Turtle Graphics

The turtle module implements a simple drawing tool based on the LOGO programming language, which was invented in the 1960's as a teaching tool for children. A “turtle” is like a pen that can be controlled to move on a two-dimensional “screen” (window). Positions on a screen are indicated using Cartesian coordinates with the origin (0, 0) indicating the center and distances measured in pixels. Like a pen, the turtle is either up or down. When down, it draws as it moves; when up, it does not draw anything. Some common commands:

```python
pen = turtle.Turtle(): create a new Turtle and assign it to variable pen.

pen.up() / pen.down(): set the state of pen to be up (not drawing)/down (drawing).

pen.setheading(angle): set the direction pen is facing to angle degrees (e.g., 0 for east, 90 for north, etc.).

pen.showturtle() / pen.hideturtle(): show/do not show pen (a cursor).

pen.pensize(width): set the line thickness to width (a positive int).

pen.color(s) / pen.color(r, g, b): Set the color for drawing. The argument is a Tcl color string (‘red’, ‘green’, ‘blue’, etc.)/the arguments are three floating point numbers between 0.0 and 1.0 indicating the amounts of red, green, and blue, respectively. The default pen color is ‘black’.

pen.forward(distance) / pen.backward(distance): move pen distance pixels forward (in the direction it is facing)/backward (in the opposite direction). (A negative distance reverses the direction.)

pen.left(angle) / pen.right(angle): turn turtle pen right/left by angle degrees.

pen.goto(x, y): move pen along a straight line to the coordinates (x, y).

pen.circle(radius): draw a circle of the indicated radius, counter-clockwise and tangent to the direction the turtle is facing.

pen.clear(): clear the screen.

pen.beginfill(), pen.endfill(): To fill a shape, use pen.beginfill() just before drawing the shape, draw the shape, and use pen.endfill() right after drawing the shape. The shape drawn between the two fill commands will be filled with the current color.

pen.bye(): close the drawing screen window.