

Assignment Model

Special Cases

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Unbalanced Assignment Problems

- Often the number of people or objects to be assigned does not equal the number of tasks or clients or machines listed in the columns, and the problem is *unbalanced*
- When this occurs, and there are more rows than columns, simply add a *dummy column* or task



Unbalanced Assignment Problems

- If the number of tasks exceeds the number of people available, we add a *dummy row*
- Since the dummy task or person is nonexistent, we enter zeros in its row or column as the cost or time estimate



Unbalanced Assignment Problems



- The NIC case has another Software Engineer available
- The director Operations still has the same basic problem of assigning workers to projects
- But the problem now needs a dummy column to balance the four workers and three projects

Figure in \$ '000

PERSON	PROJECT			DUMMY
	1	2	3	
Avinash	\$11	\$14	\$6	\$0
Biswas	8	10	11	0
Chawla	9	12	7	0
Durgesh	10	13	8	0

Maximization Assignment Problems



- Some assignment problems are phrased in terms of maximizing the payoff, profit, or effectiveness
- It is easy to obtain an equivalent minimization problem by converting all numbers in the table to opportunity costs

Maximization Assignment Problems



- This is brought about by subtracting every number in the original payoff table from the largest single number in that table
- Transformed entries represent opportunity costs
- Once the optimal assignment has been found, the total payoff is found by adding the original payoffs of those cells that are in the optimal assignment

Thanks



- Solve the Given Case with the suggested Model
- Verify Your Understanding in Quiz
