



# R Shiny

Hands-on Exercise

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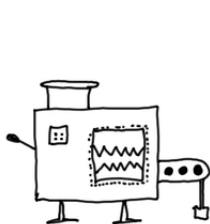




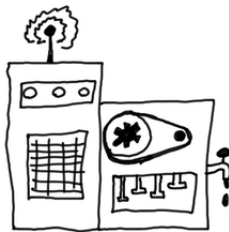
# What is it?

- Package to build *interactive* web apps
- Can be hosted on personal websites, `shinyapps.io`; embedded in R Markdown
- Build your own dashboard

# Basics



Input

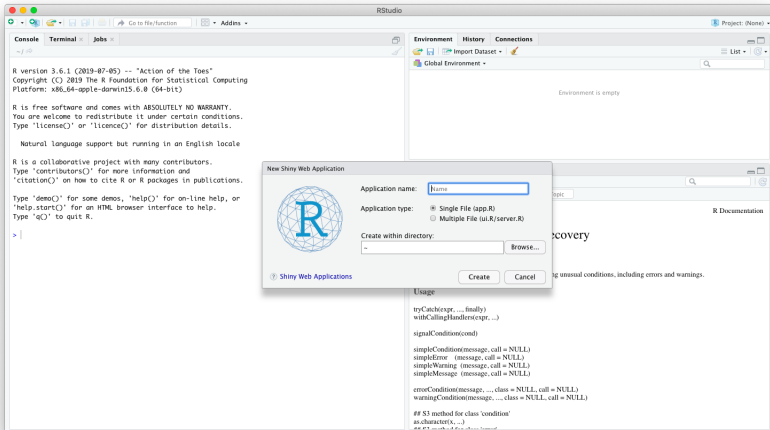


Process



Output

# Starting a new Shiny App



R version 3.6.1 (2019-07-05) -- "Action of the Toes"  
 Copyright (C) 2019 The R Foundation for Statistical Computing  
 Platform: x86\_64-apple-darwin15.6.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.  
 You are welcome to redistribute it under certain conditions.  
 Type 'license()' or 'licence()' for distribution details.

Natural language support but running in an English locale

R is a collaborative project with many contributors.  
 Type 'contributors()' for more information and  
 'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or  
 'help.start()' for an HTML browser interface to help.  
 Type 'q()' to quit R.

> |

**New Shiny Web Application**

Application name:

Application type:  Single File (app.R)  
 Multiple File (ui.R/server.R)

Create within directory:

Usage

```
tryCatch(expr, ... finally)
withCallingHandlers(expr, ...)
signalCondition(cond)
simpleCondition(message, call = NULL)
simpleError (message, call = NULL)
simpleWarning (message, call = NULL)
simpleMessage (message, call = NULL)
errorCondition(message, ..., class = NULL, call = NULL)
warningCondition(message, ..., class = NULL, call = NULL)
## S3 method for class 'condition'
as.character(x, ...)
```

# Minimum Working Example

```
library(shiny);  
  
ui = fluidPage();  
server = function (input, output) {}  
shinyApp(ui = ui, server = server);
```



# Inputs and Outputs

- Input: *what user provides*
- Output: *what user receives*

Remember: *always, always, always* start with the template



# Inputs and Outputs

Inputs and Outputs are added as arguments to `ui()` function

```
ui = fluidPage(  
  #Input(),  
  #Output(),  
);
```



# Input Widgets

http://127.0.0.1:3771 Open in Browser

Publish

## Basic widgets

### Buttons



### Single checkbox

 Choice A

### Checkbox group

 Choice 1

 Choice 2

 Choice 3

### Date input

### Date range

 to 

### File input

### Help text

Note: help text isn't a true widget, but it provides an easy way to add text to accompany other widgets.

### Numeric input

### Radio buttons

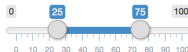
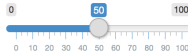
 Choice 1

 Choice 2

 Choice 3

### Select box

### Sliders



### Text input

Source: <https://shiny.rstudio.com/tutorial/written-tutorial/lesson3/>



# Slider Input

Basic, useful and easy

```
sliderInput(inputId = "num", label = "Sample Size",  
value = 10, min = 1, max = 100)
```

?sliderInput

- inputId: variable name
- label: text to be shown; optional
- value: default value in the slider; optional
- min: minimum value in slider scale
- max: maximum value in slider scale



# Output Reactives

- `dataTableOutput()`
- `htmlOutput()`
- `imageOutput()`
- `plotOutput()`
- `tableOutput()`
- `textOutput()`
- `uiOutput()`
- `verbatimTextOutput()`



# Plot Output

```
plotOutput(outputId = "pl")
```

Other inputs for beautification: width, height, ...

# Server



Server is the processor of our app

- output: list of outputs needed
- input: list of inputs used
- all outputs and inputs should be used in server function – *else, how would R know what to do with it?*
- render\* functions: server-side functions used for producing outputs



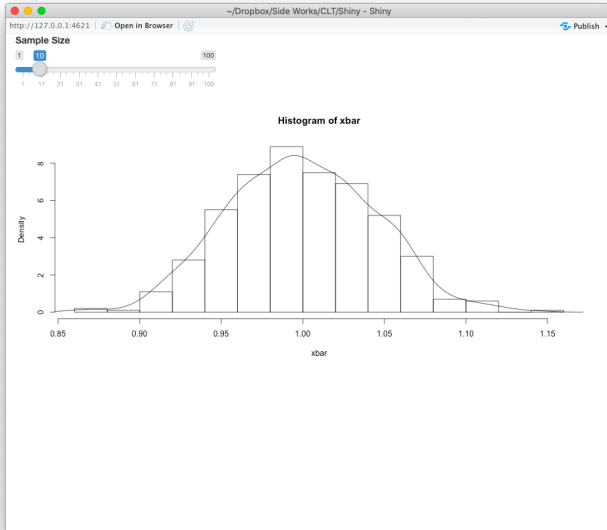
## render\* functions

- `renderDataTable()`
- `renderImage()`
- `renderPlot()`
- `renderPrint()`
- `renderTable()`
- `renderText()`
- `renderUI()`

# renderPlot

```
output$pl = renderPlot({  
  n = input$num  
  xbar = rep(0,500)  
  for (i in 1:500)  
  {  
    xbar[i] = mean(rexp(500))  
  }  
  hist(xbar,probability = T)  
  lines(density(xbar))  
})
```

# Final App





## Sharing your App

- Share your code: “app.R” – *use this name exactly!*
- shinyapps.io
- personal server [paid]





## Some Shiny Examples

- Blood banks in India:  
[https://opndt.shinyapps.io/bloodbank\\_india/](https://opndt.shinyapps.io/bloodbank_india/)
- Tweets dashboard:  
<https://gadenbuie.shinyapps.io/tweet-conf-dash/>
- Movies explorer:  
<https://shiny.rstudio.com/gallery/movie-explorer.html>
- Quotes:  
[https://harshvardhan.shinyapps.io/quotes\\_generator/](https://harshvardhan.shinyapps.io/quotes_generator/)

# Online Resources



- `https://shiny.rstudio.com/tutorial/`
- `https://shiny.rstudio.com/tutorial/written-tutorial/lesson1/`

Thank you!

Please feel free to ask questions...

Thanks a lot to Pritam Ranjan Sir for giving me such an amazing opportunity.