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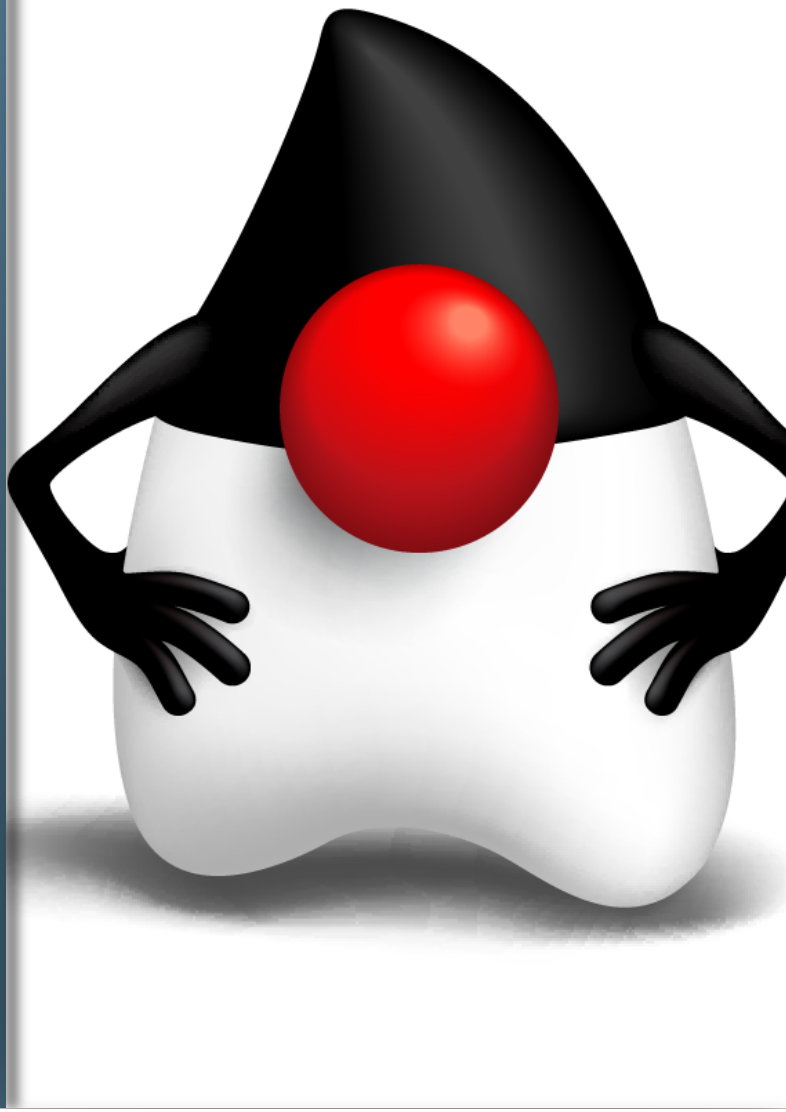
Parallel Streams Workshop

Stuart W. Marks
Oracle JDK Core Libraries
Virtual JUG 13 March 2014

@stuartmarks



Streams

- What is a stream?
  - A stream is a ~~collection~~ of ~~objects~~.
  - A stream is a ~~sequence~~ of ~~objects~~.
  - A stream is an ***abstraction*** that represents zero or more ***values***.
- Values, not objects: avoid mutation
- Not a collection: values might not be stored anywhere.
- Not a sequence: order might not matter.
- “A stream is an iterator on steroids.”

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Pipelines

- A pipeline consists of:
  - a stream ***source***
  - zero or more ***intermediate*** operations
  - a ***terminal*** operation
  - a pipeline can be executed in parallel

- What has this got to do with Lambda?
  - Lambdas tell these operations what to do.

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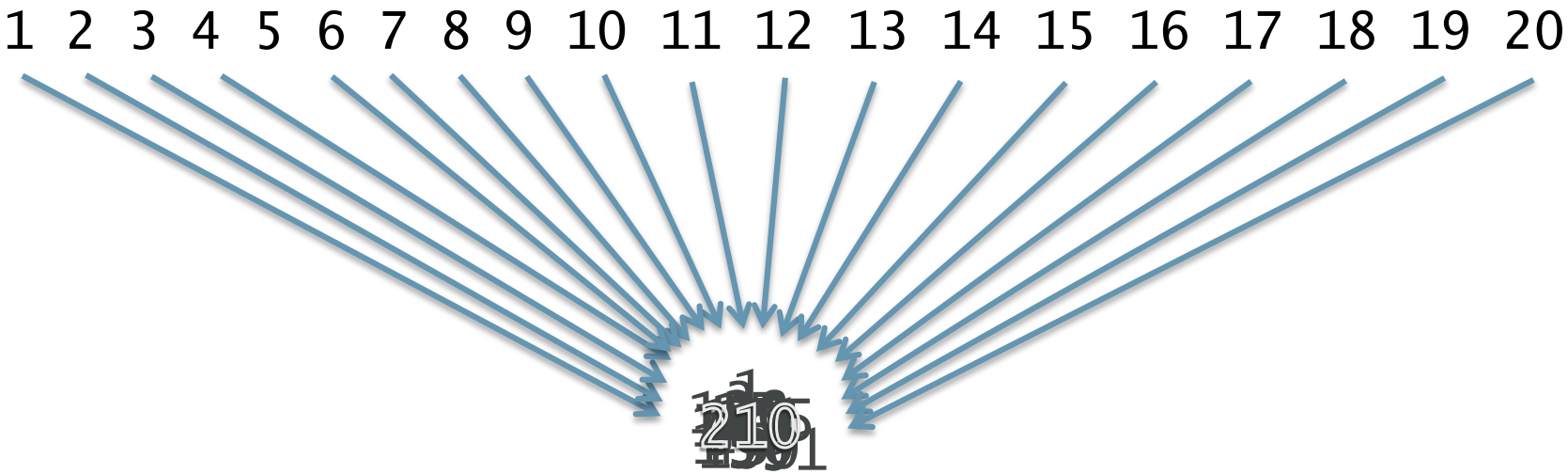
Summation by Accumulation



