EXERCISE 4:

AIM:

SKEWNESS IN R

PRELIMINARIES:

1. In statistics, skewness and kurtosis are the measures which tell about the shape of the data distribution.
2. It tells about the position of the majority of data values in the distribution around the mean value.
3. To calculate skewness and kurtosis in R language, **moments** package is required.

There exist 3 types of skewness values on the basis of which asymmetry of the graph is decided.

These are: **Positive Skew, Zero Skewness or Symmetric, Negative skew**

CODE:

Positive Skew

```
# Required for skewness() function
library(moments)

# Defining data vector
x <- c(40, 41, 42, 43, 50)

# output to be present as PNG file
png(file = "positiveskew.png")

# Print skewness of distribution
print(skewness(x))

# Histogram of distribution
hist(x)

# Saving the file
dev.off()
```

Zero Skewness or Symmetric

```
# Required for skewness() function
library(moments)
```

```
# Defining normally distributed data vector
x <- rnorm(50, 10, 10)

# output to be present as PNG file
png(file = "zeroskewness.png")

# Print skewness of distribution
print(skewness(x))

# Histogram of distribution
hist(x)

# Saving the file
dev.off()
```

Negatively skewed

```
# Required for skewness() function
library(moments)

# Defining data vector
x <- c(10, 11, 21, 22, 23, 25)

# output to be present as PNG file
png(file = "negativeskew.png")

# Print skewness of distribution
print(skewness(x))

# Histogram of distribution
hist(x)

# Saving the file
dev.off()
```

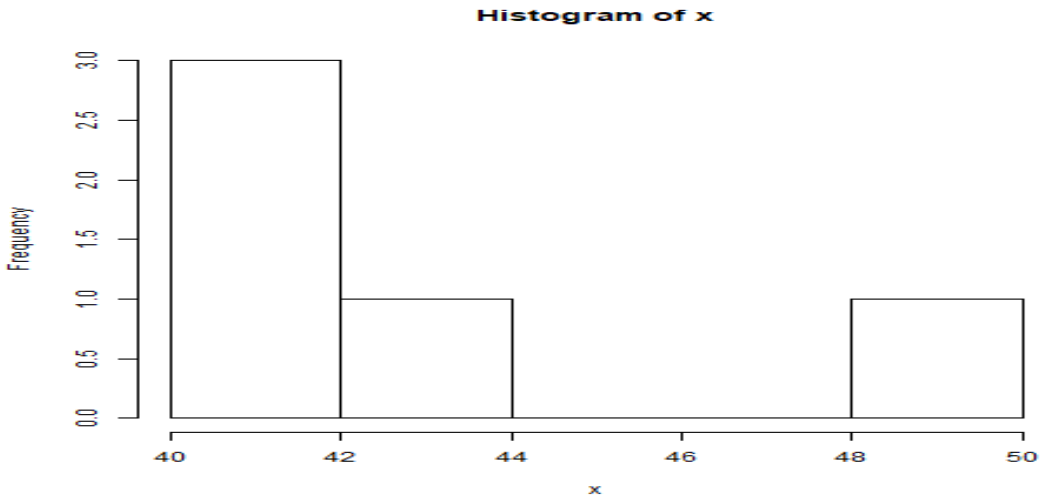
RESULT:

Thus, Skewness is computed in R Programming Language successfully.

Output: Positive Skew

[1] 1.2099

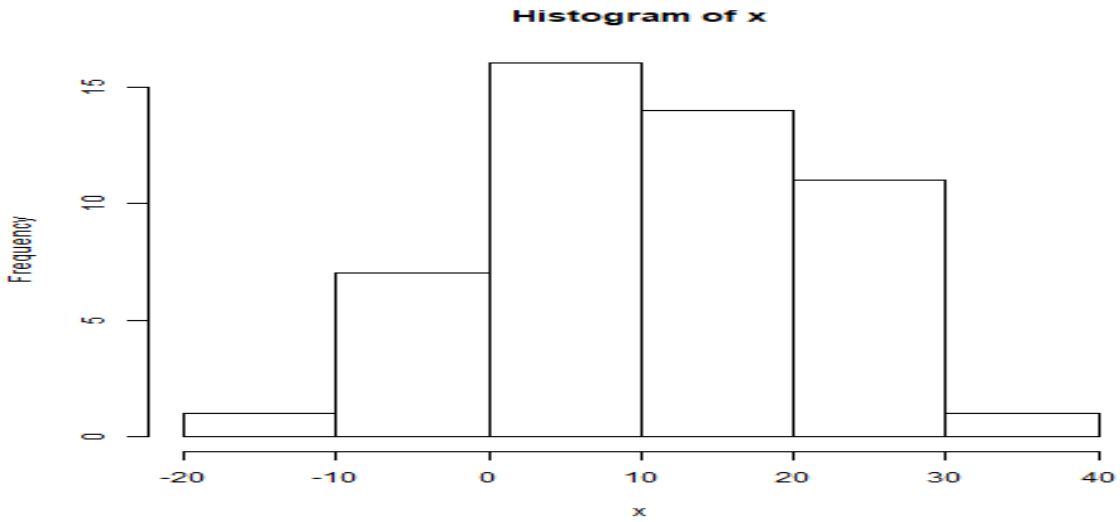
Graphical Representation:



Output: Zero Skewness or Symmetric

[1] -0.02991511

Graphical Representation:

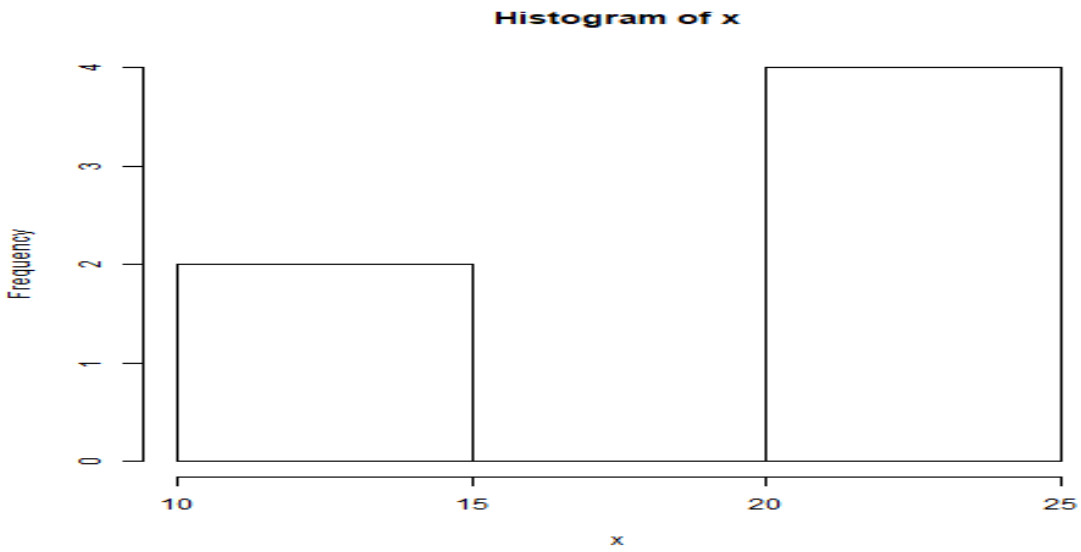


Negatively skewed

Output:

[1] -0.5794294

Graphical Representation:



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