Introduction to Shiny

BUILDING WEB APPLICATIONS WITH SHINY IN R

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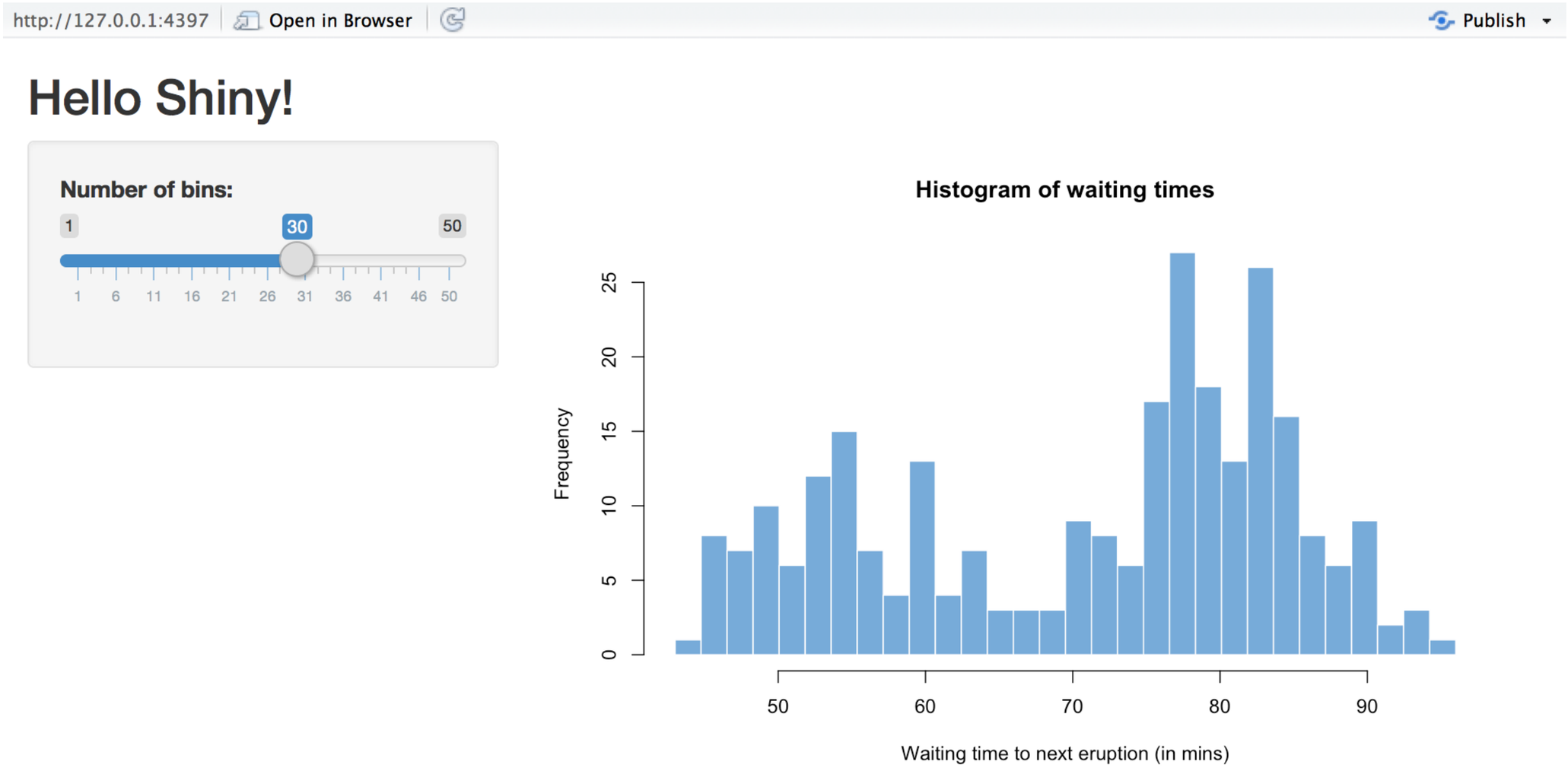
datacamp

