

**SUPER**

# SCRATCH

**PROGRAMMING ADVENTURE!**

COVERS  
VERSION 1.4

LEARN TO  
PROGRAM  
BY MAKING  
COOL  
GAMES!



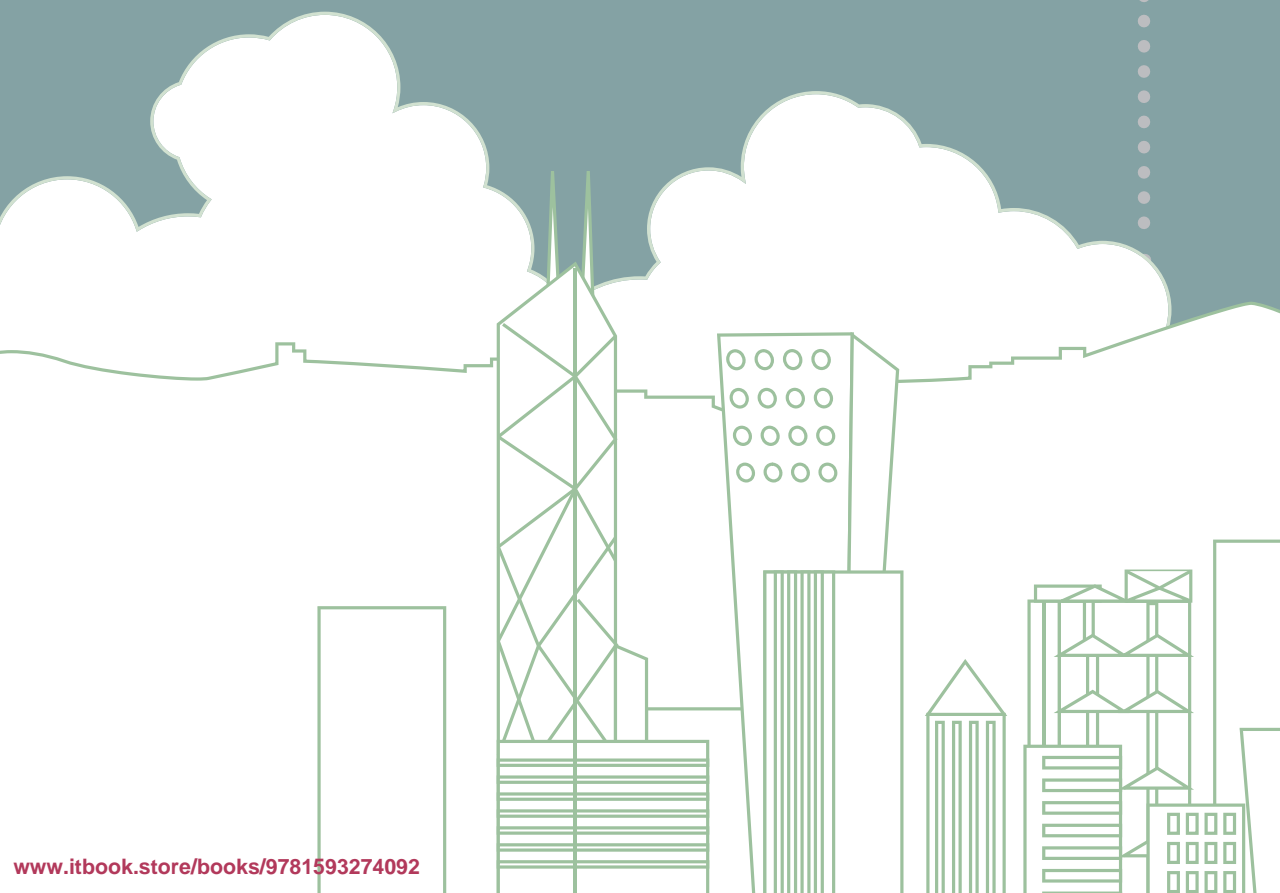
THE **LEAD** PROJECT



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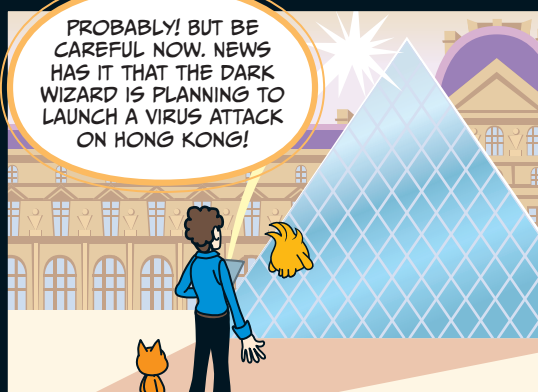
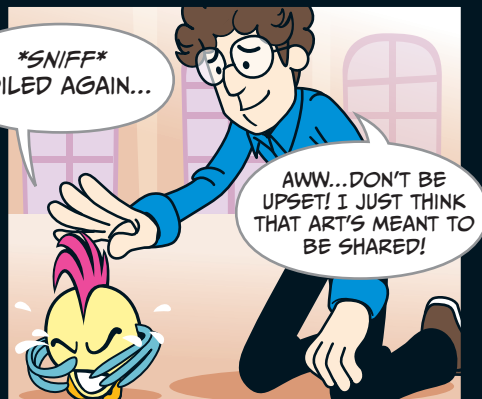
# DEFEND HONG KONG'S TECHNOCORE

# 4 STAGE



STAGE

4





## HACK ATTACK

### + Chapter Focus

Learn to control sprites with the mouse, program objects to bounce back, and start a game by pressing the spacebar.

### ✎ The Game

Help Scratchy attack flying viruses and stop them from touching the server at the bottom of the screen. If you successfully block 30 viruses, you win the game!

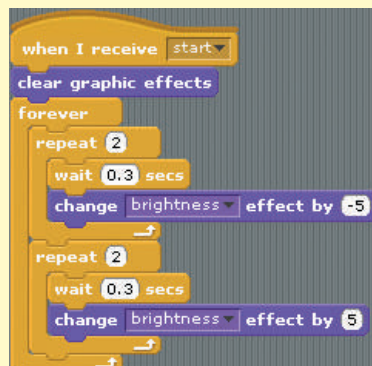
# 4 STAGE



First, go to the **Stage** and import a sparkly nighttime picture of Hong Kong!



