Visual Debugging Aids for Eclipse

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Program Tracing

Ad-hoc Tracing in Eclipse

Status Quo
- Developers insert code snippets in desired location
- Snippets print out values that need to be inspected
- Checking textual output for post-mortem analysis

Drawbacks
- Time consuming to check the textual traces
- Not possible in compiled code (available source is read-only)

Array Inspection

Eclipse built-in variable inspection

Features
- Generic indented list for all variables & fields
- Can change variable values

Not suitable for large arrays
- No overview
  - Item need to be expanded and inspected individually.
- Hard to navigate & search
  
Example: locating certain items at an unknown index

Eclipse Tracer

Features
- Can make trace-points out of normal breakpoints
- Tracepoints record information about the program state when they are hit:
  - Current timestamp, this instance and variable value (for watch-points)
  - Calling thread, its stack frames and their code locations (source and line number)
- A time-line view of the trace-point hits on a specific this instance
- Ability to show the hit information via color or line charts
- A double-click on a hit opens its source file and jumps to the respective line number

Array Explorer

Features
- Provides overview using tables
  - Table columns show the fields and can be expanded to check the sub-fields
- Enables flexible searching, sorting, and filtering
- Charts reveal distributions
- Handles variables or expressions of
  - Normal Java arrays []
  - Collections (List, Set, etc.)
  - Maps (as key-value pairs)

Limitation
- Shows information from the generic type.
  Manual inspection needed to see fields from sub-classes

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Tools downloadable at http://www.cvast.tuwien.ac.at/projects/visualdebugging