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http://www.szzljy.comBy Alejandro Santander in collaboration with Leo Arias.

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Alejandro Santander Leo Arias You're on the road, driving fast in your rare, fully restored 1969 Mustang Mach 1. The sunlight shimmers on the all-original, gorgeous plated rims. It's just you, the road, the desert, and the never-ending chase of the horizon. Perfection!

In the blink of an eye, your 335 hp beast is engulfed in white smoke, as if transformed into a steam locomotive, and you're forced to stop on the side of the road. With determination, you pop the hood, only to realize that you have absolutely no idea what you're looking at. How does this damn machine work? You grab your phone and discover that you have no signal.

Image from http://www.mustangandfords.com

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http://www.mustangandfords.com/Could this perhaps be an analogy for your current knowledge of dApp development? In the analogy, the Mustang is your set of smart contracts, the rims are all those well-thought-out little details and the vou put into them. And the popping of the hood is you looking into your contract's EVM bytecode and having absolutely no idea what's going on.

If this sounds familiar, then not to worry! The purpose of this series of articles is to deconstruct a simple Solidity contract, look at its bytecode, and break it apart into identifiable structures down to the lowest level. We'll pop the hood on Solidity. By the end of the series, you should feel comfortable when looking at or debugging EVM bytecode. The whole point of the series is to demystify the EVM bytecode produced by the Solidity compiler. And it's really much simpler than it seems.

Note: This series is aimed at developers who already feel comfortable with and have experience in developing Solidity contracts, but want to understand how things work at a slightly deeper/lower level
—that is, how Solidity is translated into EVM bytecode by the Solidity compiler, and how the EVM executes such bytecode. If you aren't there just yet, I recommend reading this great introduction by Facu Spagnuolo: A Gentle Introduction to Ethereum Programming

Note: This series is aimed at developers who already feel comfortable with and have experience in developing Solidity contracts, but want to understand how things work at a slightly deeper/lower level -that is, how Solidity is translated into EVM bytecode by the Solidity compiler, and how the EVM executes such bytecode. If you aren't there just yet, I recommend reading this great introduction by Facu Spagnuolo: A Gentle Introduction to Ethereum Programming.

A Gentle Introduction to Ethereum ProgrammingHere's the contract we'll deconstruct:

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Learn more about bidirectional Unicode characters

```
[ Show hidden characters
]()
pragma solidity
0 4 24
BasicToken
uint256
totalSupply_;
mapping
(address
uint256
) balances;
constructor
(uint256
initialSupply
) public
totalSupply =
_initialSupply;
balances[msg
.sender
] =
_initialSupply;
functiontotalSupply
() public
view
returns
(uint256
) {
return
totalSupply_;
```

}

```
functiontransfer
(address
_to
, uint256
_value
) public
returns
(bool
) {
require
(_to !=
address
(0
));
require
(_value <=
balances[msg
.sender
]);
balances[msg
.sender
] =
balances[msg
.sender
] –
_value;
balances[_to] =
balances[_to] +
_value;
return
true
functionbalanceOf
(address
_owner
) public
view
returns
(uint256
) {
return
balances[_owner];
}
view raw
[
] (https://gist.github.com/ajsantander/dce951a95e7608bc29d7f5deeb6e2ecf\#ile-basictoken-sol)\\
hosted with ♥ by GitHub
This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters.
Learn more about bidirectional Unicode characters
[ Show hidden characters
]()
pragma solidity
0.4.24
contract
```

BasicToken

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{
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```

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balances[msg
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(_value <=
balances[msg
.sender
]);
balances[msg
.sender
] =
balances[msg
.sender
]-
_value;
```

```
balances[_to] =
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```

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_value
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returns
(bool
) {
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.sender
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balances[_to] =
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functionbalanceOf
(address
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view
returns
(uint256
) {
return
balances[_owner];
pragma solidity
0.4.24
;
contract
BasicToken
{
uint256
totalSupply_;
mapping
```

```
(address
uint256
) balances;
constructor
(uint256
_initialSupply
) public
totalSupply_ =
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balances[msg
.sender
] =
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(_value <=
balances[msg
.sender
]);
balances[msg
.sender
] =
balances[msg
.sender
]-
_value;
balances[_to] =
balances[_to] +
_value;
return
true
;
functionbalanceOf
(address
```

```
_owner
) public
view
returns
(uint256
) {
return
balances[_owner];
}
pragma solidity
0.4.24
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pragma solidity
0.4.24
contract
BasicToken
{
contract
BasicToken
contract
BasicToken
uint256
total Supply\_;
uint256
totalSupply_;
uint256
mapping
(address
uint256
) balances;
mapping
(address
uint256
) balances;
mapping
address
=>
uint256
constructor
(uint256
_initialSupply
) public
{
constructor
(uint256
_initialSupply
) public
constructor
uint256
```

```
_initialSupply
public
totalSupply_ =
_initialSupply;
totalSupply_ =
\_initial Supply;
balances[msg
 .sender
] =
_initialSupply;
balances[msg
.sender
] =
_initialSupply;
msg
sender
}
functiontotalSupply
() public
view
returns
(uint256
) {
function total Supply\\
() public
view
returns
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) {
functiontotalSupply
totalSupply
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view
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return
functiontransfer
(address
_to
, uint256
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) public
returns
(bool
) {
functiontransfer
(address
_to
, uint256
_value
) public
```

returns
(bool
) {
functiontransfer
transfer
address
_to
uint256
_value
public
returns
bool
require
(_to !=
address
(0
));
require
(_to !=
address
(0
));
require
!=
address
0
require
(_value <=
balances[msg
.sender
]);
require
(_value <=
balances[msg
.sender
]);
require
<=
msg
sender
balances[msg
.sender
]=
balances[msg
.sender
]-
]-
] - _value;
] - _value; balances[msg
] - _value; balances[msg .sender
] - _value; balances[msg .sender] =
] - _value; balances[msg .sender] = balances[msg
] - _value; balances[msg .sender] = balances[msg .sender
]- _value; balances[msg .sender] = balances[msg .sender]-
]value; balances[msg .sender] = balances[msg .sender]value;
]value; balances[msg .sender] = balances[msg .sender]value; msg
]value; balances[msg .sender] = balances[msg .sender]value; msg sender =
]- _value; balances[msg .sender] = balances[msg .sender] - _value; msg sender

