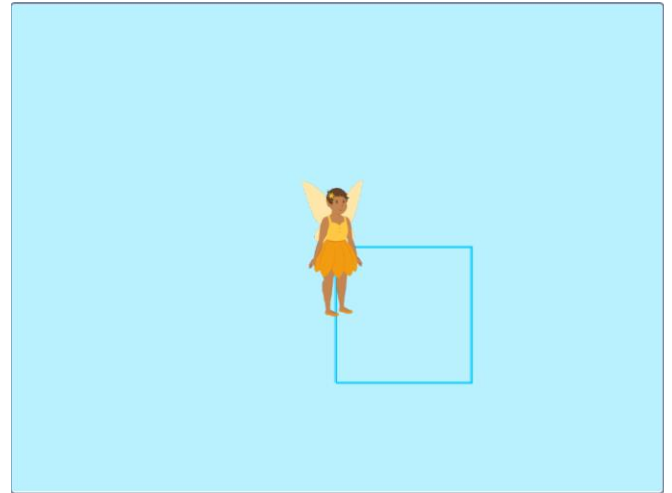


# COMPUTATIONAL ARTS WITH SCRATCH

L1U8.7-8.8  
Student Guide: Lesson 1

LET'S LEARN HOW TO DRAW  
COMPUTATIONAL ART WITH SCRATCH!

In this activity, you will learn how to draw a square  
using the **Pen** component of Scratch.

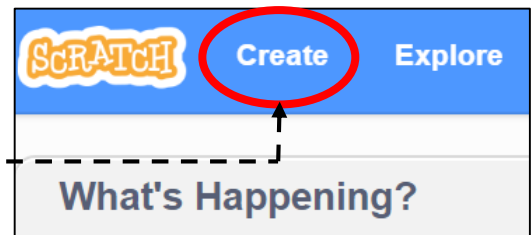


## START HERE

- ❑ Sign into your account at [scratch.mit.edu](https://scratch.mit.edu).

1

- ❑ Go to **Create** to start a new project.



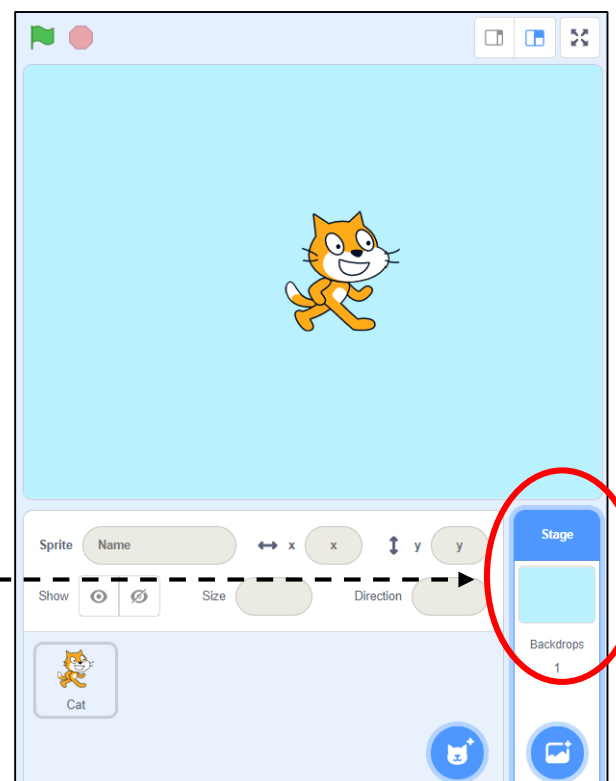
2

- ❑ Name it "DrawASquare".



3

- ❑ You can change the backdrop colour for your project.



