Output :

II) Area Plots:

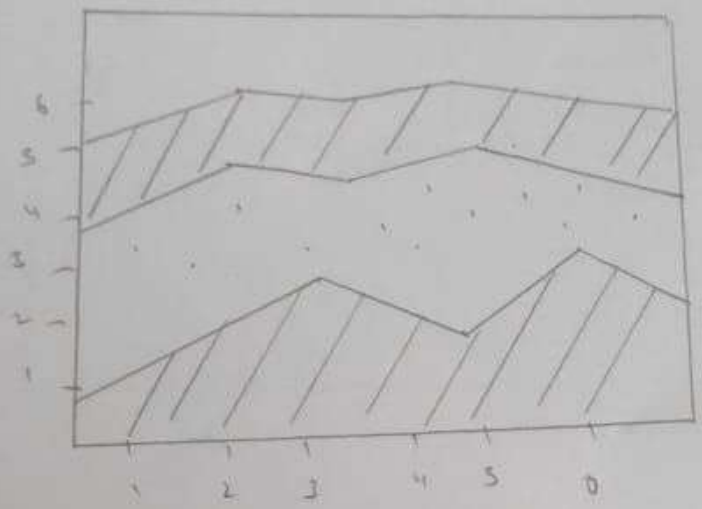
An Area Plot is also called as Area Chart which is used to display magnitude and proportion of multiple variables.

Program:

```
import matplotlib.pyplot as plt
days = [1,2,3,4,5]
sleeping =[7,8,6,11,7]
eating = [2,3,4,3,2]
working =[7,8,7,2,2]
playing = [8,5,7,8,13]
plt.plot([],[],color='m', label='Sleeping', linewidth=5)
plt.plot([],[],color='c', label='Eating', linewidth=5)
plt.plot([],[],color='r', label='Working', linewidth=5)
plt.plot([],[],color='k', label='Playing', linewidth=5)
plt.stackplot(days, sleeping,eating,working,playing, colors=['m','c','r','k'])
```

```
plt.xlabel('x')
plt.ylabel('y')
plt.title('Stack Plot')
plt.legend()
plt.show()
```

Output :



iii) Histograms:

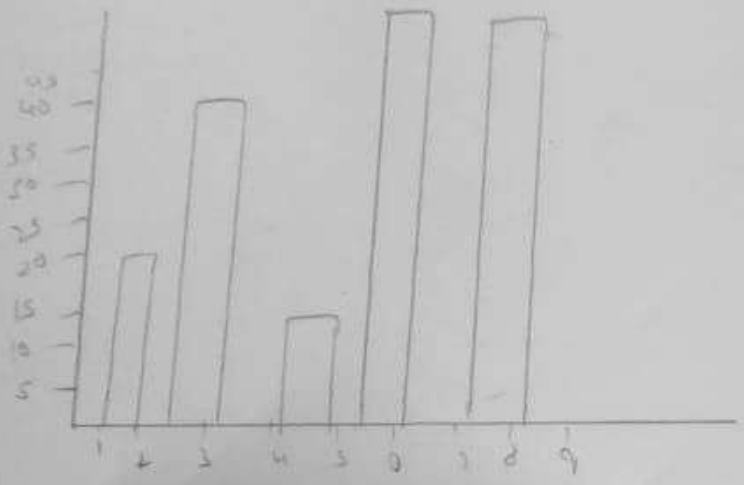
Histograms represents the frequency distribution of a dataset. It is a graph showing the number of observations within each given interval.

Program:

```
import matplotlib.pyplot as plt
population_age=[22,55,62,45,21,22,34,42,42,4,2,102,95,85,55,110,120,70,65,55,111,115,80
bins = [0,10,20,30,40,50,60,70,80,90,100]
plt.hist(population_age, bins, histtype='bar', rwidth=0.8)
```

```
plt.xlabel('age groups')
plt.ylabel('Number of people')
plt.title('Histogram')
plt.show()
```

Output:



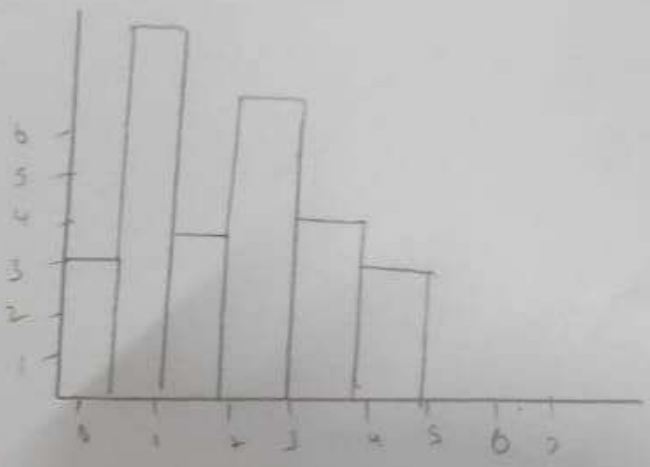
iv) Bar Charts:

A Bar chart or bar graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. A bar plot is a way of representing data where the length of the bars represents the magnitude/size of the feature/variable.

