

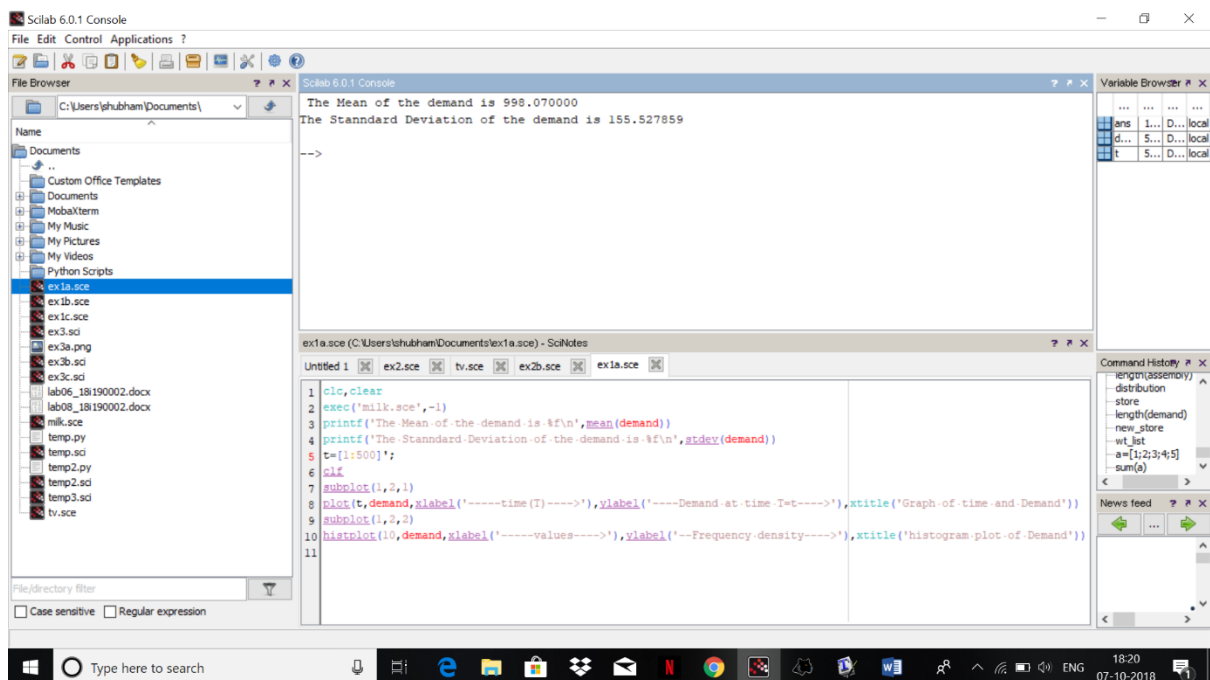
**NAME: SHUBHAM SHARMA**

**ROLL NO: 18i190002**

**MSC PHD (OR)**

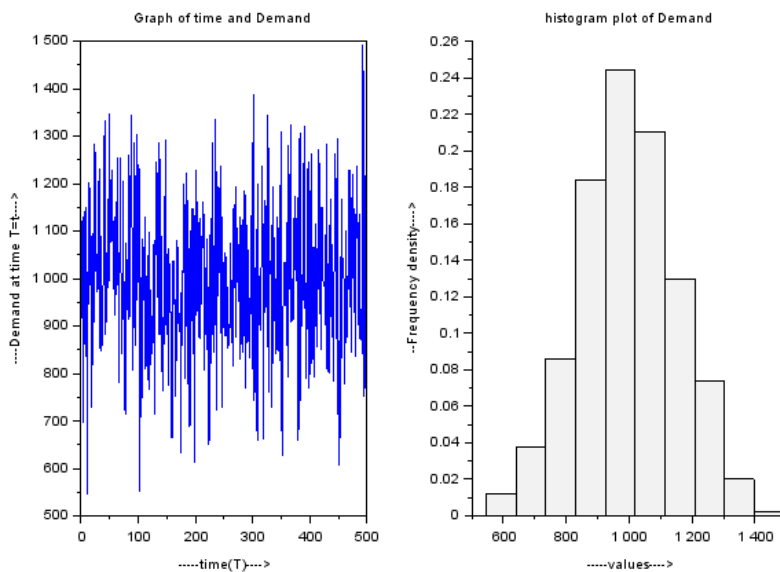
**EX1:**

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



The Mean of the demand is 998.070000

The Standard Deviation of the demand is 155.527859



The distribution of the demand seems to be **Normal Distribution**.

## part(b)

The screenshot shows a MATLAB script named 'ex1b.sce' being executed in the Scilab 6.0.1 environment. The script calculates the mean profit based on demand data. The console output shows 'The Mean of the profit is 5498.848000'. The variable browser shows the state of variables: 'd' (500x1 double), 'i' (500x1 double), 'pr' (500x1 double), 'to' (500x1 double), and 'x' (6x1 double). The command history shows the following commands:

```
length(assemby)
distribution
store
length(demand)
new_store
wt_jet
a=[1;2;3;4;5]
sum(a)
```

The script code is as follows:

```
1 tlc,clear
2 exec('milk.sce',-1)
3 to_be_sold=zeros(500,1)
4
5 //to_be_sold be the column vector that will tell us the amount of milk Akbar will decide to sell.
6 //we want to know the expected profit of akbar if he packs 1000L
7
