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Code: **CSE3020**
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LAB 8- SHINY APPLICATION

1. Create a simple app that displays text within the title panel, sidebar panel and main
   panel, where the sidebar panel is located on the right.

Code:

```
library(shiny)
ui = fluidPage(titlePanel("SHINY APP- Title"), mainPanel("This is the main panel"),
        sidebarPanel("This is the sidebar panel"))
server = function(input,output)
{
  output$hist<-renderPlot({hist(rnorm(input$n))})
}
shinyApp(ui=ui,server=server)
```

Screenshot:
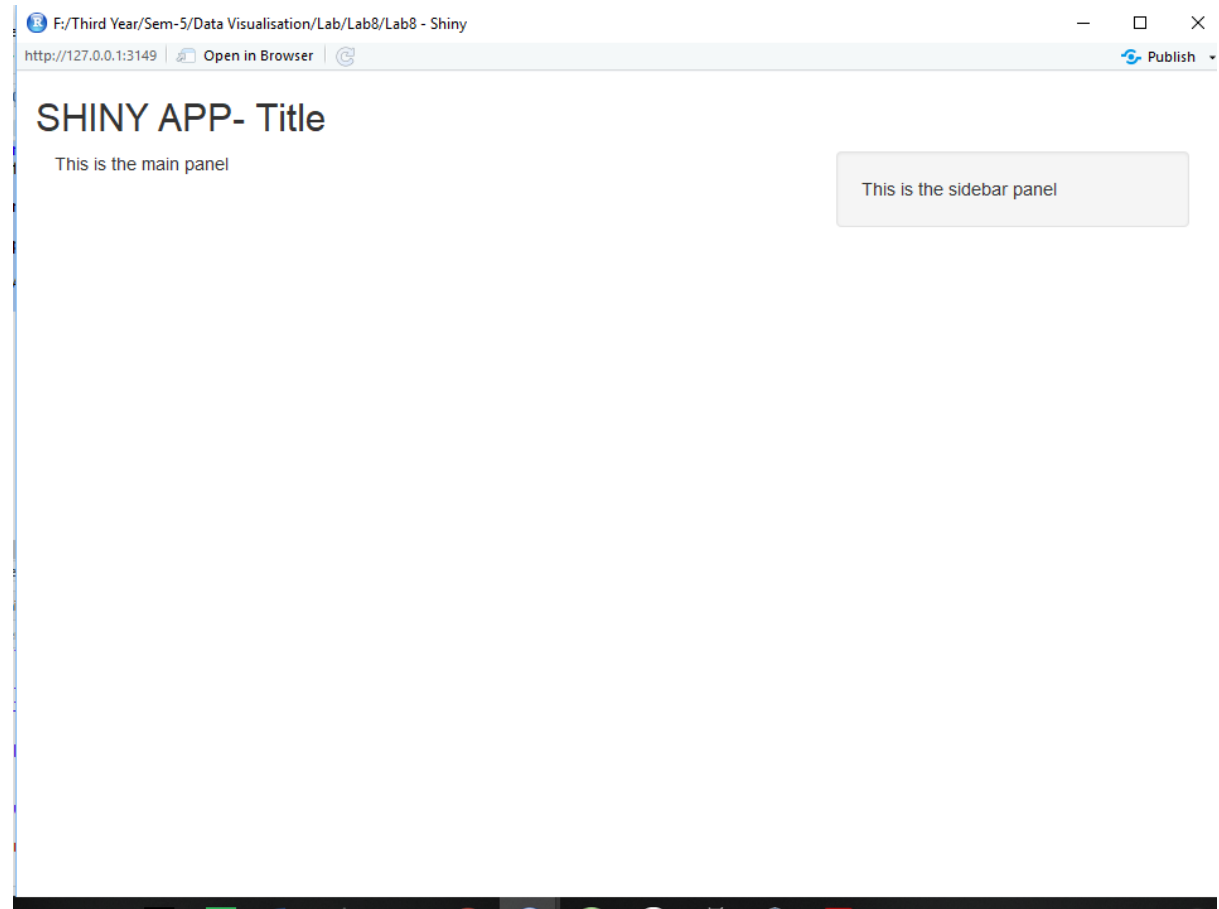
2. Extend App 1 by displaying a box plot from random generating normal distributed data in the mainpanel. Number of datapoints can be chosen apriori by the user in the sidebar panel(located at the left).

