CSE – 3020

Data Visualization

Lab DA – 6

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VIT®

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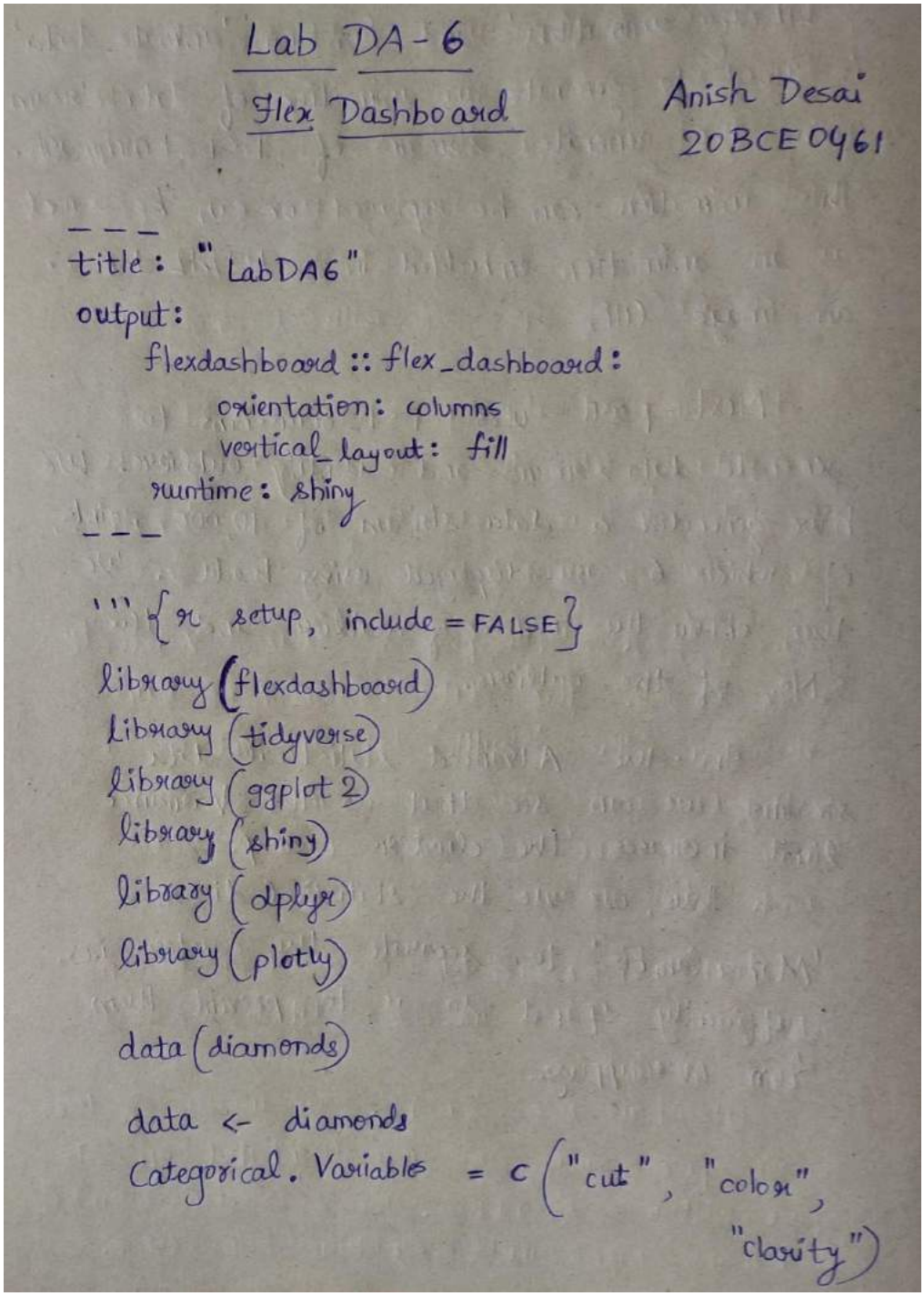
Question :

Create a dashboard using the diamonds dataset. Dashboard should contain at least 5 pages. At least one of the pages should contain some interactivity. Write proper interpretation.

