HUDK 4051: LEARNING ANALYTICS: PROCESS & THEORY

5/3/17 7:00 PM

In the news

INSIDE HIGHER ED

edtech, ed-tech, or ed tech?

Ed-Tech Investments: More Deals, Less Money

Science funding is a gamble so let's give out money by lottery aeon

Why Fixing the Pipeline Alone Won't End Edtech's Diversity Problem EdSurge

INVERSE INNOVATION

The Neural Computing Revolution is Upon Us

KINFOLK

COUNCIL FOR BIG DATA, ETHICS, AND SOCIETY

Ten simple rules for responsible big data research

Narcissism, Social Media and Power

THE JOURNAL

PROPUBLICA | MACHINE BIAS

Minority Neighborhoods Pay Higher Car Insurance Premiums Than White Areas With the Same Risk

The New York Times

Why Can't Silicon Valley Fix Online Harassment?

How Uber Uses Psychological Tricks to Push Its Drivers' Buttons

CA's Top Superintendent Leaves for Ed Tech Startup AltSchool

wcet

Call to Action: EVERYONE Should Respond to Teacher Prep Distance Ed Regs

PR Newswire a CISION company

China Overtakes America's Lead in Online EdTech Companies

EDUCATION WEEK

Algorithmic Bias a Rising Concern for Ed-Tech Field, RAND Researchers Say

Inside Philanthropy

Bending the Learning Curve: Google.org's Latest Commitment to Education Technology

Events

April 13, 11am, Cambridge Analytica: Tracing Personal Data (from ethical lapses to its use in electoral campaigns), Buell Hall, East Gallery, Maison Francais

April 14, 12pm, How Different Cultures View Data, Buell Hall, East Gallery, Maison Francais

April 19, 11am, Webinar: The tidyverse & RStudio Connect (http://bit.ly/2p1s7zY)

April 21, Machine Learning in Finance, $30, (http://bit.ly/2o78HZz)

April 27-28, Algorithms & Explanations Conference, NYU (http://www.law.nyu.edu/centers/ili/events/algorithms-and-explanations)

May 3, Open Data Science CxO Summit & Expo, Boston (http://cxo.odsc.com/) 2 for 1 code: CxODSC-COMBO, 15% off code: ODSC-MEETUP

May 15, Disrupt NYC (https://techcrunch.com/event-info/disrupt-ny-2017/) (Student $300, non-student $1995)

June 8-9, Personal Democracy Forum (https://www.pdf17.com/) ($495)

Opportunities

Data & Society, Communications Manager https://datasociety.net/blog/jobs/communications-manager/ (Deadline April 14)

Data & Society, Research Project Lead: Media Manipulation (https://datasociety.net/blog/jobs/project-lead-media-manipulation/)

A/B Test*

Open laptop, install

https://github.com/rstudio/shiny

Shiny

- Web Application Framework
- Allows you to make html applications from within R
- For us that means interactive data visualizations
- Example A*
- Example B*

Shiny

- Architecture
- Template
- Adding elements
- Reactive inputs
- Reactive results

Shiny Architecture

- Two components:
  - Computer running R
  - Webpage running html (user interface)

