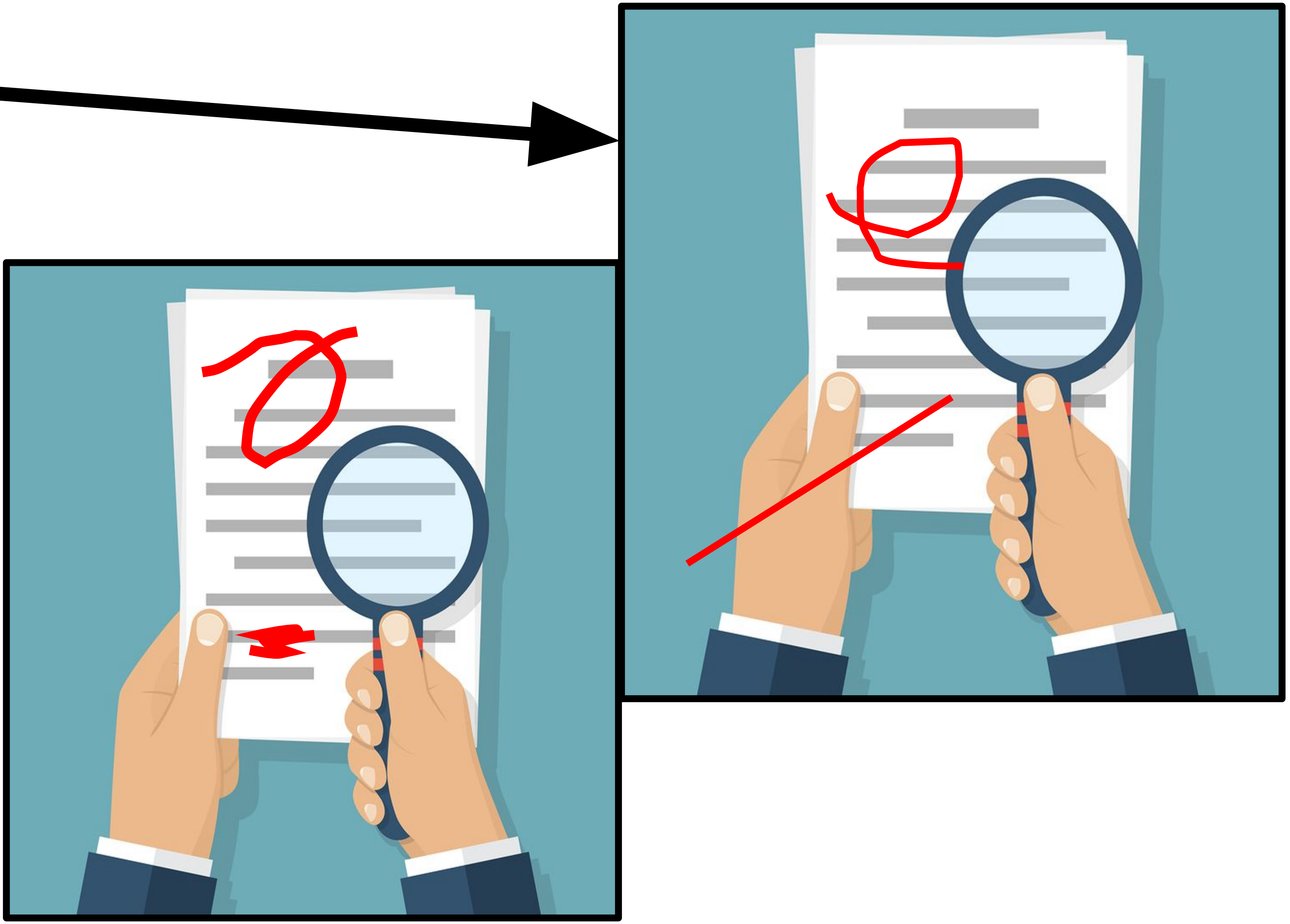
CS 301
Requirements
Characteristics

Eswaran Narasimhan

12 – Sep - 2024

Software Requirements Validation

- □ **Commenting**
- □ Inspections
- □ Walk-throughs
- □ Perspective-based reading
- □ Validation through prototypes
- □ Using checklists for validation



