Turtle Graphics !

http://cs.oregonstate.edu/~mjb/turtle

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Computer Graphics

Theresa-the-Turtle likes to explore but doesn't know where she should go. We are going to help her with that.

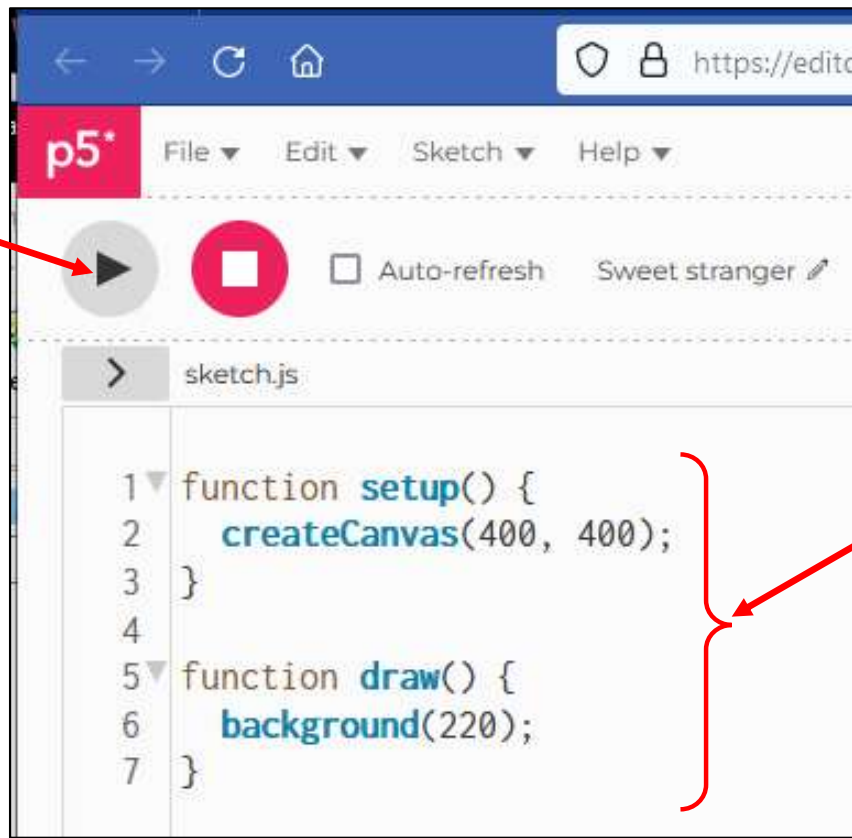Open up your favorite browser and go here: **https://editor.p5js.org/**

Here's what you will see when you get there:

Click on the right-facing triangle to run the program

```
p5*   File ▾   Edit ▾   Sketch ▾   Help ▾

▶   ⬛   ☐ Auto-refresh   Sweet stranger ✎

>   sketch.js

1▾ function setup() {
2     createCanvas(400, 400);
3  }
4
5▾ function draw() {
6     background(220);
7  }
```
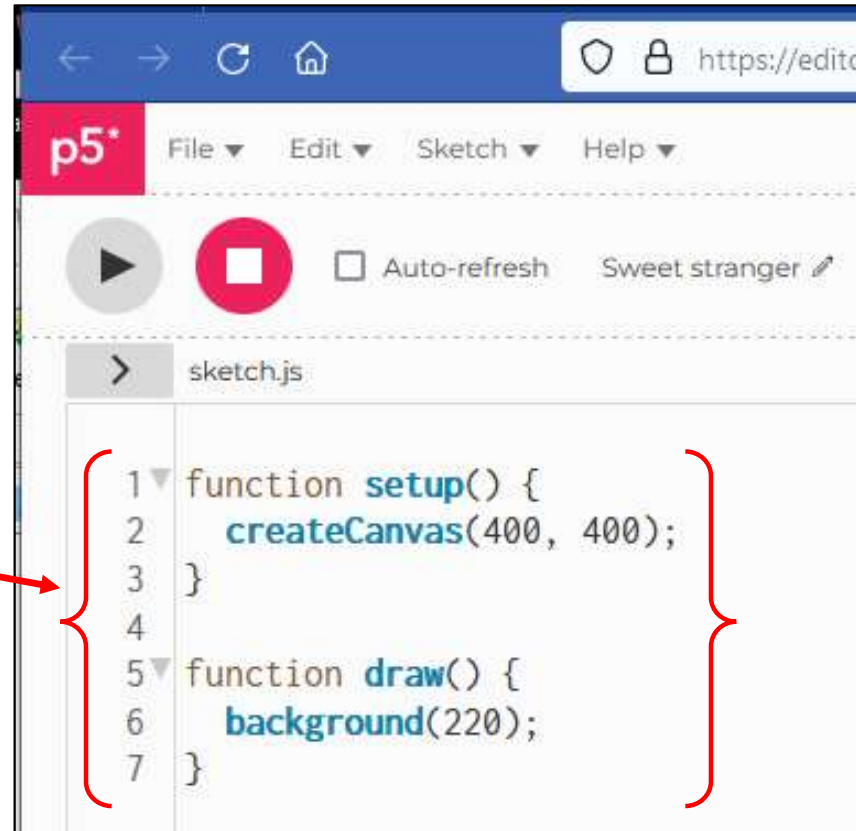
This is the program it comes with

