

# Lecture 02 - What is a Blockchain - more on Go.

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## News

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1. Canadian Steel / Supply chain tracking on blockchain.
2. LinkedIn ranks blockchain as the number one technology skill companies need in 2020.
3. Oil & Gas Blockchain Consortium goes ahead with project around expense approval.

## Question: What is a hash?

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1. (math) a mapping from a range to a domain.
2. Text to a number.

abc	275f20377d6574b67399702947cb56849d2e02f7112c1d021603346c3
abd	3212601953780d3a8de118531b87bf6183edb8c81baf6982fdca26003
war-and-peace.txt	67c570b0e09d70225d739aec9a7ea91631df1ea06ba44f0c9d9fe99e4

3. Different kinds of hash, MD5, SHA1, SHA256, SHA3, SHA512, Keccak256.

## attestation - Definition of attestation - From Websters Dictionary.

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<https://www.merriam-webster.com/dictionary/attestation> Faire Use - this is a quote.

1. an act or instance of attesting something: such as
  1. : a proving of the existence of something through evidence ... a complete and formal attestation of your innocence. —Edward Bulwer-Lytton
  2. : an official verification of something as true or authentic the notary's attestation of the will
2. the proof or evidence by which something (such as the usage of a word) is attested the earliest attestation of the term in print

## Economics of Blockchain

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In 2009 - bitcoin invented.

In 2013 - smart contracts - Ethereum.

In 2020 - 4% of transactions in 6 African countries on it. China and Russia are moving to replace national currency with it. Goldman Sacks / Apple are using it. Visa expects \$1T in transactions on it.

Ability to create trust between non-trusting parties.

Ability to create economic systems.

Merick - shipping 40% decrease in shipping times. World wide \$380 Billion in trade. 90% of all the goods in the world are moved by ship. 38 days average shipping time. A 40% reduction is dropping that to 23 days. Difference is 15 days. 40% of 380 billion is 152 billion in capital that is not tied up - at an average capital cost of 10% = 15.2 billion - over the 23 days.  $\frac{15}{365} * 15.2 \text{ billion}$ . – About 0.62 billion.

Estonia - All titles and property on the chain. In US 5.51 Million Houses. Average title search \$3821. Title search in Estonia, \$23.33 each. Title insurance \$1408. My calculation \$19 billion a year.

Marshal Islands - off of the dollar and onto a blockchain. The estimate is that the government will save around \$5M a year or about \$90 per resident a year. For entire US 327 million - that is \$29 billion dollars.

Over 22 accredited educational institutions now issuing certificates based on blockchain. (Especially interesting in this because this is our project)

Perspective on 28 or 29 billion - free college tuition for all students in the United States is estimated to cost 75 billion.

State of Nevada - Marriage license on blockchain.

The largest "blockchain" sale is valued at 103 million. In a commercial property in Zurich.

## Go - Intro

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Assignment 1 - Due Mon Feb 3

1. Hello World - walk through
2. Echo - walk through
3. Marshal and Unmarshal of data - walk through
4. For loops