

### Chapter 3: Problem Solving Agent

[1] Write an algorithm for a simple problem-solving agent. Is it ready in its current form to be implemented?

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[2] Define in your own words:

1. Problem
2. Solution
3. Optimal solution
4. State space
5. Path
6. Step cost
7. Touring problem
8. TSP

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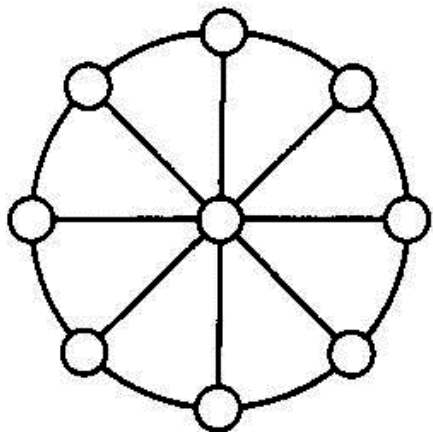
[4] Solve the following problems:

a) Number wheel:

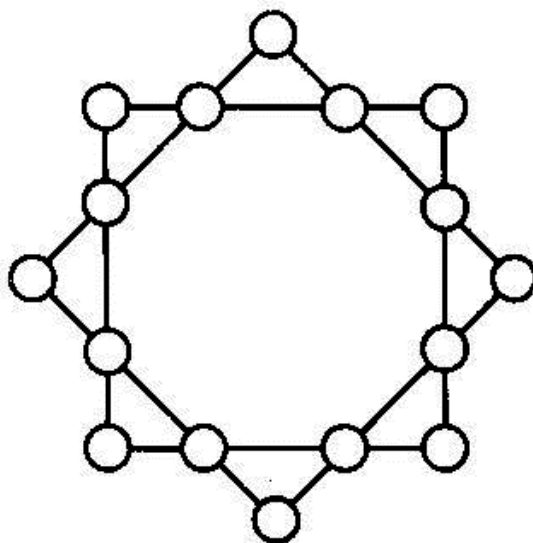
put numbers from 1 to 9, such that the sum of each diagonal is 15.

b) Number star:

put numbers from 1 to 16, such that the sum of each line is 34, also the sum of corners of each square must be 34.



(a)



(b)

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[5] Compare between **states** and **nodes**

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[6] Write an algorithm for General tree search.

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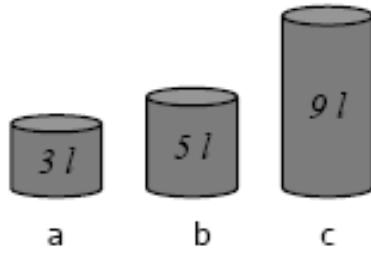
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[9] Using three buckets of 3, 5 and 9 liters ; give two solutions to measure 7 liters of water.



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[10] Write an algorithm for Iterative deepening search

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## Term project

Grouping yourselves into groups for achieving projects

- A group rang from 2 to 5 persons according to the project size.
- It is **preferred** for a group to be contained in one section.
- Discuss and a choose a **good idea** for the project within this week
  - Vacuum World
  - 8-puzzle
  - 8-queens
  - Airline travel problem
  - Assembly sequencing
  - VLSI Layout
  - Route finding
  - TSP
  - Missionaries and cannibals
  - Bridge
  - Towers of Hanoi problem
  - Knight Tour
  - Elevator
  - The Containers problem
  - Maze
  - Farmer, Fox and Goat
  - Map coloring,
  - Crypt-arithmetic
  - Cross-word puzzle
  - Time tabling
  - Chess
  - Cards
  - Football game

**Write a proposal report for the term project containing the following:**

**1** What is intelligent agent? Discussing different types of agents.

**2** why you choose this problem to solve. Give problem formulation also give expected search strategies.

**3** implementation tools and tasks divided among the team

You should know that the project should contains :

- Desktop application
- Flash animation
- Web site
- Documentation