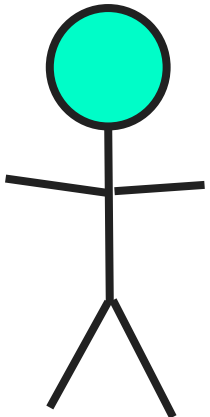
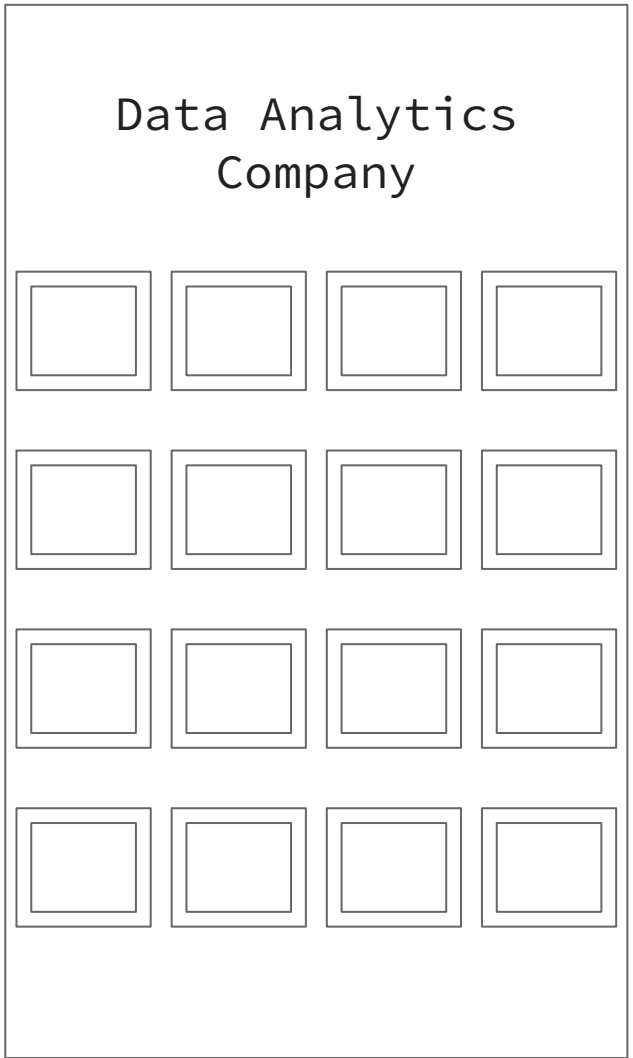
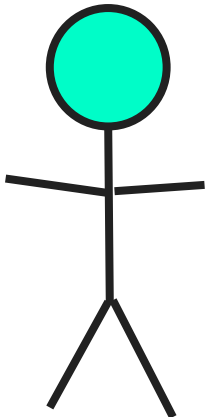
Unleashing Python on to the Browser

This is Bob!

