4. *Variable Parameters.* Procedure `MinMax` shows the case of the *variable parameter*. The actual parameter *must be a variable*; the corresponding formal parameter must be preceded by the symbol `var` and becomes a synonym for this actual variable during the entire execution of the procedure. Any operation involving the formal parameter is then performed directly upon the actual parameter. Use variable parameters to represent the *results* of a procedure — as is the case for `Min` and `Max` in Program 11.2. Furthermore, if `X1...Xn` are the actual variables that correspond to the formal variable parameters `V1...Vn`, then `X1...Xn` should be *distinct* variables. All address calculations are done at the time of the procedure activation. Hence, if a variable is a component of an array, its index expression is evaluated when the procedure is activated. Note that a component of a packed structure or a tag field in a variant record must not appear as an actual variable parameter, thus avoiding implementation problems for calculating addresses.

When no symbol heads the parameter section, the parameter(s) of this section are said to be *value parameter(s)*. In this case the actual parameter *must be an expression* (of which a variable is a simple case). The corresponding formal parameter represents a local variable in the activated procedure. As its initial value, this variable receives the current value of the corresponding actual parameter (i.e., the value of the expression at the time of the procedure activation). The procedure may then change the value of this variable through an assignment; this cannot, however, affect the value of the actual parameter. Hence, a value parameter can never represent a result of a computation. Note that file parameters or structured variables with files as components may not be specified as actual value parameters, as this would constitute an assignment.

The difference in the effects of value and variable parameters is shown in Program 11.3.

The following table summarizes the correct kinds of parameters for formal and actual parameter lists.