Univariate Report

1. Mean Median Mode Report

	sl_no	ssc_p	hsc_p	degree_p	etest_p	mba_p	salary
Mean	108.0	67.303395	66.333163	66.370186	72.100558	62.278186	288655.405405
Median	108.0	67.0	65.0	66.0	71.0	62.0	265000.0
Mode	1	62.0	63.0	65.0	60.0	56.7	300000.0

Report Summary:

The mean value for ssc_p is 67%, hsc_p is 66%, degree_p is 66%, etest_p is 72%, mba_p is 62% and salary is 2,88,655.

Based on the calculations of the **mean** for the given dataset, the average pass mark for students lies within 62% to 68%. This indicates that the students in the dataset have performed above average in all exams which includes SSC, HSC, Degree and also in MBA.

However, the entrance test pass mark is slightly higher compared to the other marks, and the average salary is approximately ₹2,88,655. Overall, students in this dataset have performed ***above average***, securing an annual income of around ₹3 lakh.

By comparing the calculations of the mean, median, and mode for the given dataset, the results are nearly identical. This suggests that the dataset does not contain any outliers, and the students in the dataset have performed above average in both SSC and HSC, with the median for HSC also being 66%.

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2. Percentile Report Summary

	sl_no	ssc_p	hsc_p	degree_p	etest_p	mba_p	salary
Mean	108.0	67.303395	66.333163	66.370186	72.100558	62.278186	288655.405405
Median	108.0	67.0	65.0	66.0	71.0	62.0	265000.0
Mode	1	62.0	63.0	65.0	60.0	56.7	300000.0
Q1:25%	54.5	60.6	60.9	61.0	60.0	57.945	240000.0
Q2:50%	108.0	67.0	65.0	66.0	71.0	62.0	265000.0
Q3:75%	161.5	75.7	73.0	72.0	83.5	66.255	300000.0
99%	212.86	87.0	91.86	83.86	97.0	76.1142	NaN
Q4:100%	215.0	89.4	97.7	91.0	98.0	77.89	940000.0
Min	1	40.89	37.0	50.0	50.0	51.21	200000.0
Max	215	89.4	97.7	91.0	98.0	77.89	940000.0

Percentile represents the relative position of the data points. It helps us to understand and interpret the values that exist within the range.

1. SSC Pass Mark Report:

- Q1:25% of ssc pass mark exists between 60% of total marks
- Q2:50% of pass mark exists between 67% of total marks
- Q2:75% of pass mark exists between 75% of total marks
- 99% of data exists between 87%

The difference between first and second quartile is 7%
The difference between first and second quartile is 8%
But the difference between Q1 & Q3 is almost 15% which is relatively high

2. HSC Pass Mark Report:

- Q1:25% of ssc pass mark exists between 60% of total marks
- Q2:50% of pass mark exists between 65% of total marks
- Q2:75% of pass mark exists between 73% of total marks
- 99% of data exists between 91%

The difference between first and second quartile is 5%
The difference between first and second quartile is 8%
But the difference between Q1 & Q3 is almost 13% which is relatively high

3. Degree Pass Mark Report:

- Q1:25% of ssc pass mark exists between 61% of total marks
- Q2:50% of pass mark exists between 66% of total marks
- Q2:75% of pass mark exists between 72% of total marks
- 99% of data exists between 83%

The difference between first and second quartile is 5%
The difference between first and second quartile is 6%
But the difference between Q1 & Q3 is almost 11%

4. Entrance Test Pass Mark Report:

- Q1:25% of ssc pass mark exists between 60% of total marks
- Q2:50% of pass mark exists between 71% of total marks
- Q2:75% of pass mark exists between 83% of total marks
- 99% of data exists between 97%

The difference between first and second quartile is 11%
The difference between first and second quartile is 13%
But the difference between Q1 & Q3 is almost 23%

