

Talk: Debugging in R

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This talk will cover a selection of both beginning and advanced topics in *R* debugging, with the goal of being helpful both to those not yet familiar with *R*'s debugging facilities and to those who have mastered the tools and want to learn about the capabilities offered by the next version of R and RStudio.

The talk's format will be example-based: we will begin with some *R* code that has several problems, and then walk through the diagnosis and resolution of those problems using *R* debugging tools. We will focus more on bug discovery than on techniques for avoiding bugs, as the latter topic is larger, and excellent resources exist (Wickham 2014).

First, **code instrumentation** for debugging will be discussed, including content-based instrumentation such as `browser()` and runtime-based instrumentation such as `debug()` and editor breakpoints.

Next, **runtime inspection and bug discovery** will be covered, including inspecting local environments and stepping through code using the interactive browser. Here we'll discover and correct the first set of bugs in the code.

We'll then discuss **handling and inspecting errors**, with a focus on finding error sources using `traceback()` and `recover()`. We'll analyze errors both after the code has finished running (post-mortem error handling) and at the moment they occur (just-in-time error handling), then use these tools to discover and correct a second set of bugs.

Finally, for attendees already familiar with debugging *R* code, we'll cover **new R debugging tools**, including stepping commands introduced in *R* 3.1.0 (R Core 2014), and new debug tools in RStudio, such the integration of *R* 3.1.0 commands and support for stepping through deparsed code.

References

R Core. 2014. "Changes in R 3.1.0." <http://stat.ethz.ch/R-manual/R-devel/doc/html/NEWS.html>.

Wickham, Hadley. 2014. "Debugging, Condition Handling, and Defensive Programming." <http://adv-r.had.co.nz/Exceptions-Debugging.html>.