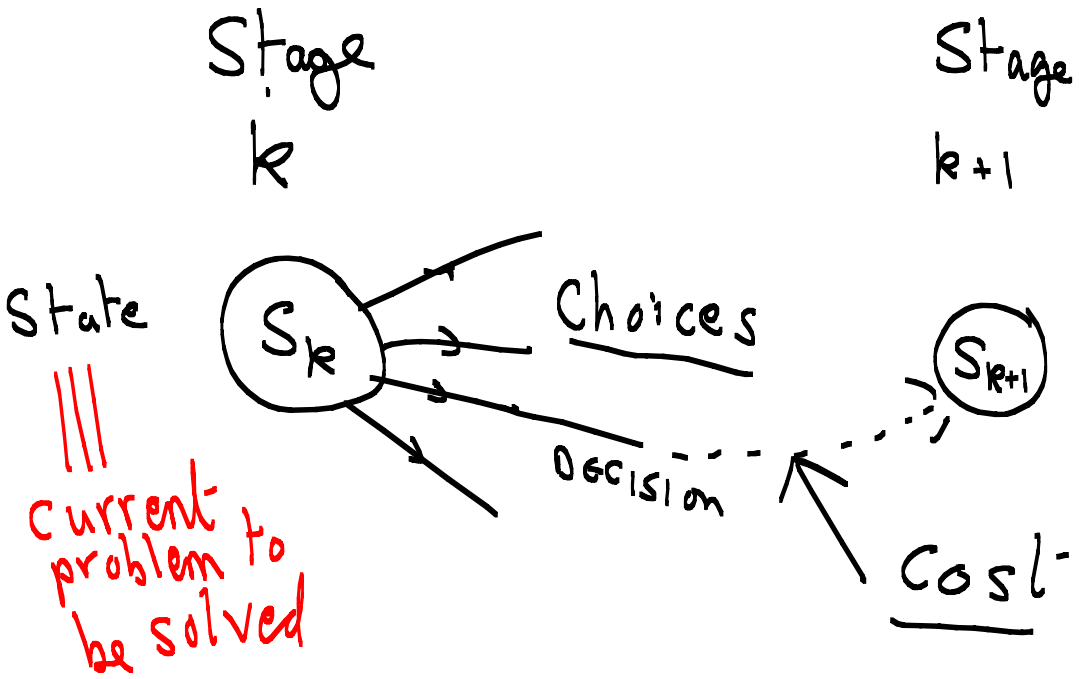
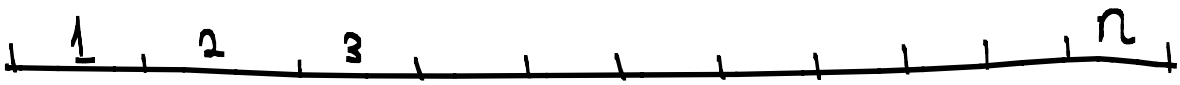
8/27/08


Stage
k
Stage
k+1
State
S_k
Choices
S_{k+1}
Decision
Cost
current problem to be solved



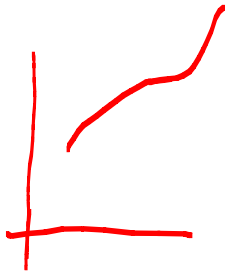
n periods

Company produces some item e.g. TV

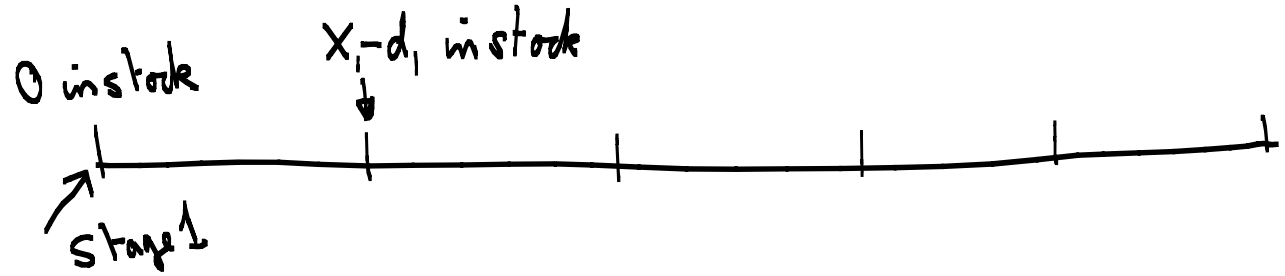
Data : (i) Demand in period j is d_j

(ii) Cost $c(x)$ to make x items

(iii) Can keep H units in stock



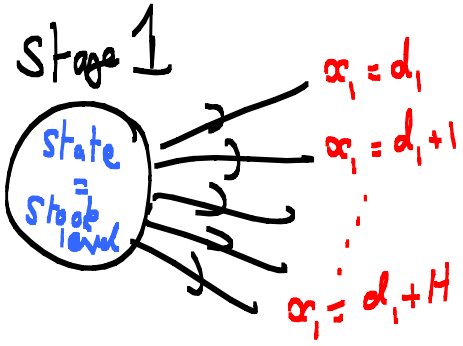
Problem: meet demand at minimum cost.



