SCRATCH TUTORIAL
SIMPLE FROGGER - BUG EATER GAME

Create a simple Frogger type game. Move the frog across the road to win points by eating bugs. Avoid getting run over by the cars or its GAME OVER!

Tutorial by:

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http://oakdome.com

Programming Difficulty Level = Easy / Medium

Fun Level = Fun to build, more fun to play.

Grade Level = 3rd and up.

This is a learn by doing coding lesson using Scratch at https://scratch.mit.edu/ .

Students will learn basic programming concepts by building and coding their own interactive game.

Students will explore the drag and drop coding interface, use simple tools to draw a background, add and program several game objects (2 cars, 2 bugs, 1 frog), read and interpret code, attend to precision in debugging code, and finally, play their game. ☺

Coding Tip :

When coding, it is good practice to test your code often such as when adding new bits of code or making any changes to code.
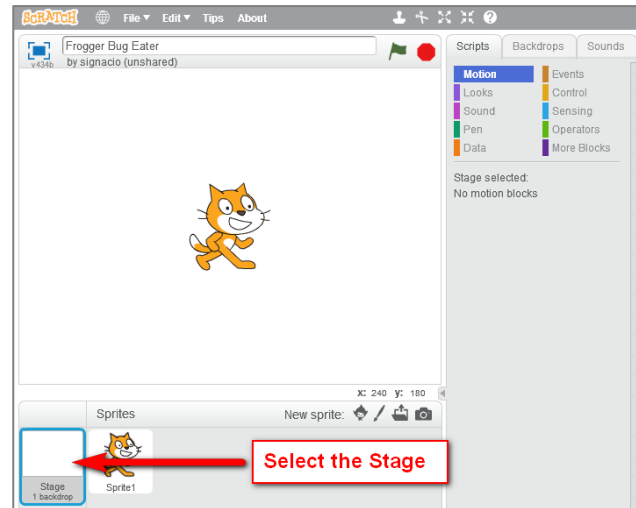
Testing your code often helps you to learn to read and understand code. It also helps you catch and correct coding errors sooner.

FIRST: CREATE THE BACKGROUND

1

**Create the road that the frog will try to cross to get the bugs.**

Select the stage and then click the backdrops tab to begin drawing the background.

2

The Backdrops tab has a simple paint program to draw your background.

- ✓ Use the bucket fill tool to fill the background with grey color.

- ✓ Use the rectangle tool to draw the grassy area on each side of the road.
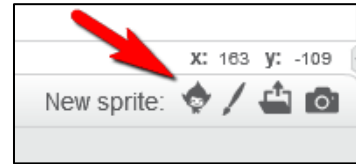
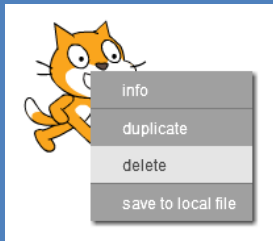- ✓ Use the line tool to create the road lines.
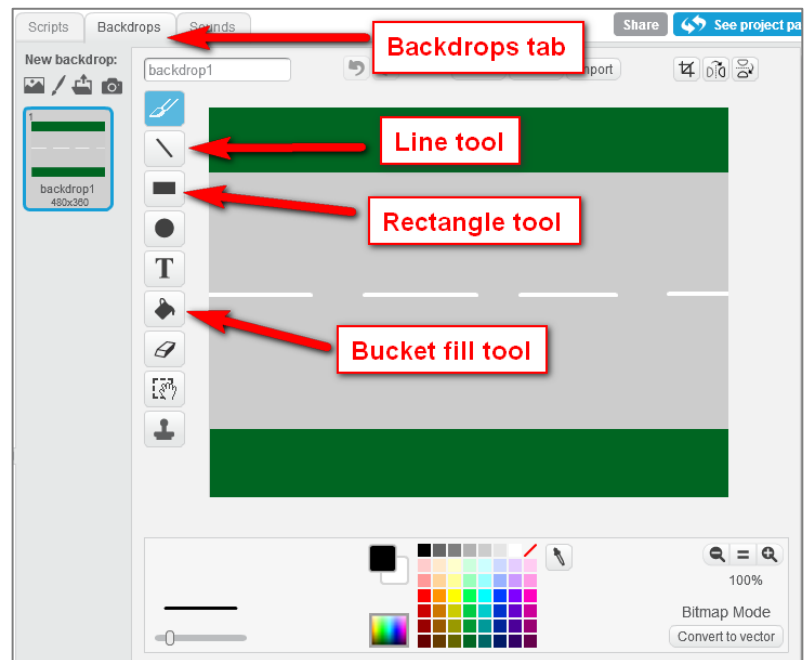
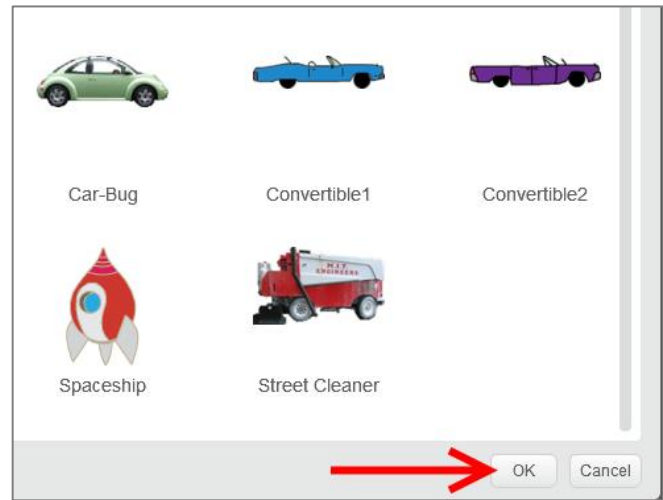# ADD THE CARS AND THEIR CODE

