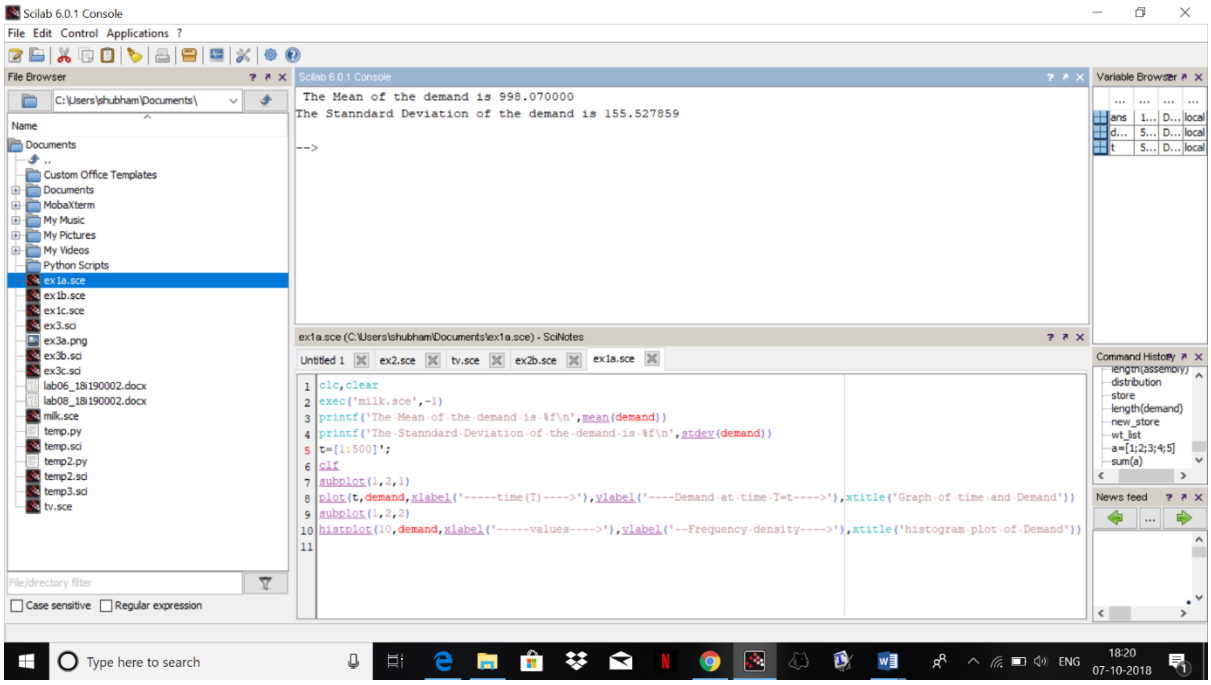
NAME: SHUBHAM SHARMA

ROLL NO: 18i190002

MSC PHD (OR)

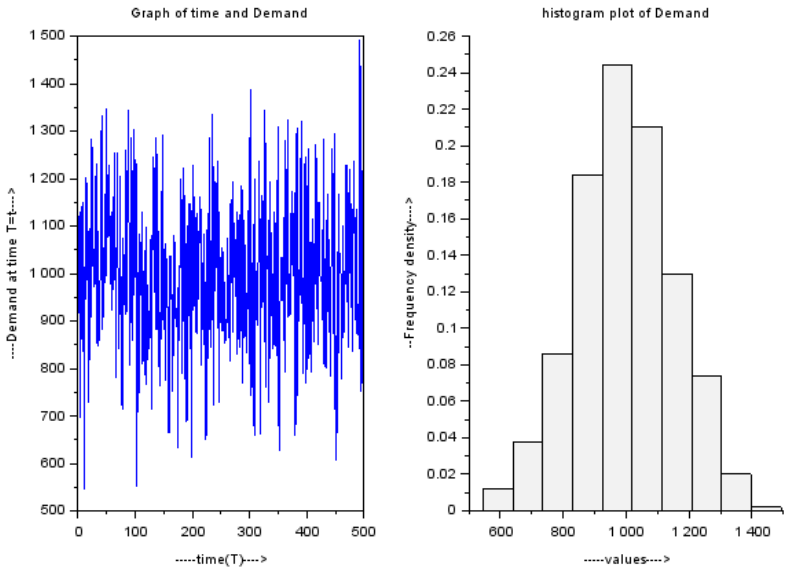
EX1:

part(a)(code file: ex1a.sce)

