

Bread
Body Lotion

Body Lotion

Marg

Marg

Washing Powder

Washing Powder

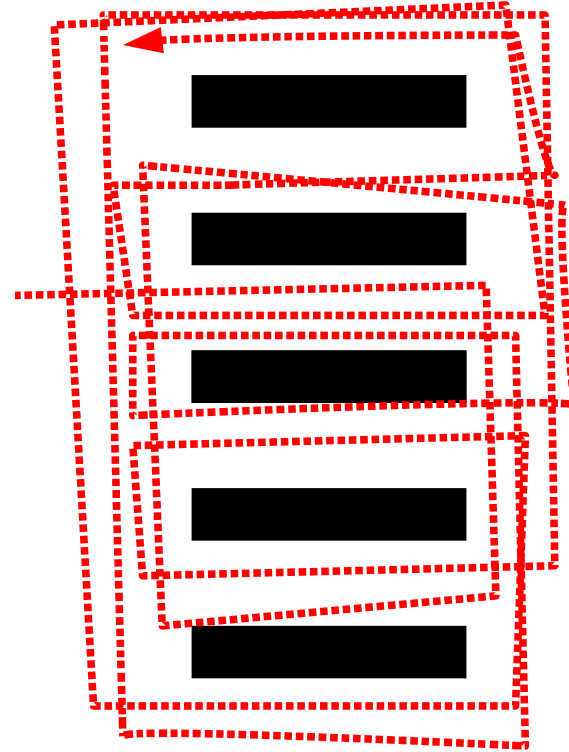
Ice cream

Ice cream

Carrots

Carrots

Soap



Fruit n veg

Oranges

Grapes

Carrots

Dairy

Marg

Ice cream

Bread n bake

Flour

Bread rolls

Bread

Bathroom

Body Lotion

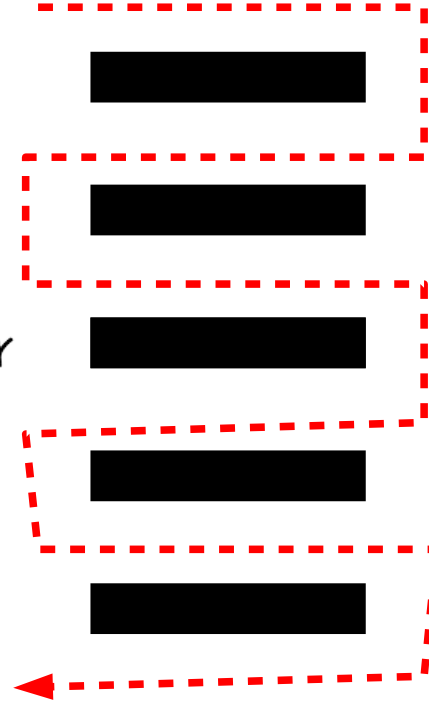
Kitchen

Washing Powder

Soap

Breakfast

Corn Flakes



Fruit n veg
Oranges
Grapes