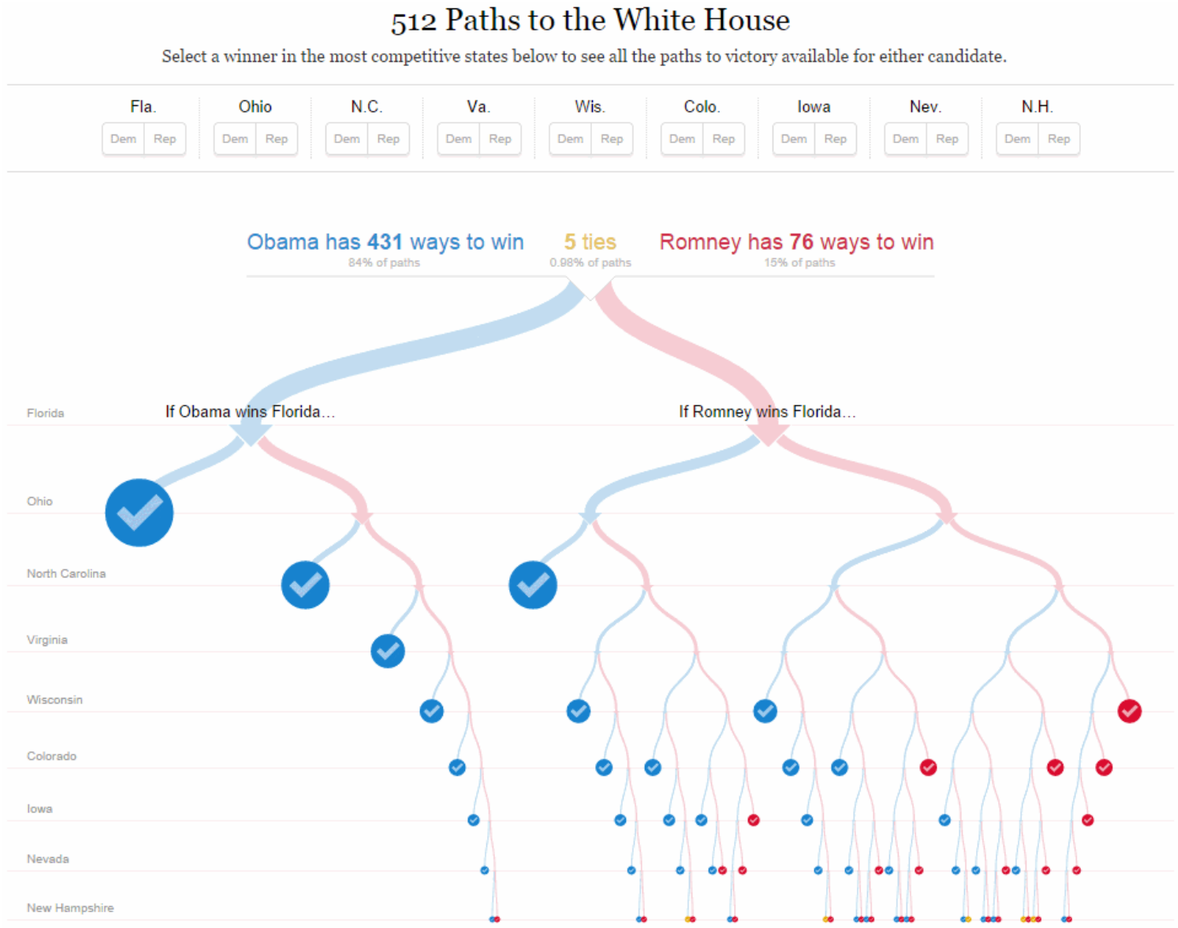
Introduction to Shiny



What is a web app?

- Updates based on user input/interaction
- Made up of UI & server

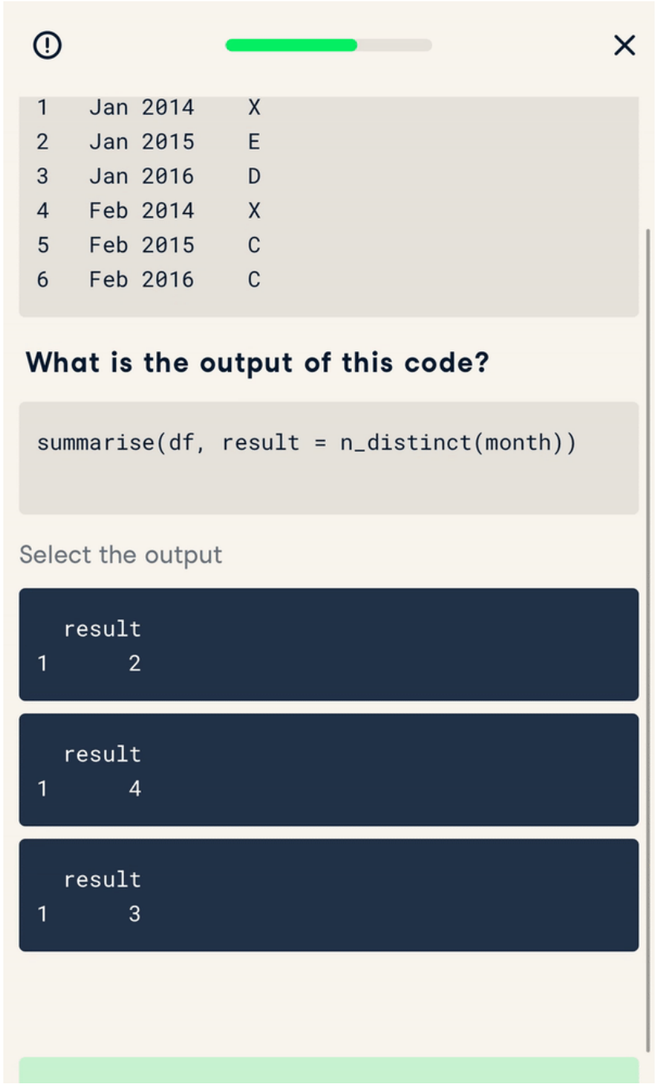
What is a web app?



- Displays paths to the White House for different presidential candidates.