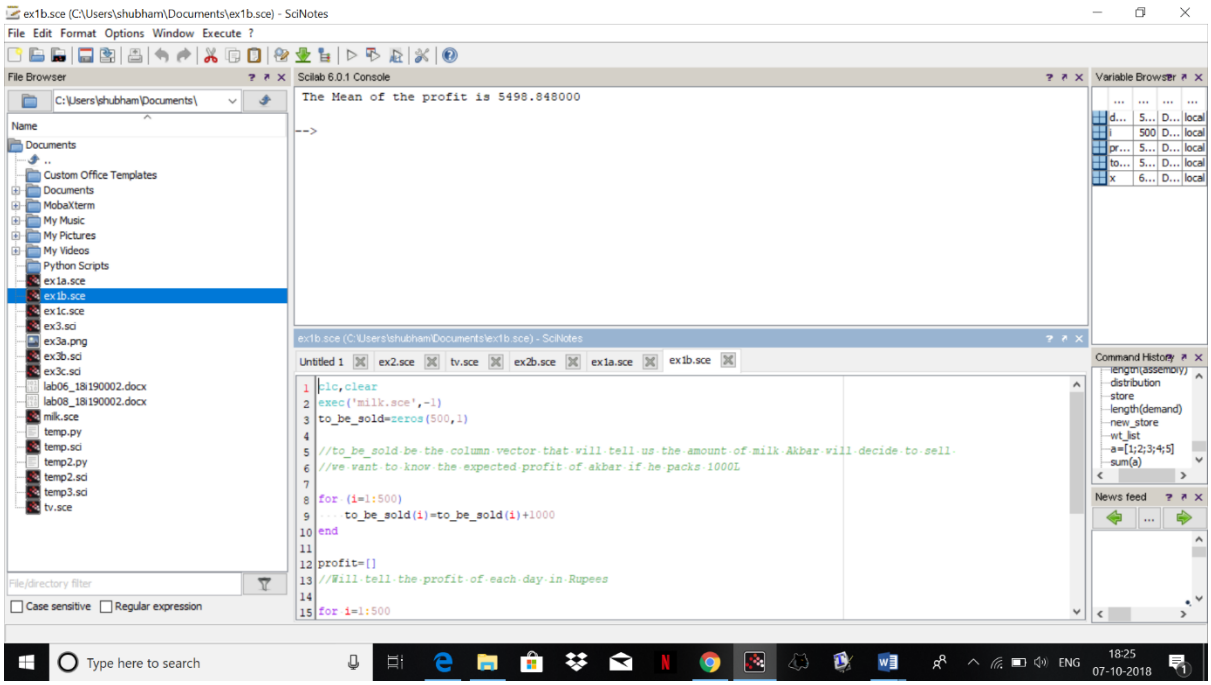


The Mean of the demand is 998.070000

The Standard Deviation of the demand is 155.527859

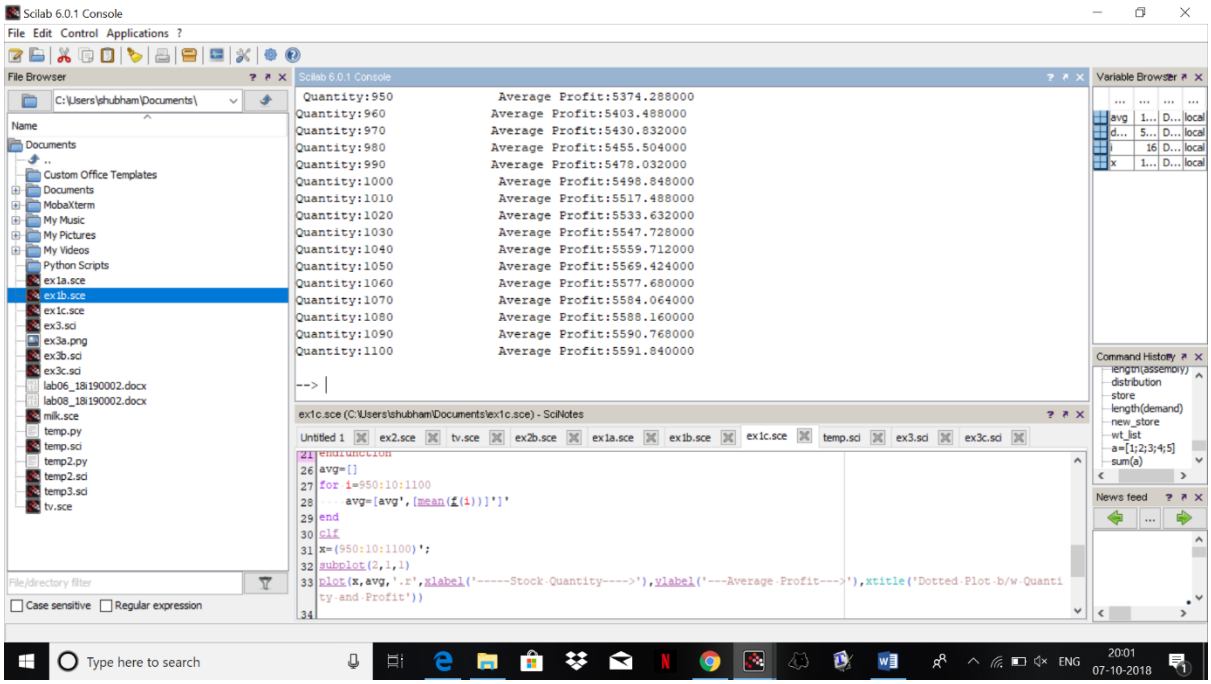


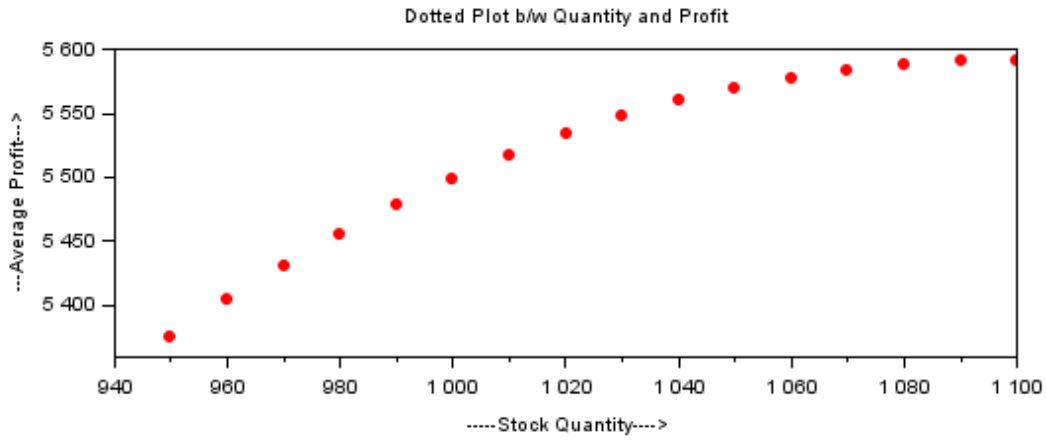
part(b)



The Mean of the profit is **5498.848000.**

part(c)





Quantity:950 Average Profit:5374.288000

Quantity:960 Average Profit:5403.488000

Quantity:970 Average Profit:5430.832000

Quantity:980 Average Profit:5455.504000

Quantity:990 Average Profit:5478.032000