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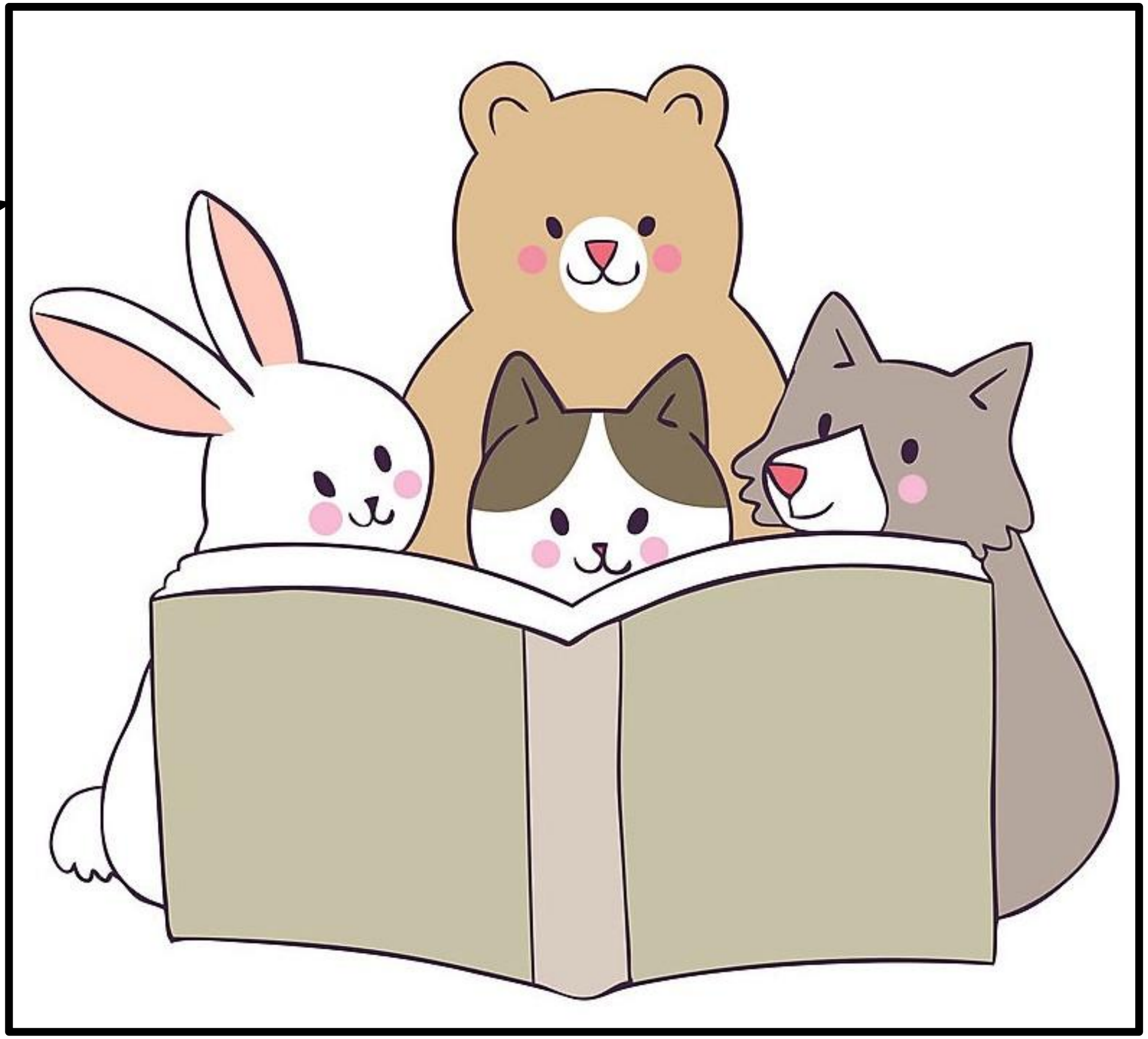