Program:

```
import matplotlib.pyplot as plt
plt.bar([0.25,1.25,2.25,3.25,4.25],[50,40,70,80,20],label="BMW",width=.5)
plt.bar([.75,1.75,2.75,3.75,4.75],[80,20,20,50,60],label="Audi", color='r',width=.5)
plt.legend()
plt.xlabel('Days')
plt.ylabel('Distance (kms)')
plt.title('Information')
plt.show()
```

Output:



V) **Pie Charts:**

A Pie chart is a circular statistical chart, which is divided into sectors to illustrate numerical proportion.

Program :

```
import matplotlib.pyplot as plt
```

```
days = [1,2,3,4,5]
sleeping =[7,8,6,11,7]
eating = [2,3,4,3,2]
working =[7,8,7,2,2]
playing = [8,5,7,8,13]
slices = [7,2,2,13]
activities = ['sleeping','eating','working','playing'] cols = ['c','m','r','b']
plt.pie(slices,labels=activities, colors=cols,start angle=90,shadow=True, explode=(0,0.1,0,0),
autopct='%1.1f%%')
plt.title('Pie Plot')
plt.show()
```

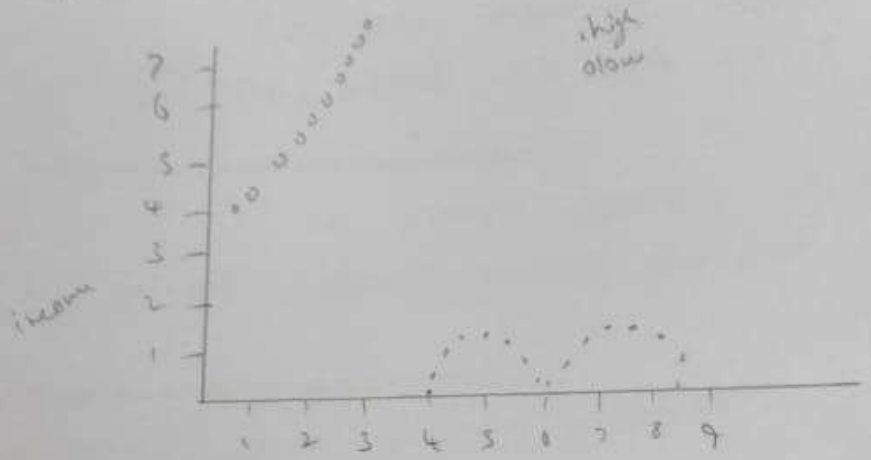
Output:

VI) Box Plots:

A Box plot (or box-and-whisker plot) shows the distribution of quantitative data in a way that facilitates comparisons between variables or across levels of a categorica e.

Box plot shows the quartiles of the dataset while the whiskers exten as

Output



1.Scatter plot

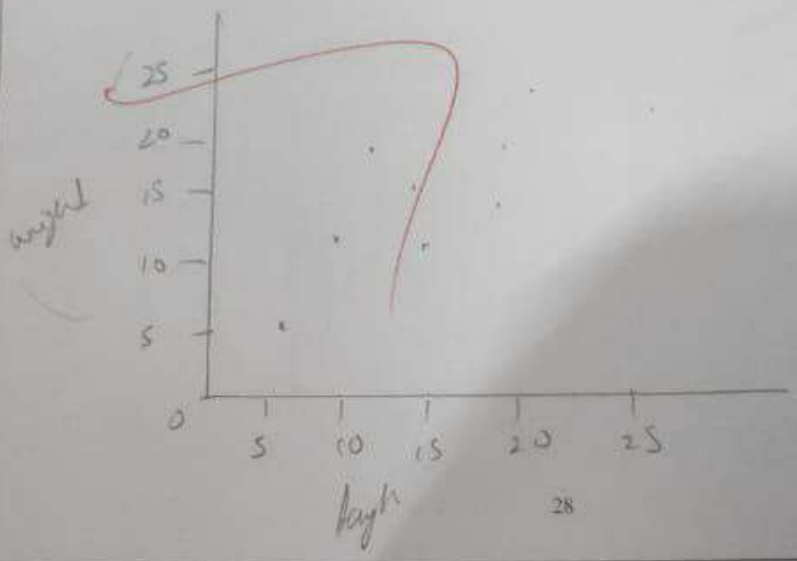
Program:

```
library(ggplot2)

Surveys <- data.frame(
 record_id = c(1, 2, 3, 4, 5),
 month = c(7, 7, 7, 7, 7),
 day = c(16, 16, 16, 17, 17),
 year = c(1977, 1977, 1977, 1977, 1977),
 plot_id = c(2, 3, 2, 7, 3),
 species_id = c("NL", "NL", "DM", "DM", "DM"),
 sex = c("M", "M", "F", "M", "M"),
 hindfoot_length = c(32, 33, 37, 36, 35),
 weight = c(20, 22, 25, 23, 24) # Added weight variable for demonstration
)

# Scatter plot
ggplot(data = Surveys, mapping = aes(x = hindfoot_length, y = weight)) +
 geom_point(alpha = 0.1, color = "blue")
```