```
balances[_to] +
_value;
balances[_to] =
balances[_to] +
_value;
return
true
return
true
return
true
functionbalanceOf
(address
_owner
) public
view
returns
(uint256
) {
functionbalanceOf
(address
_owner
) public
view
returns
(uint256
) {
functionbalanceOf
balanceOf
address
_owner
public
view
returns
uint256
return
balances[_owner];
return
balances[_owner];
return
view raw
[
BasicToken.sol
] (https://gist.github.com/ajsantander/dce951a95e7608bc29d7f5deeb6e2ecf\#file-basictoken-sol)\\
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view raw
BasicToken.sol
](https://gist.github.com/ajsantander/dce951a95e7608bc29d7f5deeb6e2ecf#file-basictoken-sol)
```

balances[_to] =

GitHubNote: This contract is susceptible to an overflow attack, but we're just keeping it simple here for the purpose at hand.

Note: This contract is susceptible to an overflow attack, but we're just keeping it simple here for the purpose at hand.

overflow attack#### Compiling the contract

To compile the contract, we'll be using Remix. Go ahead and create a new contract by clicking on the + button on the top left, above the file browser area. Set the filename to BasicToken.sol. Now, paste the above code into the editor section.

RemixIn the right-hand section, go to the Settings

tab and make sure Enable Optimization

is selected

- . Also, verify that the selected version of the Solidity compiler is "version:0.4.24+commit.e67f0147.Emscripten.clang
- ". These two details are very important, otherwise you'll be looking at slightly different bytecode from what will be discussed here.

Settings

make sure Enable Optimization

is selected

Enable Optimization

version:0.4.24+commit.e67f0147.Emscripten.clang

If you go to the Compile

tab and click on the Details

button, you should see a popup with all the stuff that the Solidity compiler generates, one of which is a JSON object named BYTECODE

that has an "object" property, which is the compiled code of the contract. It looks like this:

Compile

Details

BYTECODE

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[Show hidden characters

1()

view raw

BasicToken.evm

](https://gist.github.com/ajsantander/03a4a183756980ef0865825bea96d6f5#file-basictoken-evm)

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hosted with ♥ by GitHub

view raw

_

BasicToken.evm

](https://gist.github.com/ajsantander/03a4a183756980ef0865825bea96d6f5#file-basictoken-evm)

GitHubYup. That's completely unreadable (at least for a normal human being).

Deploying the contract

Next, go to the Run

section in Remix. At the top, make sure you're using the Javascript VM

- . This is basically an embedded Javascript EVM + network, our ideal Ethereum playground. Make sure BasicToken is selected in the ComboBox
- , and enter the number 10000 in the Deploy input box
- . Next, click the Deploy

button. This should deploy an instance of our BasicToken contract, with an initial supply of 10000 tokens owned by the account currently selected at the top of the account ComboBox

, which will hold the totality of our token supply

Run

Javascript VM

ComboBox

Deploy input box

Deploy

ComboBox

Lower in the Run

tab, in the Deployed Contracts

section, you should see the deployed contract, with fields to interact with its three functions: transfer, balanceOf, and totalSupply. Here, we'll be able to interact with the instance of the contract we just deployed.

Run

Deployed Contracts

But before that, let's take a look at exactly what "deploying" the contract means. At the bottom of the page, in the console area, you should see the log "creation of BasicToken pending...", followed by a transaction entry with various fields: from, to, value, data, logs, and hash. Click on this entry to expand the transaction's info. Even though abbreviated, you should see that the data/input of the transaction is the same bytecode we presented above. This transaction is sent to the 0x0 address, and as a result, a new contract instance is created, with its own address and code. We'll examine this process in detail in the next article.

Disassembling the bytecode

To the right of the transaction's data, still in the console, click on the Debug

button. This will activate the Debugger

tab in Remix's right-hand area. Let's take a look at the Instructions

section. If you scroll down, you should see the following:

Debug
Debugger
Instructions
This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters.
Learn more about bidirectional Unicode characters
[Show hidden characters
10
000
PUSH1
80
002
PUSH1
40
004
MSTORE
005
CALLVALUE
006
DUP1
007
ISZERO
008
PUSH2
0010
011
JUMPI
012
PUSH1
00
014
DUP1
015
REVERT
016
JUMPDEST
017
POP
018
PUSH1
40
020
MLOAD
021
PUSH1
20
023
DUP1
024
PUSH2
0217
027
DUP4
028
CODECOPY
029
DUP2
030
ADD
031
PUSH1

40 033 034

SWAP1

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00

040

DUP2

041

DUP2

042

SSTORE

043

CALLER

044

DUP2

045

MSTORE

046

PUSH1

01

048 PUSH1

20

050

MSTORE

051

SWAP2

052

SWAP1

053

SWAP2

054 SHA3

055

SSTORE 056

PUSH2 01d1

059

DUP1

060 PUSH2

0046

063

PUSH1

00

065

CODECOPY

066

PUSH1

00

RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 fffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
PUSH4 18160ddd 128
128
128 DUP2
128 DUP2 129
128 DUP2 129 EQ
128 DUP2 129 EQ 130
128 DUP2 129 EQ 130 PUSH2 005b
128 DUP2 129 EQ 130 PUSH2 005b
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082 144 JUMPI
128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082

146 PUSH4 a9059cbb 151 EQ 152 PUSH2 00b0 155 JUMPI 156 JUMPDEST 157 PUSH1 00 159 DUP1 160 REVERT 161

JUMPDEST

162 CALLVALUE

163

DUP1 164

ISZERO 165

PUSH2 0067 168

JUMPI 169

PUSH1

00 171

DUP1 172

REVERT

173

JUMPDEST 174

POP

175 PUSH2

0070 178

PUSH2 00f5

181 JUMP

182 JUMPDEST

183

PUSH1

40

185

DUP1 186

MLOAD

187 SWAP2

DUP3 189 MSTORE 190 MLOAD 191 SWAP1 192 DUP2 193 SWAP1 194 SUB 195 PUSH1 20 197 ADD 198 SWAP1 199 RETURN 200 JUMPDEST 201 CALLVALUE 202 DUP1 203 ISZERO 204 PUSH2 008e 207 JUMPI 208 PUSH1 00 210 DUP1 211 REVERT 212 JUMPDEST 213 POP 214 PUSH2 0070 217 238 PUSH1 04 240 CALLDATALOAD 241 AND 242 PUSH2 00fb

JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ####################################
284
PUSH1
гозні
04
04
286
286 CALLDATALOAD
286 CALLDATALOAD 287
286 CALLDATALOAD 287 AND
286 CALLDATALOAD 287 AND 288
286 CALLDATALOAD 287 AND 288 PUSH1
286 CALLDATALOAD 287 AND 288 PUSH1 24
286 CALLDATALOAD 287 AND 288 PUSH1 24 290
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO

303 DUP3 304 MSTORE 305 MLOAD 306 SWAP1 307 DUP2 308 SWAP1 309 SUB 310 PUSH1 20 312 ADD 313 SWAP1 314 RETURN 315 JUMPDEST 316 PUSH1 00 318 SLOAD 319 SWAP1 320 JUMP 321 JUMPDEST 322 343 AND 344 PUSH1 00 346 SWAP1 347 DUP2 348 MSTORE 349 PUSH1 01 351 PUSH1 20 353 MSTORE 354 PUSH1 40

356	
SWAP1	
357	
SHA3	
358	
SLOAD	
359	
SWAP1	
360	
JUMP	
361	
JUMPDEST	
362	
PUSH1	
00	
364	
PUSH20 ffffffffffffffffffffffffffffffffffff	fffffffff
385	
DUP4	
386	
AND	
387	
ISZERO	
388	
ISZERO	
389	
PUSH2	
0147	
392	
JUMPI	
393	
PUSH1	
00	
395 DUP1	
396	
REVERT	
397	
JUMPDEST	
398	
CALLER	
399	
PUSH1	
00	
401	
SWAP1	
402	
DUP2	
403	
MSTORE	
404	
PUSH1	
01	
406	
PUSH1	
20	
408	
MSTORE	
409	
PUSH1	

40

411

SWAP1

412

SHA3

413

SLOAD

414

DUP3

415

GT 416

ISZERO

417

PUSH2

0163

420

JUMPI 421

PUSH1

00

423

DUP1

424

REVERT

425

JUMPDEST

426

POP

427

CALLER

428

PUSH1

00 430

SWAP1

431

DUP2

432

MSTORE

433

PUSH1 01

435

PUSH1

20

437 DUP2

438

SWAP1

439

MSTORE

440

PUSH1 40

442

DUP1

443

DUP4 444

SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058

GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525 INVALID 526 CALLCODE 527 SWAP13 528 DUP9 529 INVALID 530

SHA3
501
INVALID
502
INVALID
503
SWAP10
504

DELEGATECALL

INVALID
531
RETURN
532
INVALID
533
STOP
534
INVALID
535
STOP

STOP 537

536

STOP 538 STOP

