

Performance Concepts and Methodologies



Agenda

- Performance metrics
- Monitoring vs. Profiling
- Development process

Before Getting Started

- Performance tuning is largely an art.
- There is no one approach that is always necessarily the right approach.
- And, there are performance issues which will require very specialized expertise to identify the root cause, and / or be able to recommend a solution.

Performance Metrics

Performance Metrics

- Throughput
- Runtime response time
- Footprint
- Perceived performance (for GUI applications)

Perceived Performance

- End-user experience on GUI applications:
 - > Rarely measure performance with a stopwatch
 - > How fast something *feels*, not how fast it is
- Ways to improve how fast your users feel without actually making anything run faster
 - > Changing the mouse cursor to a waiting cursor
 - > Using multiple background threads
 - > Showing the progress bar

Perceived Performance

- Start up time:
 - > Lazy initialization is often useful.
 - > Applets:
 - > Use Jar files to minimize requests.
 - > Install on client system if possible.
 - > Obfuscators and size reduction tools.
 - > Run empty applet to get VM loaded.
 - > Applications:
 - > Separate initialization thread.
 - > Minimize dependencies for start screen.

Monitoring & Profiling

Definition: Performance Monitoring

- An act of *non-intrusively* collecting or observing performance data from an operating or running application.
- Typically a “preventative” or “proactive” type of action. But, could be an initial step in a reactive action.
- Can be performed in production, or qualification, or development environments.
- Helps identify or isolate potential issues without having a severe impact on runtime responsiveness or throughput.
- Often times *monitoring* crosses over into trouble-shooting or service-ability.

Definition: Performance Profiling

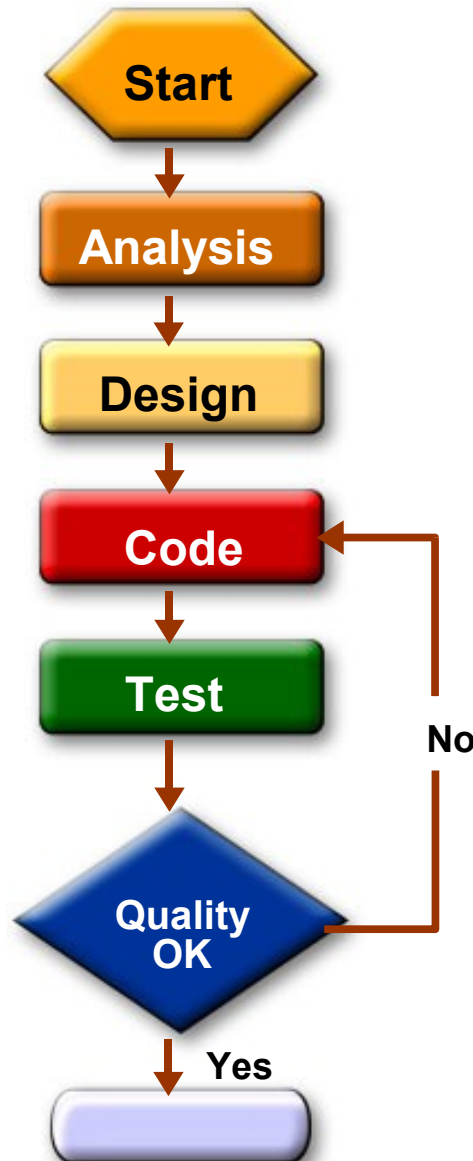
- An act of collecting or observing performance data from an operating or running application.
- Usually more intrusive than monitoring.
- Usually a narrower focus than monitoring.
- Typically a reactive type of activity. Could be a proactive activity in situations where performance is a well defined systemic quality or requirement for a target application.
- Seldom performed in production environments.
- Commonly done in qualification, testing or development environments.

Definition: Performance Tuning

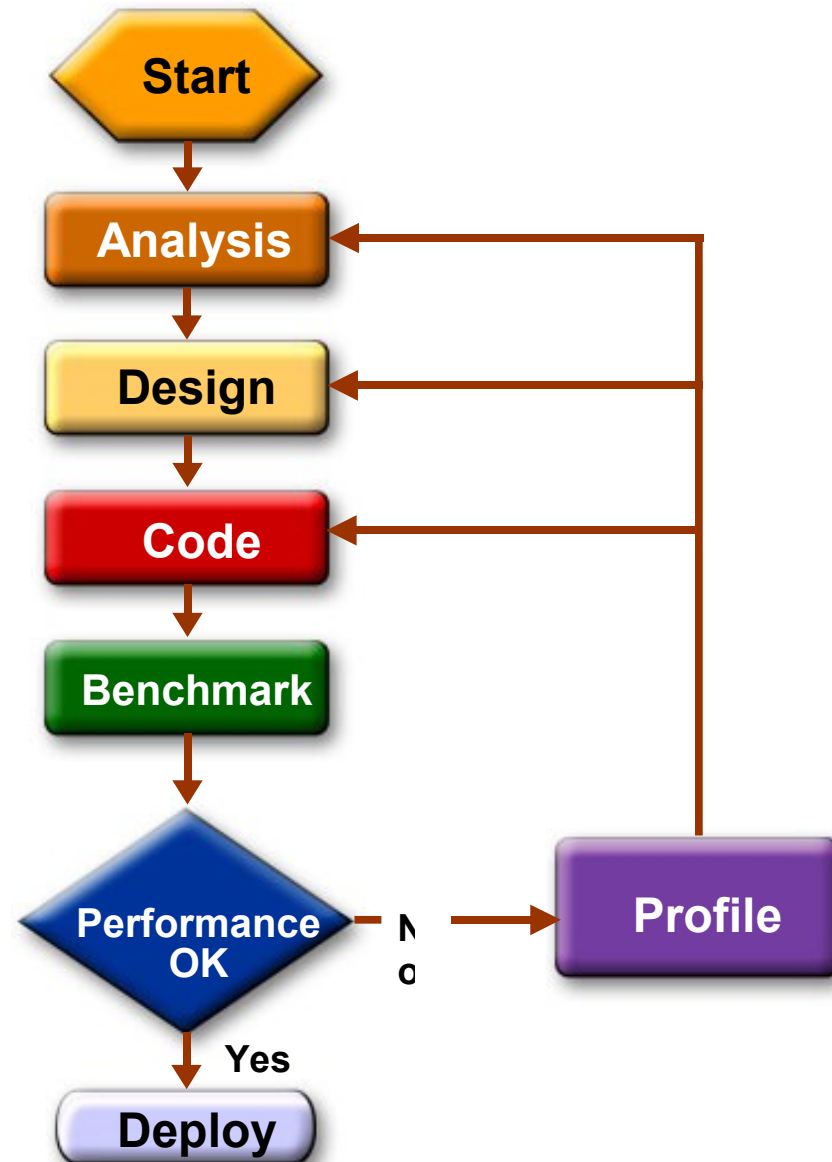
- An act of changing tune-ables, source code and/or configuration attribute(s) for the purposes of improving application responsiveness and/or application throughput.
- Usually results from monitoring and/or profiling activities.

