

# Blockchain Development Challenge @ HackerEarth 2019

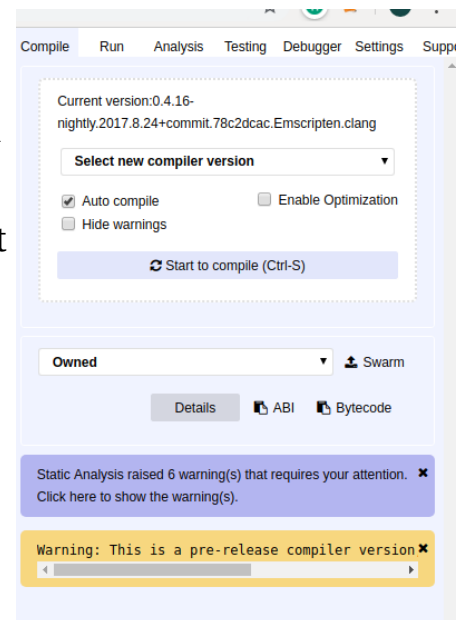
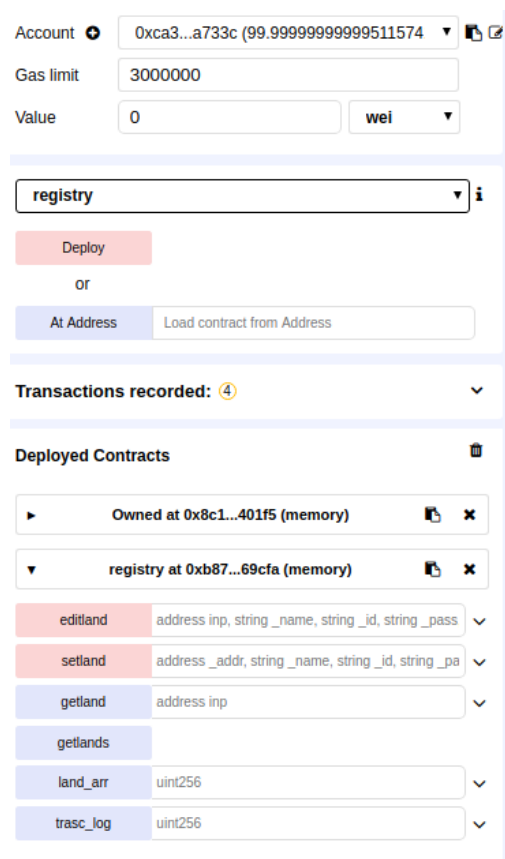
## Submission

Submitted by  
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### Deployment Instructions:

- Copy the Smart Contract in registry.sol file and head over to [remix.ethereum.org](https://remix.ethereum.org)
- Create a new file by clicking + icon on top left most column
- Paste the code in the editor
- Select the compiler version 0.4.16 and turn on auto compile and click Start to compile.
- After this move to the Run tab and select and deploy both Owned and registry contracts if its successful who new instances would pop below the deployment button.



Account- various accounts with 100 ethers to process  
editland- edit land registry details  
setland- create registry  
getland – get land details from the account hash  
getlands – array of addresses allocated with the account  
land\_arr, trasc\_log – should be used to manage transaction (currently non functional)

## ShortComings:

- No proper functional front end yet due to the tremendous changes in solidity 5.0.
- No implementation of the transaction module.

## Features:

- The Blockchain is functional and records variuos data appropriately
- The Blockchain have a immunity against tamering of data from another account ie: alex created the block, so only alex account can use editland()
- The Blockchain have a seperate and cummilative information API.

## ScreenShots

The screenshot displays the Remix Ethereum IDE interface. The main editor shows a Solidity function `registry()` being executed. The console on the left indicates a successful transaction from account `0xca3...a733c` to the `registry.setland` function. The transaction details panel on the right provides a comprehensive overview of the transaction.

Field	Value
status	0x1 Transaction mined and execution succeed
transaction hash	0xdea2bb2a7e7d3a382ba2bf2e8b4d2c3bc83441d4c6e7a44d932e8d4f14d23842
from	0xca35b7d915458ef540ade6068dfe2f44e8fa733c
to	registry.setland(address,string,string,string,string,string,uint256,string) 0x0dcd2f752394c41875e259e0bb44fd505297caf
gas	3000000 gas
transaction cost	215140 gas
execution cost	185740 gas
hash	0xdea2bb2a7e7d3a382ba2bf2e8b4d2c3bc83441d4c6e7a44d932e8d4f14d23842
input	0x211...00000
decoded input	<pre>{   "address_addr": "0xca35b7d915458ef540ade6068dfe2f44e8fa733c",   "string_name": "Aman",   "string_id": "80161616161",   "string_pass": "Root",   "string_type": "Resdential",   "string_address": "122001 Gurgaon",   "uint256_size": "1250",   "string_uni": "IN2451" }</pre>
decoded output	{}
logs	[]
value	0 wei

The right-hand panel shows the 'Deployed Contracts' section, listing the `registry` contract at address `0x0dc...97caf`. Below the contract list, there are buttons for `editland`, `setland`, `getland`, and `land_arr`, each with its corresponding function signature.

