S2 REPORT

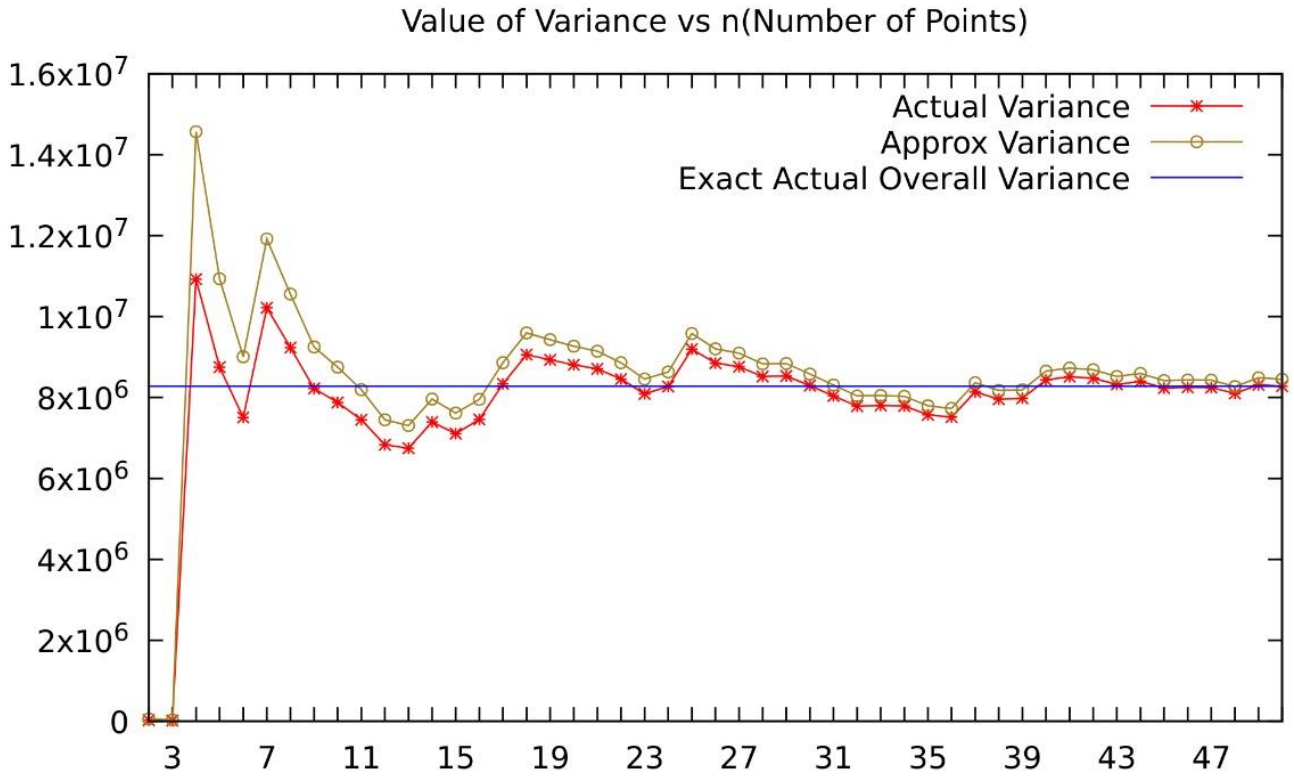
Q4 a)

In this Part, we are simply reading a text file with numerical values & finding the mean of them using one count variable, to count total number of values & one sum variable to store the summation of all elements & then finding the mean using the formula

$$Mean = \frac{\sum_{i=1}^{n} x_i}{n}$$

Q4 b)

GRAPH



We can see from the graph that the approx. & actual variance of Data keeps on improving in terms of estimation & finally almost reaches the actual exact overall variance, but initially it possesses too much error.

$$Actual\ Variance = \frac{\sum (x_i - \mu)^2}{N}$$

$$Approx\ Variance = \frac{\sum (x_i^2) - \frac{(\sum x_i)^2}{N}}{N - 1}$$

Q4 c)

The approximate percentage of numbers that lie in the range of $[0.8\,\mu\,,\ 1.2\,\mu]\ where\ \mu\ =\ Mean$ on the basis of the sample data provided is 4.00 %.

It may change on the basis of data, but it would remain close to this percentage only as per Laws of Statistics.