Chapter 47: Shiny

Section 47.1: Create an app

Shiny is an R package developed by RStudio that allows the creation of web pages to interactively display the results of an analysis in R.

There are two simple ways to create a Shiny app:

- in one `.R` file, or
- in two files: `ui.R` and `server.R`.

A Shiny app is divided into two parts:

- **ui**: A user interface script, controlling the layout and appearance of the application.
- **server**: A server script which contains code to allow the application to react.

One file

```
library(shiny)

# Create the UI
ui <- shinyUI(fluidPage(
    # Application title
    titlePanel("Hello World!")
))

# Create the server function
server <- shinyServer(function(input, output){})

# Run the app
shinyApp(ui = ui, server = server)
```

Two files

Create `ui.R` file

```
library(shiny)

# Define UI for application
shinyUI(fluidPage(
  # Application title
  titlePanel("Hello World!")
))
```

Create `server.R` file

```
library(shiny)

# Define server logic
shinyServer(function(input, output){})
```

Section 47.2: Checkbox Group

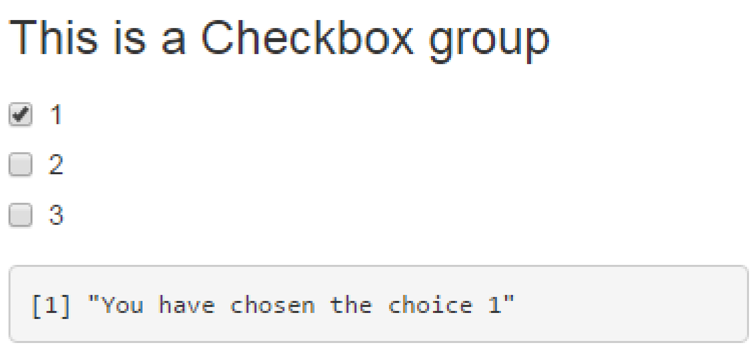
Create a group of checkboxes that can be used to toggle multiple choices independently. The server will receive the input as a character vector of the selected values.

```
library(shiny)

ui <- fluidPage(
  checkboxGroupInput("checkGroup1", label = h3("This is a Checkbox group"),
                     choices = list("1" = 1, "2" = 2, "3" = 3),
                     selected = 1),
  fluidRow(column(3, verbatimTextOutput("text_choice")))
  )


server <- function(input, output){
  output$text_choice <- renderPrint({
    return(paste0("You have chosen the choice ",input$checkGroup1))})
}

shinyApp(ui = ui, server = server)
```



```
[1] "You have chosen the choice 1"
```

It's possible to change the settings :

- label : title
- choices : selected values
- selected : The initially selected value (NULL for no selection)
- inline : horizontal or vertical
- width

It is also possible to add HTML.

Section 47.3: Radio Button

You can create a set of radio buttons used to select an item from a list.

It's possible to change the settings :

- selected : The initially selected value (character(0) for no selection)
- inline : horizontal or vertical
- width

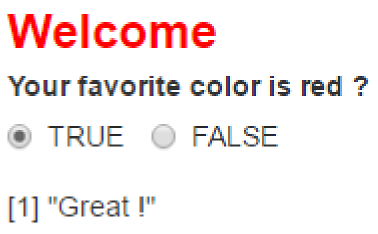
It is also possible to add HTML.

```
library(shiny)

ui <- fluidPage(
  radioButtons("radio",
               label = HTML('<FONT color="red"><FONT size="5pt">Welcome</FONT></FONT><br> <b>Your
favorite color is red ?</b>'),
               choices = list("TRUE" = 1, "FALSE" = 2),
               selected = 1,
               inline = T,
               width = "100%"),
  fluidRow(column(3, textOutput("value"))))


server <- function(input, output){
  output$value <- renderPrint({
    if(input$radio == 1){return('Great !')}
     else{return("Sorry !")}})}

shinyApp(ui = ui, server = server)
```



```
[1] "Great !"
```

Section 47.4: Debugging

debug() and debugonce() won't work well in the context of most Shiny debugging. However, browser() statements inserted in critical places can give you a lot of insight into how your Shiny code is (not) working. See also: Debugging using browser()

Showcase mode

Showcase mode displays your app alongside the code that generates it and highlights lines of code in server.R as it runs them.

There are two ways to enable Showcase mode:

- Launch Shiny app with the argument display.mode = "showcase", e.g., `runApp("MyApp", display.mode = "showcase")`.
- Create file called `DESCRIPTION` in your Shiny app folder and add this line in it: `DisplayMode: Showcase`.

Reactive Log Visualizer

Reactive Log Visualizer provides an interactive browser-based tool for visualizing reactive dependencies and execution in your application. To enable Reactive Log Visualizer, execute `options(shiny.reactlog=TRUE)` in R console and or add that line of code in your server.R file. To start Reactive Log Visualizer, hit Ctrl+F3 on Windows or Command+F3 on Mac when your app is running. Use left and right arrow keys to navigate in Reactive Log Visualizer.