Quantity:1000 Average Profit:5498.848000

Quantity:1010 Average Profit:5517.488000

Quantity:1020 Average Profit:5533.632000

Quantity:1030 Average Profit:5547.728000

Quantity:1040 Average Profit:5559.712000

Quantity:1050 Average Profit:5569.424000

Quantity:1060 Average Profit:5577.680000

Quantity:1070 Average Profit:5584.064000

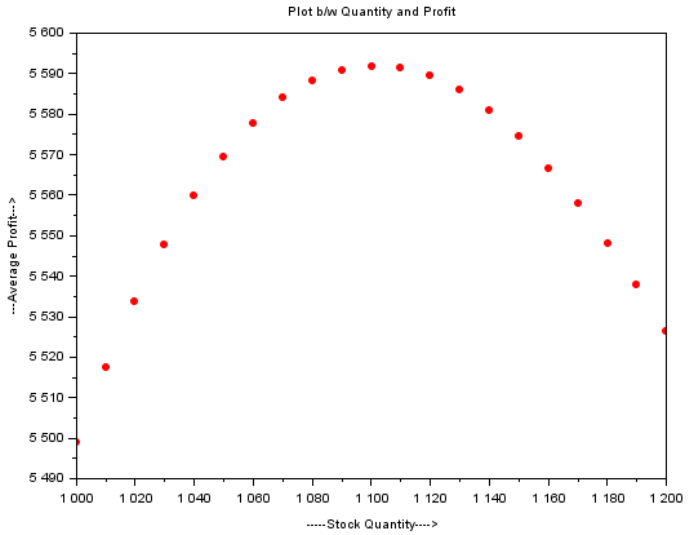
Quantity:1080 Average Profit:5588.160000

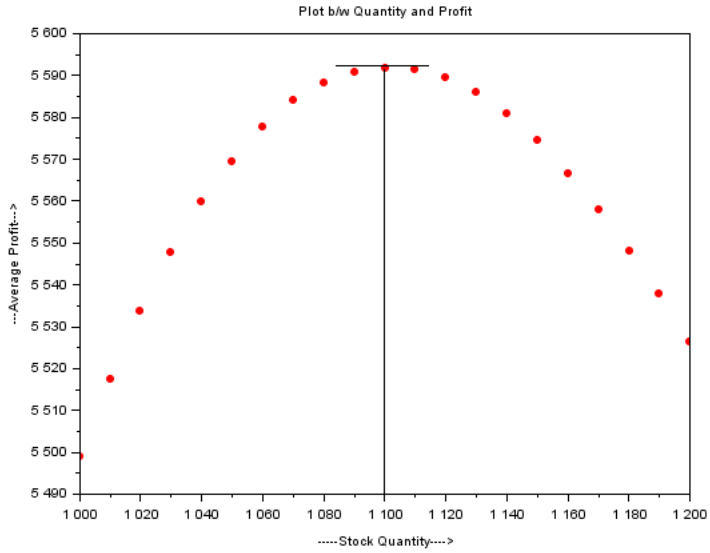
Quantity:1090 Average Profit:5590.768000

