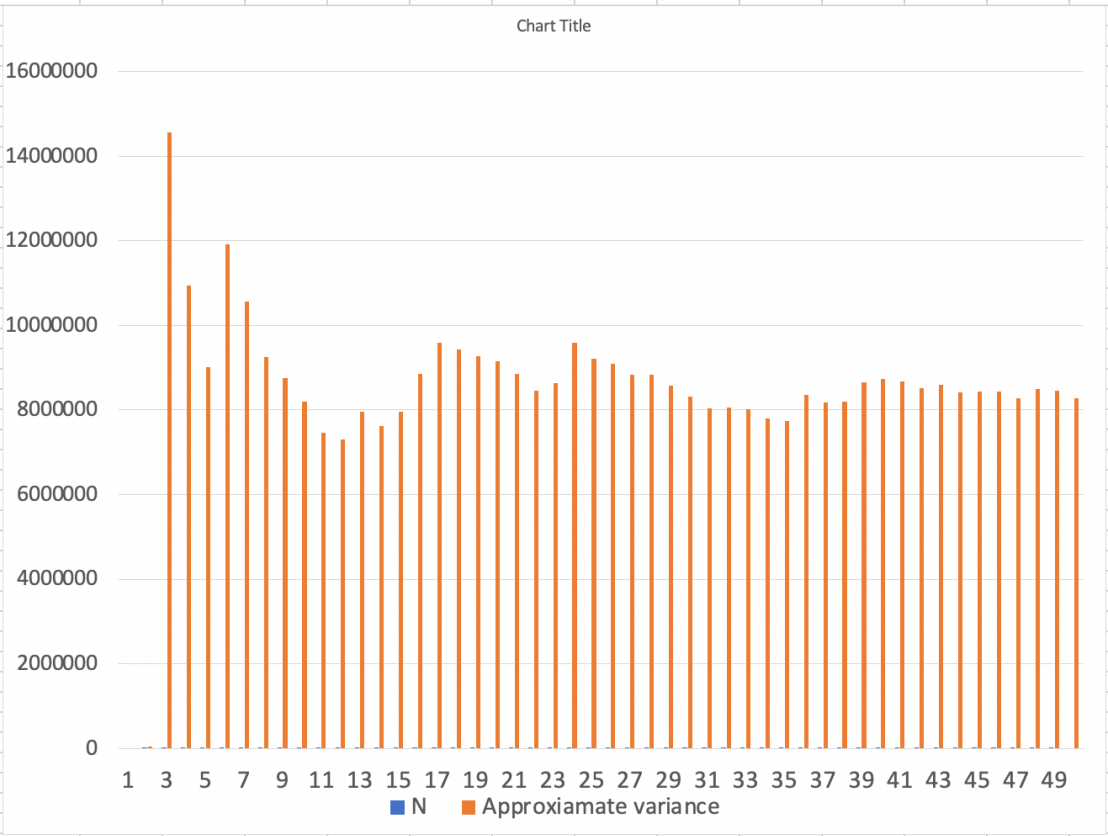
Question 4(B) Report

1. First open the data as well as mean file.
2. The use the formula for running mean to calculate the approximate value of variance and print it out on another file

$$s^2 = \frac{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}{N-1}$$

3. Using this file, plot a graph (using excel sheets) comparing it with the Calculated Value of actual variance

N	Approxiamate variance
1	NAN
2	31252
3	14571244.92
4	10938807.7
5	9010546.967
6	11922105.81
7	10556320.29
8	9252032.5
9	8752415.733
10	8196844.618
11	7453374.515
12	7309893.308
13	7963494.286
14	7619119.981
15	7956873.463
16	8862461.971
17	9595823.977
18	9431011.83
19	9271876.905
20	9145672.548
21	8860720.089
22	8459533.407
23	8632641.036
24	9582637.167
26	9204717.282
27	9101215.644
28	8833586.508
28	8840923.741
30	8583489.482
31	8309026.103
32	8041005.064
33	8052012.985
34	8028682.739
35	7798814.644
36	7733328.257
37	8366131.602
38	8177086.25
39	8194453.815
40	8651879.584
41	8729631.356
42	8684735.6
43	8522003.421
44	8594678.877
45	8421311.664
46	8435622.443
47	8429446.687
48	8273436.542
49	8490341.574
50	8452553.855
Actual	8283502.778



Conclusion:

We can see that the value of running variance approaches the actual variance as we increase the number of input data numbers.