Day 1 – Practical Session

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Course Code: DSA0613

Course: Data Handling and Visualization

1. Visualize Scatter plot for given dataset.

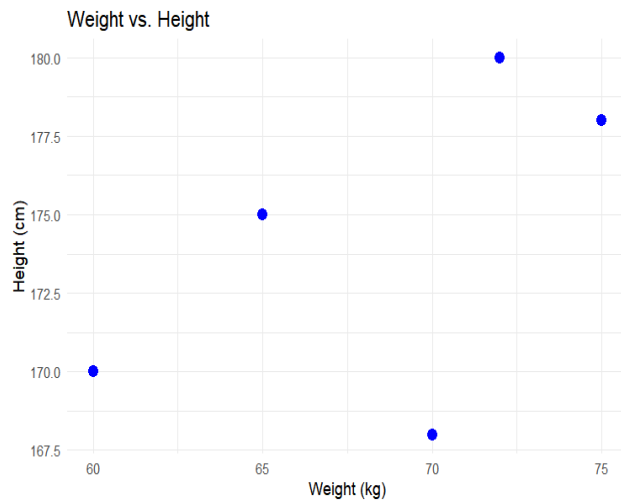| Weight (kg)	Height (cm)
60	170
65	175
70	168
72	180
75	178

Sample Code:

```
library(ggplot2)

weight_height_data <- data.frame(
  Weight = c(60, 65, 70, 72, 75),
  Height = c(170, 175, 168, 180, 178)
)

ggplot(weight_height_data, aes(x = Weight, y = Height)) +
  geom_point(color = "blue", size = 3) +
  labs(title = "Weight vs. Height",
       x = "Weight (kg)",
       y = "Height (cm)") +
  theme_minimal()
```

OUTPUT:

2. Visualize a Line Plot for the Given Population Data

Year	Population (millions)
2010	1000
2011	1020
2012	1040
2013	1060
2014	1080

Sample Code:

```
year_population_data <- data.frame(

  Year = 2010:2014,

  Population = c(1000, 1020, 1040, 1060, 1080)

)

ggplot(year_population_data, aes(x = Year, y = Population)) +

  geom_line(color = "green", size = 1) +

  geom_point(color = "red", size = 3) +

  labs(title = "Year vs. Population",

     x = "Year",

     y = "Population (millions)") +

  theme_minimal()
```
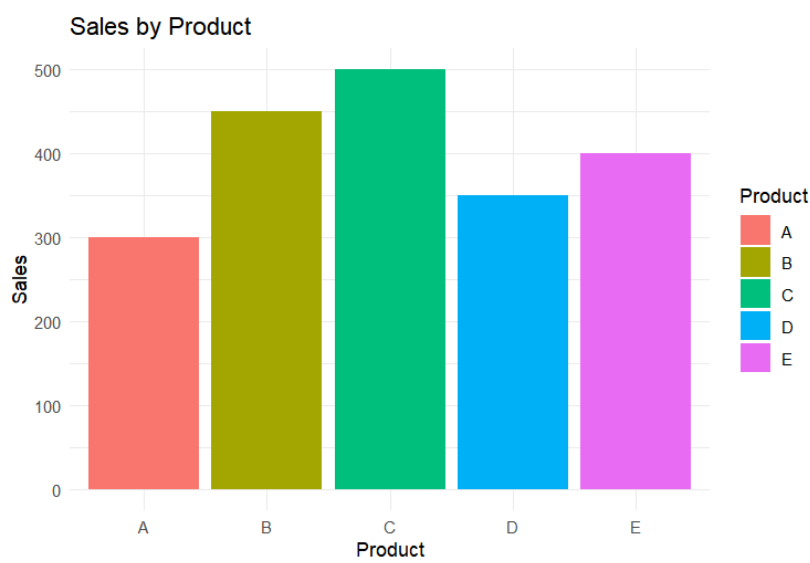
OUTPUT:

Year vs. Population
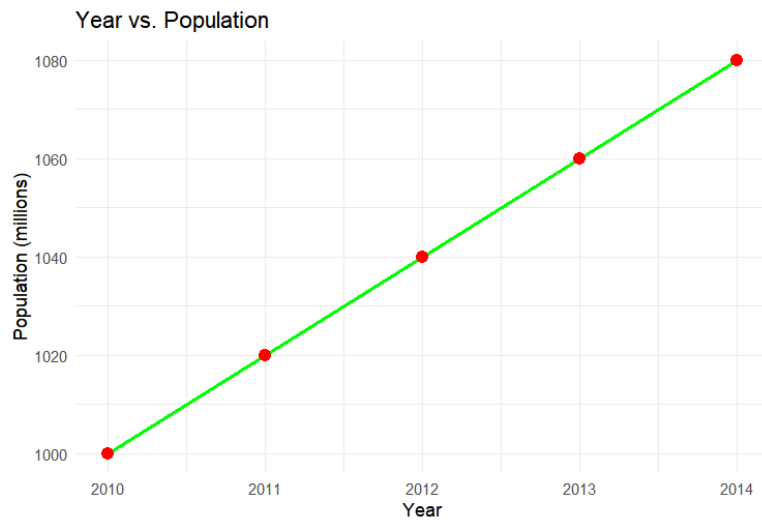
3. Bar Plot

Dataset: Sales by Product

Product	Sales
A	300
B	450
C	500
D	350
E	400

Sample Code:

```
sales_data <- data.frame(
  Product = c("A", "B", "C", "D", "E"),
  Sales = c(300, 450, 500, 350, 400)
)
ggplot(sales_data, aes(x = Product, y = Sales, fill = Product)) +
  geom_bar(stat = "identity") +
  labs(title = "Sales by Product",
       x = "Product",
       y = "Sales") +
  theme_minimal()
```

OUTPUT:

Sales by Product

4. Histogram

Dataset: Age Distribution

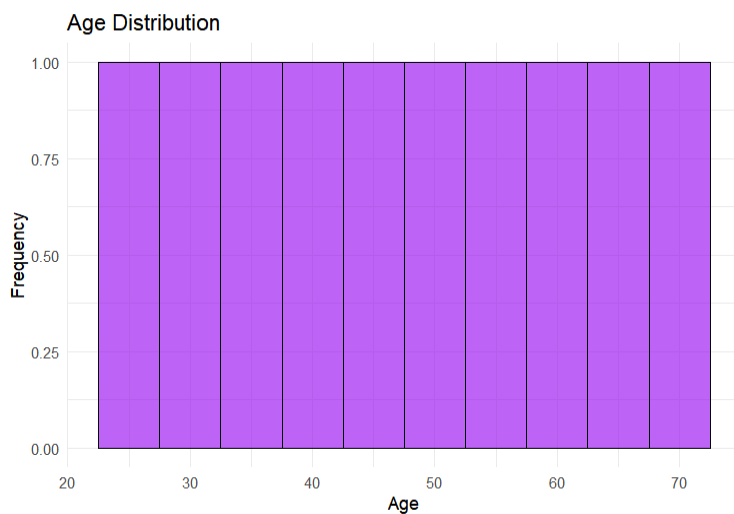| Age |
|-----|
| 25 |
| 30 |
| 35 |
| 40 |
| 45 |
| 50 |
| 55 |
| 60 |
| 65 |
| 70 |

Sample Code:

```
age_data <- data.frame(
    Age = c(25, 30, 35, 40, 45, 50, 55, 60, 65, 70)
)
```

```
ggplot(age_data, aes(x = Age)) +
  geom_histogram(binwidth = 5, fill = "purple", color = "black", alpha = 0.7) +
  labs(title = "Age Distribution",
       x = "Age",
       y = "Frequency") +
  theme_minimal()
  theme_minimal
```

(OUTPUT:

5. Pie Chart

Dataset: Market Share by Company

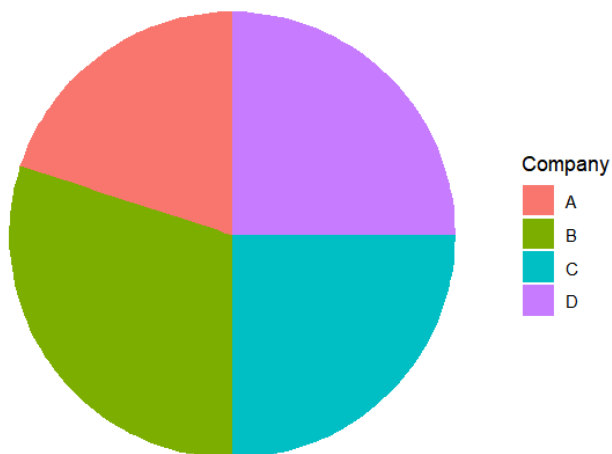| Company	Market Share
A	20%
B	30%
C	25%
D	25%

Sample Code:

```
market_share_data <- data.frame(
  Company = c("A", "B", "C", "D"),
  Market_Share = c(20, 30, 25, 25)
)
ggplot(market_share_data, aes(x = "", y = Market_Share, fill = Company)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar("y") +
```

```
    labs(title = "Market Share by Company",

        x = NULL,

        y = NULL) +

    theme_void() +

    theme(legend.position = "right")
```

OUTPUT:

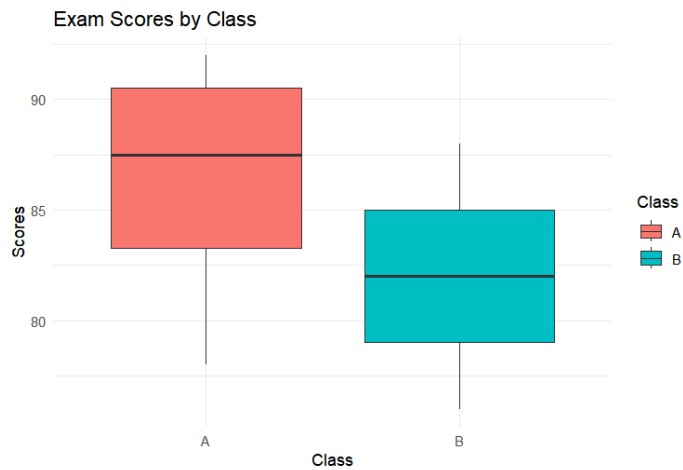Market Share by Company

6. Box Plot

Dataset: Exam Scores by Class

Class	Scores
A	85
A	90
A	78
A	92
B	88
B	76
B	80
B	84

Sample Code:

```
scores_data <- data.frame(

  Class = c("A", "A", "A", "A", "B", "B", "B", "B"),

  Scores = c(85, 90, 78, 92, 88, 76, 80, 84)

)

ggplot(scores_data, aes(x = Class, y = Scores, fill = Class)) +

  geom_boxplot() +
```

```
labs(title = "Exam Scores by Class",

    x = "Class",

    y = "Scores") +

theme_minimal()
```

OUTPUT:
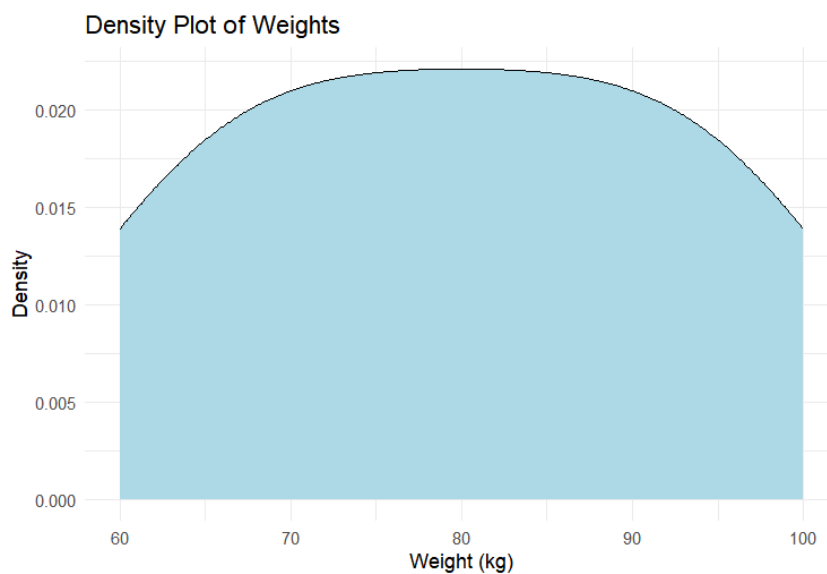

7. Density Plot

Dataset: Weights of Individuals

Weight (kg)
60
65
70
75
80
85
90
95
100

Sample Code:

```
weights_data <- data.frame(

  Weight = c(60, 65, 70, 75, 80, 85, 90, 95, 100)
```