Quantity:1100 Average Profit:5591.840000

part(d)

We are getting a concave curve if we take a plot of stock and average profit and the point on which we get the peak is the recommended stock level because we have maximum profit there

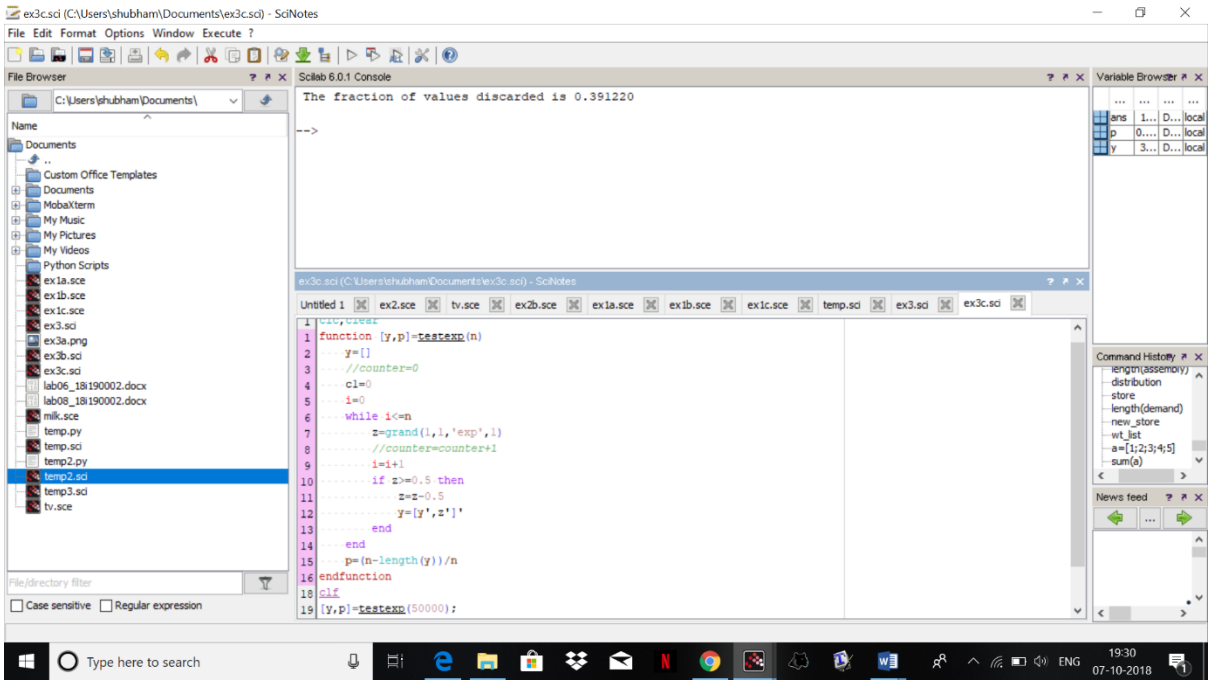


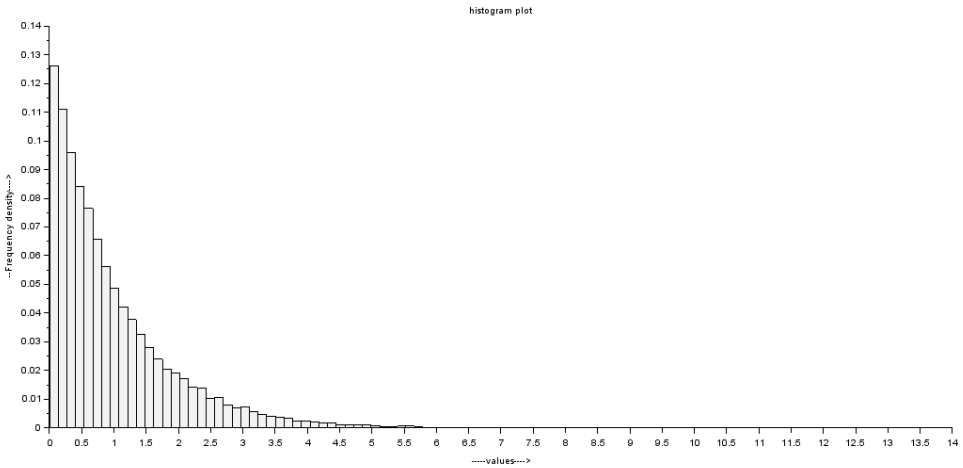


thus, stock level **1100** is the recommended stock level

EX3:

(Part c again with slight rectifications)



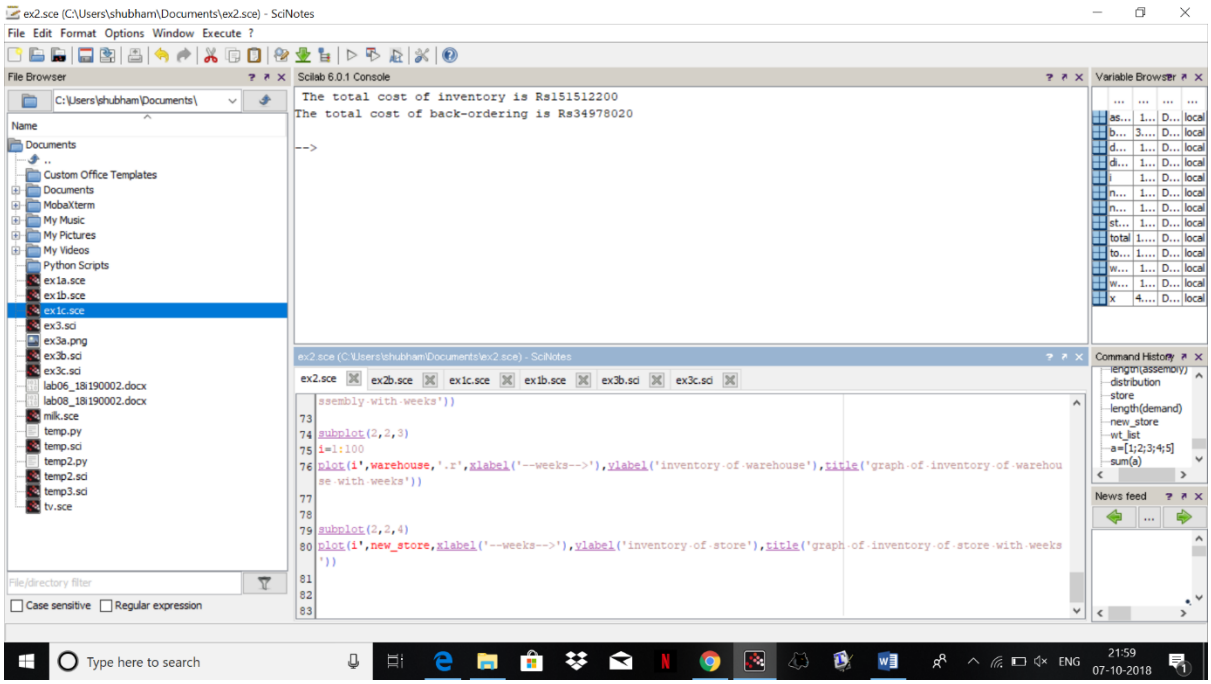


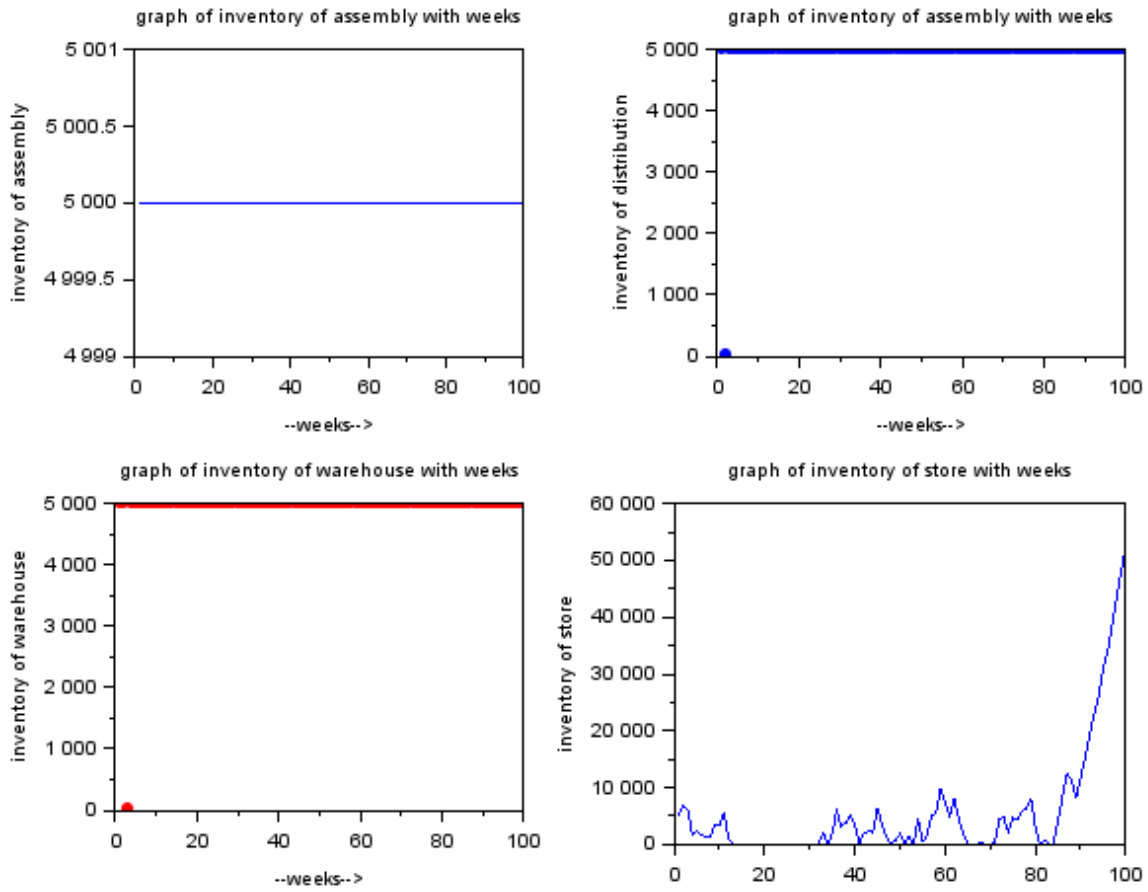
The fraction of values discarded is **0.391220**

