **Function name:** | parseIntPrivate |
| **Return type:** | uint |
| **Purpose:** | Support for ‘parseInt’ function |
| **Signature:** | function parseIntPrivate(string \_a, uint \_b) private returns (uint) {} |

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| --- | --- |
| **ID:** | F29 |
| **Function name:** | getSliceOfString |
| **Return type:** | string |
| **Purpose:** | Get slice of string |
| **Signature:** | function getSliceOfString(uint256 begin, uint256 end, string text) public pure returns (string) {} |

|  |  |
| --- | --- |
| **ID:** | F30 |
| **Function name:** | getIndexOfDotInStringOfFloat |
| **Return type:** | uint256 |
| **Purpose:** | Get index of the first character dot ‘.’ in string |
| **Signature:** | function getIndexOfDotInStringOfFloat(string stringOfFloat, string dot) public view returns (uint256) {} |

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| --- | --- |
| **ID:** | F31 |
| **Function name:** | convertStringOfFloatToInt |
| **Return type:** | uint256 |
| **Purpose:** | Parse string of float to uint with decimal is 18 |
| **Signature:** | function convertStringOfFloatToInt(string stringOfFloat) public view returns (uint256) {} |