Intro to Programming

Objectives

- Explain what programming is.
- Create a algorithm.
- Use correct and specific language to describe code.
- Identify Expressions

What is programming?

Group up and write your definition.

Algorithms

An algorithm is a process used to solve a specific problem. It's just like a recipe - a small set of instructions in a language that takes some ingredients and does something with them to produce something delicious.

Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

Flowchart symbols. Describe them.

Group Task: Whiteboards - Create a algorithm to describe a task of your choosing.

Programming Language

A programming language is, as the name would suggest, a language developed to express programs.

```
 B4  FC  90  F7  60  B1  3C

6C  36  00      JMP    ($0036
C9  A0          CMP    #$A0
90  02          BCC    $FDF6
25  32          AND    $32
84  35          STY    $35
48              PHA
20  78  FB      JSR    $FB78
68              PLA
A4  35          LDY    $35
60              RTS
C6  34          DEC    $34
F0  9F          BEQ    $FDA3
CA              DEX
D0  16          BNE    $FE1D
C9  BA          CMP    #$BA
D0  BB          BNE    $FDC6
85  31          STA    $31
A5  3E          LDA    $3E
91  40          STA    ($40),
E6  40          INC    $40
```

Machine Code

All computers have a native programming language that they understand, commonly referred to as machine code.

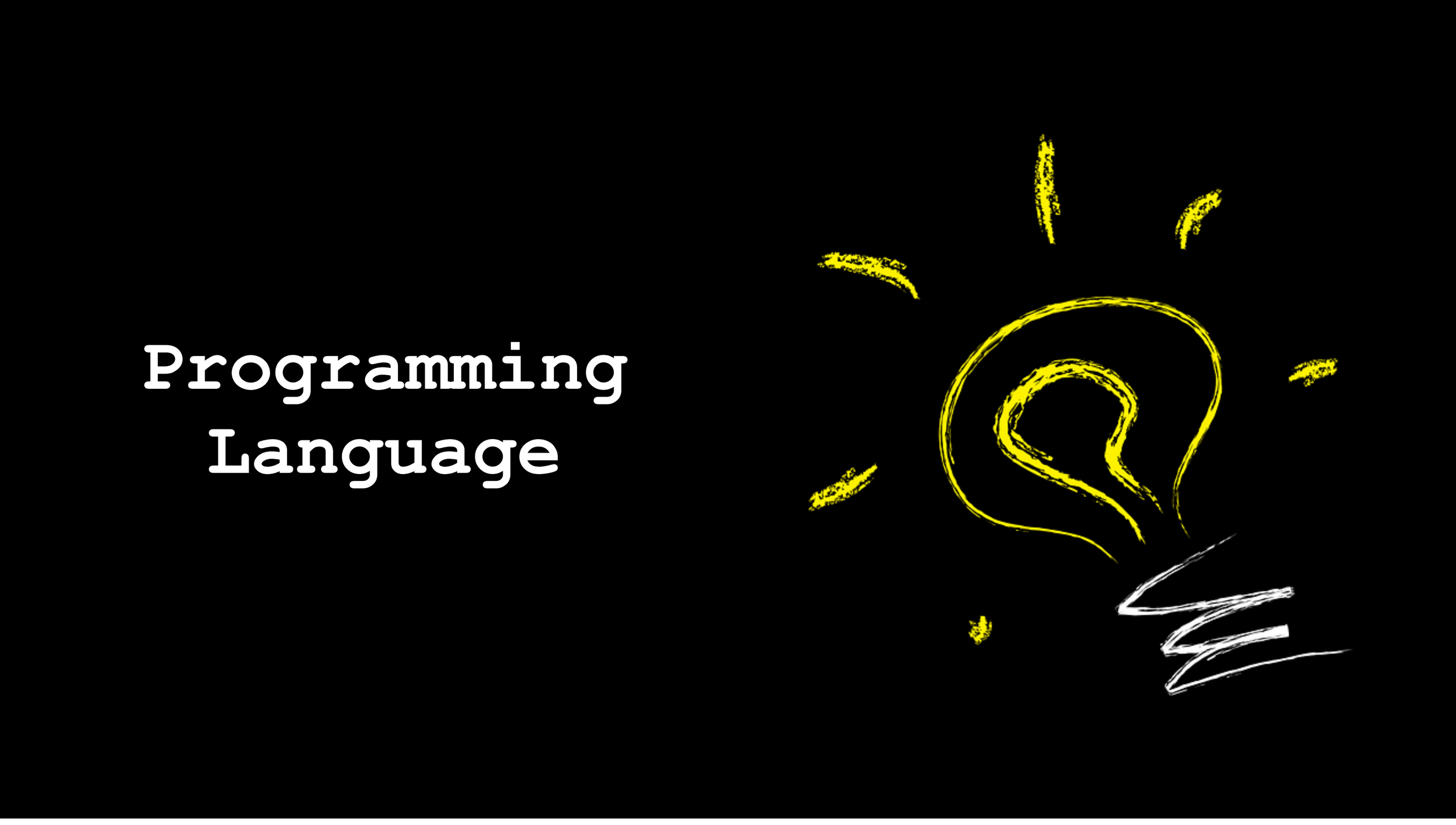
Difficult to follow.

