



First Nations
Technology Council

Focus Web Developer

Week 1 - Lesson 4

Lesson Topics

- Review
- Attributes
- Data
- JavaScript Operators
- JavaScript Math



Skills Review

- Create an HTML doc
- Create embedded JavaScript
- Create external JavaScript



Attributes

- We write HTML Tags to create HTML elements
- When the browser reads the HTML it creates HTML elements

```
<tag attribute="value">
```

Attributes

- When a browser reads HTML and creates output we call it **Parsing**
- A browser **parses** HTML

`<tag attribute="value">`

Attributes

- Browsers can also read JavaScript
- A browser **interprets** JavaScript

`<tag attribute="value">`

Attributes

- When HTML gets parsed by the browser, the browser creates HTML `<tag attribute="value">` elements

Attributes

- The browser parses our HTML and creates HTML elements
- We can further information to these elements
- This is called further describing the elements

`<tag attribute="value">`

Attributes

- We use **Attributes** to further describe HTML elements

```
<tag attribute="value">
```

Attributes

- We attach attributes to the opening tag of a matched set of HTML tags
- We **set** attributes to a value

`<tag attribute="value">`

Attributes

An example of an attribute being set on an HTML element

```
<script src="main.js"></script>
```

```
<tag attribute="value">
```

Attributes

In this example we are setting the source (src) attribute on a script element.

<tag attribute="value">

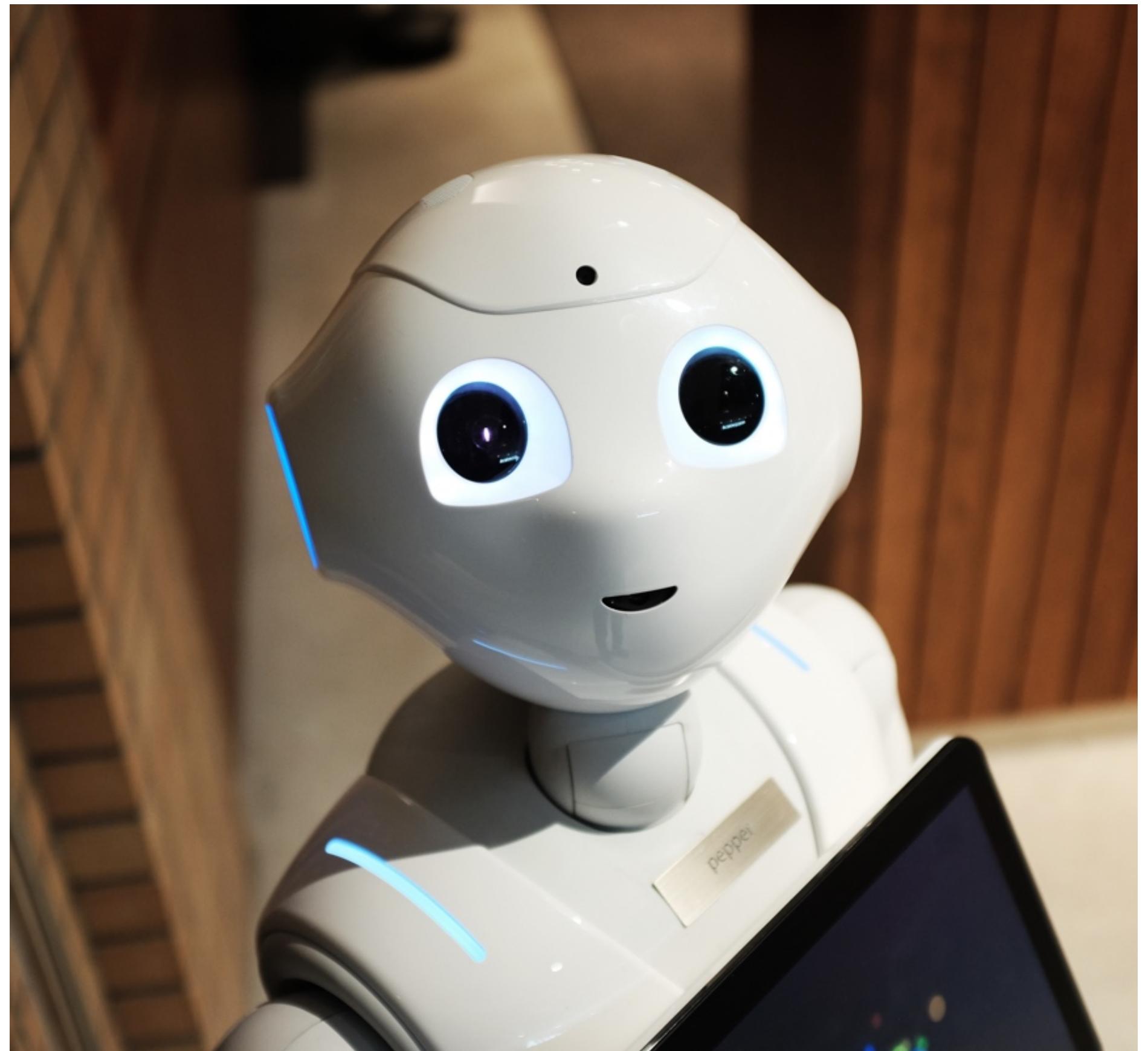
```
<script src="main.js"></script>
```

Attributes

- Attributes are also an important part of **Objects**
- Objects are an important part of Programming
- Objects play an important role in JavaScript programming
- We will explore Objects later, after we understand more of the fundamentals of JavaScript

`<tag attribute="value">`

Data



Programming



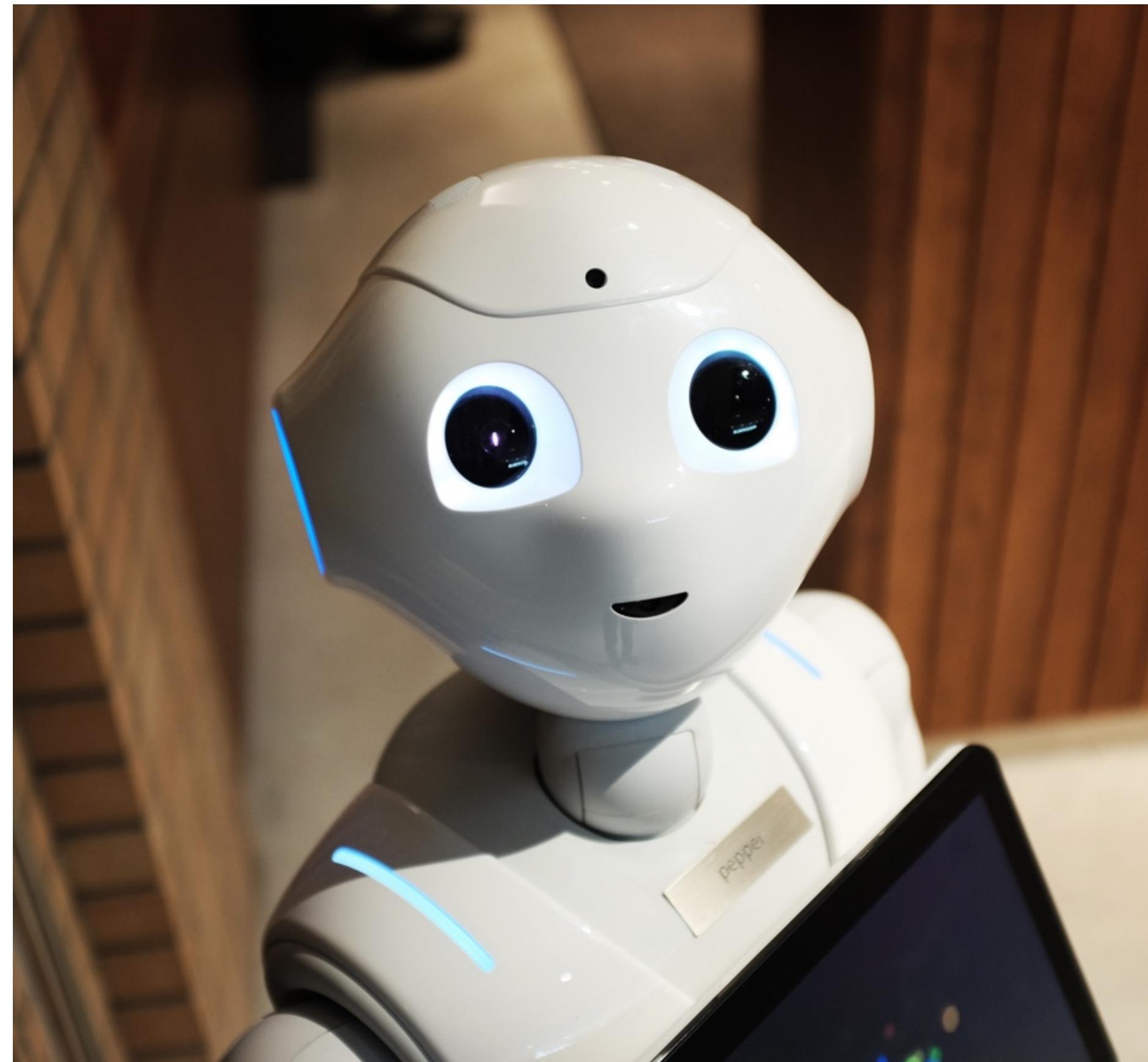
Discussion

Sharing your coding knowledge

What is Programming?

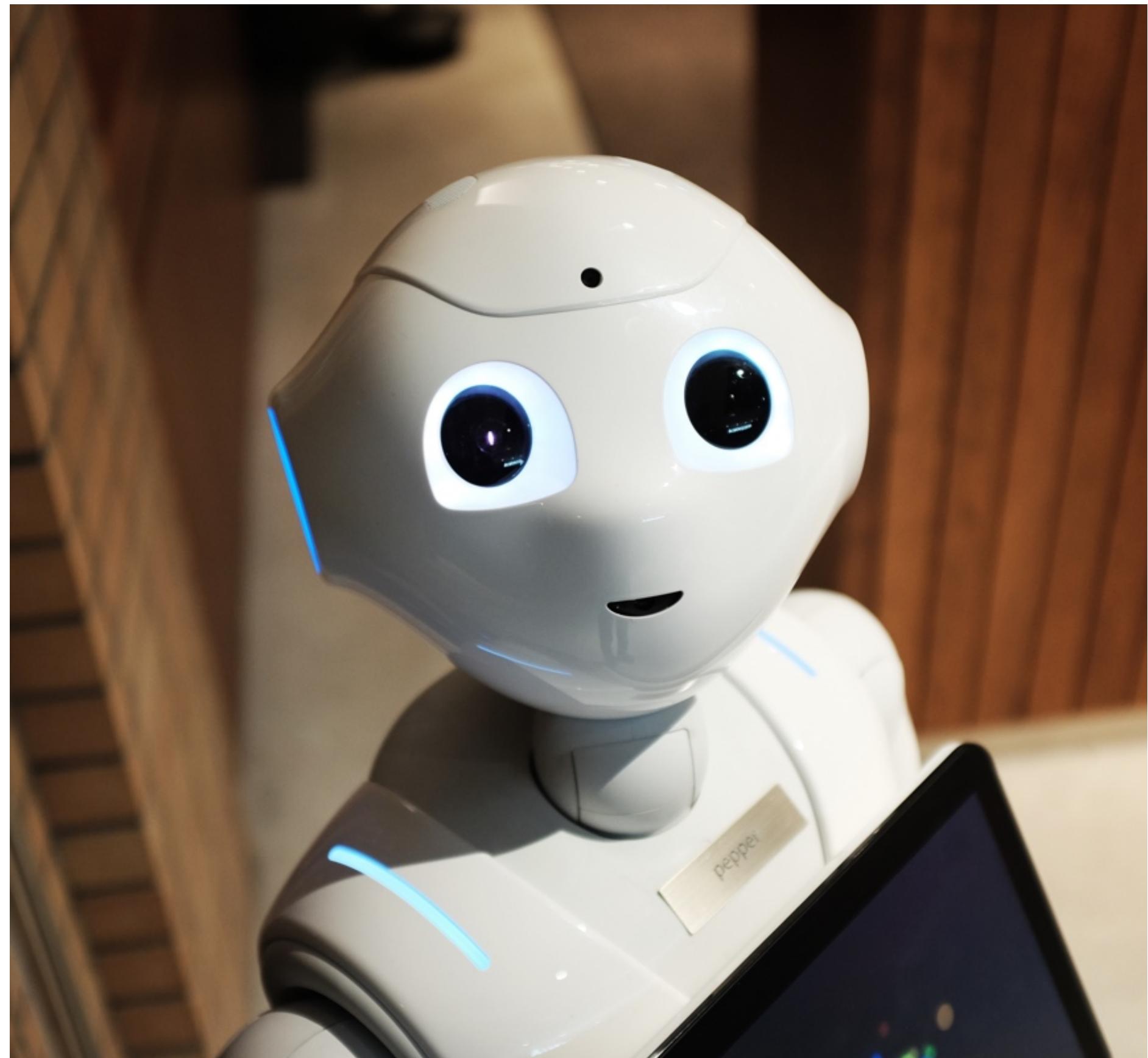
1. Work with a partner or group
2. List your ideas (blackboard or a list)
3. Share your ideas with the class

Data



Programming is manipulating Data.

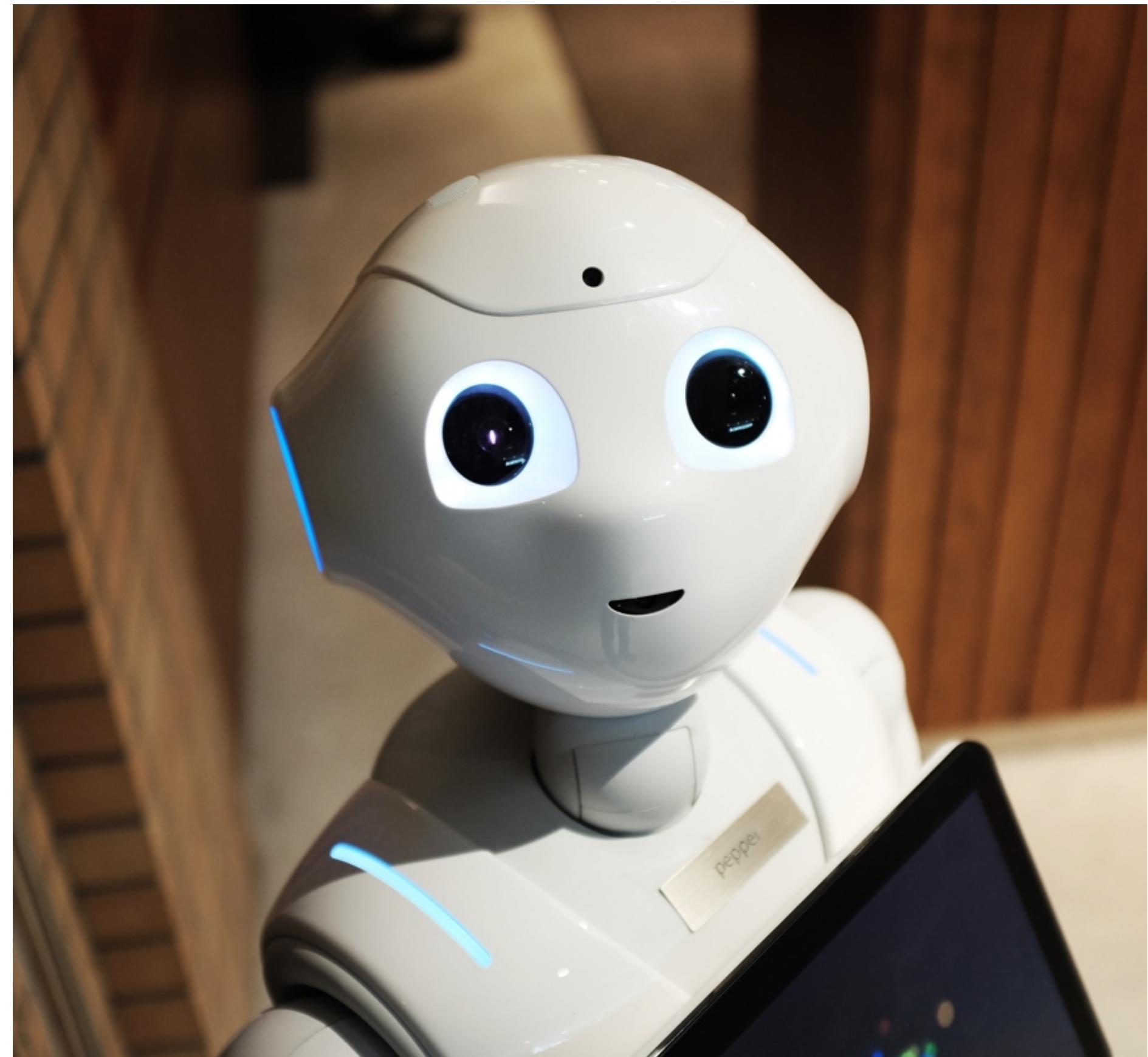
Data



Data can be:

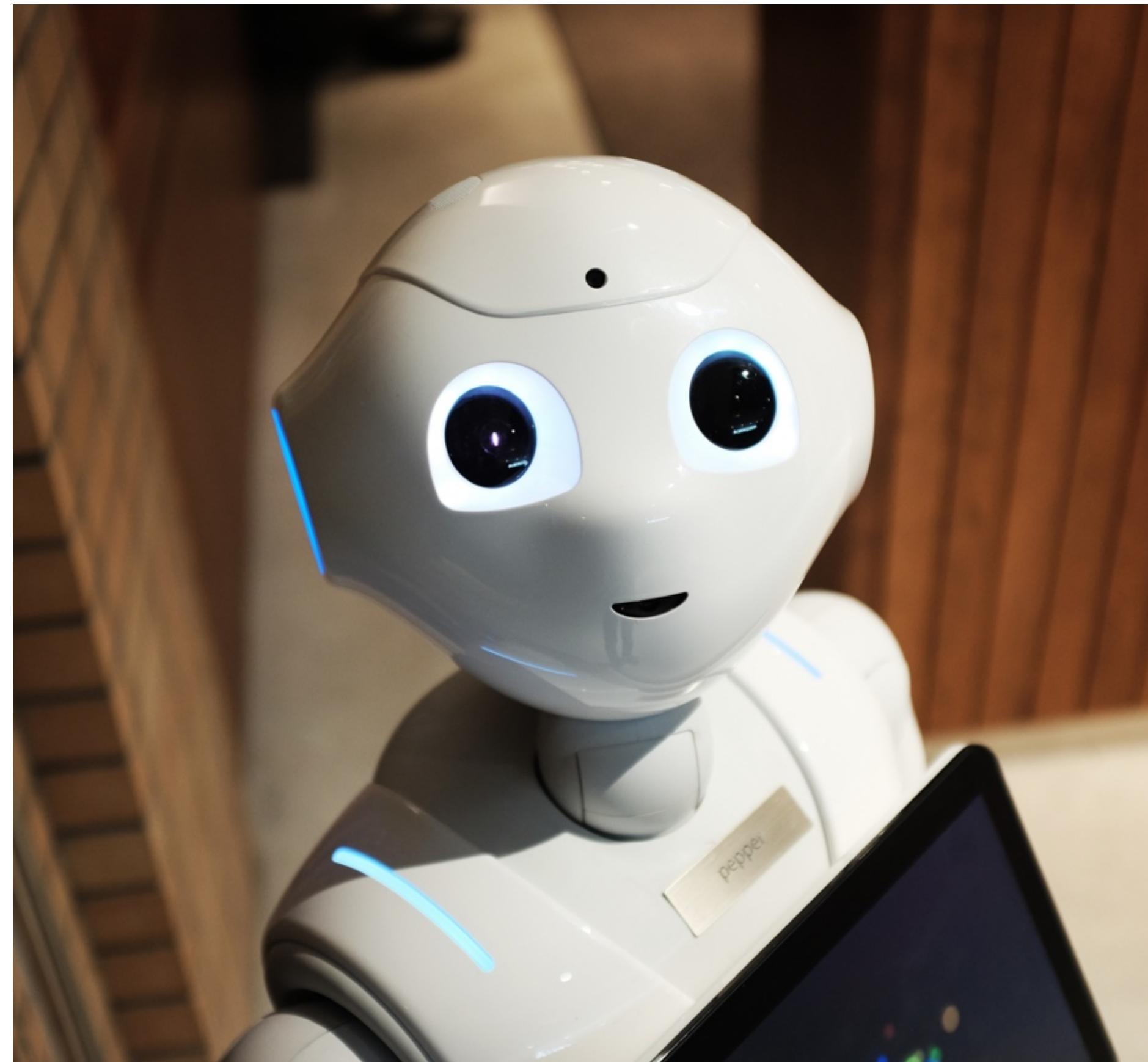
- numerical
- text
- objects
- attributes
- parameters

Data



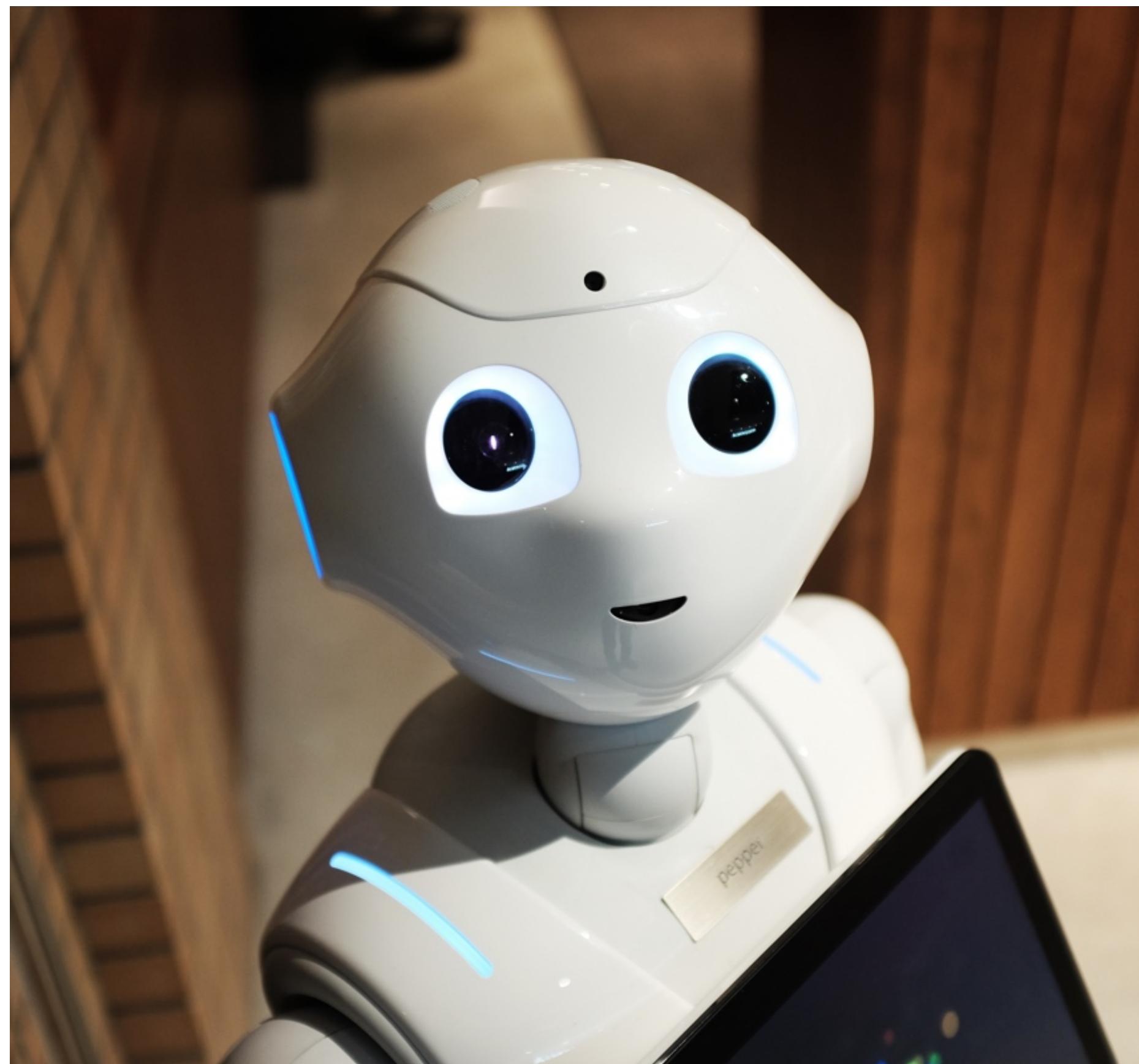
We will explore all of these types of Data as we go forward.

Data



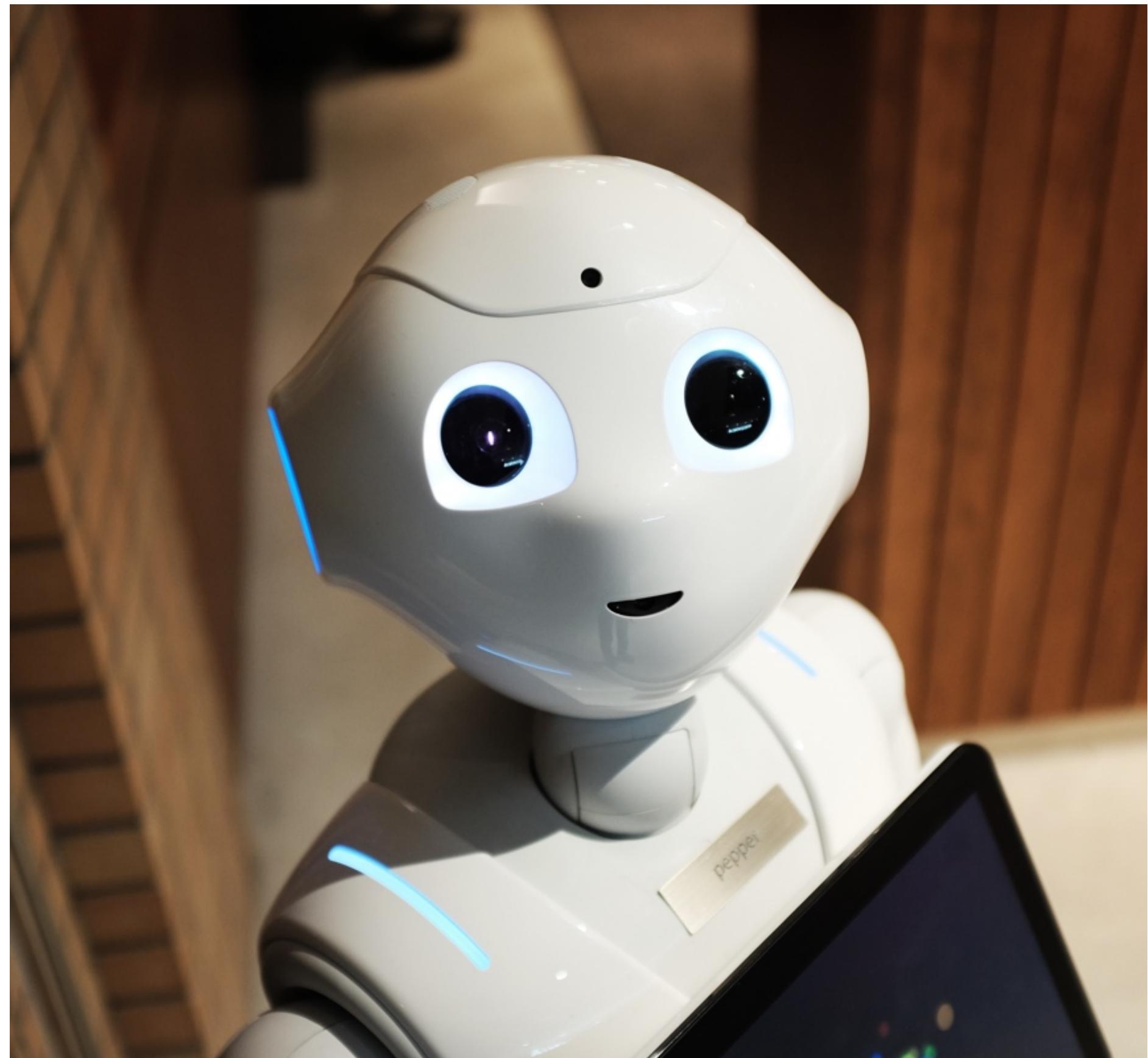
Let's concentrate on Numerical Data first.

Data



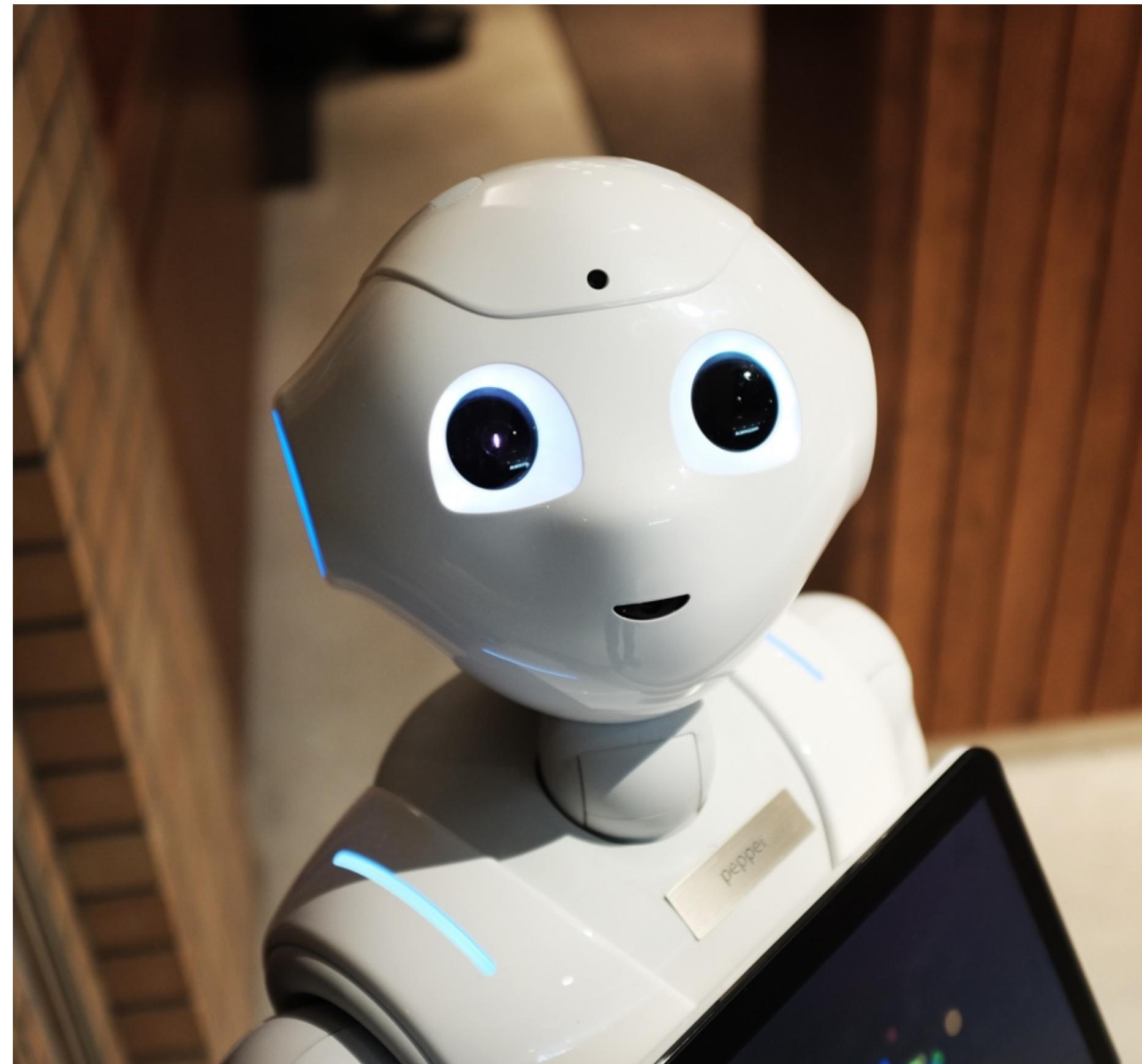
- Working with Numerical Data – that is, Numbers – is a good way to begin understanding writing Computer Code.
- We're all familiar with Numbers, so it's a good type of Data to begin with.

Data



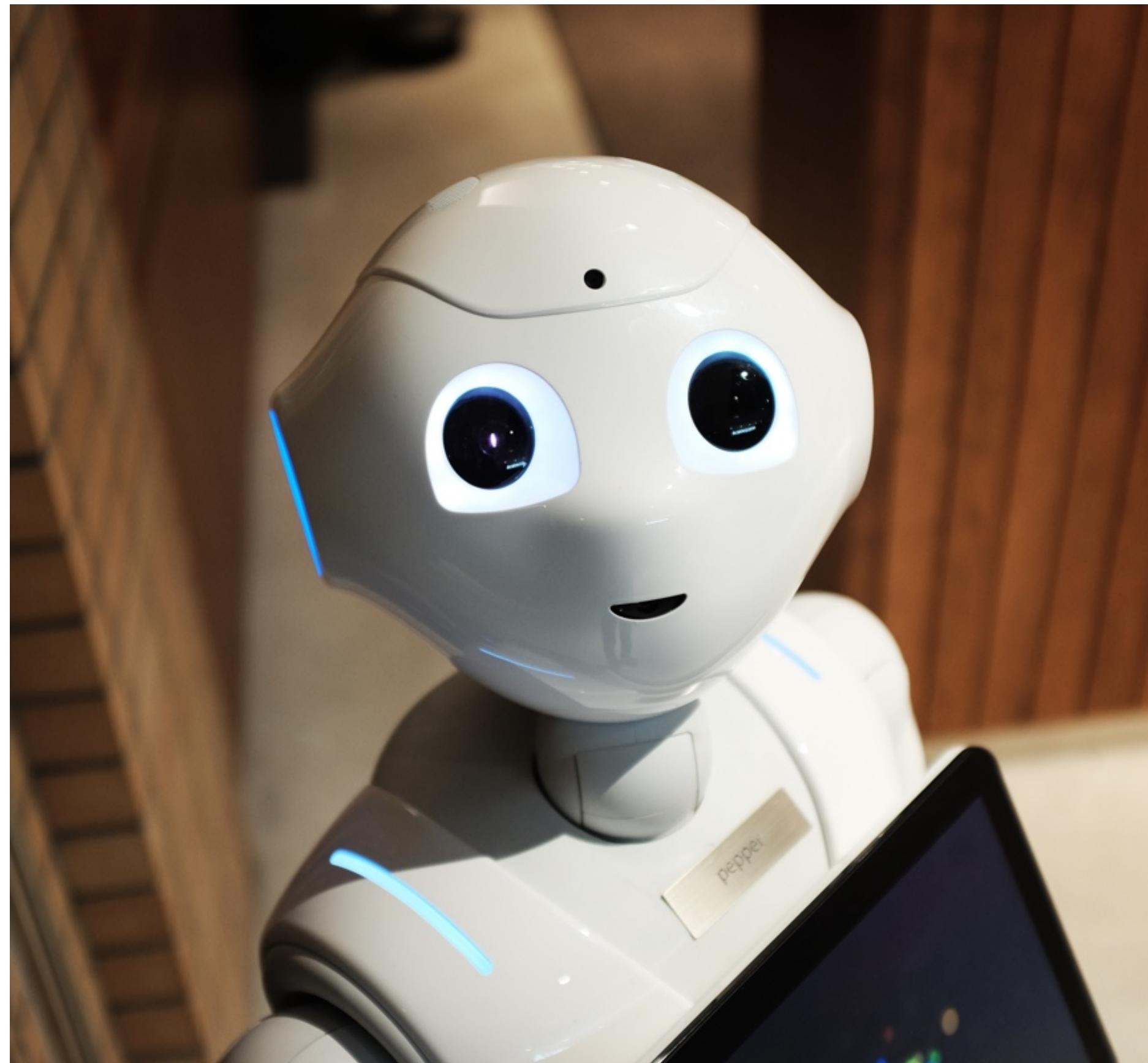
- Programming is a set of instructions
- Data is the information that we want to interact with