539 STOP

540 STOP

541 STOP 542

STOP 543 STOP

544 STOP

545STOP546

STOP 547

STOP 548 STOP

549 STOP 550

STOP 551 STOP

552 STOP 553

STOP 554

STOP 555 STOP

556STOP557

STOP 558 STOP

559

STOP 560

STOP
561
STOP
562
STOP
563
STOP
564
STOP
565
INVALID
566
LT
<u>view raw</u>
BasicToken.asm
](https://gist.github.com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm)
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10
000
PUSH1
80
002
PUSH1
40
004
MSTORE
005
CALLVALUE
006
DUP1
007
ISZERO
008
PUSH2
0010
011
JUMPI
012
PUSH1
00
014
DUP1
015
REVERT
016
JUMPDEST
017
POP
018
PUSH1
40
020
MLOAD
021
PUSH1
20

023 DUP1 024 PUSH2 0217 027 DUP4

> 028 CODECOPY

029

DUP2

030

ADD

031

PUSH1

40

033 SWAP1

034

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00

040

DUP2

041 DUP2

042

SSTORE

043

CALLER

044

DUP2 045

MSTORE

046

PUSH1

01

048 PUSH1

20

050 MSTORE

MSTORE 051

SWAP2

052

SWAP1

053

SWAP2

054

SHA3 055

SSTORE

PUSH2 01d1
059
DUP1
060
PUSH2
0046
063
PUSH1
00
065
CODECOPY
066
PUSH1
00
068
RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 ffffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
128
DUP2
129
EQ
130
PUSH2 005b

133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082 144 JUMPI 145 DUP1 146 PUSH4 a9059cbb 151 EQ 152 PUSH2 00b0 155 JUMPI 156 JUMPDEST 157 PUSH1 00 159 DUP1 160 REVERT 161 JUMPDEST 162 CALLVALUE 163 DUP1 164 ISZERO 165 PUSH2 0067 168 JUMPI 169 PUSH1 00 171 DUP1 172 REVERT 173 JUMPDEST 174 POP 175

PUSH2 0070 178

JUMPDEST 183 PUSH1 40 185 DUP1 186 MLOAD 187 SWAP2 188 DUP3 189 MSTORE 190 MLOAD 191 SWAP1 192 DUP2 193 SWAP1 194 SUB 195 PUSH1 20 197 ADD 198 SWAP1 199 RETURN 200 JUMPDEST 201 CALLVALUE 202 DUP1 203 ISZERO 204 PUSH2 008e 207 JUMPI 208 PUSH1 00 210 DUP1 211 REVERT 212 JUMPDEST 213 POP

PUSH2 00f5 181 JUMP 182

214
PUSH2
0070
217
PUSH20 ffffffffffffffffffffffffffffffffffff
238
PUSH1
04
240
CALLDATALOAD
241
AND
242
PUSH2 00fb
245
JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
256 DUP1
DUP1
DUP1 257
DUP1 257 REVERT
DUP1 257 REVERT 258
DUP1 257 REVERT 258 JUMPDEST
DUP1 257 REVERT 258 JUMPDEST 259
DUP1 257 REVERT 258 JUMPDEST 259 POP
DUP1 257 REVERT 258 JUMPDEST 259 POP 260
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ffffffffffffffffffffffffffffffffffff
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ffffffffffffffffffffffffffffffffffff
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ffffffffffffffffffffffffffffffffffff
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ffffffffffffffffffffffffffffffffffff
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ####################################
DUP1 257 REVERT 258 JUMPDEST 259 POP 260 PUSH2 00e1 263 PUSH20 ffffffffffffffffffffffffffffffffffff

295
JUMPDEST
296
PUSH1
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298
DUP1
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MLOAD
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SWAP2
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ISZERO
302
ISZERO
303
DUP3
304
MSTORE
305
MLOAD 306
SWAP1
307
DUP2
308
SWAP1
309
SUB
310
PUSH1
20
312
ADD
313
SWAP1
314
RETURN
315
JUMPDEST
316
PUSH1
00
318
SLOAD
319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00
346
SWAP1

347 DUP2 348 MSTORE 349 PUSH1 01 351 PUSH1 20 353 MSTORE 354 PUSH1 40 356 SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 385 DUP4 386 AND 387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401

SWAP1 402 DUP2 403 MSTORE 404 PUSH1 01 406 PUSH1 20 408 MSTORE 409 PUSH1 40 411 SWAP1 412 SHA3 413 SLOAD 414 DUP3 415

GT 416 ISZERO

417 PUSH2 0163

420 JUMPI 421 PUSH1

00 423 DUP1 424

REVERT 425 JUMPDEST

426 POP 427 CALLER

428 PUSH1 00

430 SWAP1 431

DUP2 432 MSTORE

433 PUSH1

01 435

PUSH1

20 437 DUP2 438 SWAP1 439 MSTORE 440 PUSH1 40 442 DUP1 443 DUP4 444 SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3

490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID

487 SWAP2 488 POP 489 POP 523

INVALID

524

INVALID

525

INVALID

526

CALLCODE

527

SWAP13

528

DUP9

529

INVALID

530

INVALID

531

RETURN

532

INVALID

533

STOP

534

INVALID

535

STOP

536

STOP

537

STOP

538

STOP

539

STOP

540 STOP

541

STOP

542

STOP

543

STOP

544 STOP

545 STOP

546

STOP

547

STOP

548

STOP 549

STOP

550

STOP

551 STOP

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STOP

550
553 CTOR
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563 CTOR
STOP
564
STOP
565
INVALID
566
LT
<u>view raw</u>
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BasicToken.asm
Basic Loken.asm](https://gist.github.com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm)
](https://gist.github.com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm)
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Intersely gist gith ub. com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm) hosted with ♥ by GitHub This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters. Learn more about bidirectional Unicode characters Show hidden characters Show hidden characters Show hidden characters Show hidden characters Ooc
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DUP1 015 REVERT 016 JUMPDEST 017 POP 018 PUSH1 40 020 MLOAD 021 PUSH1 20 023 DUP1 024 PUSH2

0217 027

DUP4 028

CODECOPY

029 DUP2

030

ADD

031

PUSH1 40

033

SWAP1

034

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00 040

DUP2

041

DUP2

042 SSTORE

043

CALLER

044

DUP2

045

MSTORE

046

PUSH1

01

DUCLIA
PUSH1
20
050
MSTORE
051
SWAP2
052
SWAP1
053
SWAP2
054
SHA3
055
SSTORE
056
PUSH2 01d1
059
DUP1
060
PUSH2
0046
063
PUSH1
00
065
CODECOPY
066
PUSH1
00
068
RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 ffffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1

AND	
123	
PUSH4 18160ddd	
128	
DUP2	
129	
EQ	
130	
PUSH2 005b	
133	
JUMPI	
134	
DUP1	
135	
PUSH4 70a08231	
140	
EQ	
141	
PUSH2	
0082	
144	
JUMPI	
145	
DUP1	
146	
PUSH4 a9059cbb	
151	
EQ	
152	
PUSH2 00b0	
155	
JUMPI	
156	
JUMPDEST	
157	
PUSH1	
00	
159	
DUP1	
160	
REVERT	
161	
JUMPDEST	
162	
CALLVALUE	
163	
DUP1	
164	
ISZERO	
165	
PUSH2	
0067	
168	
JUMPI	

DIV

CALLDATALOAD

169 PUSH1 00 171 DUP1 172 REVERT 173 JUMPDEST 174 POP 175 PUSH2 0070 178

PUSH2 00f5

181 JUMP

182

JUMPDEST

183

PUSH1

40

185

DUP1 186

MLOAD

187

SWAP2

188

DUP3

189

MSTORE

190

MLOAD

191

SWAP1

192

DUP2

193

SWAP1

194 SUB

195

PUSH1 20

197

ADD 198

SWAP1

199

RETURN

200

JUMPDEST

201

CALLVALUE

202

DUP1 203

ISZERO

204
PUSH2 008e
207
JUMPI
208
PUSH1
00
210
DUP1
211
REVERT
212
JUMPDEST
213
POP
214
PUSH2
0070
217
PUSH20 ffffffffffffffffffffffffffffffffffff
238
PUSH1
04
240
CALLDATALOAD
241
AND
242
PUSH2 00fb
245
JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ffffffffffffffffffffffffffffffffffff
PUSH20 ####################################

> PUSH1 40

> 298 DUP1

299 MLOAD

300 SWAP2

301

ISZERO

302

ISZERO

303

DUP3

304

MSTORE

305

MLOAD

306

SWAP1

307 DUP2

308

SWAP1

309

SUB 310

PUSH1

20

312

ADD 313

SWAP1

314

RETURN

315

JUMPDEST

316

PUSH1

00 318

SLOAD

319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ####################################
343
AND
344
PUSH1
00
346
SWAP1
347
DUP2
348
MSTORE
349
PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
SWAP1
357
SHA3
358
SLOAD
359
SWAP1
360
JUMP
361
JUMPDEST
362
PUSH1
00
364
PUSH20 ffffffffffffffffffffffffffffffffffff
385
DUP4
386
AND
387
ISZERO
388
ISZERO
389
PUSH2
0147
392
JUMPI

393

PUSH1

00 395

DUP1

396

REVERT

397

JUMPDEST

398

CALLER

399

PUSH1

00

401

SWAP1

402

DUP2

403

MSTORE

404

PUSH1

01

406

PUSH1

20

408

MSTORE

409

PUSH1

40

411

SWAP1

412

SHA3

413

SLOAD

414

DUP3

415 GT

416 ISZERO

417

PUSH2

0163 420

JUMPI

421

PUSH1

00 423

DUP1

424

REVERT

425

JUMPDEST

426 POP

CALLER 428 PUSH1 00 430 SWAP1 431 DUP2 432 MSTORE 433 PUSH1 01 435 PUSH1 20 437 DUP2 438 SWAP1 439 MSTORE 440 PUSH1 40 442 DUP1 443 DUP4 444 SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479

