SNS College of Engineering
Coimbatore - 641107

Assignment Problem

AP/IT

The Assignment Problem

There are n people who need to be assigned to n jobs, one person per job. The cost of assigning person i to job j is C[i,j]. Find an assignment that minimizes the total cost.

	Job 0	Job 1	Job 2	Job 3
Person 0	9	2	7	8
Person 1	6	4	3	7
Person 2	5	8	1	8
Person 3	7	6	9	4

Algorithmic Plan: Generate all legitimate assignments, compute their costs, and select the cheapest one.

Assignment Problem by Exhaustive Search

C =
$$
\begin{array}{cccc}
9 & 2 & 7 & 8 \\
6 & 4 & 3 & 7 \\
5 & 8 & 1 & 8 \\
7 & 6 & 9 & 4
\end{array}
$$

Assignment (col.#s)	Total Cost
1, 2, 3, 4	9+4+1+4=18
1, 2, 4, 3	9+4+8+9=30
1, 3, 2, 4	9+3+8+4=24
1, 3, 4, 2	9+3+8+6=26
1, 4, 2, 3	9+7+8+9=33
1, 4, 3, 2	9+7+1+6=23
	etc.

(For this particular instance, the optimal assignment can be found by exploiting the specific features of the number given. It is:

2,1,3,4

BREAK

Human Knot

Have two groups of 8-10 people stand in a circle shoulder to shoulder. They all reach their right hand into the circle and grab someone else's hand (WHO'S NOT STANDING NEXT TO THEM)... Then do the same with the left hand-the left hand must grab someone different than the right hand. Then the exercise is to get untangled without letting go of one another's hands. If you pit two teams against each other and see who can do it fastest, it quickly builds in some competition. You can have the groups do it twice. The first time around, have them do the exercise without speaking. Then let them do it using words. It's a great example of communication, team building, and leaders emerge as well. You can also see who is more strategic in their thinking and who is more tactical.

Activity

- **ASSIGNMENT PROBLEMS:**

```
      4   2   7   5

C=    3   5   3   2

      8   5   1   5

      6   7   4   3
```