- F The Turing test defines the conditions under which a machine can be said to be “intelligent”.
- F A* is an admissible algorithm.
- F DFS is faster than BFS.
- T DFS has lower asymptotic space complexity than BFS.
- F When using the correct temperature decrease schedule, simulated annealing is guaranteed to find the global optimum in finite time.

- ___F___ Alpha-beta pruning accelerates game playing at the cost of being an approximation to full minimax.
- ___F___ Hill-climbing is an entirely deterministic algorithm.
- ___T___ The exact evaluation function values do not affect minimax decision as long as the ordering of these values is maintained.
- ___F___ A perfectly rational backgammon-playing agent never loses
- ___T___ Hill climbing search is best used for problem domains with densely packed goals

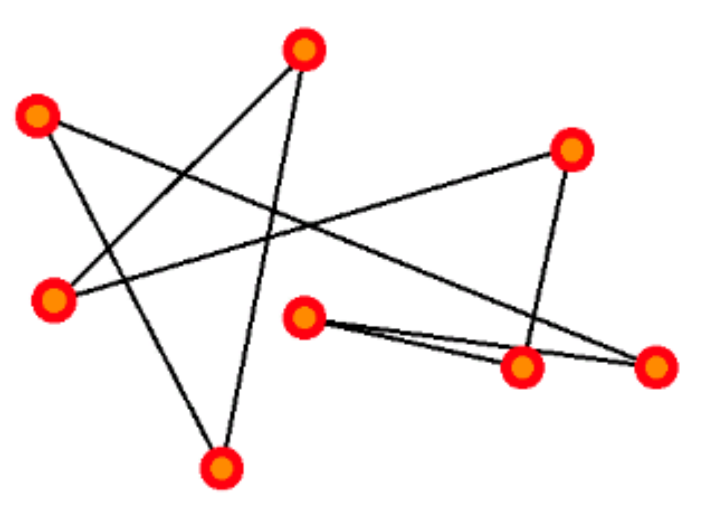
- A suitable representation for states: permutation of all cities in the tour

  <A, B, C, D, E>

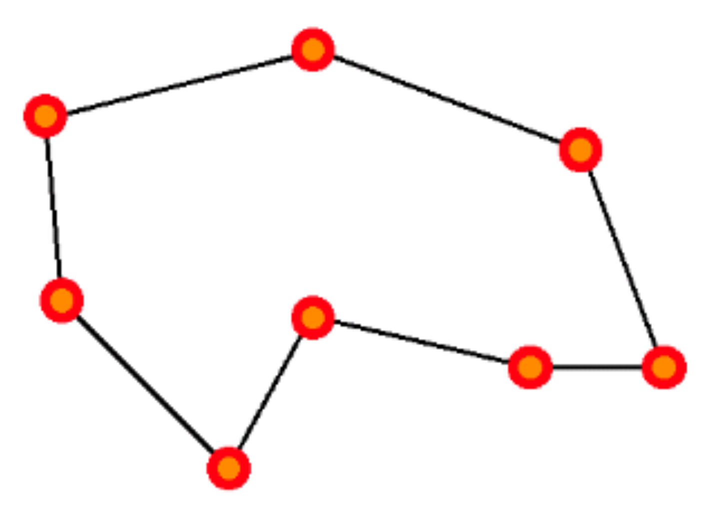
- The initial state of the problem: random permutation of all cities
- A good goal test to use in this problem: minimize the distance travelled
- Good operators to use for search: permute 2 cities
- Which search algorithm would be the most appropriate to use here if we want to minimize the distance of the tour found?

