

Overview



This activity meets **requirement two** of **stage two** of the **Digital Maker Staged Activity Badge** ('Create a simple computer program to help with a Scouting activity and try it out'). It shows people how to finish a Scratch program that helps them to identify different types of leaves. Scratch is a block-based programming language that uses drag-and-drop instructions.

Key messages

- Computers can receive inputs
- Computers can select instructions to follow based on these inputs
- Scratch is a simple drag-and-drop programming language that you can use to make a computer carry out instructions

Safety

If young people are working online, they should ask for permission before viewing any other websites. It's a good idea to set up parental controls — you can find instructions on the NSPCC website (rpf.io/scouts-nspcc-online). You should also give each young person a 'Stay safe' leaflet (rpf.io/scouts-staysafe).



30 to 60 minutes



Up to four young people per computer (pairs are ideal)



If you're running this activity without access to WiFi, you'll need to download Scratch and the activity to the laptops you'll be using; you may also wish to print handouts and gather some leaves.



Flexible

You will need:



- Computers or tablets – these can be shared between the group, we recommend one between two.
- Leaves from as many different trees as possible (for example, beech, horse chestnut, ash, willow, sycamore, elder). You could make some out of paper instead.
- Activity handouts.

If your meeting place has internet access

Run Scratch online in a web browser with an internet connection and open the 'Leaf ID' starter project using this link: rpf.io/scouts-leaf-id-on.

If your meeting place doesn't have internet access

- Download the Scratch Desktop application before you begin – there are instructions in the Scratch guide: rpf.io/scouts-scratch.
- Download the 'Leaf ID' starter project from rpf.io/scouts-leaf-id-go.

When you're ready to run the activity, open Scratch. Then open the project and go into full-screen mode.



Click for full-screen

Leader instructions

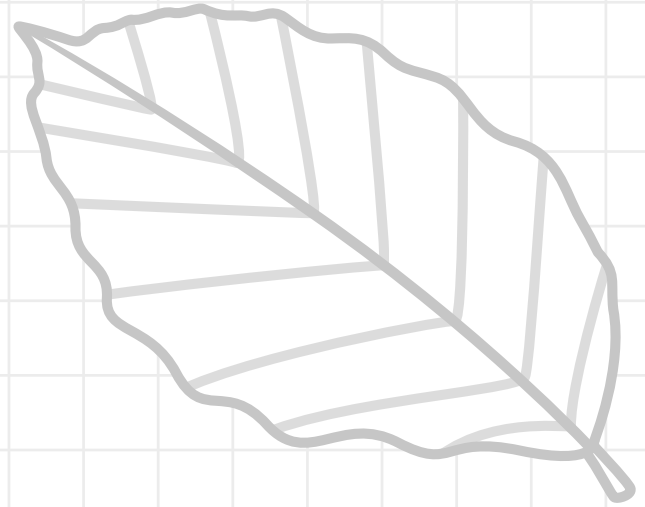
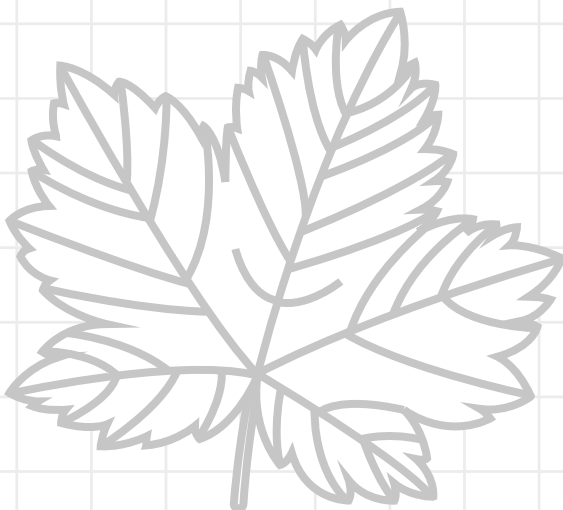


1 Explain that computer programs can help with Scouts activities. This activity's about finishing a leaf identification Scratch project to help identify different leaves.

