Benchmarking

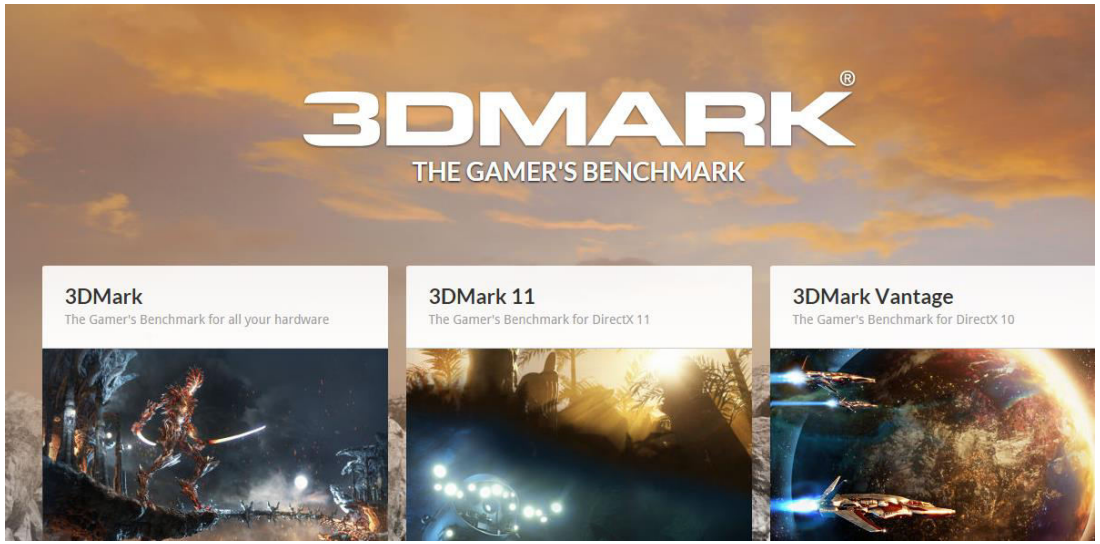
Measuring program performance on real systems.

By the end of this video you will be able to…

- Explain the role of benchmarking in computer science
- Identify components of real systems which impact execution time