)

```
ggplot(weights_data, aes(x = Weight)) +
  geom_density(fill = "lightblue") +
  labs(title = "Density Plot of Weights",
       x = "Weight (kg)",
       y = "Density") +
  theme_minimal()
```

OUTPUT:

8. Violin Plot

Dataset: Scores by Group

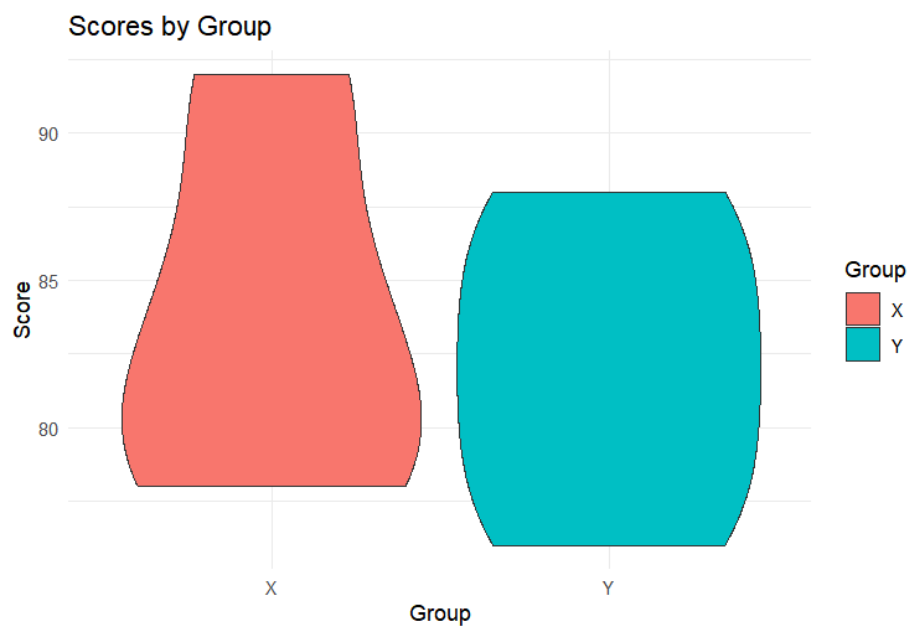| Group	Score
X	80
X	85
X	78
X	92
Y	88
Y	76
Y	80
Y	84

Sample Code:

```
scores_group_data <- data.frame(
  Group = c("X", "X", "X", "X", "Y", "Y", "Y", "Y"),
  Score = c(80, 85, 78, 92, 88, 76, 80, 84)
)
```

```
ggplot(scores_group_data, aes(x = Group, y = Score, fill = Group)) +

  geom_violin() +

  labs(title = "Scores by Group",

     x = "Group",

     y = "Score") +

  theme_minimal()
```

OUTPUT:

9. Heatmap

Dataset: Monthly Temperatures

| Month	City A	City B	City C
Jan	5	10	15
Feb	6	11	16
Mar	7	12	17
Apr	8	13	18
May	9	14	19

Sample Code:

```
temperature_data <- data.frame(

  Month = c("Jan", "Feb", "Mar", "Apr", "May"),

  City_A = c(5, 6, 7, 8, 9),

  City_B = c(10, 11, 12, 13, 14),

  City_C = c(15, 16, 17, 18, 19)

)
```

```
library(reshape2)

melted_data <- melt(temperature_data, id.vars = "Month")

ggplot(melted_data, aes(x = Month, y = variable, fill = value)) +

  geom_tile() +

  scale_fill_gradient(low = "white", high = "red") +

  labs(title = "Monthly Temperatures",

      x = "Month",

      y = "City") +

  theme_minimal()
```