Carrots

Dairy
Milk
Ice cream

Bread n bake
Flour
Bread rolls
Bread

Grapes

Grapes

Marg

Bread n bake

Flour

Bread rolls

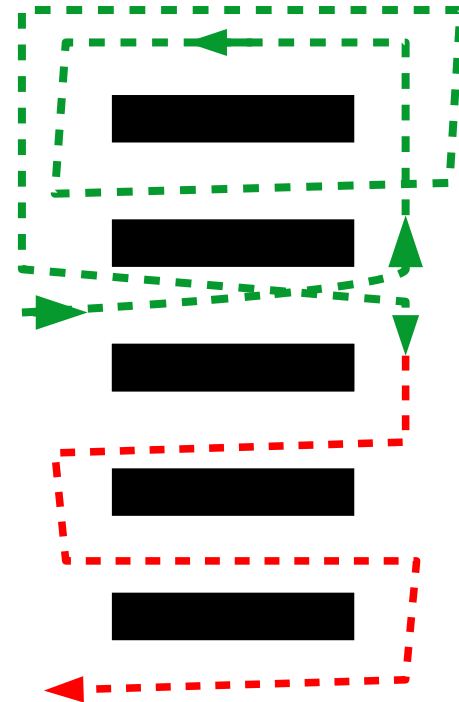
Bread



Body Lotion
Washing Powder
Soap
Corn Flakes

Soap

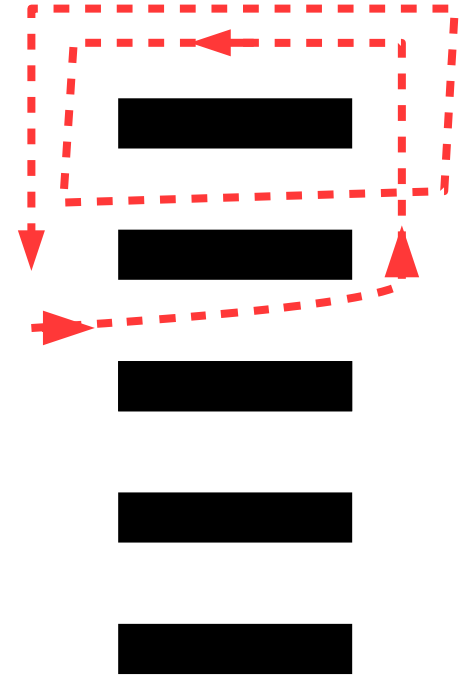
Corn Flakes

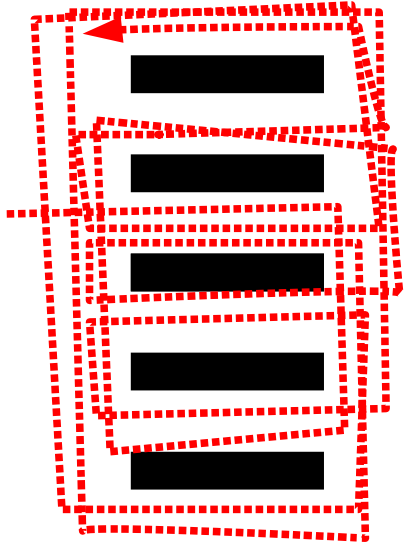


Fruit n veg
Oranges
Grapes
Carrots
Dairy
Marg
Ice cream
Bread n bake
Flour
Bread rolls
Bread



