Assignment

1. Why population variance is $\sigma^2 = \frac{\Sigma (x - \mu)^2}{N}$ and sample variance is $s^2 = \frac{\Sigma (x - \bar{x})^2}{n - 1}$.

   In sample variance denominator is taken as (n-1), where n is the number of observations in a sample and in population variance denominator is N, where N is the total number of observations in a population. State the reason with appropriate examples.
2. Three real life applications of variance and standard deviations. You are free to use some sample datas and find variance and standard deviations. State how variance and standard deviations are applying to the corresponding dataset and in real life scenarios.

3.

Month	Temperature(deg C)	Ice Cream production(kg)
Jan	35	1500
Feb	36	1550
March	36.5	1550
April	37	1700
May	38	1800
June	36	1400

July	35	2000
August	28	1300
September	31	1350
October	32	1400
November	33	1500
December	34	1600

Find covariance and correlation, also state the relation between temperature and Ice cream production?