8 for i=1:500
9     to_be_sold(i)=to_be_sold(i)+1000
10 end
11
12 profit=[]
13 //Will tell the profit of each day in Rupees
14
15 for i=1:500
```

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

## part(c)

Scilab 6.0.1 Console

File Edit Control Applications ?

File Browser

C:\Users\shubham\Documents\

ex1b.sce

ex1c.sce

ex3.sci

ex3a.png

ex3b.sci

ex3c.sci

lab06\_18190002.docx

lab08\_18190002.docx

mlk.sce

temp.py

temp.sci

temp2.py

temp2.sci

temp3.sci

tv.sce

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:5496.848000

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

--> |

ex1c.sce (C:\Users\shubham\Documents\ex1c.sce) - SciNotes

Untitled 1 ex2.sce tv.sce ex2b.sce ex1a.sce ex1b.sce ex1c.sce temp.sci ex3.sci ex3c.sci

```

24 function
25 avg=[]
26 for i=950:10:1100
27     avg=[avg', [mean(f(i))]]'
28 end
29 cli
30 x=(950:10:1100)';
31 subplot(2,1,1)
32 plot(x, avg, 'r', xlabel('----Stock-Quantity---->'), ylabel('---Average Profit--->'), xtitle('Dotted Plot b/w Quantity and Profit'))
33
34

```

Variable Browser

avg 1... D... local

cli 5... D... local

x 1... D... local

Command History

length(assembly)

distribution

store

length(demand)

