WebAssembly — the next-generation universal execution platform.

First released for the Web in 2017, WebAssembly (Wasm) has enabled a new, powerful class of Web applications and languages. Wasm is quickly growing beyond the Web, being adopted in a diverse set of platforms, from Edge computing to distributed compute infrastructure, embedded systems, and more. It holds promise as the elusive universal execution platform with strong security properties, broad language support, and excellent performance.

Ultimately, all web applications could one day be run on WebAssembly.

For Wasm to serve the needs of many languages, runtimes, and contexts, rather than the particular goals of individual companies, foundational virtual machine (VM) and language research is needed. In exploring new language designs and implementations, practitioners need a place to start from scratch in experimenting with languages on Wasm and with Wasm engines and optimizations. The WebAssembly (Wasm) Research Center at Carnegie Mellon University creates the space to do just that.

The WebAssembly Research Center, created in 2022 by Carnegie Mellon University, aims to advance the strategic direction of WebAssembly by:

- increasing the uptake of Wasm in research through developing and nurturing academic instruction, projects and programs related to Wasm,
- developing public Wasm research infrastructure and
- training the next generation of Wasm specialists.

These activities will enable the Center to fill the pipeline of virtual machine expertise for the next generation of innovation. ▶

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By training new VM experts as they investigate long-term research questions and building prototype technologies and tools that advance the state of the art, the Center will support the vision of Wasm as the next-generation universal execution platform.

Community Building

- A forum for discussing the long-term strategy of Wasm
- Connecting academic researchers to industry
- Seminars, talks, and annual research summit

Possible Research Directions

- New compiler and garbage collection techniques in Wasm engines
- New language runtimes running on Wasm
- New Wasm features to support more programming languages
- Instrumentation and dynamic analysis tools for Wasm
- Fault-injection for distributed applications on Wasm

Education

- Course materials for compilers and virtual machine
- Teaching resources for Wasm, including tools
- Highly-trained Master's and PhD graduates

Membership Benefits	$25k Affiliate	$100k Advisory	$500k Platinum
Research*	O	O	O
Name and logo on website and marketing materials	O	O	O
Regular WebAssembly development pipeline updates	O	O	O
Annual WASM Research Summit	O	O	O
Tailored recruiting experience around WebAssembly		O	O
Advisory Committee Membership		O	O
Quarterly research direction meetings		O	O
Invitation to WASM events, in person and virtual		O	O
WASM Fellow			O
Visiting Researcher			O

** A La Carte (Separate Agreement Opportunities)*

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