## Adding Record

Activities Google Chrome Sun 21:21

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

```
// function registry() public{
  32
  33
  34
```

[2] only remix transactions, script Search transactions

value wei

call to registry.getland errored: Error encoding arguments: Error: invalid address (arg="", type="string", value="")

call to registry.getlands

[call] from:0xca35b7d915458ef540ade6068dfe2f44e8fa733c to:registry.getlands() data:0xb17...3414a

transaction hash	0xb673bcf3fec7ae4ca23342a117ca3f8dc85752d4b468dd1f41ccfb3518e4ddd
from	0xca35b7d915458ef540ade6068dfe2f44e8fa733c
to	registry.getlands() 0xb0cd2f752394c41875e259e00bb44fd505297caf
transaction cost	22653 gas (Cost only applies when called by a contract)
execution cost	1381 gas (Cost only applies when called by a contract)
hash	0xb673bcf3fec7ae4ca23342a117ca3f8dc85752d4b468dd1f41ccfb3518e4ddd
input	0xb17...3414a
decoded input	{}
decoded output	{ "0": "address[]: 0xCA35b7d915458EF540aDe6068dFe2F44E8fa733c" }
logs	[]

Environment JavaScript VM VM (-) i

Account 0xca3...a733c (99.99999999999816365) i

Gas limit 3000000

Value 0 wei

registry

Deploy

or

At Address Load contract from Address

Transactions recorded: 4

Deployed Contracts

Owned at 0xbf...732db (memory) x

registry at 0x0dc...97caf (memory) x

editland address inp, string \_name, string \_id, string \_pass

setland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"

getland address inp

getlands

0: address[]:  
0xCA35b7d915458EF540aDe6068dFe2F44E8fa733c

## Total Addresses

Activities Google Chrome Sun 21:30

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

```
3 contract Owned {
  4   address owner;
  5 }
```

[2] only remix transactions, script Search transactions

[call] from:0x583031d1113ad414f02576bd6afabfb302140225 to:registry.getland(address) data:0x0e5...a733c

transaction hash	0xb853e05b0340a68c14b0b7937665add3919290399ba2c7cf305f5d629fefa9bf
from	0x583031d1113ad414f02576bd6afabfb302140225
to	registry.getland(address) 0xb0cd2f752394c41875e259e00bb44fd505297caf
transaction cost	31766 gas (Cost only applies when called by a contract)
execution cost	9086 gas (Cost only applies when called by a contract)
hash	0xb853e05b0340a68c14b0b7937665add3919290399ba2c7cf305f5d629fefa9bf
input	0x0e5...a733c
decoded input	{ "address inp": "0xCA35b7d915458EF540aDe6068dFe2F44E8fa733c" }
decoded output	{ "0": "string: Aman", "1": "string: 801616161", "2": "string: Root122", "3": "string: Commercial", "4": "string: 122001 Gurgaon", "5": "uint256: 1250", "6": "string: 1N2451" }
logs	[]

transact to registry.editland pending ...

Environment JavaScript VM VM (-) i

Account 0xca3...a733c (99.99999999999812116) i

Gas limit 3000000

Value 0 wei

registry

Deploy

or

At Address Load contract from Address

Transactions recorded: 16

Deployed Contracts

Owned at 0xbf...732db (memory) x

registry at 0x0dc...97caf (memory) x

editland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"

setland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"

getland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c

0: string: Aman  
1: string: 801616161  
2: string: Root2  
3: string: Commercial

## A particular address info

Activities Google Chrome Sun 21:31

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcacjs

browser/Registry.sol browser/new.sol

3- contract Owned {  
4- address number;  
5- }

[2] only remix transactions, script Search transactions

[vm] from:0x583...40225  
to:registry.editland(address,string,string,string,string,string,uint256,string) 0x0dc...97caf  
value:0 wei data:0xe4e...00000 logs:0 hash:0xdf2...93d47

status 0x1 Transaction mined and execution succeed  
transaction hash 0xdf265c475494a979e308ab36dd45c1786e7281728881d72ae591edcd6b393d47  
from 0x583031d1113ad414f02576bd6afabfb302140225  
to registry.editland(address,string,string,string,string,string,uint256,string) 0x0dc2f752394c41875e259e00bb44fd505297caf  
gas 3000000 gas  
transaction cost 42554 gas  
execution cost 13090 gas  
hash 0xdf265c475494a979e308ab36dd45c1786e7281728881d72ae591edcd6b393d47  
input 0xe4e...00000  
decoded input {  
"address inp": "0xCa35b7d915458EF540ade6068dfe2f44E8fa733c",  
"string\_name": "Aman",  
"string\_id": "801616161",  
"string\_pass": "Root2",  
"string\_type": "Commercial",  
"string\_address": "122001 Gurgaon",  
"uint256\_size": "1250",  
"string\_uni": "IN2451"  
}  
decoded output {}  
logs []  
value 0 wei