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Delete lines 1-7
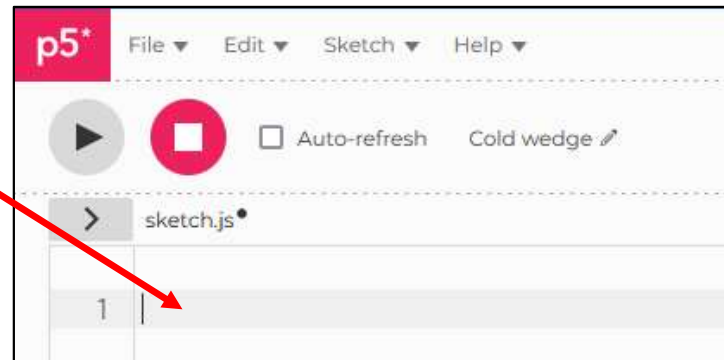
```
1  function setup() {
2      createCanvas(400, 400);
3  }
4
5  function draw() {
6      background(220);
7  }
```

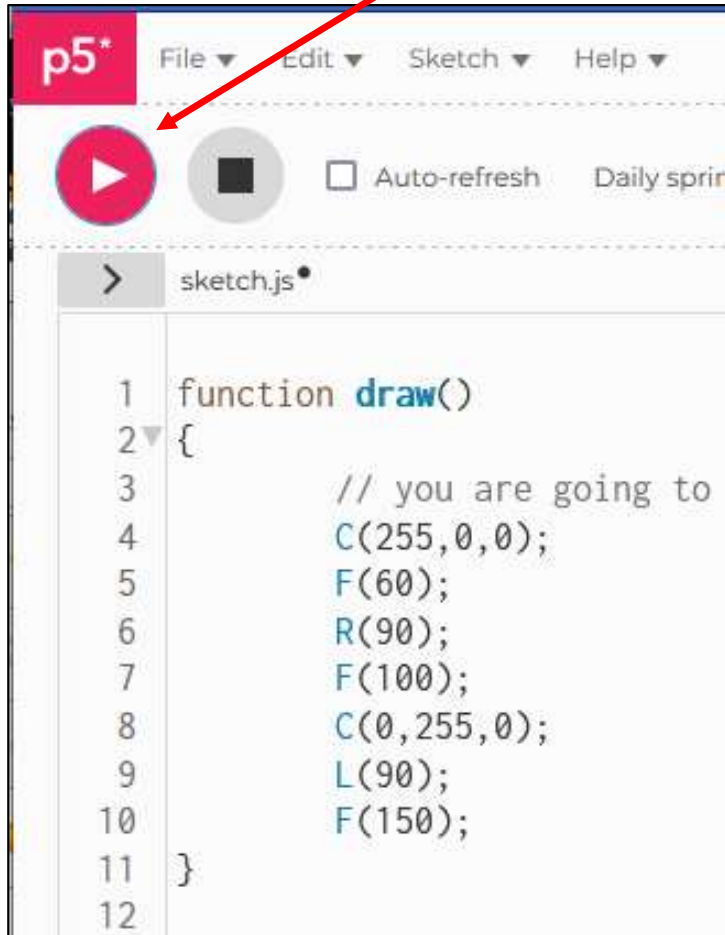Oregon State University
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In your browser, open up a new tab and go to:
https://cs.oregonstate.edu/~mjb/turtle/turtlesetup.html
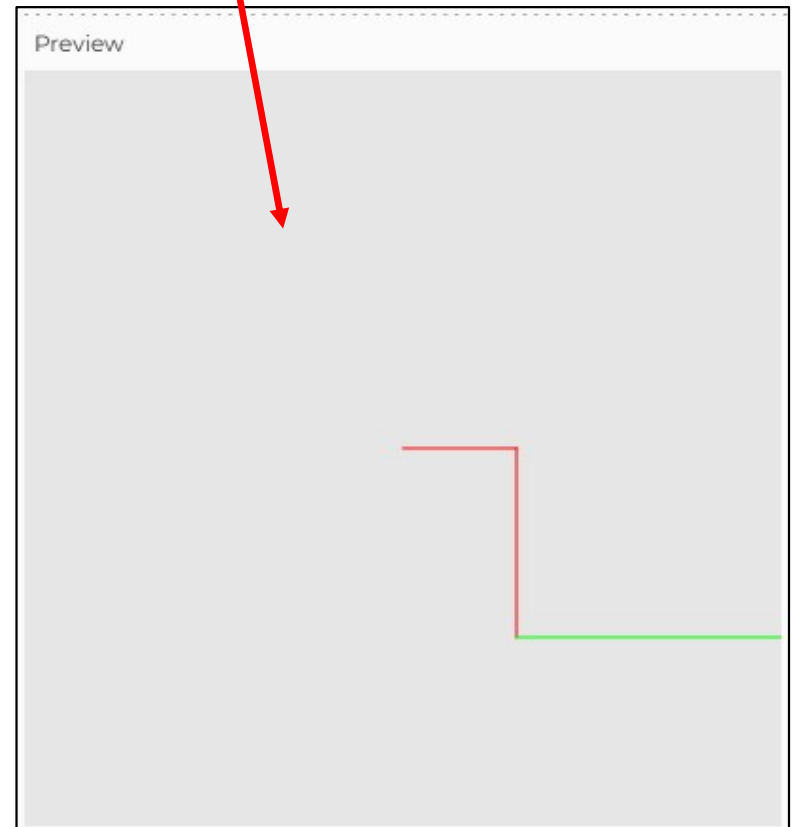
1. **Select All** on that page
2. Then **Copy**
3. Then **Paste** into the other window starting on line 1