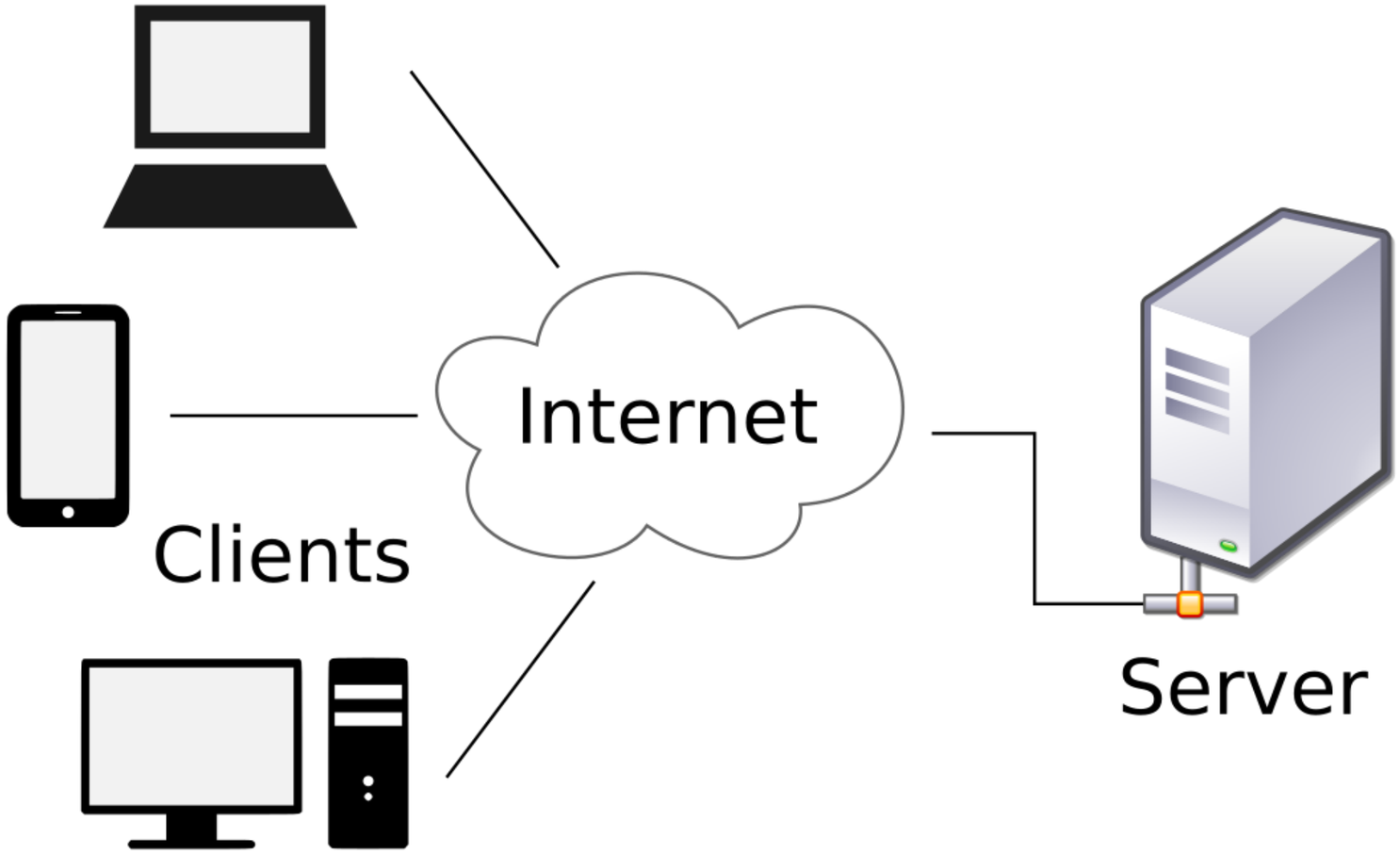
What is a web app?

- DataCamp mobile app

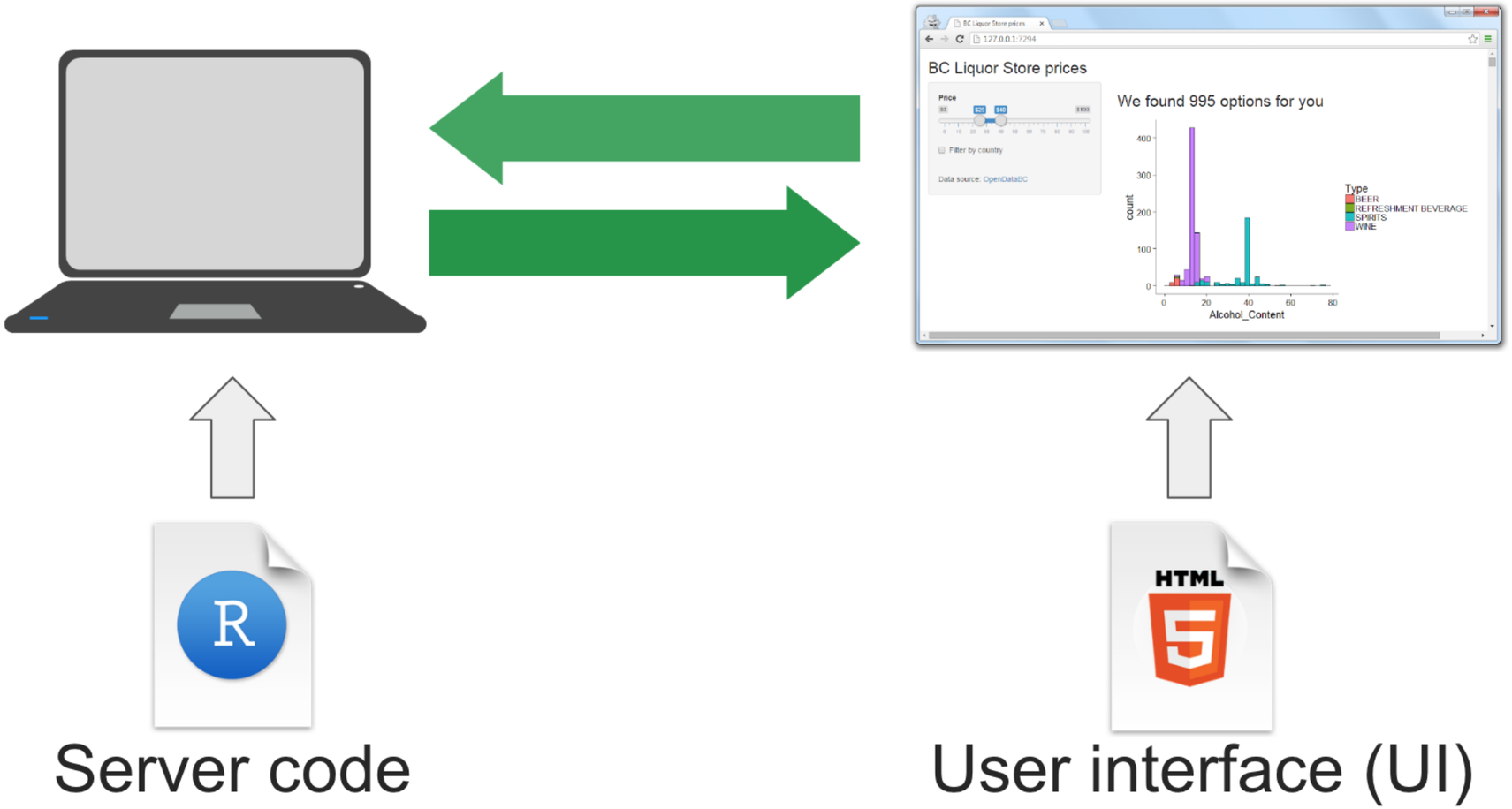


How does a web app work?

