Concept of Divide and Conquer

- The divide and conquer approach is a problem-solving technique used in computer science and mathematics. It works by recursively breaking a problem into smaller subproblems, solving each subproblem, and combining their solutions to solve the original problem.

- **Steps of Divide and Conquer**
  1. **Divide**: Split the problem into smaller, manageable subproblems.
  2. **Conquer**: Solve each of the smaller subproblems individually.
  3. **Combine**: Merge or combine the solutions of the subproblems to solve the original problem.

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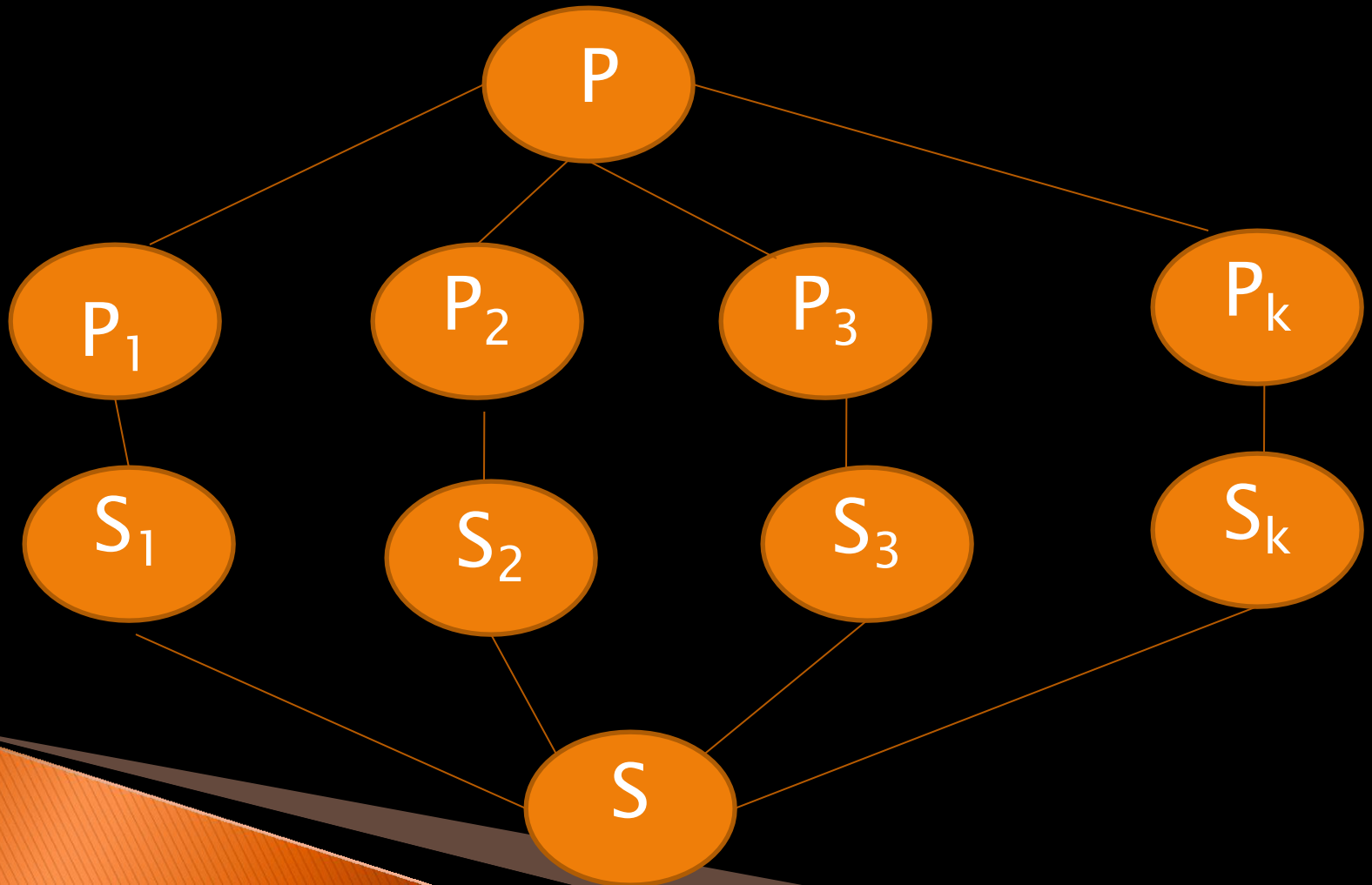

Examples: Divide-and-conquer

- Binary Search
- Merge Sort
- Quick Sort
- Matrix Multiplication Problem
- Tree Traversal
- Backtracking Problems, etc

- Divide and conquer is the strategy that uses recursion to tackle complex problems systematically.

Recursion

- Recursion is a process in which a function calls itself. Functions that incorporate recursion are called recursive functions.
- Recursion is often seen as an efficient method of programming since it requires the least amount of code to perform the necessary functions.
- A recursive function must have the following properties:

1. There must be a certain criteria, called base criteria for which the function does not call itself.
2. Each time the function does call itself, the argument of the function must be closer to a base value.

Recursion

```
def factorial(n):
    # Base case
    if n == 1:
        return 1
    # Recursive case
    return n * factorial(n - 1)
```