the histplot is as follows , we see that we get less then half values which are less than 0.5 and we decrease the values to 0.5 so the graph will not consider higher values.

EX3:

part(a)



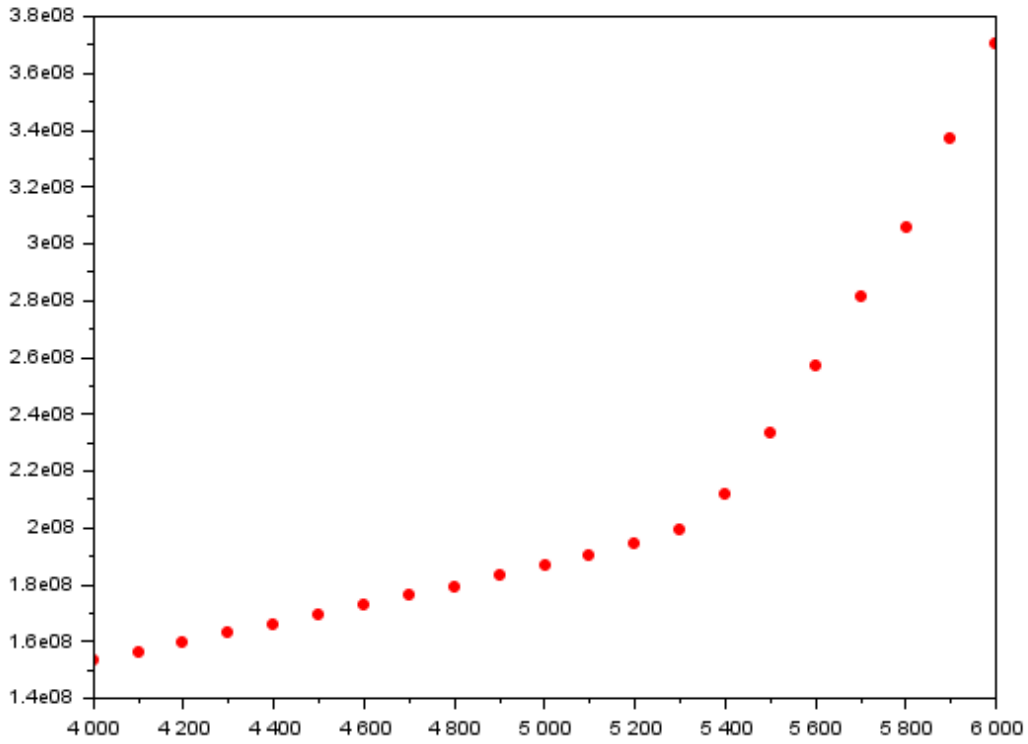


The total cost of inventory is Rs**151512200**

The total cost of back-ordering is Rs**34978020**

part(b)