Typically expressed in binary.

Unique to a particular architecture.

Two different computers could use two different versions of machine code.

Programming Language



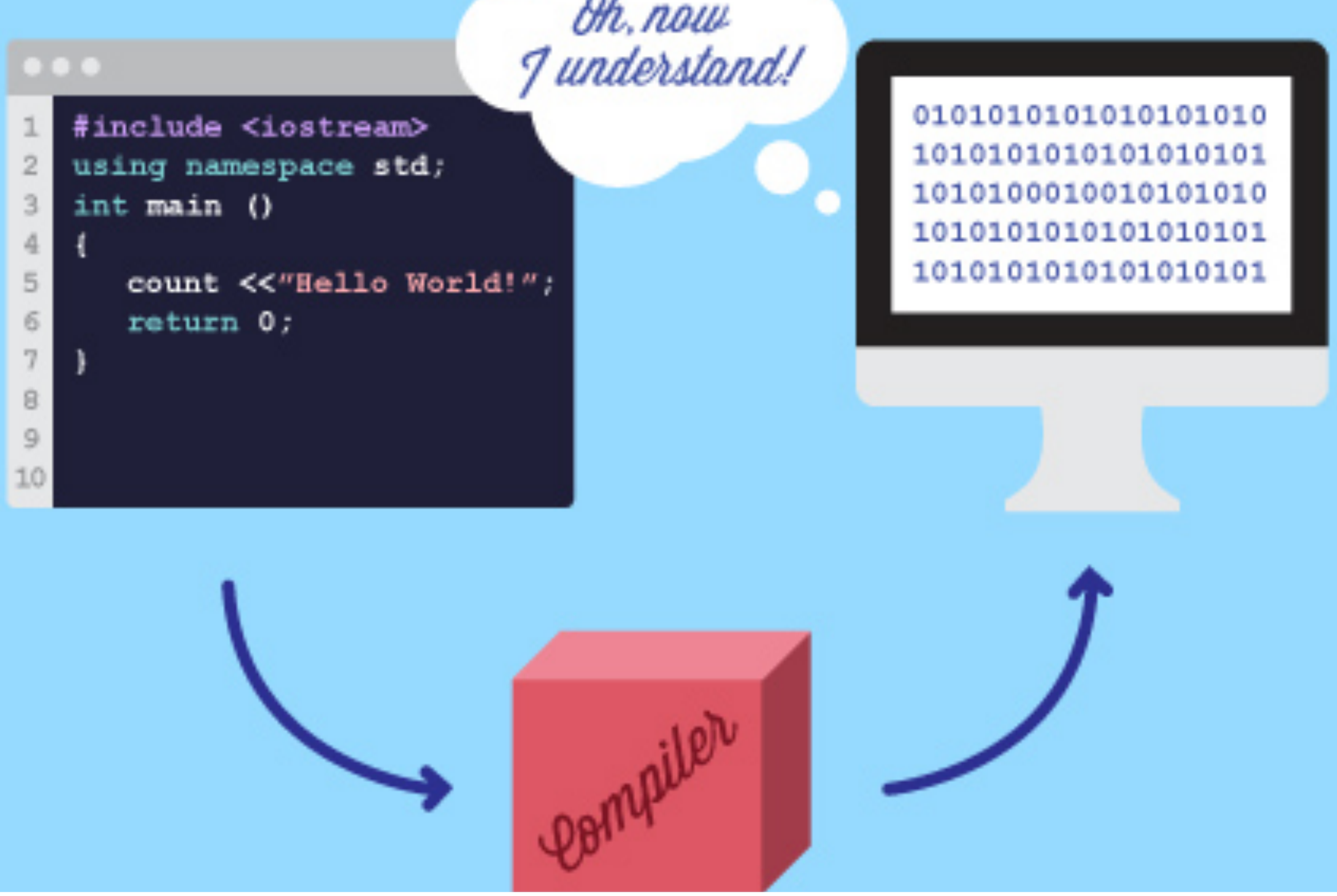
Provide a better interface between us, as the programmers, and the computer.

Allows programs to be expressed in a language easier to understand.

Potentially common to a number of architectures.

Can be translated into machine code.