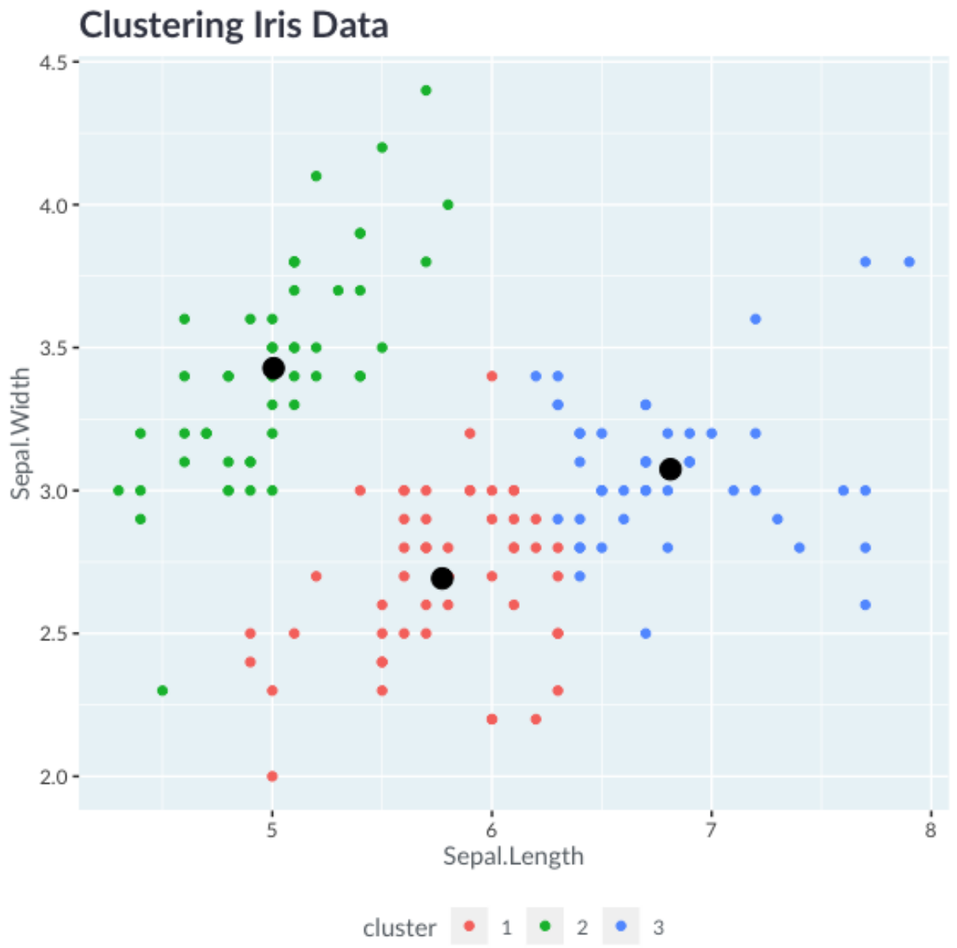
A web app is a thing that updates based on user input/interaction



What is Shiny?