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- ❑ Why Prioritize?
- ❑ Techniques to Prioritize

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- ❑ Budgetary constraints
- ❑ Tight deadlines
- ❑ Multiple conflicting stakeholders
- ❑ Order of Development
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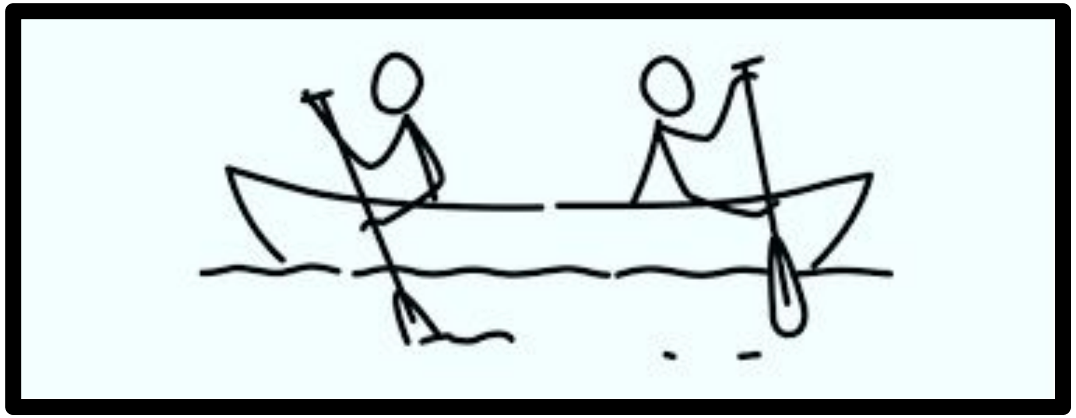

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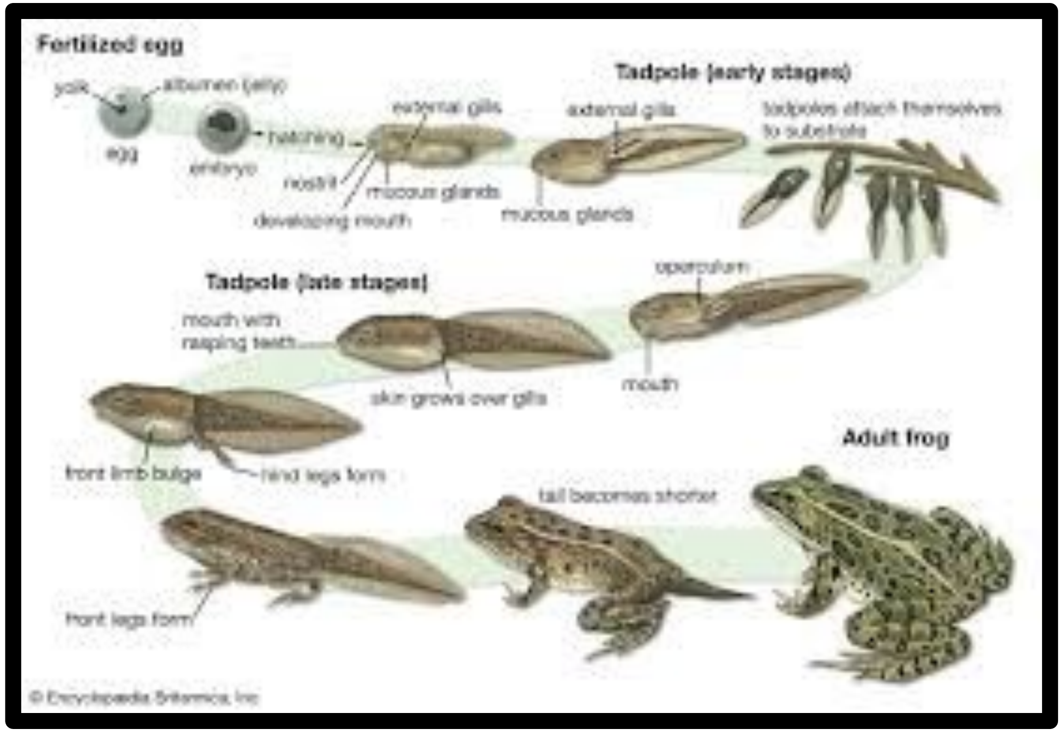