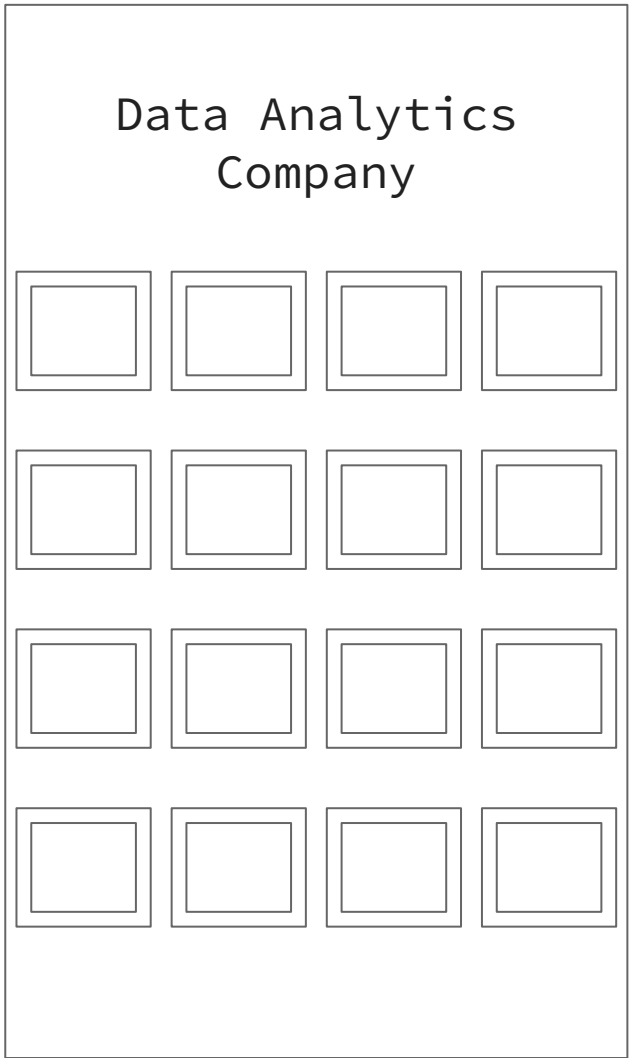


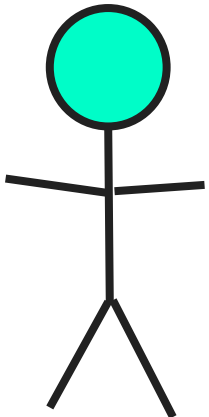
This was our company!





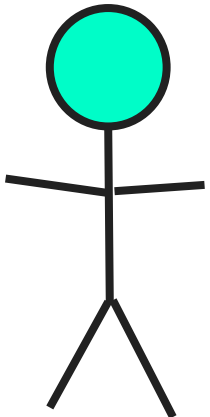
I am Speed!

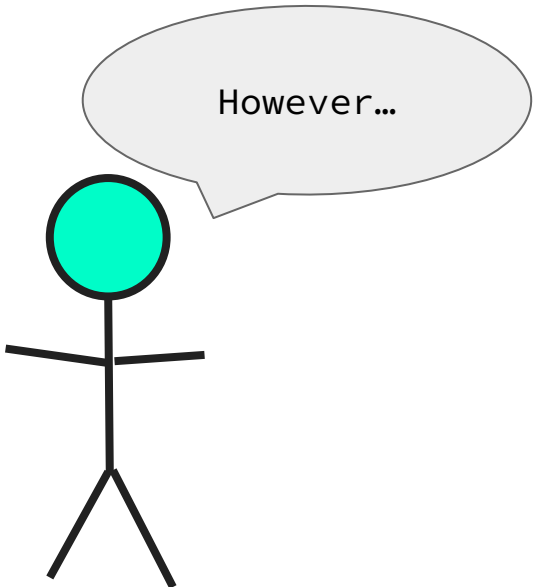


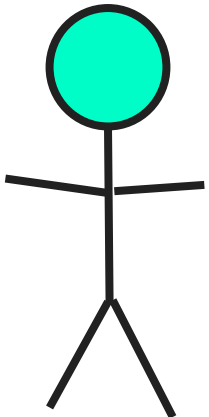


BRRRRR!