The best fixed order quantity is : **6000**



We can see from the graph that the best fixed order quantity is : **6000**

Quantity=4000 Total Cost=153115810

Quantity=4100 Total Cost=156312870

Quantity=4200 Total Cost=159500870

Quantity=4300 Total Cost=162710090

Quantity=4400 Total Cost=165920280

Quantity=4500 Total Cost=169135310

Quantity=4600 Total Cost=172432660

Quantity=4700 Total Cost=175872310

Quantity=4800 Total Cost=179299790

Quantity=4900 Total Cost=182808810

Quantity=5000 Total Cost=186490220

Quantity=5100 Total Cost=190407160

Quantity=5200 Total Cost=194487400

Quantity=5300 Total Cost=199288580

Quantity=5400 Total Cost=211838580

Quantity=5500 Total Cost=233205680

Quantity=5600 Total Cost=257063340

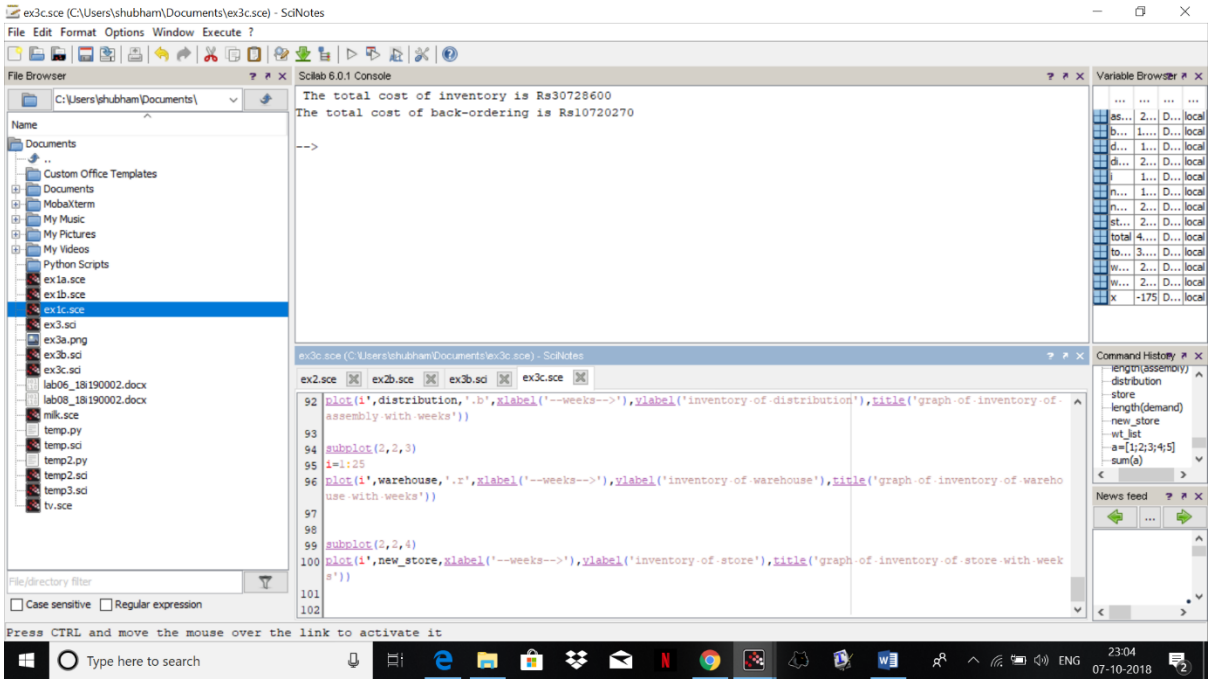
Quantity=5700 Total Cost=281413770

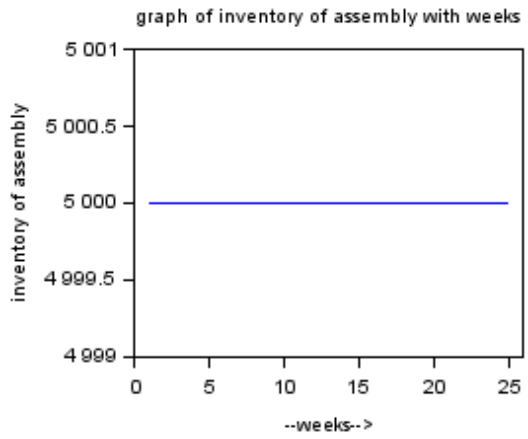
Quantity=5800 Total Cost=305815660

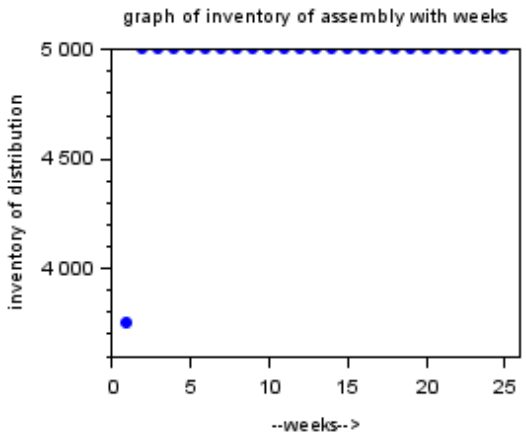
Quantity=5900 Total Cost=336950430

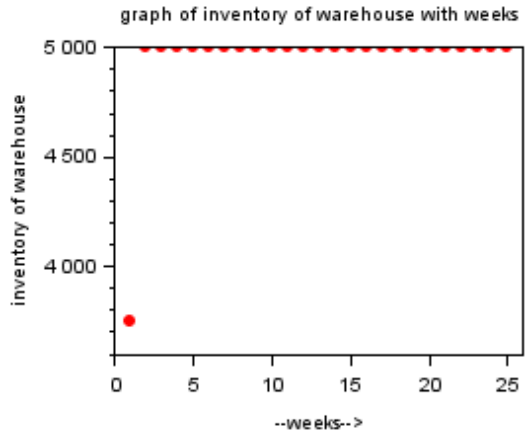
Quantity=6000 Total Cost=370202770

part(c)









part(d)