4

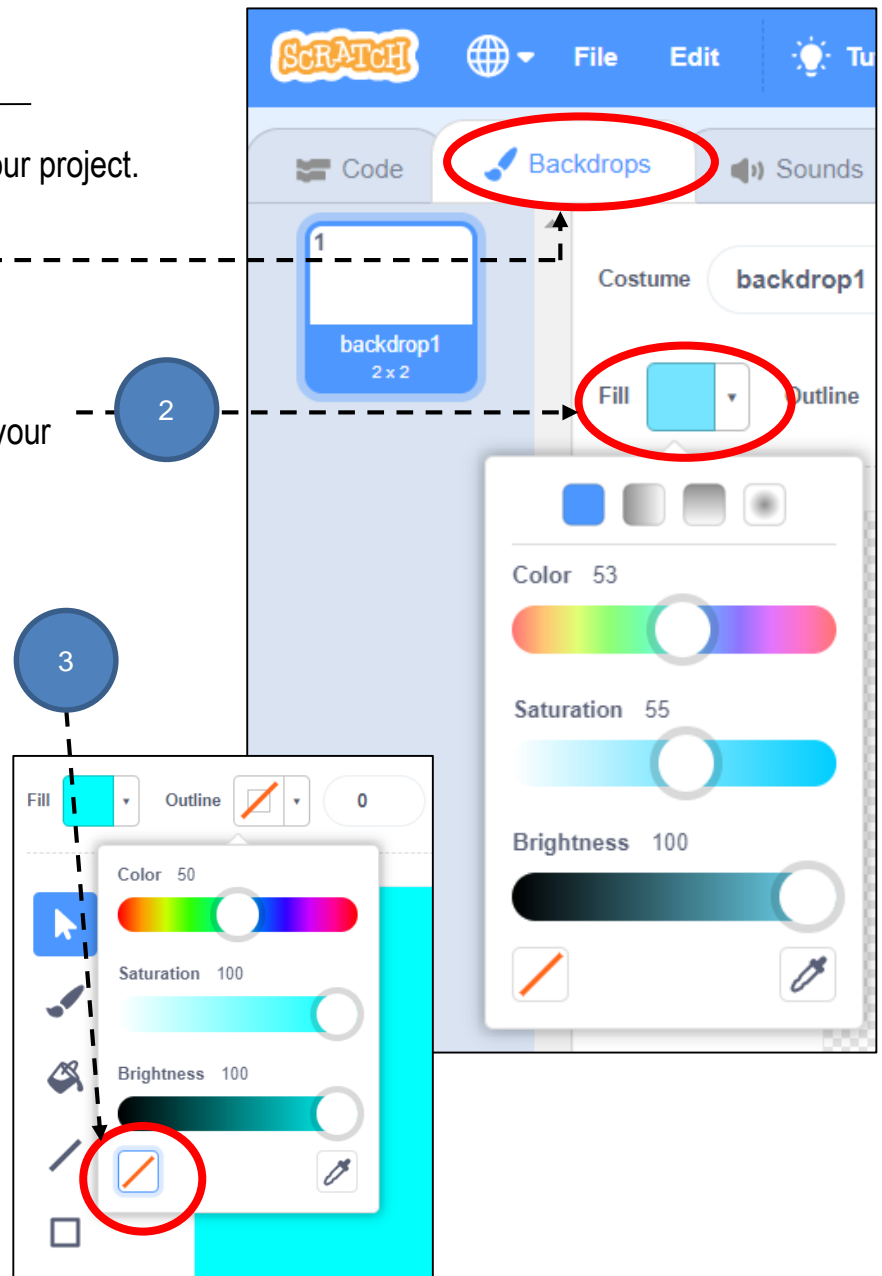
Click on the Stage

# COMPUTATIONAL ARTS WITH SCRATCH

## LET'S CONTINUE

❑ Let's change the backdrop colour for your project.

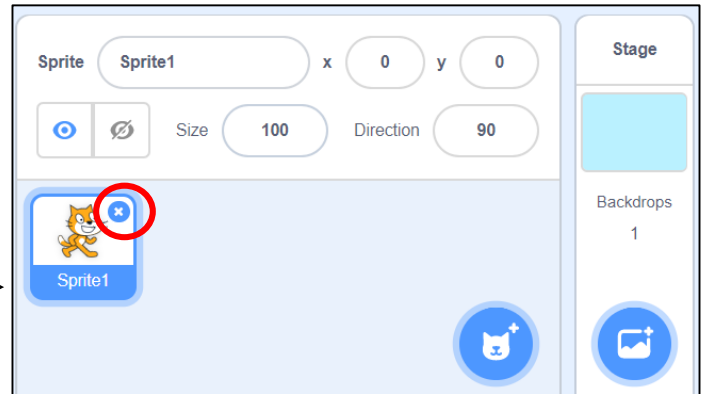
1. Go to **Backdrops**.
2. Click **Fill** to choose the colour you want to fill as the single colour of your backdrop.
3. Click **Outline** and then choose the slash image at the bottom left for "no outline".
4. Draw a rectangle to cover the whole canvas.