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- ❑ Constrained Utility Method
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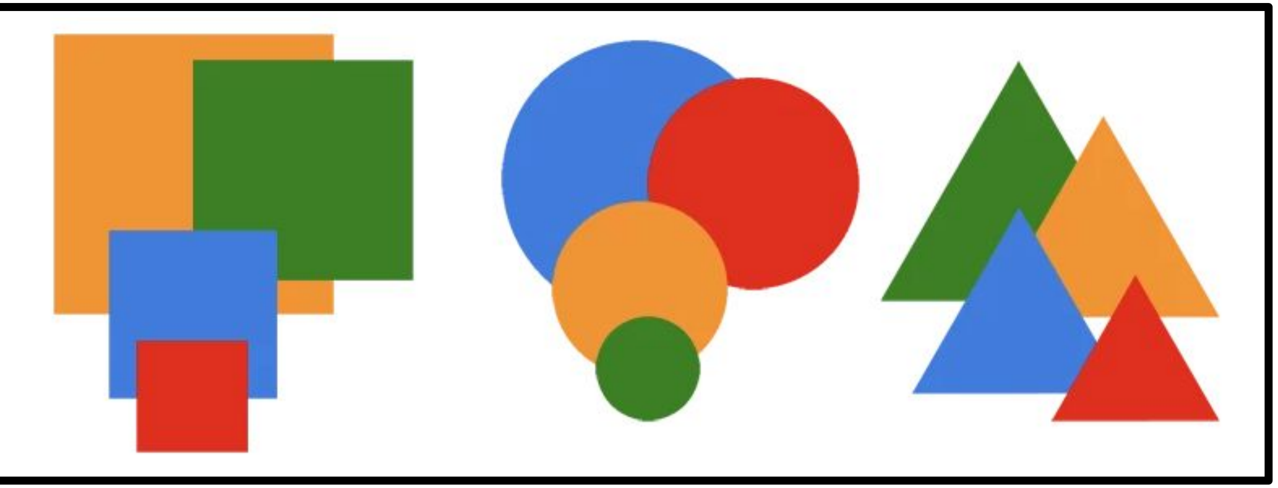

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- ❑ Why Prioritize?
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MUST HAVE	SHOULD HAVE	COULD HAVE	WON'T HAVE
❑ Non-Negotiables ❑ MVP ❑ Can't deliver on target without this ❑ Not legal without it ❑ Unsafe without it ❑ Not viable without it	❑ Important not vital ❑ May be painful without, but viable for the project ❑ May need a workaround	❑ Desirable but not as much as previous ❑ If time and money permits, then yes	❑ Won't have it this time ❑ Nice to have but no impact if absent ❑ Out of budget

