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Q.1.0 Describe the types of tailed histograms such as long-tailed, Short-tailed and skewed-tailed and provide a sample of R code snippet for each type.

Ans: Histogram: A histogram is a visual representation of the distribution of a dataset.

> Histogram allows one to see where a relatively large amount of the data is located.

> It helps to find where there is very little data.

> It helps understand how close the data lie around the midpoint.

> It helps find out possible outliners.

In R, a histogram can be created using hist() function.

E.g.:

```
> v <- c(9,13,21,8,36,22,12,41,31,33,19)
> hist(v)
```

Histograms with some attributes would look like:

```
> hist(v, xlab = "weight", col = "green", border = "red")
>hist(v, xlim = c(0,40), ylim = c(0,5), breaks = 5)
```

The tails of the distribution are the parts to the left and to the right, away from the mean. The "tail" is the part where the count in the histogram becomes smaller.

1. Long-tailed histogram: In this type, the tails decline to zero very slowly - and hence one is apt to see probability a long way from the body of the distribution. The classical long-tailed distribution is the Cauchy distribution.

A long tailed histogram can be created by managing limits of data and by creating breaks.

Code snippet:

```
> breaks ← c(0, 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2, 4, 8)
> hist (data, breaks = breaks)
```

2. Short-tailed histogram: In this type, the tail approaches zero very fast.

A short tailed histogram can be created by managing limits and by creating short breaks.

Code snippet:

```
> breaks ← c (0, 2, 4, 8)
> hist (data, breaks = breaks)
```

3. Skewed-tailed histogram: If one tail is longer than the other (i.e, acymmetric tails), then the distribution is skewed. A "skewed-right" distribution is one in which the tail is on the right side. The "skewed-left" distribution is one in which the tail is on the left side.

The histogram majorly shows as per the data entered, but similar to short-tailed and long-tailed, the right and left-skewed histogram can as well be controlled by the breaks and limits.