Ways to put code into actions (instructions)

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Interpreter

Immediately runs

Not so efficient; can run slow

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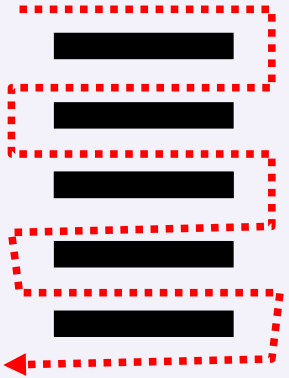

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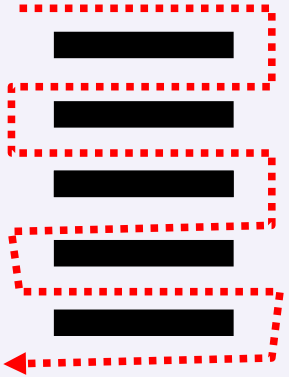

Compiler

Delay before running

Runs efficiently

Ways to put code into actions (instructions)

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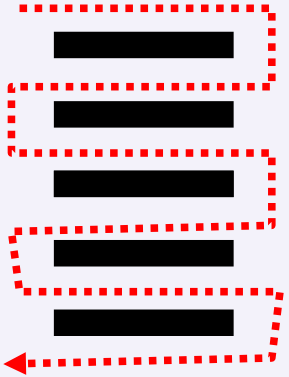

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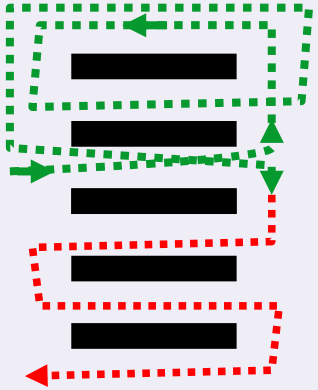

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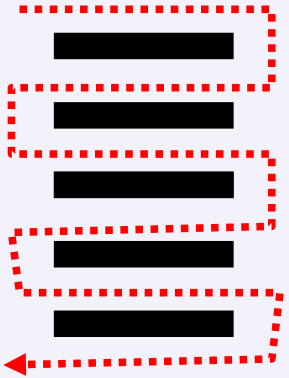

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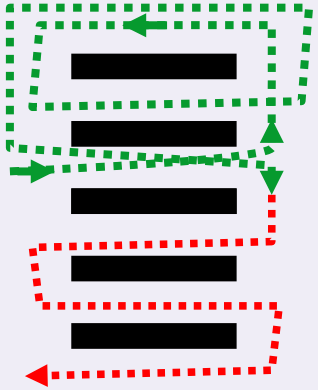

Just-in-time

Immediately runs

Runs very efficiently (all browsers 2008)

Ways to put code into actions (instructions)

Interpreter

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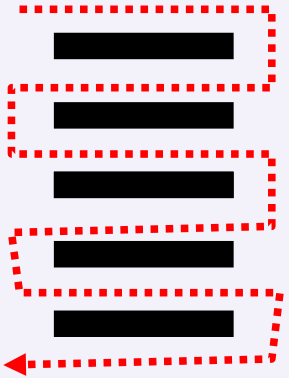

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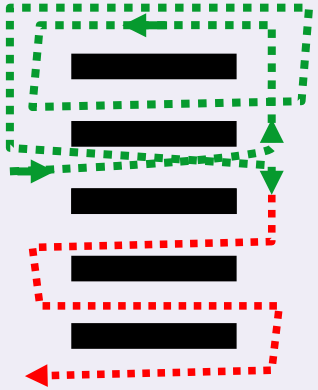

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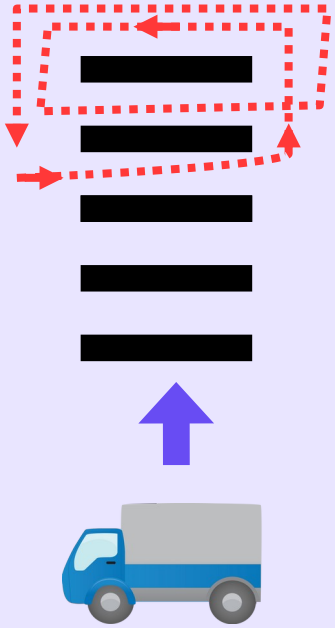

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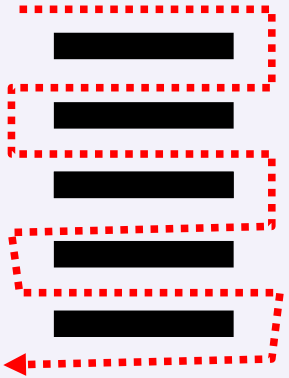