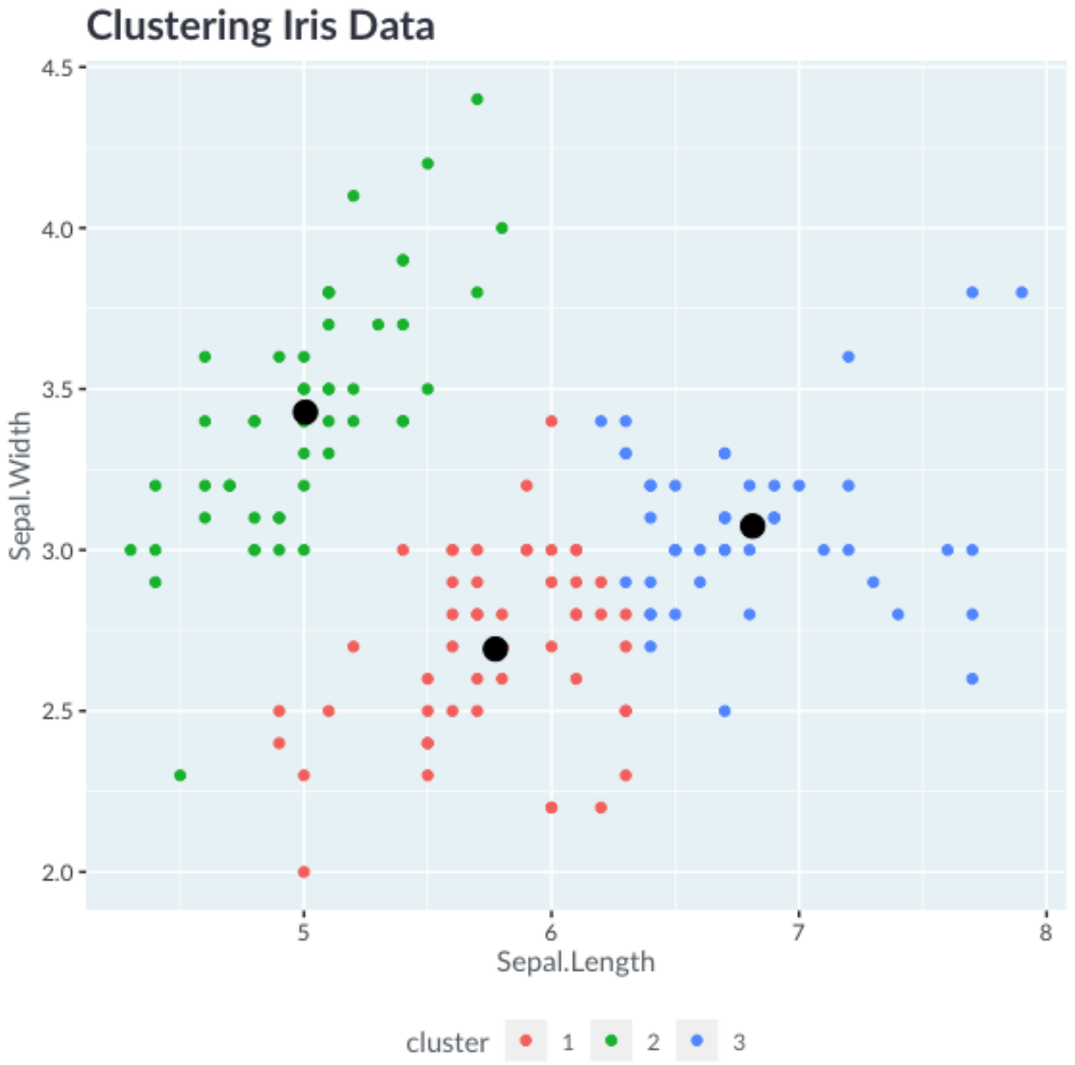


Why should data scientists build web apps?



Why should data scientists build web apps?

```
plot_kmeans(
  data = iris,
  x = 'Sepal.Length',
  y = 'Sepal.Width',
  nb_clusters = 3
)
```



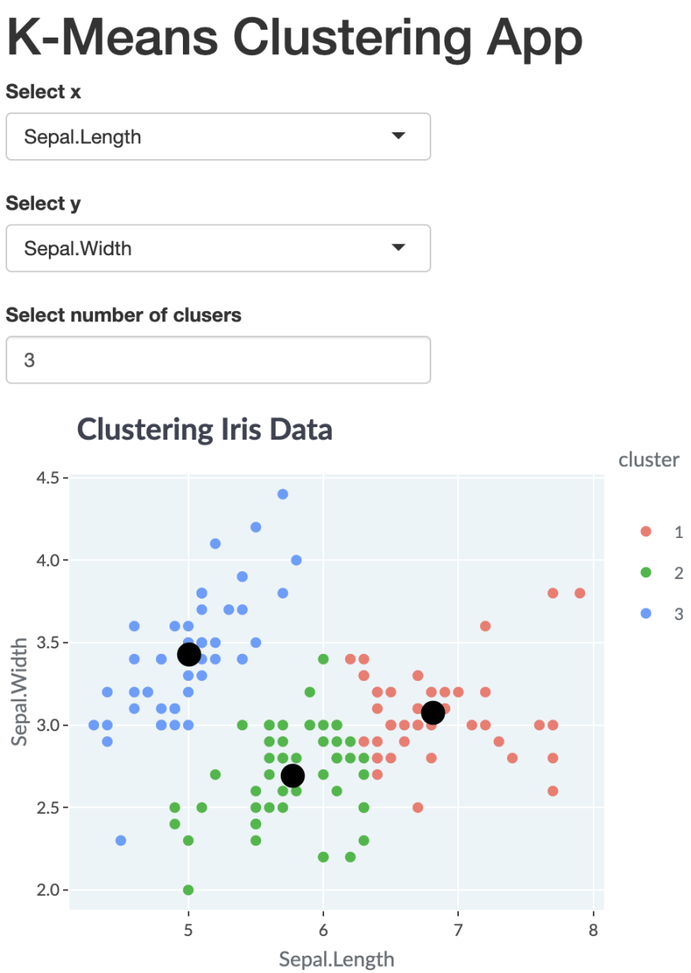
Why should data scientists build web apps?

```
library(shiny)
ui <- fluidPage(
  h1('K-Means Clustering App'),
  selectInput('x', 'Select x', names(iris), 'Sepal.Length'),
  selectInput('y', 'Select y', names(iris), 'Sepal.Width'),
  numericInput('nb_clusters', 'Select number of clusters', 3),
  plotly::plotlyOutput('kmeans_plot')
)

server <- function(input, output, session){
  output$kmeans_plot <- plotly::renderPlotly({
    plot_kmeans(iris, input$x, input$y, input$nb_clusters)
  })
}

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

Why should data scientists build web apps?



Let's practice!

BUILDING WEB APPLICATIONS WITH SHINY IN R

Build a "Hello, world" Shiny app

BUILDING WEB APPLICATIONS WITH SHINY IN R

Kaelen Medeiros
Data Scientist

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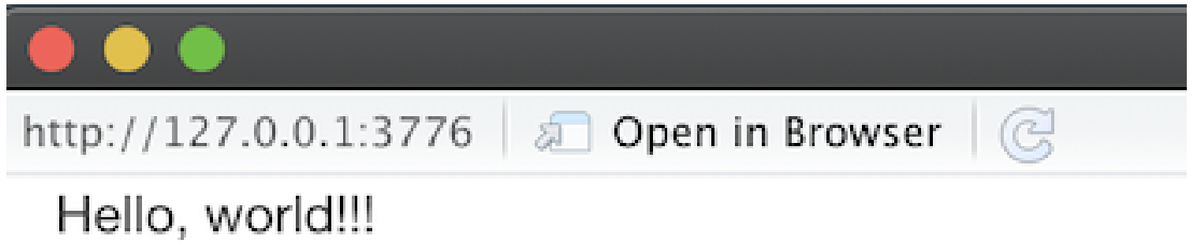
Parts of a Shiny app

```
library(shiny)
ui <- fluidPage()
server <- function(input,
                   output,
                   session) {

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

- Load `shiny`
- Create the UI with a HTML function
- Define a custom function to create the server
- Run the app