Benchmarks

www.speedtest.net

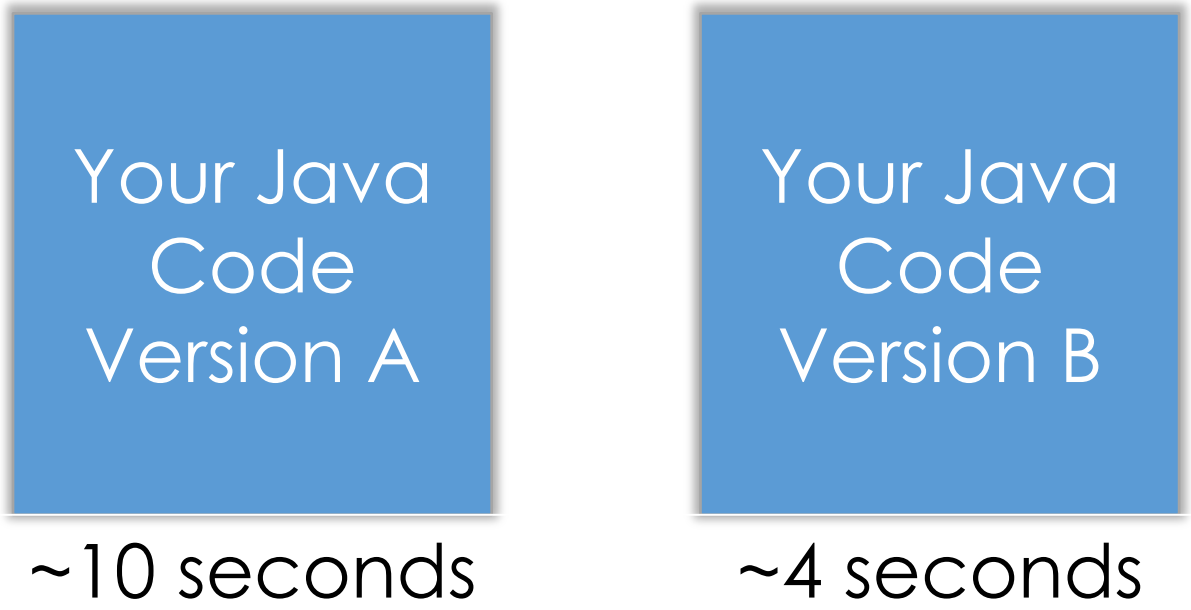


www.3dmark.com

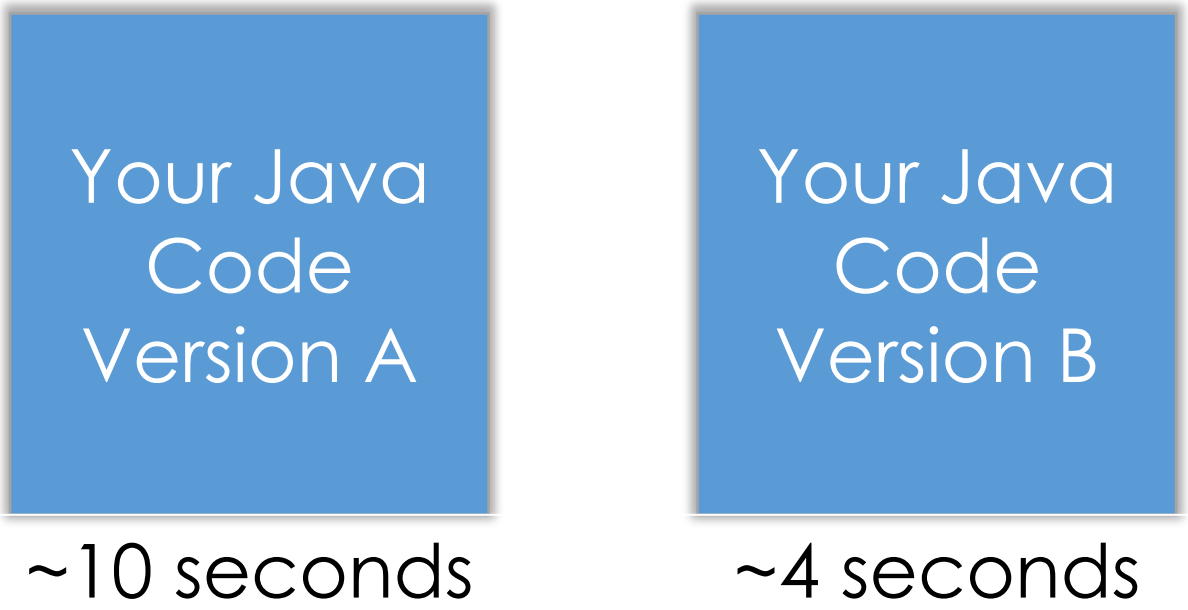
Benchmarking

~10 seconds

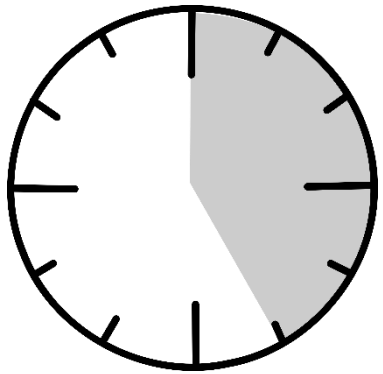