Development Process

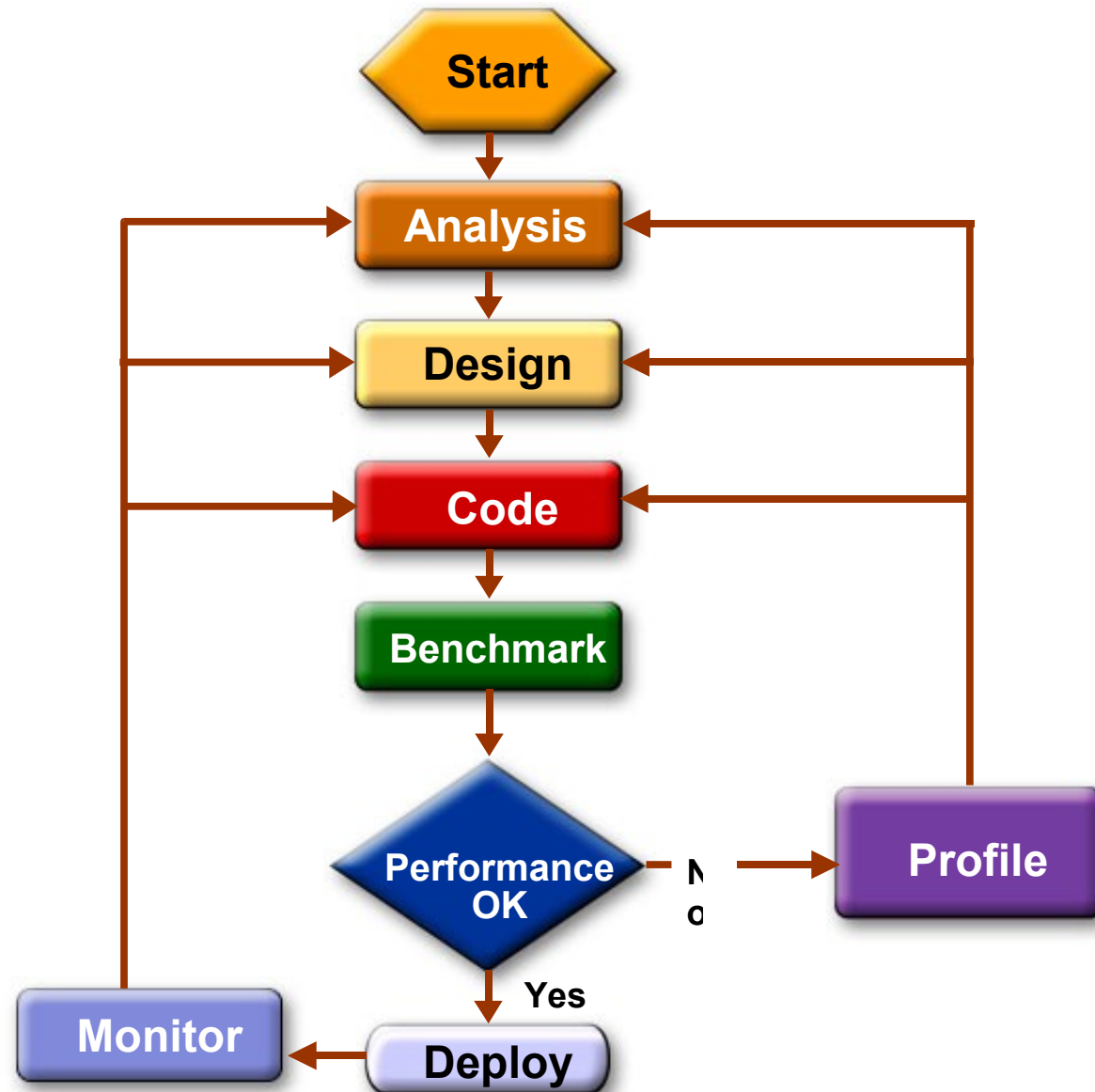
Typical Development Process



Application Performance Process



Application Performance Process



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