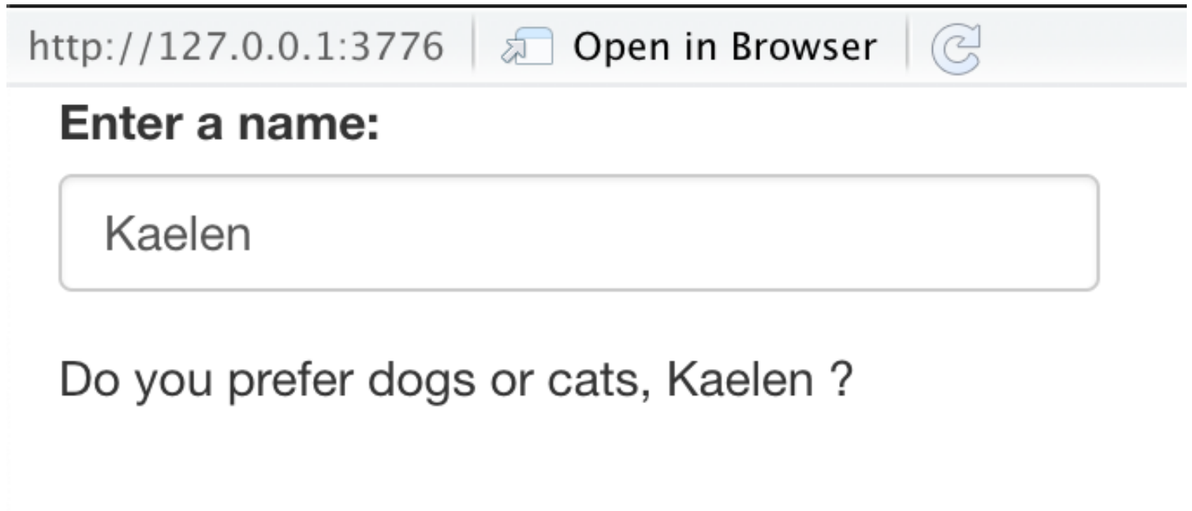
Hello, world!!!

```
library(shiny)

ui <- fluidPage(
    "Hello, world!!!"
)

server <- function(input, output,
                   session) {

}

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



Ask a question (with an input!)

```
ui <- fluidPage(
    textInput("name", "Enter a name:"),
    textOutput("q")
)
server <- function(input, output) {
    output$q <- renderText({
        paste("Do you prefer dogs
                    or cats,",
              input$name, "?")
      })
}
```



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BUILDING WEB APPLICATIONS WITH SHINY IN R

Build a babynames explorer Shiny app

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Ramnath Vaidyanathan
VP of Product Research

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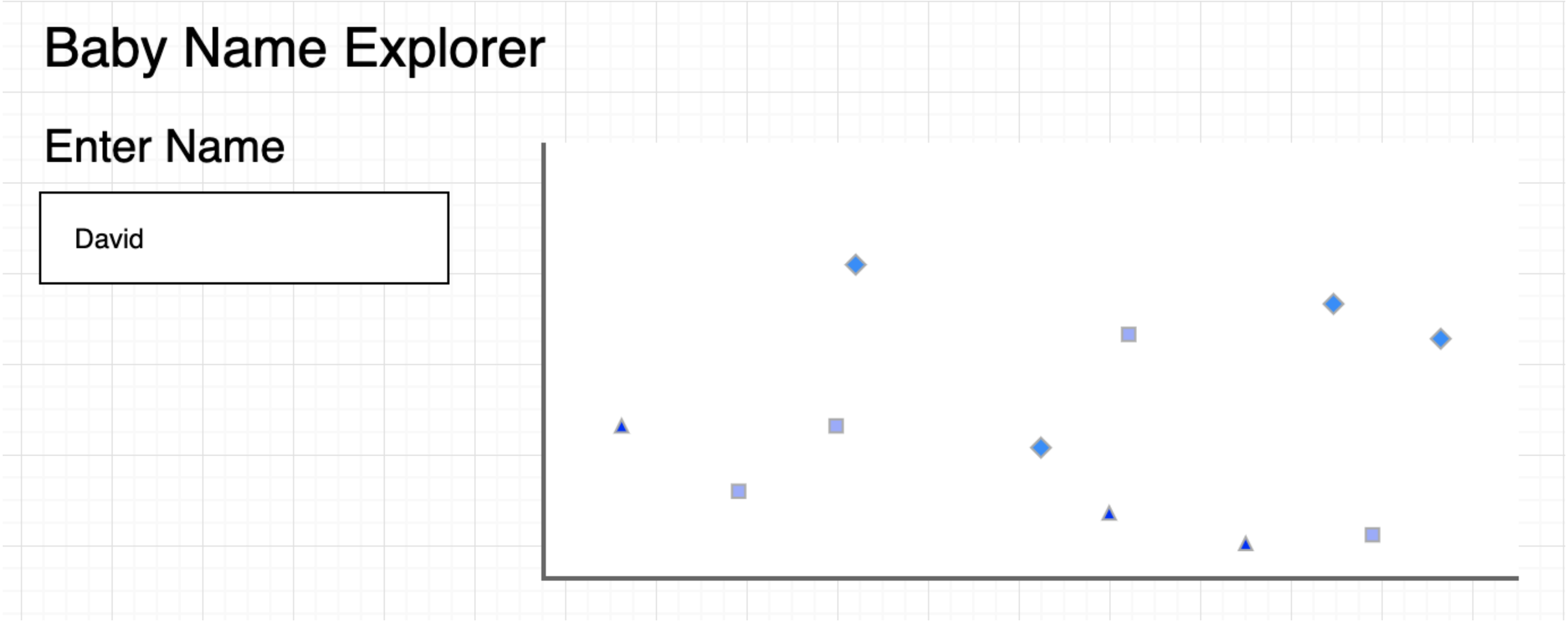
Sketch your app



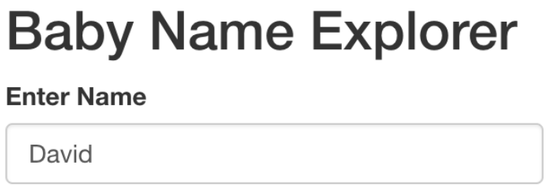
Add inputs (UI)