Data



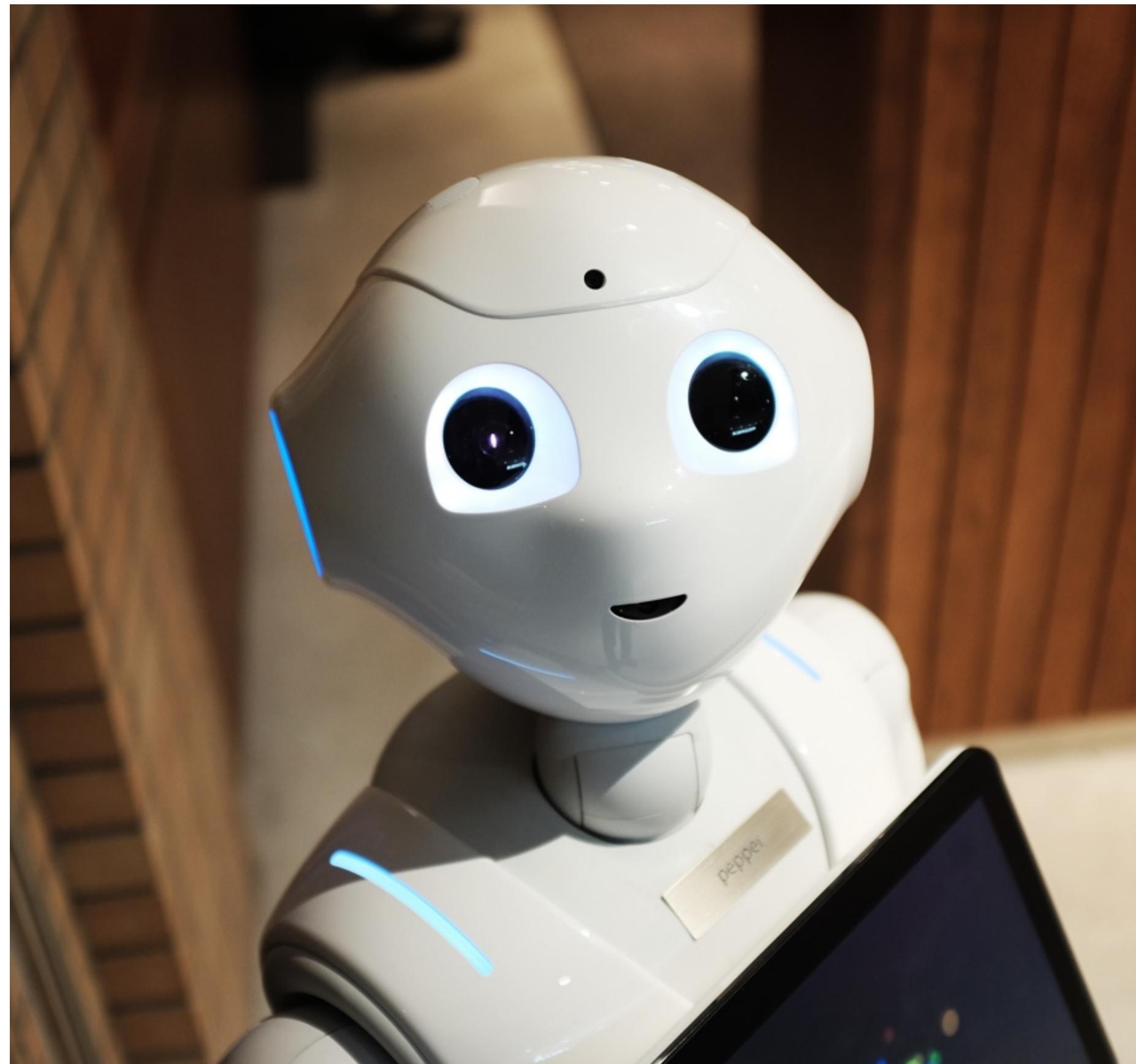
- Data can be represented as Input or as Output
- In these first examples lets use Numbers for our Input and Output
- And let's use the = symbol to mean is regular math meaning, as in $1+1=2$

Data



- Our Instructions for the computer we can call a “Routine”
- When we use Numbers as our Input we say we are “Passing” numbers into the our routine

Data

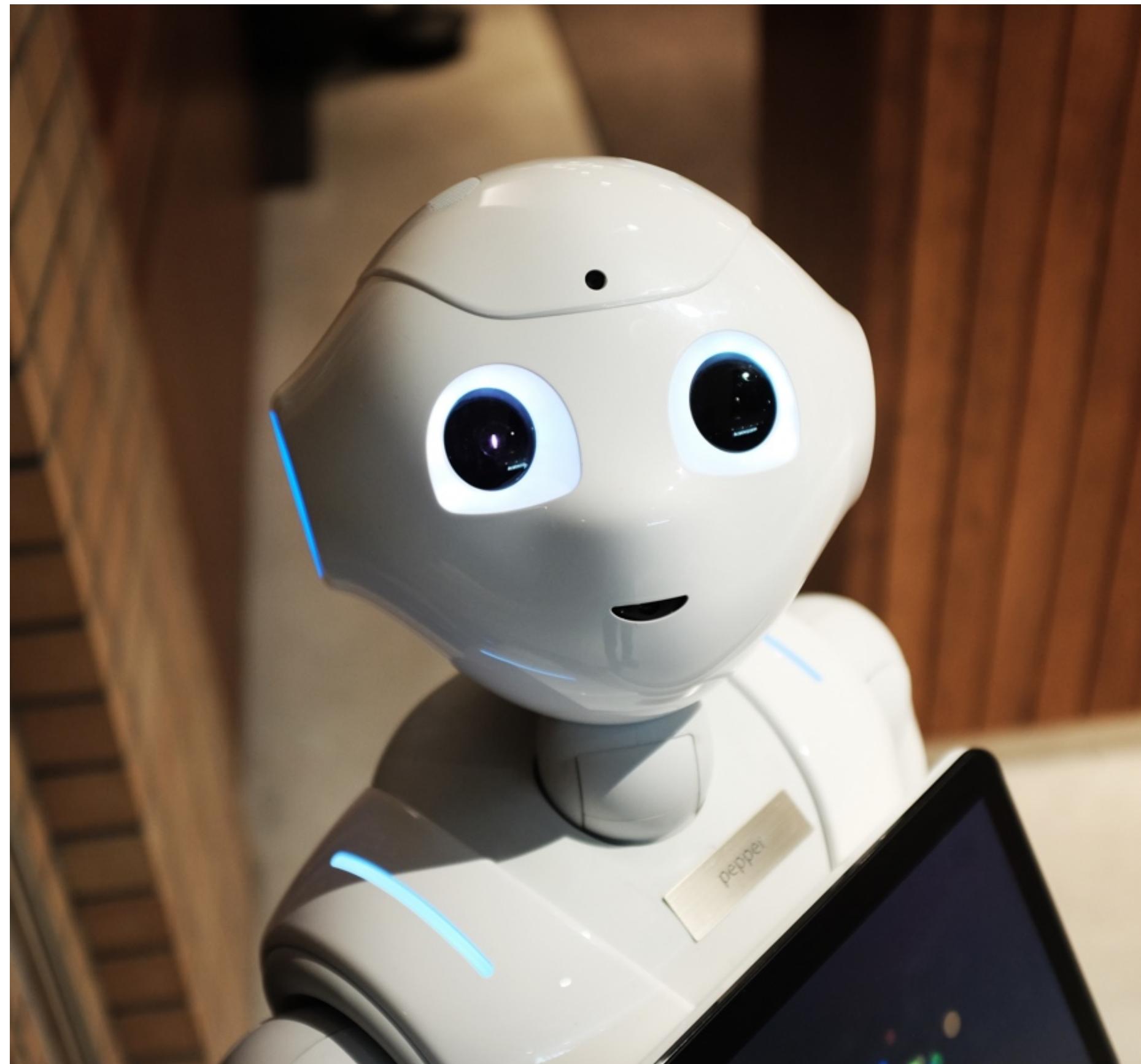


$$2 + 3 = 5$$

In this example:

- the first number “2” is **input** passed to the routine
- the second number “3” is also **input** passed to the routine
- the last number “5” is the **output** returned from our routine

Data

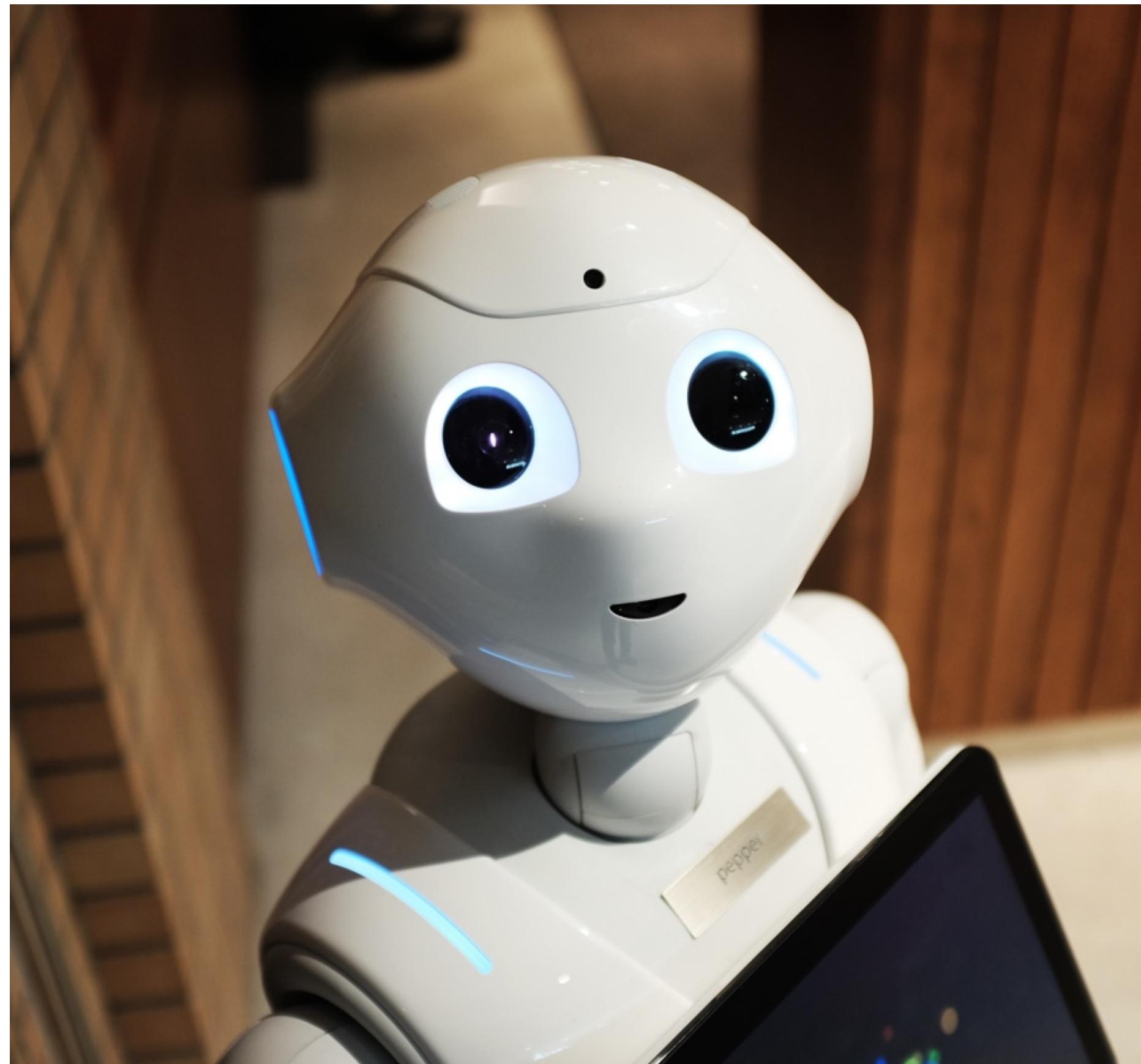


$$2 + 3 = 5$$

We can also add further definitions to the symbols in this example

- the addition symbol “+” can be called an **Operator**
- the two input numbers “2” and “3” can be called **Operands**
- the last number “5” can be called the **Output or the Return**

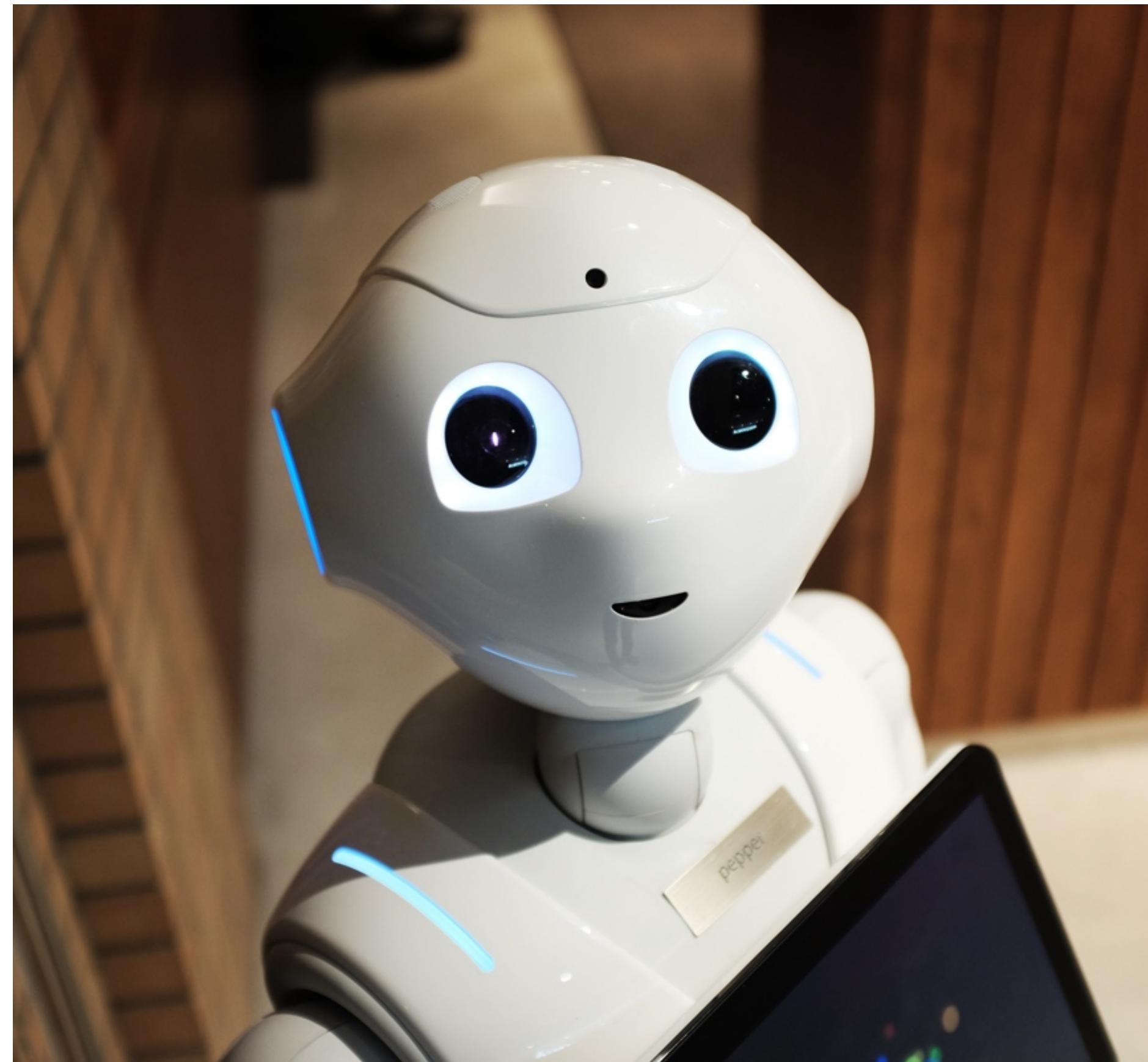
Data



$$2 + 3 = 5$$

In this example we could say that we Passed “2” and “3” into the Routine, and it Returned “5”

Data



$$2 + 3 = 5$$

Routines are also called procedures.