Code:

```
library(shiny)
ui = fluidPage(titlePanel("SHINY APP- Title"),
sidebarLayout(position="right",sidebarPanel(numericInput(inputId="n",
                        "Samplesize",value=15)), mainPanel(plotOutput(outputId = "box"))))
server = function(input,output){
 output$box=renderPlot({
   boxplot(rnorm(input$n))
 })

}

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

Screenshot:
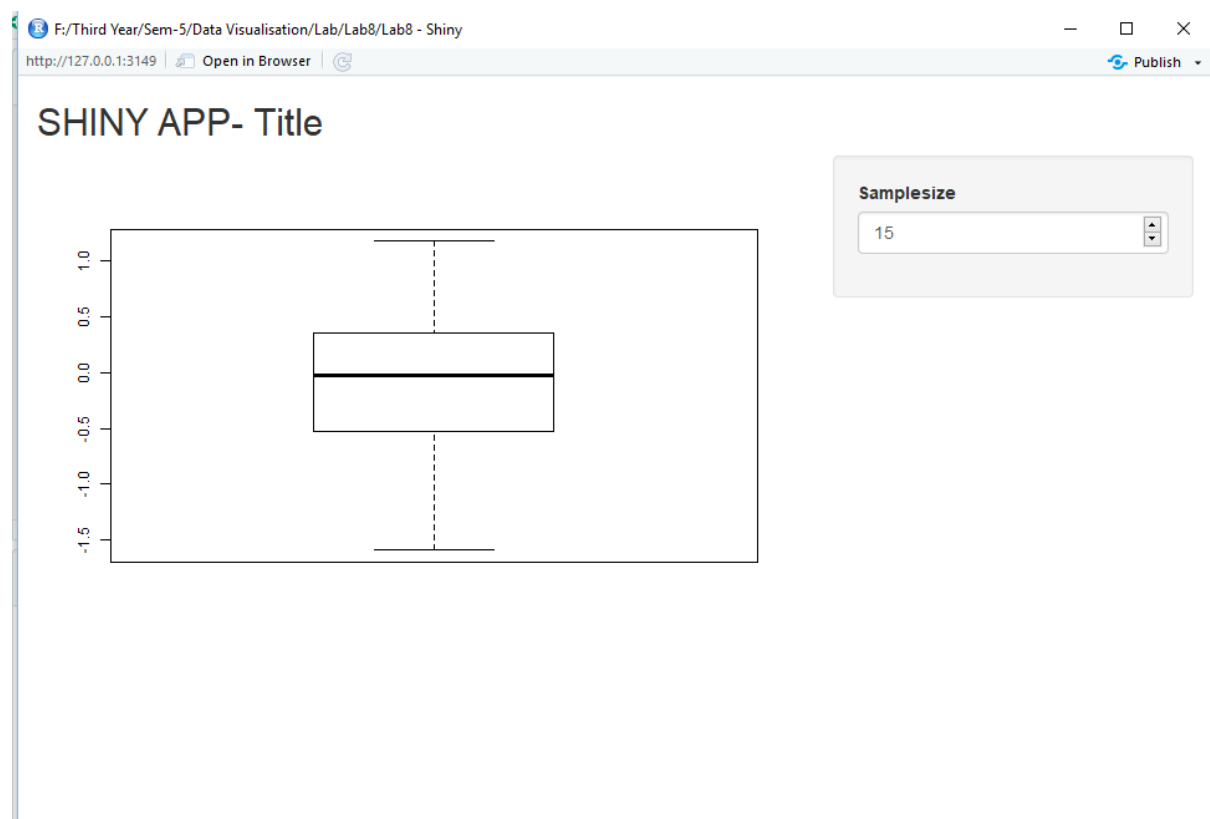
3. Extend App 2 by adding the possibility to choose your own title within a text input and color of the box plot with a radio button (in the sidebar panel). Additionally, a submit button needs to be present that only updates the main panel with a click.