Body Lotion
Washing Powder
Soap
Corn Flakes

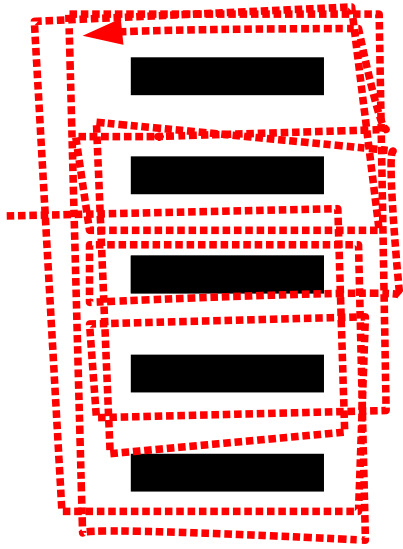




Interpreter

Immediately
runs

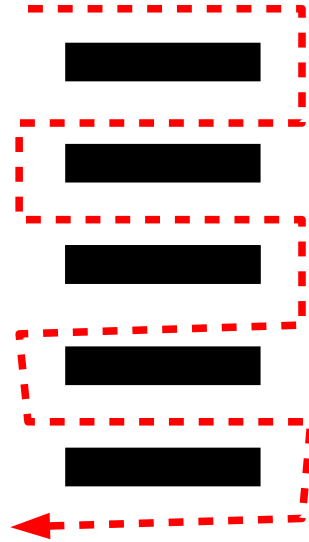
Not efficient;
can run slow



Interpreter

Immediately
runs

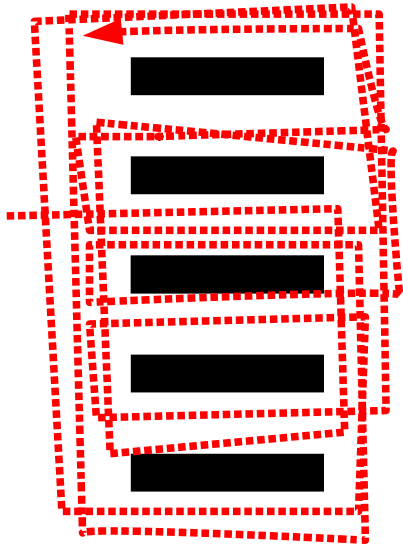
Not efficient;
can run slow



Compiler

Delay before
running

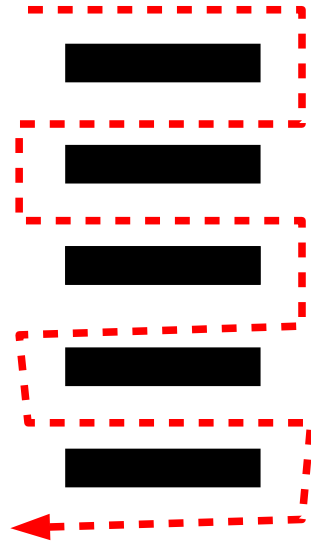
Runs efficiently



Interpreter

Immediately
runs

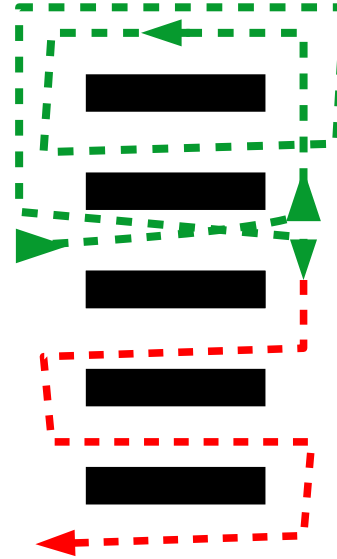
Not efficient;
can run slow



Compiler

Delay before
running

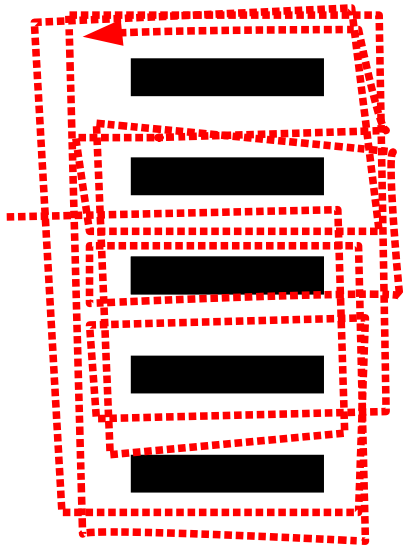
Runs efficiently



Just-in-time

Immediately
runs

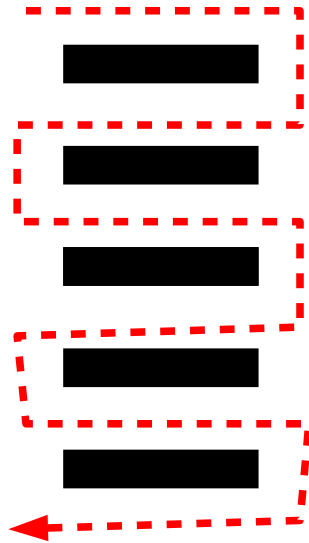
Runs quite
efficiently



Interpreter

Immediately
runs

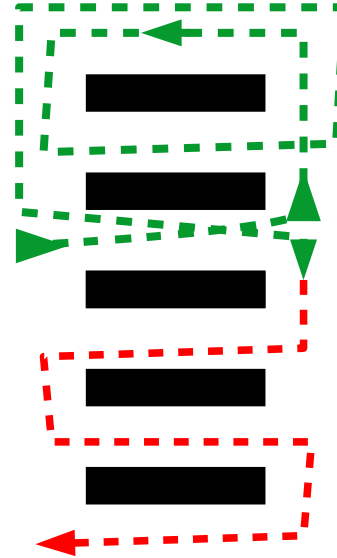
Not efficient;
can run slow



Compiler

Delay before