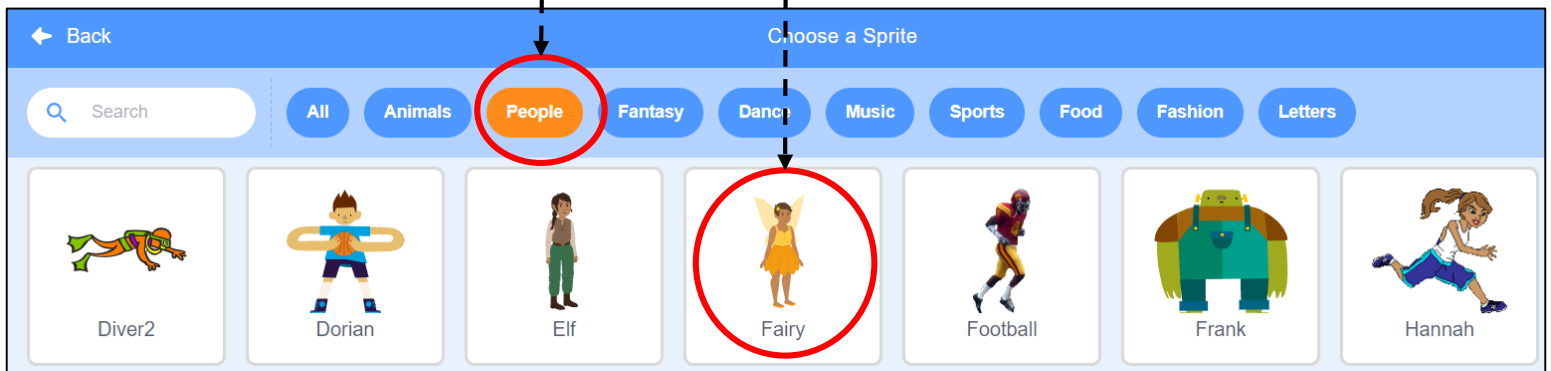
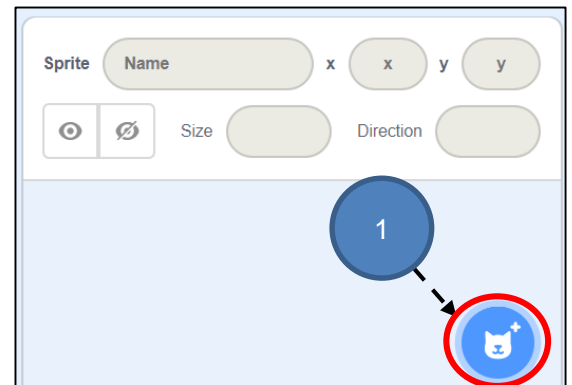
# COMPUTATIONAL ARTS WITH SCRATCH

## CHOOSING SPRITES

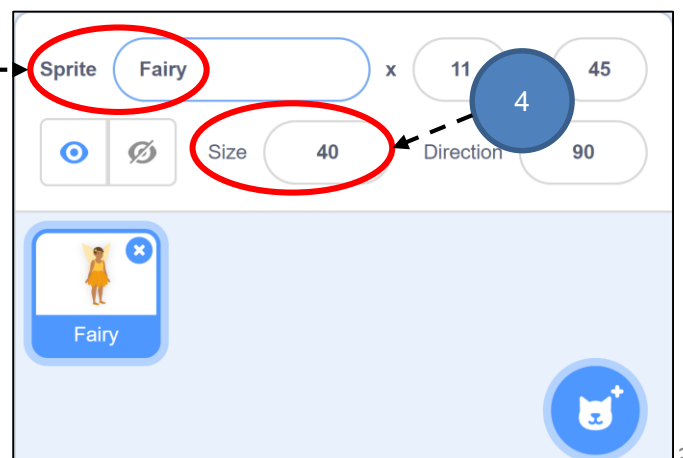
- ❑ Delete the original Scratch cat sprite by clicking the X in the upper right corner of its image.



