

DEBUG IT!

HELP! CAN YOU DEBUG THESE FIVE SCRATCH PROGRAMS?

In this activity, you will investigate what is going awry and find a solution for each of the five Debug It! challenges.

START HERE

- ❑ Go to the Unit 3 Debug It! Studio:
<http://scratch.mit.edu/studios/475554>
- ❑ Test and debug each of the five debugging challenges in the studio.
- ❑ Write down your solution or remix the buggy program with your solution.

FEELING
STUCK?

THAT'S OKAY! TRY THESE THINGS...

- ❑ Make a list of possible bugs in the program.
- ❑ Keep track of your work! This can be a useful reminder of what you have already tried and point you toward what to try next.
- ❑ Share and compare your problem finding and problem solving approaches with a neighbor until you find something that works for you!

❑ **DEBUG IT! 3.1** <http://scratch.mit.edu/projects/24269007>

In this project, the Scratch Cat teaches Gobo to meow. But when it's Gobo's turn to try – Gobo stays silent. How do we fix the program?

❑ **DEBUG IT! 3.2** <http://scratch.mit.edu/projects/24269046>

In this project, the Scratch Cat is supposed to count from 1 to the number the user provides. But the Scratch Cat always counts to 10. How do we fix the program?

❑ **DEBUG IT! 3.3** <http://scratch.mit.edu/projects/24269070>

In this project, the Scratch Cat is doing roll call with Gobo's friends: Giga, Nano, Pico, and Tera. But everything is happening all at once! How do we fix the program?

❑ **DEBUG IT! 3.4** <http://scratch.mit.edu/projects/24269097>

In this project, the Scratch Cat and Gobo are practicing their jumping routine. When Scratch Cat says "Jump!", Gobo should jump up and down. But Gobo isn't jumping. How do we fix the program?

❑ **DEBUG IT! 3.5** <http://scratch.mit.edu/projects/24269131>

In this project, the scene changes when you press the right arrow key. The star of the project – a dinosaur – should be hidden in every scene except when the scene transitions to the auditorium backdrop. In the auditorium, the dinosaur should appear and do a dance. But the dinosaur is always present and is not dancing at the right time. How do we fix the program?

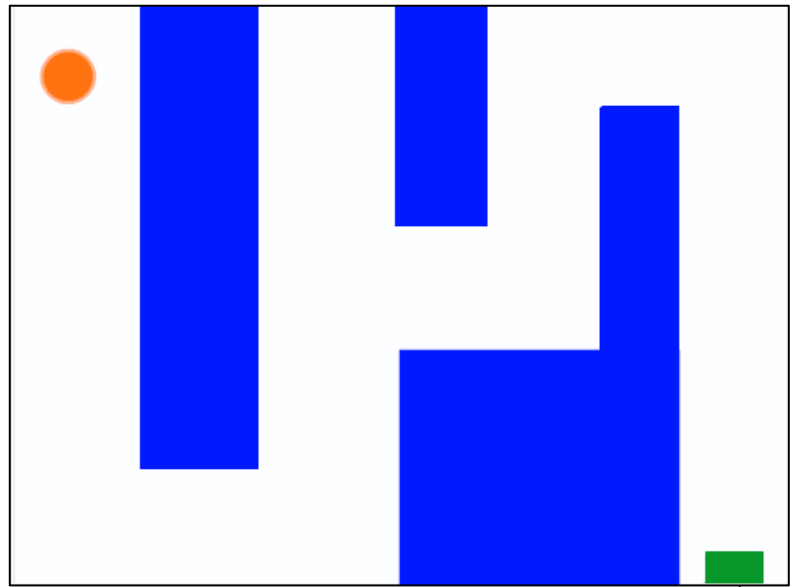
FINISHED?

- + Add code commentary by right clicking on blocks in your scripts. This can help others understand different parts of your program!
- + Discuss your testing and debugging practices with a partner, and make note of the similarities and differences in your strategies.
- + Help a neighbor!

MAZE

HOW CAN YOU USE SCRATCH TO BUILD AN INTERACTIVE GAME?

In this project, you will create a game. This game includes interactions between sprites, score, and levels. You move a sprite from the start of a maze to the end without touching the walls.



START HERE

- ❑ Draw a maze-like background and use different colors for the walls and end-of-maze marker.
- ❑ Add a sprite.
- ❑ Make your game interactive!

THINGS TO TRY

- ❑ Add multiple levels to your game! This can be done through the use of different backdrops and using broadcast blocks to trigger the next level.
- ❑ Use the make a variable block to keep score!
- ❑ Experiment with timer blocks to add new challenges to your maze!

```
when right arrow key pressed
  point in direction 90
  move 10 steps
```

```
when down arrow key pressed
  point in direction 180
  move 10 steps
```

```
when left arrow key pressed
  point in direction -90
  move 10 steps
```

```
when up arrow key pressed
  point in direction 0
  move 10 steps
```

These scripts give the player control over sprite movement in the maze.

```
when green flag clicked
  go to x: -205 y: 147
```

This tells your sprite where to begin and marks the start of the maze.