Benchmarking

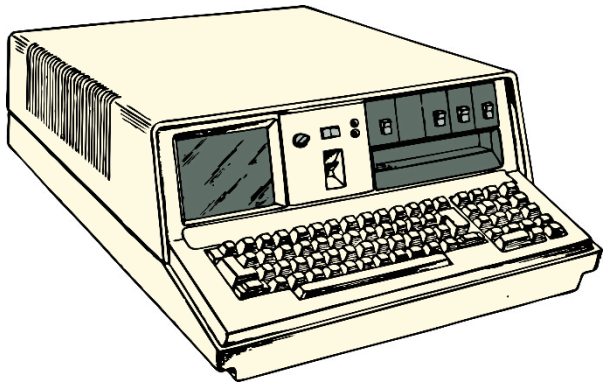


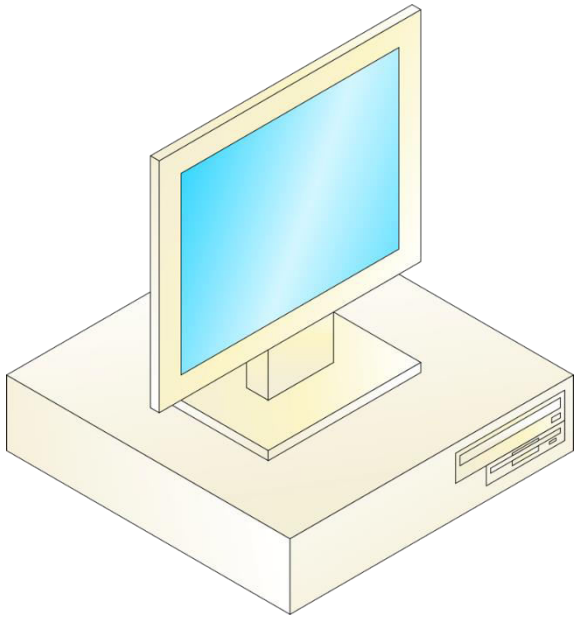
Benchmarking

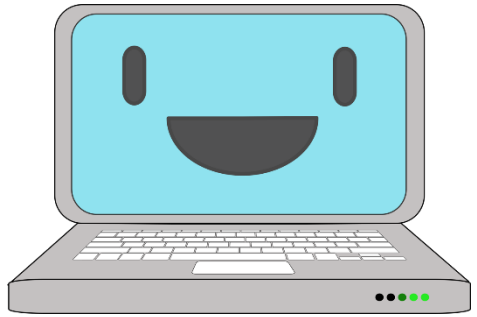


Times might not be consistent….