Code:



Lab DA-6

Flex Dashboard

Anish Desai
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```
---
title: "LabDA6"
output:
    flexdashboard::flex_dashboard:
        orientation: columns
        vertical_layout: fill
    runtime: shiny
---

```{r setup, include=FALSE}
library(flexdashboard)
Library(tidyverse)
library(ggplot2)
library(shiny)
library(dplyr)
library(plotly)

data(diamonds)

data <- diamonds
Categorical.Variables = c("cut", "color",
                          "clarity")
```
```

Numeric. Variables = c("carat", "depth", "table",
"price", "x", "y", "z")

'''

Page 1

===

Column {data-width = 650}

Chart 1.1

```{r}
diamonds %>%
  ggplot(aes(x=cut, y=mean(price), fill=cut)) +
  geom_bar(stat="identity") +
  ggtitle("Basic Bar Plot") +
  xlab("CUT") +
  ylab("price") +
  theme_bw() +
  theme(axis.text.x = element_text(face='bold',
                                   size=10),
        axis.text.y = element_text(face='bold',
                                   size=10))
```

Page 2
===

Column {data-width = 450}

Chart 2.1

```{r}
Stacked Bar Plot Code
```

Chart 2.2

```{r}
Grouped Bar Plot Code
```

Page 3
===

Column {data-width = 450}

Chart 3.1

```{r}
Tiles Plot Code
```

Column {data-width = 550}

Chart 3.2

```{r}
Ridge Plot Code
```

Chart 3.3

```{r}
Violin Plot Code
```

Page 4

===

Column {.sidebar data-width = 200}

```{r}
selectInput("categorical_variable",
            label = "Select Categorical Variable :",
            choices = Categorical.Variables)
selectInput("numeric_variable",
            label = "Select Numeric Variable :",
            choices = Numeric.Variables)
```

```
Column {data-width=400}
-----------------------

### Chart 4.1

'''{r}
renderPlotly({
    plot_ly(data,
            x = ~data[[input$numeric_variable]],
            color = ~data[[input$categorical_variable]],
            colors = "Paired",
            type = "box") %>%
      layout((title = ""),
             xaxis = list(title = "",
                          zeroline = FALSE))
})
'''
```

```
Column {data-width = 400}
-----------------------

### Chart 4.2

```{r}
renderPlotly ({
    data %>%
      count (var = data [[input $ categorical_variable]],
             name = "count") %>%
    plot_ly (x = ~var, y = ~count,
             type = "bar",
             marker = list (color = '#008ae6',
             line = list(color = '#008ae6',
                         width = 2)),
             hoverinfo = "x+y") %>%
    add_text (text = ~paste0(" (",
                  scales :: percent (count/sum(count)), ")"),
              textposition = "bottom",
              textfont = list (size = 12, color = "white"),
              showlegend = FALSE) %>%
    layout(xaxis = list(title = " "), yaxis = list
                                        (title = " "))
})
```
```

Chart 4.3