*

Shiny Template

```
library(shiny)

ui <- fluidPage()

server <- function(input, output) {}

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

Example
HTML

Shiny Template

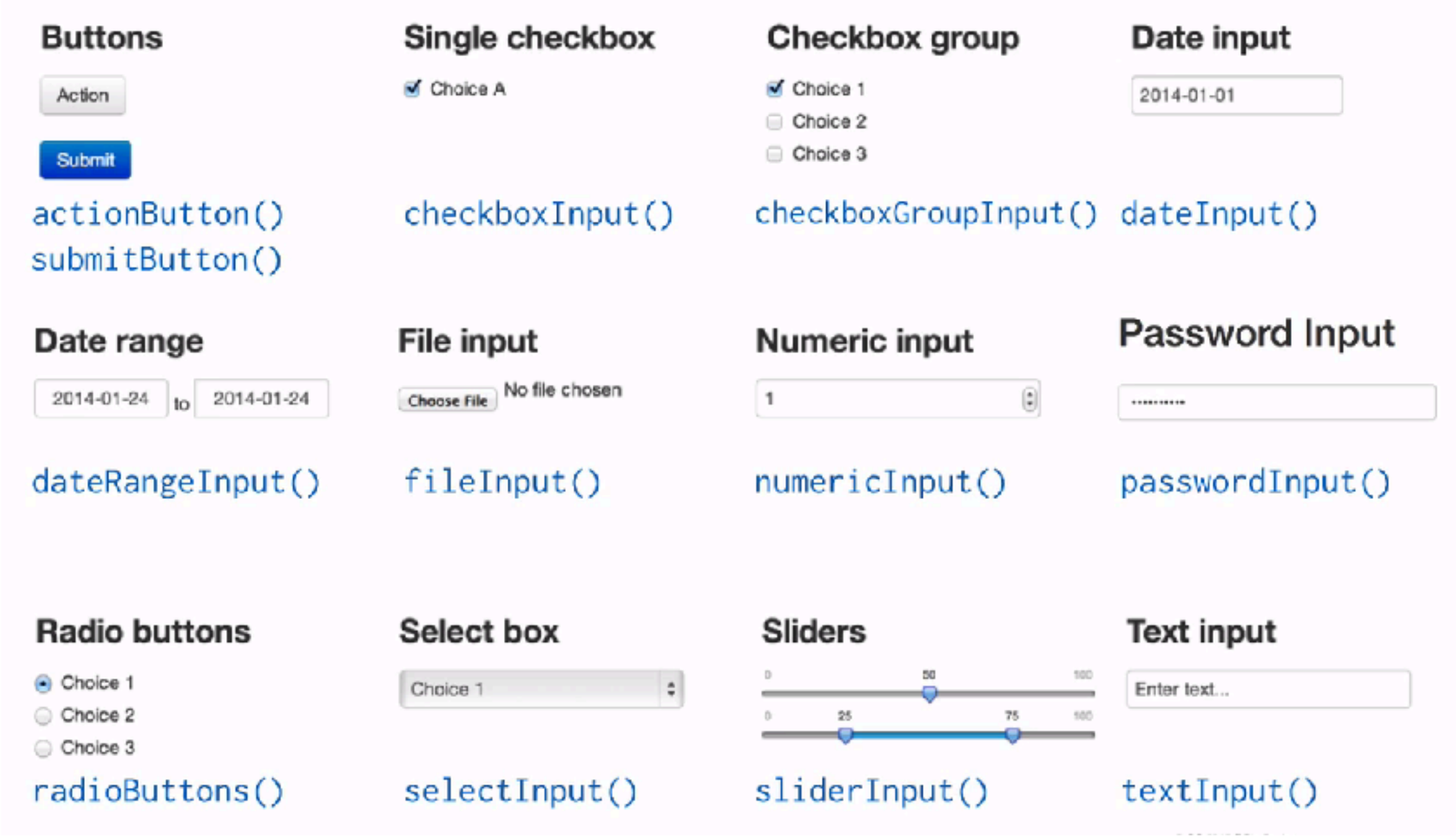
```
library(shiny)

ui <- fluidPage()

server <- function(input, output) {}

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

Example
Stop Sign

Input Functions

Things that your user will see and manipulate.

Input Functions



Input Function Syntax

```
xxxInput(inputId = “”, label = “”…)
```

Internal use

External use

Example

Output Function

Things that your user will see when they manipulate something in your web app.

