GREEN00

Green, T.R.G.; Conditional program statements and their comprehensibility to professional programmers; Journal of Occupational Psychology 50.2 pp. 93-109.

The author performed two experiments on program comprehension using professional programmers as subjects. The first experiment tested their ability to trace the execution of a program (extraction of sequential information). The second tested their ability to determine what conditions are required for a certain point in the program to be reached (extraction of taxon information).

Three programming notations were used: Jump, Nest-BE and Nest-INE. Jump is simple conditional goto. Nest-BE (nested begin-end) is the traditional, Algol style nested if-then-else. The Next-INE (nested if-not-end) is a modification of this, that attempts to repeat the condition, in and effort to reduce searching activities when trying to understand the program:

```
    Nest-BE                         Nest-INE

    if (cond) then                  if (cond)
        begin                           X
            X                       not (cond)
        end                             Y
    else                            end (cond)
        begin
            Y
        end
```

Both forms of nesting were marginally faster on forward trace. In the second experiment, Nest-INE was 15% faster than Jump and 7% faster than Nest-BE.

Other factors to note are: Nest-INE is a new notation to the subjects. Practice effects were small. No individual responses contradicted the results (no-one was significantly faster in Jump than Nest-INE). The program fragments were small (the differences would likely be greater on more complex programs). The Nest-INE notation is slightly more compact, which may contribute to its superiority.

Two key points raised: What about loops? What about long conditional expressions (where repeated the condition three times in impractical)?