

# Sheet 3

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1. I used the contract example - MyToken from <https://www.ethereum.org/token>.

The functionality is that, the contract owner can put certain amount values into another account. And it also allocates 5000 balance to contract owner.

2. Code of contract – Simple as follow:

```
pragma solidity >= 0.4.22 < 0.6.0;
```

```
contract Simple {  
  
    mapping (address => uint256) public balanceOf;  
  
    constructor() public {  
        balanceOf[msg.sender]=5000;  
    }  
  
    function transfer(address _to, uint256 _value) public returns (bool success){  
        require(balanceOf[msg.sender] >= _value);  
        require(balanceOf[_to] + _value >= balanceOf[_to]);  
        balanceOf[msg.sender]-=_value;  
        balanceOf[_to]+=_value;  
        return true;  
    }  
}
```

define following parameters to create the contract in block.

1)

```
var contractTemplate
```

```
=web3.eth.contract(JSON.parse(contractContent.contracts["simple.sol:Simple"].abi))
```

2)

```
var gasValue = eth.estimateGas({data:"0x"+contractContent.contracts["simple.sol:Simple"].bin})
```

3)

```
var contractInst = contractTemplate.new({from: eth.accounts[1],  
data:"0x"+contractContent.contracts["simple.sol:Simple"].bin,gas:gasValue},function(e,contract)  
{ if(typeof contract.address !== 'undefined'){console.log('Contract mined! address:'+  
contract.address + 'transactionHash:'+contract.transactionHash);}});
```

3. I used eth.contract([contract name].address) to check the information.

```
> eth.contract(contractInst.address)  
{  
  abi: "0xdb79ffb797cc8f1806cf67cc7d010800a98dd2fe",  
  eth: {  
    accounts: ["0xd17f08773b79984b814e0922ed74048195ebfeda", "0x02b75772d1  
0e8a57f7d96"],  
    blockNumber: 66573,  
    coinbase: "0xd17f08773b79984b814e0922ed74048195ebfeda",  
    compile: {  
      l1l: function(),  
      serpent: function(),  
      solidity: function()  
    },  
    defaultAccount: undefined,  
    ...  
  }  
}
```

According to "blockNumer: 66573", I think this contract is in block 66573.

4. a specication of how your contract can be used

1) to look up the balance.

Using [contract name].balanceOf([account])

2)

By using [contract name].transfer.call(eth.accounts[0], web3.toWei(1,"ether")) to run a transaction in local EVM, while by using [contract name].transfer.sendTransaction(eth.accounts[0], web3.toWei(1,"ether", {from:eth.accounts[1]})) , transaction will be recorded on blockchain. But our contract doesn't work well somehow. (always return false, so means that cannot make the transaction)

5. a documentation of your usage in at least one transaction, such that your transaction can be found on the blockchain.

```
> contractInst.transfer.sendTransaction(eth.accounts[0], web3.toWei(1,"ether"), {from:eth.accounts[1]})
"0x66192a7e4b4c623dd6c5d8236e3163ef77136c5036e30ece94f324837bf4b57f"
> miner.start()
```

```
INFO [02-06 19:32:32] Submitted transaction          fullhash=0x66192a7e4b4c623dd6c5d8236e3163ef77136c5036e30ece94f324837bf4b57f recipient=0xDB79
7Cc7D010800A98Dd2Fe
INFO [02-06 19:32:52] Updated mining threads          threads=0
INFO [02-06 19:32:52] Transaction pool price threshold updated price=18000000000
INFO [02-06 19:32:52] Updated mining threads          threads=0
INFO [02-06 19:32:52] Transaction pool price threshold updated price=18000000000
INFO [02-06 19:32:52] Starting mining operation
INFO [02-06 19:32:52] Commit new mining work          number=66841 txs=1 uncles=0 elapsed=201.206µs
INFO [02-06 19:32:52] □□ block reached canonical chain number=66833 hash=80a7ca...296c6d
INFO [02-06 19:32:52] □□ block reached canonical chain number=66834 hash=a96d29...4a5dae
INFO [02-06 19:32:52] □□ block reached canonical chain number=66835 hash=f4ffde...56452d
INFO [02-06 19:32:54] Successfully sealed new block   number=66841 hash=8d8b11...bc2841
INFO [02-06 19:32:54] □□ block reached canonical chain number=66836 hash=23e459...5da724
INFO [02-06 19:32:54] □□ mined potential block       number=66841 hash=8d8b11...bc2841
INFO [02-06 19:32:54] Commit new mining work          number=66842 txs=0 uncles=0 elapsed=91.165µs
```