Environment JavaScript VM VM (-) i  
Account 0xca3...a733c (99.99999999999812116) i  
Gas limit 3000000  
Value 0 wei  
registry  
Deploy  
or  
At Address Load contract from Address  
Transactions recorded: 16  
Deployed Contracts  
Owned at 0xbfb...732db (memory) x  
registry at 0x0dc...97caf (memory) x  
editland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"  
setland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"  
getland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c  
0: string: Aman  
1: string: 801616161  
2: string: Root2  
3: string: Commercial

Activities Google Chrome Sun 21:31

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcacjs

browser/Registry.sol browser/new.sol

3- contract Owned {  
4- address number;  
5- }

[2] only remix transactions, script Search transactions

call to registry.getland

[call] from:0x583031d1113ad414f02576bd6afabfb302140225 to:registry.getland(address) data:0xe5...a733c

transaction hash 0x60a5383ca5de947de45f9a43b5d8ba463ff2762a0240a1f3ea1b2f4fa0ef9c5  
from 0x583031d1113ad414f02576bd6afabfb302140225  
to registry.getland(address) 0x0dc2f752394c41875e259e00bb44fd505297caf  
transaction cost 31766 gas (Cost only applies when called by a contract)  
execution cost 9086 gas (Cost only applies when called by a contract)  
hash 0x60a5383ca5de947de45f9a43b5d8ba463ff2762a0240a1f3ea1b2f4fa0ef9c5  
input 0xe5...a733c  
decoded input {  
"address inp": "0xCa35b7d915458EF540ade6068dfe2f44E8fa733c"  
}  
decoded output {  
"0": "string: Aman",  
"1": "string: 801616161",  
"2": "string: Root2",  
"3": "string: Commercial",  
"4": "string: 122001 Gurgaon",  
"5": "uint256: 1250",  
"6": "string: IN2451"  
}  
logs []

Environment JavaScript VM VM (-) i  
Account 0xca3...a733c (99.99999999999812116) i  
Gas limit 3000000  
Value 0 wei  
registry  
Deploy  
or  
At Address Load contract from Address  
Transactions recorded: 16  
Deployed Contracts  
Owned at 0xbfb...732db (memory) x  
registry at 0x0dc...97caf (memory) x  
editland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"  
setland "0xca35b7d915458ef540ade6068dfe2f44e8fa733c"  
getland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c  
0: string: Aman  
1: string: 801616161  
2: string: Root2  
3: string: Commercial



Activities Google Chrome Sun 21:30

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

Contract Owned { address number; }

[2] only remix transactions, script

Search transactions

[call] from:0x583031d1113ad414f02576bd6afabfb302140225 to:registry.getland(address) data:0xe5...a733c

transaction hash	0xb853e05b0340a68c14b0b7937665add3919290399ba2c7cf305f5d629fefa9bf
from	0x583031d1113ad414f02576bd6afabfb302140225
to	registry.getland(address) 0x0dc2f752394c41875e259e00b44fd505297caf
transaction cost	31766 gas (Cost only applies when called by a contract)
execution cost	9086 gas (Cost only applies when called by a contract)
hash	0xb853e05b0340a68c14b0b7937665add3919290399ba2c7cf305f5d629fefa9bf
input	0xe5...a733c
decoded input	{ "address inp": "0xC35b7d915458eF540ade6068dfe2f44e8fa733c" }
decoded output	{ "0": "string: Aman", "1": "string: 801616161", "2": "string: Root122", "3": "string: Commercial", "4": "string: 122801 Gurgaon", "5": "uint256: 1250", "6": "string: IN2451" }
logs	[]

transact to registry.editland pending ...