Stage 1 make decision 1

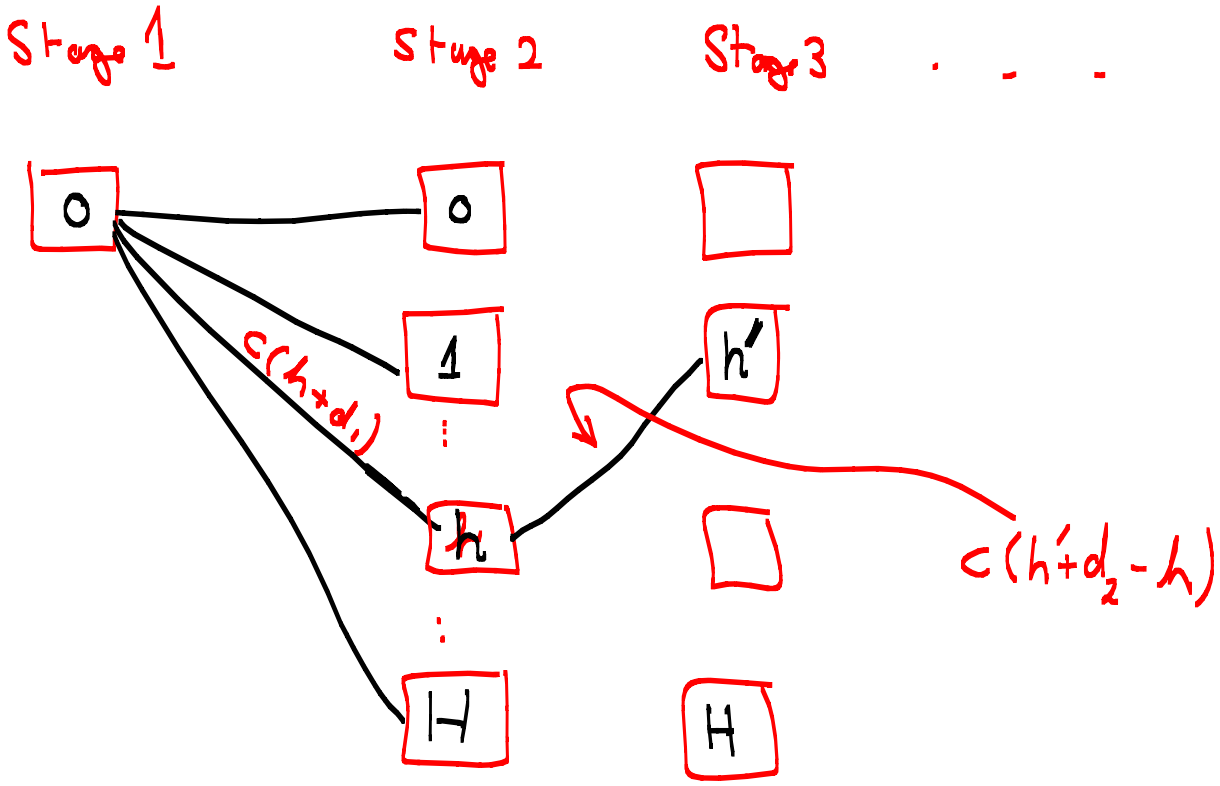
Stage 2 make decision 2

x_1 = # TV's to produce in period 1.



Solve n-1 problem 0 in stock

. . . 1 . .


Stage 1
Stage 2
Stage 3
0
0
1
h
H
h'
H
c(h+d1)
c(h'+d2-h)

Stage = k Stage

state = s

$$f_k(s) = \min_{\text{decision } d} \left[\text{Cost assoc. } d + f_{k+1}(\text{new state} = \text{function of } s \text{ and } d) \right]$$

Minimum cost for stages $k, k+1, \ldots$ if state = s

Production: $f_k(s) = \min_x \left[c(x) + f_{k+1}(s + x - d_k) \right]$

$f_{n+1}(s) = 0, \forall s$