Code:

```
library(shiny)
ui = fluidPage(titlePanel("SHINY APP- title"),
          sidebarLayout(sidebarPanel(numericInput(inputId = "n",
            "Sample size",value = 15),textInput(inputId = "title","Title of the plot",
              "title"),radioButtons(inputId =
"color","Choose",list("Red","Green"),"Blue"),submitButton("Apply
Changes")),mainPanel(plotOutput(outputId = "box"))))

server = function(input,output){
 output$box=renderPlot({
   boxplot(rnorm(input$n),col=input$color,main=input$title)
 })
}
shinyApp(ui=ui,server=server)
```
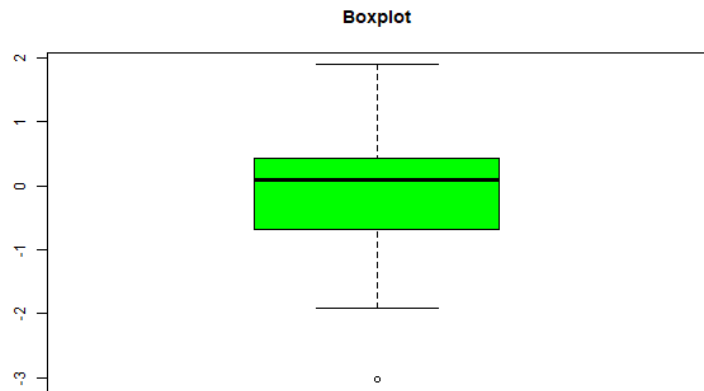
Screenshot:

Default->
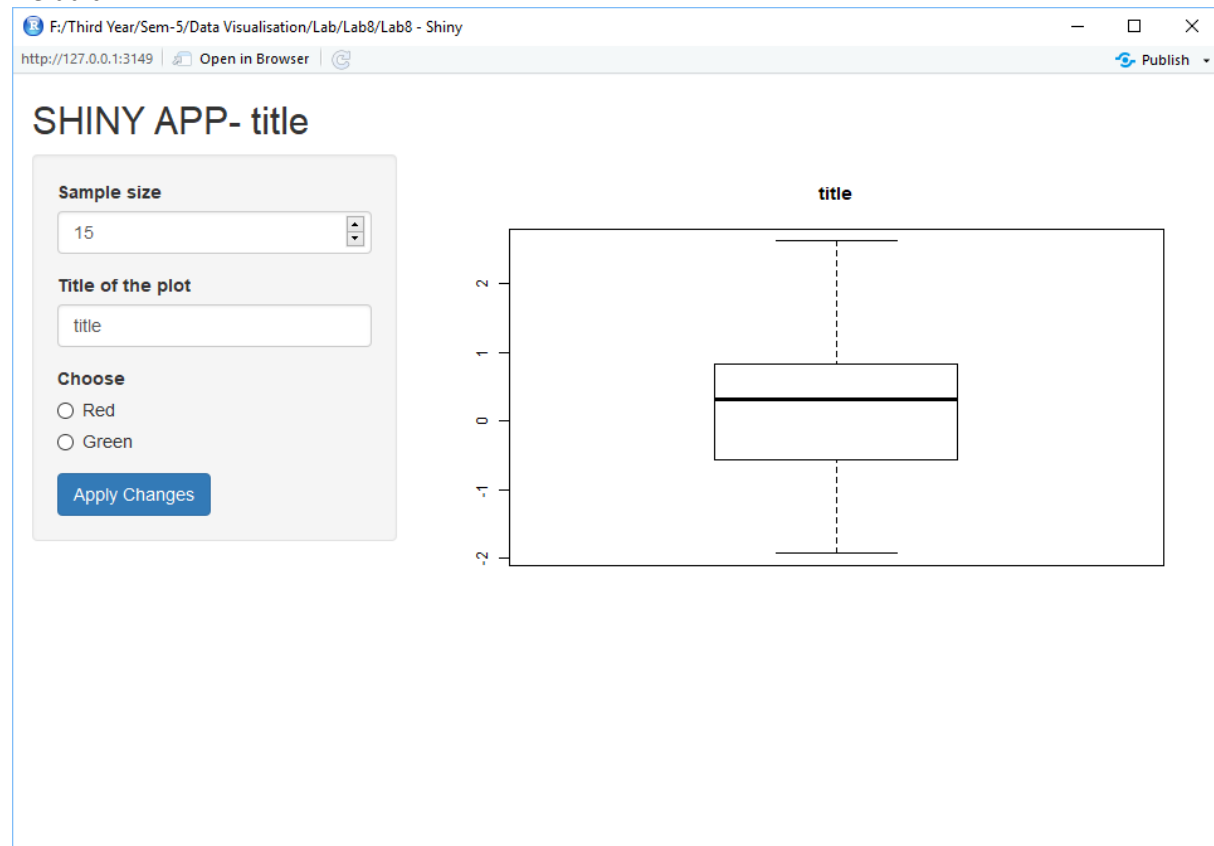
After applying some changes:

4. Analyze the iris dataset by making a box plot of every numeric variable (i.e., Sepal.Length,Sepal.Width, Petal.Length, Petal.Width) per specie. Summarize these box plots into one figure. Different slider inputs need to be used for choosing your own subset of data.

