The MagPi ESSENTIALS

[CHAPTER TWO]
BOUNCY HEDGEHOG

Spike the hedgehog loves playing on the trampoline, but he's a bit clumsy. Can you move the trampoline to stop him landing with a bump?

There are some great fantasy sprites included in Scratch, including this purple hedgehog-like creature!

Move the trampoline left and right to catch the hedgehog and bounce it back up in the air

In this chapter, you'll make your first Scratch game, in which you use the cursor keys to move the trampoline left and right to catch a bouncing target. This project shows you how to bring in new sprites and backgrounds, and how to use the bracket blocks and diamond blocks in your projects. You'll find these skills useful as you build the other projects in this book. Start a new Scratch project, and get ready to bounce! Remember you can refer back to the last chapter if you need help finding your way around the screen.

>STEP-01
Prepare your artwork

For this Scratch project, you don't need the cat, so right-click it in the Sprite List and then choose Delete. To add a new sprite, click the icon above the Sprite List that shows a folder and a star. Add the trampoline sprite from the Things folder, then the fantasy11 sprite in the Fantasy folder. Let's change the background: click the Stage in the Sprite List and the Costumes tab changes to a Backgrounds tab. Click the tab and use the Import button to bring in your choice of background. We're using the image atom-playground in the Outdoors folder.

>STEP-02
Adding player controls

Click the trampoline (which should be Sprite1) in the Sprite List to select it, and then click the Scripts tab above the Blocks Palette. **Listing 1** shows the scripts you need to add to this sprite. Work your way down them, dragging the blocks into the Scripts Area one at a time and joining them up. Click the white holes in the blocks and type the right numbers in. Remember that the colours are a clue: to find the yellow blocks, click the yellow Control button above the Blocks Palette first.

>STEP-03
Set up the hedgehog

Click Sprite2 in the Sprite List (the hedgehog). Add the script shown in **Listing 2** to it. This puts the sprite in the top left when the game begins, and gives the player a chance to spot it before it moves.
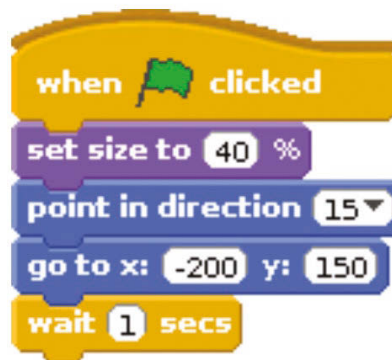
>STEP-04
Add a repeat loop

We're going to extend that script now by adding some more blocks at the bottom. **Listing 3** (overleaf) shows the entire script, including the bits you've already done. Click the Control button above the Blocks Palette. Drag a `repeat until` block into the Scripts Area and join it to your script so far.

.01

```
when [flag] clicked
set size to 20 %
go to x: 0 y: -120

when left arrow key pressed
change x by -10

when right arrow key pressed
change x by 10
```

.02

```
when [flag] clicked
set size to 40 %
point in direction 15
go to x: -200 y: 150
wait 1 secs
```