new\_store

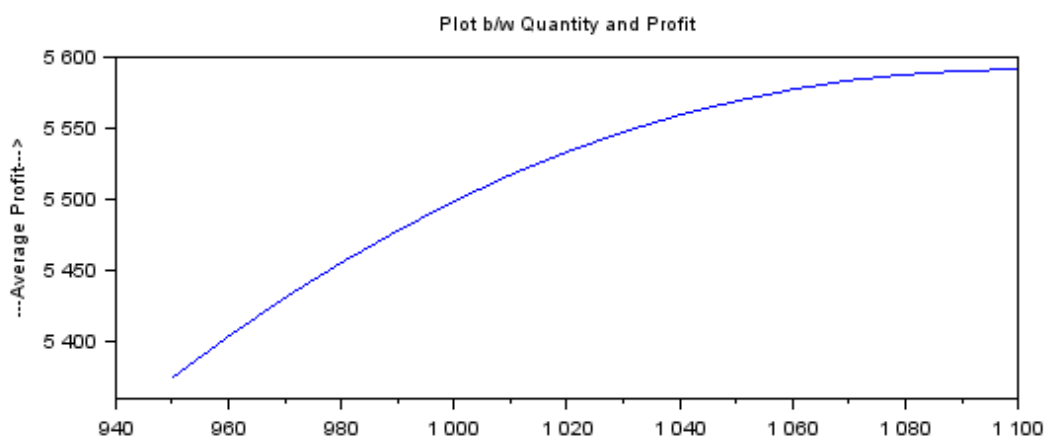
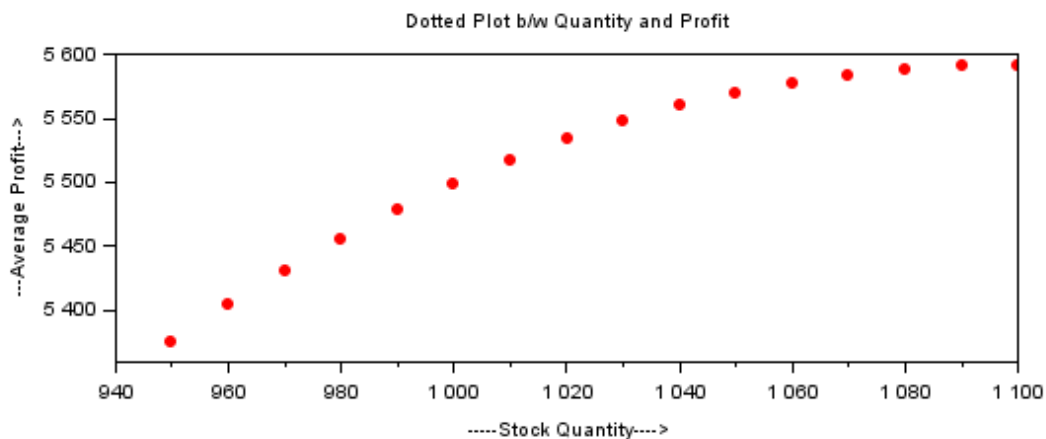
wt\_list

a=[1:2:3;4;5]

sum(a)

News feed

2001 07-10-2018



Quantity:950 Average Profit:5374.288000

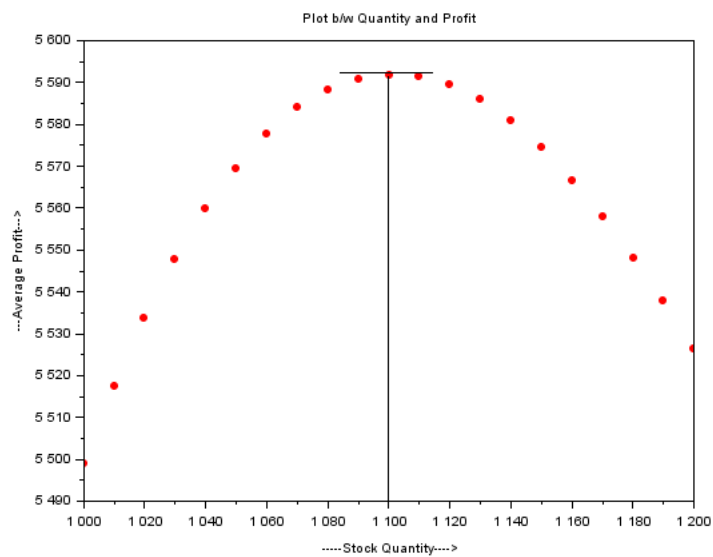
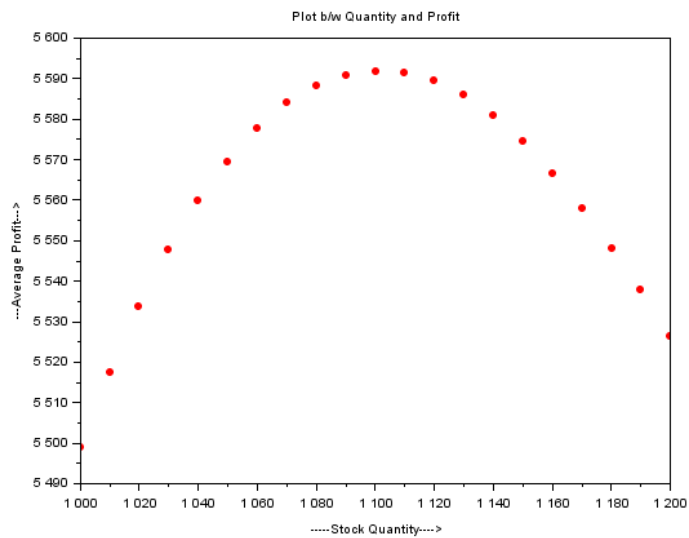
Quantity:960 Average Profit:5403.488000

