

How much does OOP cost?

Seminar

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Experiment

Hardware

CPU: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz

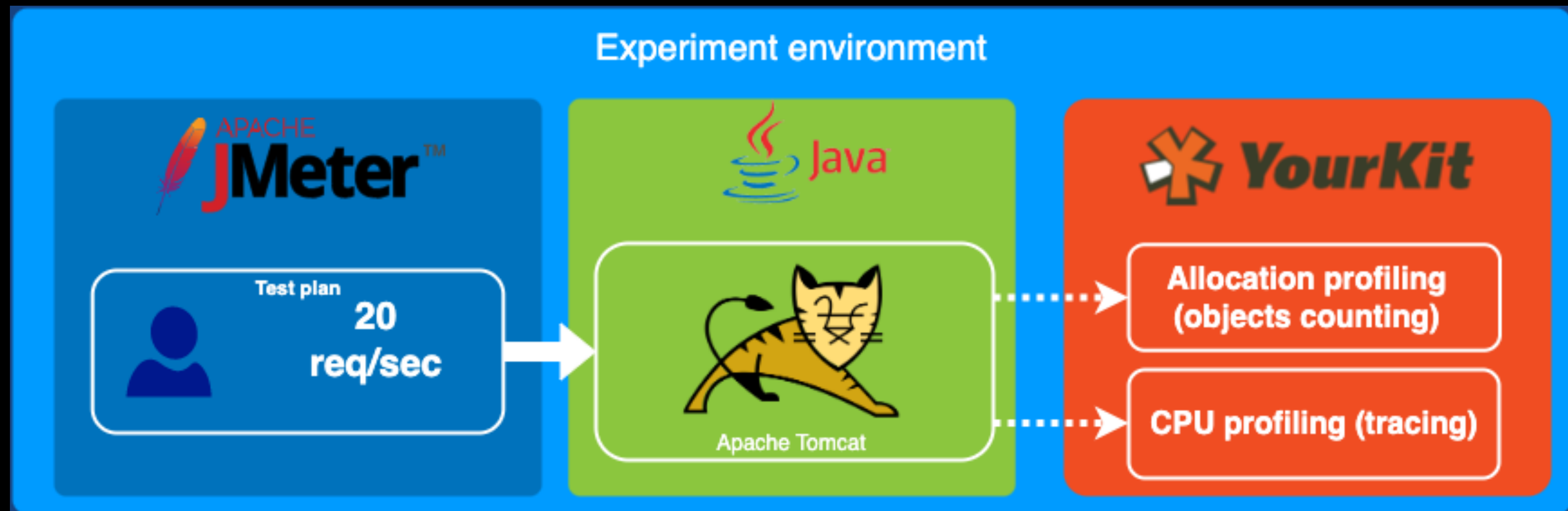
RAM: 16 GB

OS: "mac os x", version: "12.5", arch: "x86_64", family: "mac"

Java: Azul Zulu JDK 11.50.19 (11.0.12), 64-bit

Experiment Tools

- Apache JMeter <https://jmeter.apache.org>
- YourKit Profiler <https://www.yourkit.com>



Apache Tomcat

- Total objects created: 102484
- Total constructors invoked (<init>): 92828
- Total methods invoked: 5997420
- Time spent in constructors: ~ 453,2 ms
- Time spent in all methods: ~ 28535,6 ms

1,5 %

Apache Derby

- Total objects created: 935622
- Total constructors invoked (<init>): 1614040
- Total methods invoked: 61683273
- Time spent in constructors: ~ 9981,6 ms
- Time spent in all methods: ~ 292903,9 ms

3 %

Spring MVC

- Total objects created: 279030
- Total constructors invoked (<init>): 337638
- Total methods invoked: 5595665
- Time spent in constructors: ~ 1628,9 ms
- Time spent in all methods: ~ 27905,8 ms

6 %

Apache Kafka

- Total objects created: 1577740
- Total constructors invoked (<init>): 21577 (10%)
- Total methods invoked: 205683
- Time spent in constructors: ~ 96 ms (0.7%)
- Time spent in all methods: ~ 13280,9 ms

10 %

Takes

- Total objects created: 1468215
- Total constructors invoked (<init>): 1928120
- Total methods invoked: 10770992
- Time spent in constructors: ~ 8108 ms
- Time spent in all methods: ~ 45472,5 ms

18 %

Challenges

Apache Cassandra

- Strictly requires Java 11
- Uses `-XX:+PerfDisableSharedMem` which makes apps invisible for `jps`, `jstat` and other profiling tools including YourKit profiler

? %

H2

- Total objects created: ?
- Total constructors invoked (<init>): 1191
- Total methods invoked: 26141
- Time spent in constructors: ~ 11,9 ms
- Time spent in all methods: ~ 215,5 ms

5 %

What is next?

- Static vs dynamic methods
- Filter profiler objects and methods (exclude YourKit objects)
- Remote profiling of real applications
- Explain the difference between allocated objects and <init> methods