

Design Hierarchy

The use of hierarchy, or divide and conquer technique involves dividing a module into sub-modules and then repeating this operation on the sub-modules until the complexity of the smaller parts becomes manageable. This approach is very similar to the software case where large programs are split into smaller and smaller sections until simple subroutines, with well-defined functions and interfaces,

As an example of structural hierarchy, Fig. shows the structural decomposition of a CMOS four-bit adder into its components. The adder can be decomposed progressively into one-bit adders, separate carry and sum circuits, and finally, into individual logic gates. At this lower level of the hierarchy, the design of a simple circuit realizing a well-defined Boolean function is much more easier to handle than at the higher levels of the hierarchy.