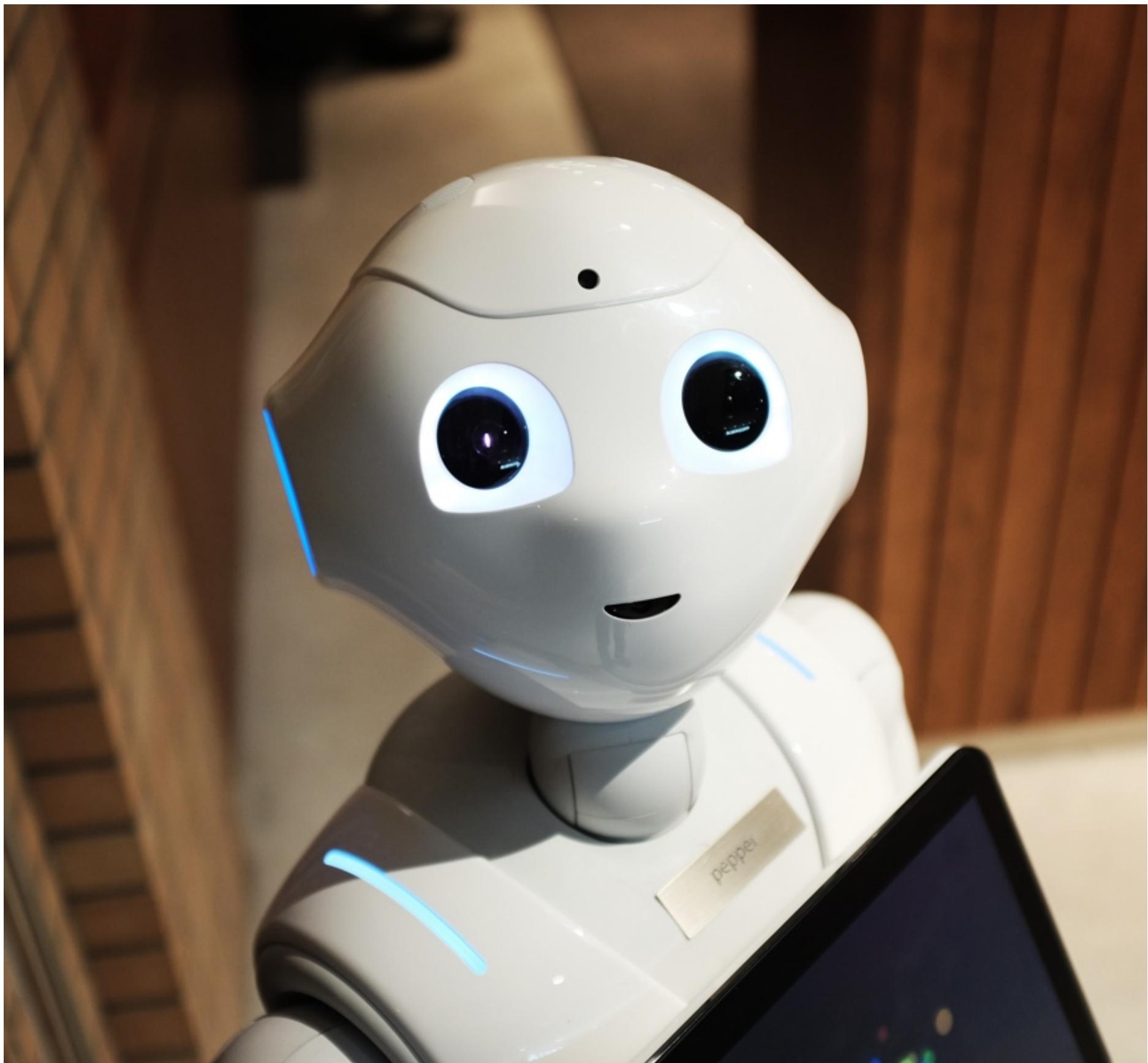
Discussion

Sharing your coding
knowledge

Mathematical Routines

1. Let's break into groups and try it ourselves
2. Here's a table of Mathematical Routines - fill in the blanks

Data

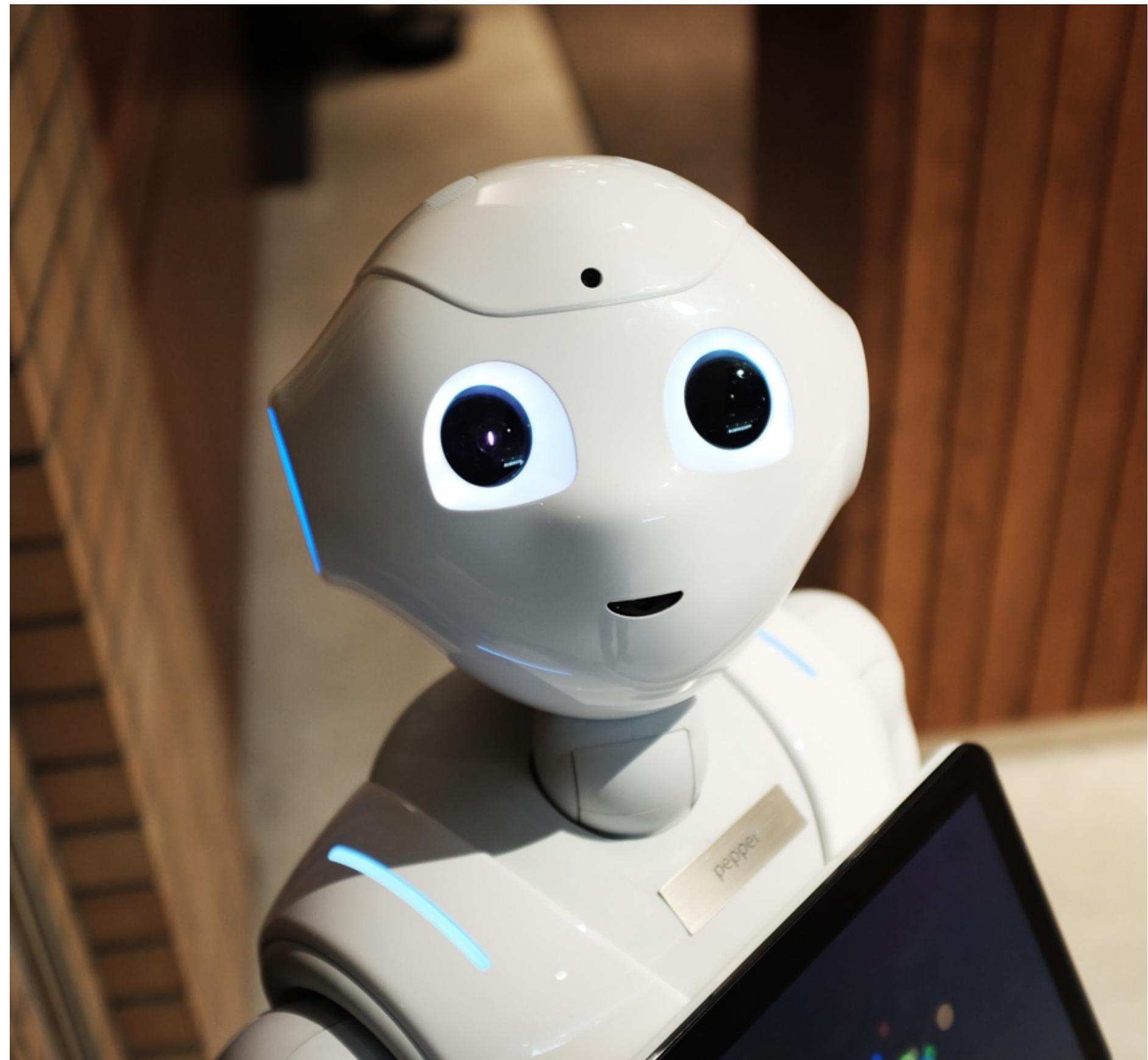


Operand 1	Operator	Operand 2	=	Output
4	+	?	=	6
10	-	4	=	?
22	+	?	=	66
?	-	9	=	18
7	+	=	?	12



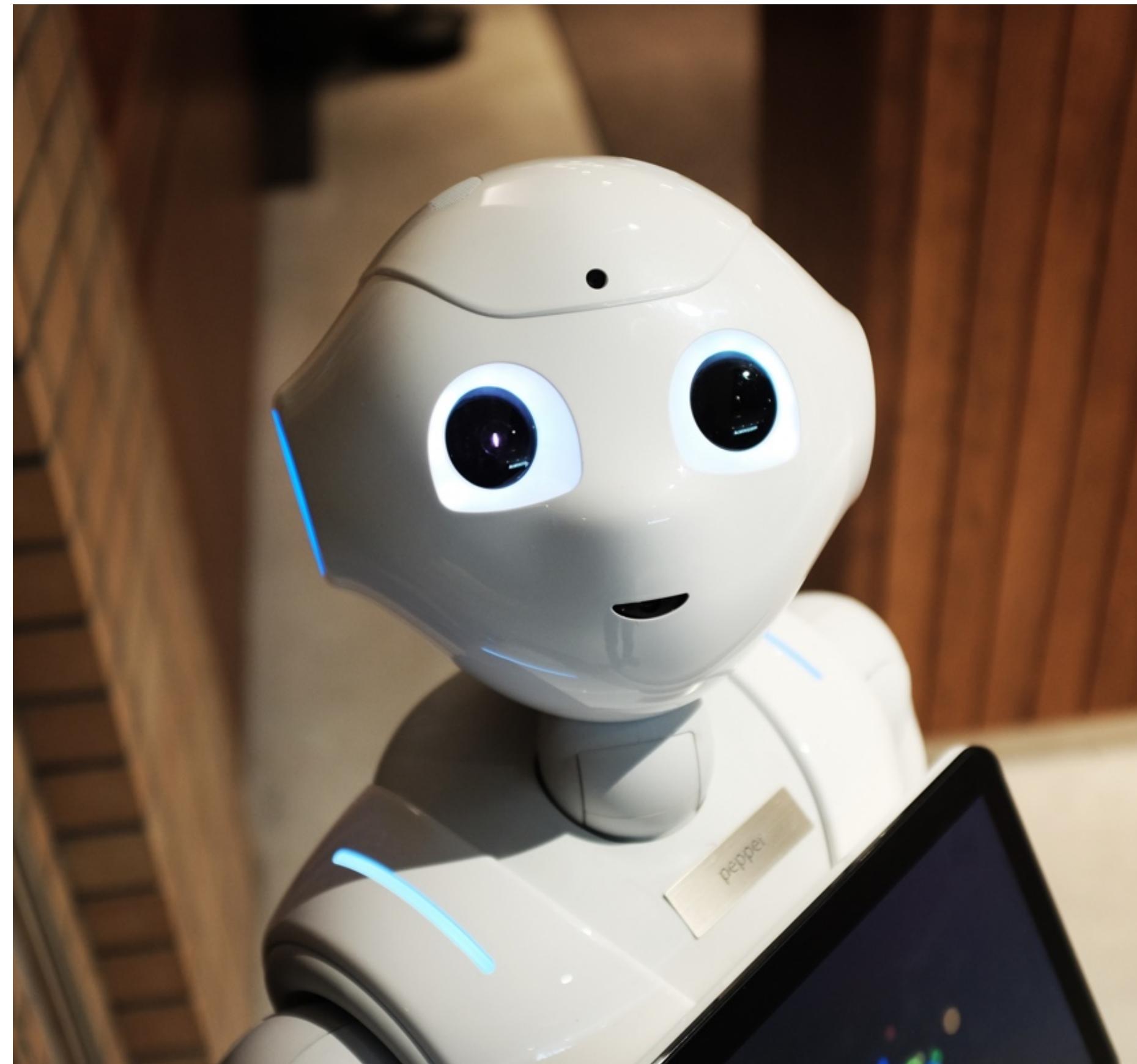
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Data



Lets stay with a little math to look deeper at procedures.

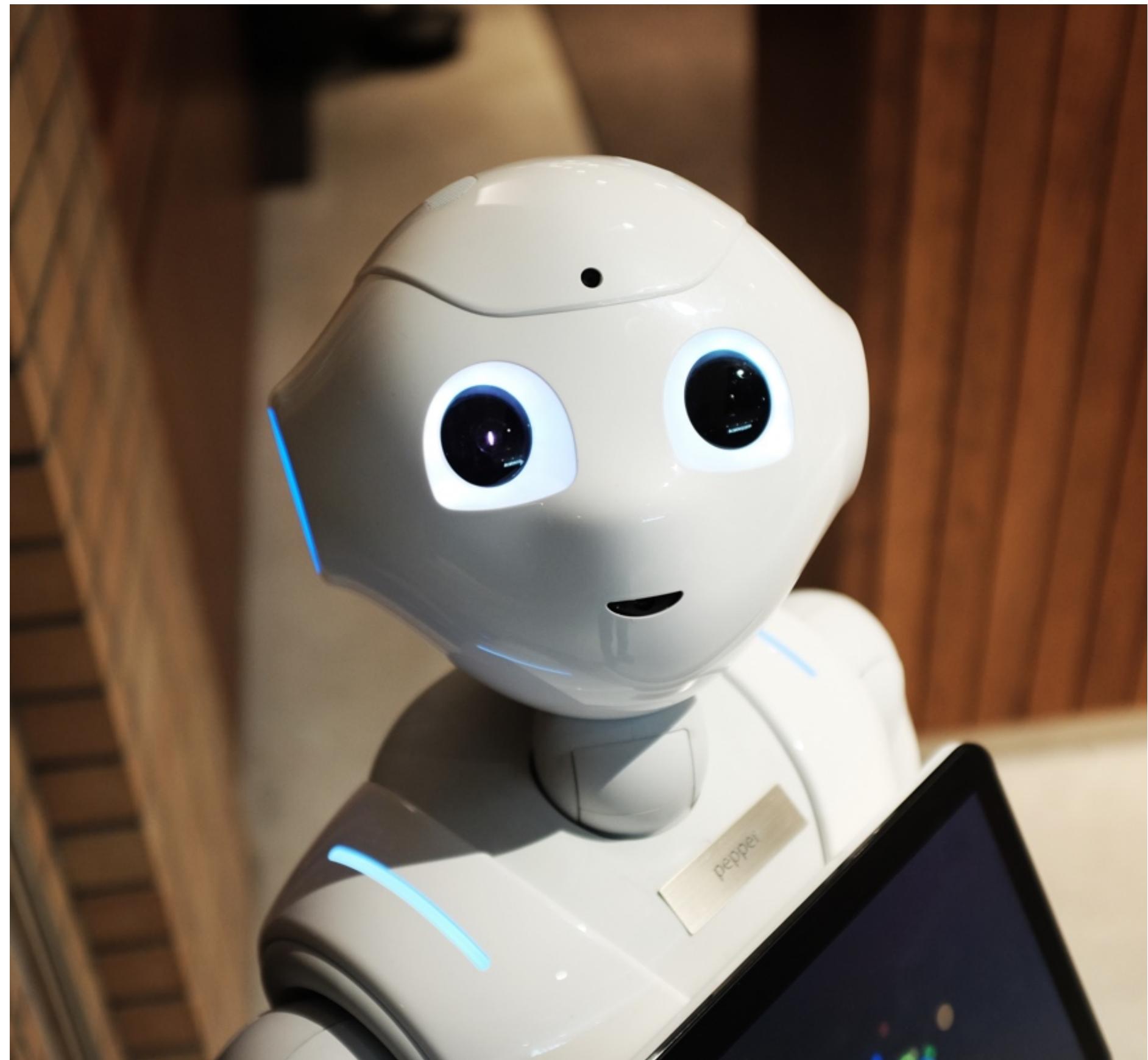
Data



Here is a typical math procedure:

$$5 + 2 = 7$$

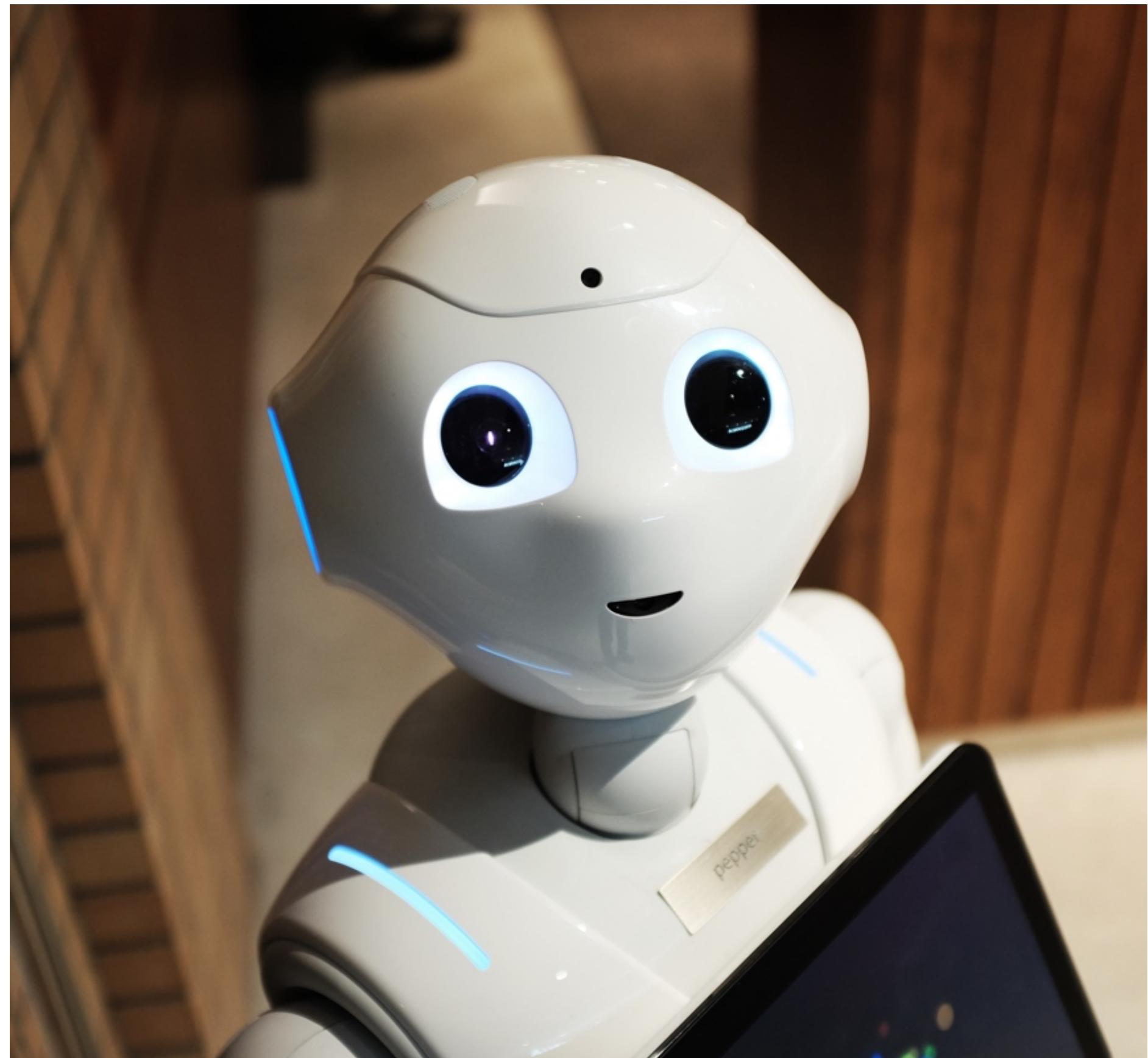
Data



Would we be able to solve
this version:

$$5 + 2 = ?$$

Data



How about this version:

$$5 + ? = 7$$

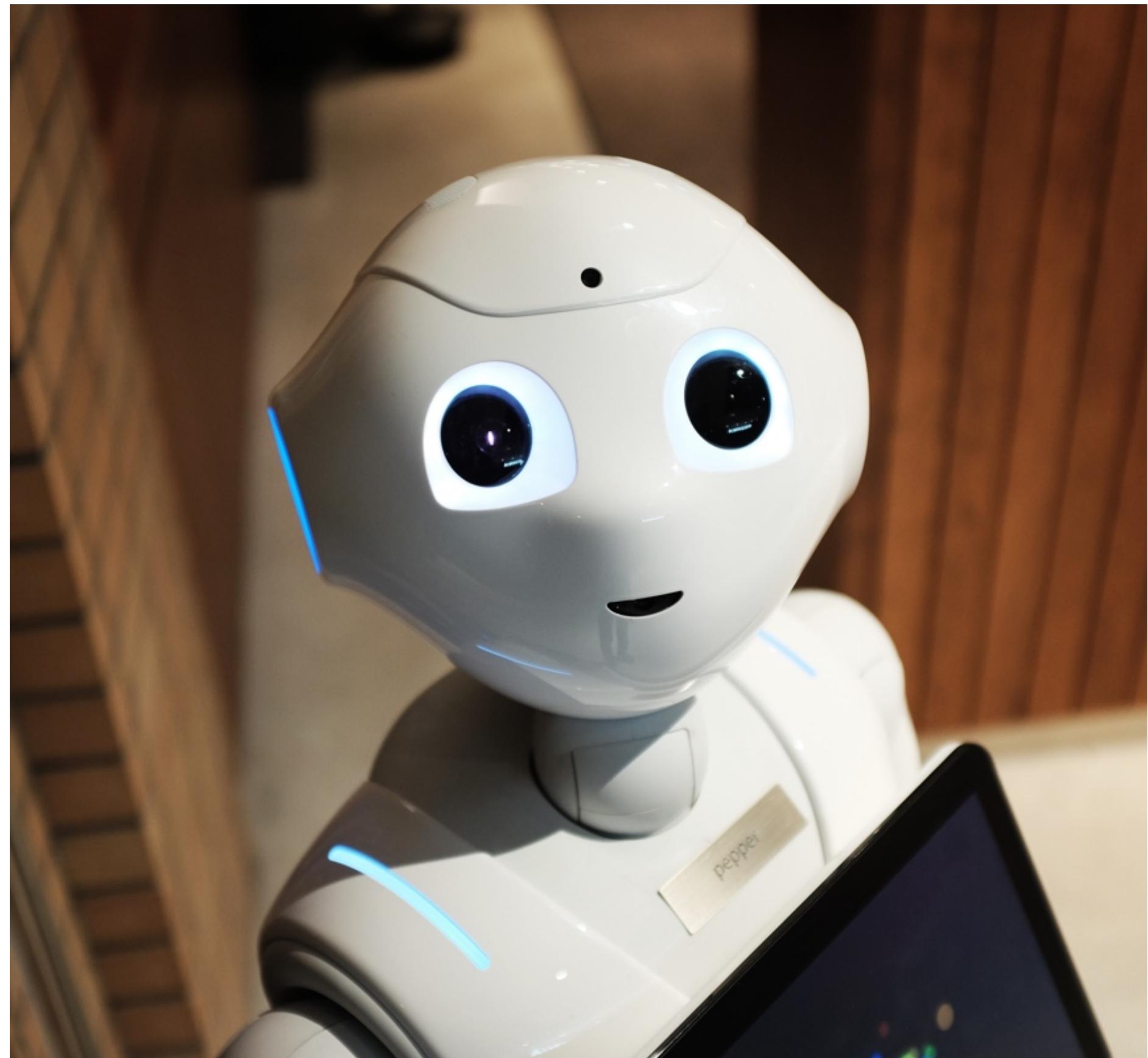
Or this one:

$$? + 2 = 7$$



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Data



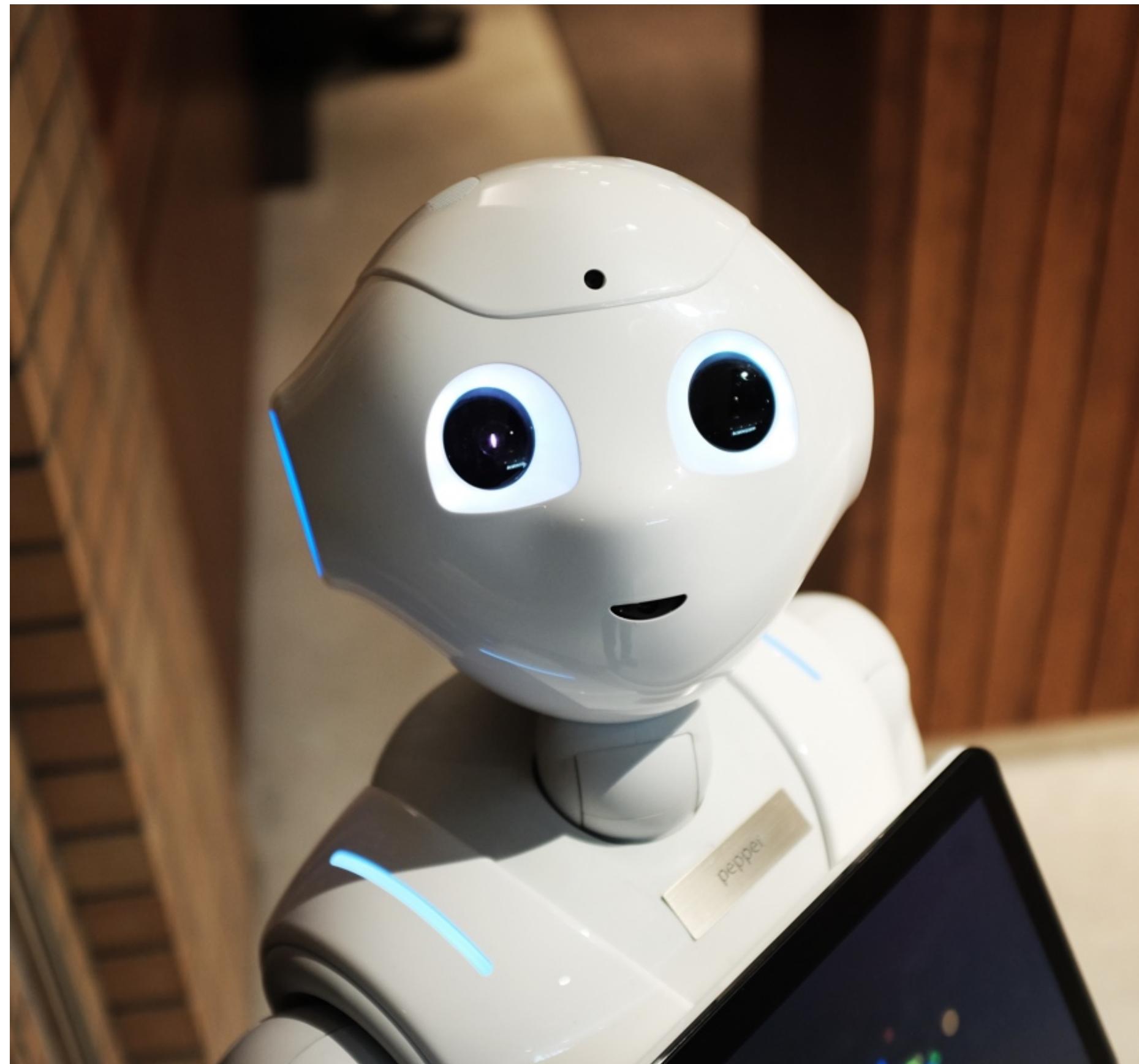
Okay, so we know we can write this procedure like this:

$$5 + 2 = ?$$

Let's rewrite it to look like this:

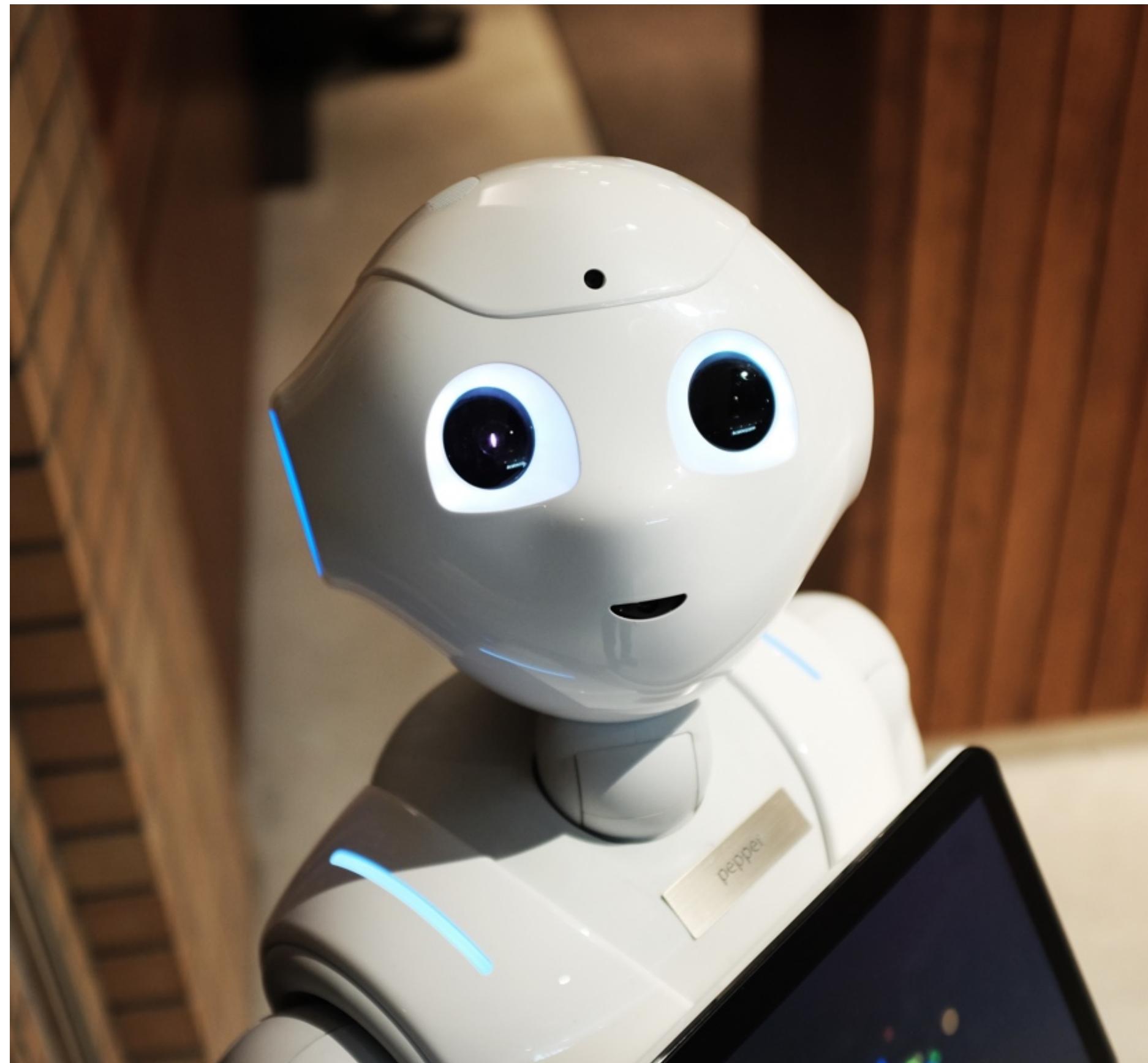
$$5 + 2 = \text{"an empty box"}$$

Data



- Another name for “an empty box” is a **variable**
- We can represent a variable with a letter

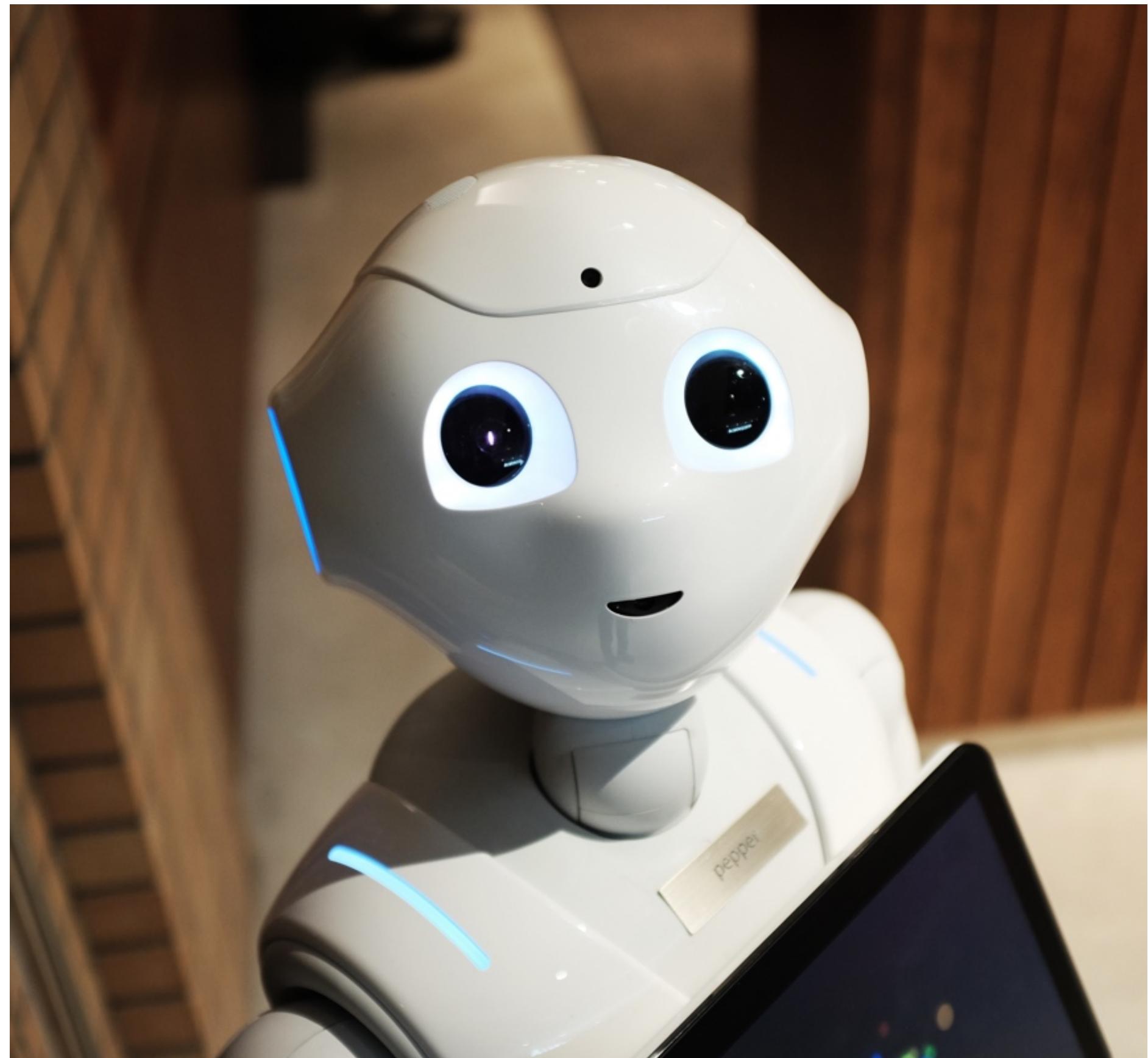
Data



- Let's use the letter “a” to represent our variable
- So, now the procedure looks like this:

$$5 + 2 = a$$

Data

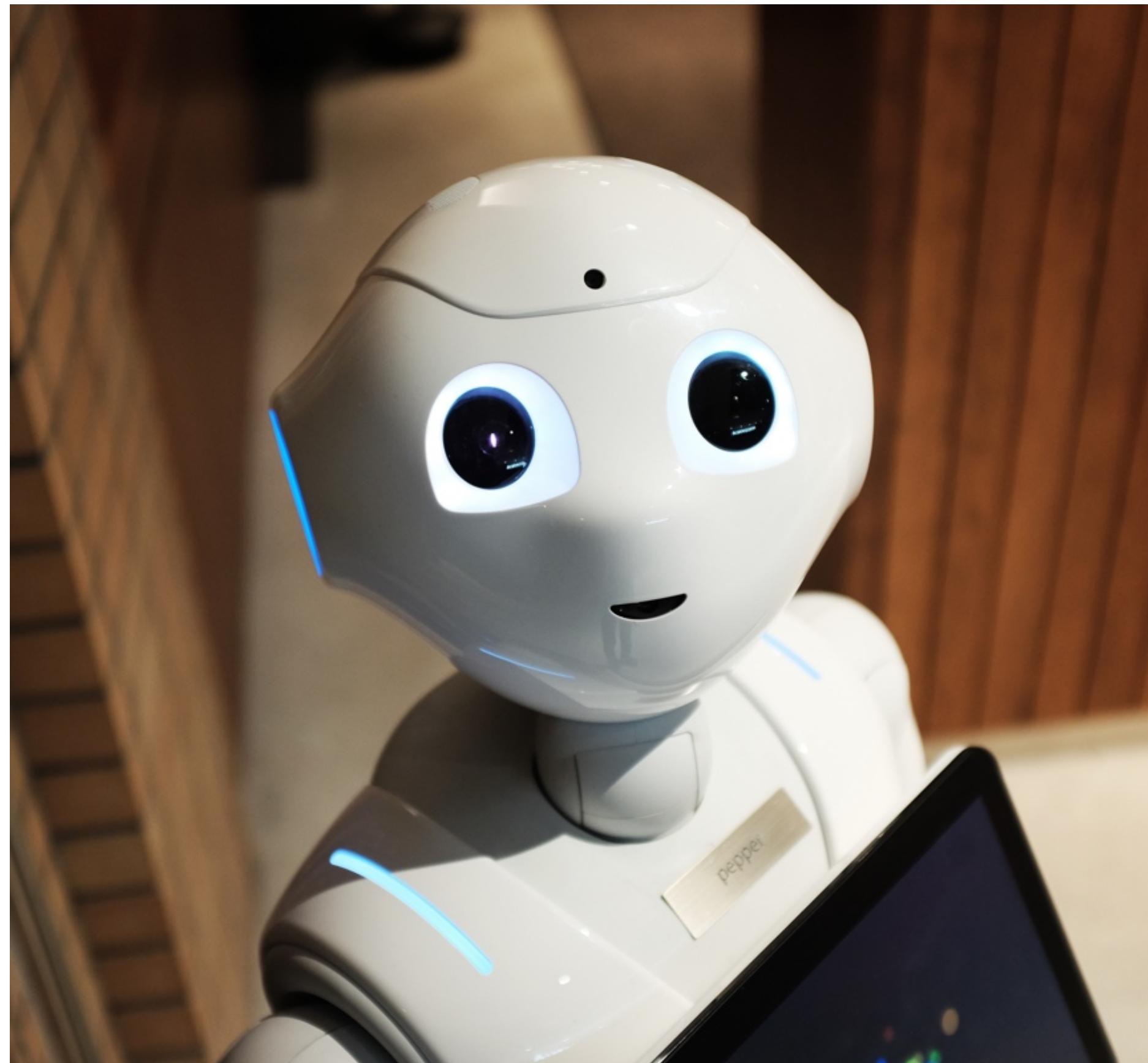


- And to solve this, we could write:

$$5 + 2 = a$$

$$a = 7$$

Data



- We can use other letters
- We could use b, c, d, e, f, g, x, y, z
- These are all common variable names



