Date	**16 November 2022**
Team ID	**PNT2022TMID17378**
Project	**Job/ Skill Recommender Application**

Utilization of algorithm ,dynamic programming,optimization

dynamic programming is an optimization approach that transforms a complex problem into a sequence of simpler problems; its essential characteristic is the multistage nature of the optimization procedure. More so than the optimization techniques described previously, dynamic programming provides a general frameworkfor analyzing many problem types. Within this framework a variety of optimization techniques can be employed to solve particular aspects of a more general formulation. Usually creativity is required before we can recognize that a particular problem can be cast effectively as a dynamic program; and often subtle insights are necessary to res**igure 11.1** Street map with intersection delays.

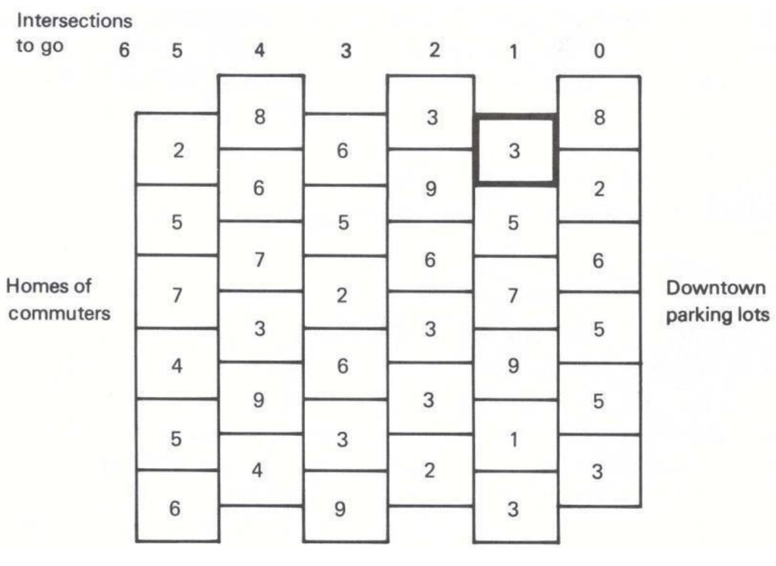

Figure 11.2 Compact representation of the network.

Algorithm 2: AR-TO-BE CONVERSION ALGORITHM

```
if scheduling lease type= = Immediate lease then:
        if resources required are available at the time then:
                allocate resources to Immediate lease
        else
                reject Immediate lease and print message
else
        if scheduling lease type= = BE then:
                Queue BE lease and set state of lease to queue.
        else
         if scheduling lease type= =AR then:
                        if no AR lease is running on required time slot & resources are
                        free then:
                                allocate resources to AR
                        else
                                if AR not getting resources & going to be rejected by the
                                scheduler then:
                                    Provide dynamic choice for AR lease convertible to
                                    BE lease
                                    if accepted then:
                                            convert this AR to BE, queue BE lease and set
                                            state of lease to queue
                                    else
                                            reject AR.
         else
                        if scheduling lease type= = DLS then:
                                slack=(deadline-start time) / duration
                                if slack < 1.1 then
                                 reject lease and print message to extend dead line or
                                 submit lease as AR lease
                                else
                                 find a single time slot which can satisfy complete lease
                                 within deadline
                                 if new lease is not schedulable as above then:
                                        find multiple slots which together can satisfy this
                                        conditions
                                 if new lease is not schedulable by any of the above
                                 methods then:
                                   find leases to be rescheduled & reschedule deadline
                                   leases
                                 else
                                   reject new lease & print message
                        else
                                print message invalid lease type
```