Did you know you can add programs to the Stage, too? We can add this program to make our city glow!

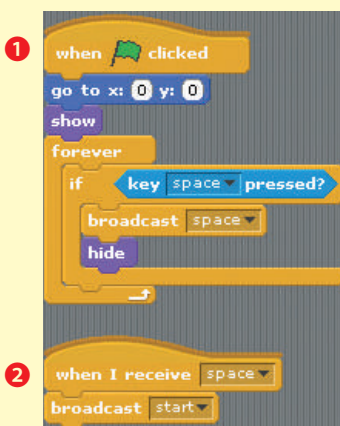


# 4 STAGE

We can then add a new sprite called Instructions, which tells the player how the game works. We'll write two programs for the sprite.

**Protect Hong Kong!**  
**Defend the server from virus attacks**

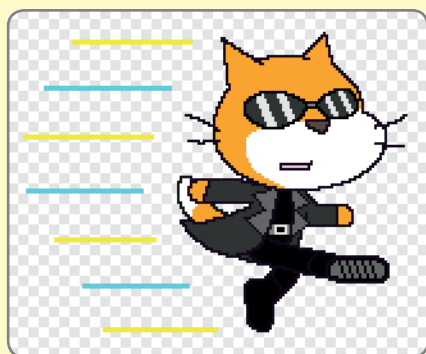
**Click your mouse to move Scratchy!**  
**Press <SPACE> to start!**



Program 1 makes the sprite show up at the start of the game and disappear when the player presses **space**, the spacebar on their keyboard.

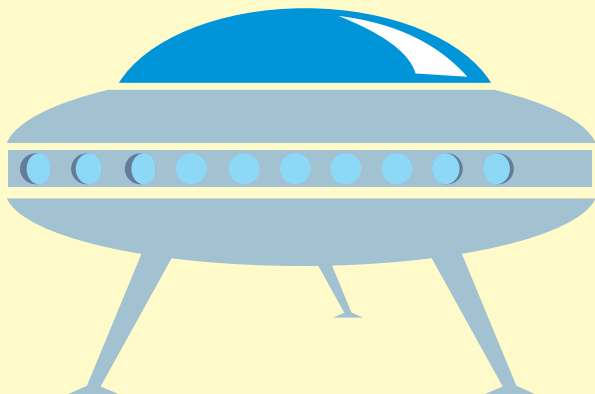
Program 2 makes the Instructions sprite broadcast **start** when it receives the **space** broadcast from program 1. This will start the game!