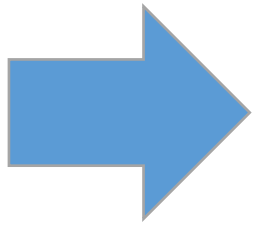






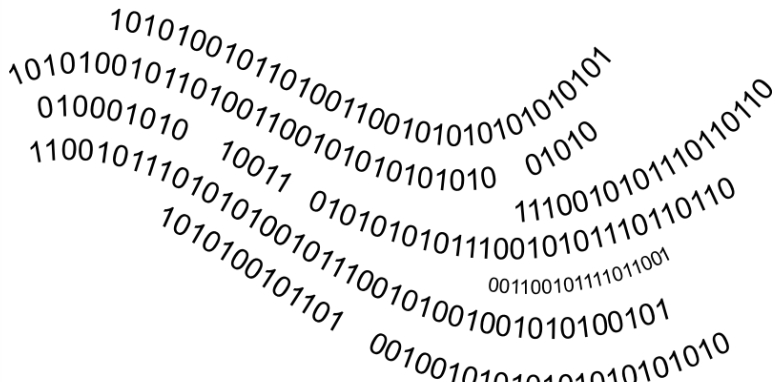
Compiler's Role

Your Java Code



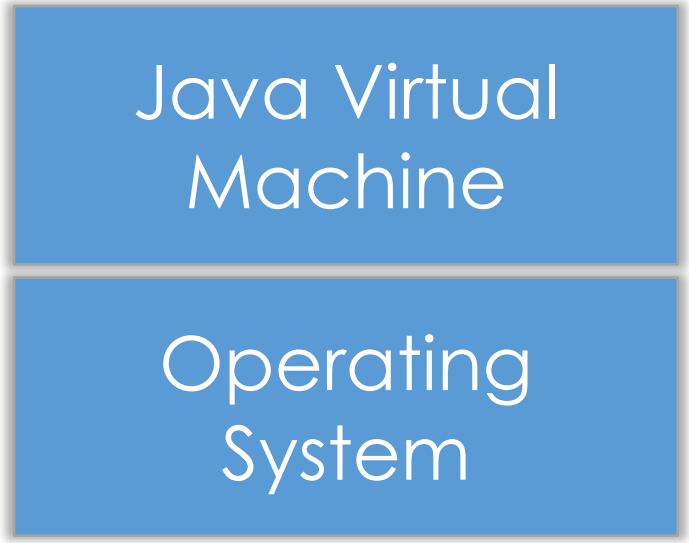
Java Compiler

Byte Code



Java Virtual Machine

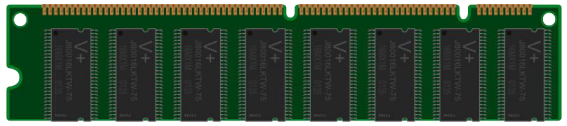
OS's Role



Hardware's Role

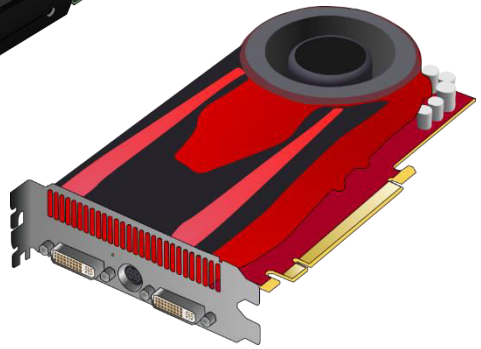
Java Virtual Machine

Operating System

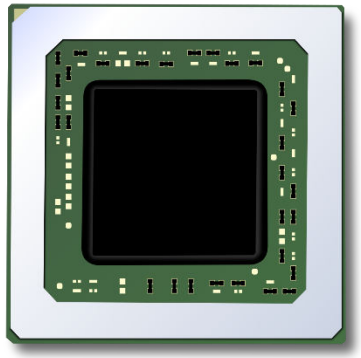


Memory

Hard Disk



Graphics Card



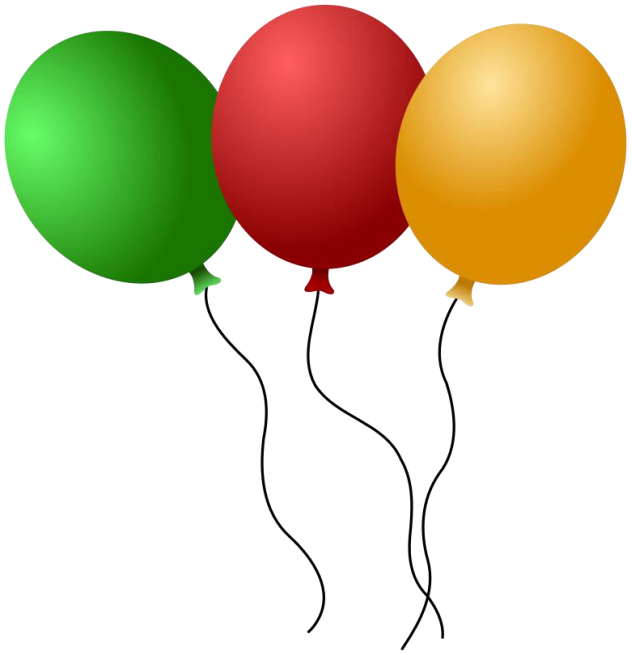
CPU

Whoa!

Whoa!

These systems are MEANT to be hidden from you

Yay Abstraction!



These systems are MEANT to be hidden from you

Yay Abstraction!

So why break the abstraction?

- Because the running time of a program is influenced by all these things!

- (Optionally) These are really interesting topics in themselves..

Back to Performance…

- So how do we reason about how long it takes for a program to run on real systems?

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Back to Performance…

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Couldn't we just time how long our programs take?