484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515

SHA3
480
DUP1
481
SLOAD
482
DUP4
483
ADD

JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525 INVALID 526

CALLCODE 527

527 SWAP13 528 DUP9

529 INVALID 530

531 RETURN

INVALID

532 INVALID

533 STOP

INVALID 535

534

STOP 536

STOP 537

STOP 538

STOP 539

STOP 540 STOP

541 STOP

542 STOP

543 STOP

544

STOP 545

STOP
546
STOP
547
STOP
548
STOP
549
STOP
550
STOP
551
STOP
552
STOP
553
STOP
554
STOP
555
STOP
556
STOP
STOP
558
STOP
559
STOP
560
STOP
561
STOP 562
STOP STOP
563
STOP STOP
564
STOP STOP
565 NVALID
566
_T
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PUSH1
30
002
PUSH1
40 40
1004
MSTORE
005

DUP1

800 PUSH2 0010 011 JUMPI 012 PUSH1 00 014 DUP1 015 REVERT 016 JUMPDEST 017 POP 018 PUSH1 40 020 MLOAD 021 PUSH1 20 023 DUP1 024 PUSH2 0217 027 DUP4 028 CODECOPY 029 DUP2 030 ADD 031 PUSH1 40 033 SWAP1 034 DUP2 035 MSTORE 036 SWAP1 037 MLOAD 038 PUSH1 00

ISZERO

ADD

031

PUSH1

40

033

SWAP1

034

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00

040

DUP2

041

DUP2

042

SSTORE

043 CALLER 044 DUP2 045 MSTORE 046 PUSH1 01 048 PUSH1 20 050 MSTORE 051 SWAP2 052 SWAP1

053 SWAP2

054 SHA3 055

SSTORE 056

PUSH2 01d1

059 DUP1

060

PUSH2 0046

063

PUSH1

00 065

CODECOPY

066

PUSH1

00 068

RETURN

069

STOP

070

PUSH1

80 072

PUSH1

40

074

MSTORE

075

PUSH1

04

077

CALLDATASIZE

078

LT 079

PUSH2

0056
082
JUMPI
083
PUSH4 #####
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
128 DUP2
129
EQ 100
130
PUSH2 005b
133
JUMPI
134
DUP1
135
PUSH4 70a08231
140
EQ
141
PUSH2
0082
144
JUMPI
145
DUP1
146
PUSH4 a9059cbb
151
EQ
152
PUSH2 00b0
155
JUMPI
156
JUMPDEST
157
PUSH1
00
159
DUP1
160
REVERT
161
JUMPDEST

CALLVALUE

SWAP2
188
DUP3
189
MSTORE
190
MLOAD
191
SWAP1
192
DUP2
193
SWAP1
194
SUB
195
PUSH1
20
197
ADD
198
SWAP1

199	
RETURN	
200	
JUMPDEST	
201	
CALLVALUE	
202	
DUP1	
203	
ISZERO	
204	
PUSH2 008e	
207	
JUMPI	
208	
PUSH1	
00	
210	
DUP1	
211	
REVERT	
212	
JUMPDEST	
213	
POP	
214	
PUSH2	
0070	
217	
PUSH20 ffffffffff	ffffffffffffffffffffffffffffffffffffff
238	
PUSH1	
04	
04 240	
04 240 CALLDATALOA	D
04 240 CALLDATALOA 241	D
04 240 CALLDATALOA 241 AND	D
04 240 CALLDATALOA 241 AND 242	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1	D
04 240 CALLDATALOA 241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256	D

JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ffffffffffffffffffffffffffffffffffff
284
PUSH1
04
286
CALLDATALOAD
287
AND
288
PUSH1
24
290
CALLDATALOAD
291
PUSH2
0123
294
JUMP
295
JUMPDEST
296
PUSH1
40
298
DUP1
299
MLOAD
300
SWAP2
301
ISZERO
302
ISZERO
303
DUP3
304
MSTORE
305
MLOAD
306
SWAP1
307
DUP2
308 SWAD1
SWAP1
309 CUB
SUB
310
PUSH1

SWAP1
314
RETURN
315
JUMPDEST
316
PUSH1
00
318
SLOAD
319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00 00
346 OWAR4
SWAP1
347 DUDO
DUP2
348
MSTORE
349
PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
SWAP1
357
SHA3
358
SLOAD
359
SWAP1
360
JUMP
361
JUMPDEST
362
PUSH1
00
364
PUSH20 ffffffffffffffffffffffffffffffffffff
385
DUP4
386

AND 387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393

PUSH1

00 395

DUP1 396

REVERT

397

JUMPDEST

398

CALLER

399

PUSH1

00

401

SWAP1

402

DUP2

403

MSTORE

404

PUSH1

01

406

PUSH1

20

408

MSTORE

409

PUSH1

40 411

SWAP1

412

SHA3 413

SLOAD

414

DUP3 415

GT

416

ISZERO

417

PUSH2

0163

420

JUMPI 421

PUSH1

00 423 DUP1 424 REVERT 425 JUMPDEST 426 POP 427 CALLER 428 PUSH1 00 430 SWAP1 431 DUP2 432 MSTORE 433 PUSH1 01 435 PUSH1 20 437 DUP2 438 SWAP1 439 MSTORE 440 PUSH1 40 442 DUP1 443 DUP4 444 SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474

475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID

AND

INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525 INVALID 526 CALLCODE 527 SWAP13 528 DUP9 529 INVALID 530 INVALID 531 RETURN 532 INVALID 533 STOP 534 INVALID 535 STOP 536 STOP 537 STOP 538 STOP 539 STOP

STOP 541 STOP 542 STOP 543 STOP 544 STOP 545 STOP 546 STOP 547 STOP 548 STOP 549 STOP 550 STOP 551 STOP 552 STOP 553 STOP 554 STOP 555 STOP 556 STOP 557 STOP 558 STOP 559 STOP 560 STOP 561 STOP 562 STOP 563 STOP 564 STOP 565 INVALID 566 LT This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters. Learn more about bidirectional Unicode characters [Show hidden characters]()

000 PUSH1 80

002 PUSH1 40 004 MSTORE 005 CALLVALUE 006 DUP1 007 ISZERO 800 PUSH2 0010 011 JUMPI 012 PUSH1 00 014

DUP1 015 REVERT

016 JUMPDEST 017

POP 018

PUSH1 40 020

MLOAD 021

PUSH1 20

023 DUP1 024

PUSH2 0217

027 DUP4 028

CODECOPY

DUP2 030

029

ADD 031

PUSH1 40

033 SWAP1

034 DUP2

035 MSTORE

036 SWAP1

MLOAD 038 PUSH1 00 040 DUP2 041 DUP2 042 SSTORE 043 CALLER 044 DUP2 045 MSTORE 046 PUSH1 01 048 PUSH1

> 20 050 MSTORE 051 SWAP2 052 SWAP1 053 SWAP2 054 SHA3 055 SSTORE 056 PUSH2 01d1 059 DUP1 060 PUSH2 0046 063 PUSH1 00 065 CODECOPY 066 PUSH1 00 068 RETURN 069 STOP 070 PUSH1 80 072 PUSH1 40 074

MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 fffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
128
DUP2
129
EQ
130
PUSH2 005b
133
JUMPI
134
DUP1
135
PUSH4 70a08231
140
EQ
141
PUSH2
0082
144
JUMPI
145
DUP1
146
PUSH4 a9059cbb
151
EQ
152
PUSH2 00b0
155
JUMPI
156

JUMPDEST

157 PUSH1 00 159 DUP1 160 REVERT 161 JUMPDEST 162 CALLVALUE 163 DUP1 164 ISZERO 165 PUSH2 0067

168

JUMPI 169

PUSH1 00

171 DUP1

172

REVERT

173

JUMPDEST 174

POP

175 PUSH2

0070

178

PUSH2 00f5

181

JUMP

182

JUMPDEST

183

PUSH1

40

185 DUP1

186

MLOAD

187

SWAP2

188

DUP3

189

MSTORE

190

MLOAD 191

SWAP1

192

DUP2

SWAP1
194
SUB
195
PUSH1
20
197
ADD
198
SWAP1
199
RETURN
200
JUMPDEST
201
CALLVALUE
202
DUP1
203
ISZERO
204
PUSH2 008e
207
JUMPI
208
PUSH1
00
210
DUP1
211
REVERT
212
JUMPDEST
213
POP
214
PUSH2
0070
217
PUSH20 ffffffffffffffffffffffffffffffffffff
238
PUSH1
04
240
2.0
CALLDATALOAD
CALLDATALOAD
241
241 AND
241 AND 242
241 AND 242 PUSH2 00fb
241 AND 242 PUSH2 00fb 245
241 AND 242 PUSH2 00fb 245 JUMP
241 AND 242 PUSH2 00fb 245 JUMP 246
241 AND 242 PUSH2 00fb 245 JUMP
241 AND 242 PUSH2 00fb 245 JUMP 246
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1
241 AND 242 PUSH2 00fb 245 JUMP 246 JUMPDEST 247 CALLVALUE 248 DUP1 249

PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ####################################
284
PUSH1
04
286
CALLDATALOAD
287
AND
288
PUSH1
24
290
CALLDATALOAD
291
DUOLIO
PUSH2
0123
0123 294
0123 294 JUMP
0123 294 JUMP 295
0123 294 JUMP 295 JUMPDEST
0123 294 JUMP 295 JUMPDEST 296
0123 294 JUMP 295 JUMPDEST 296 PUSH1
0123 294 JUMP 295 JUMPDEST 296
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3 304
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3 304 MSTORE
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3 304 MSTORE 305
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3 304 MSTORE 305 MLOAD
0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO 302 ISZERO 303 DUP3 304 MSTORE 305 MLOAD 306

308
SWAP1
309
SUB
310
PUSH1
20
312
ADD
313
SWAP1
314
RETURN
315
JUMPDEST
316
PUSH1
00
318
SLOAD
319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00
346
SWAP1
347
DUP2 348
MSTORE
349
PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
SWAP1
357
SHA3
358
SLOAD
359
359 SWAP1

361		
JUMPDEST		
362		
PUSH1		
00		
364		
964 PUSH20 ####################################		
385		
DUP4		
386		
AND		
387		
ISZERO		
388		
ISZERO		
389		
PUSH2		
0147		
392		
JUMPI		
393		
PUSH1		
00		
395		
DUP1		
396		
REVERT		
397		
JUMPDEST		
398		
CALLER		
399		
PUSH1		
00		
401		
SWAP1		
402		
DUP2		
403		
MSTORE		
404		
PUSH1		
01		
406		
PUSH1		
20		
408		
MSTORE		
409		
PUSH1		
40		
411		

SWAP1
412
SHA3
413
SLOAD
414
DUP3
415

GT

416

ISZERO

417

PUSH2

0163

420

JUMPI

421

PUSH1

00

423

DUP1

424

REVERT

425

JUMPDEST

426

POP

427

CALLER

428

PUSH1

00

430

SWAP1

431

DUP2

432

MSTORE

433

PUSH1

01

435

