Shiny Gadgets

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Introduction

Shiny Gadgets provide a way to use Shiny's interactivity and user interface tools as a part of a data analysis. With Shiny Gadgets you can create a function that opens a small Shiny app. Since these apps are smaller we'll be using the miniUI package for creating user interfaces.

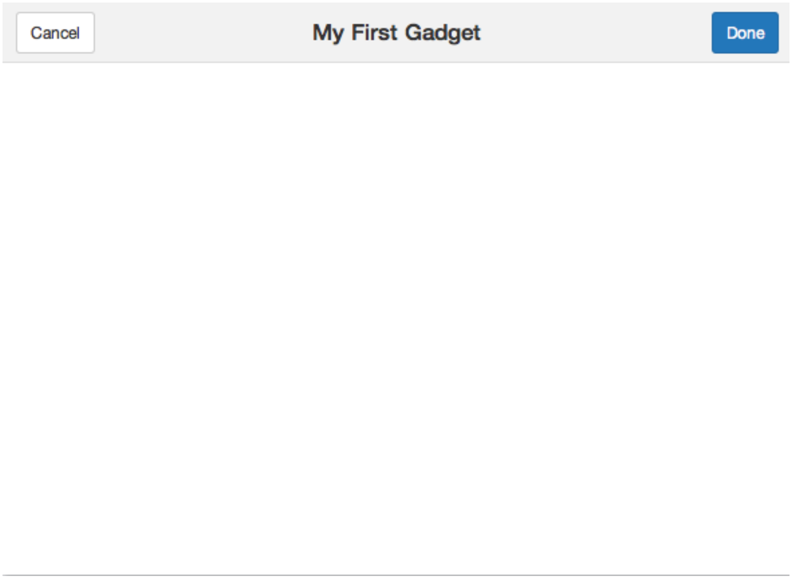
A Simple Gadget

At its core a Shiny Gadget is a function that launches a small (single-page) Shiny application. Since Shiny Gadgets are meant to be displayed in the RStudio viewer pane, the miniUI package comes in handy for its smaller graphical elements. Let's construct a very simple Shiny Gadget.

A Simple Gadget: Code

```r
library(shiny)
library(miniUI)

myFirstGadget <- function() {
  ui <- miniPage(
    gadgetTitleBar("My First Gadget")
  )
  server <- function(input, output, session) {
    # The Done button closes the app
    observeEvent(input$done, {
      stopApp()
    })
  }
  runGadget(ui, server)
}
```

A Simple Gadget: Image



A Simple Gadget: Code Review

Source the preceding code and run `myFirstGadget()` to see a very basic Shiny Gadget. Just to review some of the new functions in this Gadget:

- `miniPage()` creates a small layout.
- `gadgetTitleBar()` provides a title bar with Done and Cancel buttons.
- `runGadget()` runs the Shiny Gadget, taking `ui` and `server` as arguments.

Gadgets with Arguments

One of the advantages of Shiny Gadgets is that since Shiny Gadgets are functions they can take values as arguments and they can return values. Let's take a look at a simple example of a Shiny Gadget that takes arguments and returns a value. The following Shiny Gadget takes two different vectors of numbers as arguments and uses those vectors to populate two `selectInputs`. The user can then choose two numbers within the Gadget, and the product of those two numbers will be returned.

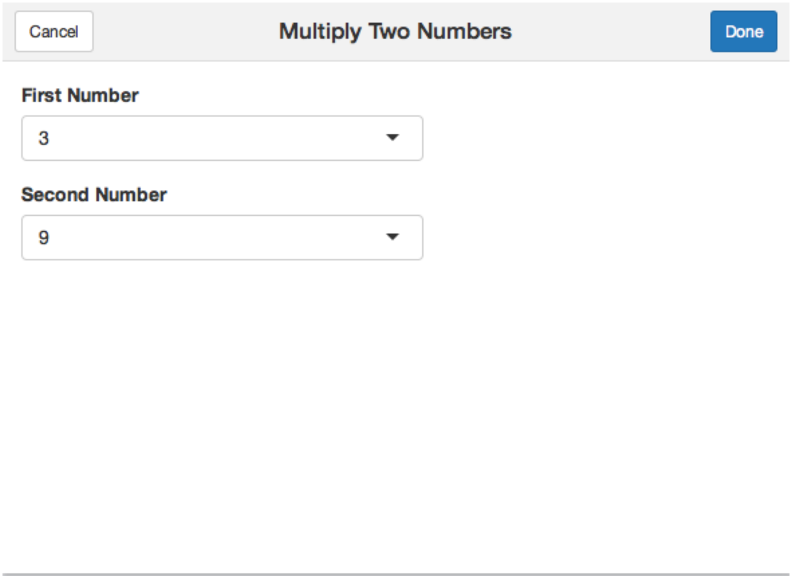
Gadgets with Arguments: Code Part 1

```r
library(shiny)
library(miniUI)

multiplyNumbers <- function(numbers1, numbers2) {
  ui <- miniPage(
    gadgetTitleBar("Multiply Two Numbers"),
    miniContentPanel(
      selectInput("num1", "First Number", choices=numbers1
      selectInput("num2", "Second Number", choices=numbers
    )
  )
```

Gadgets with Arguments: Code Part 2

```
  server <- function(input, output, session) {
    observeEvent(input$done, {
      num1 <- as.numeric(input$num1)
      num2 <- as.numeric(input$num2)
      stopApp(num1 * num2)
    })
  }
  runGadget(ui, server)
}
```

Gadgets with Arguments: Image



First Number

3

Second Number

9

Gadgets with Arguments: Code Review

Source the preceding code and run `multiplyNumbers(1:5, 6:10)` so you can get a sense of how this Gadget works. As you can see this Gadget uses `selectInput()` so that the user can select two different numbers. Clicking the Done button multiplies the tow numbers together, which is returned as the result of the `multiplyNumbers()` function.

Gadgets with Interactive Graphics

Shiny Gadgets are particularly useful when a data analysis needs a touch of human intervention. You can imagine presenting an interactive data visualization through a Gadget, where an analyst could manipulate data in the Gadget, and then the Gadget would return the manipulated data. Let's walk though an example of how this could be done.

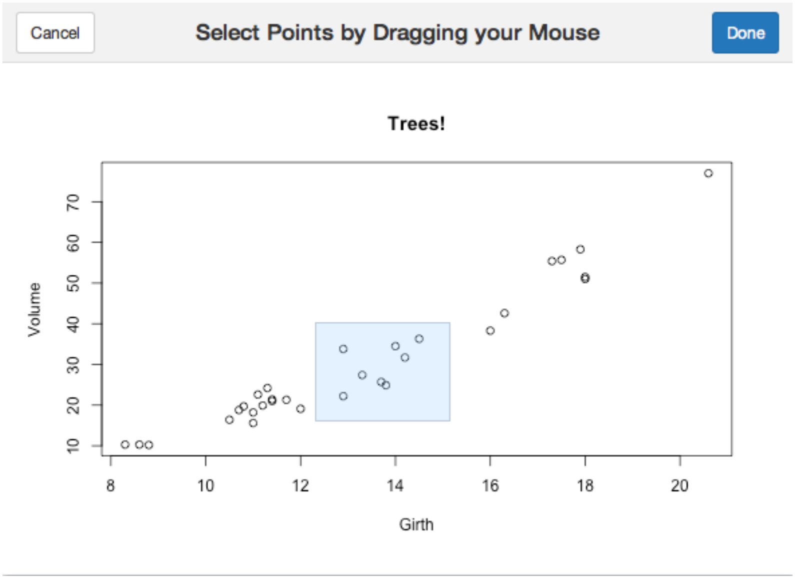
Gadgets with Interactive Graphics: Code Part 1

```
library(shiny)
library(miniUI)

pickTrees <- function() {
  ui <- miniPage(
    gadgetTitleBar("Select Points by Dragging your Mouse")
    miniContentPanel(
      plotOutput("plot", height = "100%", brush = "brush")
    )
  )
```

Gadgets with Interactive Graphics: Code Part 2

```
  server <- function(input, output, session) {
    output$plot <- renderPlot({
      plot(trees$Girth, trees$Volume, main = "Trees!",
        xlab = "Girth", ylab = "Volume")
    })
    observeEvent(input$done, {
      stopApp(brushedPoints(trees, input$brush,
        xvar = "Girth", yvar = "Volume"))
    })
  }

  runGadget(ui, server)
}
```

Gadgets with Interactive Graphics: Image



Gadgets with Interactive Graphics: Code Review

Source the preceding code and run `pickTrees()`. Click and drag a box over the graph. Once you've drawn a box that you're satisfied with click the Done button and the points that you selected will be returned to you as a data frame. This functionality is made possible by the `brushedPoints()` function, which is part of the `shiny` package. (See `?shiny::brushedPoints` for more information.)

Conclusion

For more details about Shiny Gadgets visit the Shiny Gadgets website:

- `http://shiny.rstudio.com/articles/gadgets.html`
- `http://shiny.rstudio.com/articles/gadget-ui.html`