Rapid R GUI development with SciViews/Komodo snippets

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R (in a broad sense, comprising the thousands of contributed packages) is a very powerful, but complex system. Most R user interfaces are rather terse and technical (command line, Emacs-ESS, ...). These are often considered as suboptimal interfaces by/for beginneRs, or in the context of introductory statistical courses. Moreover, the documentation of R functions is also very technical and hard to read and digest by beginneRs.

There are several projects aiming to provide an alternative user interface (preferrably a GUI) on top of R, like R Commander, Deducer, Poor Man's GUI, RKward, RExcel, etc. Using these GUIs, and programming new tools for them lead to two main observations: (1) development of a GUI on top of R function takes time, and (2) it makes the user interface significantly more inflexible than the original R (data frames often favoured to more specialized objects, limited number of arguments or possibilities offered by the GUI, difficulties to adapt to the rapid evolution of R and R packages).

SciViews proposes an evolution of Komodo snippets turning them into powerful R GUI building blocks (within a complete development environment named SciViews-K) that allows to create rapidly and easily GUIs on top of R function. Snippets can trigger "autobuild" dialog boxes, and are organized in a browseable, searcheable tree. Snippets ease access to R functions for beginneRs and help them to spot the required tools. Snippets are build in seconds and require no programmation. They are context-aware. For instance, a snippet's dialog box prompting for an object will automatically propose the list of such objects available in the user workspace of the current R session. Snippets also show how to construct clean R code.

Collections of snippets can be attached to any R package and are made available automatically in SciViews-K when the package is loaded in the R session. There are other means to share collections of snippets: they can be saved into Komodo project files and packages. These are zipped XML files and works seamlessly on Windows, Mac OS X or Linux. Translation tools are also provided to localize collections of snippets to various languages, using poEdit. Teachers can write a collection of snippets for their courses in a couple of hours, or days. The collection is, then, easy to manage in time to remain up to date with R, or with the course.

These snippets have been tested in three different courses on statistics for undergraduate and graduate students, with excellent results in term of usability (easy for teacher to build contextual GUIs for their course, easy for students to master that GUI), and efficiency (students quickly learn R code for doing what they want through these snippets and are more concentrated on understanding statistical concepts and running their analysis in practical sessions than fighting with R complexity). Of course, SciViews-K snippets are not limited to teaching and should prove useful to build many different GUIs on top of R.

References

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