OUTPUT:
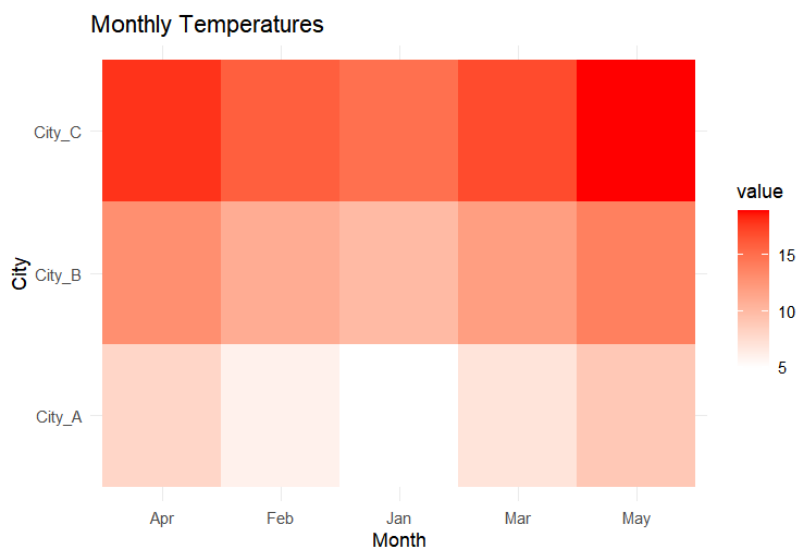
10. Facet Plot

Dataset: Sales by Month and Region

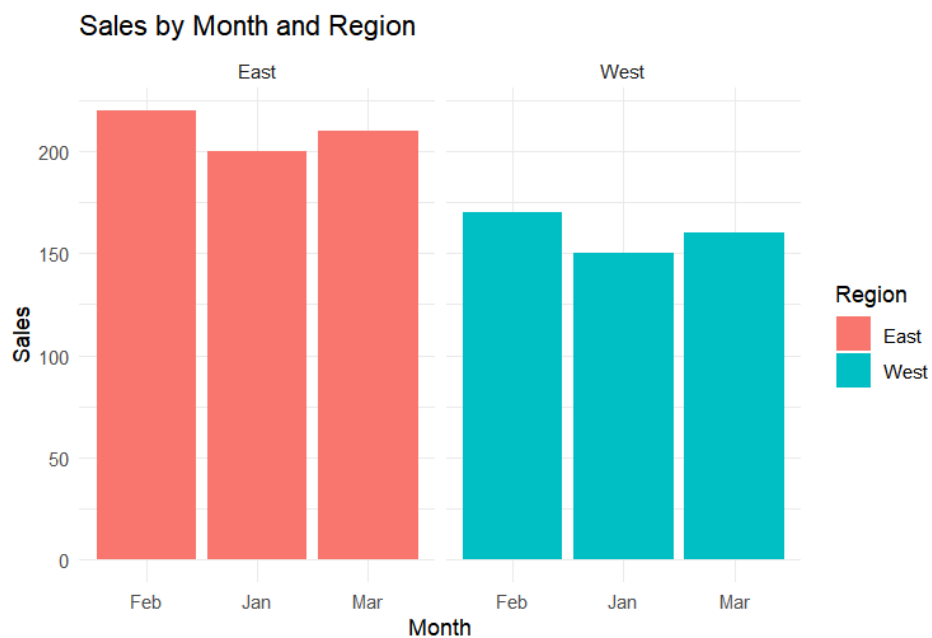| Month	Region	Sales
Jan	East	200
Jan	West	150
Feb	East	220
Feb	West	170
Mar	East	210
Mar	West	160

Sample Code:

```
sales_region_data <- data.frame(

  Month = c("Jan", "Jan", "Feb", "Feb", "Mar", "Mar"),

  Region = c("East", "West", "East", "West", "East", "West"),
```

```
  Sales = c(200, 150, 220, 170, 210, 160)
)
ggplot(sales_region_data, aes(x = Month, y = Sales, fill = Region)) +
  geom_bar(stat = "identity", position = "dodge") +
  facet_wrap(~ Region) +
  labs(title = "Sales by Month and Region",
      x = "Month",
      y = "Sales") +
  theme_minimal()
```

OUTPUT:

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