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Click on this right-facing triangle to run the program

```
p5*   File ▼   Edit ▼   Sketch ▼   Help ▼

  ▶      ■      ☐ Auto-refresh    Daily sprin

  >    sketch.js●

 1   function draw()
 2 ▼ {
 3             // you are going to
 4             C(255,0,0);
 5             F(60);
 6             R(90);
 7             F(100);
 8             C(0,255,0);
 9             L(90);
10             F(150);
11   }
12
```

When you do, you'll see this:

Preview

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The program uses these commands:

F(p);	Move forward by p pixels.
B(p);	Move backwards by p pixels.
R(d);	Turn to your right by d degrees.
L(d);	Turn to your left by d degrees.
C(r,g,b);	Set the color to r,g,b. Each of these numbers needs to be between 0 and 255.
W(p);	Set the line width to p pixels.

Angles are measured in degrees according to which way the turtle is facing right now
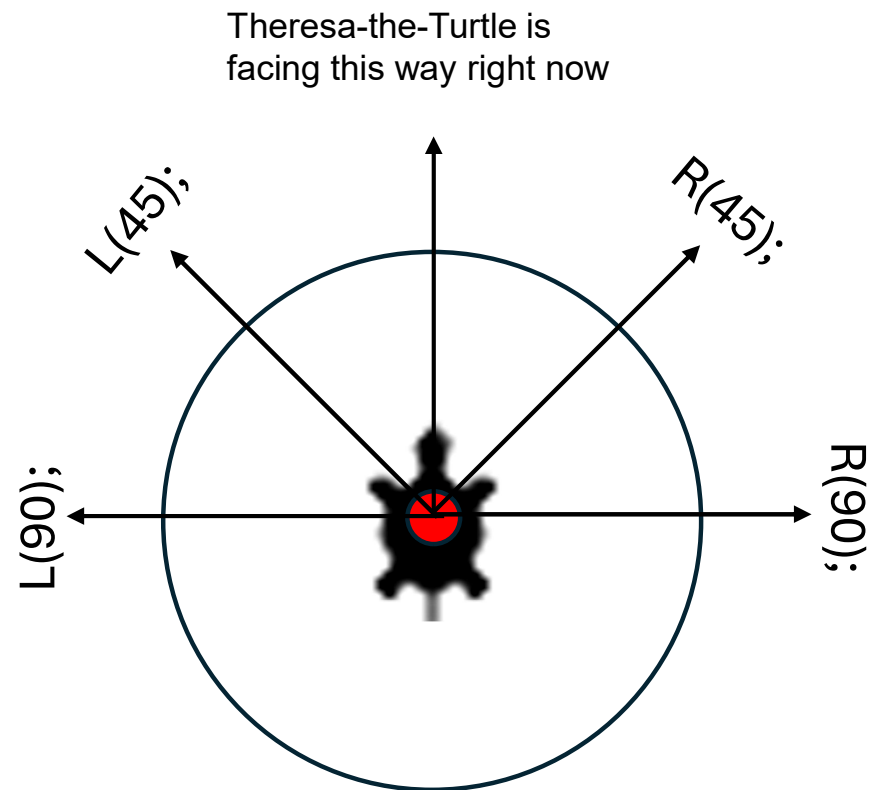
Theresa-the-Turtle is
facing this way right now