```{r}
renderPlotly ({
    plot_ly (x = data [[ input $ numeric_ variable]],
             type = "histogram",
             marker = list(color = ("# 008ae6"),
             line = list (color = "darkgray",
                          width = 1)))
})
```

Page 5 {data-icon = "fa-hashtag"}
===
Column {.tabset}

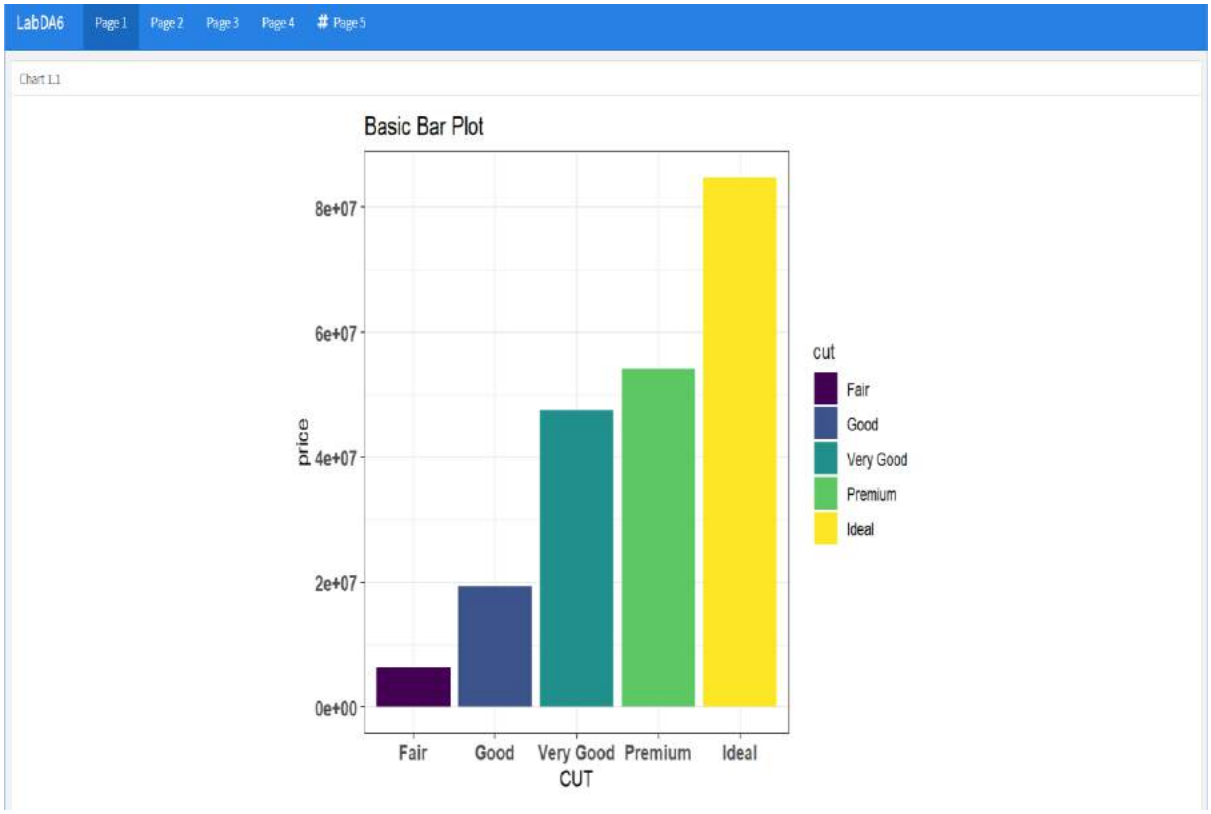
Chart 5.1