- ❑ Let's choose a new sprite for your project.
  1. Click on the **Choose a Sprite** icon.
  2. Click on the **People** category on the top.
  3. Add the **Fairy** sprite to the project. You may choose your favourite sprite instead, if you want.



4. Change the size of the sprite to "40".
5. If you wish, you can change the name for your sprite.



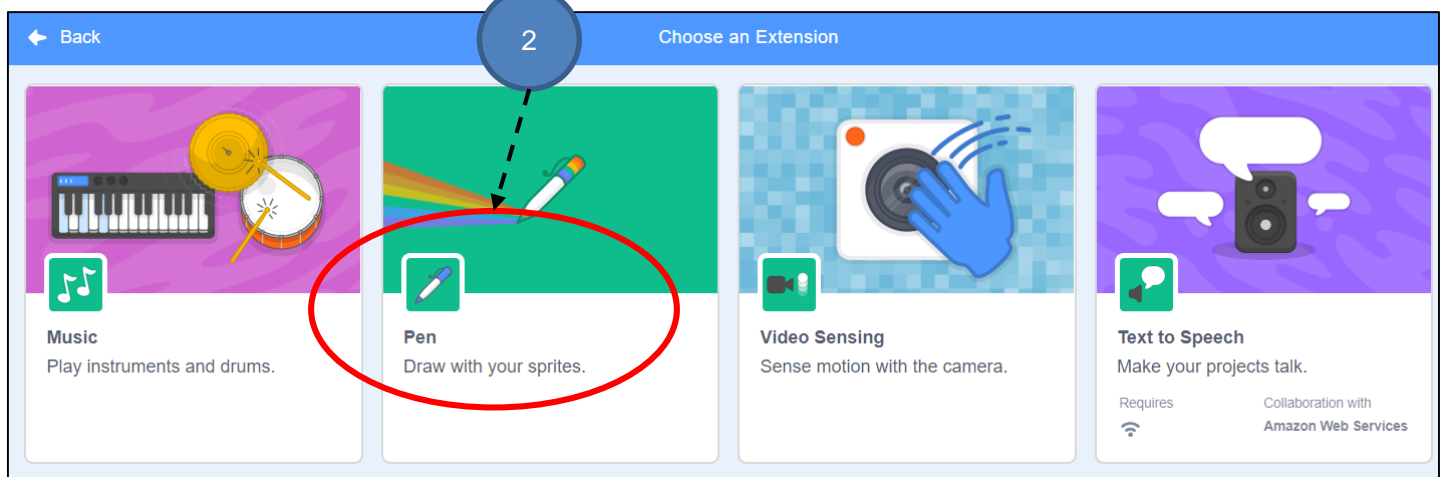
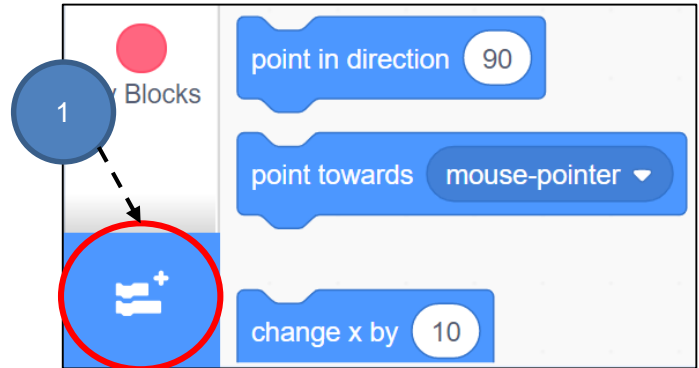
# COMPUTATIONAL ARTS WITH SCRATCH

L1U8.7-8.8  
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## PEN COMPONENT

- Before you start drawing, you need to add the **Pen** component to your Scratch project.