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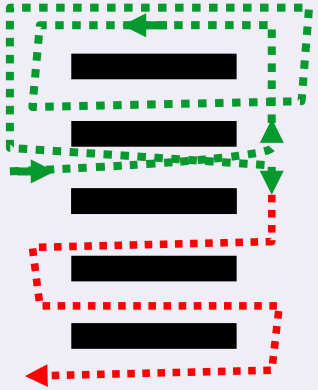

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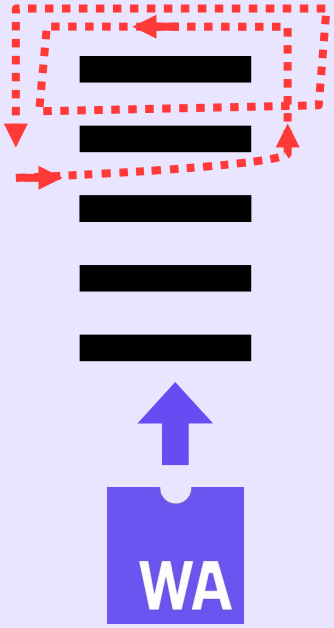


WebAssembly

Immediately runs highly efficiently (MVP 2017)

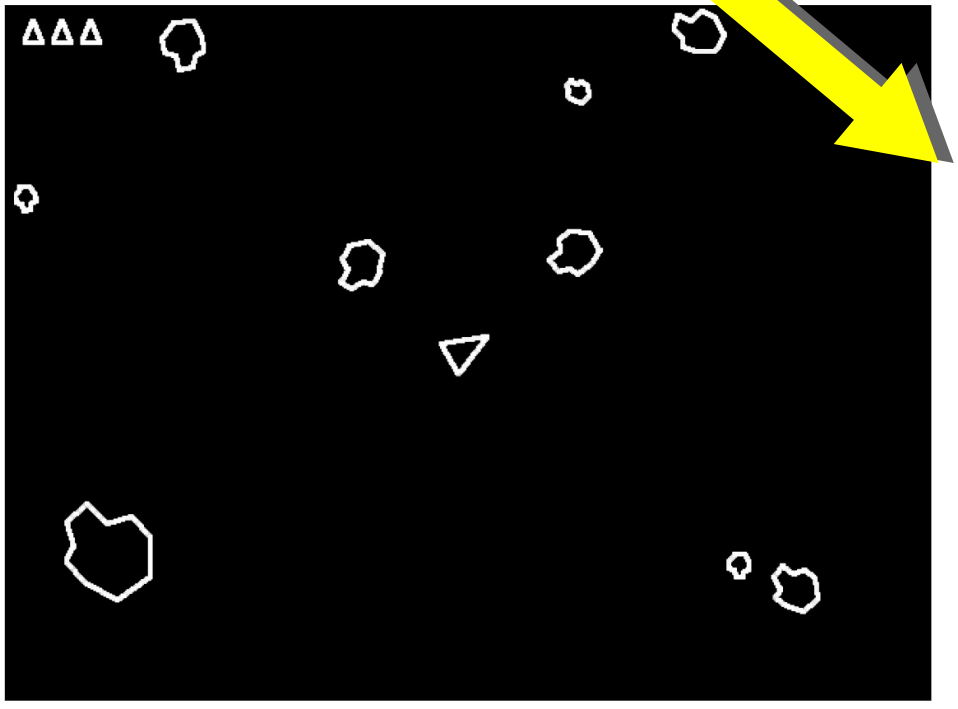
What is WebAssembly

Asteroids in WebAssembly

Code on GitHub

An Asteroids game ported from C to WebAssembly.

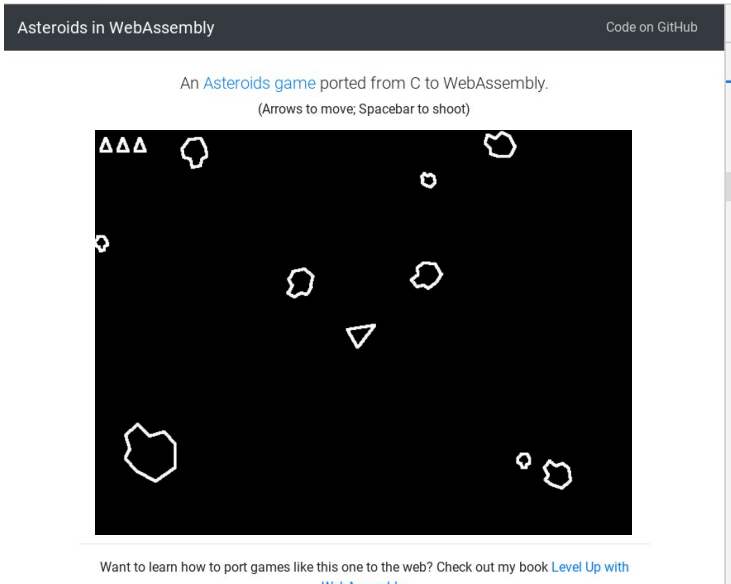
(Arrows to move; Spacebar to shoot)