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

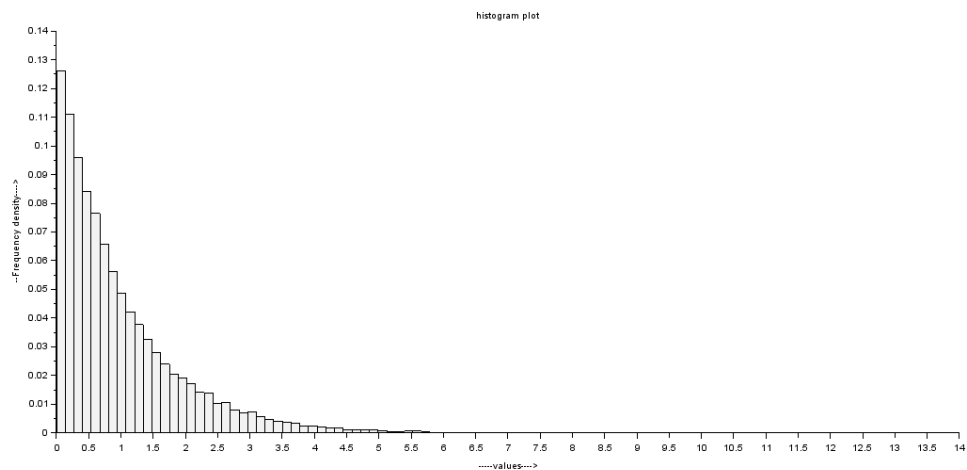
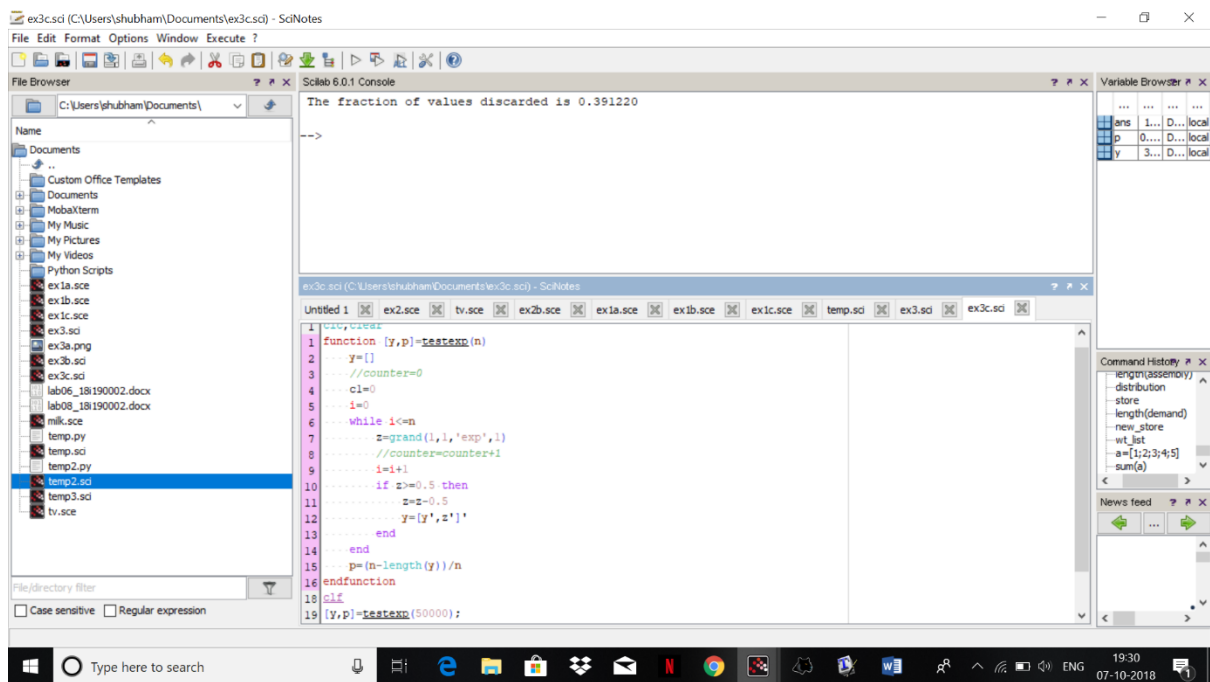


