

Computer Language

Remember when I said that a computer is a device that stores and processes data by performing calculations?

Whether you're creating

an artificial intelligence that can be

humans at chess or

something more simple like running a video game,

the more computing power you have access to,

the more you can accomplish.

By the end of this lesson,

you'll understand what a computer calculates and how.

Let's look at this simple math problem.

Zero plus one equals what?

It only takes a moment to come up with the answer one,

but imagine that you needed to do

100 calculations that were this simple.

You could do it, and if you are

careful you might not make any mistakes.

What if you needed to do 1,000 of these calculations?

How about a million?

How about a billion? This is

exactly what a computer does.

A computer simply compares ones and zeros,

but millions or billions of times per second.

[inaudible]. The communication that a computer uses is

referred to as binary system,

also known as base-2 numeral system.

This means that it only talks in ones and zeros.

You may be thinking,

my computer only talks in ones and zeros.

How do I communicate with it? Think of it like this.

We use the letters of the alphabet to

form words and we give those words meaning.

We use them to create sentences,

paragraphs and whole stories.

The same thing applies to binary,

except instead of A, B, C,

and so on, we only have zero

and one to create words that we give meaning to.

In computing terms, we group

binary into eight numbers or bits.

Technically, a bit is a binary digit.

Historically, we use eight bits because in the early days of computing, hardware utilized the base-2 numeral system to move bits around.

Two to the eighth numbers offered us a large enough range of values to do the computing we needed.

Back then, any number of bits was used, but eventually the grouping of eight bits became the industry standard that we use today.

You should know that a group of eight bits is referred to as a byte.

A byte of zeros and ones could look like 10011011.

Each byte can store one character, and we can have 256 possible values thanks that a base-2 system, two to the eighth.

In computer talk, this byte can mean something like the letter c. This is how a computer language is born.

Let's make a quick table to translate something a computer might see into something we'd be able to recognize.

What does the following translate to?

Did you get hello? Pretty cool.

By using binary, we can have unlimited communication with our computer.

Everything you see on your computer right now, whether it's a video,

an image, texts or anything else, is nothing more than a one or a zero.

It is important that you understand how binary works.

It is the basis for everything else we'll do in this course.

Make sure you understand the concept before moving on.

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