Graphical Data anaylsis

1.plot :

it is used for Graphical data analysis
it is used to plot point on the graph
plot() is used to create scatter plot or line plot in the graph of 2 vectors
plot() generic functions which can accept different type of data object and produce results based on them
it develops 2D graph.

syntax :
```
plot(x , y , xlab , ylab , main , pch , cex , col , type= "p , b , l , c , o , s , h " , lty = 0 to 6 , lwd )
```

example :
```
month <- 1:12
temp20 <- c(10.1, 10.2 , 10.3 , 10.4,10.5 , 10.6 , 10.7 , 10.8 , 10.9 , 10.10 , 10.11 , 10.12)
temp21 <- c(11.1 ,11.2,11.3,11.4,11.5,11.6,11.7,11.8,11.9,11.10,11.11,11.12)

#comparision
points(month , temp21 , cex = 1 , pch =1 , col = "green" , lty = 1 , lwd = 1 )
lines(month , temp21 , cex = 1 , pch =1 , col = "green" , lty = 1 , lwd = 1 )

plot(month , temp20 , xlab = "months", ylab = "temprature" , main = "2020 vs 2021 temparature analysis" ,
 type = "b" , lty =1 , pch = 1 , cex =1 , col = "cyan" , lwd = 1)
```

2.pie chart :

it is used for graphical data analysis
it is a circular graph that indicates numerical proportions in slices
it is used to show the contribution of each slices in the entire graph
pie() function to create a pie chart

syntax :
```
pie(x , labels , col , clockwise , radius, main)

pie3d(x , labels , col , clockwise , radius , main , explode)
```

example :
example
book survey

```
books <- c("urdu" , "marathi", "hindi" , "history")
readers <- c(10, 20 , 30 , 40)
readersPerc <- paste(round(readers/sum(readers)*100),"%")
readersPerc

pie(readers , labels = readersPerc , clockwise = TRUE , radius = 0.9 , main = "Book Survey" ,col = rainbo
w(length(readers)) )
legend(x = "topright" , legend = books , fill = rainbow(length(readers)))

install.packages("plotrix")
library("plotrix")
pie3D(readers , labels = readersPerc, main = "3D book survey" , explode = 0.4)
```

3.Bar chart :

it is used for graphical data analysis.
It is used to plot bar on the graph.
it is used to represent categorical data.
barplot() is used to create bar chart on the graph.
The height of bars proportional to the values they represent

syntax :
barchart(x , names.arg , xlab , ylab , main , col)

#simple barchart
event <- data.frame(ename = c('coding','paper',"speech") , scount = c(10, 20 , 30))
event

img <- barplot(event$scount , names.arg = event$ename , main = "Event analysis" , xlab = "No of student
s" , ylab = "Events" ,col = topo.colors(3))
box()

text(img , 0 , event$scount , pos = 3 ,cex = 1)
legend(x = "topright" , legend = event$ename , fill =topo.colors(3))

#stacked bar chart
events <- data.frame(ename = c('coding','paper',"speech") , boys = c(10, 20 , 30) , girls = c(20,30,10))

emat <- matrix(c(events$boys , events$girls) , nrow = 2 , ncol = 3 , byrow = TRUE)

rownames(emat) <- c("boys" , "girls")
colnames(emat) <- events$ename

barplot(emat , names.arg = events$ename , main = "Event analysis" , xlab = "Events" , ylab = "no of stud
ents" , col = topo.colors(3))
legend(x = "topright" , title = "BOY vs GIRLS" , legend = c("boys","girls") , fill = topo.colors(2))
box()

#grouped bar chart
img <- barplot(emat , names.arg = events$ename , main = "Event analysis" , xlab = "Events" , ylab = "no
of students" , col = topo.colors(2) ,beside = TRUE)
box()
text(img , 0 , emat , cex = 1 , pos = 3)

4. Histogram :

It is used for graphical data analysis
It is similar to the barchart but difference is , It is used to represent the frequency or occurances of numbe
rical data using bars or rectangle in the graph
basically it is used to create ranges type barchart
hist() is used to create histogram

syntax :
hist(v , xlab , ylab , main , xlim = c(0, 20) , ylim = c(0,20) , breaks , border = "color")

example :
v1 <- c(1 ,2 ,3 ,4, 5,10 , 11 , 12 , 15 , 16 , 17 , 20)

hist(v1 , xlim = c(0,20) , ylim = c(0,20) , col= rainbow(length(v1)) , xlab = "data" , ylab = "ranges" , border = "red" , main = "histogram")

5. Boxplot :
It is used for graphical data analysis
it is used to plot box on the graph
it diviedes the data into three quartiles.
it represents min , max , median , first & third quartils.
it also used to compare two data sets by plotting box plot on the graph
boxplot() is used to create box plot

syntax :
boxplot(x , data , xlab , ylab , main , notch , varwidth , col)

example :
boxplot(mtcars$mpg , data = mtcars , xlab = "no of mpg" , ylab = "mpg" , col = "orange" ,main = "Car anal ysis" , notch = TRUE , varwidth = FALSE)