running

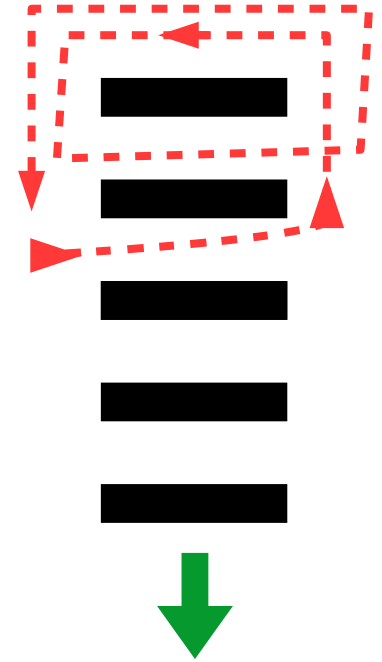
Runs efficiently



Just-in-time

Immediately
runs

Runs quite
efficiently



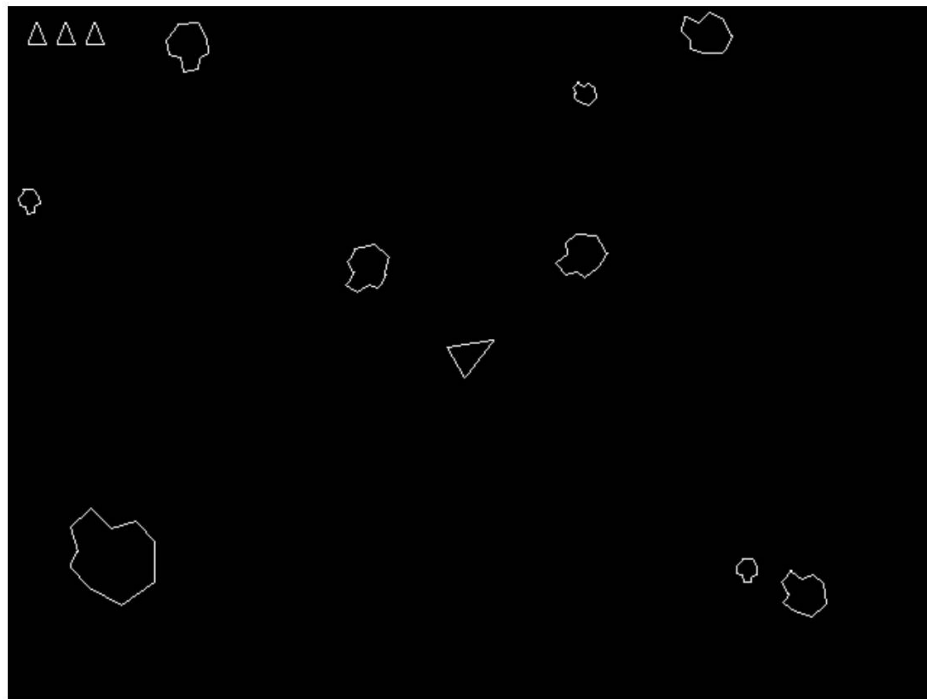
WebAssembly

Immediately
runs highly efficiently

What is WebAssembly ?

An [Asteroids game](#) ported from C to WebAssembly.

(Arrows to move; Spacebar to shoot)



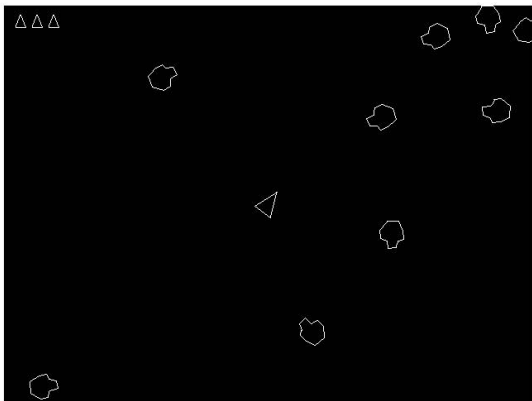
[levelupwasm.com
/apps/asteroids](http://levelupwasm.com/apps/asteroids)

What is WebAssembly ?

Asteroids in WebAssembly

Code on GitHub

An [Asteroids](#) game ported from C to WebAssembly.
(Arrows to move; Spacebar to shoot)



Want to learn how to port games like this one to the web? Check out my book [Level Up with WebAssembly](#).

Elements Console Sources Network Performance Memory Application Security Audits

Page Filesystem »

