



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME: 190E201-Blockchain Technology

IV YEAR /VII SEMESTER

Unit 3- ETHEREUM

Topic : Solidity Programming Language



Solidity



Ethereum Solidity is a contract-oriented, high-level language with syntax like that of JavaScript.

A solidity is a tool used to generate a machine-level code to execute on EVM.

The solidity compiler takes the high-level code and breaks it down into simpler instructions.

*Solidity code is encapsulated in **Contracts***



Operators in Solidity





Operators in Solidity -Arithmetic Operators



Solidity has pretty straightforward Math operations.

Addition: $x + y$

Subtraction: $x - y$

Multiplication: $x * y$

Division: x / y

Modulus / remainder: $x \% y$



Operators in Solidity -Incremental Operators



Incremental operators in solidity: $a++$, $a--$, $++a$, $--a$, $a+=1$, $a=a+1$

Rules applicable to other programming languages are similar in solidity also.



Operators in Solidity -Bitwise Operators



Following are the operators:

(Bitwise OR) '|', (Bitwise XOR), (Bitwise negation) '~', (Bitwise right shift) '>>', (Bitwise left shift) '<<'



Operators in Solidity –Logical Operators



Logical operators in Solidity: ! (logical negation), && (logical and), || (logical or), ==(equality), != (not equal)



Operators in Solidity – Operators example



contract operators

```
{
```

```
// Arithmetic Operators
```

```
// +,-,*,/, %, **
```

```
// Incremental Operators
```

```
// a++, a--, a+=1, a=a+1, ++a, --a;
```

```
a=10;
```

```
a= a++; //here, output will be 10, because the value is first returned and then then increment is done
```

```
a=++a;
```

```
//Logical Operators !, &&, ||, ==, !=
```

```
isOwner = true && false;
```

```
var orValue= 0x02 | 0x01; // output would be 0x03
```

```
//Bitwise Operators~,>>, <<;
```

```
function Operators() {
```

```
// Initialize state variables here
```

```
}
```

```
}
```




References



TEXT BOOKS

1. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, by Andreas M Antonopoulos 2018
2. Imran Bashir, “Mastering Blockchain: Distributed Ledger Technology, Decentralization and Smart Contracts Explained”, Second Edition, Packt Publishing, 2018.
3. <https://101blockchains.com/blockchain-vs-database-the-difference/>

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1. William Mougayar, “Business Blockchain Promise, Practice and Application of the Next Internet Technology, John Wiley & Sons 2016.
2. Josh Thompson, ‘Blockchain: The Blockchain for Beginnings, Guild to Blockchain Technology and Blockchain Programming’, Create Space Independent Publishing Platform, 2017.
3. Arvind Narayanan, “Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction”, Princeton University Press, July 19, 2016.
4. Henning Diedrich, Ethereum: Block chains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations-2016

Thank You