PUSH1

20 437

DUP2

438

SWAP1

439

MSTORE

440

PUSH1

40 442

DUP1

443

DUP4 444

SHA3

445

DUP1 446

SLOAD

447

DUP6

448 SWAP1

SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503

505

SWAP10 504

DELEGATECALL

GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525 INVALID 526 CALLCODE 527 SWAP13 528 DUP9 529 INVALID 530 INVALID 531

RETURN
532
INVALID
533
STOP
534
INVALID
535

STOP 536 STOP 537 STOP 538 STOP 539 STOP 540 STOP 541 STOP 542 STOP 543 STOP 544 STOP 545 STOP 546 STOP 547 STOP 548 STOP 549 STOP 550 STOP 551 STOP 552 STOP 553 STOP 554 STOP 555 STOP 556 STOP 557 STOP 558 STOP 559 STOP 560 STOP 561

\$TOP 562 \$TOP 563 \$TOP 564 \$TOP

INVALID
566
LT
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10
000
PUSH1
80
002
PUSH1
40
004 MSTORE
005
CALLVALUE
006
DUP1
007
ISZERO
008
PUSH2
0010
011
JUMPI
012
PUSH1
014
DUP1 015
REVERT
016
JUMPDEST
017
POP
018
PUSH1
40
020
MLOAD
021
PUSH1
20
023 DUD4
DUP1 024
PUSH2
0217
027
DUP4
028
CODECOPY
029
DUP2
030
ADD
031 PUOLIA
PUSH1

40 033 034

SWAP1

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00

040

DUP2

041

DUP2

042

SSTORE

043

CALLER

044

DUP2

045

MSTORE

046

PUSH1

01

048 PUSH1

20

050

MSTORE

051

SWAP2

052

SWAP1

053

SWAP2

054 SHA3

055

SSTORE 056

PUSH2 01d1

059

DUP1

060 PUSH2

0046

063

PUSH1

00

065

CODECOPY

066

PUSH1

00

RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 #####
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
00 120
00 120 CALLDATALOAD
00 120 CALLDATALOAD 121
00 120 CALLDATALOAD 121 DIV
00 120 CALLDATALOAD 121 DIV 122
00 120 CALLDATALOAD 121 DIV
00 120 CALLDATALOAD 121 DIV 122 AND
00 120 CALLDATALOAD 121 DIV 122 AND
00 120 CALLDATALOAD 121 DIV 122 AND
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082
00 120 CALLDATALOAD 121 DIV 122 AND 123 PUSH4 18160ddd 128 DUP2 129 EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082

146 PUSH4 a9059cbb 151 EQ 152 PUSH2 00b0 155 JUMPI 156 JUMPDEST 157 PUSH1 00 159 DUP1 160 REVERT 161

JUMPDEST

162 CALLVALUE

163

DUP1 164

ISZERO 165

PUSH2 0067 168

JUMPI 169

PUSH1

00 171

DUP1 172

REVERT

173

JUMPDEST 174

POP

175 PUSH2

0070 178

PUSH2 00f5

181 JUMP

182 JUMPDEST

183

PUSH1

40

185

DUP1 186

MLOAD

187 SWAP2

DUP3 189 MSTORE 190 MLOAD 191 SWAP1 192 DUP2 193 SWAP1 194 SUB 195 PUSH1 20 197 ADD 198 SWAP1 199 RETURN 200 JUMPDEST 201 CALLVALUE 202 DUP1 203 ISZERO 204 PUSH2 008e 207 JUMPI 208 PUSH1 00 210 DUP1 211 REVERT 212 JUMPDEST 213 POP 214 PUSH2 0070 217 238 PUSH1 04 240 CALLDATALOAD 241 AND 242 PUSH2 00fb

JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ####################################
284
PUSH1
rosni
04
04
286
286 CALLDATALOAD
286 CALLDATALOAD 287
286 CALLDATALOAD 287 AND
286 CALLDATALOAD 287 AND 288
286 CALLDATALOAD 287 AND 288 PUSH1
286 CALLDATALOAD 287 AND 288 PUSH1 24
286 CALLDATALOAD 287 AND 288 PUSH1 24 290
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301
286 CALLDATALOAD 287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD 300 SWAP2 301 ISZERO

303 DUP3 304 MSTORE 305 MLOAD 306 SWAP1 307 DUP2 308 SWAP1 309 SUB 310 PUSH1 20 312 ADD 313 SWAP1 314 RETURN 315 JUMPDEST 316 PUSH1 00 318 SLOAD 319 SWAP1 320 JUMP 321 JUMPDEST 322 343 AND 344 PUSH1 00 346 SWAP1 347 DUP2 348 MSTORE 349 PUSH1 01 351 PUSH1 20 353 MSTORE 354 PUSH1 40

356	
SWAP1	
357	
SHA3	
358	
SLOAD	
359	
SWAP1	
360	
JUMP	
361	
JUMPDEST	
362	
PUSH1	
00	
364	
PUSH20 ffffffffffffffffffffffffffffffffffff	ffffffffffffffffffffffffffffffffffffff
385	
DUP4	
386	
AND	
387	
ISZERO	
388	
ISZERO	
389	
PUSH2	
0147	
392	
JUMPI	
393	
PUSH1	
00 395	
DUP1	
396	
REVERT	
397	
JUMPDEST	
398	
CALLER	
399	
PUSH1	
00	
401	
SWAP1	
402	
DUP2	
403	
MSTORE	
404	
PUSH1	
01	
406	
PUSH1	
20	
408	
MSTORE	
409	
PUSH1	

40

411

SWAP1

412

SHA3

413

SLOAD

414

DUP3

415

GT 416

ISZERO

417

PUSH2

0163

420

JUMPI 421

PUSH1

00

423

DUP1

424

REVERT

425

JUMPDEST

426

POP

427

CALLER

428

PUSH1

00 430

SWAP1

431

DUP2

432

MSTORE

433

PUSH1 01

435

PUSH1

20

437 DUP2

438

SWAP1

439

MSTORE

440

PUSH1 40

442

DUP1

443

DUP4 444

SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058

GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525 INVALID 526 CALLCODE 527 SWAP13 528 DUP9 529 INVALID 530

SHA3
501
INVALID
502
INVALID
503
SWAP10
504

DELEGATECALL

INVALID
531
RETURN
532
INVALID
533
STOP
534
INVALID

535 STOP

536 STOP

537 STOP

538

STOP 539

STOP 540

STOP 541

STOP

542 STOP

543 STOP

544

STOP 545

STOP

546 STOP

547

STOP 548

STOP 549

STOP

550 STOP

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552 STOP

553 STOP

554

STOP 555

STOP

556 STOP

557 STOP 558

STOP

559 STOP

STOP
561
STOP
562
STOP
563
STOP
564
STOP
565
INVALID
566
LT
This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters.
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[Show hidden characters
10
000
PUSH1
80
002
PUSH1
40
004
MSTORE
005
CALLVALUE
006
DUP1
007
ISZERO
008
PUSH2
0010
011
JUMPI 242
012
PUSH1
014
DUP1
015
REVERT
016
JUMPDEST
017
POP
018
PUSH1
40
020
MLOAD
021
PUSH1
20
023
DUP1
024
PUSH2
0217

027 DUP4 028 CODECOPY 029 DUP2 030 ADD 031 PUSH1 40 033 SWAP1 034 DUP2 035 MSTORE 036 SWAP1 037 MLOAD

MLOAD 038

PUSH1

00

040

DUP2

041

DUP2

042

SSTORE

043

CALLER

044

DUP2

045

MSTORE

046

PUSH1

01

048 PUSH1

20

050

MSTORE

051

SWAP2

052

SWAP1

053

SWAP2 054

SHA3

055

SSTORE

056

PUSH2 01d1

059 DUP1

060

PUSH2

0046
063
PUSH1
00
065
CODECOPY
066
PUSH1
00
068
RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 ffffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
128
DUP2
129
EQ
130
PUSH2 005b
133
JUMPI
134
DUP1
135

JUMPI	
145	
DUP1	
146	
PUSH4 a9059cbb	
151	
EQ	
152	
PUSH2 00b0	
155	
JUMPI	
156	
JUMPDEST	
157	
PUSH1	
00	
159	
DUP1	
160	
REVERT	
161	
JUMPDEST	
162	
CALLVALUE	
163	
DUP1	
164	
ISZERO	
165	
PUSH2	
0067	
168	
JUMPI	
169	
PUSH1	
00	
171	
DUP1	
172	
REVERT	
173	
JUMPDEST	
174	
POP	
175	
PUSH2	
0070	
178	
PUSH2 00f5	
181	
JUMP	
182	
JUMPDEST	

PUSH4 70a08231

183 PUSH1 40 185 DUP1 186 MLOAD 187 SWAP2 188 DUP3 189 MSTORE 190 MLOAD 191 SWAP1 192 DUP2 193 SWAP1 194 SUB 195 PUSH1 20 197 ADD 198 SWAP1 199 RETURN 200 JUMPDEST 201 CALLVALUE 202 DUP1 203 ISZERO 204 PUSH2 008e 207 JUMPI 208 PUSH1 00 210 DUP1 211 REVERT 212 JUMPDEST 213 POP 214 PUSH2 0070 217

238
PUSH1
04
240
CALLDATALOAD
241
AND
242
PUSH2 00fb
245
JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ffffffffffffffffffffffffffffffffffff
284
PUSH1
04
286
CALLDATALOAD
287
AND
288
PUSH1
24
290
CALLDATALOAD
291
PUSH2
0123
294
JUMP

40

JUMPDEST 296 PUSH1

298
DUP1
299
MLOAD
300
SWAP2
301
ISZERO
302
ISZERO
303
DUP3
304
MSTORE
305
MLOAD
306
SWAP1
307
DUP2
308
SWAP1
309
SUB
310
PUSH1
20
312
ADD
313
SWAP1
314
RETURN
315
JUMPDEST
316
PUSH1
00
318
SLOAD
319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00
346
SWAP1
347
DUP2
348
MSTORE

PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
SWAP1
357
SHA3
358
SLOAD
359
SWAP1
360
JUMP
361
JUMPDEST
362
PUSH1
00
364
PUSH20 ffffffffffffffffffffffffffffffffffff
385
DUP4
386
AND
387
387 ISZERO
387 ISZERO 388
387 ISZERO 388 ISZERO
387 ISZERO 388 ISZERO 389
387 ISZERO 388 ISZERO 389 PUSH2
387 ISZERO 388 ISZERO 389 PUSH2
387 ISZERO 388 ISZERO 389 PUSH2 0147 392
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401 SWAP1
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401 SWAP1
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401 SWAP1 402 DUP2
387 ISZERO 388 ISZERO 389 PUSH2 0147 392 JUMPI 393 PUSH1 00 395 DUP1 396 REVERT 397 JUMPDEST 398 CALLER 399 PUSH1 00 401 SWAP1

404

PUSH1

01

406

PUSH1

20

408

MSTORE

409

PUSH1

40

411

SWAP1

412

SHA3

413

SLOAD

414

DUP3

415

GT

416 ISZERO

417

PUSH2

0163

420

JUMPI

421

PUSH1

00 423

DUP1

424

REVERT

425

JUMPDEST

426

POP 427

CALLER

428

PUSH1

430 SWAP1

431

DUP2

432

MSTORE

433

PUSH1

435

PUSH1

20

437 DUP2

438

SWAP1

439
MSTORE
440
PUSH1