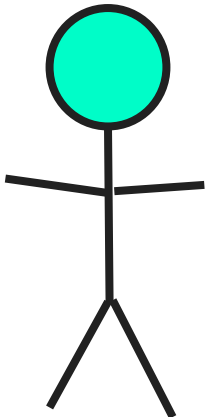
Data Analytics Company



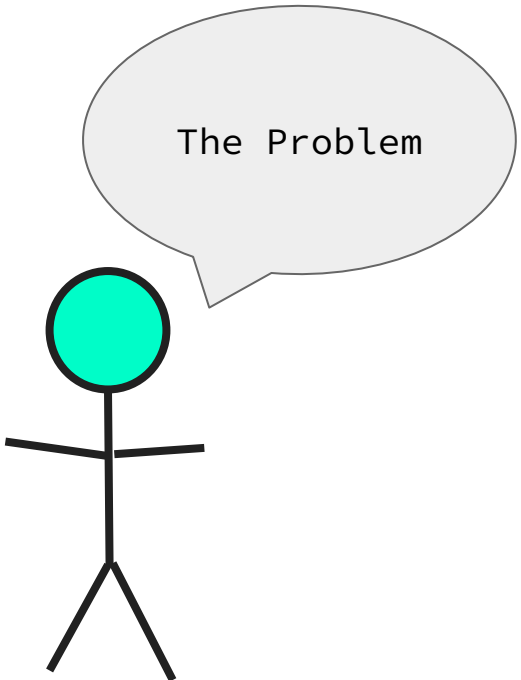

However…



Backend	Frontend
python™	
node JS®	

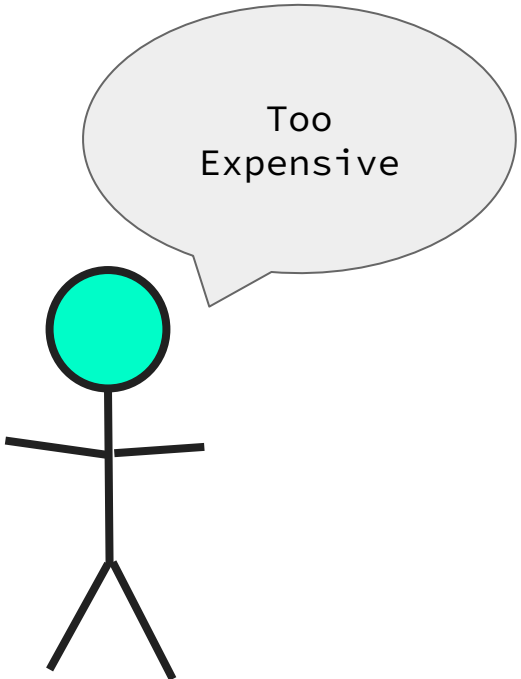


Backend	Frontend
	

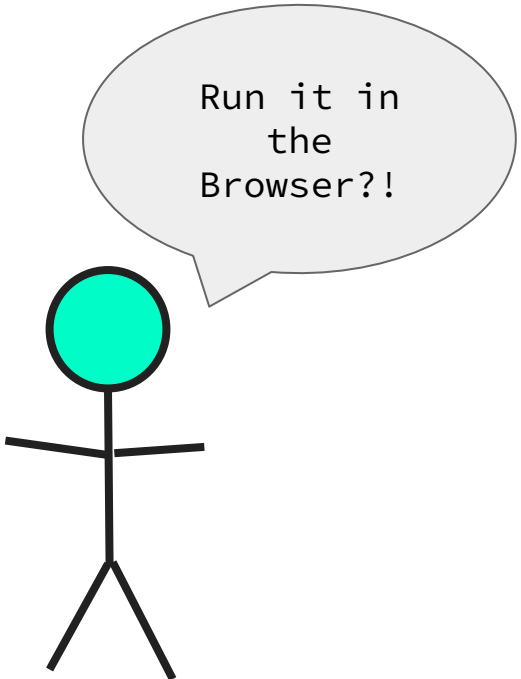


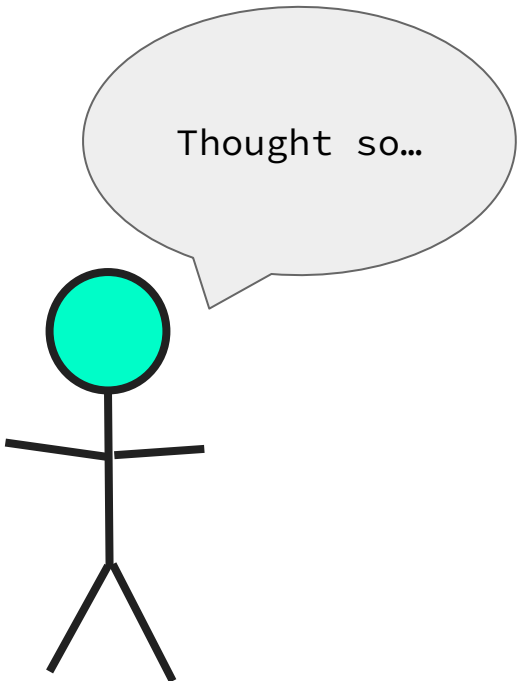
Backend	Frontend
python™	
node JS®	


python
node
JS


Too
Expensive

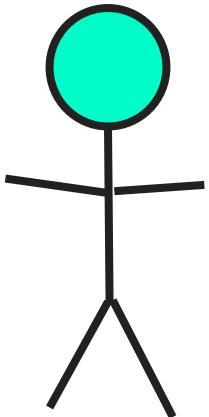

python


Run it in
the
Browser?!