  Local Search - GA/SA/hill climbing, etc…

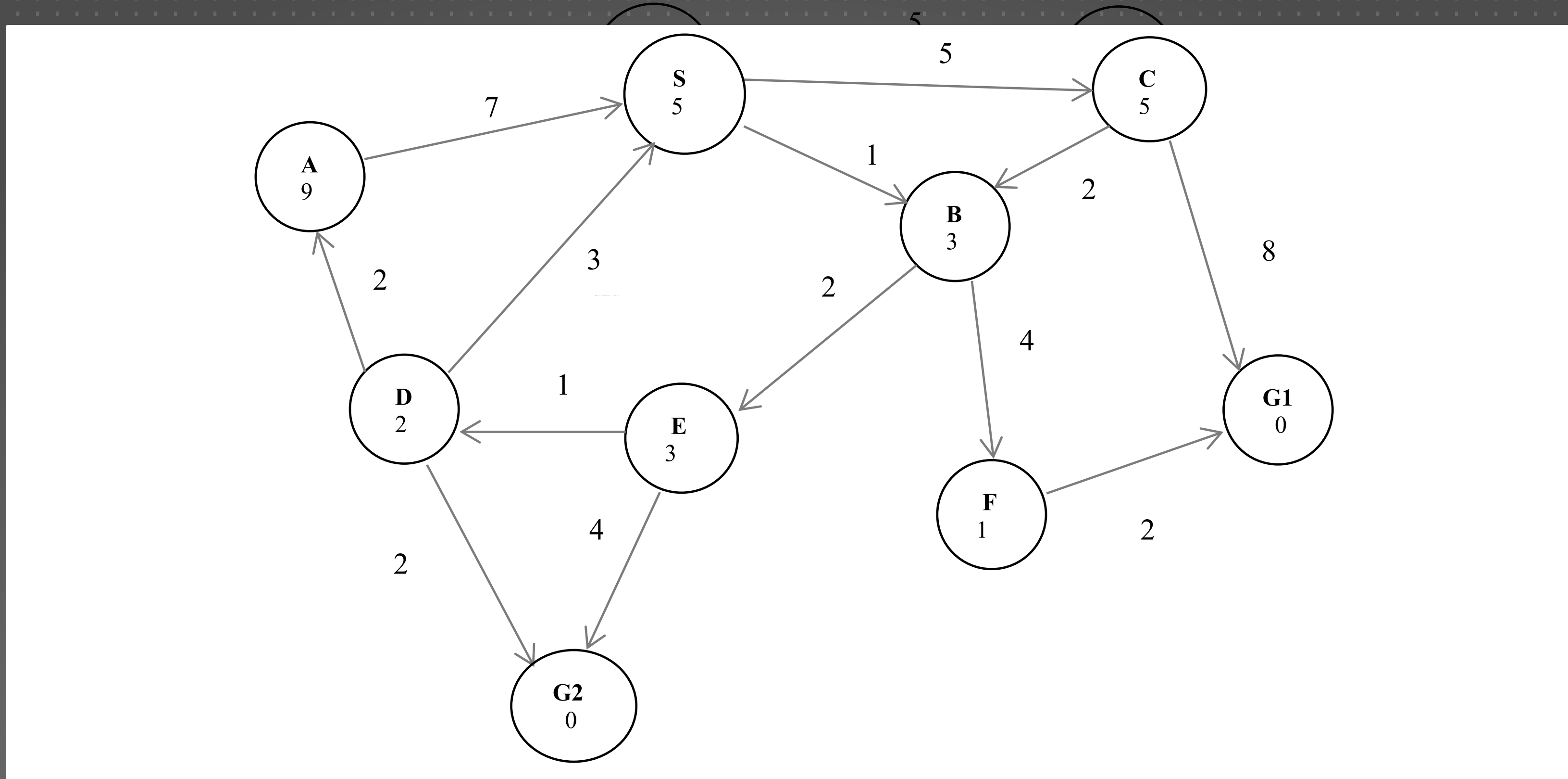
Suboptimal solution (long path)