5. MBA Pass Mark Percentile:

- Q1:25% of ssc pass mark exists between 57% of total marks
- Q2:50% of pass mark exists between 62% of total marks

- Q2:75% of pass mark exists between 66% of total marks
- 99% of data exists between 76%

The difference between first and second quartile is 5%
The difference between first and second quartile is 4%
But the difference between Q1 & Q3 is 9%

6. Salary Percentile:

- Q1:25% of ssc pass mark exists between 240000
- Q2:50% of pass mark exists between 265000
- Q2:75% of pass mark exists between 300000

The difference between first and second quartile is 25000
The difference between first and second quartile is 35000
But the difference between Q1 & Q3 is 60000

Overall Summary:

- The pass marks tend to increase as you move from the first quartile (Q1) to the third quartile (Q3), showing a trend where a larger proportion of students score better on the entrance test.

- The Salary has a wide range, from a minimum of 200,000 to a maximum of 940,000, with a substantial difference between the median (265,000) and the mean (288,655).

IQR

In outlier detection, the **Interquartile Range (IQR)** is often used to identify values that are significantly lower or higher than most of the data points. Outliers can be classified as data points that fall outside a certain range defined by the **IQR**.

IQR=Q3-Q1
Lesser range = Q1-1.5* IQR
Higher range = Q3+ 1.5* IQR

1.5 Using Reason:

Using smaller values (1): Increases the likelihood of categorizing more data points as lower outliers.

Using larger values (2 or 3): Decreases the likelihood of detecting high outliers.

Why 1.5: It is considered a reasonable threshold that identifies most outliers without being too strict or too lenient, making it a balanced approach for outlier handling in datasets.

Outlier Prediction:

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

	Minimum	Q1	Median	Q3	Maximum	IBR Q3-Q1	1.5*IQR	Lesser Range Q1-1.5*IQR	Higher Range Q3+1.5*IQR
Day	32	56	74.5	82.5	99	26.5	39.75	16.25	122.25
Night	25.5	78	81	89	98	11	16.5	61.5	105.5

This particular data has a ***lower outlier*** as the lesser range is higher than Minimum value.

IQR Calculation Table Explanation:

	sl_no	ssc_p	hsc_p	degree_p	etest_p	mba_p	salary
Mean	108.0	67.303395	66.333163	66.370186	72.100558	62.278186	288655.405405
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Q2:50%	108.0	67.0	65.0	66.0	71.0	62.0	265000.0
Q3:75%	161.5	75.7	73.0	72.0	83.5	66.255	300000.0
Q4:100%	215.0	89.4	97.7	91.0	98.0	77.89	940000.0
IQR	107.0	15.1	12.1	11.0	23.5	8.31	60000.0
1.5rule	160.5	22.65	18.15	16.5	35.25	12.465	90000.0
Lesser	-106.0	37.95	42.75	44.5	24.75	45.48	150000.0
Greater	322.0	98.35	91.15	88.5	118.75	78.72	390000.0
Min	1	40.89	37.0	50.0	50.0	51.21	200000.0
Max	215	89.4	97.7	91.0	98.0	77.89	940000.0

Summary:

	ssc_p	hsc_p	degree_p	etest_p	mba_p	salary
Mean	67.303395	66.333163	66.370186	72.100558	62.278186	288655.4054
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99%	87	91.86	83.86	97	76.1142	NaN
Q4:100%	89.4	97.7	91	98	77.89	940000
IQR	15.1	12.1	11	23.5	8.31	60000
1.5rule	22.65	18.15	16.5	35.25	12.465	90000
Min	40.89	37	50	50	51.21	200000
Max	89.4	97.7	91	98	77.89	940000
Lesser	37.95	42.75	44.5	24.75	45.48	150000
Greater	98.35	91.15	88.5	118.75	78.72	390000
Lower Range		Yes				
Higher Range		Yes	Yes			Yes

Lesser range: hsc_p

Higher range: hsc_p, degree_p and salary