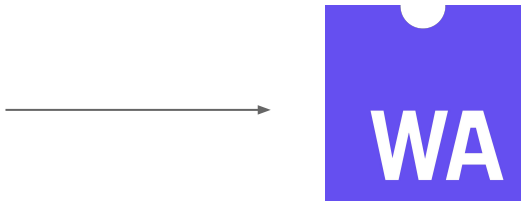

Thought so…

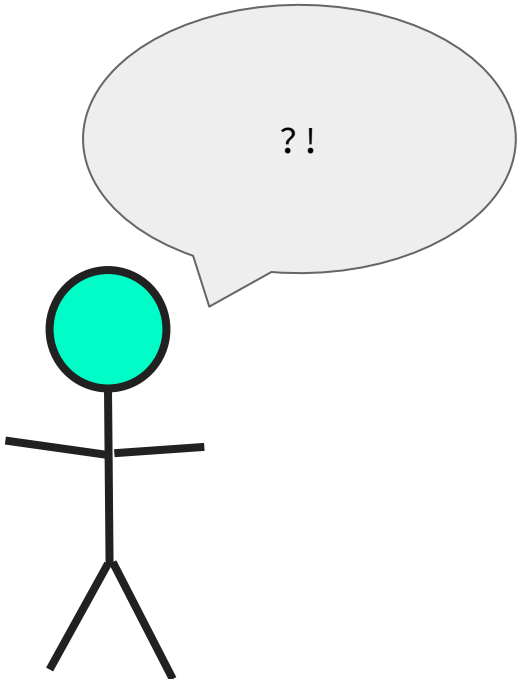

python

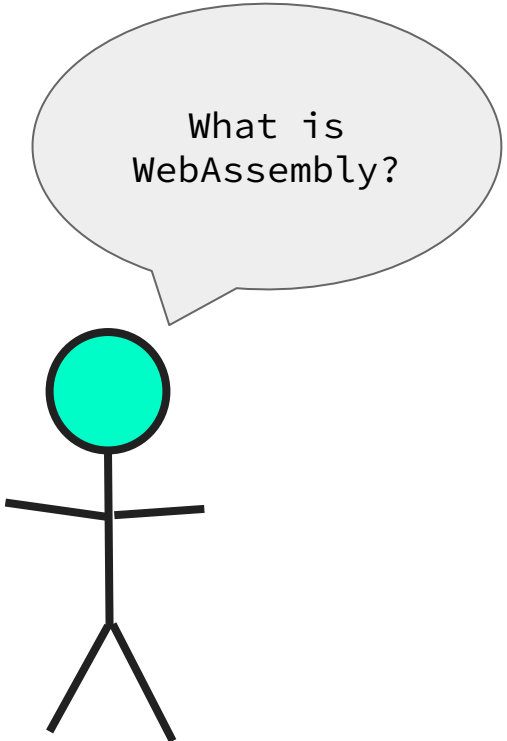

JS

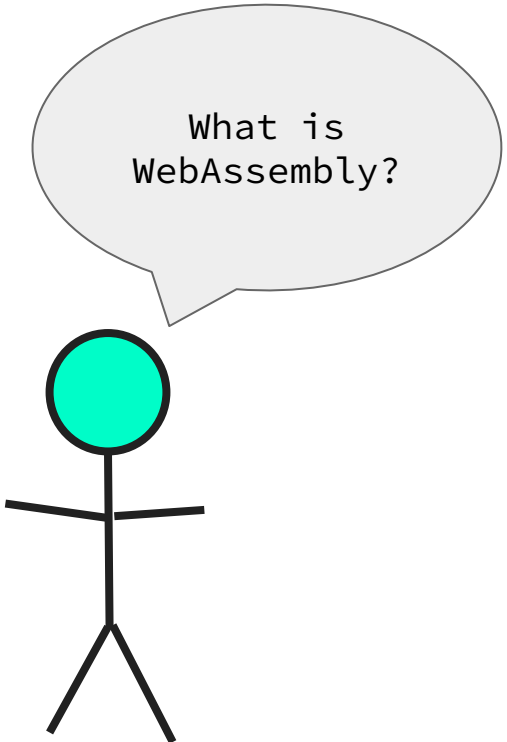



python

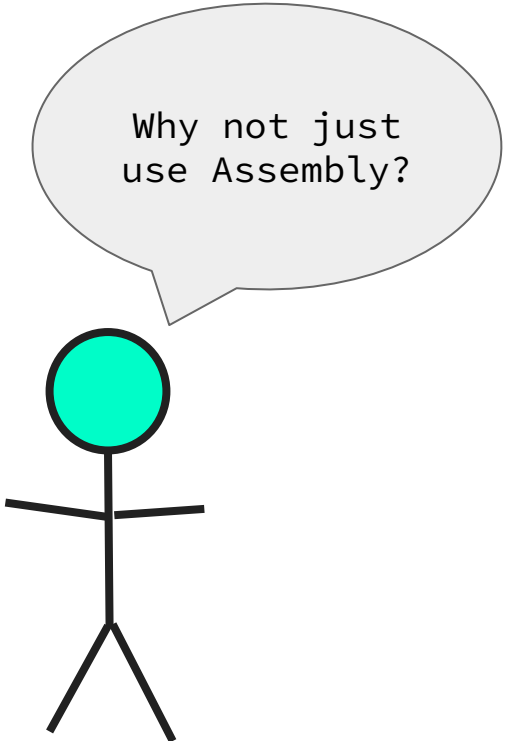

WA

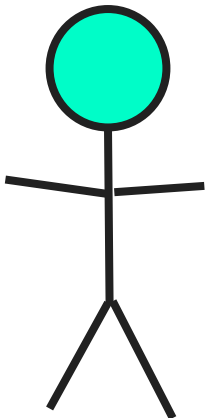

? !

