

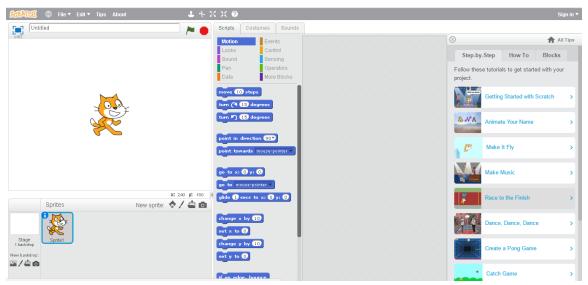
How Algorithms Work – Programming Structures





There are many ways one can solve a problem or perform a task. However, the more efficient an algorithm is for the game engine the faster a program can run. In this activity, you will see firsthand the 3 types of programming structures in Scratch and conclude which one is more efficient.

- 1. Go to www.scratch.mit.edu.
- 2. Click on the Sign-in or Join Scratch Tab to access your account.
- 3. Click on the **Create** tab.
- 4. Click on the **Race to Finish Game** on the right-sidebar of the step-by-step instructions. (If you don't see the right-sidebar as shown in the picture, make sure you click on the ② icon.)



- 5. Follow the steps below in the tutorial:
 - Choose a backdrop (background) for the Race
 - Start moving
 - Move by pressing a key
 - Draw a finish line
 - If you reach the finish line
 - In this step, use the sequential code to the right for Sprite 1 (the Cat)
 - Go to your starting point
 - Use the x (-200) and y (-122) coordinates

```
when clicked

go to x: -200 y: -122

when space key pressed

move 5 steps

move 6 steps

move 7 steps

move 7 steps

move 8 steps

move 8 steps

move 9 step
```

- Add another Sprite to race
 - In this step, use the Selection code to the right for Sprite Dog2 (the blue dog)
- Before you personalize your game with sound (next step) add a third Sprite to race
 - In this step, use the Repetition (looping) code below for Sprite Duck

```
when clicked

go to x: -221 y: 108

Duck

when space v key pressed

forever

repeat 5

move 5 steps

if touching Sprite2 ? then

say Repetition Programming Structure for 2 secs
```

```
when space key pressed

move 5 steps

if not touching Sprite2 ? then

repeat 5

move 5 steps

else

say Selection Programming Structure for 2 secs
```

- Personalize your game
- Finally, save and share your project

Question:

After creating 3 different types of programming structure algorithms, which one is more efficient? Why?