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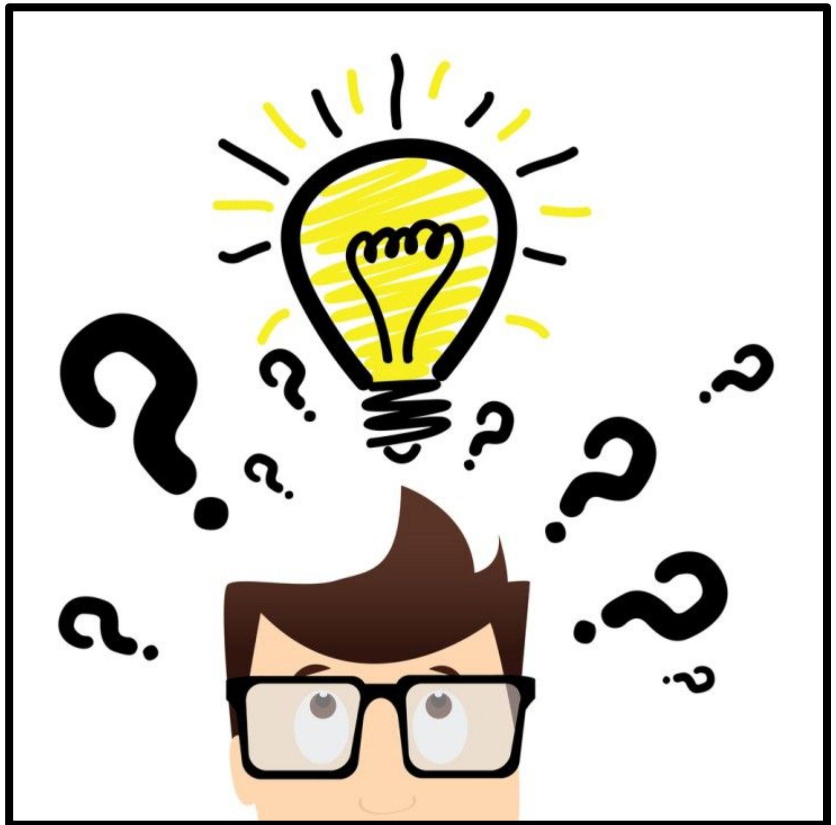

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Algorithms–requirements/validation

- Problem definition
- Development of a model
- Specification of the algorithm
- Checking the correctness of the algorithm
- Analysis of algorithm

- Binary Search
- Selection, Bubble, Insertion, Quicksort & Merge
- Huffman Coding
- Breadth First Search
- Depth First Search
- Gradient Descent
- Kruskal & Dijkstra's Algorithm
- Diffie-Hellman Key Exchange

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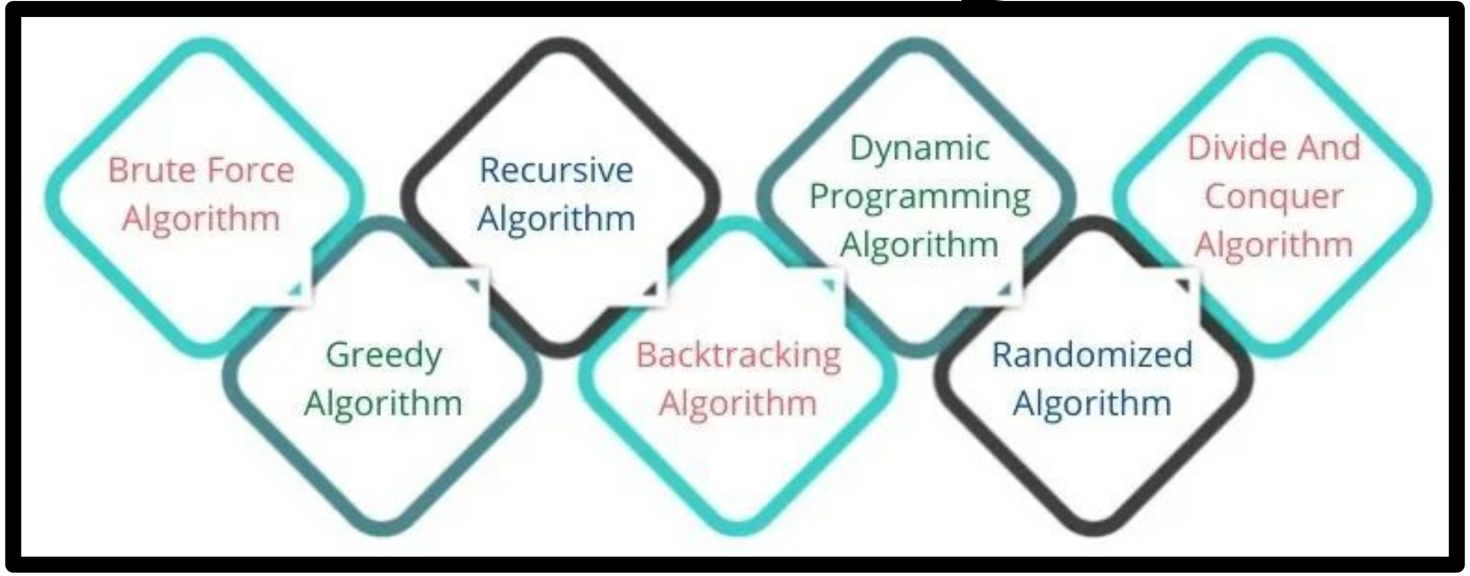