```
ui <- fluidPage(
  titlePanel("Baby Name Explorer"),
  textInput('name', 'Enter Name', 'David')
)
```

```
server <- function(input, output, session){

}
```

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



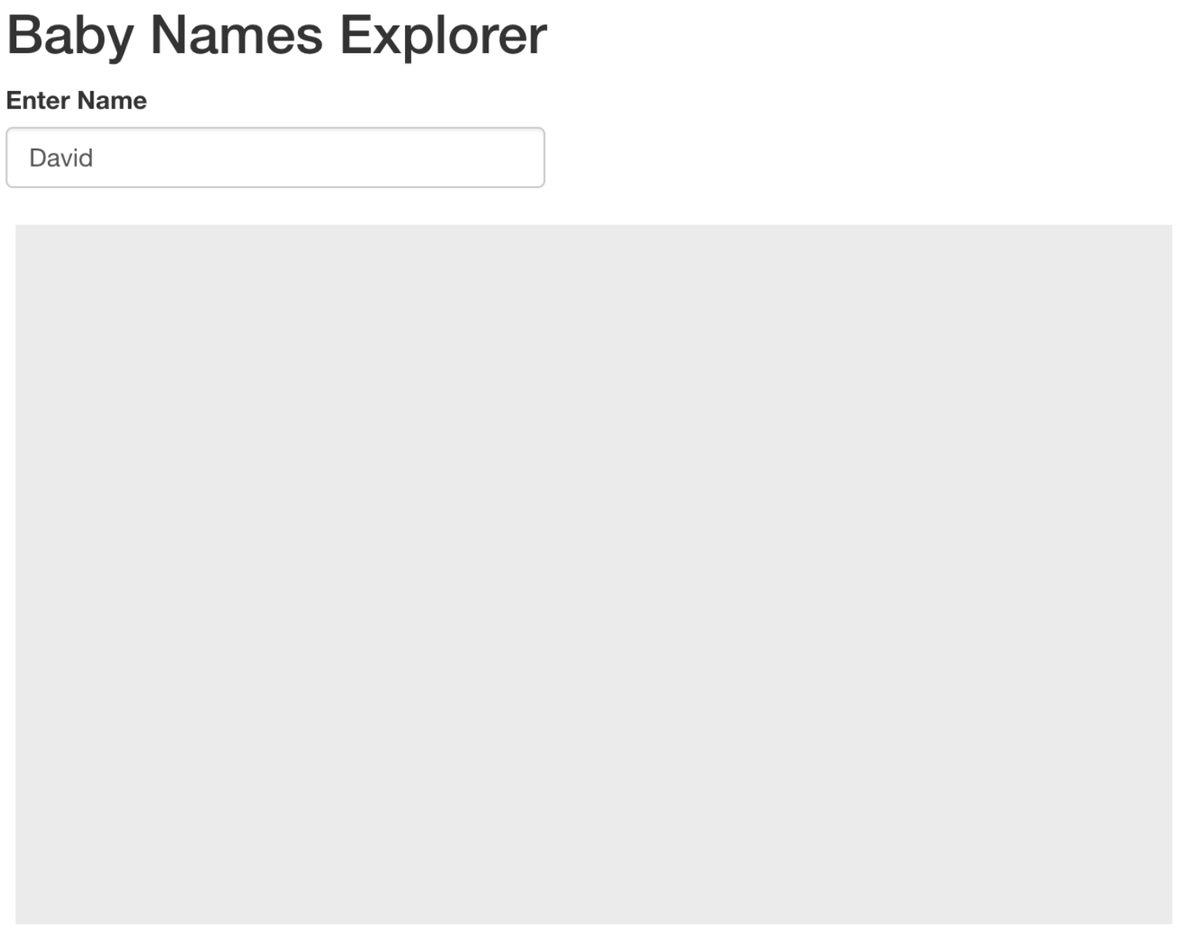
Add outputs (UI/server)

```
ui <- fluidPage(
  titlePanel("Baby Name Explorer"),
  textInput('name', 'Enter Name', 'David'),
  plotOutput('trend')
)
```