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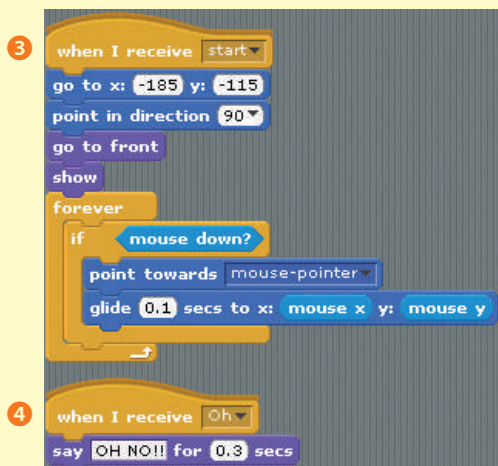
Then we'll write some programs for Scratchy. Import the sprite *Neo-Cat* from the *Super Scratch* folder into your project. Notice how he already has two costumes: one where he's just standing and another where he's jumping.

So let's add some programs to control how Scratchy looks. In program ①, we **hide** him before the **start** broadcast is received. In program ②, we control how Scratchy switches costumes. Whenever the player's mouse is clicked—that is, whenever **mouse down?**—Scratchy looks like he's jumping.





# 4 STAGE

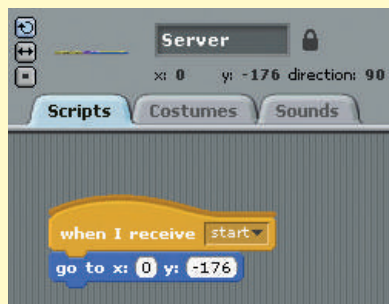


But how does the player control Scratchy? Program 3 lets you control Scratchy with the mouse, showing him only when the **start** broadcast is received.

Program 4 makes a speech bubble saying “OH NO!!” appear whenever the Scratchy sprite receives the **Oh** signal. We’ll broadcast **Oh** whenever a virus manages to hit the server.

Tip: By using the mouse instead of the keyboard, the player has a lot of control over Scratchy, who will move very quickly for this game. But remember—every game is different! Sometimes the keyboard works well, too.

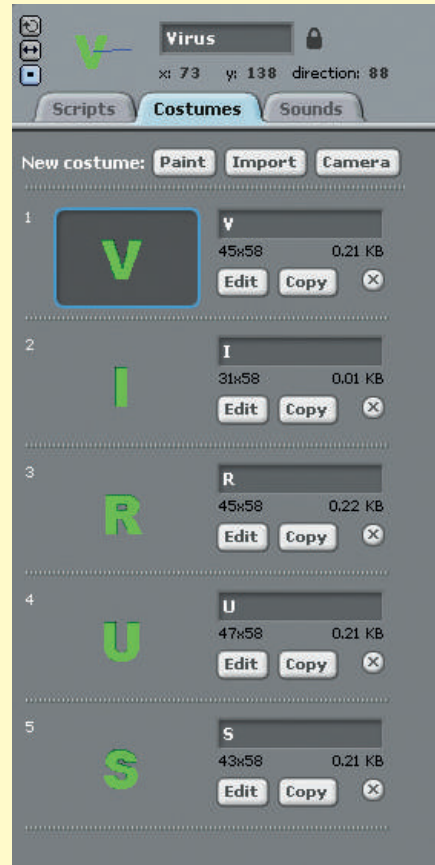
Then we’ll draw or import a new sprite called Server. The Server has one simple program so that it appears in the right place: centered and at the bottom of the screen.



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Next, import a new sprite called *Virus* from the *Super Scratch* folder. It has a set of costumes of letters spelling V-I-R-U-S.

Program 1 hides the Virus until the game starts. Program 2 makes the Virus switch costumes as it flies around.



Program 3 for the Virus makes it fly around. It bounces whenever it bumps into Scratchy or the edges of the screen.

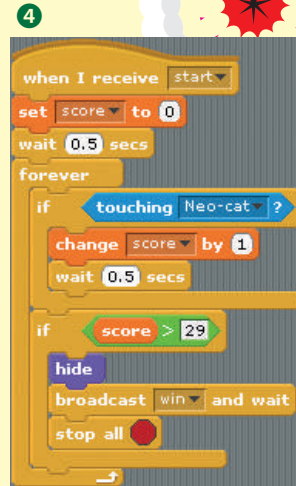




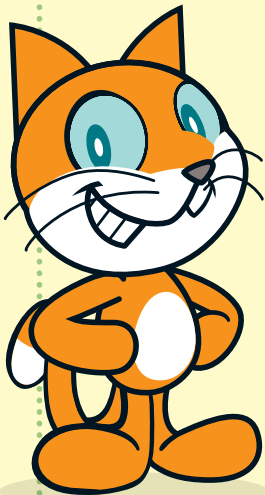
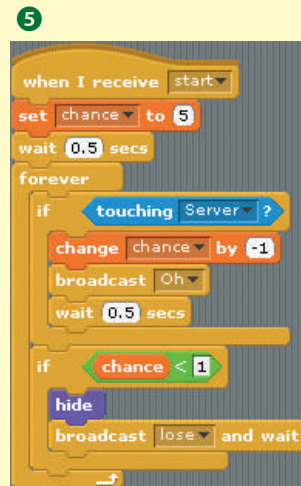
# 4 STAGE