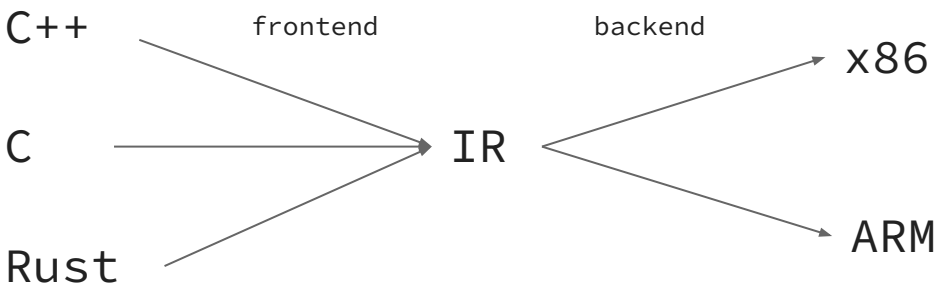

What is
WebAssembly?

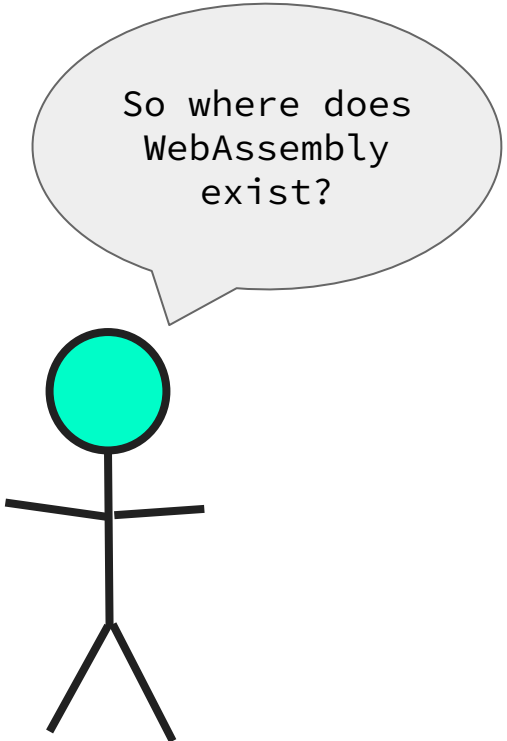


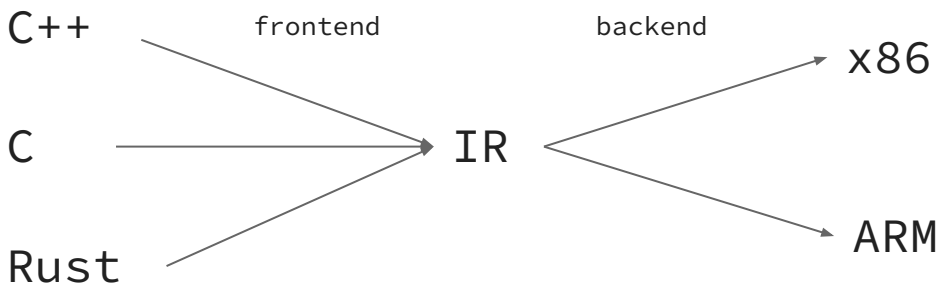
WebAssembly is a low-level assembly-like language with a compact binary format that runs with near-native performance and provides languages such as C/C++, C# and Rust with a compilation target so that they can run on the web.

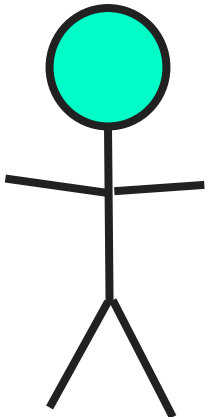

Why not just
use Assembly?