YES!

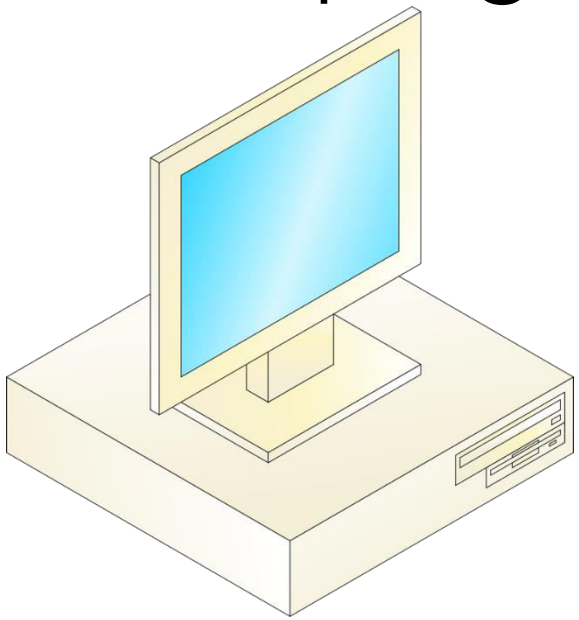
Benchmarking

- Just means running programs on real machines and measuring performance

- For us right now, “performance” is just how long it takes for something to execute.

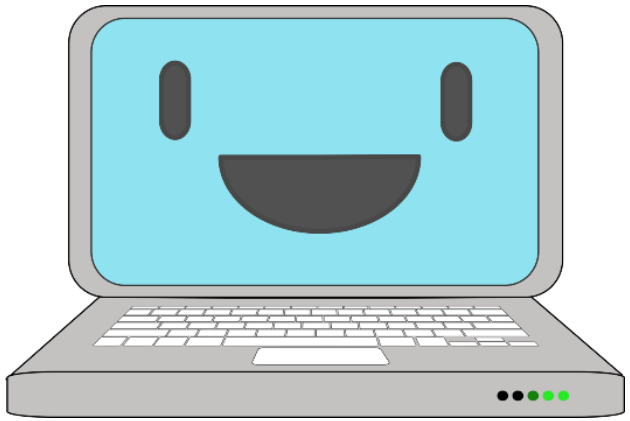
Benchmarking

- Allows us to compare machines by running the same program



VS.

Same Program



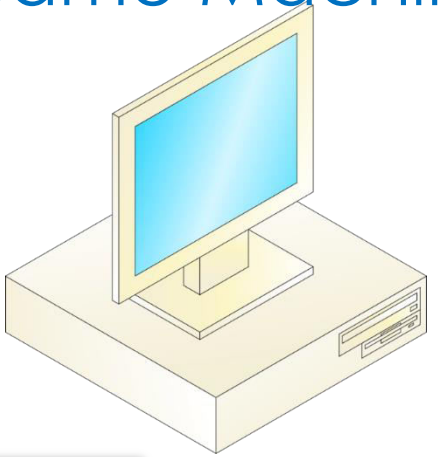
Benchmarking

- Allows us to compare programs on a single machine

Same Machine

Program A

VS.



Program B

Benchmarking

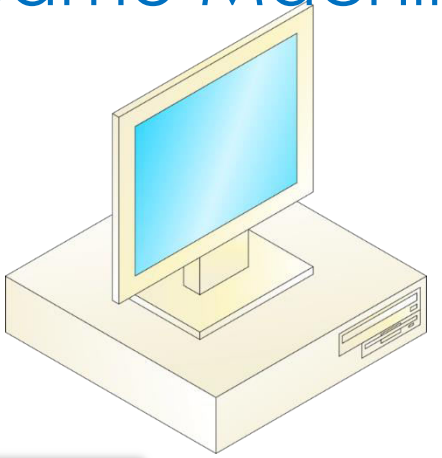
- Allows us to compare programs on a single machine

Same Machine

We'll do this, next!

Program A

VS.



Program B