The syntax of a `for` statement is similar to a function definition. It has a header that ends with a colon and an indented body. The body can contain any number of statements.

A `for` statement is sometimes called a **loop** because the flow of execution runs through the body and then loops back to the top. In this case, it runs the body four times.

This version is actually a little different from the previous square-drawing code because it makes another turn after drawing the last side of the square. The extra turn takes a little more time, but it simplifies the code if we do the same thing every time through the loop. This version also has the effect of leaving the turtle back in the starting position, facing in the starting direction.

## 4.3 Exercises

The following is a series of exercises using TurtleWorld. They are meant to be fun, but they have a point, too. While you are working on them, think about what the point is.

The following sections have solutions to the exercises, so don't look until you have finished (or at least tried).

1. Write a function called `square` that takes a parameter named `t`, which is a turtle. It should use the turtle to draw a square.

   Write a function call that passes `bob` as an argument to `square`, and then run the program again.

2. Add another parameter, named `length`, to `square`. Modify the body so length of the sides is `length`, and then modify the function call to provide a second argument. Run the program again. Test your program with a range of values for `length`.

3. The functions `lt` and `rt` make 90-degree turns by default, but you can provide a second argument that specifies the number of degrees. For example, `lt(bob, 45)` turns `bob` 45 degrees to the left.

   Make a copy of `square` and change the name to `polygon`. Add another parameter named `n` and modify the body so it draws an n-sided regular polygon. Hint: The exterior angles of an n-sided regular polygon are $360.0/n$ degrees.

4. Write a function called `circle` that takes a turtle, `t`, and radius, `r`, as parameters and that draws an approximate circle by invoking `polygon` with an appropriate length and number of sides. Test your function with a range of values of `r`.

   Hint: figure out the circumference of the circle and make sure that `length * n = circumference`.

   Another hint: if `bob` is too slow for you, you can speed him up by changing `bob.delay`, which is the time between moves, in seconds. `bob.delay = 0.01` ought to get him moving.

5. Make a more general version of `circle` called `arc` that takes an additional parameter `angle`, which determines what fraction of a circle to draw. `angle` is in units of degrees, so when `angle=360`, `arc` should draw a complete circle.