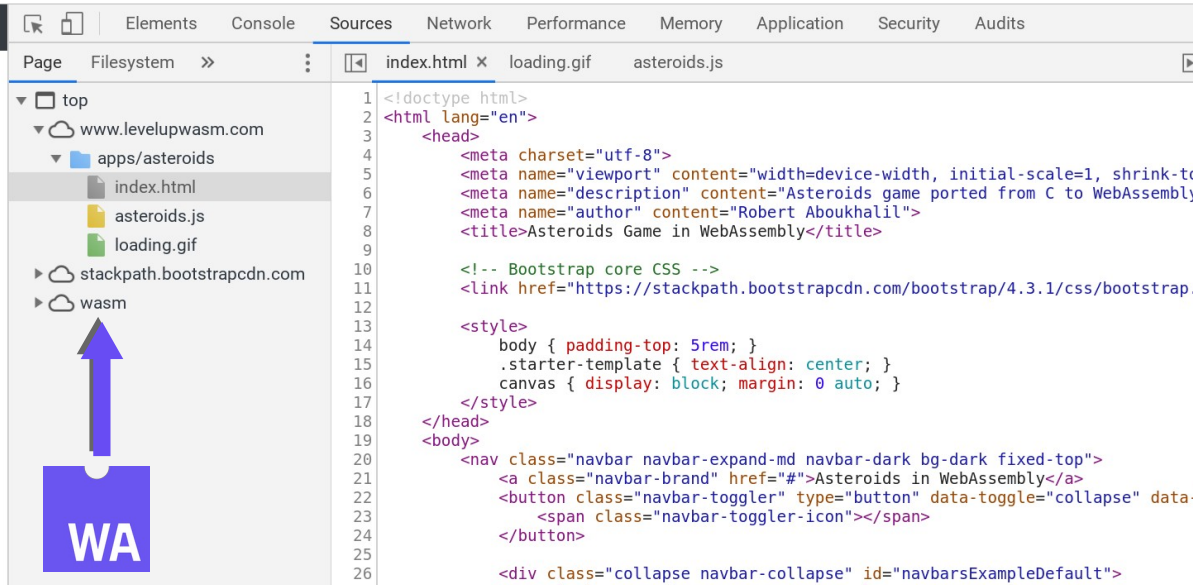


Written in C NOT JavaScript

levelupwasm.com/apps/asteroids/index.html

What is WebAssembly





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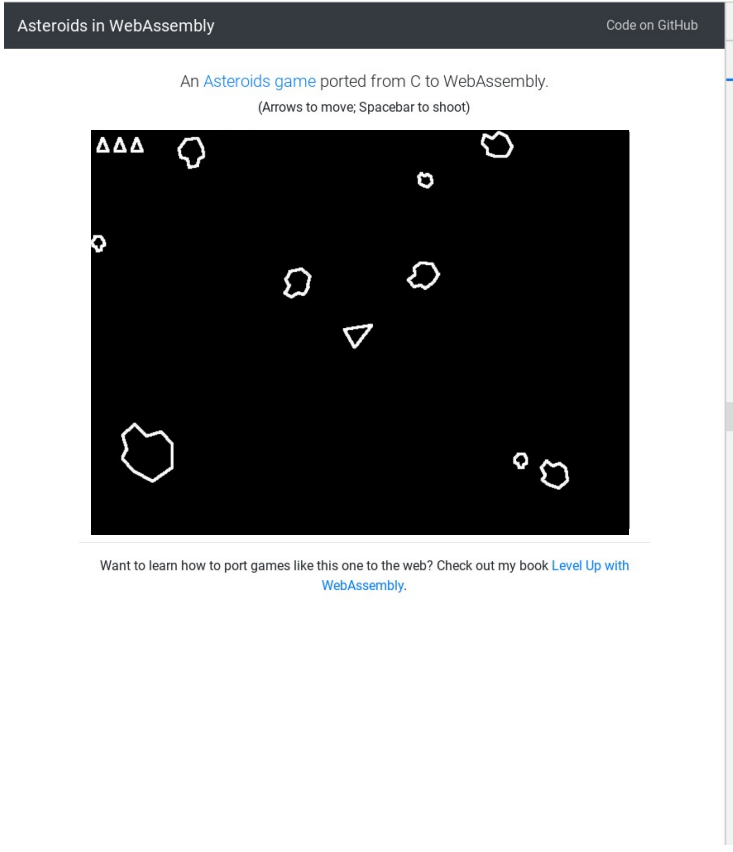
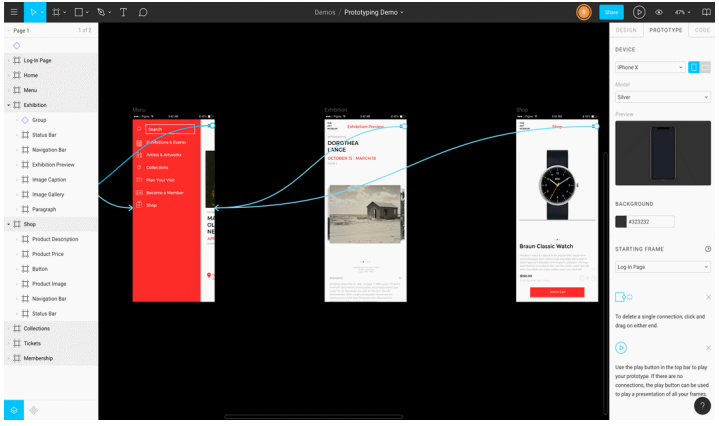