40
442
DUP1
443
DUP4
444
SHA3
445
DUP1
446
SLOAD
447
DUP6
448
SWAP1
449
SUB
450
SWAP1
451
SSTORE
452
PUSH20 ####################################
473
DUP6
474
AND
475
475 DUP4
475 DUP4 476
475 DUP4 476 MSTORE
475 DUP4 476 MSTORE 477
475 DUP4 476 MSTORE 477 SWAP1
475 DUP4 476 MSTORE 477 SWAP1 478
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2
475 DUP4 476 MSTORE 477 SWAP1 478
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 484
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487
475 DUP4 476 MSTORE 477 SWAP1 478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2

491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID 524 INVALID 525

POP 490 JUMP

INVALID 526 CALLCODE 527 SWAP13 528 DUP9 529 INVALID 530 INVALID 531 RETURN 532 INVALID 533 STOP

534

INVALID 535

STOP

536 STOP

537 STOP

538 STOP

539

STOP 540

STOP

541 STOP

542

STOP

543

STOP 544

STOP

545

STOP

546

STOP

547

STOP

548 STOP

549

STOP

550

STOP

551

STOP 552

STOP

553

STOP 554

STOP

STOP
556
STOP
557
STOP
558
STOP
559
STOP
560
STOP SCA
561
STOP
562 OTOR
STOP
563
STOP
564
STOP
565
INVALID
566
LT
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10
This file contains bidirectional Unicode text that may be interpreted or compiled differently than what appears below. To review, open the file in an editor that reveals hidden Unicode characters
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Learn more about bidirectional Unicode characters
[Show hidden characters
10
[Show hidden characters
10
000
PUSH1
80
002
PUSH1
40
004
MSTORE
005
CALLVALUE
006
DUP1
007
007 ISZERO 008
ISZERO
ISZERO 008
ISZERO 008 PUSH2
ISZERO 008 PUSH2 0010
ISZERO 008 PUSH2 0010 011
ISZERO 008 PUSH2 0010 011 JUMPI 012
ISZERO 008 PUSH2 0010 011 JUMPI 012 PUSH1
ISZERO 008 PUSH2 0010 011 JUMPI 012
ISZERO 008 PUSH2 0010 011 JUMPI 012 PUSH1 00 00 014
ISZERO 008 PUSH2 0010 011 JUMPI 012 PUSH1 00

016
JUMPDEST
017
POP
018
PUSH1

40 020

MLOAD

021

PUSH1 20

023

DUP1

024

PUSH2 0217

027

DUP4

028

CODECOPY

029

DUP2

030

ADD 031

PUSH1

40

033

SWAP1

034

DUP2

035

MSTORE

036

SWAP1

037

MLOAD

038

PUSH1

00

040

DUP2

041 DUP2

042

SSTORE

043

CALLER

044

DUP2

045

MSTORE

046 PUSH1

01

048

PUSH1

20

051
SWAP2
052
SWAP1
053
SWAP2
054
SHA3
055
SSTORE
056
PUSH2 01d1
059
DUP1
060
PUSH2
0046
063
PUSH1
00
065
CODECOPY
066
PUSH1
00
068
RETURN
069
STOP
070
PUSH1
80
072
PUSH1
40
074
MSTORE
075
PUSH1
04
077
CALLDATASIZE
078
LT
079
PUSH2
0056
082
JUMPI
083
PUSH4 fffffff
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD

MSTORE

EQ 130 PUSH2 005b 133 JUMPI 134 DUP1 135 PUSH4 70a08231 140 EQ 141 PUSH2 0082 144 JUMPI 145 DUP1 146 PUSH4 a9059cbb 151 EQ 152 PUSH2 00b0 155 JUMPI 156 JUMPDEST 157 PUSH1 00 159 DUP1 160 REVERT 161 JUMPDEST 162 CALLVALUE 163 DUP1 164 ISZERO 165 PUSH2 0067 168 JUMPI 169 PUSH1 00

121 DIV 122 AND 123

128 DUP2 129

PUSH4 18160ddd

DUP1

172

REVERT

173

JUMPDEST

174

POP

175

PUSH2

0070

178

PUSH2 00f5

181

JUMP

182

JUMPDEST

183

PUSH1

40

185

DUP1

186

MLOAD

187

SWAP2

188

DUP3

189

MSTORE

190

MLOAD

191

SWAP1

192

DUP2

193

SWAP1

194 SUB

195

PUSH1

20 197

ADD 198

SWAP1

199

RETURN

200

JUMPDEST

201

CALLVALUE

202

DUP1 203

ISZERO

204

PUSH2 008e

JUMPI
208
PUSH1
00
210
DUP1
211
REVERT
212
JUMPDEST
213
POP
214
PUSH2
0070
217
PUSH20 ffffffffffffffffffffffffffffffffffff
238
PUSH1
04
240
CALLDATALOAD
241
AND
242
PUSH2 00fb
245
JUMP
246
JUMPDEST
247
CALLVALUE
248
DUP1
249
ISZERO
250
PUSH2 00bc
253
JUMPI
254
PUSH1
00
256
DUP1
257
REVERT
258
JUMPDEST
259
POP
260
PUSH2 00e1
263
PUSH20 ffffffffffffffffffffffffffffffffffff
284
PUSH1
04
286
CALLDATALOAD

287 AND 288 PUSH1 24 290 CALLDATALOAD 291 PUSH2 0123 294 JUMP 295 JUMPDEST 296 PUSH1 40 298 DUP1 299 MLOAD

300 SWAP2 301

ISZERO 302 ISZERO

303 DUP3 304 MSTORE

305 MLOAD 306

SWAP1 307 DUP2

308 SWAP1 309 SUB

310 PUSH1 20

312 ADD 313 SWAP1

314 RETURN

315 JUMPDEST

316 PUSH1

318 SLOAD

00

319

SWAP1 320

JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00
346
SWAP1
347
DUP2
348
MSTORE
349
PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
SWAP1
357
SHA3
358
SLOAD
SLOAD 359
359
359 SWAP1
359 SWAP1 360
359 SWAP1 360 JUMP
359 SWAP1 360 JUMP 361
359 SWAP1 360 JUMP 361 JUMPDEST
359 SWAP1 360 JUMP 361 JUMPDEST 362
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################

DUP1 396

REVERT

397

JUMPDEST

398

CALLER

399

PUSH1

00

401

SWAP1

402

DUP2

403

MSTORE

404

PUSH1

01

406

PUSH1

20

408

MSTORE

409

PUSH1

40

411

SWAP1

412 SHA3

413

SLOAD

414

DUP3

415

GT

416

ISZERO 417

PUSH2

0163

420 JUMPI

421

PUSH1

00

423 DUP1

424

REVERT

425

JUMPDEST

426

POP

427

CALLER

428

(00
	430
:	SWAP1
	431
1	DUP2
	432
	MSTORE
	433
	PUSH1
	01
	435
1	PUSH1
2	20
	437
1	DUP2
	438
;	SWAP1
	439
	MSTORE
	440
	PUSH1
	40
	442
- 1	DUP1
•	443
1	DUP4
	444
;	SHA3
	445
1	DUP1
	446
	SLOAD
	447
	DUP6
	448
	SWAP1
•	449
;	SUB
	450
;	SWAP1
	451
:	SSTORE
	452
	PUSH20 ####################################
	473
	DUP6
	474
	AND
	475
-	DUP4
	476
ı	MSTORE
	477
;	SWAP1
	478
;	SWAP2
	479
	SHA3
	480
	DUP1

481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509 INVALID 510 INVALID 511 INVALID 512 SWAP4 513 LOG4 514 SWAP1

515 JUMPI 516 INVALID

CALLVALUE

INVALID

519

BLOCKHASH

520

INVALID

521

SWAP2

522

INVALID

523

INVALID

524

INVALID

525

INVALID

526

CALLCODE

527

SWAP13

528

DUP9

529 INVALID

530

INVALID

531

RETURN

532

INVALID

533 STOP

534

INVALID

535

STOP

536 STOP

537

STOP

538

STOP 539

STOP

540

STOP 541

STOP

542

STOP 543

STOP

544

STOP

545

STOP

546

STOP

547 STOP 548 STOP 549 STOP 550 STOP 551 STOP 552 STOP 553 STOP 554 STOP 555 STOP 556 STOP 557 STOP 558 STOP 559 STOP 560 STOP 561 STOP 562 STOP 563

562 STOP 563 STOP 564 STOP 565

INVALID 566 LT 000 PUSH1

002 PUSH1 40

80

004

MSTORE 005

CALLVALUE 006

DUP1 007 ISZERO

008 PUSH2

0010 011 JUMPI

PUSH1 00 014 DUP1 015 REVERT 016 JUMPDEST 017 POP 018 PUSH1 40 020 MLOAD 021 PUSH1 20 023 DUP1 024 PUSH2 0217 027 DUP4 028 CODECOPY 029 DUP2 030 ADD 031 PUSH1 40 033 SWAP1 034 DUP2 035 MSTORE 036

036 SWAP1 037 MLOAD

038 PUSH1

00 040

DUP2 041

DUP2 042

SSTORE

043 CALLER

044

DUP2 045

MSTORE

SWAP2 052 SWAP1 053 SWAP2 054 SHA3 055 SSTORE 056 PUSH2 01d1 059 DUP1 060 PUSH2 0046 063 PUSH1 00 065 CODECOPY 066 PUSH1 00 068 RETURN 069 STOP 070 PUSH1 80 072 PUSH1 40 074 MSTORE 075 PUSH1 04 077 CALLDATASIZE 078 LT 079 PUSH2 0056 082 JUMPI 083 PUSH4 fffffff 088 PUSH29

010000000000000000000000000000000000000
118
PUSH1
00
120
CALLDATALOAD
121
DIV
122
AND
123
PUSH4 18160ddd
128
DUP2
129
EQ 400
130 PUSH2 005b
133
JUMPI
134 DUD4
DUP1
135 PUSH4 70a08231
140
EQ
141
PUSH2
0082
144
JUMPI
145
DUP1
146
PUSH4 a9059cbb
151
EQ
152
PUSH2 00b0
155
JUMPI
156
JUMPDEST
157
PUSH1
00
159
DUP1
160
REVERT
161
JUMPDEST
162
CALLVALUE
163
DUP1
164
ISZERO

168

JUMPI

169

PUSH1

00

171

DUP1

172

REVERT

173

JUMPDEST

174

POP

175

PUSH2

0070

178

PUSH2 00f5

181

JUMP

182

JUMPDEST

183

PUSH1

40

185

DUP1

186

MLOAD 187

SWAP2

188

DUP3

189

MSTORE

190

MLOAD

191

SWAP1

192

DUP2 193

SWAP1

194 SUB

195

PUSH1

20

197 ADD

198

SWAP1

199 RETURN

200

JUMPDEST

201 CALLVALUE

DUP1
203
ISZERO
204
PUSH2 008e
207
JUMPI
208
PUSH1
00
210
DUP1
211
REVERT
212
JUMPDEST
213
POP
214
PUSH2
0070
217
PUSH20 ####################################
238
PUSH1
04
240
CALLDATALOAD
241
AND
242
PUSH2 00fb
245
JUMP
246
JUMPDEST
247
247 CALLVALUE
CALLVALUE
CALLVALUE 248
CALLVALUE 248 DUP1
CALLVALUE 248 DUP1 249
CALLVALUE 248 DUP1 249 ISZERO 250
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1 257
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1 257 REVERT
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1 257 REVERT 258
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1 257 REVERT 258 JUMPDEST
CALLVALUE 248 DUP1 249 ISZERO 250 PUSH2 00bc 253 JUMPI 254 PUSH1 00 256 DUP1 257 REVERT 258 JUMPDEST 259