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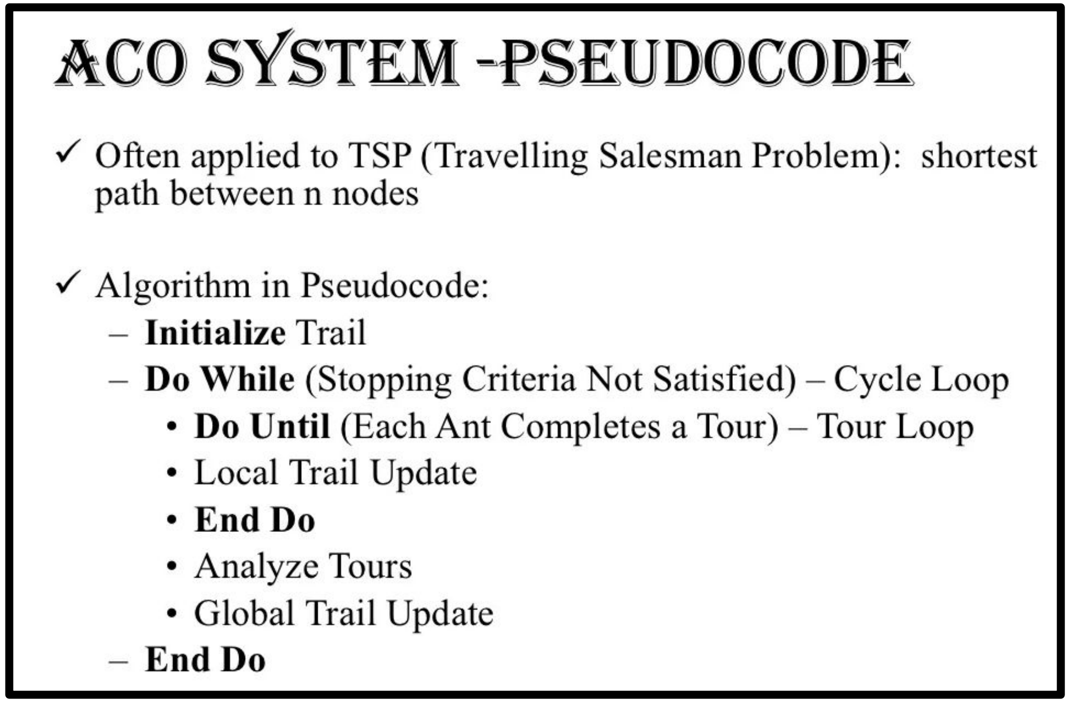
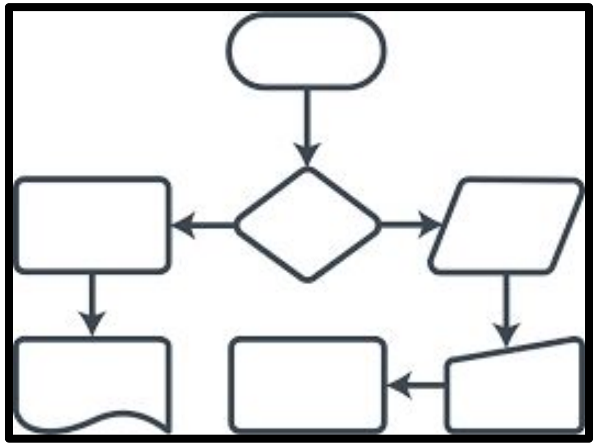


