Interquartile Range(IQR)

- What is the purpose of IQR?

  To know the outlier range present in the dataset.

IQR = Q3-Q1

Lesser Outlier
Less Than
Outlier range= Q1- 1.5*IQR

Greater Outlier
Greater Than
Outlier range= Q3+ 1.5*IQR

Reason for multiplying 1.5 with IQR to find the lesser outlier, and greater outlier

Multiplying the IQR by 1.5 helps us decide which numbers in a dataset are much smaller or much larger than most of the numbers. This factor of 1.5 was chosen because it usually does a good job of finding unusual numbers without incorrectly flagging normal numbers as unusual. It's a simple and effective way to spot outliers.

Important points to note:

The 1.5 multiplier is a rule of thumb, and it might not be suitable for all datasets, especially those with a significant number of outliers or non-normal distributions.

There are other, more robust methods for outlier detection, and the IQR rule is a simple starting point.

Q) 2

Interquartile Range(IQR)

a. The interquartile range. Compare the two interquartile ranges.

b. Any outliers in either set.

The five number summary for the day and night classes is

	Minimum	Q_1	Median	Q_3	Maximum
Day	32	56	74.5	82.5	99
Night	25.5	78	81	89	98

How to identifies outliers:

- **Lower Bound:** Q1 - (1.5 * IQR) - Any data point below this value is considered a lesser outlier.

- **Upper Bound:** Q3 + (1.5 * IQR) - Any data point above this value is considered a greater outlier.

  To find IQR

  IQR=Q3-Q1

Solution-

Day

Lower Bound= Q1 - (1.5 *IQR)= Q1+(1.5(Q3-Q1))

= 56 -(1.5 *(82.5-56)

= 56-39.75

= 16.25 No out layer found because minimum number is above the outlier limit

Upper Bound= Q3 +(1.5 *IQR)= Q1+(1.5(Q3-Q1))

= 82.5 +(1.5 *(82.5-56)

= 82.5+39.75

= 122.25 No outlier found because maximum number is within the outlier limit

Night

Lower Bound = Q1 - (1.5 *IQR)= Q1+(1.5(Q3-Q1))

= 78-(1.5(89-78)

=78-16.5

=61.5 outlier found

Upper Bound = Q3 +(1.5 *IQR)= Q3+(1.5(Q3-Q1))

=89+(1.5(89-78)

=89+16.5

=105.5 No outlier found