thus, stock level **1100** is the recommended stock level

---

### EX3:

(Part c again with slight rectifications)

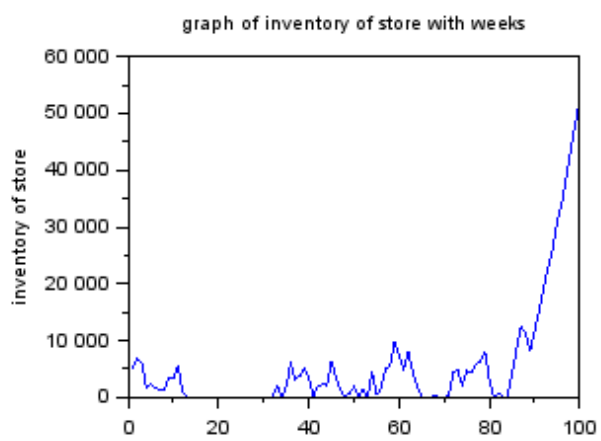
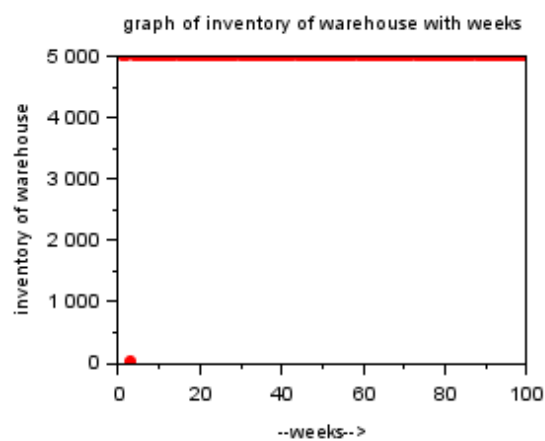