[vm] from:0x583...40225

Environment JavaScript VM VM (-) i

Account 0xca3...a733c (99.99999999999912116) i

Gas limit 3000000

Value 0 wei

registry

Deploy

or

At Address Load contract from Address

Transactions recorded: 16

Deployed Contracts

Owned at 0xbfb...732db (memory) x

registry at 0x0dc...97caf (memory) x

editland "0xca35b7d915458eF540ade6068dfe2f44e8fa733c" v

setland "0xca35b7d915458eF540ade6068dfe2f44e8fa733c" v

getland 0xca35b7d915458eF540ade6068dfe2f44e8fa733c v

0: string: Aman  
1: string: 801616161  
2: string: Root2  
3: string: Commercial

Activities Google Chrome Sun 21:30

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

Contract Owned { address number; }

[2] only remix transactions, script

Search transactions

[vm] from:0x583...40225 to:registry.editland(address,string,string,string,string,string,uint256,string) 0x0dc...97caf value:0 wei data:0xe4e...00000 logs:0 hash:0xd78...fb2cf

status	0x1 Transaction mined and execution succeed
transaction hash	0xd78d9ab482bd155a84fbb0b0855bfbdb8ece55ef12b632c79e2ed95f3afb2cf
from	0x583031d1113ad414f02576bd6afabfb302140225
to	registry.editland(address,string,string,string,string,string,uint256,string) 0x0dc2f752394c41875e259e00b44fd505297caf
gas	3000000 gas
transaction cost	42554 gas
execution cost	13090 gas
hash	0xd78d9ab482bd155a84fbb0b0855bfbdb8ece55ef12b632c79e2ed95f3afb2cf
input	0xe4e...00000
decoded input	{ "address inp": "0x583031d1113ad414f02576bd6afabfb302140225", "string name": "Aman", "string_id": "801616161", "string_pass": "Root2", "string_type": "Commercial", "string_address": "122801 Gurgaon", "uint256_size": "1250", "string_uni": "IN2451" }
decoded output	{}
logs	[]
value	0 wei

Environment JavaScript VM VM (-) i

Account 0xca3...a733c (99.99999999999912116) i

Gas limit 3000000

Value 0 wei

registry

Deploy

or

At Address Load contract from Address

Transactions recorded: 16

Deployed Contracts

Owned at 0xbfb...732db (memory) x

registry at 0x0dc...97caf (memory) x

editland "0xca35b7d915458eF540ade6068dfe2f44e8fa733c" v

setland "0xca35b7d915458eF540ade6068dfe2f44e8fa733c" v

getland 0xca35b7d915458eF540ade6068dfe2f44e8fa733c v

0: string: Aman  
1: string: 801616161  
2: string: Root2  
3: string: Commercial

**Demonstration of immunity against editing registry by some other accounts**

Activities Google Chrome Sun 21:22

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

```
// function registry() public{
```

[2] only remix transactions, script Search transactions

status	0x1 Transaction mined and execution succeed
transaction hash	0xdd8d3e6bc05d386001f6599c3e34fd984a9c5b018c88512b6060b8192f2568
from	0xca35b7d915458ef540ade6068dfe2f44e8fa733c
to	registry.editland(address,string,string,string,string,string,uint256,string) 0x8dc2f752394c41875e259e00bb44fd505297caf
gas	3000000 gas
transaction cost	42490 gas

Environment JavaScript VM VM (-) i

Account 0x147...c160c (100 ether)

Gas limit 3000000

Value 0 wei

registry

Deploy

or

Activities Google Chrome Sun 21:31

https://remix.ethereum.org/#optimize=false&version=soljson-v0.4.16-nightly.2017.8.24+commit.78c2dcac.js

browser/Registry.sol browser/new.sol

```
3- contract Owned {
4-     address owner;
```

[vm] from:0x583...40225  
to:registry.editland(address,string,string,string,string,string,uint256,string) 0x8dc...97caf  
value:0 wei data:0xe4e...00000 Logs:0 hash:0xdf2...93d47

Debug

status	0x1 Transaction mined and execution succeed
transaction hash	0xdf265c475494a979e308ab36dd45c1786e7281728881d72ae591edcd6b393d47
from	0x583031d1113ad414f02576bd6afabfb302140225
to	registry.editland(address,string,string,string,string,string,uint256,string) 0x8dc2f752394c41875e259e00bb44fd505297caf
gas	3000000 gas
transaction cost	42554 gas
execution cost	13090 gas
hash	0xdf265c475494a979e308ab36dd45c1786e7281728881d72ae591edcd6b393d47
input	0xe4e...00000
decoded input	{ "address inp": "0xCA35b7d915458EF540ade6068dfe2f44E8fa733c", "string_name": "Aman", "string_id": "80161616161", "string_pass": "Root2", "string_type": "Commercial", "string_address": "122001 Gurgaon", "uint256_size": "1250", "string_uni": "IN2451" }
decoded output	{}
logs	[ ]
value	0 wei

Environment JavaScript VM VM (-) i

Account 0xca3...a733c (99.99999999999812116 ether)

Gas limit 3000000

Value 0 wei

registry

Deploy

or

At Address Load contract from Address

Transactions recorded: 16

Deployed Contracts

- Owned at 0xbbf...732db (memory)
- registry at 0x8dc...97caf (memory)

editland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c

setland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c

getland 0xca35b7d915458ef540ade6068dfe2f44e8fa733c

0: string: Aman  
1: string: 80161616161  
2: string: Root2  
3: string: Commercial