

8. DIVIDE AND CONQUER METHODOLOGY

A **divide and conquer algorithm** works by recursively breaking down a problem into two or more sub-problems of the same (or related) type (**divide**), until these become simple enough to be solved directly(**conquer**).

Divide-and-conquer algorithms work according to the following general plan:

1. A problem is divided into several sub problems of the same type, ideally of about equal size.
2. The sub problems are solved (typically recursively, though sometimes a different algorithm is employed, especially when sub problems become small enough).
3. If necessary, the solutions to the sub problems are combined to get a solution to the original problem.

The divide-and-conquer technique as shown in Figure 2.9, which depicts the case of dividing a problem into two smaller sub problems, then the sub problems solved separately. Finally, solution to the original problem is done by combining the solutions of sub problems.

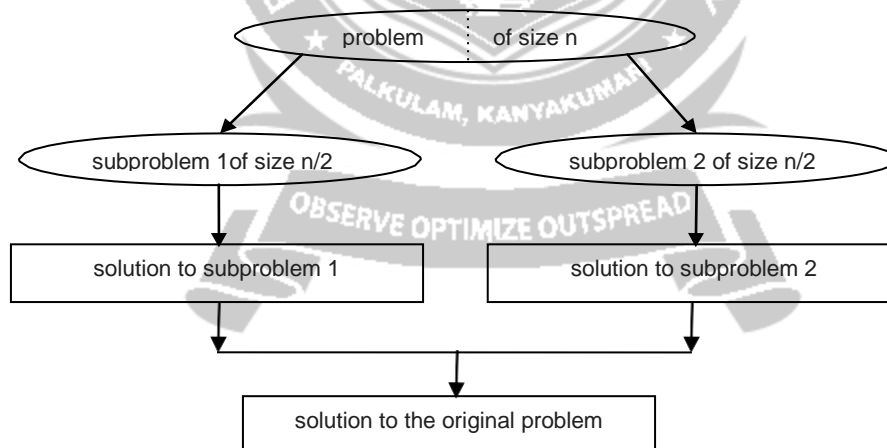


FIGURE 2.9 Divide-and-conquer technique.

Divide and conquer methodology can be easily applied on the following problem.

1. Merge sort
2. Quicksort

3. Binary search