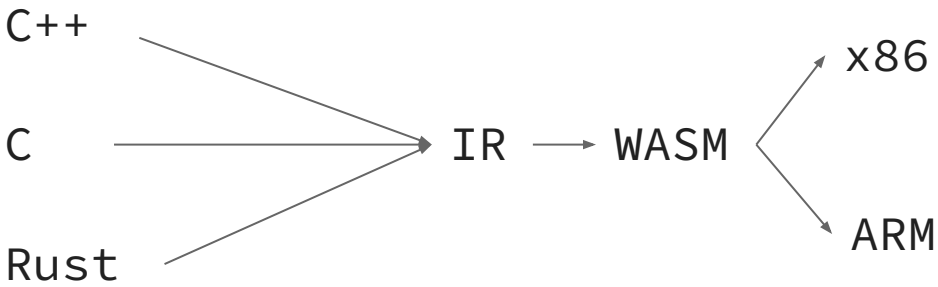


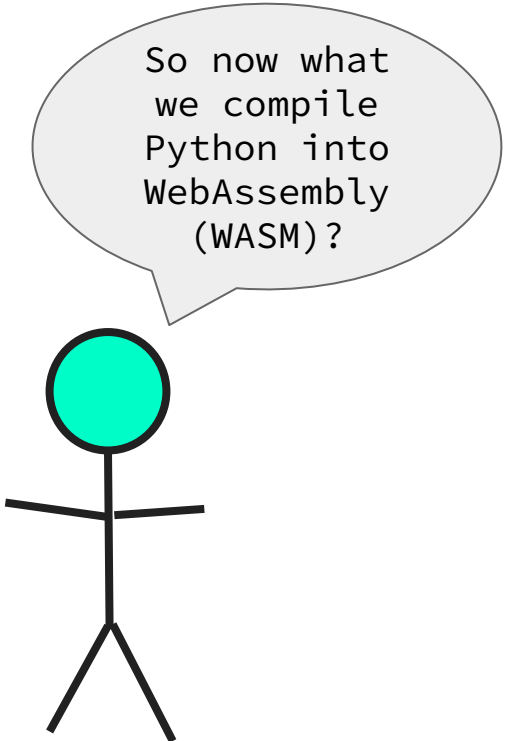

C++
C
Rust
frontend
IR
backend
x86
ARM

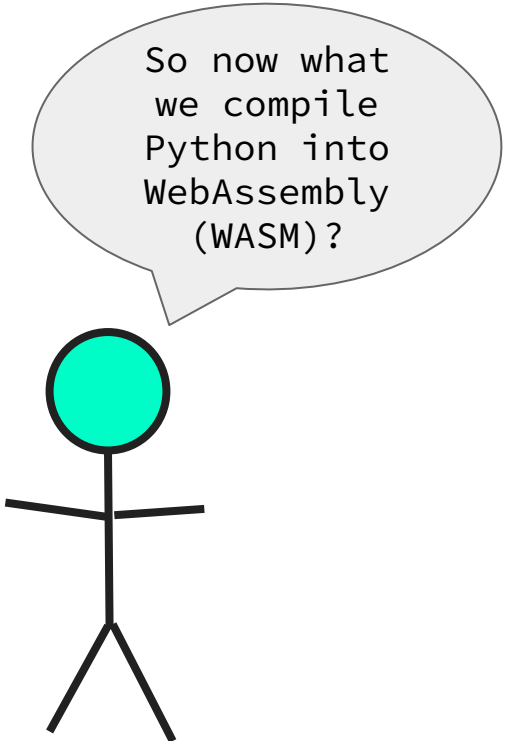

So where does WebAssembly exist?


C++
C
Rust
frontend
IR
backend
x86
ARM




C++
C
Rust
IR
WASM
x86
ARM

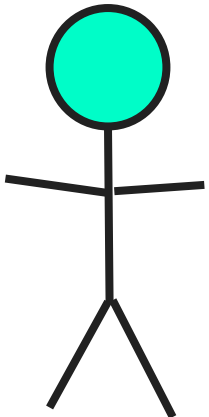

So now what we compile Python into WebAssembly (WASM)?



NO!

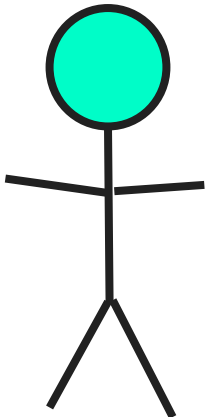
Features of WASM

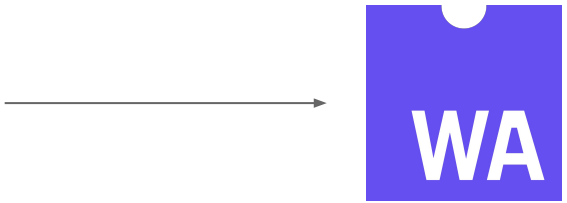
Portable
Secure
Fast
Size-efficient
Flexible



