sometimes D.P. > generally, sometimes guerdy > O.P

(>: pruffered)

## # 0-1 KNAPSACK PROBLEM

PROBLEM . > no items, Vi > money , Wi > wight wight as force

find Marc. profit.

Let perofit per item be pi

Motive:  $\Rightarrow \sum_{i \in T} p_i$  i marinized (given  $\sum_{i \in T} w_i \leq w$ )

W= 50

.i.	l	2_	3	4	2	6
WI	10	15	20	25	05	0
Pi	100	200	100	210	50	210

\* Route fouce -> cotch every element and try to fit -> O(n2) \* Combination of all values  $\rightarrow 0(2^n) \implies 0/1$  So four posséble

\* solding another weight w, weight of the subproblem

then so find P[KoW]

ing another weight  $\omega$ , weight of the subpublish.

then so find P[K,W] weight WK>W with respect weight.  $P[K,W] = \begin{cases} P[K-1,W], P[K-1,W-WK] + PK \\ METHOD. \end{cases}$ Thou METHOD.

TABULATION METHOD.

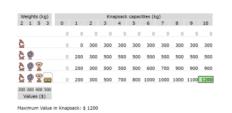
perofit without element

Mno item available

Weight 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15. .. 20 2122 23 ... 30 31 32.40 49...50

30 0000 ... 60 60 ... 60 ... 100 ... 100 ... 160 ... 160 ... 180 ... 20

C=50	w1	p1	w2	p2	w3	р3
N=3	10	60	20	100	30	120



$$4g:7 m=8$$
  $p=21,2,5,63$   
 $m=4$   $w=22,3,4,53$ 

	7	0(	~	(	2	3	4	5_		
D	(1)	0	0	0	6	6	6	Ó	0	0_0
1	2	1	$\bigcirc$	$\bigcirc$		1	(	1	(	\ /
2	3	2	0	0		2	2	3	3	33
5	4	3	0	10	(	2	5	5	6	77
6	5	4	0	6	1	2.	5	6	6	79
			1							

V[î] H[[i]] = marc ( V[î-1, W-W[i]) + ([i])

11 W-WIEJ KO Y WEEJ >W Hence, V [ U-19 W) accepted.

Hence the folion  $V[0,W] = \begin{cases} V[6-i,W] & W[6] \neq W \end{cases}$ Then the folion  $V[0,W] = \begin{cases} V[6-i,W] & W[6] \neq W \end{cases}$ The sum of the folion o

we withou take the object on combination of objects.

8-6 = 2 cosof 3rd(X)

2 cog of 2"(V)

D TT O [] -> check the uppell ellment

'y not present, change is due to the element

8-6-2=0 cos of oth not 1st. ... and or 4th object.

for (int i =0; ix=n;i++)

fore (int w = 0; W < = C; w++) 11 c is the capacity.

"y (===0 || W==0) m [i][w]=0;

([j]W<[3]W) j ulb

m (zJ[w] = [e-(][w];

m tistus = marc (m [i-1, w[j]], [i-1, w[j]-w[i]+P[i]); else

else m [i][w] = mare (m[e-1, w[j]], [e-1, w[j]-w[i]+P[i]);

3

cout</m[m][c];