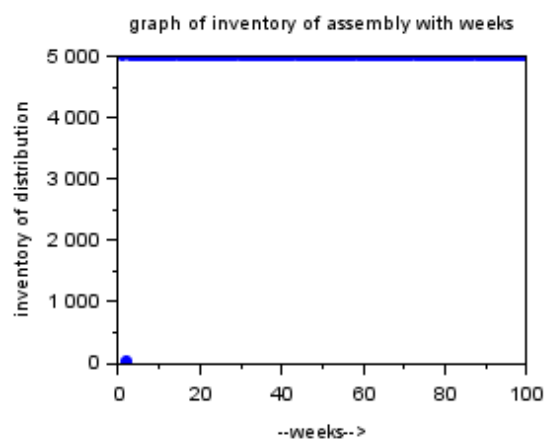
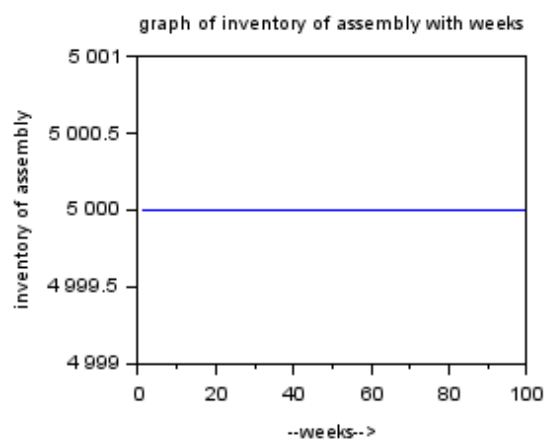
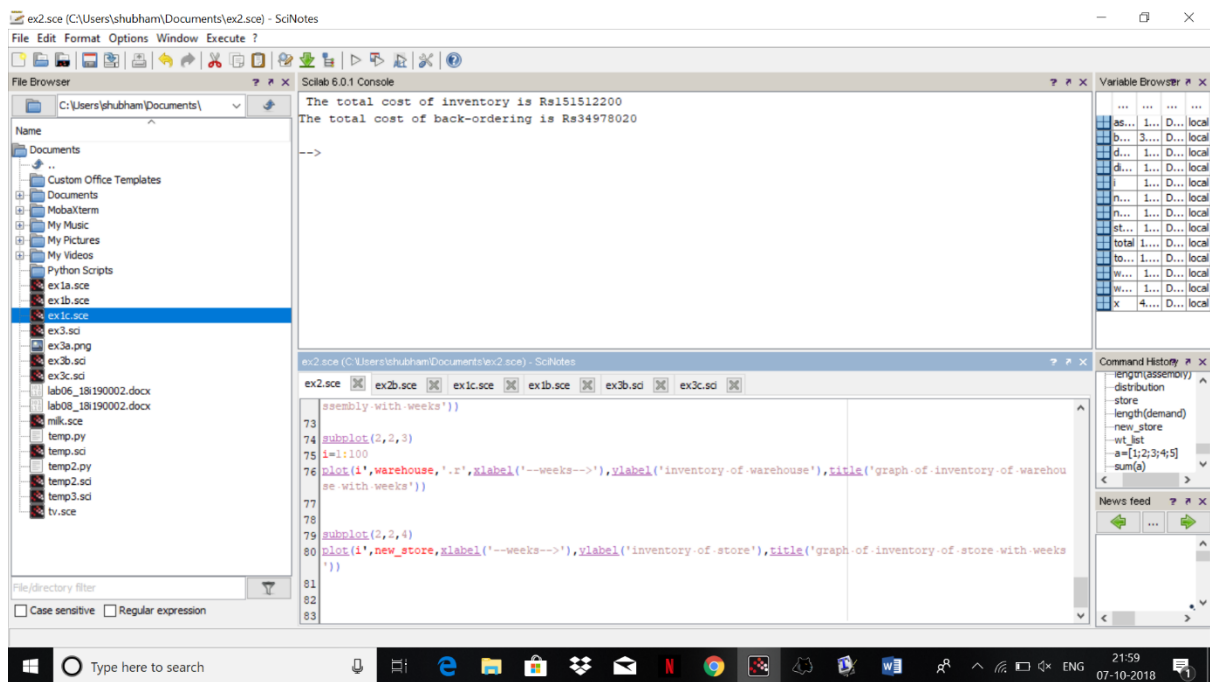


The fraction of values discarded is **0.391220**

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)