ACO SYSTEM -PSEUDOCODE

✓ Often applied to TSP (Travelling Salesman Problem): shortest path between n nodes

✓ Algorithm in Pseudocode:

```
– Initialize Trail
– Do While (Stopping Criteria Not Satisfied) – Cycle Loop
    • Do Until (Each Ant Completes a Tour) – Tour Loop
    • Local Trail Update
    • End Do
    • Analyze Tours
    • Global Trail Update
– End Do
```



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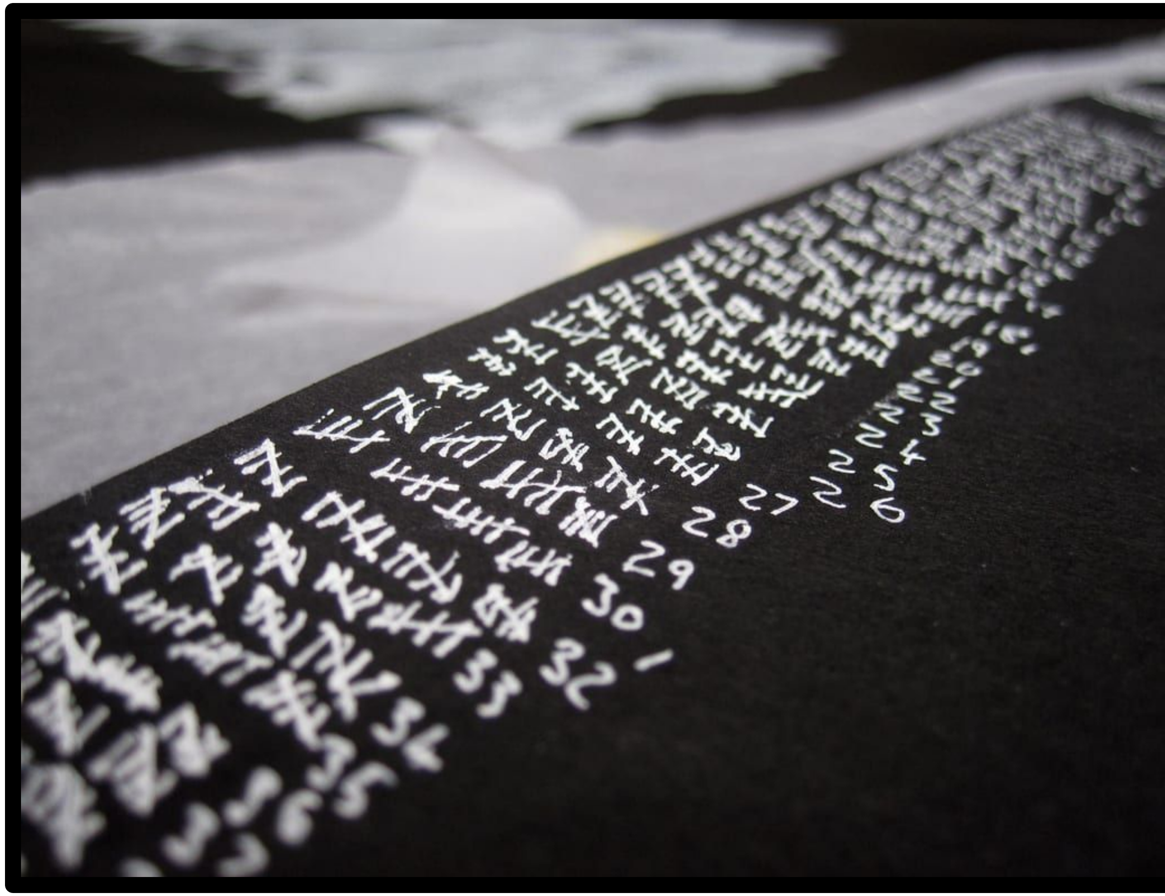