index.html x loading.gif asteroids.js

▼ top
▼ www.levelupwasm.com
▼ apps/asteroids
index.html
asteroids.js
loading.gif
▶ stackpath.bootstrapcdn.com
▶ wasm

```
1 <!doctype html>
2 <html lang="en">
3   <head>
4     <meta charset="utf-8">
5     <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
6     <meta name="description" content="Asteroids game ported from C to WebAssembly">
7     <meta name="author" content="Robert Aboukhalil">
8     <title>Asteroids Game in WebAssembly</title>
9
10    <!-- Bootstrap core CSS -->
11    <link href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" rel="stylesheet">
12
13    <style>
14      body { padding-top: 5rem; }
15      .starter-template { text-align: center; }
16      canvas { display: block; margin: 0 auto; }
17    </style>
18  </head>
19  <body>
20    <nav class="navbar navbar-expand-md navbar-dark bg-dark fixed-top">
21      <a class="navbar-brand" href="#">Asteroids in WebAssembly</a>
22      <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarExampleDefault">
23        <span class="navbar-toggler-icon"></span>
24      </button>
25
26      <div class="collapse navbar-collapse" id="navbarExampleDefault">
27        <ul class="navbar-nav mr-auto"></ul>
28        <div>
29          <a style="color:#ccc" class="nav-link" href="https://github.com/levelupwasm/asteroids">
30            </div>
31        </div>
32      </nav>
33
34    <div class="starter-template">
35      <p class="lead">
36        An <a href="https://github.com/flightscrank/asteroids">Asteroids game</a>
37        <small>(Arrows to move; Spacebar to shoot)</small>
38      </p>
39    </div>
40  </body>
41</html>
```

What is WebAssembly ?

The screenshot displays a web browser window with the title "Asteroids in WebAssembly". The main content area shows a black space with white outlines of a spaceship, several asteroids, and three triangles in the top-left corner representing stars. Below the game, a text prompt reads: "An Asteroids game ported from C to WebAssembly. (Arrows to move; Spacebar to shoot)".

On the right side of the browser, the "Sources" tab is active, showing the file system structure of the loaded page. The path "wasm-0053561a-698" is selected, revealing a list of files. The file "wasm-0053561a-698" is highlighted, and its contents are displayed in the right pane. The code is WebAssembly text format, starting with a function definition: `func (param i32 i32) { ... }`. A large blue bracket on the right side of the code pane groups the entire function body, with a callout box containing the text: "WebAssembly code (also called Wasam) transpiled (converted) from C to WebAssembly to run directly in the browser".

At the bottom right of the image, there is a blue square logo with the white letters "WA".

Why is it important?

Why is it important?

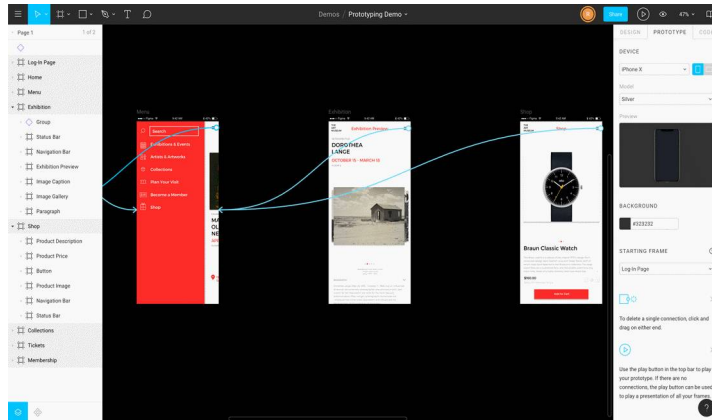


Speed

Why is it important?



