

```
for (sum = 0, i = 1; i <= N; i++)
    sum += i;
```

The expression `sum = 0, i = 1` first assigns 0 to `sum`, then assigns 1 to `i`. With additional commas, the `for` statement could initialize more than two variables.

PROGRAM Printing a Table of Squares (Revisited)

The `square.c` program (Section 6.1) can be improved by converting its `while` loop to a `for` loop:

```
square2.c /* Prints a table of squares using a for statement */

#include <stdio.h>

int main(void)
{
    int i, n;

    printf("This program prints a table of squares.\n");
    printf("Enter number of entries in table: ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++)
        printf("%10d%10d\n", i, i * i);

    return 0;
}
```

We can use this program to illustrate an important point about the `for` statement: C places no restrictions on the three expressions that control its behavior. Although these expressions usually initialize, test, and update the same variable, there's no requirement that they be related in any way. Consider the following version of the same program:

```
square3.c /* Prints a table of squares using an odd method */

#include <stdio.h>

int main(void)
{
    int i, n, odd, square;

    printf("This program prints a table of squares.\n");
    printf("Enter number of entries in table: ");
    scanf("%d", &n);

    i = 1;
    odd = 3;
    for (square = 1; i <= n; odd += 2) {
        printf("%10d%10d\n", i, square);
        ++i;
    }
```