CHAPTER 4: PROGRAM STRUCTURE

Most programs are too big to be comprehended as a single chunk. They must be divided into smaller pieces that can be conquered separately. That is the only way to write them reliably; it is the only way to read and understand them.

Subroutines, functions, and procedures are the "modules," or building blocks, of large programs. In many languages, they can be compiled separately and, if properly designed, maintained nearly independently of each other. Well designed building blocks are often usable in other applications, contributing to a library of labor-saving routines.

When a program is not broken up into small enough pieces, the larger modules often fail to deliver on these promises. They try to do too much, or too many different things, and hence are difficult to maintain and are too specialized for general use.

Consider the following subroutine, which generates simple moves (no jumps) for a checker-playing program. The routine tries to make up to four moves: forward right and left, backward right and left. If the move is off the board or to an occupied square, it is disallowed. White men may only move forward and black men may only move backward. Kings may move either way.