user.R

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```
library(dplyr)

library(shiny)

library(shinythemes)

shinyUI(navbarPage(

  theme = shinytheme("slate"),

  strong("Time Series Forecasting Tutorial App"),

  tabPanel("Data Summary",

           sidebarLayout(

             sidebarPanel(

               radioButtons("RD1",label=h3(strong("Data Type")),choices = list("Pollutant Data"=2),selected = 2),



               #conditionalPanel(condition="input.RD1==2",fileInput('file1', h4(strong('Choose csv File')),

                #                                         accept=c('text/csv',

                 #                                                 'text/comma-separated-values,text/plain',

                  #                                                '.csv')),

               #                   checkboxInput('header', 'Header', TRUE),

               #                   radioButtons('sep', 'Separator',

               #                                c(Comma=',',

               #                                  Semicolon=';',

               #                                  Tab='\t'),

               #                                ','),
```

```
 #                  radioButtons('quote', 'Quote',
 #                               c(None='',
 #                                 'Double Quote'='"',
 #                                 'Single Quote'="'"),
 #                               '"'))
 # ,
 numericInput("Col",strong("Column to Analysis"),value = 2)


 ,


 h4(strong("Time Series Setting")),
 numericInput("Start",strong("Start Period"),value = 2014),


 numericInput("freq",strong("Frequency"),value=12),
 h4(strong("Holdout Sample Setting")),
 numericInput("Starth",strong("Start Period"),value = 2017),
 numericInput("Endh",strong("End Period"),value = 2017)
),



mainPanel(fluidRow(


 column(10,h3("Summary"),verbatimTextOutput("summary")),
 column(10,h3("Table"),dataTableOutput("table")),
 column(10,h3("Plot"),plotOutput("PlotG"))


)
```

```
    )


   )),


tabPanel("Naive Method",
   sidebarLayout(
    sidebarPanel(


     'Naive Method Does not Need any Parameter.'
    ),


    mainPanel(
     fluidRow(
      h3('Model Introduction'),
      p('Naive forecasts are the most cost effective forecasting model. Generally, it just
use the value of past to predict the near future',align='justify'),


      column(10,h4(strong('Forecasting Plot')),plotOutput("Plot0")),


      column(10,h4(strong('Accuracy Table')),tableOutput("accu0")),


      column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot00"))
     )
    )
   ))
,
```

```
navbarMenu("Smoothing Method",

          tabPanel("Simple Exponential Smoothing",

                  sidebarLayout(

                    sidebarPanel(



                      sliderInput("CI",label="Confience Interval",min=0.01,max=0.99,value=0.9)

                      ,

                      radioButtons("F2",h4(strong("Determinant or Optimal")),choices =
list("Optimal"=1,"Determinant"=2),selected = 1)

                      ,

                      conditionalPanel(condition="input.F2==2",sliderInput("AlphaS","Your Alpha
Value",min=0,max=1,value=0.2))

                    ),

                    mainPanel(

                      fluidRow(

                        h3('Model Introduction'),

                        p('Simple exponential smoothing. The simplest of the exponentially
smoothing methods is naturally called simple exponential smoothing (SES). (In some
books, it is called single exponential smoothing.) This method is suitable for forecasting
data with no trend or seasonal pattern.',align='justify'),



                        column(10,h4(strong('Forecasting Plot')),plotOutput("Plot1")),



                        column(10,h4(strong('Accuracy Table')),tableOutput("accu1")),

                        column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot2")),

                        column(10,h4(strong('Table')),tableOutput("out1"))

                      )

                    )

                  )),
```

```
tabPanel("Linear Exponential Smoothing",
    sidebarLayout(
     (sidebarPanel(



      sliderInput("CI1",label="Confience Interval",min=0.01,max=0.99,value=0.9)
      ,
      radioButtons("F4",h4(strong("Determinant or Optimal")),choices = list("Optimal"=1,"Determinant"=2),selected = 1)
      ,
      conditionalPanel(condition="input.F4==2",sliderInput("AlphaL","Your Alpha Value",min=0,max=1,value=0.2),sliderInput("BetaL","Your Beta Value",min = 0,max = 1,value = 0.2))
     )
     ),
     mainPanel(
      fluidRow(
       h3('Model Introduction'),
       p('Holt (1957) extended simple exponential smoothing to allow forecasting of data with a trend. This method involves a forecast equation and two smoothing equations (one for the level and one for the trend)',align='justify'),

       column(10,h4(strong('Forecasting Plot')),plotOutput("Plot3")),

       column(10,h4(strong('Accuracy Table')),tableOutput("accu2")),
       column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot4")),
       column(10,h4(strong('Accuracy Table')),tableOutput("out2"))
      )
     )
```