Speed

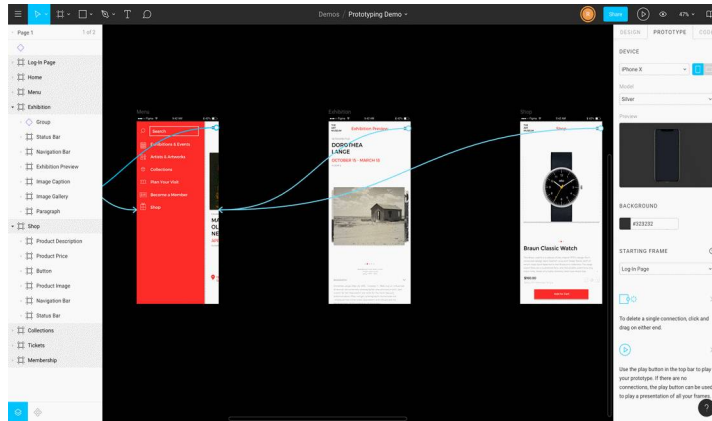


Figma 3X faster

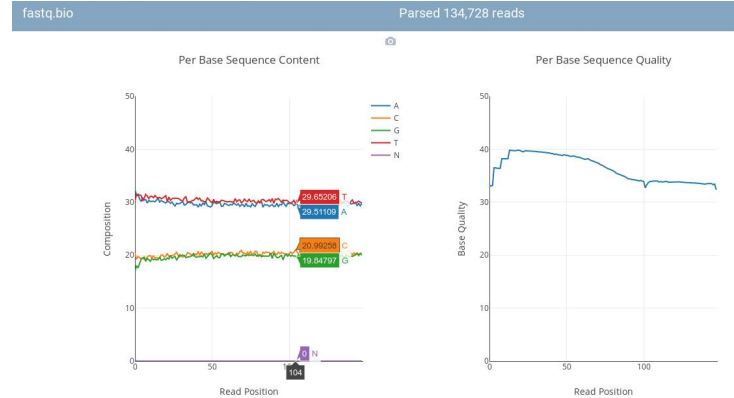
Why is it important?



Speed



Figma 3X faster



*fastq.bio DNA
sequencer 20X faster*

Why is it important?

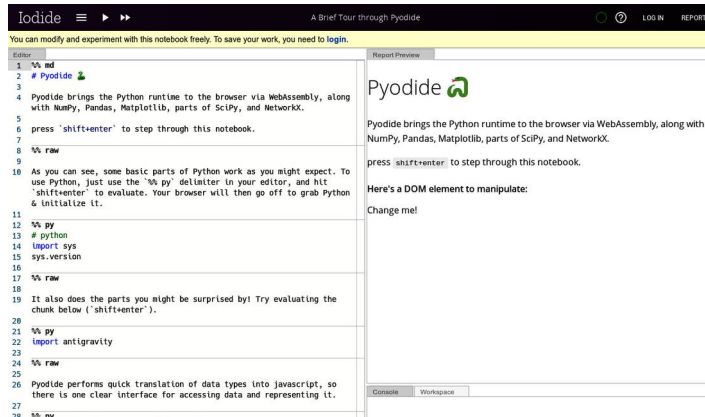


*Run
established
code*

Why is it important?



*Run
established
code*

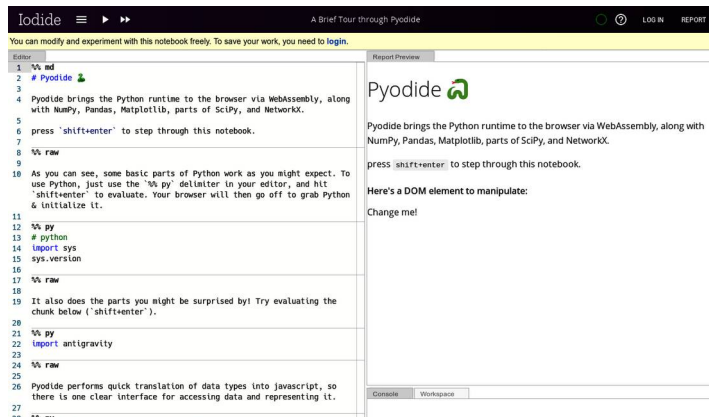


***Pyodide: Python scientific
on the browser***

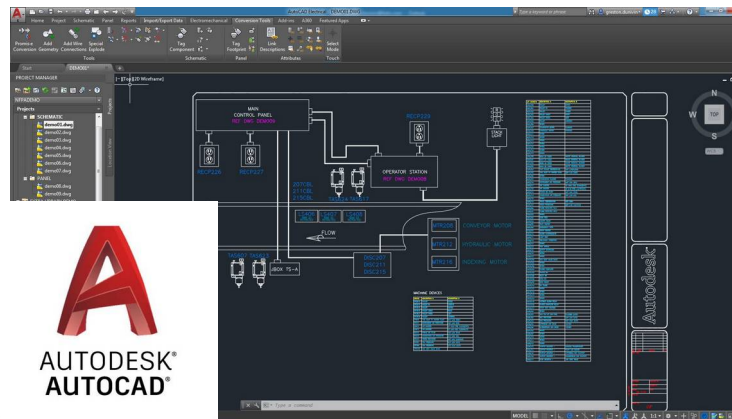
Why is it important?



*Run
established
code*



*Pyodide: Python scientific
on the browser*



*AutoCAD: web uses identical
codebase as desktop*

TL;DR

**WebAssembly Code is 'shipped
in' via a **binary blob****

faster & efficient execution

**Run established code not written
in JavaScript**