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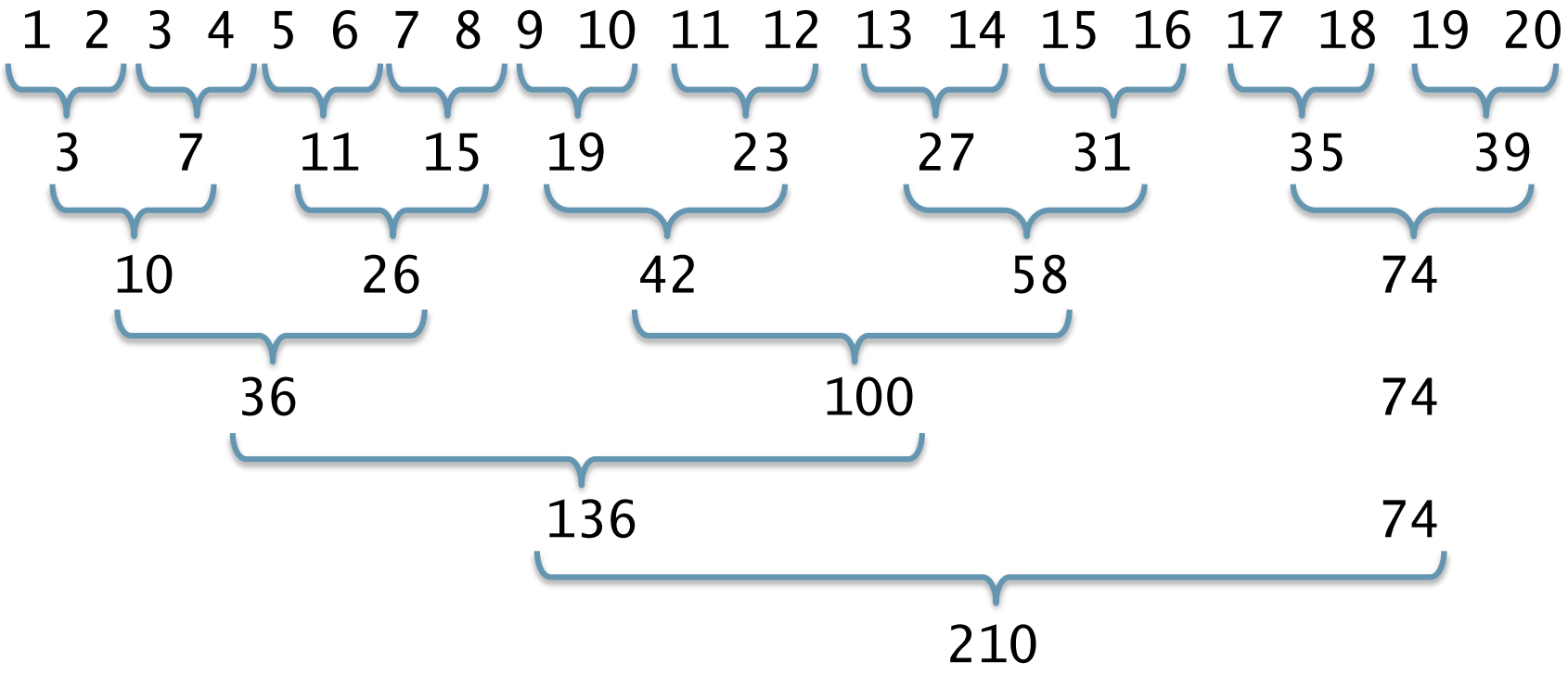
Summation by Reduction



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Summary

- Writing parallel programs is easy! Or is it?
- You still have to be careful:
  - avoid mutation and interference
  - avoid contention
  - think reduction, not accumulation
- Benchmark, don't guess:
  - JMH is easy to use and avoids common pitfalls benchmarking Java
  - "multi-core" machines can be very slippery

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Links

- Java 8:
  - http://openjdk.java.net/projects/jdk8/ (OpenJDK sources)
  - https://jdk8.java.net/ (snapshot builds, currently b132 is RC3)
- FAQ: http://www.lambdafaq.org/
- JMH: http://openjdk.java.net/projects/code-tools/jmh/

- Contact me on Twitter: **@stuartmarks**
- Thanks to @sjmaple and @virtualJUG !!

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