Linear assignment problem. The problem instance has a number of *agents* and a number of *tasks*. Any agent can be assigned to perform any task, incurring some *cost* that may vary depending on the agent-task assignment. It is required to perform as many tasks as possible by assigning at most one agent to each task and at most one task to each agent, in such a way that the *total cost* of the assignment is minimized. The total cost of the assignment for all tasks is equal to the sum of the costs for each agent.

	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15
A	6	17	10	1	-	7	13	18	21	16	5	4	11	19	20
B	9	-	21	4	5	-	11	8	0	32	7	3	24	0	0
C	2	8	5	0	1	6	4	11	18	6	0	0	0	32	27
D	19	31	19	20	9	11	15	2	-	-	-	-	-	5	21
E	21	25	-	3	-	14	11	20	9	-	12	22	9	23	3
F	11	5	21	-	18	20	21	-	17	12	7	11	1	2	1
G	17	4	20	9	-	-	-	22	25	21	29	34	4	7	-
H	4	-	3	2	4	7	9	1	-	12	33	16	11	-	12
I	6	2	-	3	9	10	12	-	19	13	35	-	10	5	20

1. Model the above table as a linear program.

2. Solve the problem using the simplex method. Use some solver, for example, CPLEX.

Explain how the algorithm works.

3. Solve the problem using the interior point method.

Use some solver, for example, IPOPT.

Explain how the algorithm works and state the initial values of the parameters, barrier parameter, and step size.

Plot the steps of the algorithm in one figure.

4. Compare the time complexity of the two methods. Which one is better? Why?

Note: Your source codes should be included in the prepared document.