OutPut:



2) **Histogram**

Program

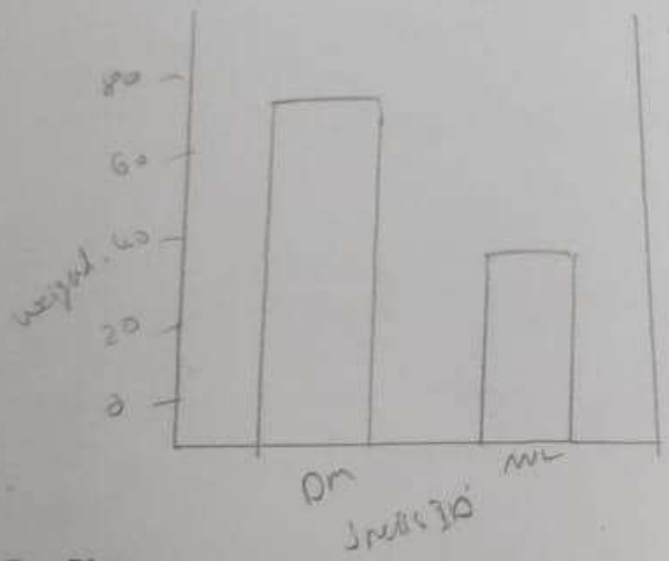
```
library(ggplot2)
Surveys <- data.frame(
record_id = c(1, 2, 3, 4, 5),
month = c(7, 7, 7, 7, 7),
day = c(16, 16, 16, 17, 17),
year = c(1977, 1977, 1977, 1977, 1977),
plot_id = c(2, 3, 2, 7, 3),
species_id = c("NL", "NL", "DM", "DM", "DM"),
sex = c("M", "M", "F", "M", "M"),
hindfoot_length = c(32, 33, 37, 36, 35),
weight = c(20, 22, 25, 23, 24) # Added weight variable for demonstration
)

# Create a histogram of the weight variable
ggplot(data = Surveys, aes(x = weight)) +
 geom_histogram(binwidth = 1, fill = "blue", color = "black") +
 labs(x = "Weight", y = "Frequency", title = "Histogram of Weight")
```

Output:

labs(title = "Total Weight by Species", x = "Species ID", y = "Total Weight")

Output:



4.Box Plot:

Program

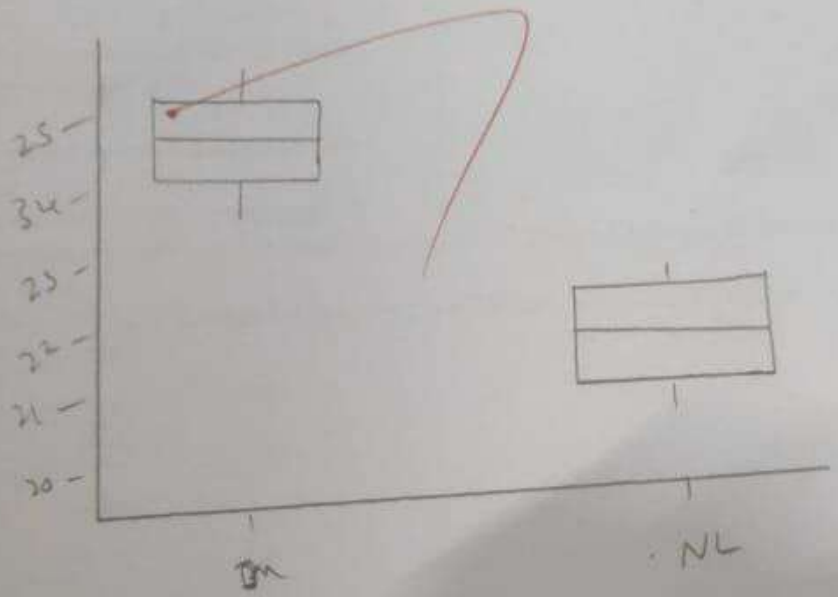
```
library(ggplot2)
# Load required package
library(ggplot2)

# Create the data frame
Surveys <- data.frame(
record_id = c(1, 2, 3, 4, 5),
month = c(7, 7, 7, 7, 7),
day = c(16, 16, 16, 17, 17),
```