WebAssembly code (Wasam)

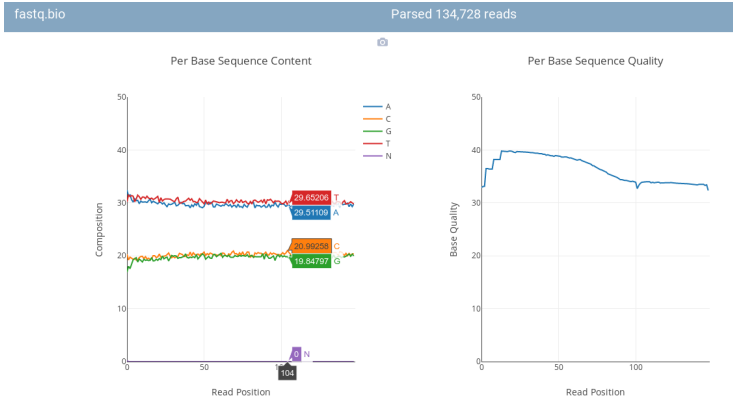
Compiled (converted) from C to WebAssembly to run directly in the browser

Why is WebAssembly important?

Faster than JavaScript



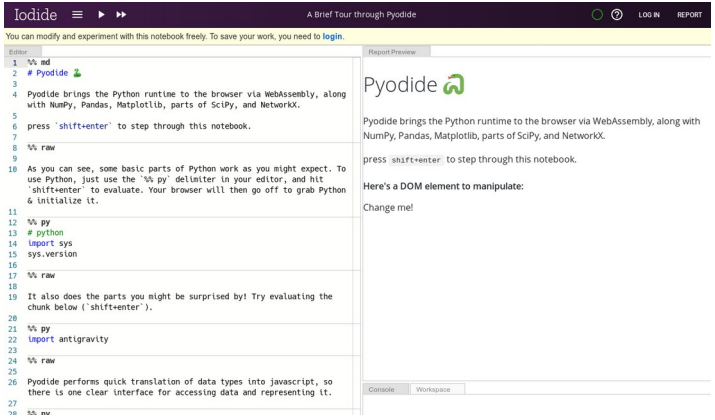
Figma 3X faster



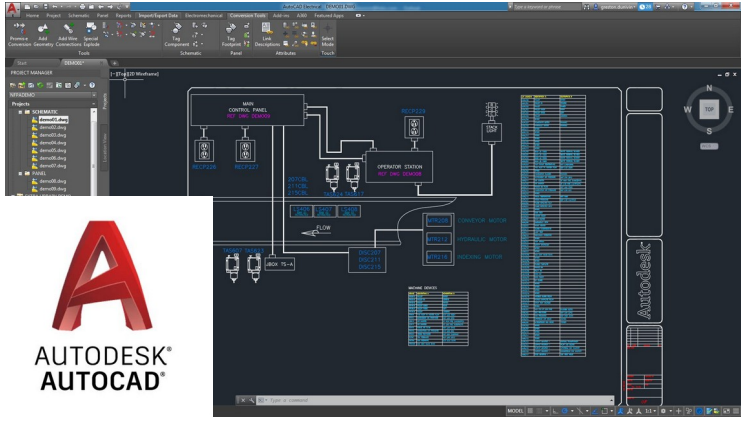
fastq.bio DNA sequencer 20X faster

Why is WebAssembly important?

Run established codebase



Pyodide is Python running on the browser via webAssembly for scientific and AI



AutoCAD web version uses identical codebase as desktop - C

TL;DR

WebAssembly Code is ‘shipped in’ via a binary blob

Allows faster execution than JavaScript

Allows established non JavaScript code via compiler to run on the web

References

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https://github.com/robertaboukhalil/wasm-asteroids

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https://hacks.mozilla.org/2019/04/pyodide-bringing-the-scientific-python-stack-to-the-browser/