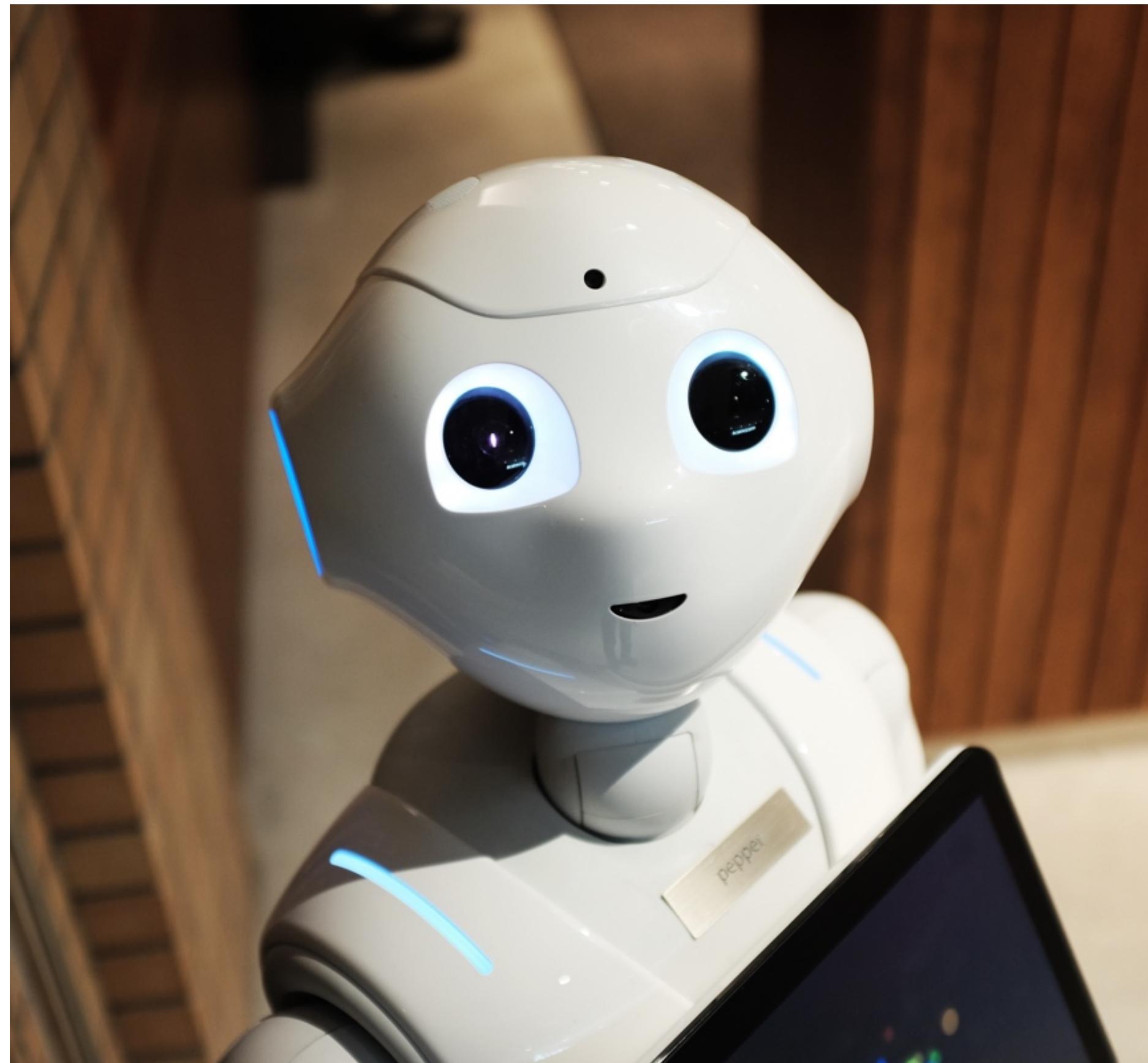
Discussion

Sharing your coding
knowledge

Mathematical Routines

1. Let's break into groups and try it ourselves
2. Here's a table of Mathematical Routines – solve for the **Variables**

Data



- Solve for a, b, c, d, e, f, g
- $2 + 8 = a$
- $4 + 5 = b$
- $4 + c = 12$
- $d + 5 = 10$
- $4 + e = 20$
- $f + 5 = 100$
- $24 + 6 = g$

Create a doc named Your_Name_4_1

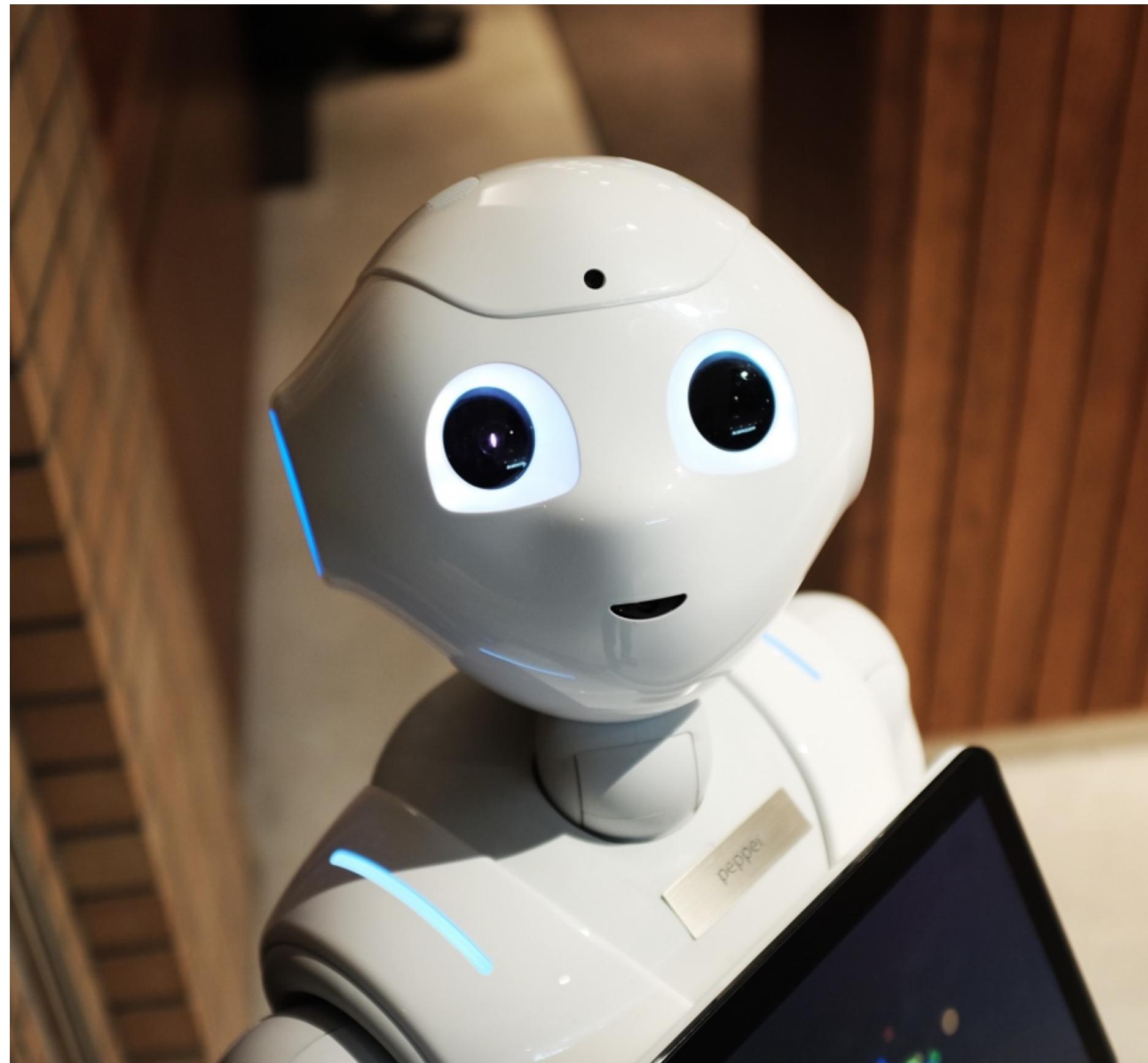
A quick quiz:

1. Input
2. Output
3. Return
4. Operator
5. Operand
6. Variable

Activity 1

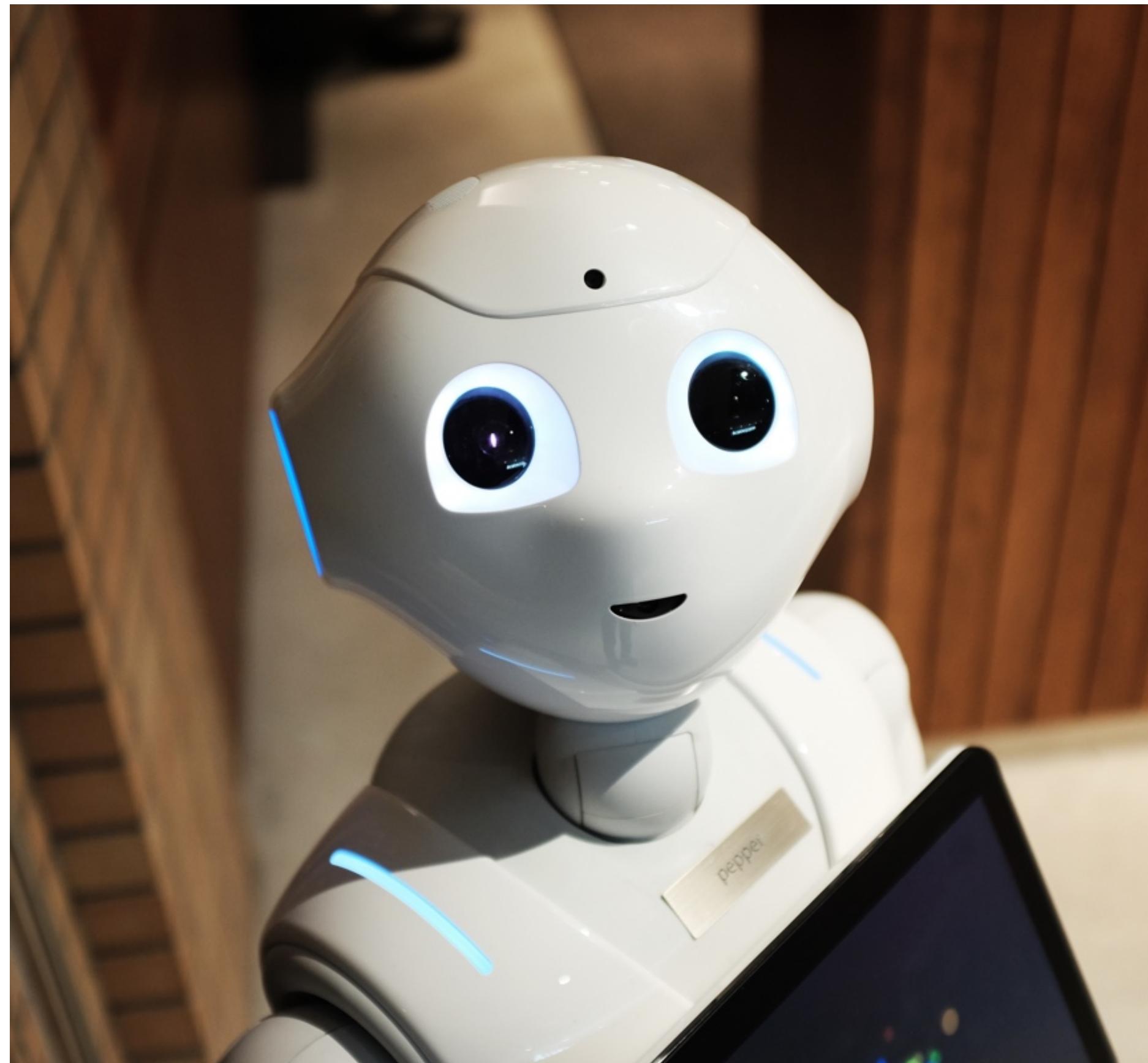
Quick Quiz

JavaScript Operators-Math



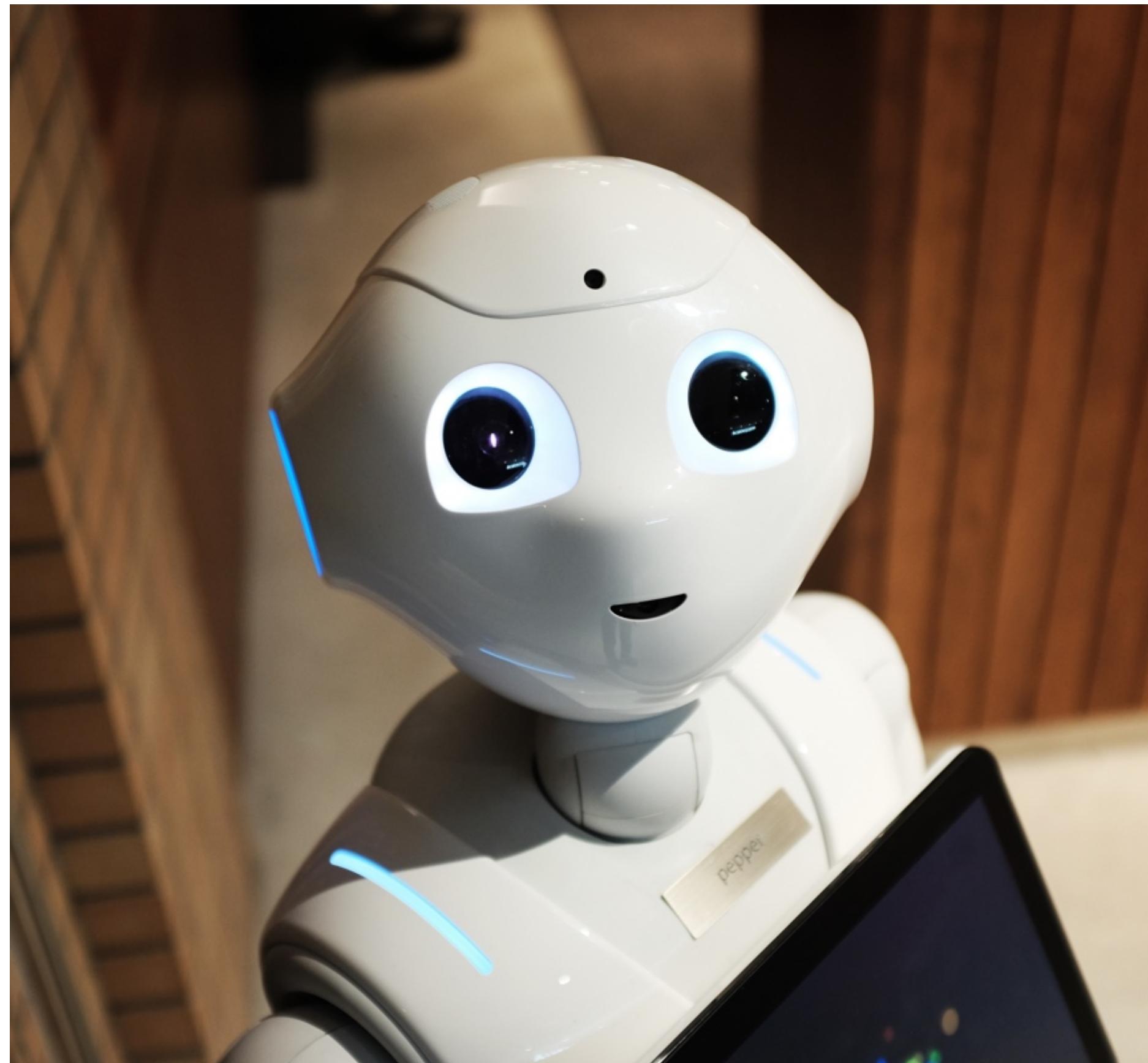
- Procedures in JavaScript programming
- Let's start to look at math procedures in JavaScript programming

JavaScript Operators-Math



- There are other operations available as programmers other than addition:

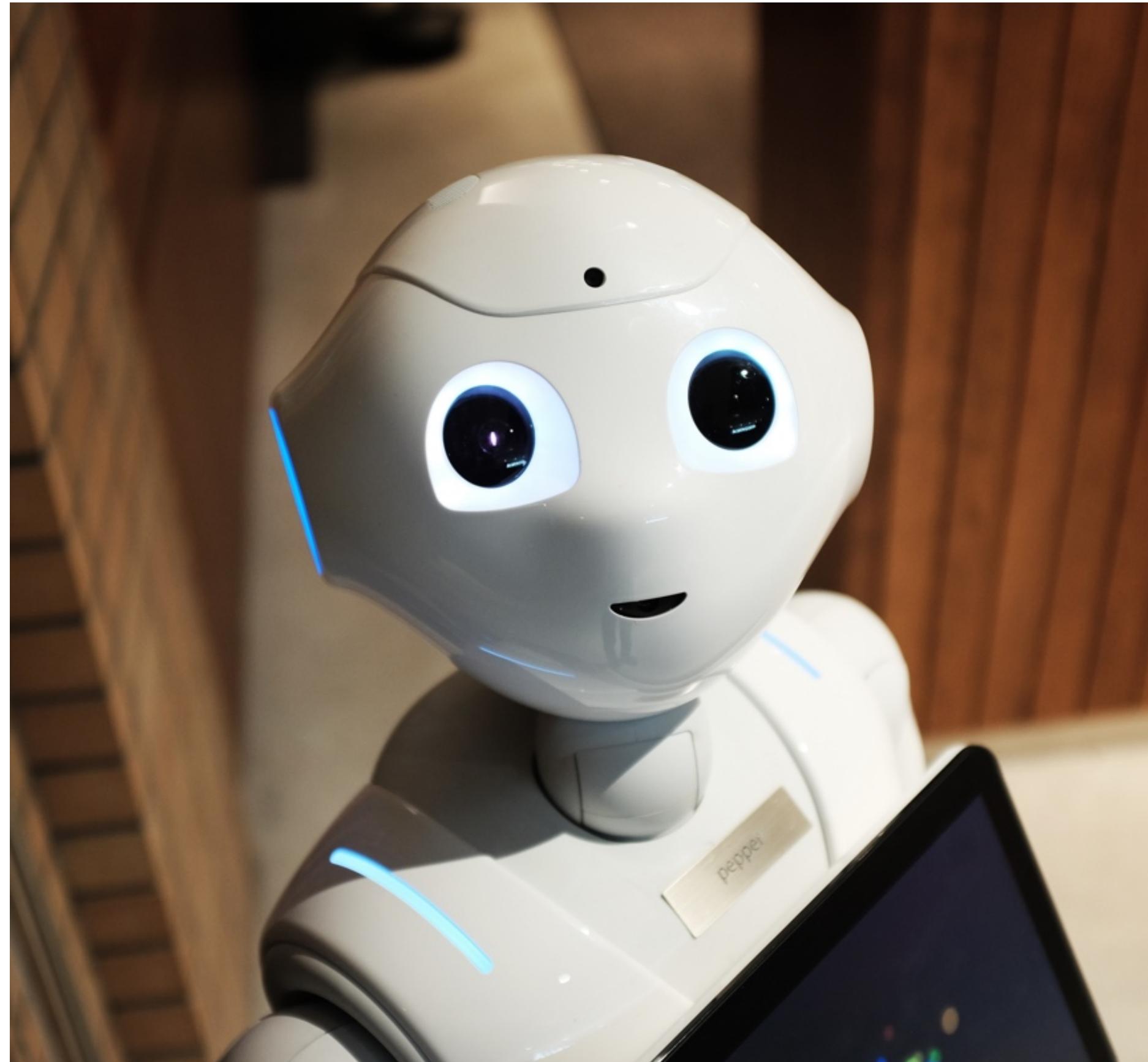
JavaScript Operators-Math



JavaScript Math Operands:

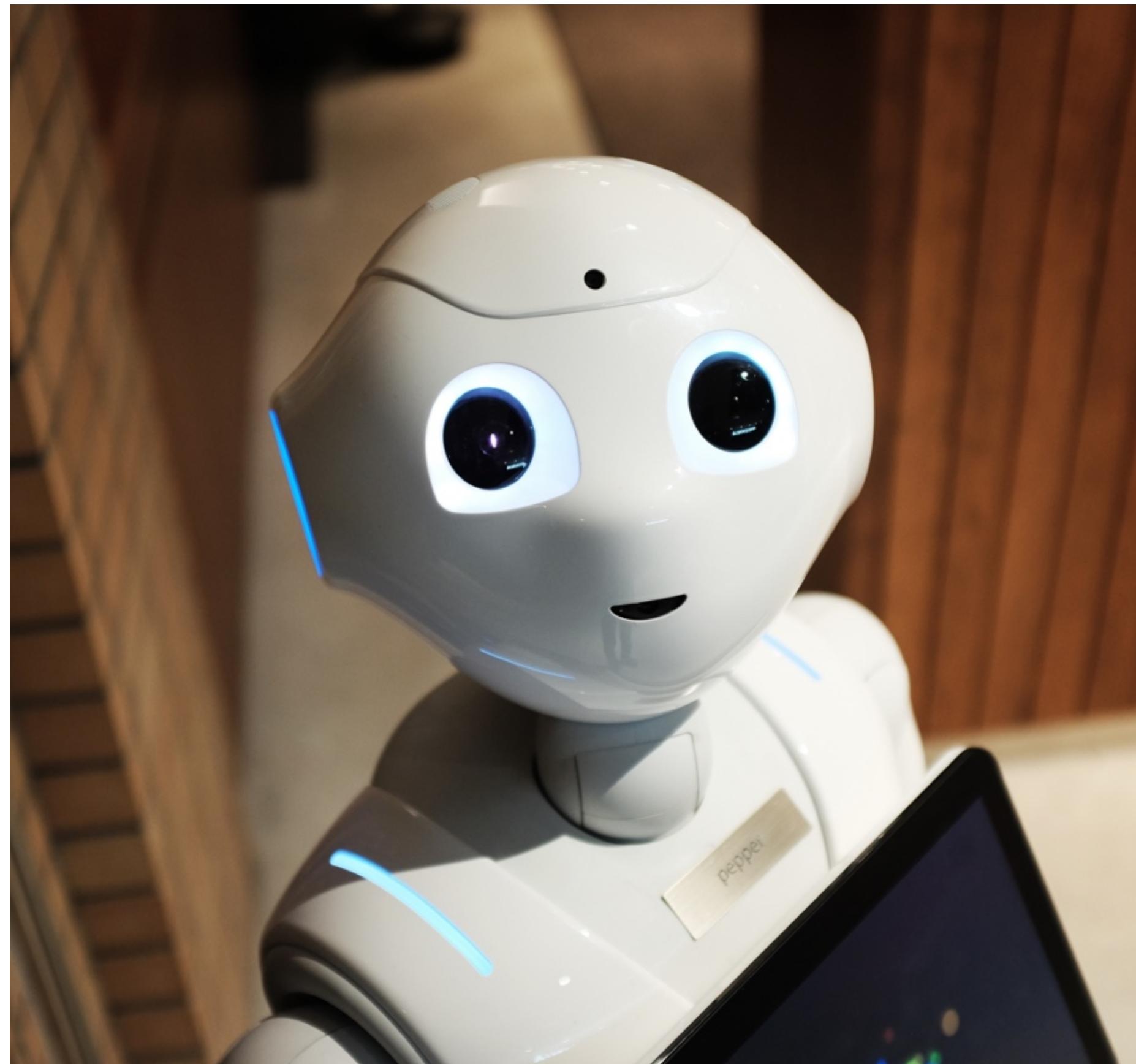
- + addition
- - subtraction
- * multiplication
- / division
- % modulus
- = assignment operator

JavaScript Operators-Math



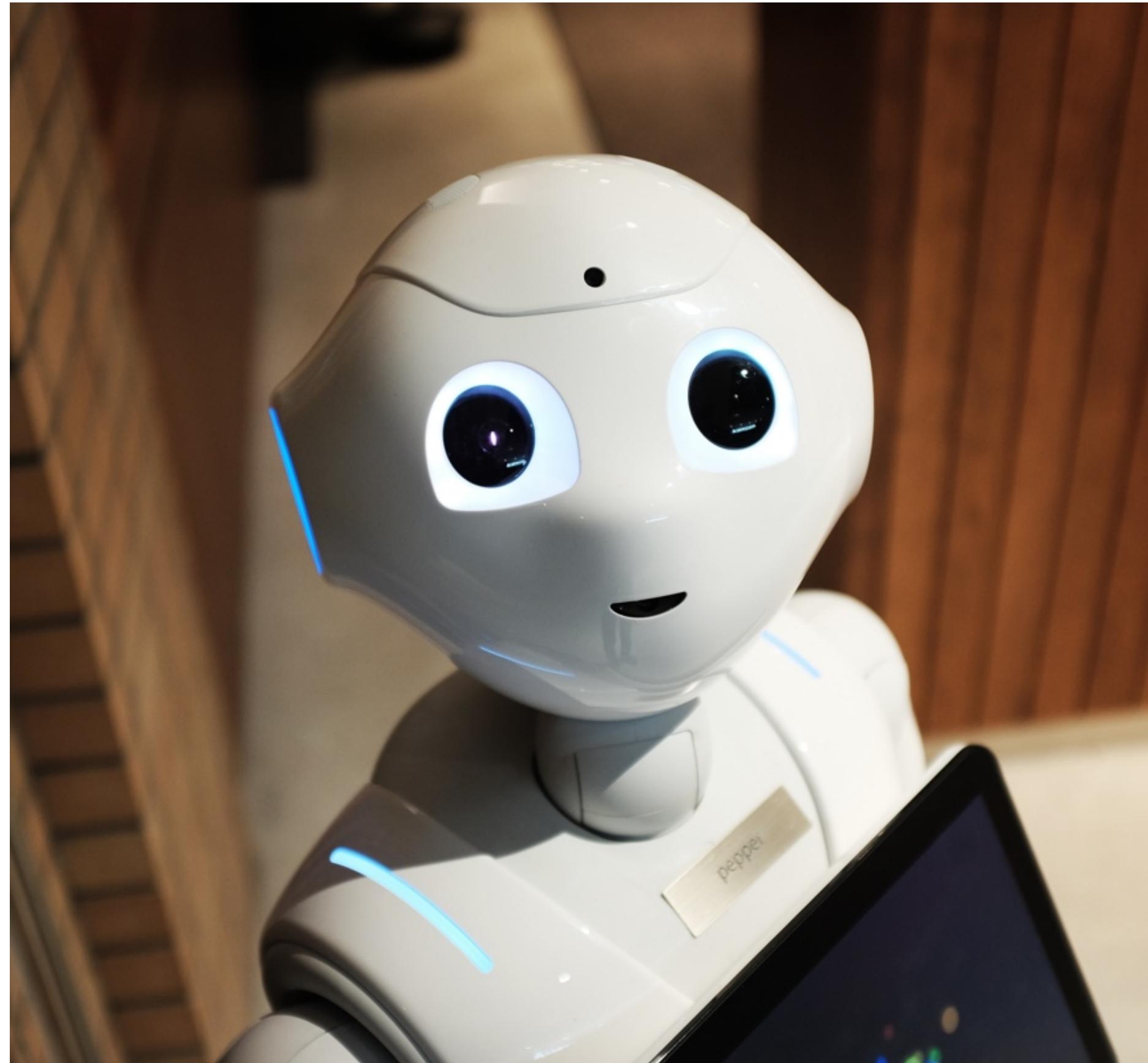
- In programming the = is not an equals sign.
- The = is an assignment operator and is used to assign a value (usually a variable).

JavaScript Operators-Math



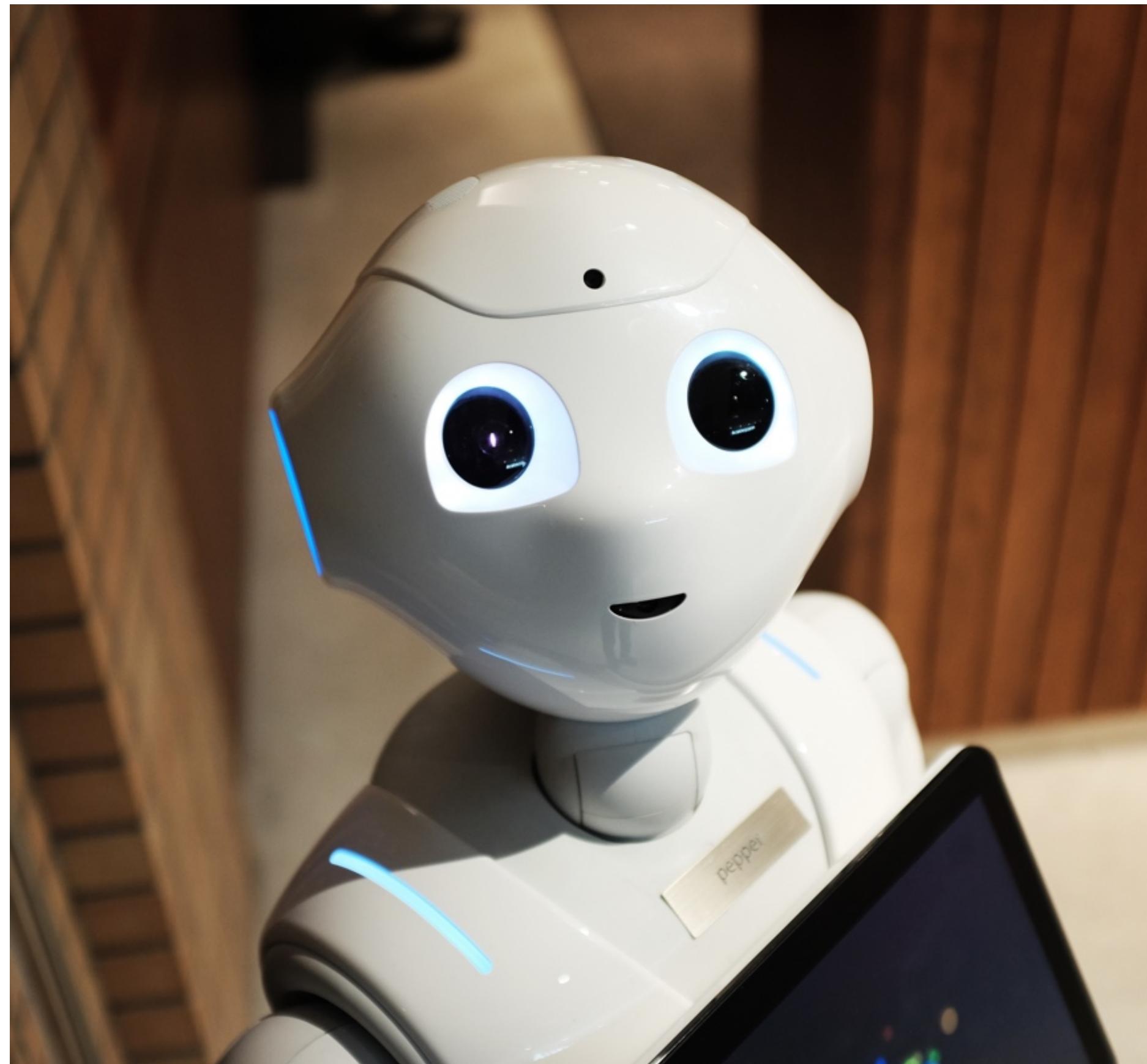
- In JavaScript we use the * as the multiplication operator
- In JavaScript we use the / as the division operator

JavaScript Operators-Math



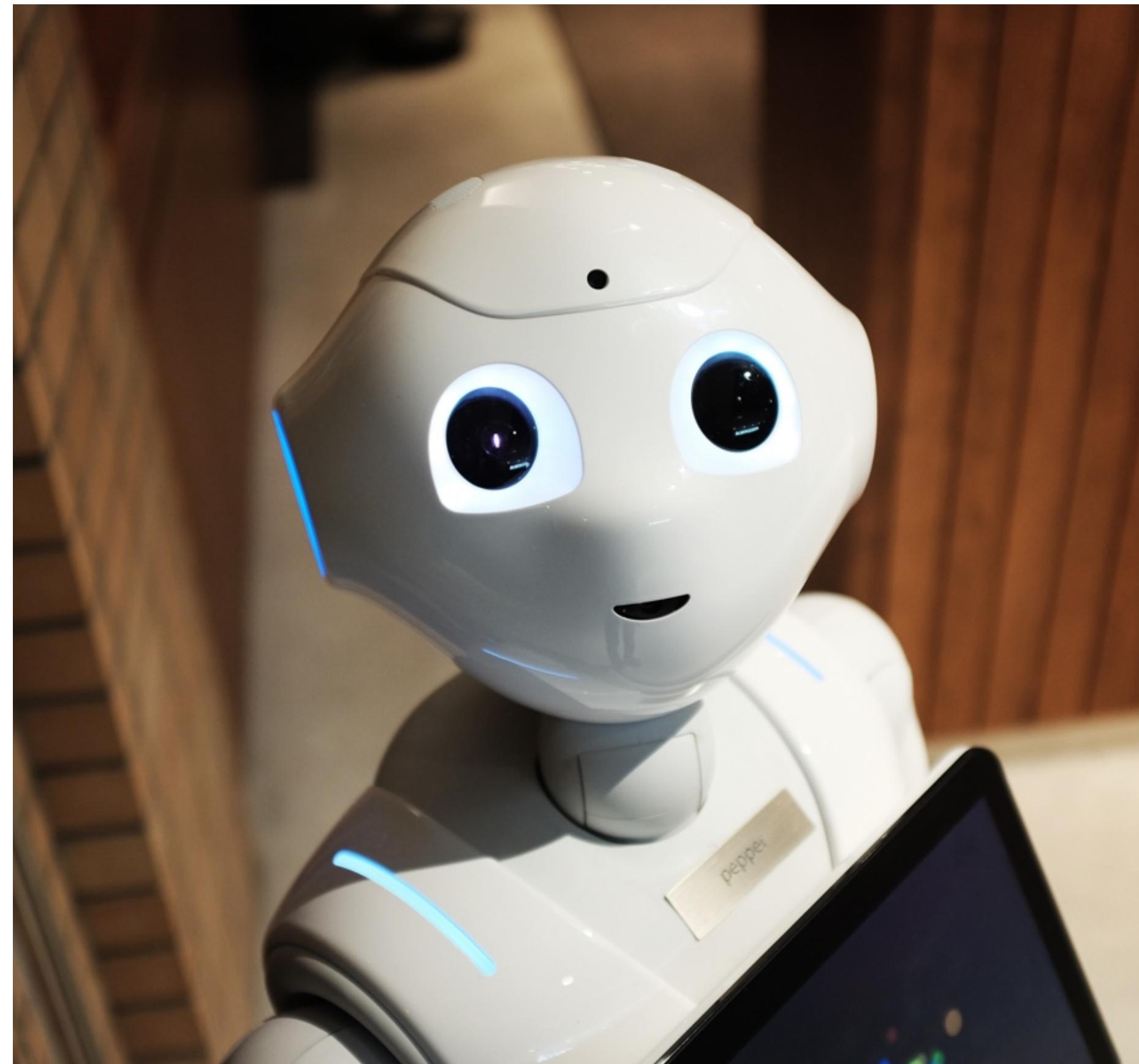
- And what is that % modulus operator?

JavaScript Operators-Math



- The % modulus operator is the remainder amount left over from division.