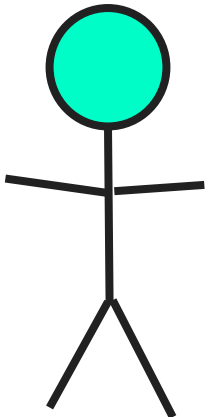
WASM imports

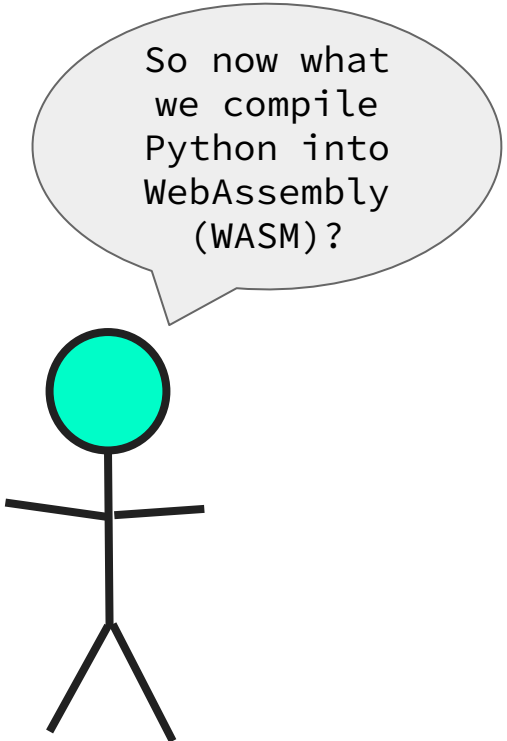
Functions

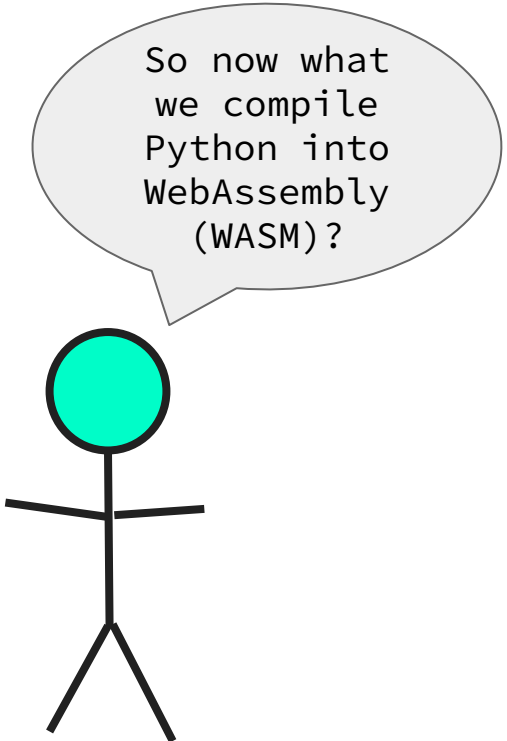




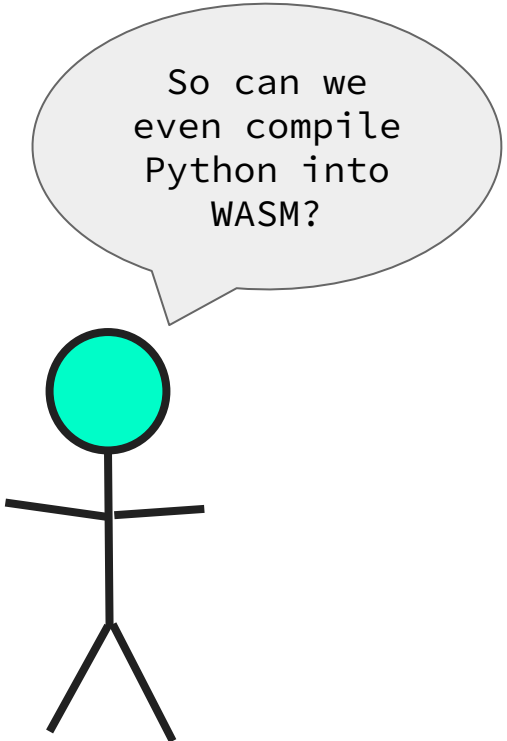
emscripten

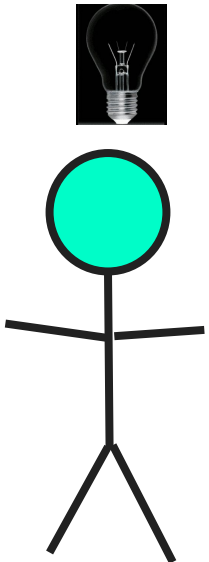



So now what we compile Python into WebAssembly (WASM)?



NO!

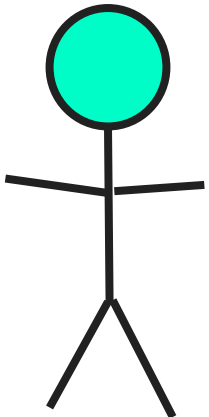

So can we even compile Python into WASM?