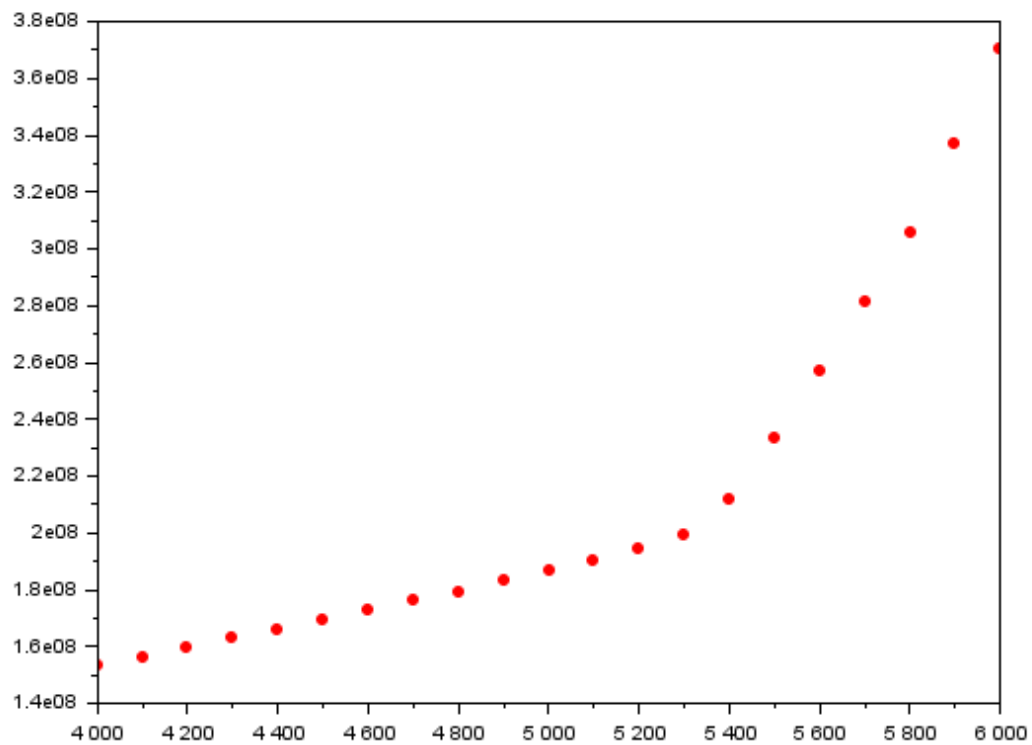


The total cost of inventory is Rs**151512200**

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

**part(b)**

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

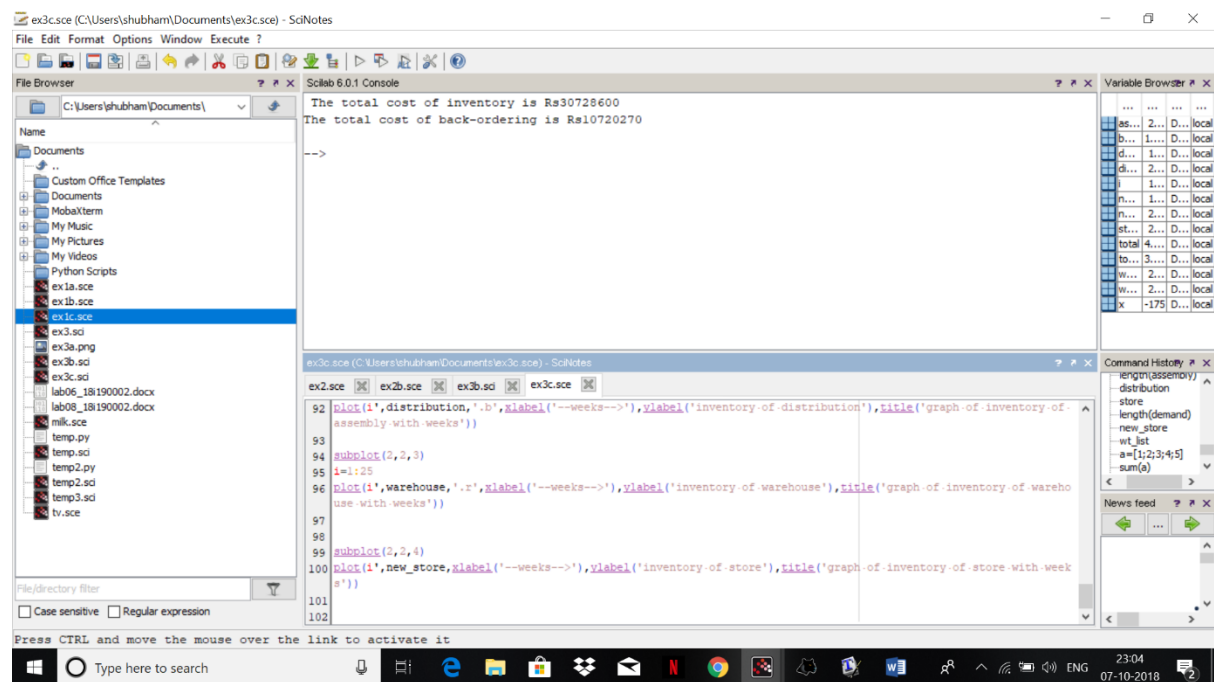


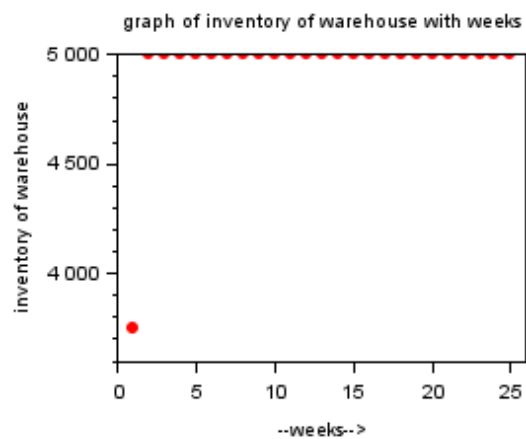