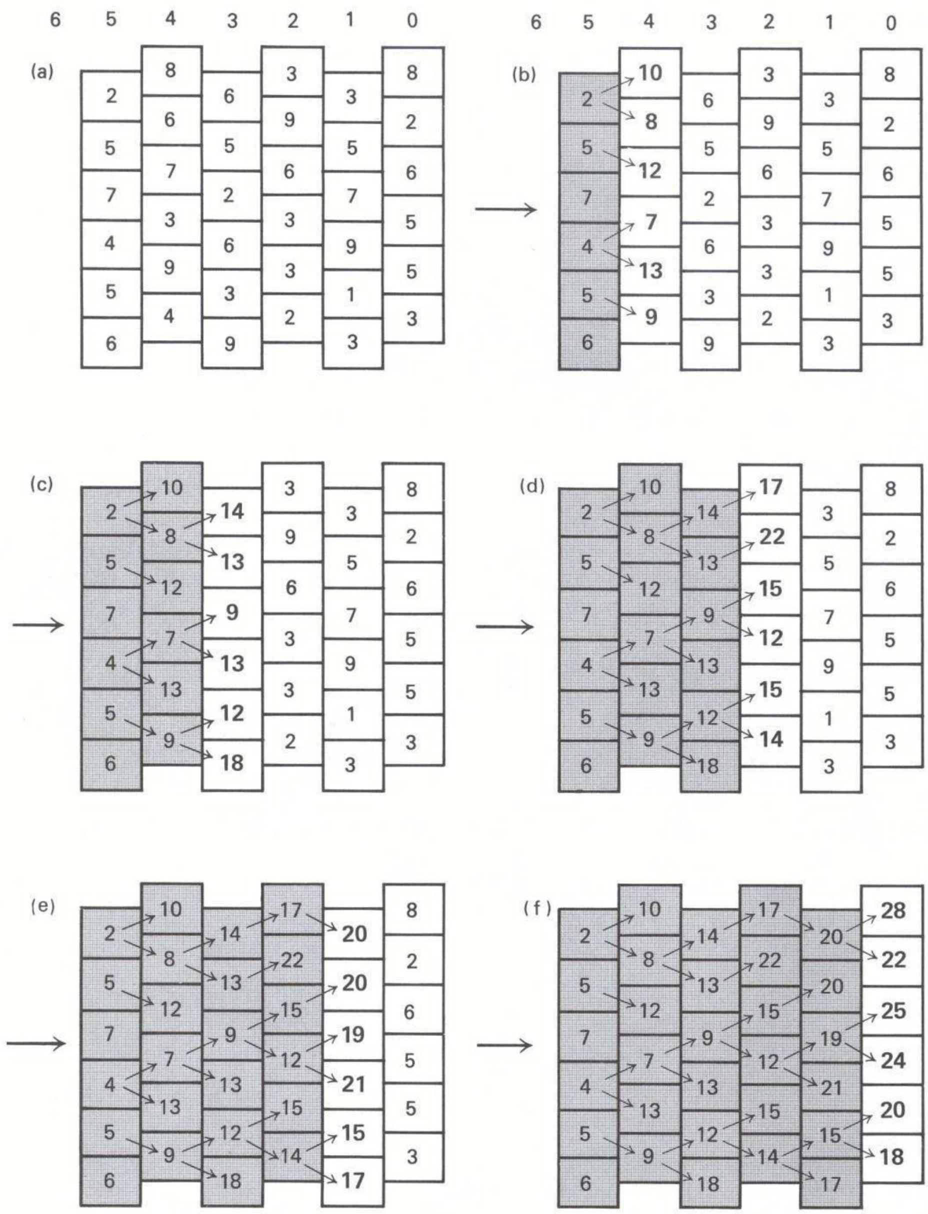

Figure 11.6 Solution by forward induction.

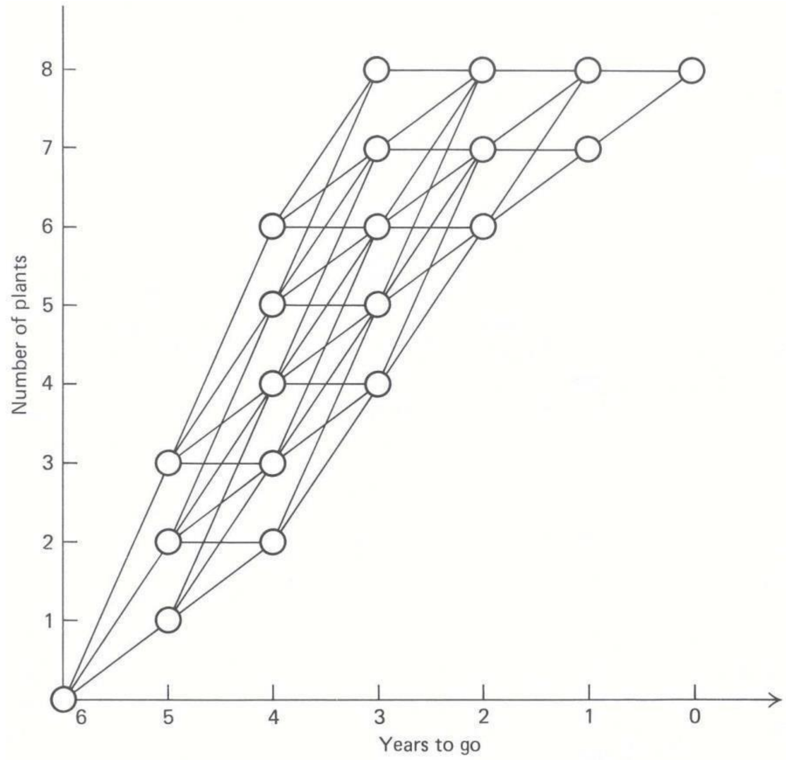

Figure 11.8 Allowable capacity (states) for each tage

plus the plant costs, which depend upon the year of construction and whether 1, 2, or 3 plants are completed. Measured in thousands of dollars, these costs are

$$1500 + c_n x_n,$$

the one additional plant is the $1500 common cost plus the $5200 cost per plant, for a total of $6700. (All costs are measured in thousands of

dollars.) The column headed $d_{1*}(s_1)$ gives the optimal decision function, which specifies the optimal number of plants to construct, given the current state of the system.

Now let us consider what action we should take with two years (stages) to go. Tableau 2 indicates the possible costs of eachstate:

Tableau 1Tablea

s_2 \ d_2	0	1	2	$v_2(s_2)$	$d_2^*(s_2)$
8	0	—	—	0	0
7	6,700	7,000	—	6,700	0
6	—	13,700	12,500	12,500	2

$\underbrace{\qquad}_{c_2(s_2,\, d_2) + v_1(s_1)}$

$\underbrace{\qquad}_{c_1(s_1,\, d_1)}$