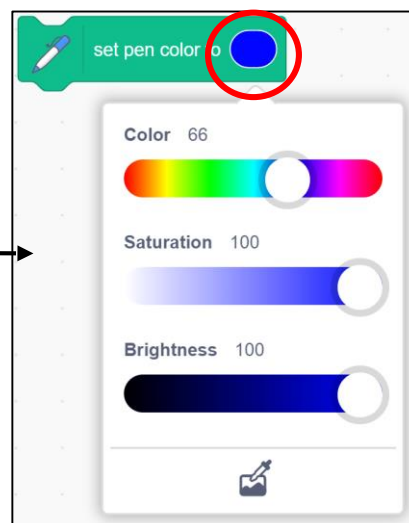
- Click on the **Add Extension** icon at the bottom left of the page.
- Select the **Pen** extension.



- Go to the **Pen** drawer under **Code** tab to see a list of blocks that you can use.
  - Can you guess what each block does? Try to drag out some blocks to see what they do.
- Drag out the **set pen color to** block and try to change the colour.



The colour of the pen should have a suitable contrast with the colour of the backdrop.



Are you able to draw a line with the pen?

# COMPUTATIONAL ARTS WITH SCRATCH

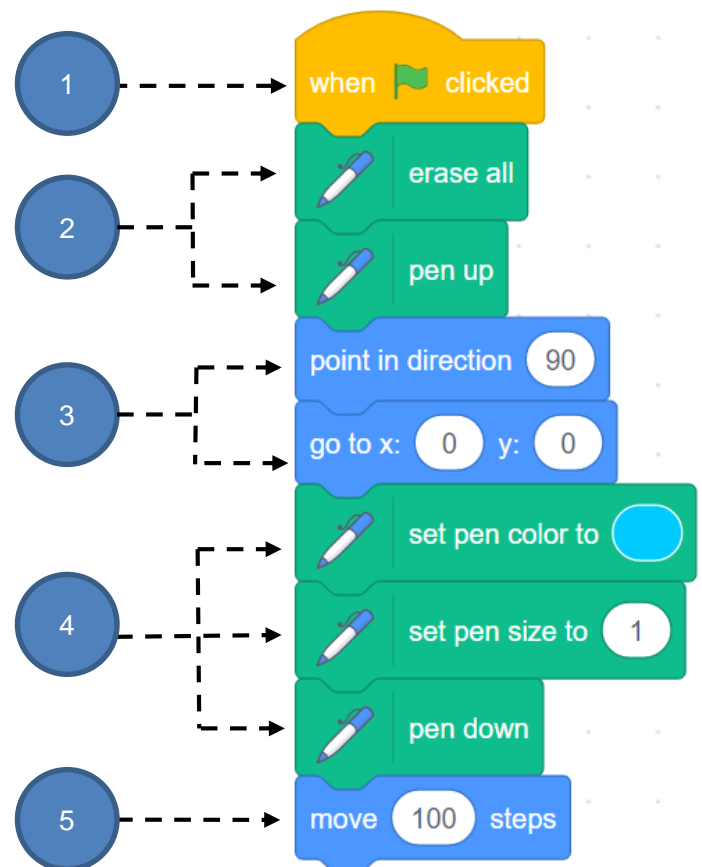
A line is formed by putting the pen down and moving the sprite.  
The pen follows the sprite and draws as the sprite moves.



## DRAW A LINE

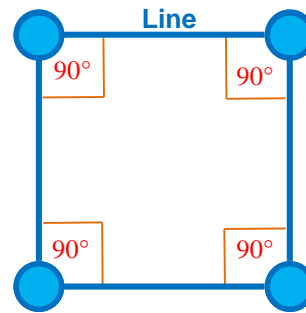
- ❑ In Scratch, you define the length of the line being drawing by using the **move** \_\_\_ **steps** block after the **pen down** block.