Below: Right-click the sprite in the Sprite List to delete it. Note the buttons to add a sprite above the cat here too

```
New sprite: [buttons]

Sprite.   show
          export this sprite
          duplicate
          delete
```
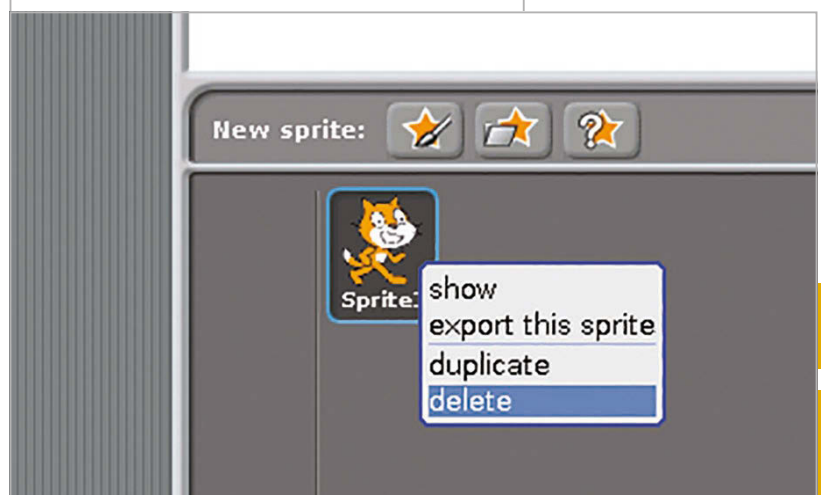
(Make sure you don't use the repeat block with a number in it). Next, you need to drop a **<** block into the diamond-shaped hole. Click the Operators button above the Blocks Palette to find it. Type -120 into the box on the right. Finally, click the Motion button and drag the y position block into the left box. Now, whatever we put inside the **repeat until** bracket will be repeated until the sprite's y position (how far up or down the screen it is), is less than -120. In our game, that means it's missed the trampoline and hit the floor.
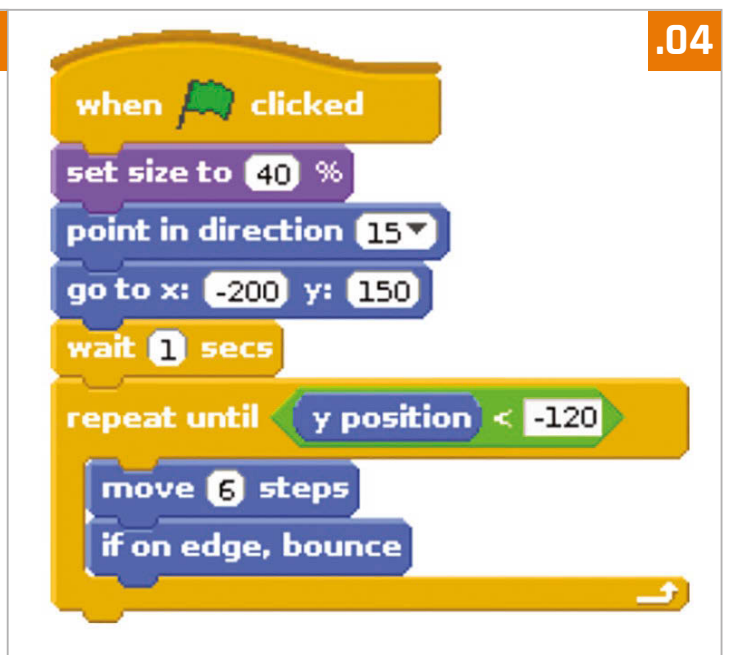
>STEP-05
Make the hedgehog move
To make the sprite move, add the two Motion blocks shown in **Listing 4** into the **repeat until** block in your script. Click the green flag above the Stage to test it so far. You should see the hedgehog go to the top left, plummet down, and stop when it reaches the bottom.
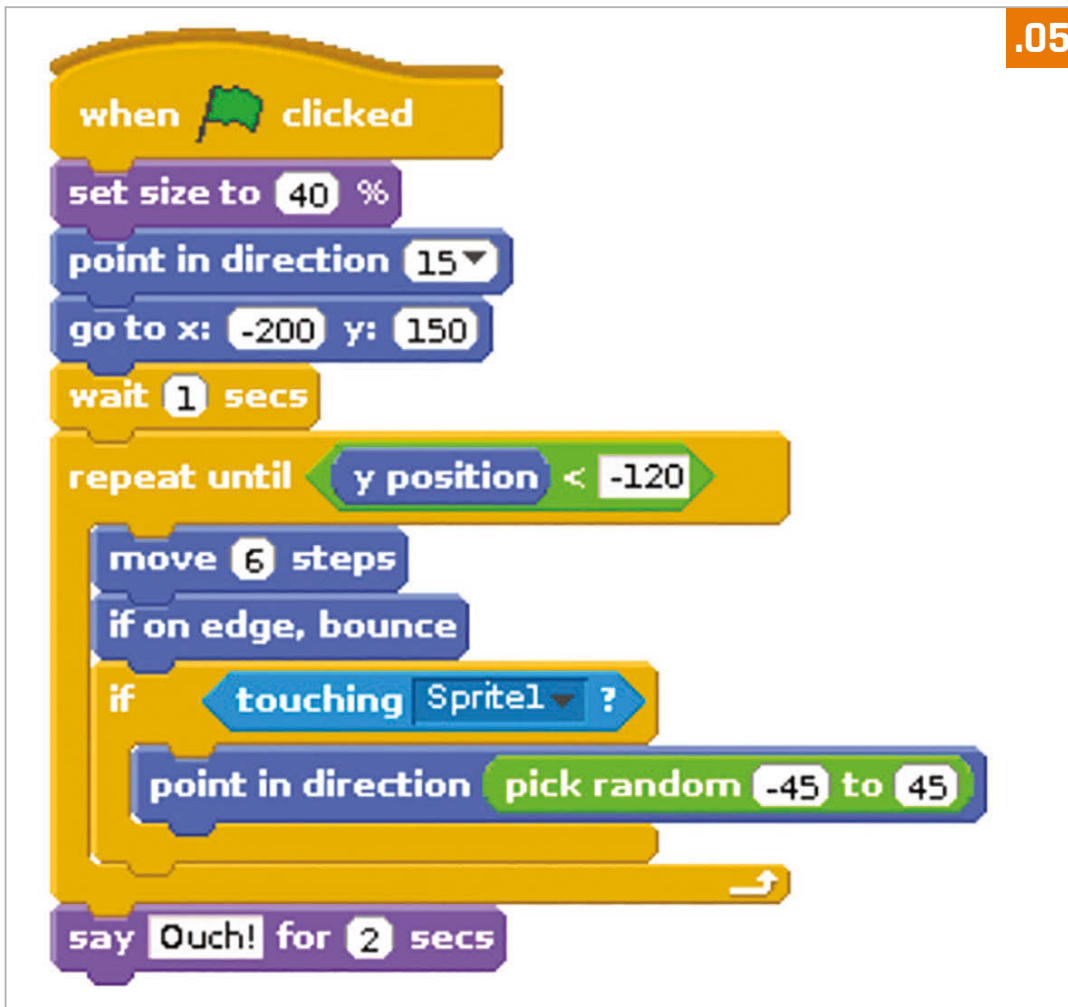
.05


```
when [flag] clicked
set size to 40 %
point in direction 15
go to x: -200 y: 150
wait 1 secs
repeat until  y position < -120
    move 6 steps
    if on edge, bounce
    if   touching Sprite1 ?
        point in direction  pick random -45 to 45
say Ouch! for 2 secs
```

>STEP-06
Make the trampoline bouncy

We need to make the hedgehog bounce back up again if it touches the trampoline. Click the Control block and drag an **if** block into your script. Be careful with where you put it: it belongs inside your **repeat until** bracket, as shown in **Listing 5**. Click the Sensing button and drag in a **touching** block for the diamond hole in your **if** block. Click the menu in the **touching** block to choose Sprite1 (the trampoline). Inside the bracket of your **if** block, put a **point in direction 90** Motion block. Instead of putting a number in its hole, this time we'll use **pick random** with values of −45 and 45. You'll find it in the Operators section of the Blocks Palette. Now the sprite will point in a random upward direction (between 45 degrees left and 45 degrees right) if it touches the trampoline. Finally, add a **say** block at the end of your script, outside all the brackets. This is shown when game ends.