```
server <- function(input, output, session){
  output$trend <- renderPlot({
    ggplot()
  })
}
```

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

Add outputs (UI/server)

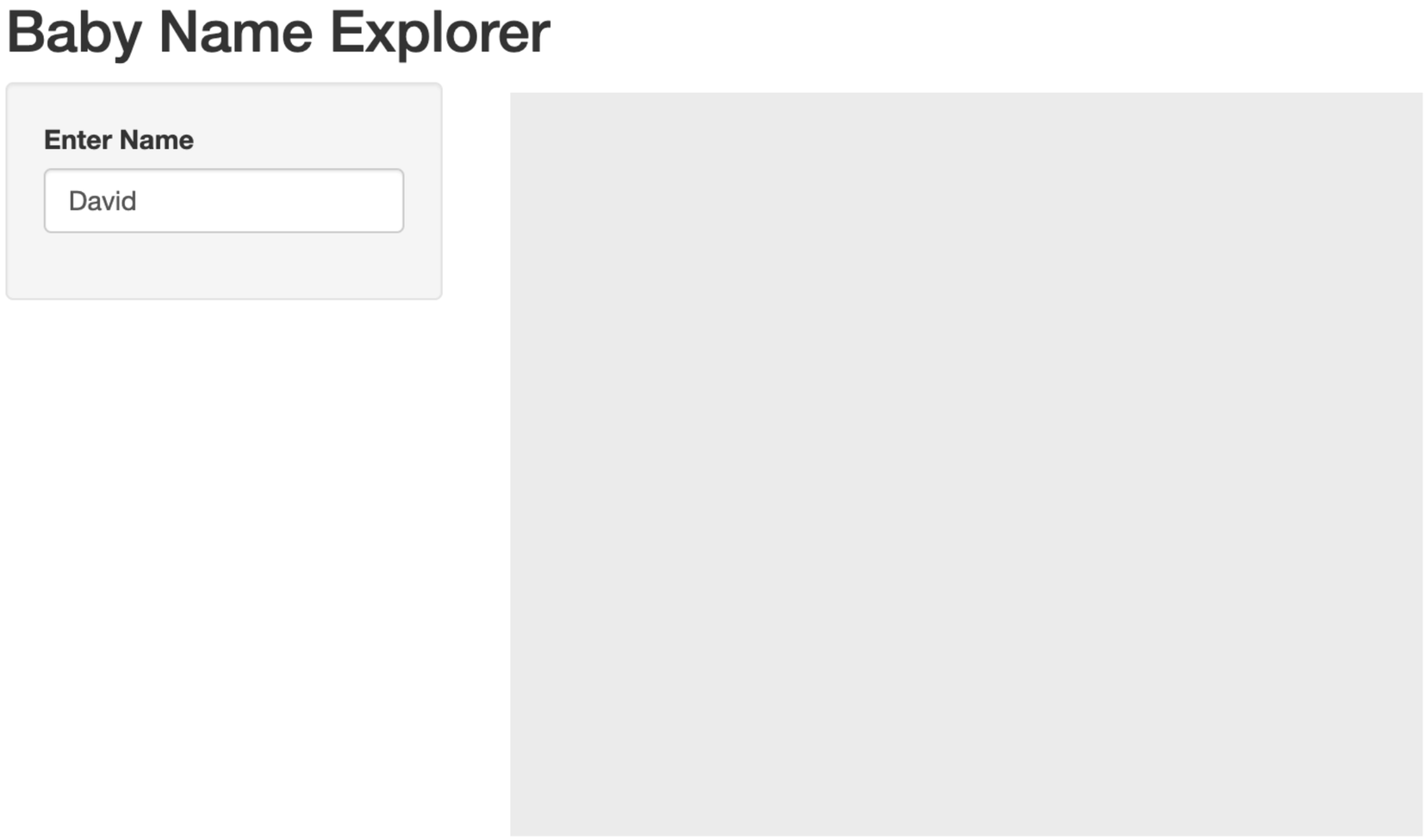


Update layout (UI)

```
ui <- fluidPage(
  titlePanel("Baby Name Explorer"),
  sidebarLayout(
    sidebarPanel(
      textInput('name', 'Enter Name', 'David')
    ),
    mainPanel(
      plotOutput('trend')
    )
  )
)
```

```
server <- function(input, output, session){
  output$trend <- renderPlot({ggplot()})
}
```

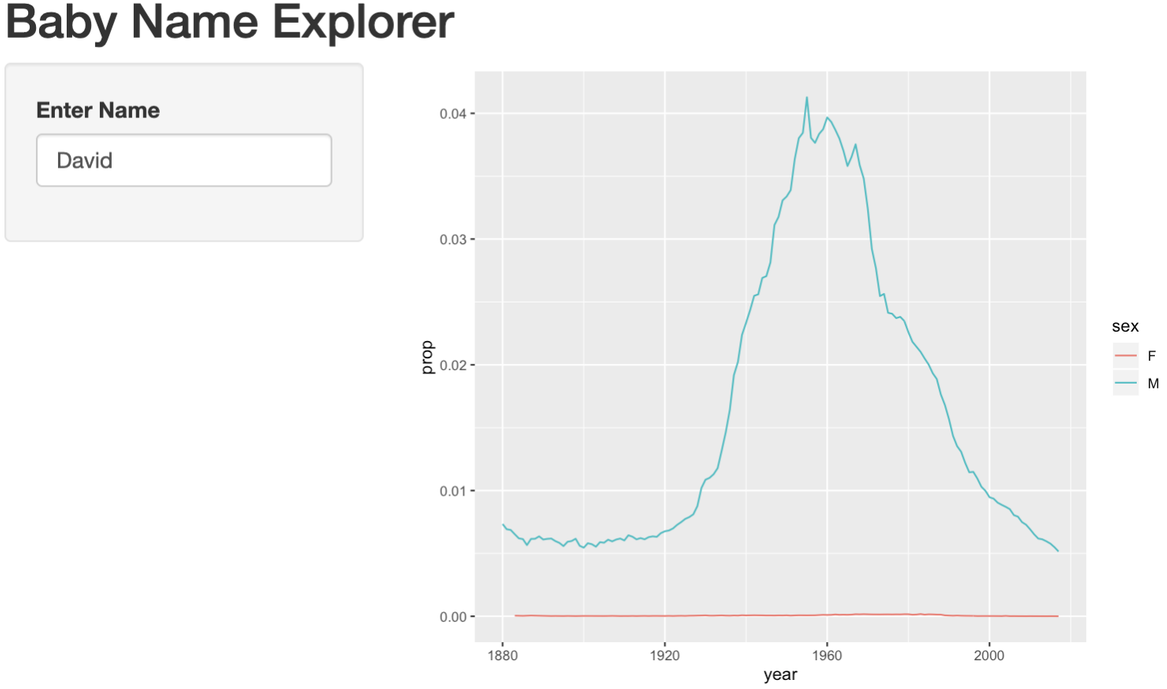
Update layout (UI)



Update output (server)

```
ui <- fluidPage(
  ...
)
```

```
server <- function(input, output, session){
  output$trend <- renderPlot({
    data_name <- subset(
      babynames, name == input$name
    )
    ggplot(data_name) +
      geom_line(
        aes(x = year, y = prop, color = sex)
      )
  })
}
```



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