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#Name: Brian D. Farin
#Date: January 21st, 2020
#Program Name: "app.R"

#Importing Libraries
library(readr) #readr is used for importing CSV files
library(readxl) #readxl is used for importing Excel files
library(dplyr) #dplyr is used for data filtering
library(shiny) #shiny is used to create and deploy Shiny applications
library(tidyr)#tidyr is used for certain data tidying functions

#Data Source: https://www.pro-football-reference.com/years/2019/opp.htm
#Data Table Name: 2020 NFL Team Defense Statistics
#Date Type: CSV - downloaded directly from link and column names renamed in Excel software

defense <- read_csv("nfldefense.csv") #Importing NFL defense data with renamed column names

#Selecting the variables to display and the format of the data

data <- defense %>%
  select(Team, OverallRank, Games, PointsGiven, YardsGiven, Takeaways,
         FirstDownsGiven, PassingYardsGiven, OppRushYards) %>%
  mutate(PointsGivenPerGame = PointsGiven / Games, YardsGivenPerGame =
         YardsGiven / Games, TakeawaysPerGame = Takeaways / Games,
         FirstDownsGivenPerGame = FirstDownsGiven / Games)

data <- data %>%
  gather(key = "OverallCategory", value = "OverallValue", PointsGiven,
         YardsGiven, Takeaways, FirstDownsGiven) %>%
  gather(key = "PerGameCategory", value = "GameValue",
         PointsGivenPerGame, YardsGivenPerGame, TakeawaysPerGame,
         FirstDownsGivenPerGame) %>%
  mutate(TotalPassingYardsGiven = PassingYardsGiven,
         TotalRushingYardsGiven = OppRushYards) %>%
  select(-PassingYardsGiven, -OppRushYards, -Games)

data <- data %>%
  mutate(OverallRank = as.factor(OverallRank),
         OverallCategory = as.factor(OverallCategory),
         PerGameCategory = as.factor(PerGameCategory))

#Creating the ui for the rshiny app

ui <- fluidPage(
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h1("2019 NFL Defensive Statistics"), #Giving the app a header title
sliderInput(inputId = "TotalPassingYardsGiven", label = "Total Passing Yards
Given", #Setting the slider inputs to measure Total Passing Yards
min = min(data$TotalPassingYardsGiven), max = max(data
$TotalPassingYardsGiven),
value = c(min(data$TotalPassingYardsGiven), max(data
$TotalPassingYardsGiven))),
sliderInput(inputId = "TotalRushingYardsGiven", label = "Total Rushing Yards
Given", #Setting the slider inputs to measure Total Rushing Yards
min = min(data$TotalRushingYardsGiven), max = max(data
$TotalRushingYardsGiven),
value = c(min(data$TotalRushingYardsGiven), max(data
$TotalRushingYardsGiven))),

selectInput("OverallCategory", "OverallCategory", choices = levels
(as.factor(data$OverallCategory))), #Setting dropdown menu for
Overall Category
selectInput("PerGameCategory", "PerGameCategory", choices = levels
(as.factor(data$PerGameCategory))), #Setting dropdown menu for
Per Game Category

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tableOutput("table")
)

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#Creating the server for the rshiny app

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server <- function(input, output) {
  output$table <- renderTable({
    data <- data
    data <- subset(data, TotalPassingYardsGiven >= input$TotalPassingYardsGiven
[1] & TotalPassingYardsGiven <= input$TotalPassingYardsGiven[2])
#subsetting for values of the slider input
    data <- subset(data, TotalRushingYardsGiven >= input$TotalRushingYardsGiven
[1] & TotalRushingYardsGiven <= input$TotalRushingYardsGiven[2])
#subsetting for values of the slider input
    data <- subset(data, OverallCategory == input$OverallCategory) #Subsetting
for the drop down menu
    data <- subset(data, PerGameCategory == input$PerGameCategory) #Subsetting
for the drop down menu

    data
  })
}

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shinyApp(ui, server)
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