We take **PythonC** and convert the whole interpreter to WASM

PYODIDE

WA



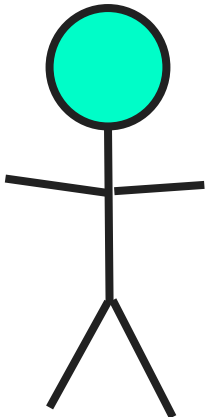
PYODIDE

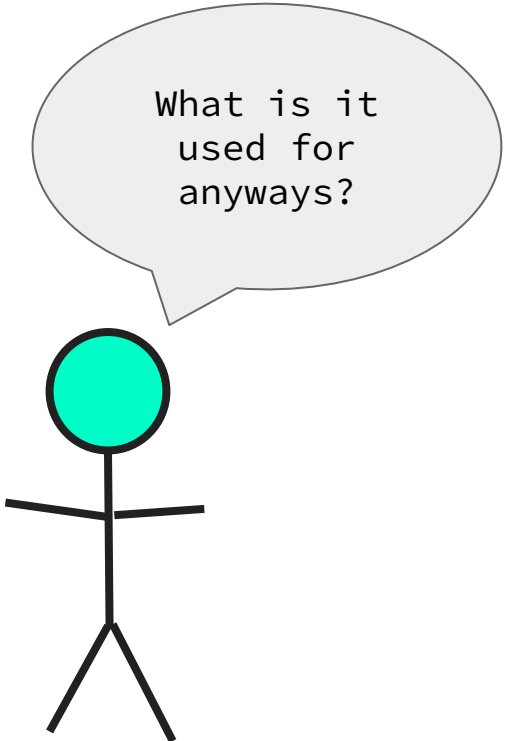
WA

Setup: https://cdn.jsdelivr.net/pyodide/v0.25.0/full/pyodide.js

Run:

```
async function main() {
  let pyodide = await loadPyodide();
  console.log(pyodide.runPython(`
    import sys
    sys.version
  `));
};
main();
```

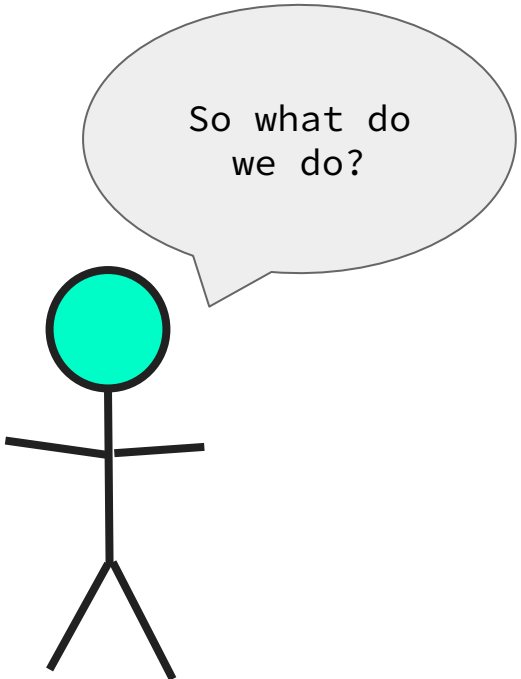


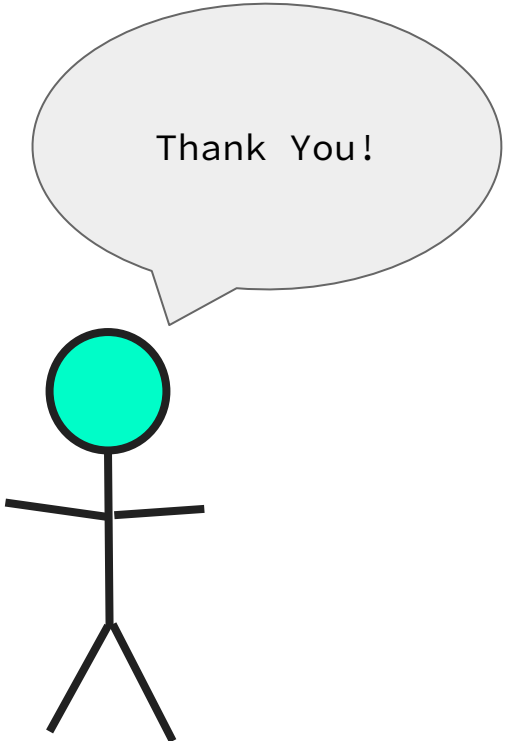


1. JupyterLite
2. PyScript
3. Sandbox Environment


python


WA


So what do
we do?


Thank You!