

WEB DAY 2023

MILANO 16 MARZO



Sfruttare WebAssembly per frontend e backend

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/* Sponsor */



/* Partner */



WebAssembly

- Formato binario portatile
 - .wasm
 - Versione testuale: .wat
- Esecuzione in sandbox
 - Tutti i moderni browser
- Stack machine
- Componenti
 - Module: estensione .wasm
 - Memory: allocazione di memoria
 - Table: array di referenze
 - Instance: esecuzioni dei moduli

WebAssembly

- Type system
 - i32 - signed 32-bit integers
 - i64 - signed 64-bit integers
 - f32 - a 32-bit float
 - f64 - a 64-bit float (often called a double)
 - funcref - referenza a funzione WebAssembly
 - externref - referenza ad un oggetto esterno
- No runtime, garbage, file system, thread, reflection
 - Interazione con l'hosting: JavaScript
- [Roadmap - WebAssembly](#)

Compilatori

- Statici
 - C/C++ - Emscripten
 - TypeScript - AssemblyScript
 - Rust
 - Go - TinyGo
- Scripting/interpretati
 - Python
 - .NET - Blazor
 - PHP - Peachpie
- WebAssembly Binary Toolkit
 - <https://github.com/webassembly/wabt>

WASI

- WebAssembly System Interface
- API POSIX
 - Thread, socket, filesystem, random, crypto
- SDK
 - Compilazione
- Runtime
 - Wastime
 - Capability-based security
 - Hosting per Rust, Go, .NET, Python, C/C++, Bash

WIT

- Wasm Interface Type
 - Definizione di interfacce, funzioni e tipi
 - Convenzione su record e parametri
- Bindgen per hosting
 - Rust, C/C++, Python, Java, Go

```
record person {  
  name: string,  
  age: u32,  
}
```

```
hello: func(who: option<person>) -> string
```

Wasmer

- Runtime universale
 - Come Wastime e polyfill per browser
 - Compilatori, caching e metering
- Webassembly.sh
 - Runtime offline in browser
- WAPM
 - Package manager per WASM
 - <https://wapm.io/>

Progetti interessanti

- waPC
 - WebAssembly-based Process Communication
- Fluence
 - Decentralized Application Platform
 - <https://fluence.network>
- WasmCloud
 - Platform for building microservices using WebAssembly
 - <https://wasmcloud.com>
- Envoy
 - Open-source edge and service proxy
- Dapr
 - Distributed Application Runtime
- Demo
 - <https://github.com/Ricciolo/WebAssembly>

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