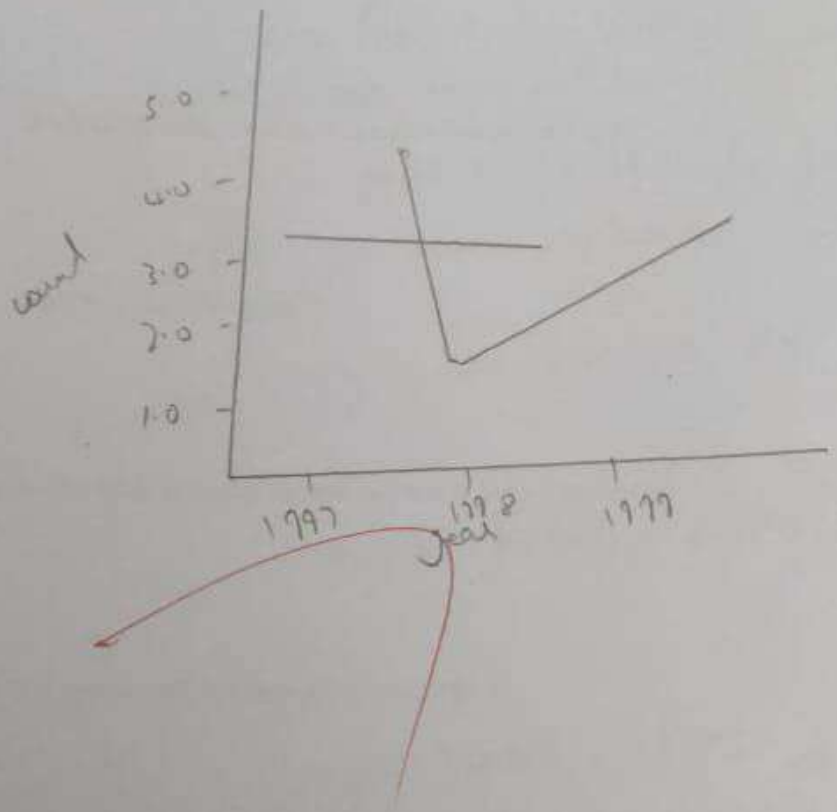
```
  year = c(1977, 1977, 1977, 1977, 1977),
  plot_id = c(2, 3, 2, 7, 3),
  species_id = c("NL", "NL", "DM", "DM", "DM"),
  sex = c("M", "M", "F", "M", "M"),
  hindfoot_length = c(32, 33, 37, 36, 35),
  weight = c(20, 22, 25, 23, 24) # Added weight variable for demonstration
  )

  # Create the box plot using ggplot2
ggplot(data = Surveys, mapping = aes(x = species_id, y = weight)) +
geom_boxplot() +
labs(title = "Box Plot of Weight by Species", x = "Species ID", y = "Weight")
```

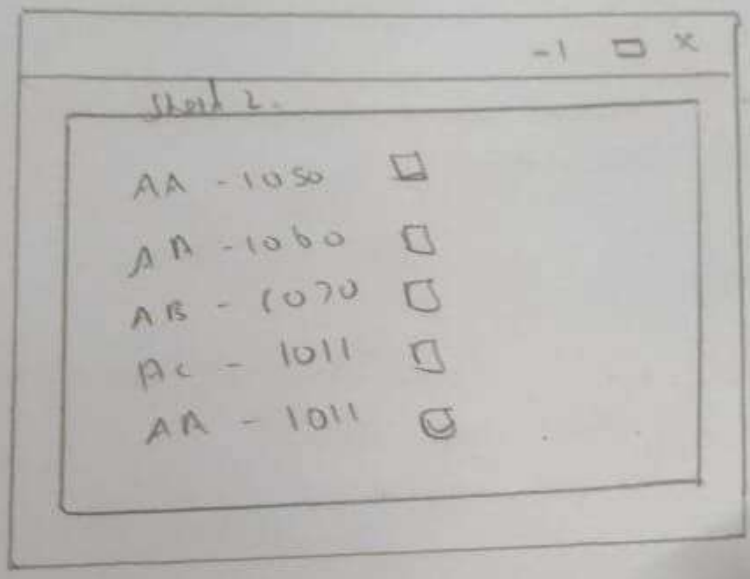
Output:



Output:



Output:



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