Now we'll add more programs to the Virus to keep score. These programs use blocks from the **Control** and **Variables** palettes to record and signal the conditions for winning and losing.

Program 4 creates a new variable called **score** and the conditions we need to meet for the script to broadcast **win**. Your score will now appear on the Stage.



Program 5 creates a variable called **chance**, which keeps track of how many times the Virus is allowed to touch the Server sprite before the player loses. We'll give Scratchy five chances to start. When you're out of chances, the program broadcasts **lose**. Just like the player's **score**, the number of tries the player has left is displayed on the Stage as **chance**.



Tip: When setting the rules for winning and losing in your games, use the greater-than symbol (>) or the less-than symbol (<) instead of the equal sign (=), as we do in programs 4 and 5. This will prevent the game from breaking when a variable changes too quickly!

Why might the variable change too fast in this game? Scratchy might touch the Virus a few times in quick succession, and the program won't realize that you've won the game.

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Now let's add a sprite for the winning screen. Programs 1 and 2 keep it hidden. Then program 3 makes it appear when the **win** broadcast is received from the Virus sprite.

**You Win!!**  
**The city server is safe now!**

- 1 when clicked  
hide
- 2 when I receive space  
hide
- 3 when I receive win  
go to x: 0 y: 0  
go to front  
show



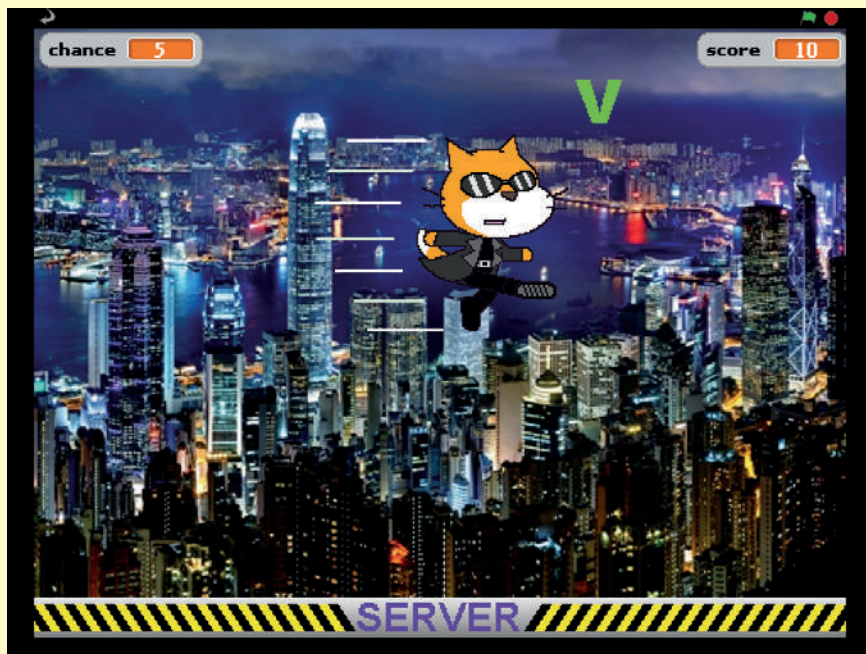
The losing screen is pretty similar to the winning screen. To save time, we can select the **Duplicate** tool and click the winning screen to copy both the image and the programming!

**You Lose!!**  
**Press <SPACE> to try again!**

All we need to do now is change the costume and the last program a bit.

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- The screenshot shows the 'Lose' sprite's script area with three event blocks:
- 1 when clicked  
hide
  - 2 when I receive space  
hide
  - 3 when I receive lose  
go to x: 0 y: 0  
go to front  
show

# 4 STAGE



We're finished! After you save the file, hurry and help Scratchy the hacker defend the network from the virus attack!

## Scratchy's Challenge!!

How would you make this game harder for the player? How about adding different kinds of viruses? What about turning this game into a two-player Ping-Pong match? Give it a try!