Section 47.5: Select box

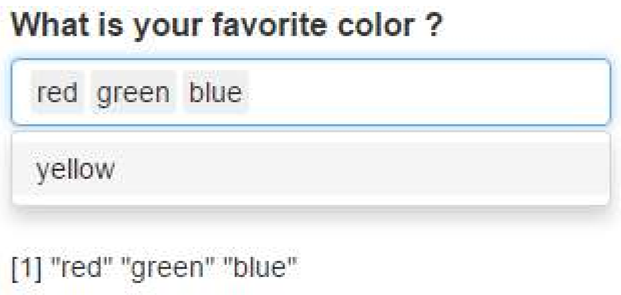
Create a select list that can be used to choose a single or multiple items from a list of values.

```
library(shiny)

ui <- fluidPage(
  selectInput("id_selectInput",
          label = HTML('<B><FONT size="3">What is your favorite color ?</FONT></B>'),
          multiple = TRUE,
          choices = list("red" = "red", "green" = "green", "blue" = "blue", "yellow" = "yellow"),
          selected = NULL),
  br(), br(),
  fluidRow(column(3, textOutput("text_choice"))))
```

```
server <- function(input, output){
  output$text_choice <- renderPrint({
    return(input$id_selectInput)})
}

shinyApp(ui = ui, server = server)
```



```
[1] "red" "green" "blue"
```

It's possible to change the settings :

- label : title
- choices : selected values
- selected : The initially selected value (NULL for no selection)
- multiple : TRUE or FALSE
- width
- size
- selectize: TRUE or FALSE (for use or not selectize.js, change the display)

It is also possible to add HTML.

Section 47.6: Launch a Shiny app

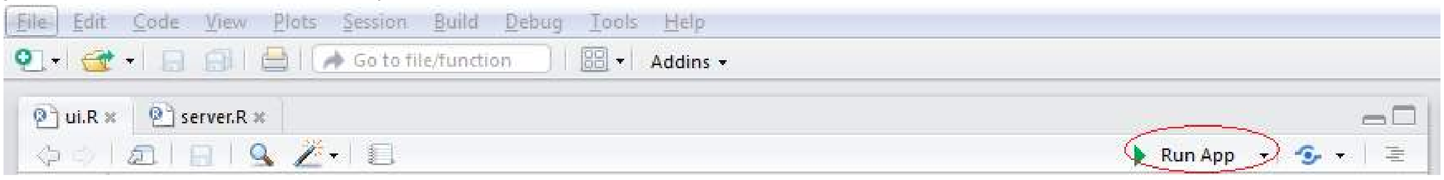
You can launch an application in several ways, depending on how you create you app. If your app is divided in two files `ui.R` and `server.R` or if all of your app is in one file.

1. Two files app

Your two files `ui.R` and `server.R`have to be in the same folder. You could then launch your app by running in the console the `shinyApp()` function and by passing the path of the directory that contains the Shiny app.

```
shinyApp("path_to_the_folder_containing_the_files")
```

You can also launch the app directly from Rstudio by pressing the **Run App** button that appear on Rstudio when you an `ui.R` or `server.R` file open.



Or you can simply write `runApp()` on the console if your working directory is Shiny App directory.

2. One file app

If you create your in one `R` file you can also launch it with the `shinyApp()` function.

- inside of your code :

```r
library(shiny)

ui <- fluidPage() #Create the ui
server <- function(input, output){} #create the server

shinyApp(ui = ui, server = server) #run the App
```

- in the console by adding path to a `.R` file containing the Shiny application with the parameter `appFile`:

```r
shinyApp(appFile="path_to_my_R_file_containig_the_app")
```

Section 47.7: Control widgets

Function	Widget
actionButton	Action Button
checkboxGroupInput	A group of check boxes
checkboxInput	A single check box
dateInput	A calendar to aid date selection
dateRangeInput	A pair of calendars for selecting a date range
fileInput	A file upload control wizard
helpText	Help text that can be added to an input form
numericInput	A field to enter numbers
radioButtons	A set of radio buttons
selectInput	A box with choices to select from
sliderInput	A slider bar
submitButton	A submit button
textInput	A field to enter text

```r
library(shiny)

# Create the UI
ui <- shinyUI(fluidPage(
  titlePanel("Basic widgets"),

  fluidRow(

    column(3,
           h3("Buttons"),
           actionButton("action", label = "Action"),
           br(),
           br(),
           submitButton("Submit")),

    column(3,
           h3("Single checkbox"),
           checkboxInput("checkbox", label = "Choice A", value = TRUE)),

    column(3,
           checkboxGroupInput("checkGroup",
                              label = h3("Checkbox group"),
                              choices = list("Choice 1" = 1,
                                             "Choice 2" = 2, "Choice 3" = 3),
                              selected = 1)),

    column(3,
           dateInput("date",
                     label = h3("Date input"),
                     value = "2014-01-01"))
  ),

  fluidRow(

    column(3,
           dateRangeInput("dates", label = h3("Date range"))),

    column(3,
           fileInput("file", label = h3("File input"))),

    column(3,
           h3("Help text"),
           helpText("Note: help text isn't a true widget,",
                    "but it provides an easy way to add text to",
                    "accompany other widgets.")),

    column(3,
           numericInput("num",
                        label = h3("Numeric input"),
                        value = 1))
  ),

  fluidRow(

    column(3,
           radioButtons("radio", label = h3("Radio buttons"),
                        choices = list("Choice 1" = 1, "Choice 2" = 2,
                                       "Choice 3" = 3),selected = 1)),

    column(3,
           selectInput("select", label = h3("Select box"),
                       choices = list("Choice 1" = 1, "Choice 2" = 2,
                                      "Choice 3" = 3), selected = 1)),

    column(3,
           sliderInput("slider1", label = h3("Sliders"),
                       min = 0, max = 100, value = 50),
           sliderInput("slider2", "",
                       min = 0, max = 100, value = c(25, 75))
    ),

    column(3,
           textInput("text", label = h3("Text input"),
                     value = "Enter text..."))
  )

))

# Create the server function
server <- shinyServer(function(input, output){})

# Run the app
shinyApp(ui = ui, server = server)
```