

Square

To implement the square, I started with the provided example. In the example, there is a large switch statement block which processes timesteps and determines whether to move the turtle in a straight line, rotate it, or keep it stationary. This switch block divides the total time to draw the shape into discrete segments which move and rotate the turtle for each leg of the square. I tweaked these time intervals to produce a smooth drawing of a square.

Diamond

To draw a diamond, I used the same approach as the square, but added an additional rotation at the beginning of the sequence. This shifts the shape 45 degrees and produces the diamond shape.

Circle

To draw a circle, all I had to do was provide turtlesim a message with a fixed linear and angular velocity. When these values remain fixed, the turtle will loop a full 360 degrees. I maintained this message for the appropriate time to complete the circle once and stop the turtle at the end.

Random

For the random shape, I elected to generate an arrow pointing in a random direction. To accomplish this, I first coded the turtle to spin at a randomly generated rate and direction for a fixed interval of time. Then, I went through a static sequence of straight travels and angular rotations to generate an arrow shape.