L(45);

R(45);

L(90);

R(90);

Angles are measured in degrees according to which way the turtle is facing right now

L(90);

L(45);

R(45);

R(90);

Theresa-the-Turtle is facing this way right now
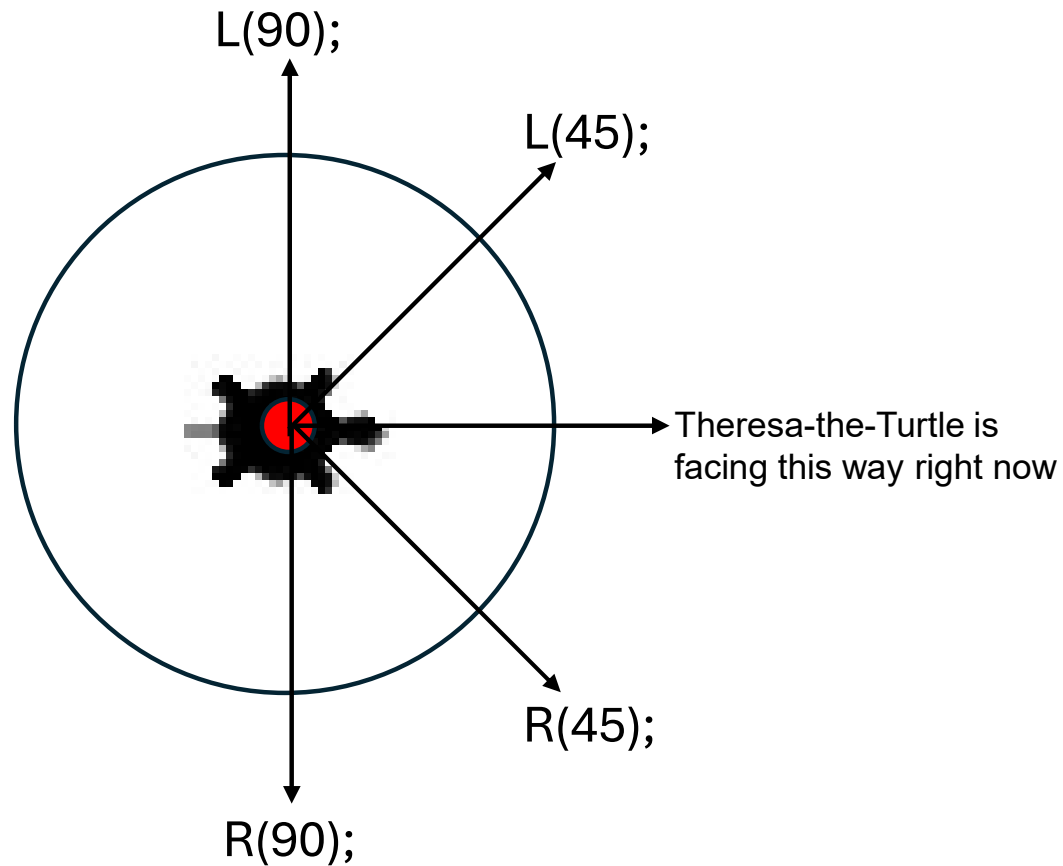
So, this program is telling the turtle to do this:

```
1   function draw()
2   {
3           // you are
4           C(255,0,0);
5           F(60);
6           R(90);
7           F(100);
8           C(0,255,0);
9           L(90);
10          F(150);
11  }
12
```