1. Drag the **when green flag clicked** block out from the **Events** drawer.
2. To clear the screen, drag out the **erase all** and **pen up** blocks from the **Pen** drawer and snap them to the **when green flag clicked** block. The **pen up** block prevents the sprite from drawing while its moving.
3. To get the sprite to its starting position, drag out the **point in direction 90** and **go to x:0 y:0** blocks from the **Motion** drawer and snap to the above blocks.
4. Drag out the **set pen color to**, **set pen size to** and **pen down** blocks from the **Pen** drawer. Snap them to the above blocks to get the sprite ready to draw.
5. Add a **move 100 steps** block from the **Motion** drawer to draw the line.



# COMPUTATIONAL ARTS WITH SCRATCH

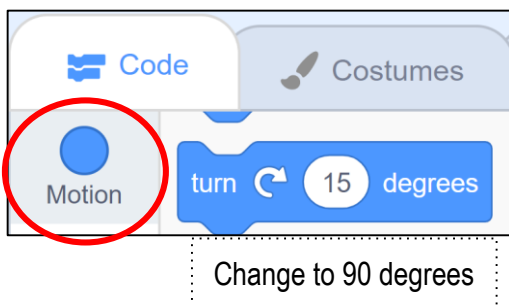
A square is created by joining four lines at right angles (90 degrees).



## DRAW A SQUARE

- ❑ To draw a square, you need to turn 90 degrees before you start to draw the next line.

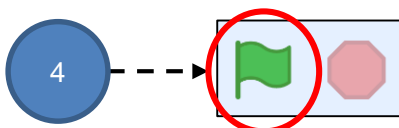
1. Snap a **turn right 90 degrees** block from the **Motion** drawer to the **move 100 steps** block.



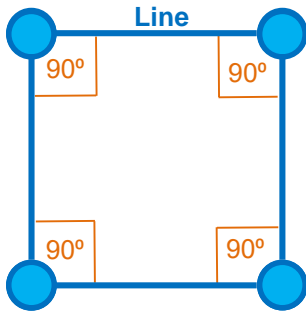
2. Right-click on the **move 100 steps** block to duplicate the **move 100 steps** and **turn right 90 degrees** blocks. Snap the duplicate blocks below the blocks created in step 1.

3. Repeat **step 2** two more times.

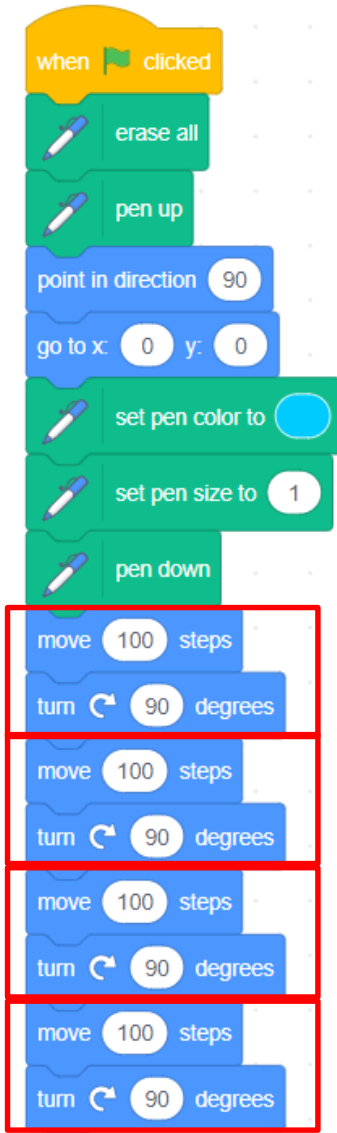
4. Click on the **green flag** to see what the sprite draws.



# COMPUTATIONAL ARTS WITH SCRATCH



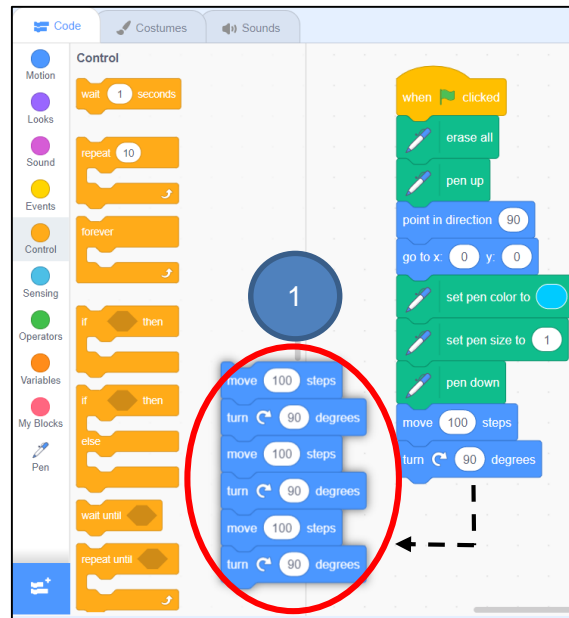
Do you see there  
are blocks  
repeating?