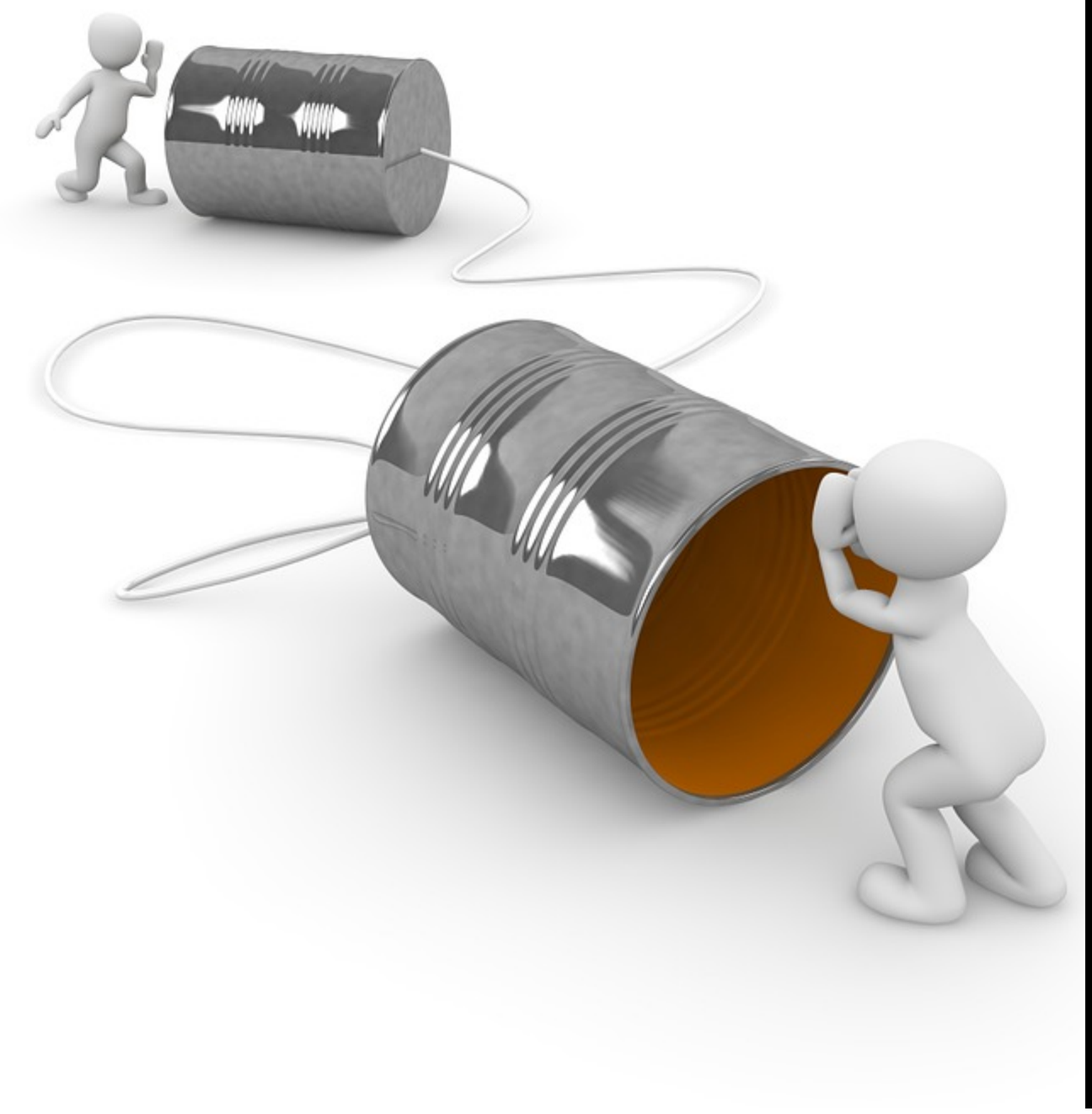
For this to happen a computer must either compile or interpret the program so it can be executed.



A compiled program has to be modified into machine code before it is used.

An interpreted program is stored in a human-readable form. When the program is executed, an interpreter modifies the human-readable content as it is run.

Source code to machine code image



Speaking like a developer

Collaborating on code with other developers.

Interpreting error messages.

They tend to be incredibly specific.

Understanding documentation.

Performing well in technical interviews.