The total cost of inventory is Rs553604300

The total cost of back-ordering is Rs0

This policy or ordering is an month is less reasonable as the cost is more

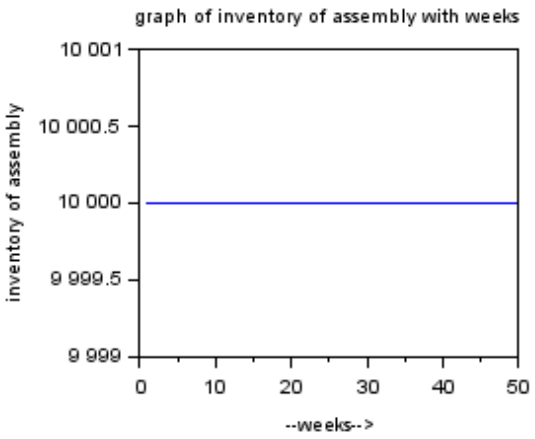
what we can do is to take the average of demand each week and order that amount of stock that will minimize the cost

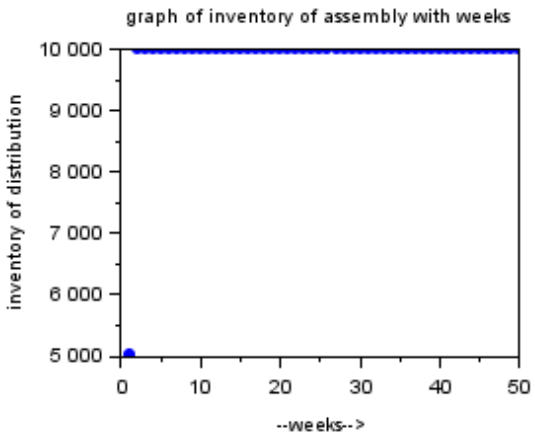
part(e)

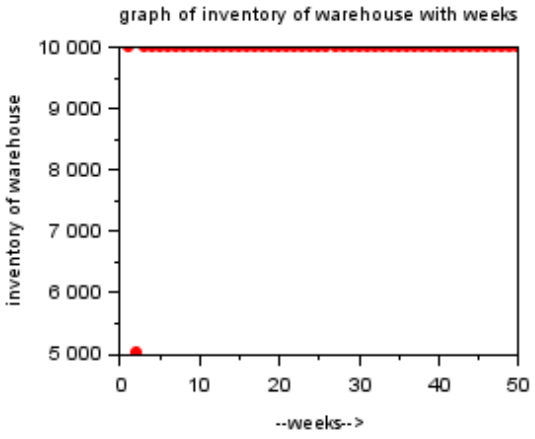
We can make the order in every two weeks and we get the following results

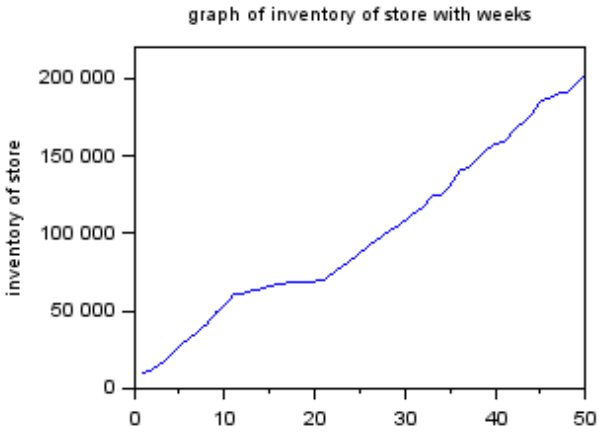
The total cost of inventory is Rs597524700

The total cost of back-ordering is Rs0


graph of inventory of assembly with weeks
inventory of assembly
10 001
10 000.5
10 000
9 999.5
9 999
0
10
20
30
40
50
--weeks-->


graph of inventory of assembly with weeks
inventory of distribution
10 000
9 000
8 000
7 000
6 000
5 000
0
10
20
30
40
50
--weeks-->


graph of inventory of warehouse with weeks
inventory of warehouse
10 000
9 000
8 000
7 000
6 000
5 000
0
10
20
30
40
50
--weeks-->


graph of inventory of store with weeks
inventory of store
200 000
150 000
100 000
50 000
0
0
10
20
30
40
50