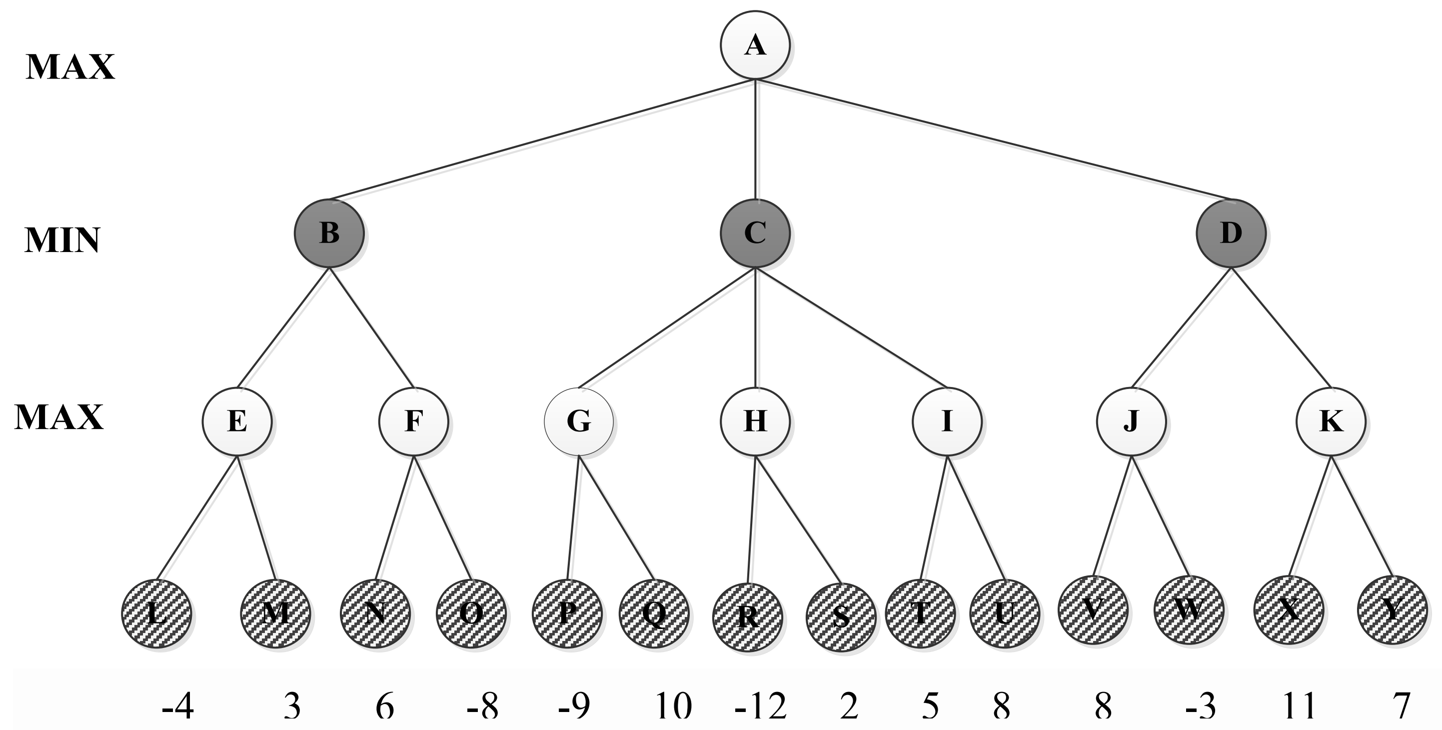
Optimal solution



SEARCH STRATEGIES



MINIMAX



MAX
MIN
MAX
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
-4
3
6
-8
-9
10
-12
2
5
8
8
-3
11
7

The schedules of the customers are:

Company 1: Webflix: 8:00-9:00am

Company 2: Anazon: 8:30-9:30am

Company 3: Pied Piper: 9:00-10:00am

Company 4: Hooli: 9:00-10:00am

Company 5: Gulu: 9:30-10:30am

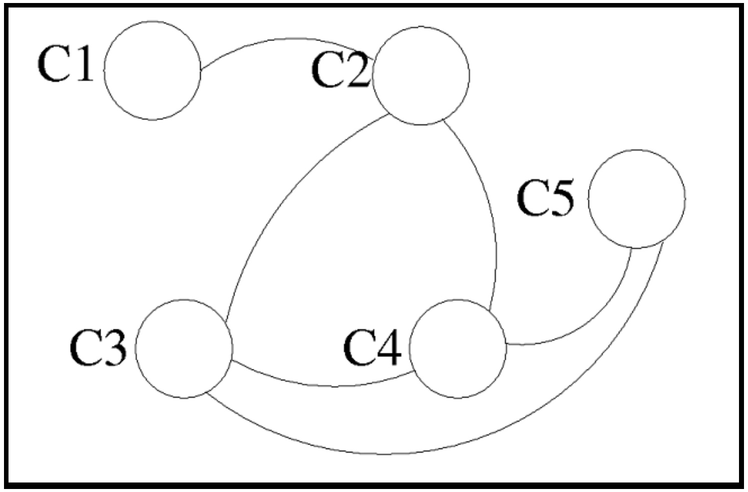
The profiles of your engineers are:

1) Albacore can maintain Pied Piper and Hooli.
2) Bosam can maintain all companies, but Webflix.
3) Coleslaw can maintain all companies.

- Using Company as variable, formulate this problem as a CSP problem with variables, domains, and constraints. Constraints should be specified formally and precisely, but may be implicit rather than explicit.
- Draw the constraint graph associated with your CSP.

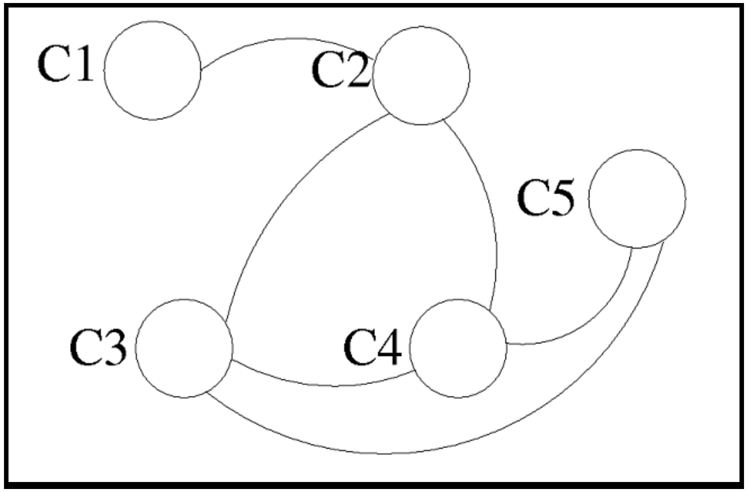
Variable	Domain
C1	C
C2	BC
C3	ABC
C4	ABC
C5	BC

Constraints:
C1 ≠ C2, C2 ≠ C3, C3 ≠ C4, C4 ≠ C5, C2 ≠ C4, C3 ≠ C5.



Variable	Domain
C1	C
C2	BC
C3	ABC
C4	ABC
C5	BC

Constraints:
C1 ≠ C2, C2 ≠ C3, C3 ≠ C4, C4 ≠ C5, C2 ≠ C4, C3 ≠ C5.



- Show the domains of the variables after running arc-consistency on this initial graph (after having already enforced any unary constraints).
- Give one solution to this CSP.

C1 = C, C2 = B, C3 = C, C4 = A, C5 = B.

Variable	Domain
C1	C
C2	B
C3	AC
C4	AC
C5	BC

- Which AI application has a discrete, static environment?
  a. Robocup Soccer robots
  b. Google Self-driving car
  c. IBM's Deep Blue
  d. All of the above
  e. None of the above
- Using local search is the **preferred** method to find a solution for the problem of assigning seats during an exam for N students in a room with N rows of N columns of chairs, where no two students can sit in the same row, column or diagonal, because:
  a. Local search is always the preferred search method for CSP
  b. There are no local minima or maxima in this problem domain
  c. This problem domain has densely packed goals
  d. All of the above
  e. None of the above

- Though none of these AI applications have passed the Turing test, which is considered rational?
  a. Robocup soccer robots
  b. Google Maps
  c. IBM's Deep Blue
  d. All of the above
  e. None of the above
- An admissible heuristic for route planning in Google Maps could be?
  a. Straight-line distance
  b. Manhattan distance
  c. h(n)=1
  d. All of the above
  e. None of the above