3

Click the "New sprite" icon.

Select your first vehicle and click OK.

x: 163   y: -109

New sprite:

Tip - Deleting a Sprite:

info
duplicate
delete
save to local file

If you need to delete the cat or any other sprite, Right Click on the sprite and click "delete".

Car-Bug   Convertible1   Convertible2

Spaceship   Street Cleaner

OK   Cancel

4

Click on the "Scripts" tab and then drag and drop the code for the first car.

Drag the code from the left column to the right column. **Test this code before moving on. The car should glide across the screen.**
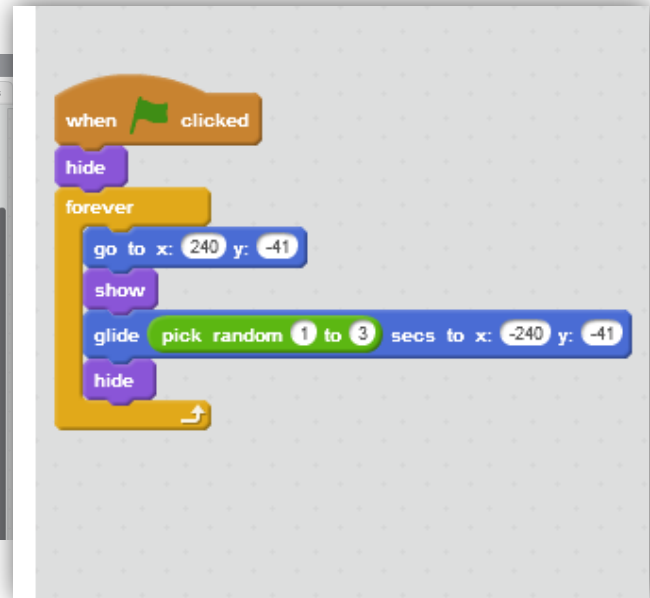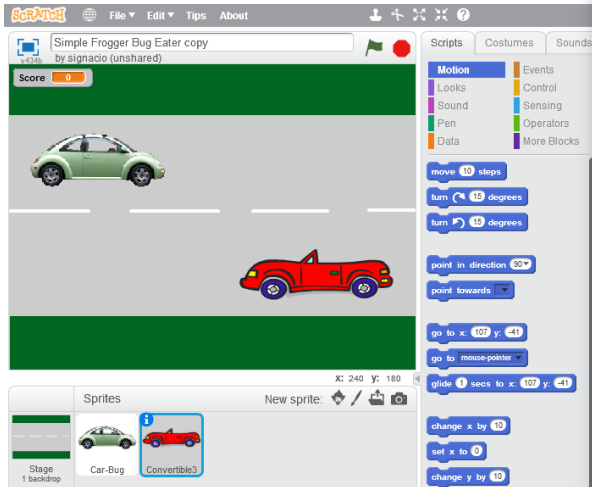
when 🚩 clicked
hide
forever
    go to x: -291 y: 68
    show
    glide 2 secs to x: 291 y: 68
    hide
    wait 1 secs
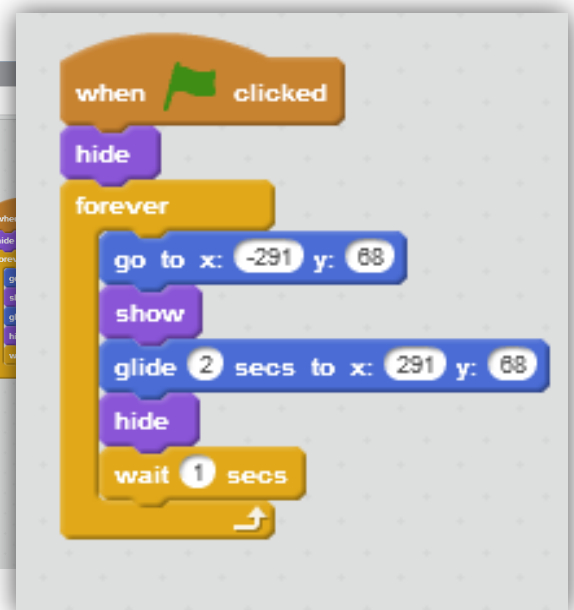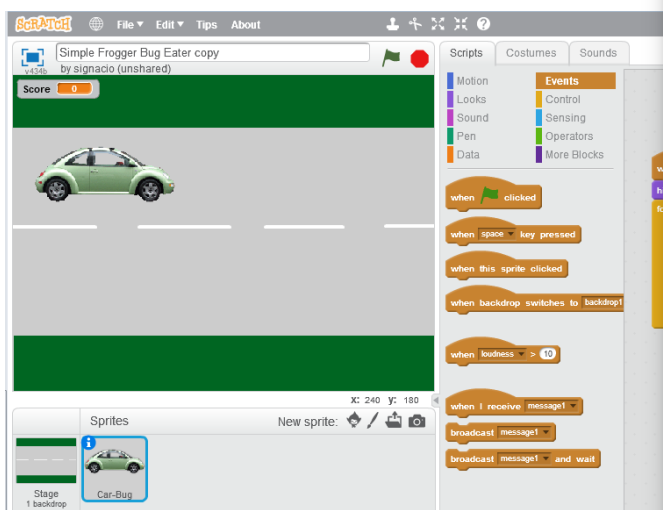
5