```{r}
  Histogram Plot Code
```

Chart 5.2

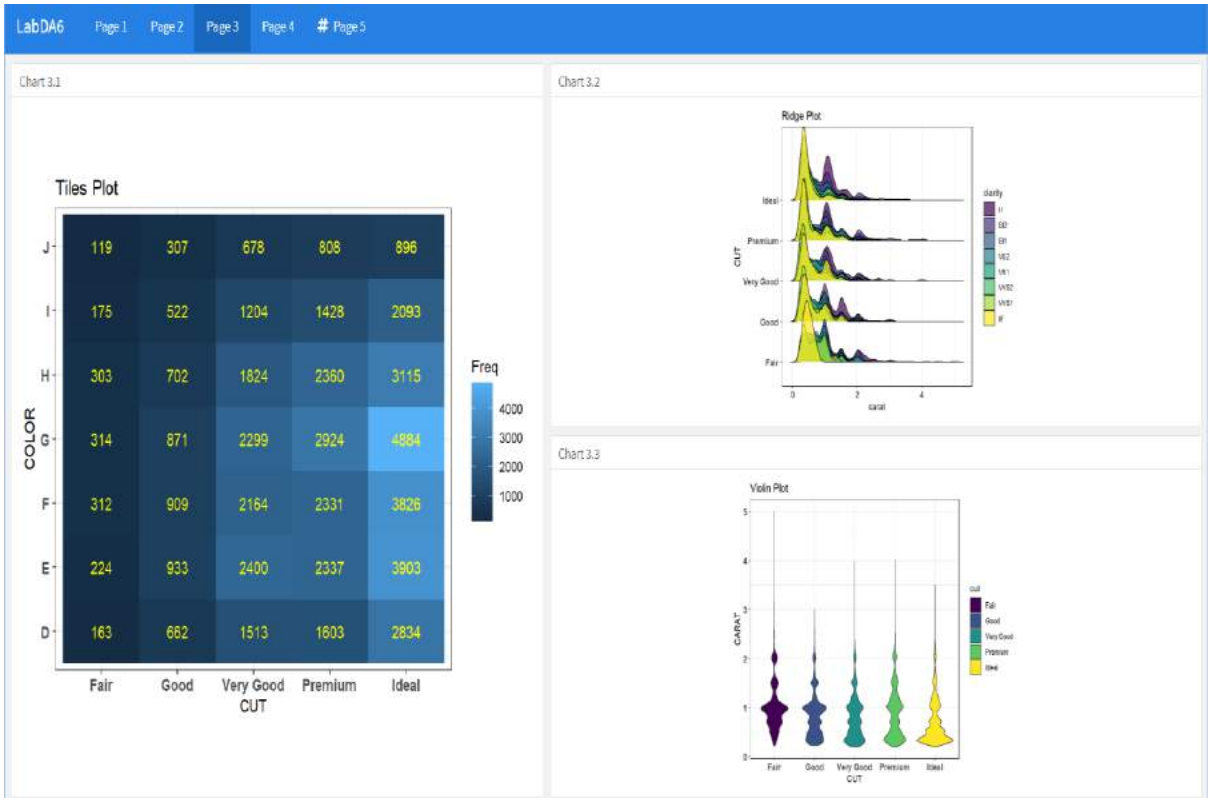
```{r}
  Stacked Histogram Code
```

Output:

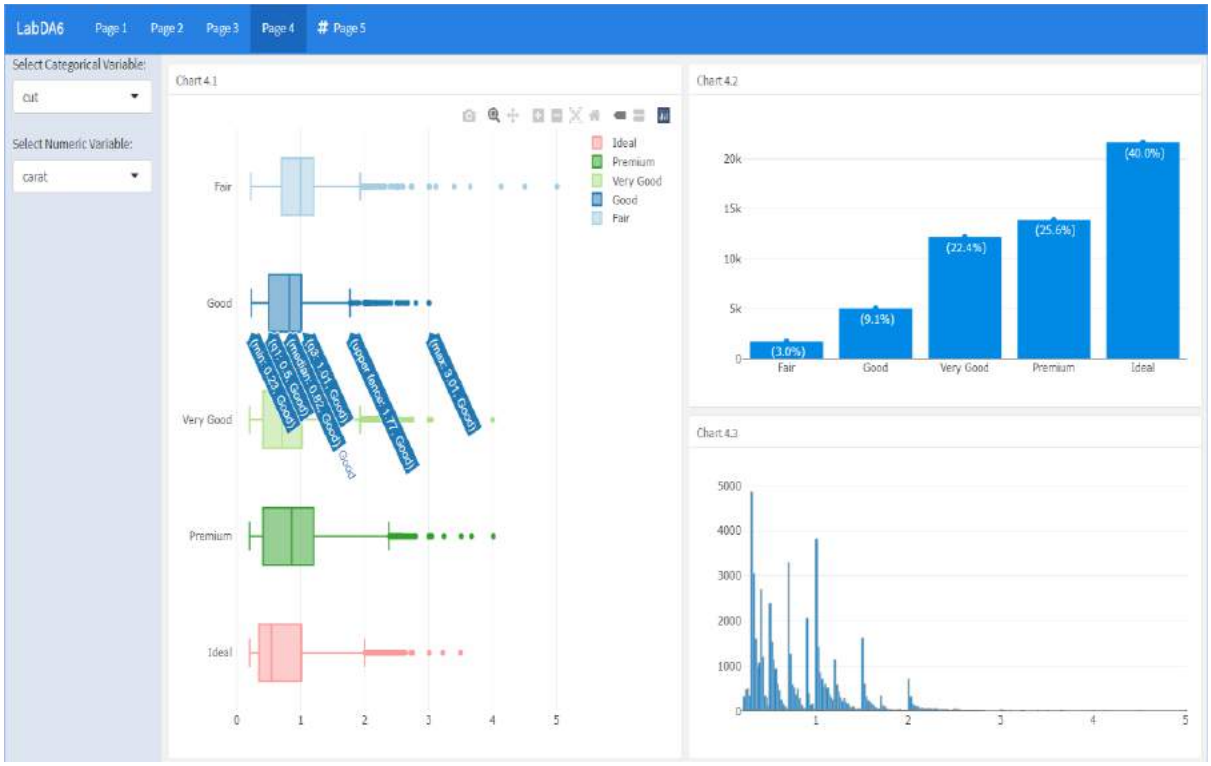


Page 1 Chart 1.1

Page 2 Charts 2.1 and 2.2



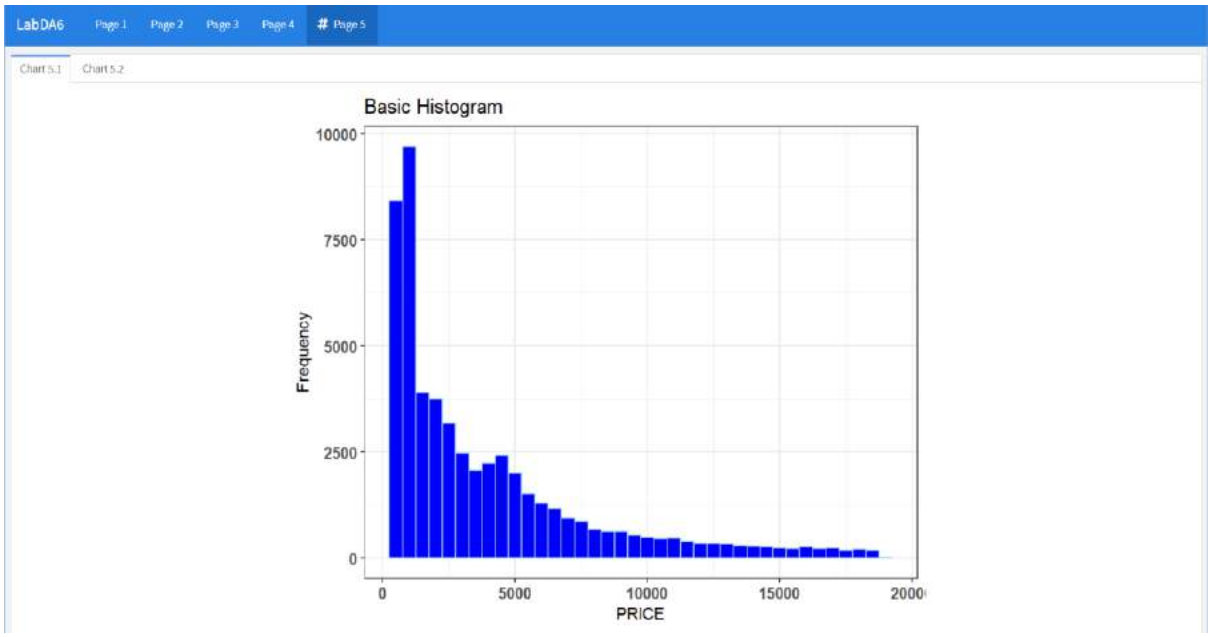
Page 3 Charts 3.1, 3.2 and 3.3

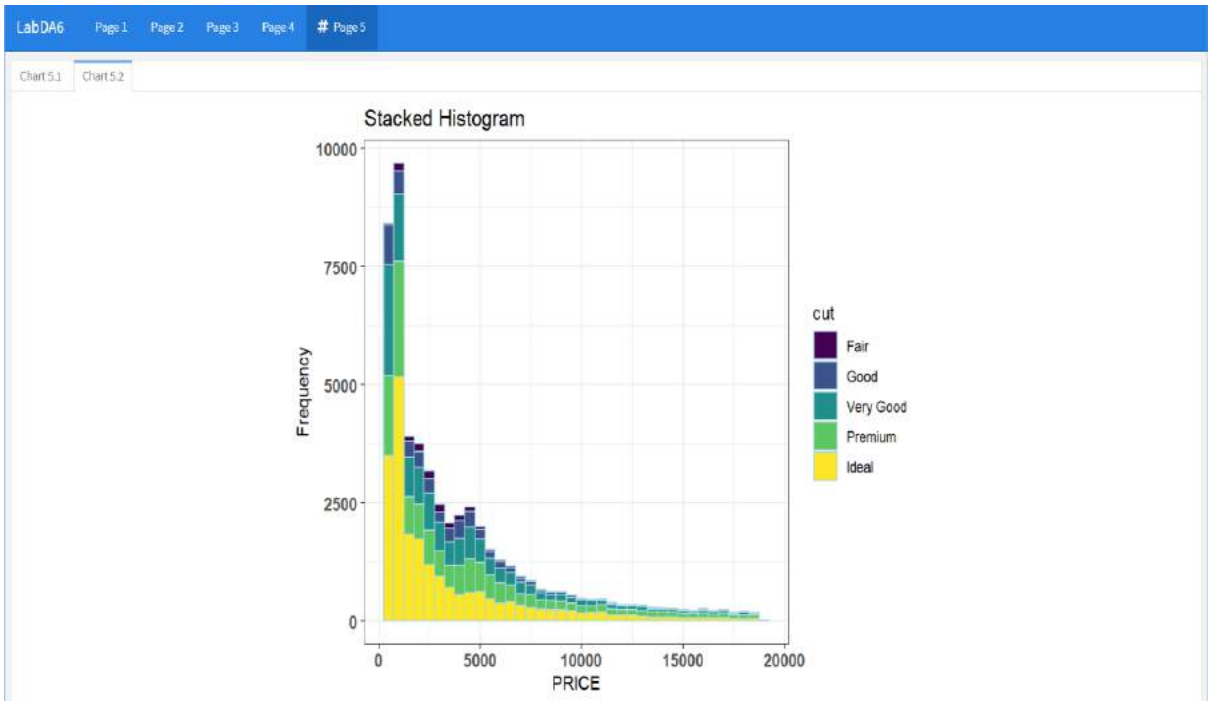


Page 4 Charts 4.1, 4.2 and 4.3 : Interactive Page

We can visualize Boxplot, Barplot and Histogram for different categorical and numeric variables in the dataset 'diamonds' using the interactive plotly lib.

Changing the Categorical and Numeric Variables using the tab given in the left changes the visualization plots.





Page 5 Charts 5.1 and 5.2 : Hashtagged Page and tabs in the Page

In this page, Hash tag has been added in the Page Number.

Along with this, Tabs feature has been included which shows two different graphs in two different tabs of the same Page.