Code:

```
library(shiny)
library(ggplot2)
library(gridExtra)
View(iris)
summary(iris)

ui = fluidPage(titlePanel("IRIS Dataset- Title"),sidebarLayout(sidebarPanel(sliderInput(inputId =
"sepalwidth","Sepal.Width",min=2,max = 5,value=4,step=0.1),
                                        sliderInput(inputId =
"sepallength","Sepal.Length",min=2,max = 5,value=4,step=0.1),
                                        sliderInput(inputId =
"petalwidth","Petal.Width",min=0.1,max = 3,value=1.5,step=0.3),
                                        sliderInput(inputId =
"petallength","Petal.Length",min=1,max = 7,value=c(1.5,5.5)),animate=animationOptions(interval =
2600,loop = TRUE)),
        mainPanel(plotOutput(outputId = "box")))
        )

server = function(input, output){
 output$box=renderPlot({
  sepallen=subset(iris,Sepal.Length>=4.3 & Sepal.Length <input$sepallength, select =
c(Sepal.Length,Species))
  sepalwid= subset(iris,Sepal.Width>=2 & Sepal.Width <input$sepalwidth, select =
c(Sepal.Width,Species))
  petallen=subset(iris,Petal.Length>=input$petallength[1] & Petal.Length <input$petallength[2],
select = c(Petal.Length,Species))
  petalwid=subset(iris,Petal.Width>=0.1 & Petal.Width <input$petalwidth, select =
c(Petal.Width,Species))
  p1 = ggplot(sepallen,aes(x=Species,y=Sepal.Length))+geom_boxplot()
  p2=ggplot(sepalwid,aes(x=Species,y=Sepal.Width))+geom_boxplot()
  p3=ggplot(petallen,aes(x=Species,y=Petal.Length))+geom_boxplot()
  p4=ggplot(petalwid,aes(x=Species,y=Petal.Width))+geom_boxplot()
  grid.arrange(p1,p2,p3,p4,nrow=1) #arranging all the plots in a single row
 })
}
shinyApp(ui=ui,server=server)
```
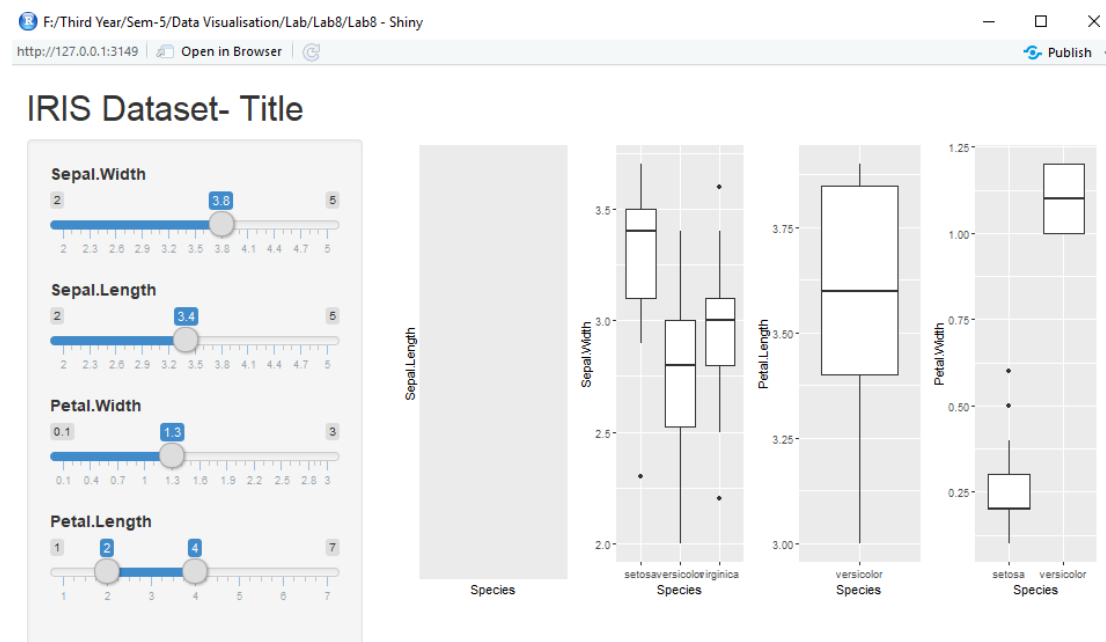
Screenshots:
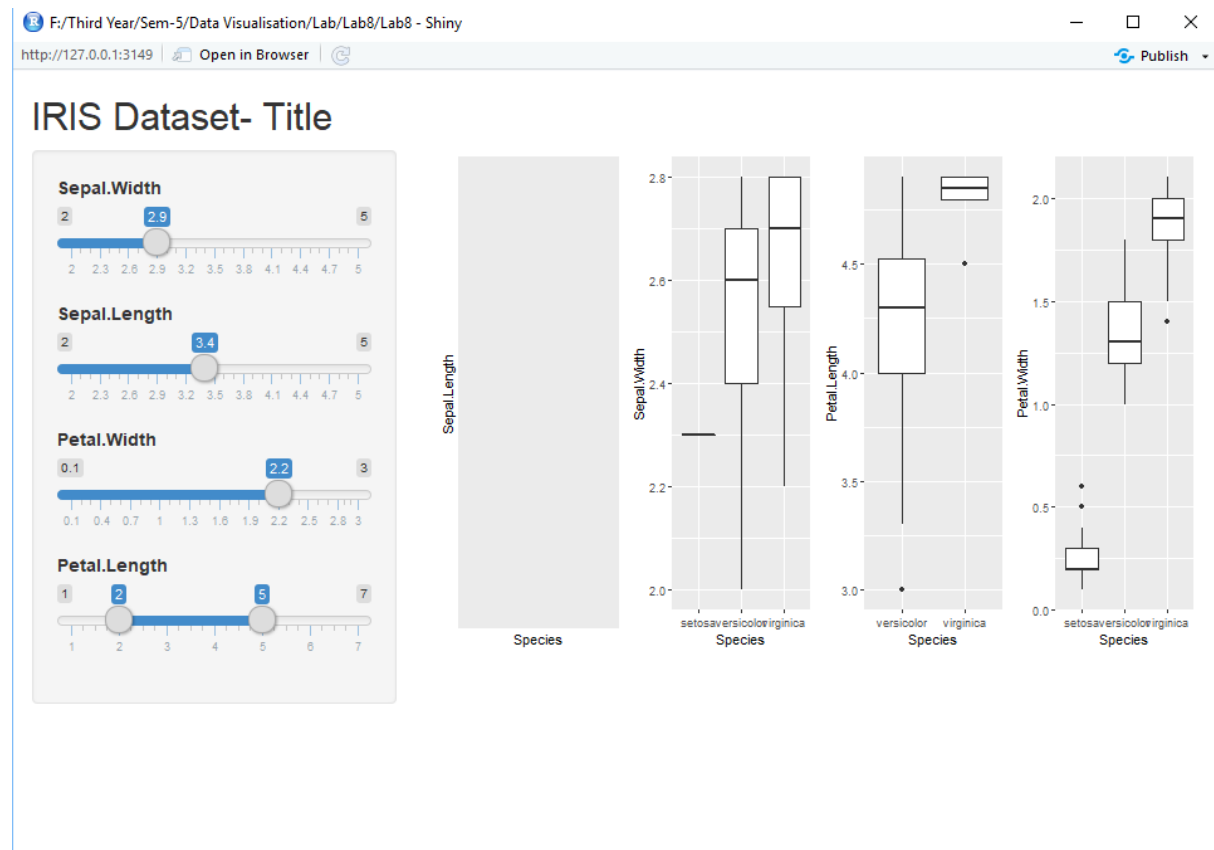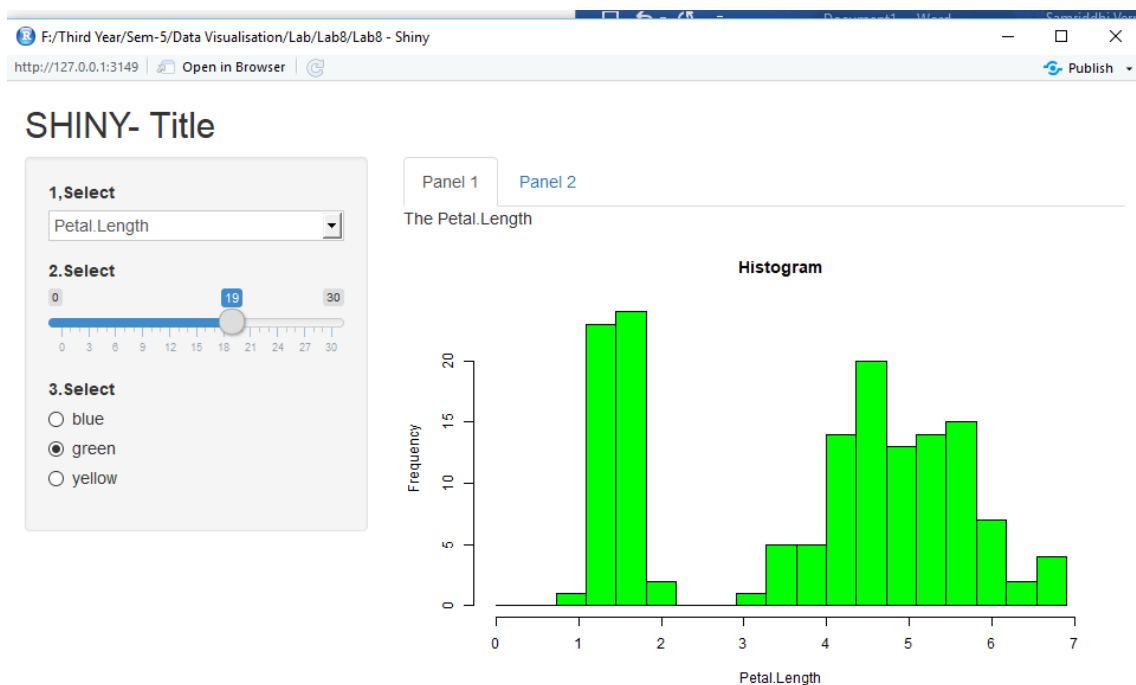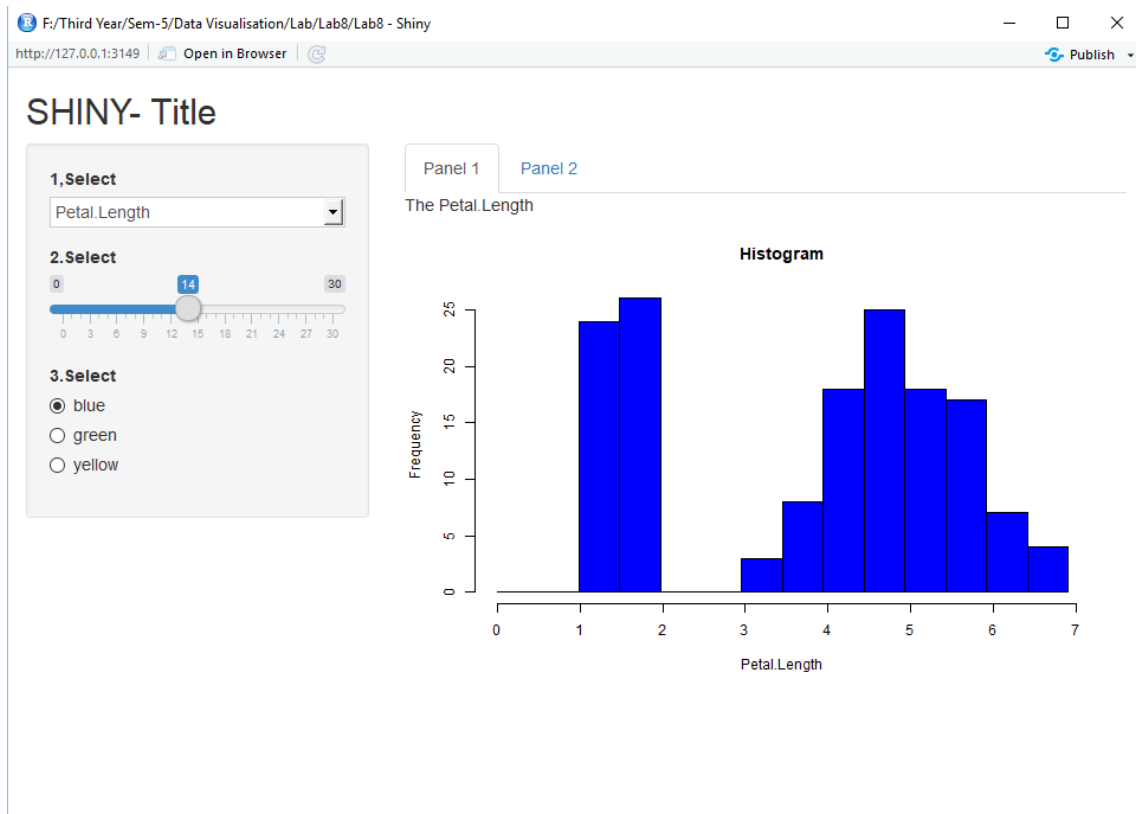

After some changes in sliders:

5. Analyze the iris dataset by creating two tabsets in the main panel. The first one contains a histogram per chosen variable, while the second one displays a summary output of all variables. Variable selection is obtained by a select input.

Code:

```r
library(shiny)
ui = fluidPage(titlePanel("SHINY- Title"),
        sidebarLayout(
          sidebarPanel(
            selectInput(inputId = "var","1,Select",choices = c(
              "Sepal.Length"=1, "Sepal.Width"=2,"Petal.Length"=3,
              "Petal.Width"=4),selected = 3,selectize = FALSE),
            sliderInput(inputId = "bin","2.Select",min=0,max = 30,value=15),
            radioButtons(inputId = "colour",
                    label = "3.Select",choices = c(
                      "blue","green","yellow"),selected = "blue")
          ),
        mainPanel(
         tabsetPanel(type = "tab",
                tabPanel("Panel 1",
                  textOutput(outputId = "text"),
                  plotOutput(outputId = "hist")),
                tabPanel("Panel 2",
                    tableOutput(outputId = "summary")))
        ))
    )
server= function(input,output){
 output$text= renderText({
  c= as.numeric(input$var)
  paste("The",names(iris[c]))})
 output$hist=renderPlot({
  c=as.numeric(input$var)
  hist(iris[,c],col = input$colour,
     xlim=c(0,max(iris[,c])),
     main = "Histogram", breaks =
       seq(0,max(iris[,c]),l=input$bin+1),
     xlab = names(iris[c]))})
 output$summary= renderTable({
  summary(iris)})
}
shinyApp(ui=ui,server=server)
```

Screenshot:

SHINY- Title

1,Select

Petal.Length

2.Select

0   19   30

0   3   6   9   12   15   18   21   24   27   30

3.Select

○ blue
◉ green
○ yellow

Var1	Var2	Freq
	Sepal.Length	Min. :4.300
	Sepal.Length	1st Qu.:5.100
	Sepal.Length	Median :5.800
	Sepal.Length	Mean :5.843
	Sepal.Length	3rd Qu.:6.400
	Sepal.Length	Max. :7.900
	Sepal.Width	Min. :2.000
	Sepal.Width	1st Qu.:2.800
	Sepal.Width	Median :3.000
	Sepal.Width	Mean :3.057
	Sepal.Width	3rd Qu.:3.300
	Sepal.Width	Max. :4.400
	Petal.Length	Min. :1.000
	Petal.Length	1st Qu.:1.600
	Petal.Length	Median :4.350
	Petal.Length	Mean :3.758
	Petal.Length	3rd Qu.:5.100
	Petal.Length	Max. :6.900

SHINY- Title

1,Select

Sepal.Width

2.Select

0   19   30

0   3   6   9 12 15 18 21 24 27 30

3.Select
○ blue
○ green
◉ yellow

The Sepal.Width

Histogram