

Tyre Shop Modelling and simulation

Simulation of an Inventory problem(1/4)

- .A Tyre store manager is suppose to keep replenishing a certain item(tyres) by ordering it from the whole seller.
- .The policy is “ When the stock goes down to P items(**reorder level**), order Q more items (**reorder quantity**) from the whole seller
- .If the demand on any day exceeds the amount of inventory on hand, **the excess/less** represents lost sale and loss of goodwill.
- .On the other hand overstocking implies increased **carrying cost**(storage cost, insurance, interest, deterioration etc.).
- .Ordering too frequently will result in **excessive reorder cost**



Simulation of an Inventory problem(2/4)

- There are 3-day lag between order and delivery/arrival. The merchandise is ordered at the end of the day(i) and received at the start of fourth day($i+3$).
- For each unit of inventory the carrying cost of each night is Rs.0.75.
- Each unit out of stock when ordered results into the loss of goodwill worth Rs.2.0 per unit plus loss of Rs.16.00 net income, that would have resulted in its sale. Or a total loss of Rs. 18.00 per unit forever.
- The demand in a day can be for any number of units between 0 and 99, each equiprobable.
- There is never more than one replenishment order outstanding.
- Initially we have 115 units on hand and no reorder outstanding.



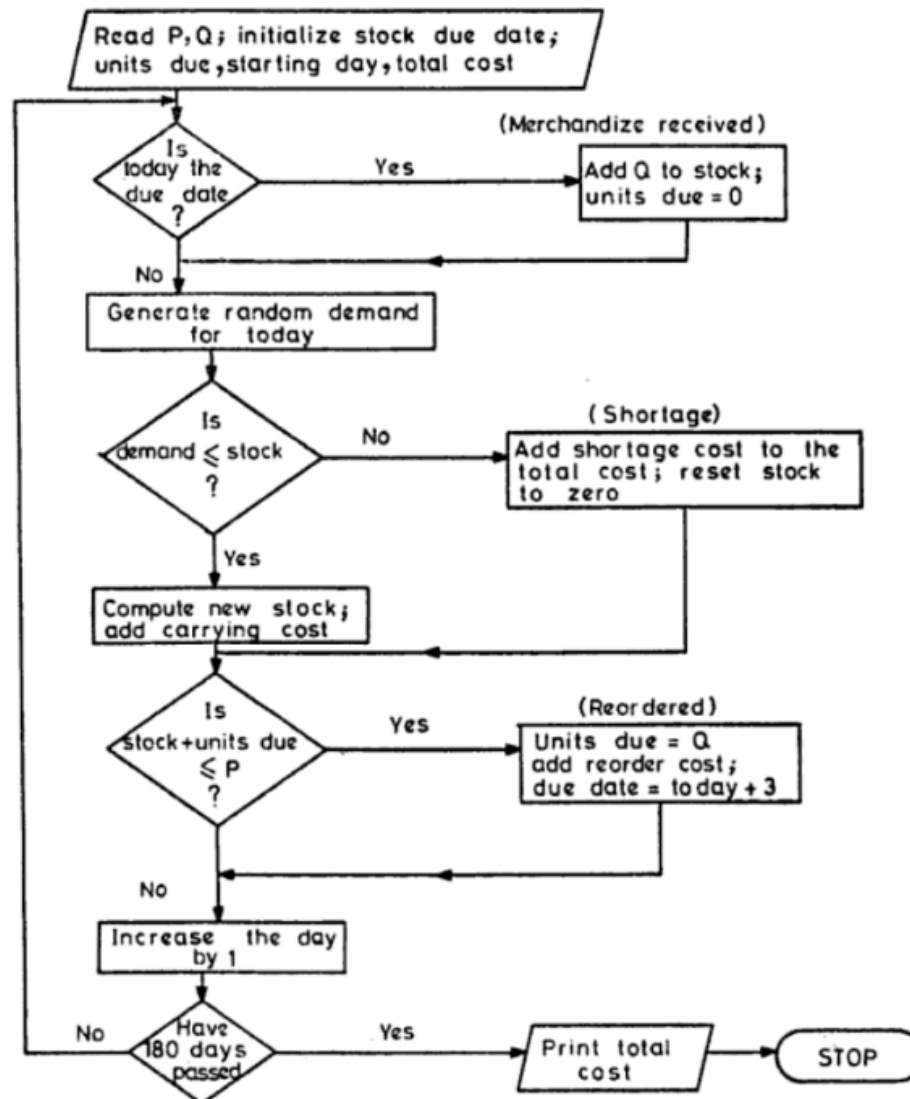
Simulation of an Inventory problem(3/4)

.Compare the following five replenishment policies and select the one that has the minimum total cost(reorder cost + carrying cost + lost sale cost).

	P (reorder point)	Q (reorder quantity)
Policy I	125	150
Policy II	125	250
Policy III	150	250
Policy IV	175	250
Policy V	175	300



Simulation of an Inventory problem(4/4)



As per one set of random numbers

The results are

<i>P</i>	<i>Q</i>	Cost in Rs.
125	150	38679.75
125	250	31268.25
150	250	29699.25
175	250	26094.00
175	300	27773.25