JavaScript Operators-Math

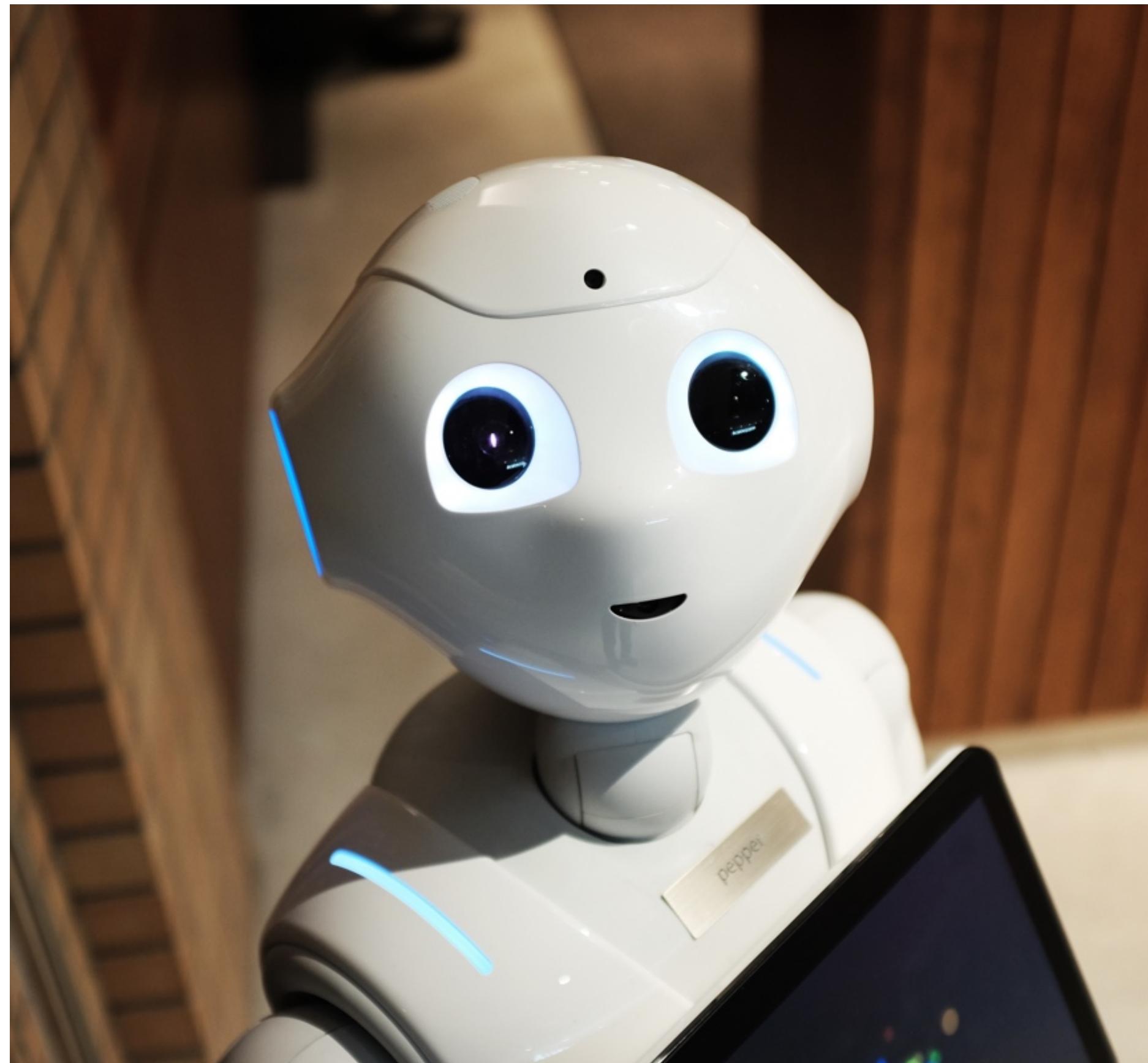


- The % modulus operator is the remainder amount left over from division.

What?

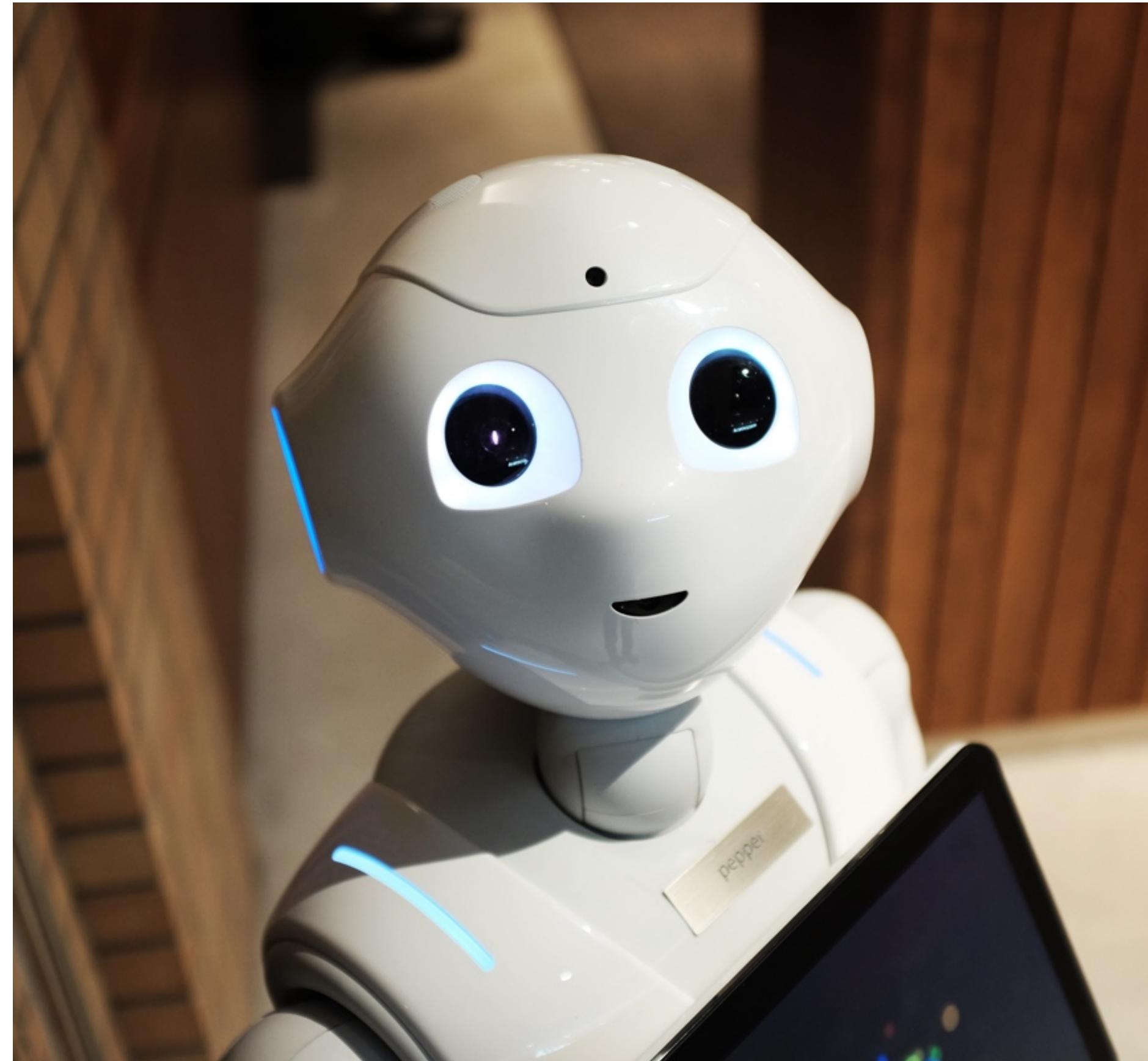
- Here's an example:

JavaScript Operators-Math



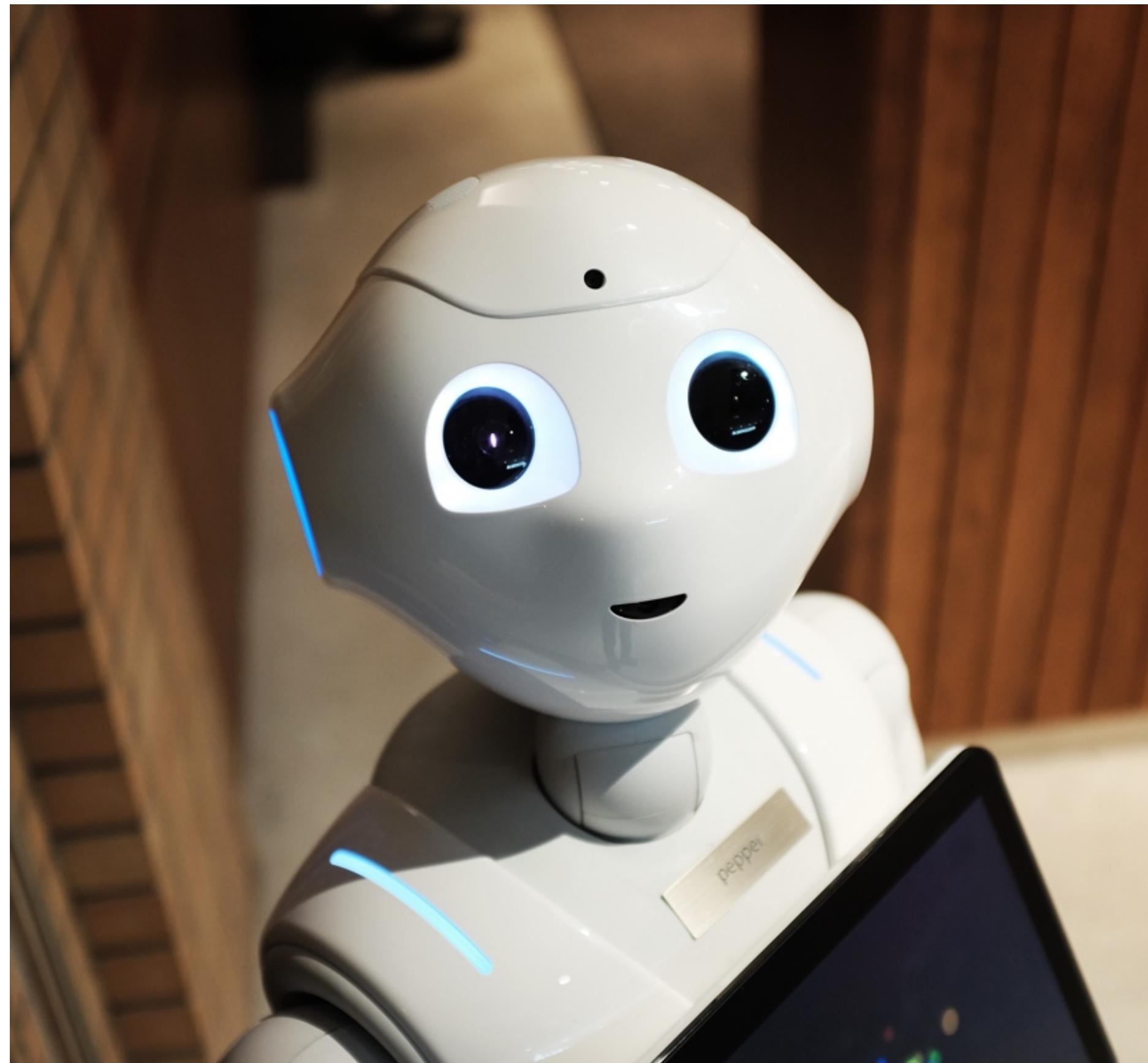
- $11 / 5$ equals ?
- $11 / 5$ equals 2 and 1 remainder
- If you just wanted the remainder you would use the modulus operator!

JavaScript Operators-Math



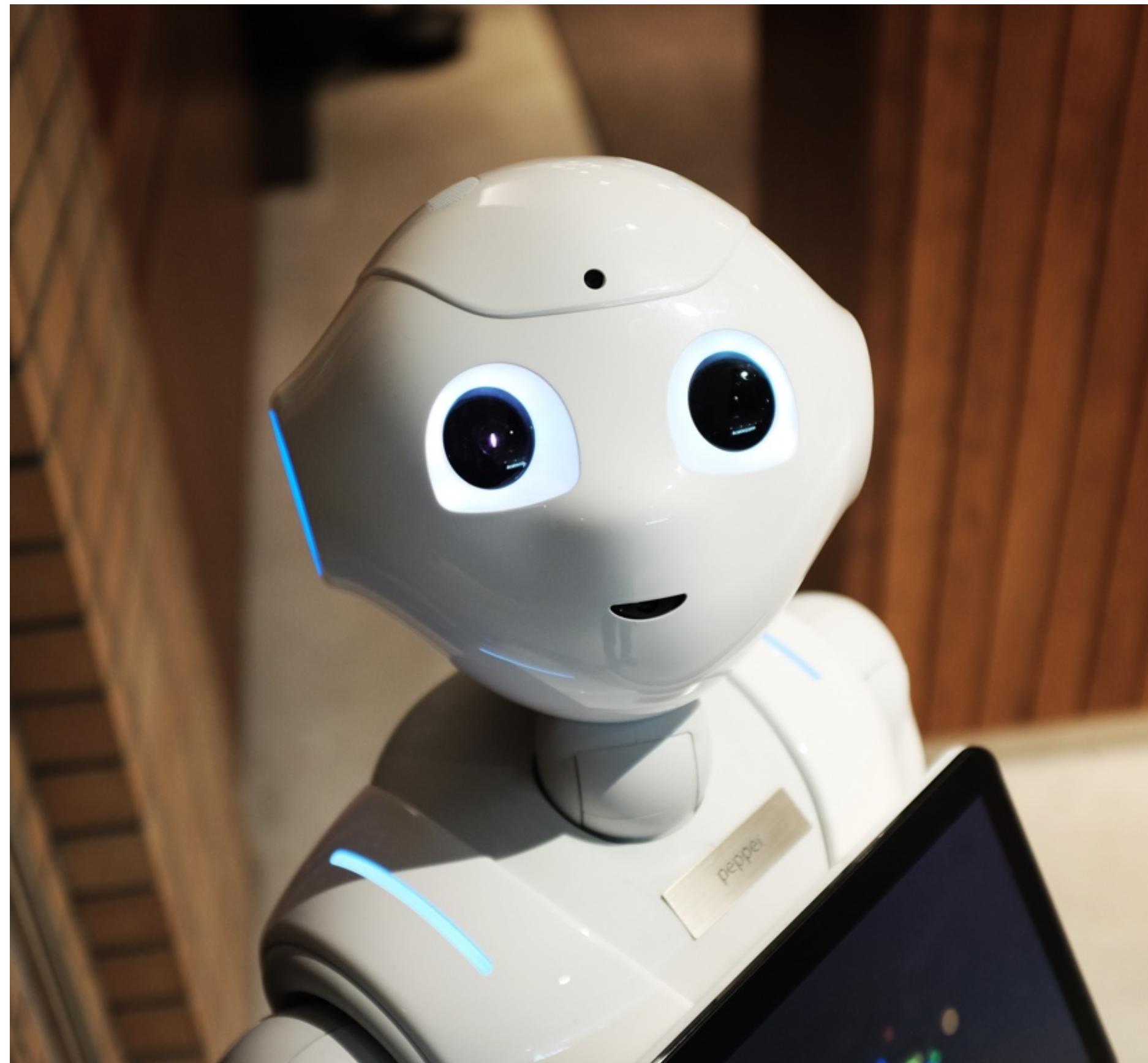
- $11 \% 5$ equals 1

JavaScript Operators-Math



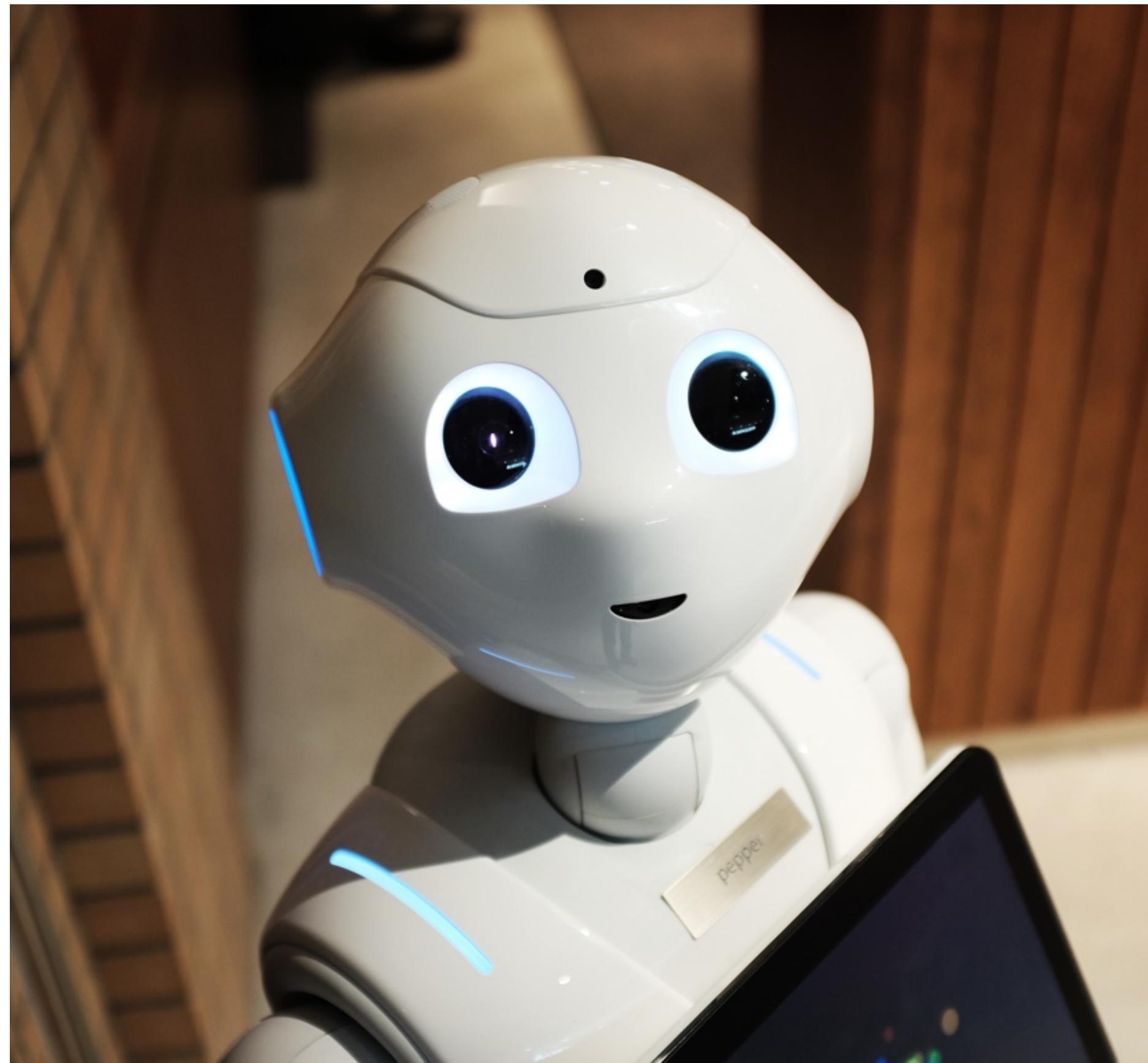
- The modulus is very useful in programming.

JavaScript Operators-Math



- If you want only even numbers then you could find the modulus for each one and the ones that had a modulus of zero, then those are even.

JavaScript Operators-Math



Like this:

- $4 \% 2$ equals 0 (even number)
- $6 \% 2$ equals 0 (even number)
- $7 \% 2$ equals 1 (not an even number)

Create a doc named YourName_1_4_2

Let's try out the **modulus** operator:

1. $12 \% 3$ equals ?
2. $8 \% 4$ equals ?
3. $5 \% 2$ equals ?
4. $4 \% 2$ equals ?

Activity 2

Quick Quiz

Class Wrap-up

How was your day?

How's your website coming along?

Are you excited to add some colour?



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