Click the "New sprite" icon and add your second car.

You can flip the car to face the other direction in the "Costumes" tab.

Click on the "Scripts" tab and then drag and drop the code for the second car. **Test before moving on. The second car should glide across the screen.**
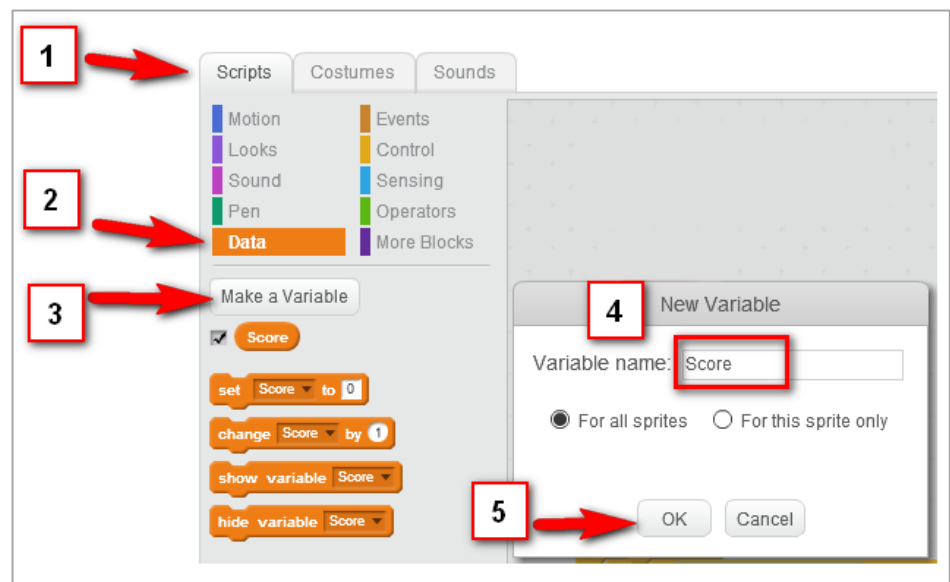
CREATE A VARIABLE TO KEEP SCORE

A variable is a piece of code that will allow us to change (vary) our score. Our score will increase by one when the frog touches (eats) a bug. The score will reset to zero if we touch a car (Game Over!)