Theresa-the-Turtle always starts in the middle, pointing to the right

Set the color to red

Move forward 60 pixels

Turn right 90 degrees

Move forward 100 pixels

Set the color to green
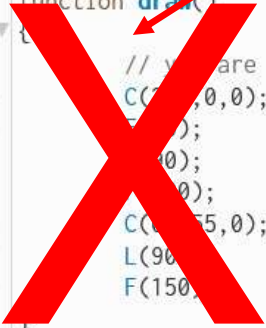
Turn left 90 degrees

Move forward 150 pixels

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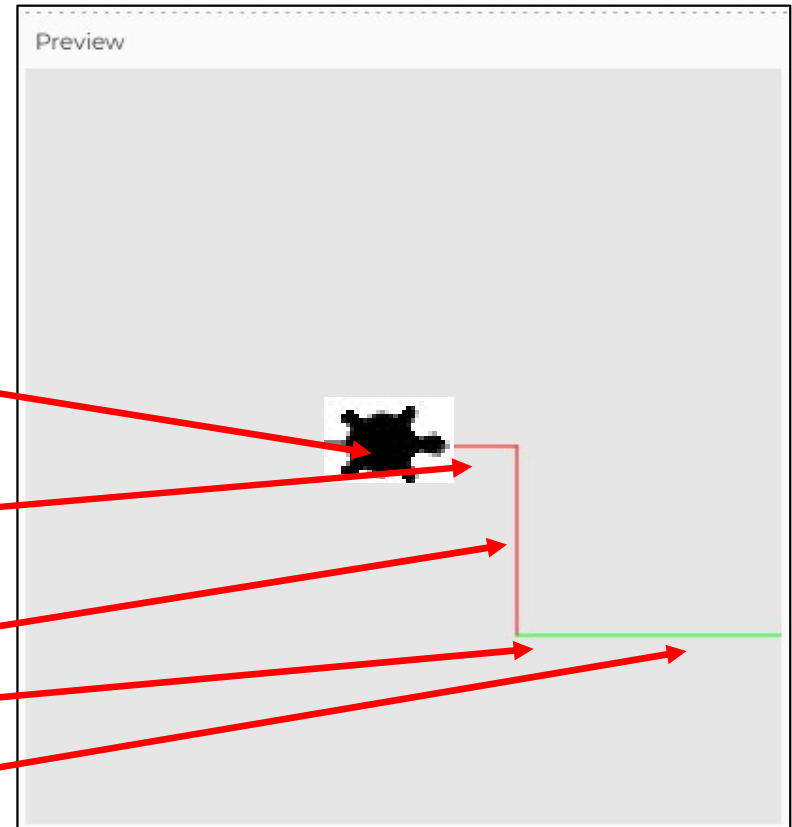
Want to do a Branch of a Tree? Try This.

11

Delete lines 3-10. Copy-and-paste this code there instead.
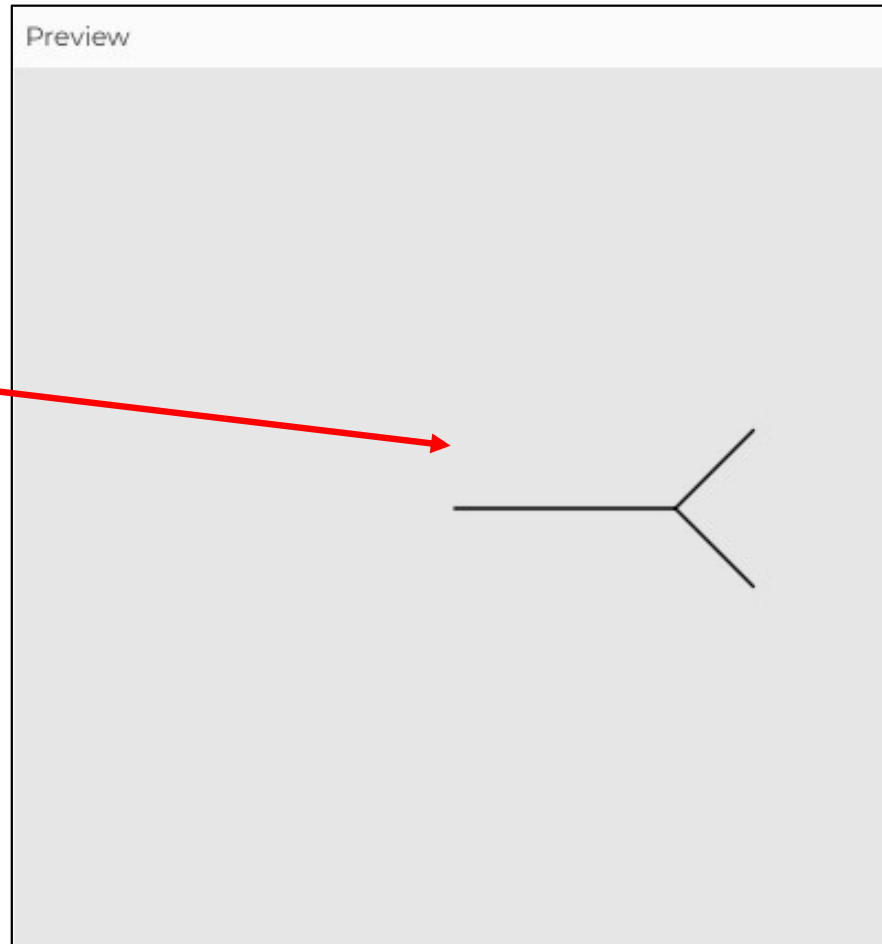
```
var b = 100;
F( b );
R( 45 );
F( b/2 );
B( b/2 );
L( 90 );
F( b/2 );
B( b/2 );
R( 45 );
B( b );
```

