**SUMMARY REPORT ON IQR DATA**

**Objective:**

Clear **statistical report** based on the five-number summaries provided for the **Day** and **Night** classes.

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## MEASURE OF LOCATION OF THE DATA

### 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 |

**Formulas :**

(IQR) – Inter Quartile range

Q3 – Q1

= 82.5 – 56 = 26.5

Q1 & Q3 formula is Median if its from the dataset

Lesser outlier - Q1 – 1.5 * IQR

= 56 – 1.5 * 26.5 = 16.25

Greater outlier - Q3 + 1.5 * IQR

= 82.5 – 1.5 * 26.5 = 122.25

**Observations:**

**Interquartile Range (IQR)**

IQR = $Q_3 - Q_1$

| Class | $Q_3$ | $Q_1$ | IQR |
|---|---|---|---|
| Day | 82.5 | 56 | **26.5** |
| Night | 89 | 78 | **11.0** |

**Comparison:**

- **Day Class** has a **wider spread** of middle 50% values (IQR = 26.5).
- **Night Class** shows a **more concentrated performance** (IQR = 11.0), median.

**Outlier Detection**

Outliers are data points outside the range:

**Lesser outlier** = $Q_1 - 1.5 \times IQR$
**Greater outlier** = $Q_3 + 1.5 \times IQR$

**Day Class:**

- IQR = 26.5
- Lesser outlier = 56 − (1.5 × 26.5) = **16.25**
- Greater outlier = 82.5 + (1.5 × 26.5) = **122.25**

🔹 All values are within 32 to 99 → **No outliers**

**Night Class:**

- IQR = 11
- Lesser outlier = 78 − (1.5 × 11) = **61.5**
- Greater outlier = 89 + (1.5 × 11) = **105.5**

🔹 Minimum = 25.5 < 61.5 → **25.5 is an outlier**