**Day 1 – Practical Session**

**Course Code: DSA0612**

**Course: Data Handling and Visualization**

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**1. Visualize Scatter plot for given dataset.**

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

**Sample Code:**

weight=c(60,65,70,72,75)

height=c(170,175,168,180,178)

plot(weight,height,main="weight vs height",col="red",pch=16)



**2. Visualize a Line Plot for the Given Population Data**

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

**code:**

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

year=c(2010,2011,2012,2013,2014)

plot(year,population,main="year vs population",type="l",col="green",pch=16,lwd=2)



**3. Bar Plot**

**Dataset: Sales by Product**

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

**code:**

product=c("A","B","C","D","E")

Sales=c(300,450,500,350,400)

par(lwd = 2)

barplot(Sales,names.arg=product,main="sales vs product",col="lightblue",border="blue")



**4. Histogram**

**Dataset: Age Distribution**

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

**code:**

age <- c(25, 30, 35, 40, 45, 50, 55, 60, 65, 70)

hist(age, main = "Histogram for Age",ylab = "Frequency",col = "yellow", border="black")



**5. Pie Chart**

**Dataset: Market Share by Company**

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

**code:**

Company <- c("A", "B", "C", "D")

Market <- c(20, 30, 25, 25)

percentages <- round(Market / sum(Market) \* 100, 1)

pie(Market, labels = paste(Company, percentages, "%"), main = "Market Share by Company", col = c("red","blue","green","yellow"))



**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 |

**code:**

Class <- c("A", "A", "A", "A", "B", "B", "B", "B")

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

boxplot(Scores~Class, main = "Boxplot of Scores by Class",

col = c("lightblue","lightgreen"))



**7. Density Plot**

**Dataset: Weights of Individuals**

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

**Weight <- c(60, 65, 70, 75, 80, 85, 90, 95, 100)**

**plot(density(Weight), main = "Density Plot for Weight",**

**xlab = "Weight", ylab = "Density",**

**col = "purple",lwd=2)**



**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 |

**code:**

library(vioplot)

Group <- c("X", "X", "X", "X", "Y", "Y", "Y", "Y")

Score <- c(80, 85, 78, 92, 88, 76, 80, 84)

vioplot(Score[Group == "X"], Score[Group == "Y"],

names = c("Group X", "Group Y"),

col = c("orange", "yellow"),

main = "Violin Plot of Scores by Group",

xlab = "Group",ylab="Score")



**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 |

**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)

)

rownames(temperature\_data) <- temperature\_data$Month

temperature\_data <- temperature\_data[, -1]

heatmap(as.matrix(temperature\_data),

main = "Temperature Heatmap",

xlab = "Cities", ylab = "Months",

col = heat.colors(256), scale = "column",

margins = c(5, 10),

cexRow = 1.2,

cexCol = 1.2,

las=2)



**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 |

**code:**

Sales\_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)

)

par(mfrow = c(1, 2))

east\_sales <- Sales\_data[Sales\_data$Region == "East", ]

barplot(east\_sales$Sales, names.arg = east\_sales$Month,

main = "East Region Sales", xlab = "Month", ylab = "Sales", col = "pink")

west\_sales <- Sales\_data[Sales\_data$Region == "West", ]

barplot(west\_sales$Sales, names.arg = west\_sales$Month,

main = "West Region Sales", xlab = "Month", ylab = "Sales",col="yellow")

