Inter Quantile Range Exercise

Problem Statement:

Analyze the dataset using the given IQR values and 1.5 × IQR rule to determine:

- The spread of middle 50% of data for each feature.
- Presence of any potential outliers.

1. Interquartile Range (IQR)

Feature	IQR
ssc_p	15.1
hsc_p	12.1
degree_p	11.0
etest_p	23.5
mba_p	8.31
salary	60000.0

2. Outlier Detection (1.5 × IQR Rule)

(Lower bound = Lesser, Upper bound = Greater)

Feature	Lower Bound	Upper Bound	Min Value	Max Value	Lower Outlier	Higher Outlier	comment
sl_no	-106	322	1	215	None	None	Min ≥ Lower and Max ≤ Upper → No outlier
ssc_p	37.95	98.35	40.89	89.4	None	None	Min ≥ Lower and Max ≤ Upper → No outlier
hsc_p	42.75	91.15	37.0	97.7	37.0	97.7	**Low outlier:** Min < Lower; **High outlier:** Max > Upper
degree_p	44.5	88.5	50.0	91.0	None	91.0	**High outlier:** Max > Upper
etest_p	24.75	118.75	50.0	98.0	None	None	Min ≥ Lower and Max ≤ Upper → No outlier
mba_p	45.48	78.72	51.21	77.89	None	None	Min ≥ Lower and Max ≤ Upper → No outlier
salary	150000	390000	200,000	940,000	None	940,000	**High outlier:** Max > Upper

3. Key Insights

- **etest_p** has the largest variability among scores (IQR = 23.5), but no detected outliers.
- **mba_p** has the smallest IQR (8.31), showing high consistency.
- Outliers are found in:
- `hsc_p` → one low (37.0) and one high (97.7)
- `degree_p` → one high (91.0)
- `salary` → one high (940,000)
    - Most other variables are within expected ranges without extreme deviations.