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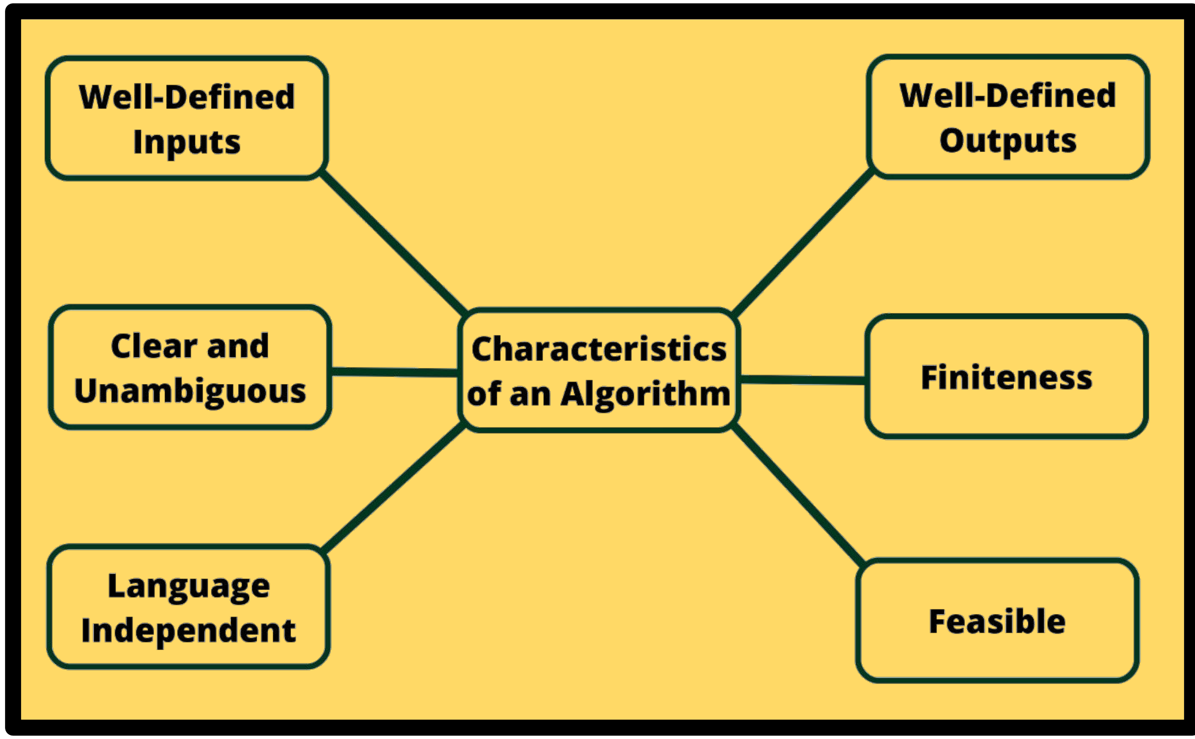
Well-Defined Inputs
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Clear and Unambiguous
Characteristics of an Algorithm
Finiteness
Language Independent
Feasible