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# Ethereum: 30 Tips & Tricks

FOR SOLIDITY DEVELOPERS

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# **Table of Contents**

# #CONTENTS#CON

<b>TABLE OF CONTENTS</b>	5
<b>PREFACE</b>	7
<b>SOFTWARE</b>	9
<b>TIPS</b>	12
#1 What meaning has the size of the letters in the address?	13
#2 What's the difference between an address and a public key?	14
#3 What's the difference between SHA-3 and Keccak256?	15
#4 The difference between the default visibility of function and state variable?	16
#5 How many transactions can fit into the Ethereum block?	17
#6 How to access the value returned by the function during the transaction?	18
#7 How to tell what function is supported by the given smart contract?	19
#8 How to send free transactions on the mainnet?	20
#9 How to time travel?	21
#10 How to convert a string to bytes and bytes to string using Web3?	22
#11 How to connect to Infura using WebSockets?	23
#12 How to force ether transfer to the smart contract?	24
#13 How can a function return multiple values?	25
#14 How can a modifier call the modified function multiple times?	26
#15 How to easily swap values of two variables?	27
#16 How to set a custom error message?	28
#17 How to compute the function selector and test the exception?	29
#18 How to use events as cheap storage?	30
#19 What interesting can you do with gas left in the fallback function?	31
#20 How can you easily log an event?	32
#21 How to debug tests using events?	33
#22 How to use default parameters?	34
#23 How to concatenate two strings?	35
#24 How to return a struct?	36
#25 How to return a struct using ABIEncoderV2?	37
#26 How to highlight Solidity syntax on GitHub?	38
#27 How to enforce the coding style guide?	39
#28 How to check the test coverage?	40
#29 How your functions can shadow built-ins?	41
#30 How does hoisting work?	42
<b>ADDITIONAL MATERIALS</b>	44
<b>SUMMARY</b>	46



**Tips**

# #3#SOLIDITY#3#S

## Tip #3 What's the difference between SHA-3 and Keccak256?

In Solidity, the sha3 function is an alias for keccak256 function and uses Keccak, the winning algorithm in the NIST competition for SHA-3 hash function. In many libraries or different programming languages, sha3 usually implements the SHA-3 FIPS 202 standard which is different from Keccak. Before standardization, NIST changed the padding parameter which results in a different output.

In the next Solidity version, aliases sha3 and suicide are going to be forbidden.

```
keccak256("The quick brown fox jumps over the lazy dog");  
// 0x4d741b6f1eb29cb2a9b9911c82f56fa8d73b04959d3d9d222895df6c0b28aa15
```

```
const { sha3_256, keccak_256 } = require("js-sha3");  
sha3_256("The quick brown fox jumps over the lazy dog");  
// 69070dda01975c8c120c3aada1b282394e7f032fa9cf32f4cb2259a0897dfc04  
keccak_256("The quick brown fox jumps over the lazy dog");  
// 4d741b6f1eb29cb2a9b9911c82f56fa8d73b04959d3d9d222895df6c0b28aa15
```

# #17 #FUNCTION\_S

## Tip #17

### How to compute the function selector and test the exception?

To test the exception in Solidity, for example, while writing unit tests in Solidity, you have to use the `address.call`. You can assert for raised exceptions as `address.call` returns `false` when the call failed and `true` otherwise. To use the `address.call` function, you have to pass a function selector which are the first 4 bytes of Keccak hash of the function signature.

```
bytes4 signature = bytes4(keccak256("transferOwnership(address)"));
bool result = address(ownable).call(signature, address(this));
Assert.equal(result, false, "non-owner can call transfer ownership");
```

The other way to obtain a function selector is to access the `selector` member of the function. It's easier and makes refactoring simpler as you change argument type once but doesn't work for overloaded functions.

```
bytes4 signature = ownable.transferOwnership.selector;
```

# #26 #SOLIDITY #26

---

## Tip #26 How to highlight Solidity syntax on GitHub?

At the time of writing, GitHub doesn't support syntax highlighting in \*.sol files by default. If you want to improve readability of your pull requests, add the .gitattributes file to your repository with the following content.

```
*.sol linguist-language=Solidity
```



CONTINUE READING...

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# #REVIEWS #OPINIONS

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## Full version reviews

“I was amazed how Michal was able to put a lot of knowledge in form of short, easy to digest tips. I think it’s essential read for any blockchain developer.”

– **Krzysztof Kaczor**, Engineering At MakerDAO

“This book is an essence of the most useful hints in Solidity for Ethereum Blockchain. On almost 50 pages you will find everything from an address definition, through transactions details, to Smart Contracts functions.”

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