

Design and Analysis of Algorithms

03-01 Divide – and – Conquer

Main Idea

Imran Ihsan

Assistant Professor, Department of Computer Science
Air University, Islamabad, Pakistan
www.imranihsan.com

Divide – and – Conquer



A Problem to be solved



Divide

Break into **non-overlapping** subproblems of the **same type**



Divide

Break into **non-overlapping** subproblems of the **same type**



Divide

Break into **non-overlapping** subproblems of the **same type**



Divide

Break into **non-overlapping** subproblems of the **same type**



A Problem to be solved



Not the Same Type

Not Allowed



Divide



Divide



Overlapping

Not Allowed



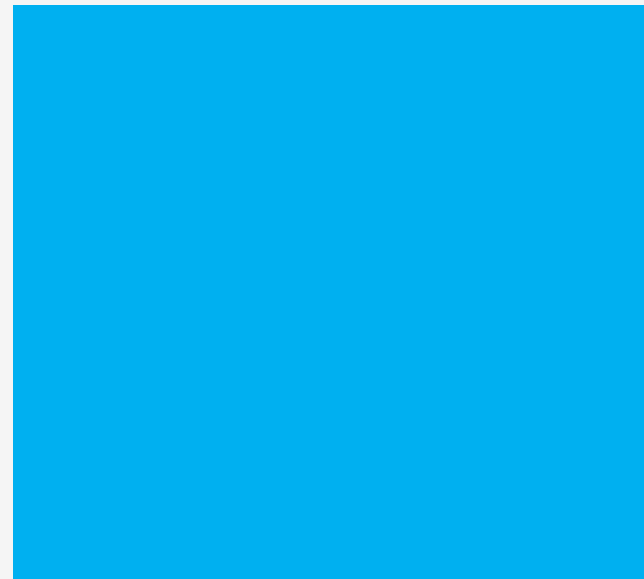
Divide

Break into **non-overlapping** subproblems of the **same type**



Divide

Break Apart



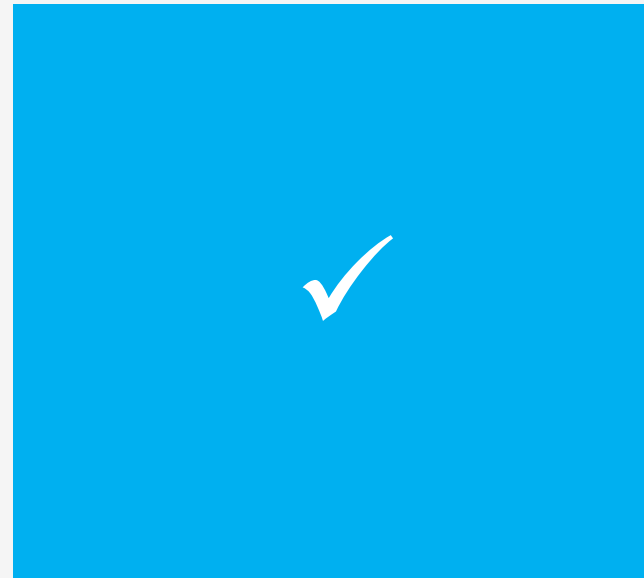
Divide

Solve Subproblems



Divide

Solve Subproblems



Divide

Combine



Divide

Conquer



Divide – and – Conquer

Break into non-overlapping subproblems of the same type

Solve subproblems

Combine results