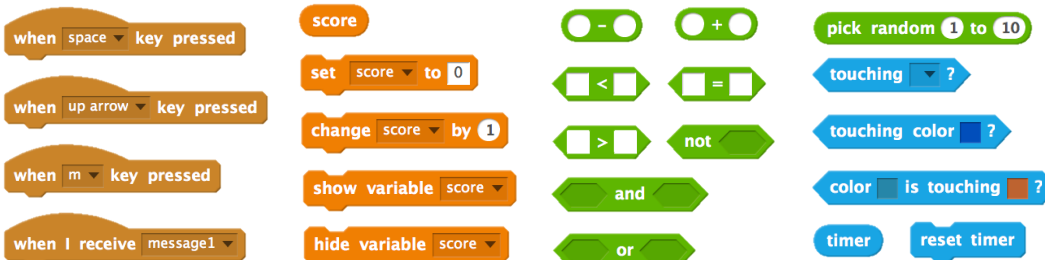
```
when green flag clicked
  forever
    if touching color ? then
      move -10 steps
```

This will cause your sprite to bounce off the blue walls of the maze.

```
when green flag clicked
  forever
    if touching Ball ? then
      say You win!
```

This tells the end-of-maze sprite that players win when the ball touches this sprite.

BLOCKS TO PLAY WITH



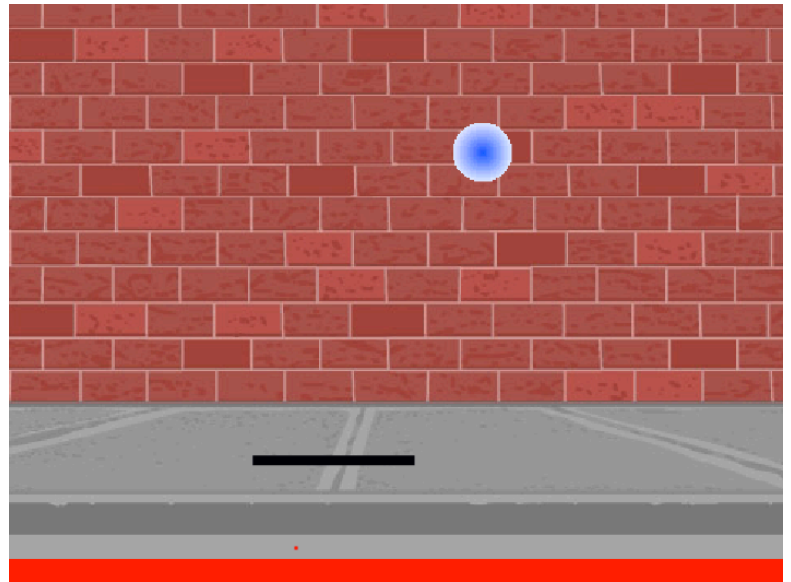
FINISHED?

- + Add your project to the Games Studio: <http://scratch.mit.edu/studios/487504>
- + Swap games with a partner and walk each other through your creations.

PONG

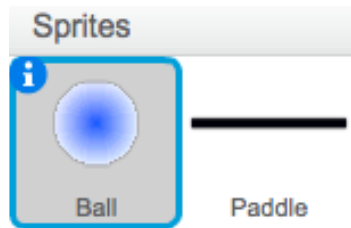
HOW CAN YOU USE SCRATCH TO BUILD AN INTERACTIVE GAME?

In this project, you will create a game. This game includes interactions between sprites, score, and levels. The game is similar to the classic game of pong, where the goal is to keep the sprite from getting past you.



START HERE

- Create two sprites: a paddle for the user to control and a ball the user will be playing with.
- Make your paddle sprite interactive.
- Bring your game to life!



```
when right arrow key pressed
  point in direction 90
  move 10 steps
```

```
when left arrow key pressed
  point in direction -90
  move 10 steps
```

THINGS TO TRY

- How do you add difficulty to your game? Creating different levels, using a timer, or keeping score are a few examples of things you could do.
- Experiment with changing the look of your game by editing the backdrops!
- Explore using different key presses to control your sprites!

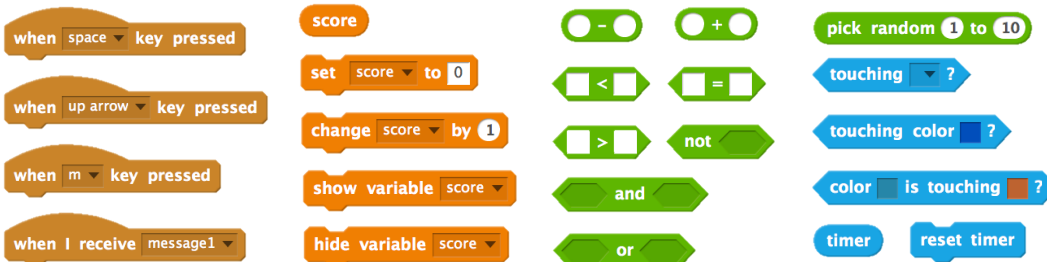
```
when green flag clicked
  forever
    if touching Paddle ? then
      play sound water_drop
      turn pick random 160 to 200 degrees
      move 10 steps
    if touching color red ? then
      stop all
```

```
when green flag clicked
  go to x: 20 y: 150
  point in direction 45
  forever
    if on edge, bounce
    move 10 steps
```

Interacts with the walls
Interacts with the paddle

These control the ball - if touching the paddle or a wall, it continues moving. If touching red (meaning the ball moved past the paddle) the game ends.