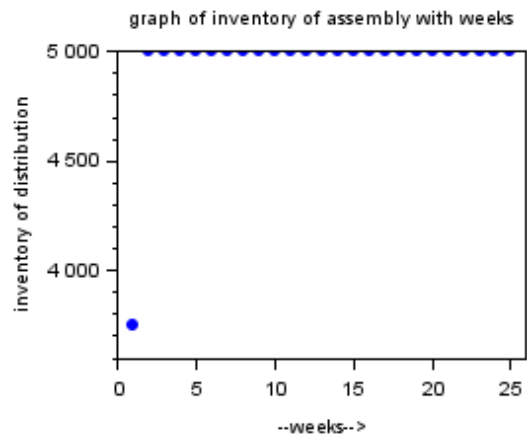
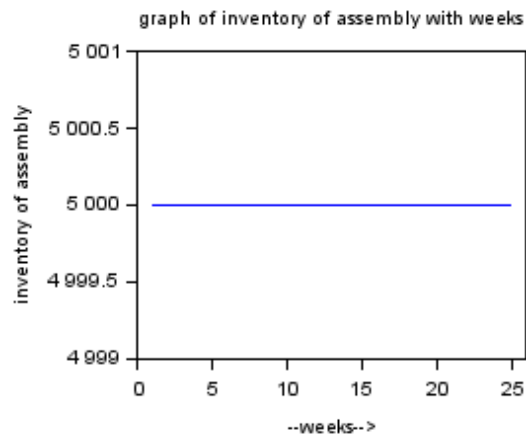
We can see from the graph that the best fixed order quantity is : **6000**

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=6000      Total Cost=370202770





## 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