Interpretation:

Interpretation

Using Flexdashboard, we have visualized graphs on different pages. For this we have used R Markdown.

The title, orientation, layout and runtime will be configured and set.

In the first block of code, we have loaded required libraries and the 'diamonds' dataset. The dataset is copied into a variable. The categorical and numeric variables of the dataset are stored into two separate vectors, which is used later for interactive plotly visualization.

In the Page 1, the column width is set. Inside the quotes, a basic bar plot between cut and price.

In the Page 2, the layout is changed and 2 graphs - Stacked Bar Plot and Grouped Bar Plot have been visualized in 2 rows with the column width set as 450.

In Page 3, a different layout of two columns and one column in twin containing two rows have been designed having the Tiles, Ridge and Violin plots.

These layouts can be made row-centric by changing 'orientation' to rows at the top of the code.

In Page 4, Interactivity has been added. This was achieved using 'plotly'. A sidebar of width 200 is created and two options are made available - To select Categorical variable and To select Numeric variable. The dataset is already bifurcated into these two categories at the first code block. Boxplot, Barplot and Histogram is visualized for the options selected. The Barplot is a frequency chart of categorical variable while the histogram is the frequency chart of numeric variable. Upon moving cursor on the graphs, various counts and measures such as mean, median, etc.. has been displayed.

In Page 5, hashtag has been added to the page icon and 'tabset' has been used to display the graphs in various tabs of the same page. Two tabs with graphs Basic Histogram and Stacked Histogram have been visualized.

----------Thank you----------