Preview

Try changing colors.
Try setting the variable b to be something other than 100.
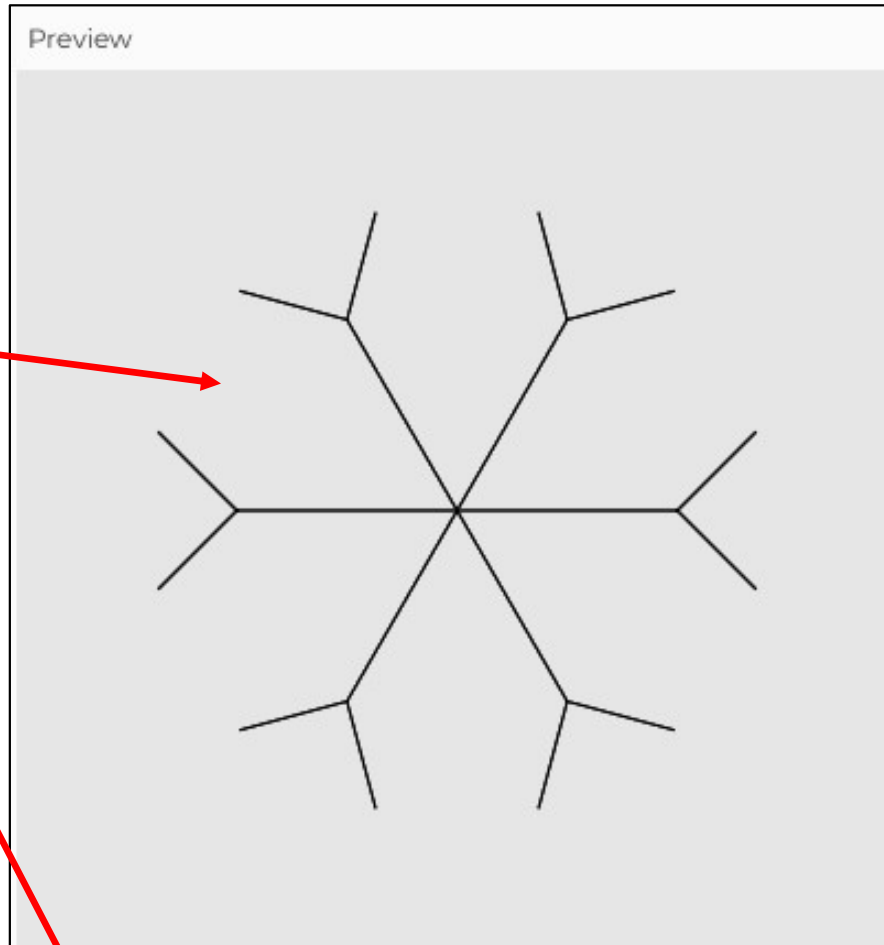
Copy-and-paste this code there instead.

```
var b = 100;
for( var s = 0; s < 6; s = s + 1)
{
        F( b );
        R( 45 );
        F( b/2 );
        B( b/2 );
        L( 90 );
        F( b/2 );
        B( b/2 );
        R( 45 );
        B( b );

        L(60);
}
```

Preview

Try setting the variable b to be something other than 100.

In the for-loop, try changing the 6 to a 12
At the end, try changing the L(60); to L(30);

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