PUSH20 ffffffffffffffffffffffffffffffffffff
284
PUSH1
04
286
CALLDATALOAD
287
AND
288
PUSH1
24
290
CALLDATALOAD
291
PUSH2
0123
294
JUMP
295
JUMPDEST
296
PUSH1
40
298
DUP1
299
MLOAD
300
SWAP2
301
ISZERO
302
ISZERO
303
DUP3
304
MSTORE
305
MLOAD
306
SWAP1
307
DUP2
308
SWAP1
309
SUB
310
PUSH1

20 312 ADD 313 SWAP1 314 RETURN 315 JUMPDEST 316 PUSH1

00
318
SLOAD
319
SWAP1
320
JUMP
321
JUMPDEST
322
PUSH20 ffffffffffffffffffffffffffffffffffff
343
AND
344
PUSH1
00
346
SWAP1
347
DUP2
348
MSTORE
349
PUSH1
01
351
PUSH1
20
353
MSTORE
354
PUSH1
40
356
356 SWAP1
SWAP1
SWAP1 357
SWAP1 357 SHA3
SWAP1 357 SHA3 358
SWAP1 357 SHA3 358 SLOAD
SWAP1 357 SHA3 358 SLOAD 359
SWAP1 357 SHA3 358 SLOAD 359 SWAP1
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################
SWAP1 357 SHA3 358 SLOAD 359 SWAP1 360 JUMP 361 JUMPDEST 362 PUSH1 00 364 PUSH20 ####################################

392

JUMPI

393

PUSH1

00

395

DUP1

396

REVERT

397

JUMPDEST

398

CALLER

399

PUSH1

00

401

SWAP1

402

DUP2

403

MSTORE

404

PUSH1

01

406

PUSH1

20

408

MSTORE

409

PUSH1

40 411

...

SWAP1 412

SHA3

413 SLOAD

414

DUP3

415

GT 416

ISZERO

417

PUSH2

0163 420

JUMPI

421

PUSH1

00

423

DUP1

424

REVERT 425

JUMPDEST

426 POP 427 CALLER 428 PUSH1 00 430 SWAP1 431 DUP2 432 MSTORE 433 PUSH1 01 435 PUSH1 20 437 DUP2 438 SWAP1 439 MSTORE 440 PUSH1 40 442 DUP1 443 DUP4 444 SHA3 445 DUP1 446 SLOAD 447 DUP6 448 SWAP1 449 SUB 450 SWAP1 451 SSTORE 452 473 DUP6 474 AND 475 DUP4 476 MSTORE 477 SWAP1

478 SWAP2 479 SHA3 480 DUP1 481 SLOAD 482 DUP4 483 ADD 484 SWAP1 485 SSTORE 486 SWAP3 487 SWAP2 488 POP 489 POP 490 JUMP 491 STOP 492 LOG1 493 PUSH6 627a7a723058 500 SHA3 501 INVALID 502 INVALID 503 SWAP10 504 DELEGATECALL 505 GASLIMIT 506 SWAP7 507 TIMESTAMP 508 DUP8 509

GASLIMIT
506
SWAP7
507
TIMESTAMP
508
DUP8
509
INVALID
510
INVALID
511
INVALID
512
SWAP4
513
LOG4

514 SWAP1 515 JUMPI 516 INVALID 517 CALLVALUE 518 INVALID 519 BLOCKHASH 520 INVALID 521 SWAP2 522 INVALID 523 INVALID

524 INVALID 525

INVALID 526

CALLCODE

527

SWAP13

528 DUP9

529

INVALID

530

INVALID

531

RETURN

532

INVALID

533

STOP

534

INVALID

535

STOP 536

STOP

537

STOP

538

STOP 539

STOP

540

STOP

541

STOP

542

STOP 543

STOP

544
STOP
545
STOP
546
STOP
547
STOP
548
STOP
549
STOP
550
STOP
551

STOP 552 STOP 553

STOP

554 STOP 555 STOP

556 STOP 557

STOP558STOP559

STOP 560 STOP

561 STOP 562 STOP 563

STOP 564 STOP 565

INVALID 566 LT

000 PUSH1 80

000 PUSH1 80

000 PUSH1 80

002 PUSH1 40

002

PUSH1

40

004

MSTORE

004

MSTORE

004

MSTORE

005

CALLVALUE

005

CALLVALUE

005

CALLVALUE

006

DUP1

006

DUP1

006

DUP1

007

ISZERO

007

ISZERO

007

ISZERO

800

PUSH2

0010

800

PUSH2

0010 008

PUSH2

0010

011

JUMPI

011

JUMPI 011

JUMPI

012 PUSH1

00

012

PUSH1

00 012

PUSH1

00

014

DUP1

014

DUP1

014 DUP1

015

REVERT

REVERT

015

REVERT

016

JUMPDEST

016

JUMPDEST

016

JUMPDEST

017

POP

017

POP

017

POP

018

PUSH1

40

018

PUSH1

40

018

PUSH1

40

020

MLOAD

020

MLOAD

020

MLOAD

021

PUSH1 20

021

PUSH1

20

021

PUSH1

20

023 DUP1

023

DUP1 023

DUP1

024

PUSH2 0217

024

PUSH2

0217 024

PUSH2

0217

027

DUP4 027

DUP4

DUP4 028 CODECOPY 028 CODECOPY 028 CODECOPY 029 DUP2 029 DUP2 029 DUP2 030 ADD 030 ADD 030 ADD 031 PUSH1 40 031 PUSH1 40 031 PUSH1 40 033 SWAP1 033 SWAP1 033 SWAP1 034 DUP2 034 DUP2 034 DUP2 035 MSTORE 035 MSTORE 035 MSTORE

036
SWAP1
036
SWAP1
037
MLOAD
037
MLOAD
037
MLOAD
037
MLOAD

038

PUSH1

00

038

PUSH1

00

040

DUP2

040

DUP2 040

DUP2

041

DUP2

041

DUP2

041

DUP2

042

SSTORE

042

SSTORE

042

SSTORE

043

CALLER

043

CALLER

043

CALLER

044

DUP2

044 DUP2

044

DUP2

045

MSTORE

045

MSTORE

045

MSTORE 046

PUSH1

01 046

PUSH1

01

046 PUSH1

01

048

PUSH1

20

048

PUSH1

20 048

20 050 MSTORE 050 MSTORE 050 MSTORE 051 SWAP2 051 SWAP2 051 SWAP2 052 SWAP1 052 SWAP1 052 SWAP1 053 SWAP2 053 SWAP2 053 SWAP2 054 SHA3 054 SHA3 054 SHA3 055 SSTORE 055 SSTORE 055 SSTORE 056 PUSH2 01d1 056 PUSH2 01d1 056 PUSH2 01d1 059 DUP1 059 DUP1 059 DUP1 060

PUSH2 0046 060 PUSH2 0046 060 PUSH2 0046 063 PUSH1

063

PUSH1

00

065

CODECOPY

065

CODECOPY

065

CODECOPY

066

PUSH1

00

066

PUSH1

00

066

PUSH1

00

068

RETURN

068

RETURN

068

RETURN

069

STOP 069

STOP

069

STOP

070

PUSH1

80

070

PUSH1

80

070

PUSH1

80 072

PUSH1

40

072

PUSH1

40 072

PUSH1

40

074

MSTORE 074

MSTORE

074

MSTORE 075

04
075
PUSH1
04
075
PUSH1
04
077
CALLDATASIZE
077
CALLDATASIZE
077
CALLDATASIZE
078
LT
078
LT
078
LT
079
PUSH2
0056
079
PUSH2
0056
079
PUSH2
0056
082
JUMPI
082
JUMPI
082
JUMPI
083
PUSH4 ffffffff
083
PUSH4 ffffffff
083
PUSH4 fffffff
088
PUSH29
010000000000000000000000000000000000000
088
PUSH29
010000000000000000000000000000000000000
088
PUSH29
010000000000000000000000000000000000000
118
PUSH1
00
118
PUSH1
00
118
PUSH1
00
120
CALLDATALOAD

PUSH4 18160ddd

123

AND 122 AND 123

PUSH4 18160ddd

123

PUSH4 18160ddd

128

DUP2

128

DUP2

128

DUP2

129

EQ 129

EQ

129

EQ

130

PUSH2 005b

130

PUSH2 005b

130

PUSH2 005b

133

JUMPI

133

JUMPI

133

JUMPI 134

DUP1

134

DUP1

134

DUP1 135

PUSH4 70a08231

135

PUSH4 70a08231

135

PUSH4 70a08231

140

EQ

140 EQ 140 EQ 141 PUSH2 0082 141 PUSH2 0082 141 PUSH2 0082 144 JUMPI 144 JUMPI 144 JUMPI 145 DUP1 145 DUP1 145 DUP1 146 PUSH4 a9059cbb 146 PUSH4 a9059cbb 146 PUSH4 a9059cbb 151 EQ 151 EQ 151 EQ 152 PUSH2 00b0 152 PUSH2 00b0 152 PUSH2 00b0 155 JUMPI 155 JUMPI 155 JUMPI

JUMPDEST
156
JUMPDEST
157
PUSH1
00
157

PUSH1

156 JUMPDEST 156

157

PUSH1

00

159

DUP1

159

DUP1

159

DUP1

160

REVERT

160

REVERT

160

REVERT

161

JUMPDEST

161

JUMPDEST

161

JUMPDEST

162

CALLVALUE

162

CALLVALUE

162

CALLVALUE

163

DUP1

163 DUP1

163

DUP1

164

ISZERO

164

ISZERO

164

ISZERO

165

PUSH2

0067

165 PUSH2

0067

165

PUSH2

0067 168

JUMPI

168

JUMPI

168

JUMPI 169

PUSH1

00

169

169

PUSH1

00

171

DUP1

171

DUP1

171

DUP1

172

REVERT

172

REVERT

172

REVERT

173

JUMPDEST

173

JUMPDEST

173

JUMPDEST

174

POP

174

POP

174 POP

175

PUSH2

0070

175

PUSH2

0070 175

PUSH2

0070

178

PUSH2 00f5

178

PUSH2 00f5

178

PUSH2 00f5

181

JUMP

181 JUMP

181

JUMP

182

JUMPDEST

182

JUMPDEST

182

JUMPDEST

183

PUSH1

40 183

183

PUSH1

40

185

DUP1

185

DUP1

185

DUP1

186

MLOAD

186

MLOAD

186 MLOAD

187

SWAP2

187

SWAP2

187

SWAP2

188

DUP3

188

DUP3

188 DUP3

189

MSTORE

189

MSTORE

189

MSTORE

190

MLOAD

190

MLOAD

190

MLOAD 191

SWAP1

191

SWAP1

191 SWAP1

192

DUP2

192

DUP2

192 DUP2

193

SWAP1

193

SWAP1

193

SWAP1

194

SUB

SUB

194

SUB

195

PUSH1

20

195

PUSH1

20

195

PUSH1

20

197

ADD

197

ADD

197 ADD

198

SWAP1

198

SWAP1

198

SWAP1

199

RETURN

199

RETURN

199

RETURN

200 JUMPDEST

200

JUMPDEST

200

JUMPDEST

201

CALLVALUE

201

CALLVALUE

201

CALLVALUE

202

DUP1 202

DUP1

202 DUP1

203

ISZERO

203

ISZERO

203 ISZERO

204

PUSH2 008e

204

PUSH2 008e

PUSH2 008e
207
JUMPI
207
JUMPI
207
JUMPI
208
PUSH1
00
208
PUSH1
00
208
PUSH1
00
210
DUP1
210
DUP1
210
DUP1
211
REVERT
211
REVERT
211
REVERT
212
JUMPDEST
212
JUMPDEST
212
JUMPDEST
213
POP
213
POP
213
POP
214
PUSH2
0070
214
PUSH2
0070
214
PUSH2
0070
217
PUSH20 ffffffffffffffffffffffffffffffffffff
217
PUSH20 ffffffffffffffffffffffffffffffffffff
217
PUSH20 ####################################
238
PUSH1
04
238
PUSH1

04 238 PUSH1 04 240 CALLDATALOAD 240 CALLDATALOAD 240 CALLDATALOAD 241 AND 241 AND 241 AND 242

PUSH2 00fb 242

PUSH2 00fb 242

PUSH2 00fb 245 JUMP

245 JUMP 245 JUMP 246

JUMPDEST 246 JUMPDEST

246 JUMPDEST 247

CALLVALUE 247

CALLVALUE 247 CALLVALUE

248 DUP1 248

DUP1 248 DUP1

249 ISZERO 249 ISZERO

249 ISZERO

250 PUSH2 00bc 250

PUSH2 00bc 250

PUSH2 00bc 253

JUMPI

253
JUMPI
253
JUMPI
254
PUSH1
00
254
PUSH1
00
254
PUSH1
00
256
DUP1 256
DUP1
256
DUP1
257
REVERT
257
REVERT
257