```
            )),
        tabPanel("Holt Winter Method",
            sidebarLayout(
             sidebarPanel(


              sliderInput("CI2",label="Confience Interval",min=0.01,max=0.99,value=0.9)
              ,
              radioButtons("F6",h4(strong("Determinant or Optimal")),choices =
list("Optimal"=1,"Determinant"=2),selected = 1),
              radioButtons("AM",h4(strong("Additive or
Multiplicative")),choices=list("Additive"=1,"Multiplicative"=2),selected=1)
              ,
              conditionalPanel(condition="input.F6==2",sliderInput("AlphaH","Your Alpha
Value",min=0,max=1,value=0.2),sliderInput("BetaH","Your Beta Value",min = 0,max =
1,value = 0.2),sliderInput("GammaH","Your Gamma Value",min=0,max=1,value=0.2))




             ),
             mainPanel(
              fluidRow(
               h3('Model Introduction'),
               p('Holt (1957) and Winters (1960) extended Holt method to capture
seasonality. The Holt Winters seasonal method comprises the forecast equation and three
smoothing equations, one for the level, one for trend, and one for the seasonal
component',align='Justify'),
               column(10,h4(strong('Forecasting Plot')),plotOutput("Plot5")),


               column(10,h4(strong('Accuracy Table')),tableOutput("accu3")),
               column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot6")),
               column(10,h4(strong('Table')),tableOutput("out3"))
```

```
              )
             )
            ))),
 tabPanel("Regression Method ",
      sidebarLayout(
       sidebarPanel(
        radioButtons("Trans",h4(strong("Data Transformation")),choices =
list("Normal"=1,"Logarithm"=2,"Powered"=3),selected = 1),


        sliderInput("CI3","Confidence Interval",min = 0.01,max = 0.99,value = 0.9)


       ),
       mainPanel(
        fluidRow(
         h3('Model Introduction'),
         p('In statistical modeling, regression analysis is a statistical process for estimating
the relationships among variables. It includes many techniques for modeling and analyzing
several variables, when the focus is on the relationship between a dependent variable and
one or more independent variables (or predictors).',align='Justify'),
         column(10,h4(strong('Forecasting Plot')),plotOutput("Plot7")),


         column(10,h4(strong('Accuracy Table')),tableOutput("accu4")),
         column(10,h4(strong('Accuracy Bar Plot')),plotOutput("plot8")),
         column(10,h4(strong('Accuracy Table')),tableOutput("out4"))
        )
       )
      )),


 # tabPanel("Neural Network",
```

```
#        sidebarLayout(
#          sidebarPanel(
#
#
#            sliderInput("CI4",label="Confience Interval",min=0.01,max=0.99,value=0.9)
#
#          ),
#
#          mainPanel(
#            fluidRow(
#              h3('Model Introduction'),
#              p('A neural network usually involves a large number of processors operating in parallel and arranged in tiers. The first tier receives the raw input information -- analogous to optic nerves in human visual processing. Each successive tier receives the output from the tier preceding it, rather than from the raw input -- in the same way neurons further from the optic nerve receive signals from those closer to it. The last tier produces the output of the system.',align='Justify'),
#              column(10,h4(strong('Forecasting Plot')),plotOutput("Plot9")),
#              column(10,h4(strong('Accuracy Table')),tableOutput("accu5")),
#              column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot10"))
#            )
#          )
#        )),
tabPanel("ARIMA Method",
         sidebarLayout(
           sidebarPanel(


             sliderInput("CI5",label="Confience Interval",min=0.01,max=0.99,value=0.9)
```

```
        ),


        mainPanel(
          fluidRow(
            h3('Model Introduction'),
            p('In statistics and econometrics, and in particular in time series analysis, an autoregressive integrated moving average (ARIMA) model is a generalization of an autoregressive moving average (ARMA) model. These models are fitted to time series data either to better understand the data or to predict future points in the series (forecasting). They are applied in some cases where data show evidence of non-stationarity, where an initial differencing step (corresponding to the "integrated" part of the model) can be applied to reduce the non-stationarity.',align='Justify'),


            column(10,h4(strong('Forecasting Plot')),plotOutput("Plot11")),
            column(10,h4(strong('Accuracy Table')),tableOutput("accu6")),
            column(10,h4(strong('Accuracy Bar Plot')),plotOutput("Plot12")),
            column(10,h4(strong(' Table')),tableOutput("out6"))
          )
        )
      )),
 tabPanel("Read Me",
      h3(strong("Introduction")),
      br(),


      h3(strong("Author")),
      p(""),
      p(""),
      HTML('<Left><img src="rsm.png" width="330" height="130"></Left>'),
```

```
        p(""),

        h5("Linkedin"),

        a(h5(""),href=""),

        p(strong('If you are interested in the orginal code of this app, you can find it on my Github page. Link is presented below.')),

        a(h5(""),href="")

  )


)

)
```