Speaking with confidence

Declaration

```
var x;
```

Assignment

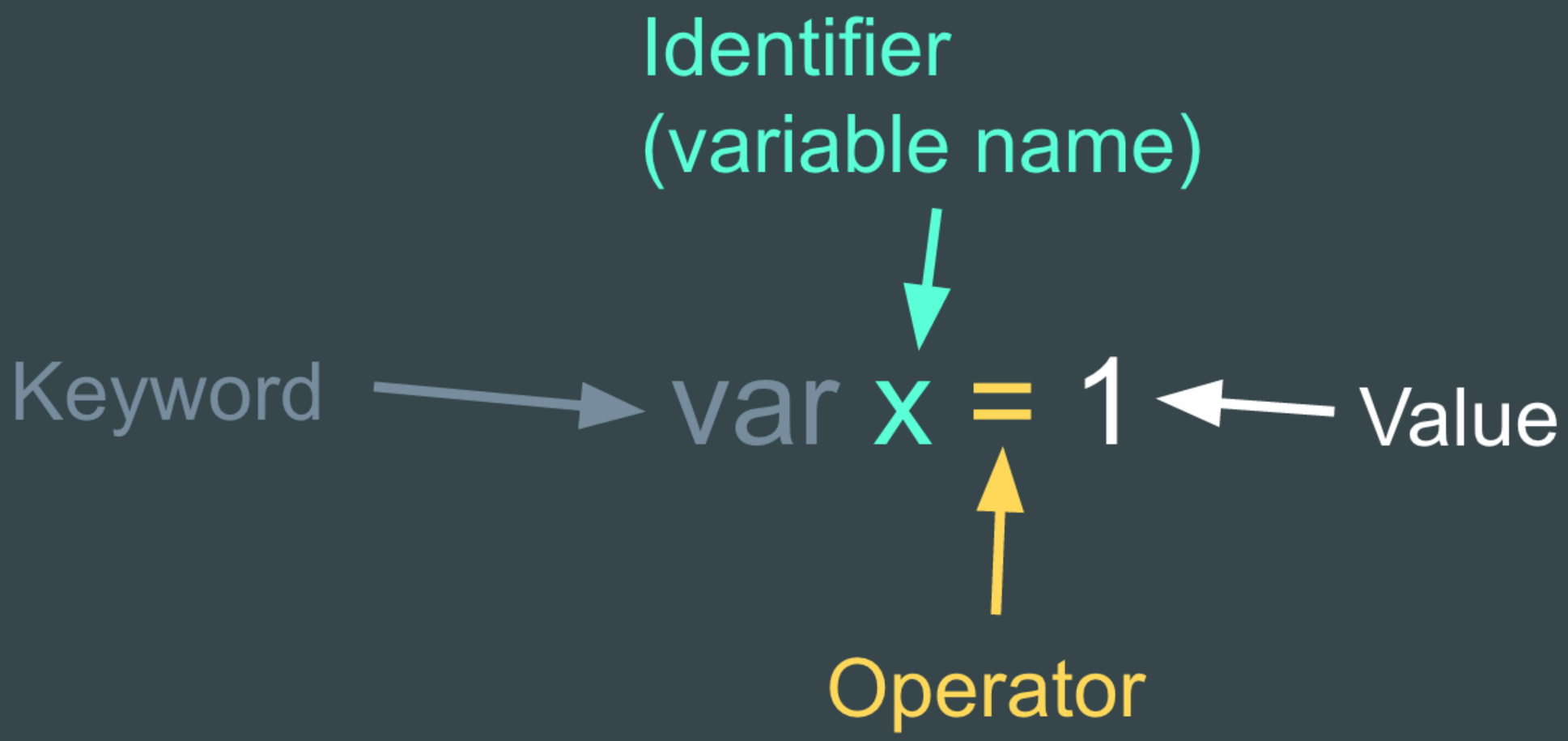
```
var x = 1;
```

This is Declaring and Assignment combined.
^You might hear the term “set” instead of assign.

Declaration/Assignment

The previous example showed them together … but they can (and are commonly) placed on different lines.

```
var x;
x = 1;
```


Identifier
(variable name)
Keyword
var x = 1
Value
Operator

Identifiers

Used in

- Variable Names.
- Function Names.
- Parameter Names.

Rules

- Must Start with a letter, _ or $.
- The rest may be letters, numbers, _ or $.

Keywords

- Reserved
- if / function / var / while / this (and more)

```
var pi = 3.14
```

Operators

- They act like functions
- Different Syntax

```
var five = 2 + 2
```

Literals

- Literally represents the data.
- Shorthand - extremely common.

```
var greeting = "Hello g[32]";
```

Expressions / Statements

- Expression
  - Something that results in a value.
  - someVar
  - 1 + 1
- Statement
  - A block of code that does something
  - If (x === y) …
  - x = 7;

Statement or Expression

```
var x = 1 + 1
```

Statement or Expression

```
var x = 1 + 1
```

Trick question ... both

The entire thing is a statement.

The 1+1 bit is an expression.

Whiteboard Write one expression and one statement.

Evaluation

The order in which Javascript does things.

The process of determining the value of an expression

"Running the code" ...

Reducing expressions to their values.

Determined by precedence

Show mdn javascript precedence

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Operators/Operator_Precedence

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