REVERT
258
JUMPDEST
258
JUMPDEST
258
JUMPDEST
259 POP
259
POP
259
POP
260
PUSH2 00e1
260
PUSH2 00e1
260
PUSH2 00e1
263 PUSH20 ####################################
263
PUSH20 ####################################
263
PUSH20 ####################################
284
PUSH1
04
284
PUSH1
04
284
PUSH1
04
286
CALLDATALOAD

CALLDATALOAD

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CALLDATALOAD

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AND

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AND

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AND

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PUSH1

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PUSH1

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PUSH1

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CALLDATALOAD

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CALLDATALOAD

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CALLDATALOAD

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PUSH2 0123

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JUMP

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PUSH1

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SWAP2

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SWAP2

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SWAP2

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ISZERO

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ISZERO

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DUP3

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DUP3 303

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PUSH1

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PUSH1

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SWAP1

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SWAP1

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SHA3 412

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JUMPI

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426 POP

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CALLER

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CALLER

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PUSH1

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PUSH1

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430

SWAP1

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SWAP1

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SWAP1

431

DUP2

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DUP2

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DUP2

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MSTORE

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MSTORE

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MSTORE

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PUSH1

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484 SWAP1

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485

SSTORE

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SSTORE

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SSTORE

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SWAP3

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SWAP3 486

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SWAP2

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POP 488

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CALLVALUE

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CALLCODE

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view raw

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BasicToken.asm

](https://gist.github.com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm)

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view raw

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BasicToken.asm

](https://gist.github.com/ajsantander/60bd8d6f88725663f89a67a7c51672c7#file-basictoken-asm)

GitHub To make sure that you're following the same set of opcodes described in this series, please compare what you see in Remix with they tecode in this gist

bytecode in this gist This is the disassembled bytecode of the contract. Disassembly sounds rather intimidating, but it's quite simple, really. If you scan the raw bytecode by bytes (two characters at a time), the EVM identifies specific opcodes that it associates to particular actions. For example:

0x60 => PUSH 0x01 => ADD 0x02 => MUL 0x00 => STOP ..

The disassembled code is still very low-level and difficult to read, but as you will see, we can start making sense out of it.

Oncodes

Before we get started on our ambitious endeavour of completely deconstructing the bytecode, you're going to need a basic tool set for understanding individual opcodes such as PUSH

, ADD

SWAP

, DUP

, etc. An opcode, in the end, can only push or consume items from the EVM's stack, memory, or storage belonging to the contract. That's it.

PUSH

ADD

SWAP

DUP

To see all the available opcodes that the EVM can process, check outhis handy gist from Pyethereum showing a list of the opcodes. To understand what each one does and how it works, Solidity's assembly documentation is a great reference. Even though it's not a one-on-one relationship with the raw opcodes, it's pretty close (it's actually Yul, an intermediate language between Solidity and EVM bytecode). Finally, if you can speak scientician, there's always the Ethereum Yellow Paper to fall back on.

this handy gist from Pyethereum showing a list of the opcodes olidity's assembly documentation Ethereum Yellow Paper There's no point in reading these resources from start to finish right now; just keep them around for reference. We'll be using them as we go along.

Instructions

Each line in the disassembled code above is an instruction for the EVM to execute. Each instruction contains an opcode. For example, let's take one of those instructions, instruction 88, which pushes the number 4 to the stack. This particular disassembler interprets instructions as follows:

88 PUSH1 0x04 | | |

| Hex value for push. | Opcode. Instruction number.

Even though the disassembled code brings us one step closer to understanding what's going on, it's still quite intimidating. We're going to need a strategy for deconstructing the whole thing, which has 596 instructions!

The Strategy

Problems that appear to be overwhelming at first usually succumb to the all-powerful, all-mighty "divide-and-conquer" strategy, and this problem is no exception to the rule. We'll identify split points in the disassembled code and reduce it bit by bit, until we end up with small, digestible chunks, which we'll walk through step by step in Remix's debugger. In the following diagram, we can see the first split we can make on the disassembled code, which we'll analyze completely in the next article.

You can find the end result of the entire deconstruction in the deconstruction in the deconstruction diagram. Don't worry if you don't understand the diagram at first. You're not supposed to. This series will go through it step by step. Keep it around so you can keep track of the big picture as we go along.

deconstruction diagram The series is divided into the following set of articles. If you're up for the challenge, get started with the actual deconstruction in Part II. See you there!

Part II1. Deconstructing a Solidity Contract—Part I: Introduction ✔

- 1. Deconstructing a Solidity Contract—Part II: Creation vs. Runtime
- 2. Deconstructing a Solidity Contract—Part III: The Function Selector
- Deconstructing a Solidity Contract—Part IV: Function Wrappers
 Deconstructing a Solidity Contract—Part V: Function Bodies
- 5. Deconstructing a Solidity Contract—Part VI: The Metadata Hash

Deconstructing a Solidity Contract—Part I: Introduction ✔

Deconstructing a Solidity Contract—Part II: Creation vs. Runtime

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Deconstructing a Solidity Contract—Part VI: The Metadata Hash