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# Performance Analysis Concepts

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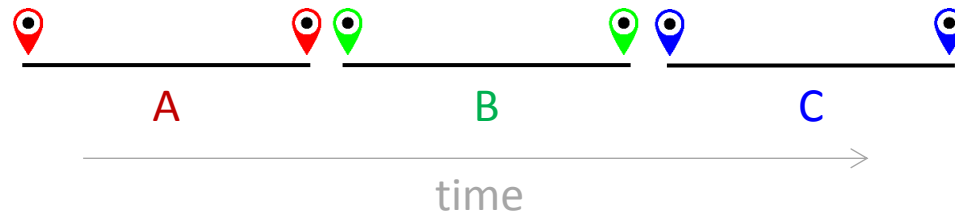
CRHPCS19, San José

# Performance Analysis

- Goal: Answer the question “Am I efficient?”
- Until I am happy with the answer, loop
  1. Monitor – collect information
  2. Analysis – extract insight, identify problems
  3. Optimization – modify to improve efficiency

# Monitor – When?

- Instrumentation – collection at selected points



- Sampling – periodic collection



Trade-off between accuracy and overhead

# Monitor – What?

- Trace – timestamped data

Time 1 event: entry A

Time 3 event: exit A

Time 4 event: entry A

Time 10 event: exit A

Example with  
instrumentation



- Profile – aggregated metrics

Number of calls = 2

Average duration = 4

Trade off between details and size (memory and disc)

# Monitor – Some tricks

- Overhead should not perturb the data
  - Looking through a lens
- Buffer may be full → need to dump to disk
- If running in parallel...
  - Need to synchronize clocks
  - Need for a unified name space
  - Need to correlate data