6

1. Click the "Scripts" tab.
2. Click "Data".
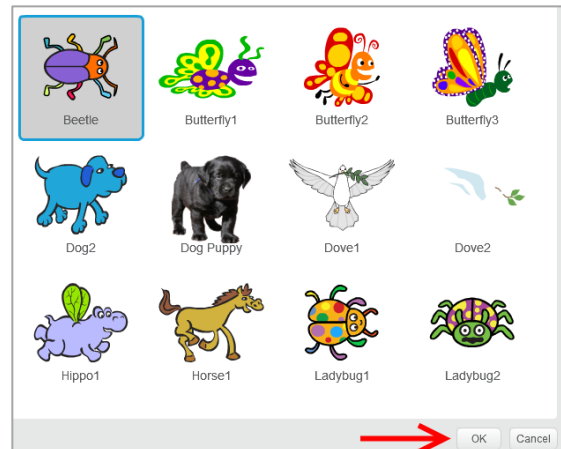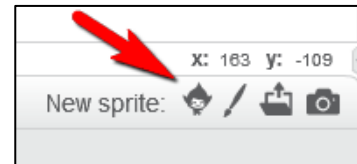3. Click "Make a Variable"
4. Variable name = Score
5. Click OK.

ADD THE TWO INSECTS

7

You need TWO insects.

1. Click the "New sprite" icon.
2. Select an insect and click OK.
3. Repeat to get a second insect.

x: 163 y: -109

New sprite:

Beetle	Butterfly1	Butterfly2	Butterfly3
Dog2	Dog Puppy	Dove1	Dove2
Hippo1	Horse1	Ladybug1	Ladybug2

OK   Cancel

ADD THE CODE FOR THE FIRST INSECT

8

Click the first insect, and then add this code to it.

SCRATCH File▼ Edit▼ Tips About

Simple Frogger Bug Eater
by signacio (unshared)

Score 0

x: 240 y: -180

Sprites   New sprite:

Stage
1 backdrop

Car-Bug   Convertible3   Beetle   Butterfly1   Frog

Scripts

Motion
Looks
Sound
Pen
Data

move 10
turn ↻ 1
turn ↺ 1
point in di
point towa
go to x:
go to mou
glide 1 se
change x
set x to
change y

when 🏳 clicked
go to x: -6 y: 151
show

when I receive Yummy!▼
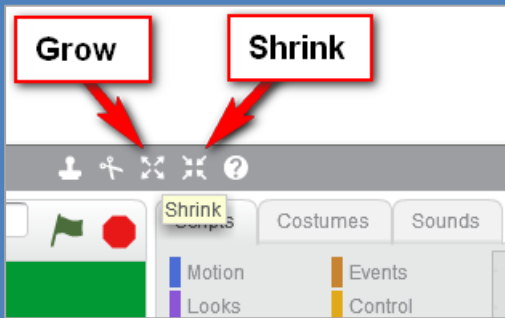hide

when I receive Tasty!▼
show

Positions the beetle insect at x = -6 , and y = 151 and shows the beetle insect.
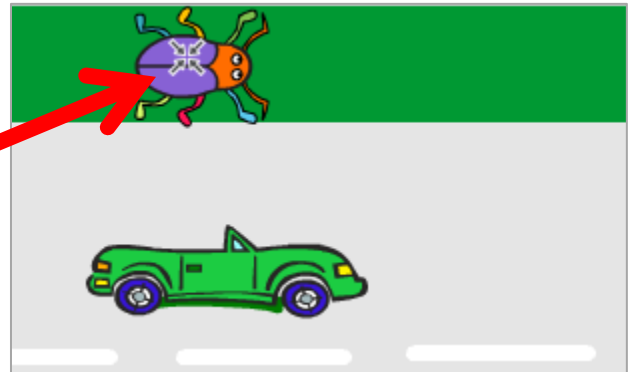
Hides this insect when it receives the broadcast "Yummy!" from the frog. This happens when the frog touches (eats) this insect.

Shows this insect when the other bug gets eaten.

Tip - Changing a Sprite's Size

Grow

Shrink

Shrink   Costumes   Sounds

Motion   Events
Looks   Control

Click on the grow or shrink tool, then click on the sprite to change its size.

Tip – Changing the Receive or Broadcast Messages

when I receive message1

1

message1

new message...

2

New Message

3

Message Name: Yummy!

4

OK   Cancel

ADD THE CODE FOR THE SECOND INSECT

9

Click the second insect and then add this code to it.
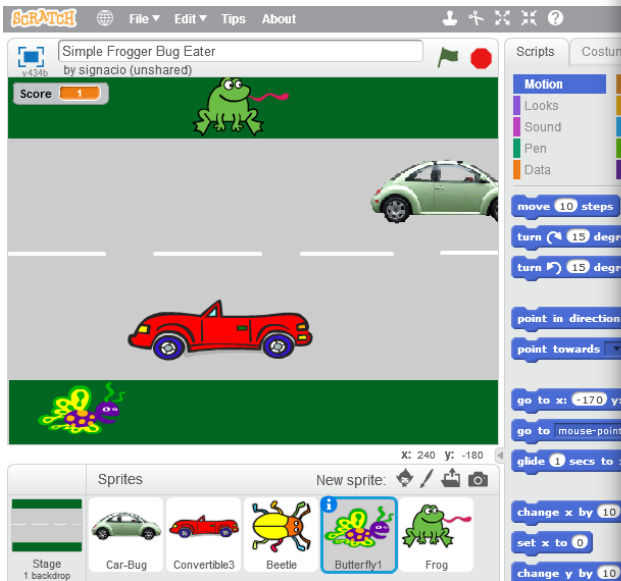
Positions the second insect at x = -170 and y = -149 and hides this insect.

Shows this insect when the first insect gets eaten.

Hides this insect when it gets eaten.

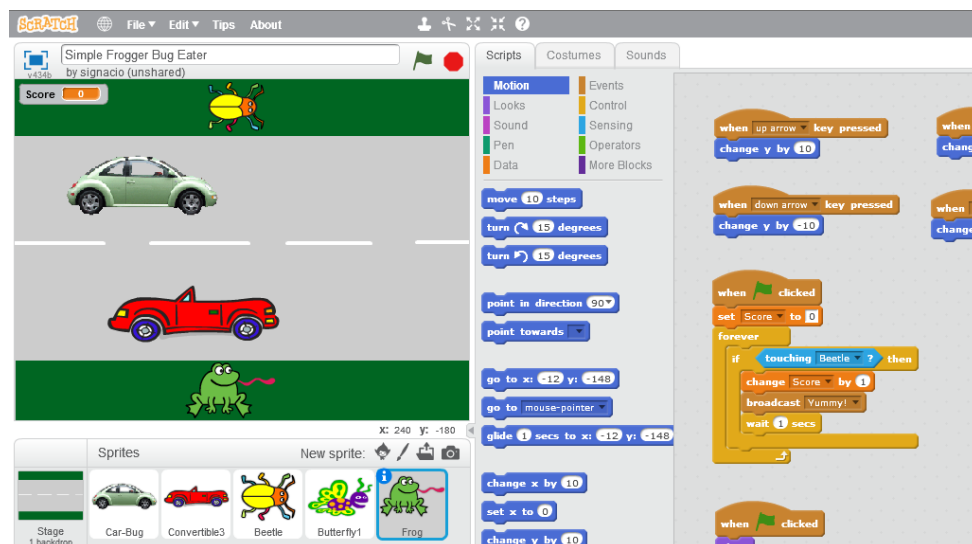# ADD THE FROG AND THE CODE

10

Click the "New sprite" icon.

Select the Frog and click OK.
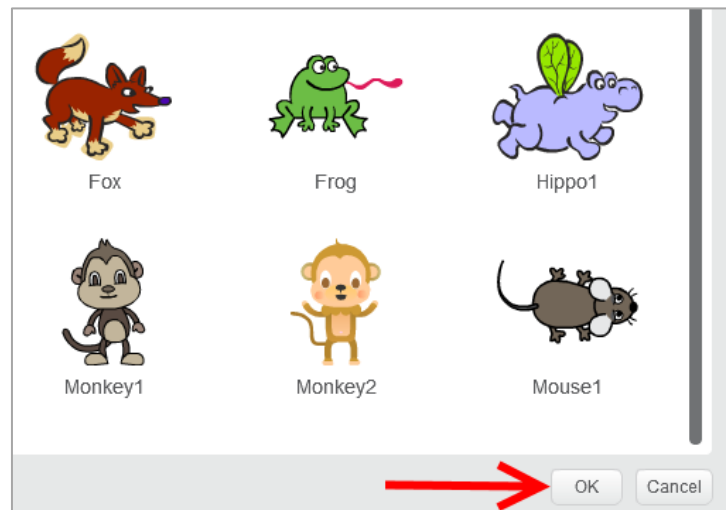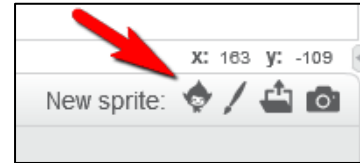
11

Select the Frog.

Add the code to the frog (See the next page for complete code).

Add this code to the frog.

```
when up arrow ▼ key pressed
change y by 10

when down arrow ▼ key pressed
change y by -10

when right arrow ▼ key pressed
change x by 10

when left arrow ▼ key pressed
change x by -10
```

Code to move the frog.

```
when 🚩 clicked
set Score ▼ to 0
forever
    if  touching Beetle ▼ ?  then
        change Score ▼ by 1
        broadcast Yummy! ▼
        wait 1 secs
```

```
when 🚩 clicked
set Score ▼ to 0
forever
    if  touching Butterfly1 ▼ ?  then
        change Score ▼ by 1
        broadcast Tasty! ▼
        wait 1 secs
```

Sets Score to 0.

If the frog touches an insect, the score increases by 1.

Broadcasts (silently tells) to whoever may be listening (receiving) a message: Yummy! or Tasty!

Later, we'll program the bugs to listen for the messages.

```
when 🚩 clicked
show
go to x: -12 y: -148
forever
    if  touching Convertible3 ▼ ?  or  touching Car-Bug ▼ ?  then
        broadcast Game Over! ▼
        stop all ▼
```

```
when I receive Game Over! ▼
say Game Over for 2 secs
```

When the flag is clicked, the frog is shown at coordinates of
X= -12
Y= -148

Can you tell what the rest of the code does?
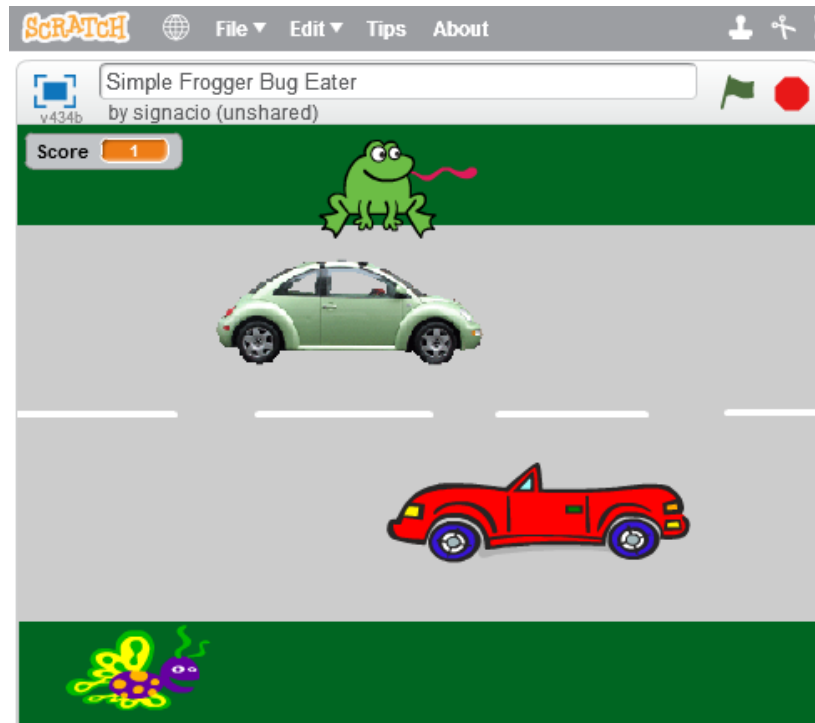
PROBLEMS? - DEBUG YOUR CODE

If your game doesn't work properly, debug your code. Debugging is the process of finding and fixing errors (bugs) in your code. Carefully check your code for errors such as missing code, incomplete code, incorrect code, code in the wrong order, or errors in number values.

Recheck the frog's code if you are having problems with frog movement, scoring, or game over (Step 11).

Can't see the score? Did you create the score variable? (Step 6).

Cars don't travel in a straight line or move correctly? Check the **Go to** "x" and "y" numbers and the **Glide** "x" and "y" numbers. (Steps 4 and 5).

You've checked everything and a sprite is still not working properly? Delete the sprite, and then re-add it and carefully re-add the code for it.

Still not working? Try testing with a different web browser.

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