BLOCKS TO PLAY WITH



FINISHED?

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- + Swap games with a partner and walk each other through your creations.

SCROLLING

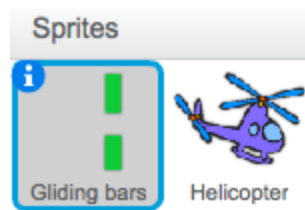
HOW CAN YOU USE SCRATCH TO BUILD AN INTERACTIVE GAME?

In this project, you will create a game. This game includes interactions between sprites, score, and levels. The game is similar to Flappy Bird, where the goal is to keep an object from falling to the ground or touching certain objects.



START HERE

- ❑ Create two sprites: one for the player to control (helicopter) and one to avoid (gliding bars).
- ❑ Make the helicopter interactive.
- ❑ Bring your game to life by adding scripts to make the gliding bars scroll across the stage!



```
when space key pressed
  change y by 20
```

Controls sprite movement

```
when green flag clicked
  go to x: 0 y: 0
  set size to 30 %
  wait 2 secs
  forever
    change y by -2
```

Causes sprite to constantly fall downward

THINGS TO TRY

- ❑ How do you add difficulty to your game? Creating different levels, using a timer, or keeping score are a few examples of things you could do.
- ❑ Experiment with changing the look of your game by editing the backdrops!
- ❑ Explore using different key presses to control your sprites!

```
when green flag clicked
  hide
  forever
    wait 5 secs
    create clone of myself
```

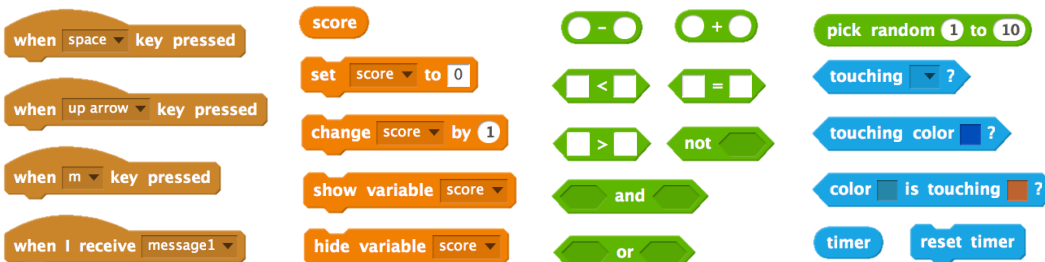
This creates clones, which are used in the script below to make the bars scroll across the screen:

```
when I start as a clone
  switch costume to pick random 1 to 3
  go to x: 240 y: 0
  show
  glide 8 secs to x: -240 y: 0
  delete this clone
```

```
when green flag clicked
  forever
    if touching color ? then
      stop all
```

Specifies when the game ends

BLOCKS TO PLAY WITH



FINISHED?

- + Add your project to the Games Studio: <http://scratch.mit.edu/studios/487504>
- + Swap games with a partner and walk each other through your creations.

SCORE

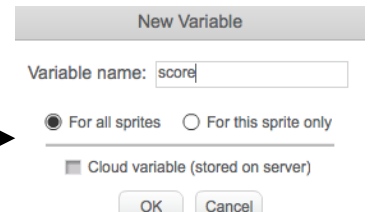
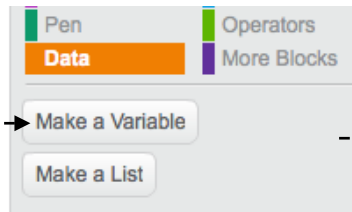
HOW CAN YOU KEEP SCORE IN A SCRATCH PROJECT?

Fish Chomp is a game where players try to catch as many fish as they can by guiding a sprite with the mouse. In this activity, you will remix Fish Chomp by adding a score with variables.



START HERE

- ❑ Go to the Fish Chomp project page:
<http://scratch.mit.edu/projects/10859244>
- ❑ Click on the Make a Variable button in the Data category to create and name a variable for score.
- ❑ Experiment with your new variable blocks to incorporate score into your project!



FEELING STUCK?

THAT'S OKAY! TRY THESE THINGS...

- ❑ Not sure how to work with variables? Check out this project for more information: <http://scratch.mit.edu/projects/2042755>
- ❑ Or take a look at this video: <http://youtu.be/uXq379XkhVw>
- ❑ Explore and study code in games that use score to learn more about creating variables and incorporating score into a project.

FINISHED?

- + Add your project to the Fish Chomp Remix studio: <http://scratch.mit.edu/studios/475615>
- + Challenge yourself to do more! How can you use score to add difficulty to your game design?
- + Find a game you are inspired by and remix it!