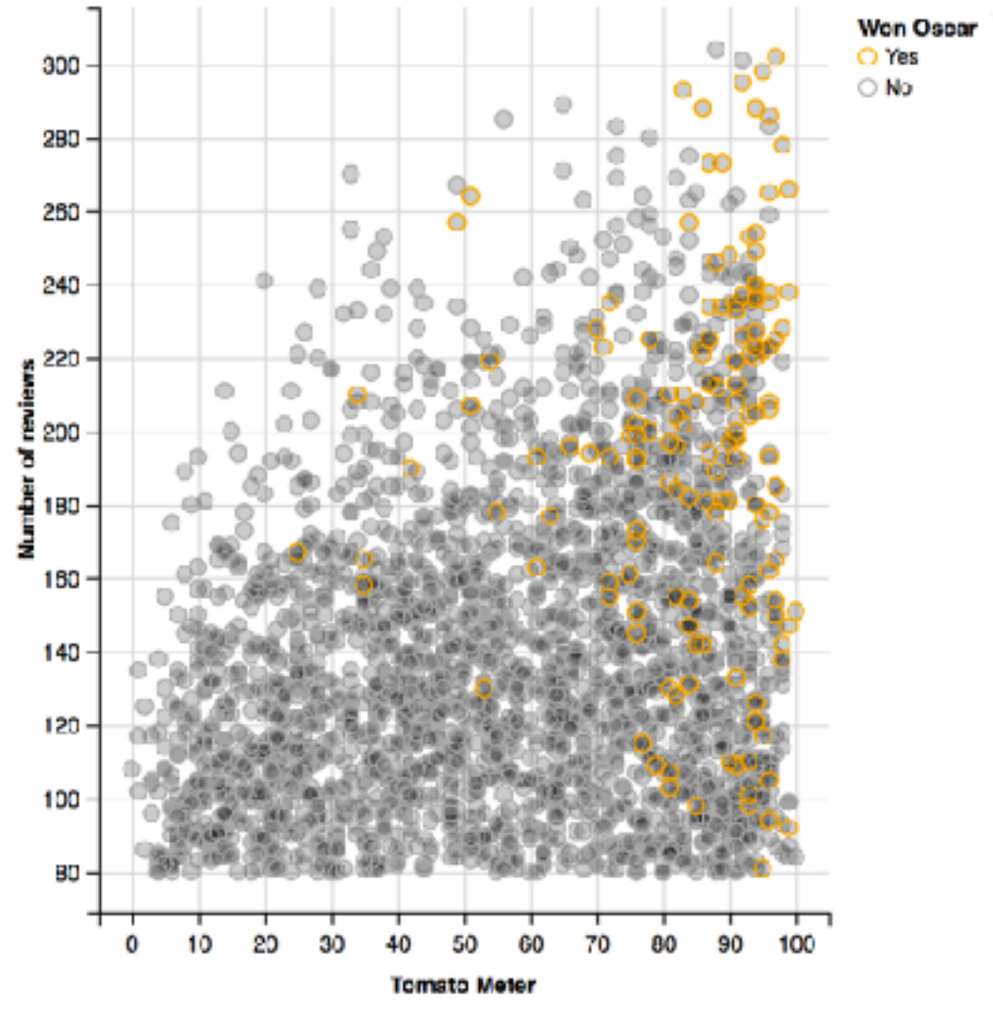
Output Function

Manufacturer: ford

Transmission: All

Show 10 entries

	manufacturer	model	displ	year	cyl	trans
1	ford	expedition 2wd	4.6	1999	8	auto(l4)
2	ford	expedition 2wd	5.4	1999	8	auto(l4)
3	ford	expedition 2wd	5.4	2006	8	auto(l6)
4	ford	explorer 4wd	4	1999	6	auto(l5)
5	ford	explorer 4wd	4	1999	6	manual(m5)
6	ford	explorer 4wd	4	1999	6	auto(l5)
7	ford	explorer 4wd	4	2006	6	auto(l5)
8	ford	explorer 4wd	4.6	2006	8	auto(l6)
9	ford	explorer 4wd	5	1999	8	auto(l4)
10	ford	f150 pickup 4wd	4.2	1999	8	auto(l4)



Output Function

Function	Inserts
`dataTableOutput()`	an interactive table
`htmlOutput()`	raw HTML
`imageOutput()`	image
`plotOutput()`	plot
`tableOutput()`	table
`textOutput()`	text
`uiOutput()`	a Shiny UI element
`verbatimTextOutput()`	text

Output Function Syntax

```
plotOutput(outputId = “name”)
```

Example

Putting the Pieces Together

Template

`xxxInput(inputId = “”, label = “”…)` `plotOutput(outputId = “name”)`

```
ui <- fluidPage(*Input, *Output)

server <- function(input, output) {}

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

Server Function

- Assembles inputs into outputs
- Three pieces:
  1. Create reactivity
  2. Save output$
  3. Build output

```
server <- function(input, output) {
observeEvent(input$y,
output$x <- render*({}))
}
```

Example

1. Create Reactivity

- `input$`

```
ui <- fluidPage(actionButton("goButton", "Wake up!"),
                textOutput("reply"))

server <- function(input, output) {
observeEvent(input$goButton,
```

2. Save Output

- `output$`

```
ui <- fluidPage(actionButton("goButton", "Wake up!"),
                textOutput("reply"))

server <- function(input, output) {
observeEvent(input$goButton,
output$reply <-
```

3. Build Output from Input

- `render*()`

```
ui <- fluidPage(actionButton("goButton", "Wake up!"),
                textOutput("reply"))
```

```
server <- function(input, output) {
observeEvent(input$goButton,
output$reply <- renderText({"5 more minutes..."}))
```

Render

function	creates
`renderDataTable()`	An interactive table (from a data frame, matrix, or other table-like structure)
`renderImage()`	An image (saved as a link to a source file)
`renderPlot()`	A plot
`renderPrint()`	A code block of printed output
`renderTable()`	A table (from a data frame, matrix, or other table-like structure)
`renderText()`	A character string
`renderUI()`	a Shiny UI element