- Set of valid states for a problem
- Linked by operators
- e.g., 20 valid states (cities) in the Romanian travel problem
- Search Tree:
    - Root node = initial state
    - Child nodes = states that can be visited from parent
    - Note that the depth of the tree can be infinite

      E.g., via repeated states – Partial search tree
- Portion of tree that has been expanded so far
- Fringe : Leaves of partial search tree, candidates for expansion
- Search trees = data structure to search state-space

● Solving Problems by Searching

Following are the four essential properties of search algorithms to compare the efficiency of these algorithms:

1. Completeness: A search algorithm is said to be complete if it guarantees to return a solution if at least any solution exists for any random input.
2. Optimality: If a solution found for an algorithm is guaranteed to be the best solution (lowest path cost) among all other solutions, then such a solution is said to be an optimal solution.
3. Time Complexity: Time complexity is a measure of time for an algorithm to complete its task.
4. Space Complexity: It is the maximum storage space required at any point during the search, as the complexity of the problem.