## USING REPEAT BLOCK

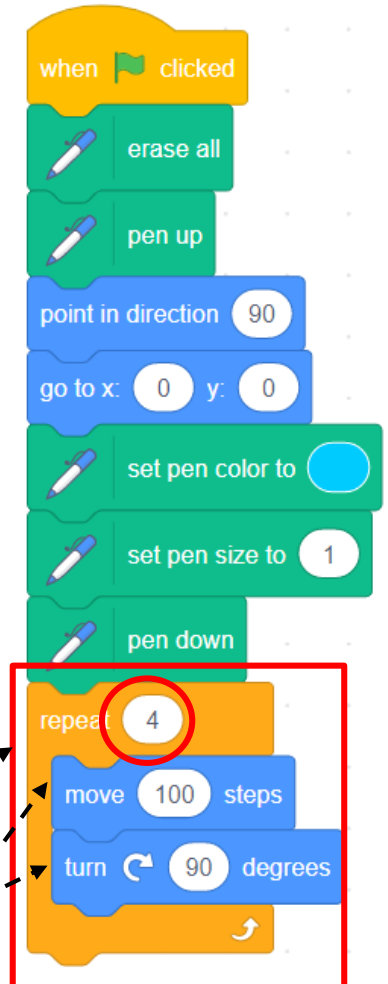
- ❑ Replace the duplicate blocks with a **repeat** block.

1. Remove the three sets of duplicate blocks: **move 100 steps** and **turn right 90 degrees**.



Drag the duplicate blocks to the blocks  
palette to remove.

2. Drag a **repeat** block from the **Control** drawer and change the number to "4".
3. Snap the remaining **move 100 steps** and **turn right 90 degrees** blocks into the **repeat** block.
4. Click on the **green flag**. Are you able to draw a square using the "repeat" block?



### CT Tips

**Repetition** is a very important CT concept. We can use "repeat" to perform actions multiple times.

# COMPUTATIONAL ARTS WITH SCRATCH

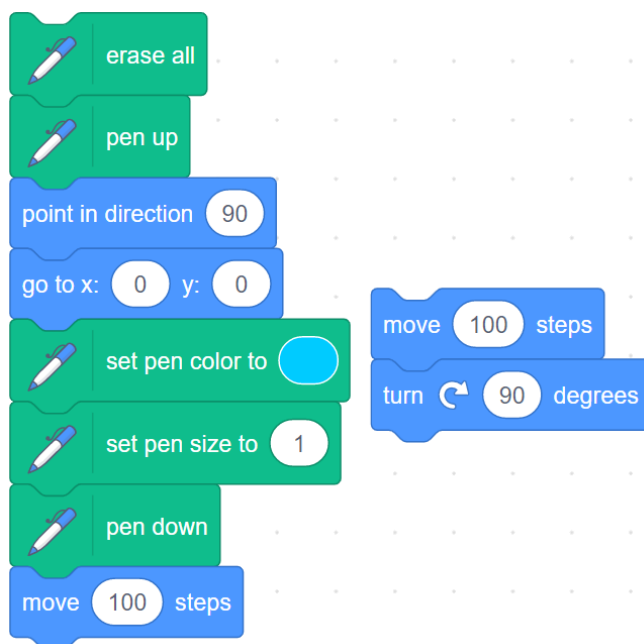
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## COMPUTATIONAL THINKING CONCEPTS

The following are the computational thinking concepts learnt in lesson 1.

### L1U8.7-8.8 Computational Arts with Scratch

#### 1. Sequences:



#### 2. Repetition:

