Shiny Dashboard of Temperature in Australian Cities.

I created Shiny dashboard using R studio by pre-processing and aggregating the data required for the dashboard.
Dashboard consists of interactive graphs and map of cities of Australia and their respective changes in Temperature
over a period of 2 Decades. By this dashboard, one can analyse the temperature of each city and their impacts for
climate change.

Link for the dashboard: **https://niranjanpm.shinyapps.io/Project/**

Code:

```
# load the required packages

library(shiny)

library(shinydashboard)

library(ggplot2)

library(dplyr)

library(leaflet)


data <- read.csv('temperature.csv',stringsAsFactors = F,header=T)

df<-select(data, -State)

data$AvgTemperature[data$AvgTemperature == -99] <- NA

tapply(data$AvgTemperature, data$City, median, na.rm=TRUE)

df$Month <-factor(df$Month, levels = c("Jan", "Feb", "Mar", "Apr", "May", "Jun","Jul", "Aug", "Sep",
        "Oct", "Nov", "Dec"))


agg<- df %>% group_by(City,Year) %>% summarise_at(vars(AvgTemperature), list(name = mean))

aa <- agg %>% filter(City=="Auckland")

Year <- aa$Year

name <- aa$name

aaa <- data.frame(Year,name)

avg <- agg %>% group_by(City) %>% summarise(value=mean(name))
```

```
#Dashboard header carrying the title of the dashboard
header <- dashboardHeader(title = "Temperature Dashboard")

#Sidebar content of the dashboard
sidebar <- dashboardSidebar(
   selectInput(
      inputId = "city",
      label = "City:",
      choices = list("Auckland"=1,"Brisbane"=2,"Canberra"=3,"Melbourne"=4,"Perth"=5,"Sydney"=6),
      selectize = FALSE),
   sidebarMenu(
      selectInput(
         inputId = "year",
         label = "Year:",
         choices =
        list("1995"=1995,"2000"=2000,"2006"=2006,"2010"=2010,"2015"=2015,"2019"=2019),
         selectize = FALSE)
   )
)


frow1 <- fluidRow(
   splitLayout(
      valueBoxOutput("value1",width = 10),
      valueBoxOutput("value2",width = 10),
      valueBoxOutput("city1",width = 10),
      valueBoxOutput("city",width = 10)
   )
)
```

```
frow3 <- fluidRow(
   column(3, valueBoxOutput("Display",width = 30))
)



frow2 <- fluidRow(
   splitLayout(
      box(title = "Overall Average Temperature of Cities", plotlyOutput("line"))
   )
   ,box(
      title = "Yearly Temperature of City",plotlyOutput("bar")
   )
   ,box(
      title = "Average Temperature of City across Years"
      ,plotlyOutput("bar1")
   ),leafletOutput("map",width = 600)
)

# combine the two fluid rows to make the body
body <- dashboardBody(frow1, frow2, frow3)

#completing the ui part with dashboardPage
ui <- dashboardPage(title = 'This is my Page title', header, sidebar, body, skin='red')

# create the server functions for the dashboard
server <- function(input, output,session) {

   maxtemp <- df %>% summarise(AvgTemperature = max(AvgTemperature))
   #maxtemp <- round((maxtemp-32)/1.8,2)
   mintemp <- df %>% summarise(AvgTemperature = min(AvgTemperature))
```

```
#mintemp <- round((mintemp-32)/1.8,2)


a <- df %>% group_by(df$City) %>% summarise(AvgTemperature=max(AvgTemperature))

b <- df %>% group_by(df$City) %>% summarise(AvgTemperature=min(AvgTemperature))

c <- df %>% group_by(df$Month) %>% summarise(AvgTemperature=min(AvgTemperature))

d <- df %>% group_by(df$City,df$Month) %>%
     summarise(AvgTemperature=max(AvgTemperature))


df_Auckland <- subset(df, df$City == "Auckland")

df_brisbane <- subset(df, df$City == "Brisbane")

df_Canberra <- subset(df, df$City == "Canberra")

df_Melbourne <- subset(df, df$City == "Melbourne")

df_Perth <- subset(df, df$City == "Perth")

df_Sydney <- subset(df, df$City == "Sydney")


output$value1 <- renderValueBox({
   valueBox(
      paste0(mintemp), "Avg Min Temp of Aus region in Fahreinheit",
      color = "blue")
})


output$city <- renderValueBox({


   if(input$city == 1){
      maxcity <- a[1,2]
      tt <- "Auckland"
   }
   else if(input$city ==2){
      maxcity <- a[2,2]
      tt <- "Brisbane"
   }else if(input$city ==3){
```

```
    maxcity <- a[3,2]
    tt <- "Canberra"
  }else if(input$city ==4){
    maxcity <- a[4,2]
    tt <- "Melbourne"
  }else if(input$city ==5){
    maxcity <- a[5,2]
    tt <- "Perth"
  }else if(input$city ==6){
    maxcity <- a[6,2]
    tt <- "Sydney"
  }
  valueBox(paste0(tt,":",maxcity),"Avg Max Temp in Fahrenheit", color = "red")
})


output$city1 <- renderValueBox({

  if(input$city == 1){
    mincity <- b[1,2]
    tt <- "Auckland"
  }
  else if(input$city ==2){
    mincity <- b[2,2]
    tt <- "Brisbane"
  }else if(input$city ==3){
    mincity <- b[3,2]
    tt <- "Canberra"
  }else if(input$city ==4){
    mincity <- b[4,2]
    tt <- "Melbourne"
```

```
  }else if(input$city ==5){
    mincity <- b[5,2]
    tt <- "Perth"
  }else if(input$city ==6){
    mincity <- b[6,2]
    tt <- "Sydney"
  }
  valueBox(paste0(tt,":",mincity),"Avg Min Temp in Fahrenheit", color = "blue")
})


output$value2 <- renderValueBox({
  valueBox(
    paste0(maxtemp), "Avg Max Temp of Aus region in Fahrenheit",
    color = "red")
})



output$Display <- renderValueBox({
  valueBox(paste0("Alert"),"Average Temperature increased in the year 2020", color =
    "red",icon("arrow-circle-up", lib = "glyphicon"))
  })


output$line <- renderPlotly({

  p1 <- ggplot(data = avg, aes(x=City,y=value))
  p1+geom_bar(stat = "identity",colour="white",fill="chocolate")+labs(title = "From years 1995 to
    2020 ")
})
```

```
output$bar <- renderPlotly({
   if(input$city == 1){
      plotcity <- df_Auckland
      tt <- "Auckland"
   }
   else if(input$city ==2){
      plotcity <- df_brisbane
      tt <- "Brisbane"

   }else if(input$city ==3){
      plotcity <- df_Canberra
      tt <- "Canberra"

   }else if(input$city ==4){
      plotcity <- df_Melbourne
      tt <- "Melbourne"

   }else if(input$city ==5){
      plotcity <- df_Perth
      tt <- "Perth"

   }else if(input$city ==6){
      plotcity <- df_Sydney
      tt <- "Sydney"
   }
   print(tt)
   aa <- agg %>% filter(City==tt)
   Year <- aa$Year
   name <- aa$name
```

```
    cityy <- data.frame(Year,name)

    ggplot(data = cityy,aes(x=cityy$Year, y=cityy$name)) +
      geom_line() + ylab("Temperature") +
      xlab("Years") + ggtitle(paste("Temperature of :",tt)) + labs(fill = "Region")
})

output$map <- renderLeaflet({

    df_Auckland <- subset(df, df$City == "Auckland")
    df_brisbane <- subset(df, df$City == "Brisbane")
    df_Canberra <- subset(df, df$City == "Canberra")
    df_Melbourne <- subset(df, df$City == "Melbourne")
    df_Perth <- subset(df, df$City == "Perth")
    df_Sydney <- subset(df, df$City == "Sydney")

     df_Auckland %>% group_by(df_Auckland$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))
    df_brisbane %>% group_by(df_brisbane$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))
    df_Canberra %>% group_by(df_Canberra$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))
    df_Melbourne %>% group_by(df_Melbourne$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))
    df_Perth %>% group_by(df_Perth$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))
    df_Sydney %>% group_by(df_Sydney$Year) %>%
       summarise(AvgTemperature=mean(AvgTemperature))

    if(input$city == 1){
      long <- 174.768
      latt <- -36.84
      content <- paste("average Temperature Increased by 0.9 Fahrenheit in 2 decades")
```

```
}
else if(input$city ==2){
   long <- 153.02
   latt <- -27.46
   content <- paste("Average Temperature Increased by 2.1 Fahrenheit in 2 decades")

}else if(input$city ==3){
   long <- 149.13
   latt <- -35.28
   content <- paste("Average Temperature Increased by 2.4 Fahrenheit in 2 decades")

}else if(input$city ==4){
   long <- 144.768
   latt <- -37.81
   content <- paste("Average Temperature Increased by 1.7 Fahrenheit in 2 decades")

}else if(input$city ==5){
   long <- 115.86
   latt <- -31.95
   content <- paste("Average Temperature Increased by 1.1 Fahrenheit in 2 decades")

}else if(input$city ==6){
   long <- 151.20
   latt <- -33.86
   content <- paste("Average Temperature Increased by 2.9 Fahrenheit in 2 decades")
}



leaflet() %>%
   addTiles() %>% setView(lng=133.77, lat=-25.27, zoom = 4) %>% addPopups(long, latt, content,
```

```
            options = popupOptions(closeButton = FALSE)
        )
})
```

```
output$bar1 <- renderPlotly({

    if(input$city == 1){
        plotcity <- df_Auckland
        tt <- "Auckland"
    }
    else if(input$city ==2){
        plotcity <- df_brisbane
        tt <- "Brisbane"

    }else if(input$city ==3){
        plotcity <- df_Canberra
        tt <- "Canberra"

    }else if(input$city ==4){
        plotcity <- df_Melbourne
        tt <- "Melbourne"

    }else if(input$city ==5){
        plotcity <- df_Perth
        tt <- "Perth"
```

```
}else if(input$city ==6){
   plotcity <- df_Sydney
   tt <- "Sydney"
}

if(input$year == 1995){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))

}
else if(input$year ==2000){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))


}else if(input$year ==2006){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))


}else if(input$year ==2010){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))


}else if(input$year ==2015){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))


}else if(input$year ==2019){
   plotyear <- df %>% filter((City == tt) & (Year == input$year))

}

cc <-paste(" Temperature of:",tt)
```

```
      yy <- paste(" In Year:",input$year)

      ggplot(data = plotyear,aes(x=plotyear$Month, y=plotyear$AvgTemperature)) +
        geom_bar(position = "dodge", stat = "identity") + ylab("Temperature") +
        xlab("Years") + ggtitle(paste0(cc,yy)) + labs(fill = "Region")
 })



}

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