

Inter Quartile 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

IQR for day time= $Q_3 - Q_1$

IQR for day time = $(82.5 - 56)$

IQR for day time= 26.5

Lower IQR for day time= $Q_1 - (1.5 * \text{IQR})$

Lower IQR for day time= $56 - (1.5 * 26.5)$

Lower IQR for day time= 16.25

Higher IQR for day time= $Q_3 + (1.5 * \text{IQR})$

Higher IQR for day time= $82.5 + (1.5 * 26.5)$

Higher IQR for day time= 122.25

From the problem, min value in the day = 32 and max value in the day = 99

Here min value > lower IQR and max value < higher IQR.

So, there is no outlier is present in the dataset for day classes

IQR for night time= $Q_3 - Q_1$

IQR for night time = $(89 - 78)$

IQR for night time= 11

Lower IQR for night time= $Q_1 - (1.5 * \text{IQR})$

Lower IQR for night time=78-(1.5*11)

Lower IQR for night time=61.5

Higher IQR for night time=Q3+(1.5*IQR)

Higher IQR for night time=89+(1.5*11)

Higher IQR for night time=105.5

From the problem, min value in the day =25.5 and max value in the day =98

Here min value< lower IQR and max value<higher IQR.

So, there is outlier is present in the LOWER side of the dataset for night classes and that is replace by 61.5 which is the Lower IQR value