2 Choose an example leaf, and show everyone how a leaf identification guide works with 'yes' or 'no' questions. Now's a good time to introduce some leaf terminology!

3 Run a demo of the Scratch program at: rpf.io/scouts-leaf-id-complete. Explain that a Scratch program can help identify leaves. When you answer a 'yes' or 'no' question, the program hides all of the leaves that don't match the criteria. For example, if you answer 'yes' to the question 'Is it a single leaf?', all of the leaves that are compound (that have multiple leaves) will disappear. You can click on each leaf to find out what it is.

4 Show everyone the code the program uses by clicking on the 'full-screen' icon and then 'See inside'.



5 Find the 'when green flag clicked' block on the right hand side. Read the code out loud and work together to understand it. The program will ask 'Is it a single leaf?'. If you answer 'yes', all the compound leaves will hide. Otherwise, all the simple leaves will hide. Run the program a few times and make sure everyone understands how it works.

6 Point out that the layout of the finished code matches the layout of the leaf identification guide. Each script corresponds to a question.

7 Now it's time for the young people to have a go. Give them the unfinished version of the leaf identifier project (from rpf.io/scouts-leafid-on). They should work in pairs to follow the instructions on the handout and complete the project. If they get stuck, they can peek at the finished code, but they should try to work it out on their own first.

Activity

- 1** Everyone should get ready with their finished leaf identifier and some leaves.
- 2** One person should choose a leaf and keep it secret from their partner. They should answer the questions; their partner should type in their answers.
- 3** Together, the pairs should check if the leaf picture shown matches the chosen leaf, then they should swap roles.
- 4** Everyone should think about how computer programs can help with everyday activities: making useful projects is a key part of being a digital maker.
- 5** What other types of wildlife identifier you people make? What about a program that helps identify birds? What problems might people face?

Alternatives

- You could complete this program outdoors, collecting leaves and writing questions on paper.
- You could make a program for other forms of wildlife, such as insects, or natural items, such as rocks and minerals. Young people could even collect and photograph their own images to use in the program.

Adaptability

- A leader could guide a group as they work together to complete the project.
- The completed code handout, which shows people what their finished code should look like, might be useful if people get stuck.
- You can find the completed project at: rpf.io/scouts-leaf-id-complete.
- Consider pairing young people who have no knowledge of Scratch with people that do.

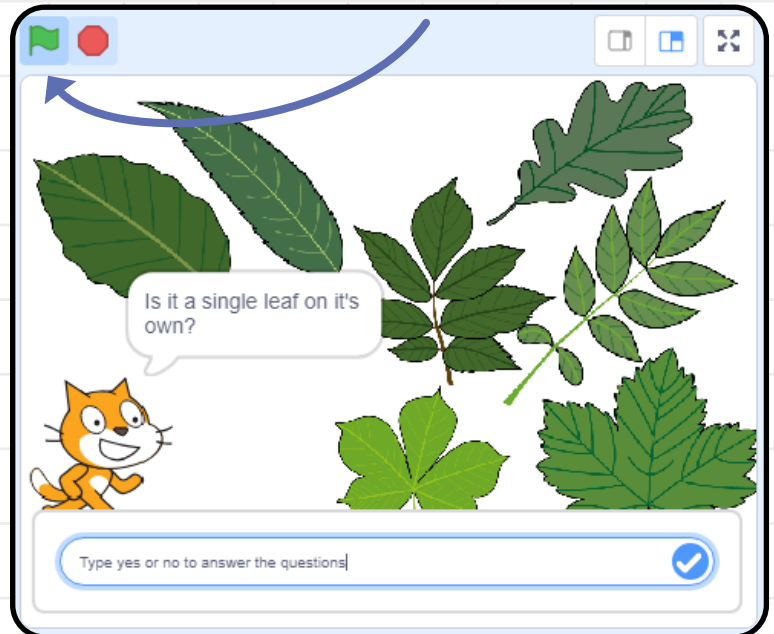
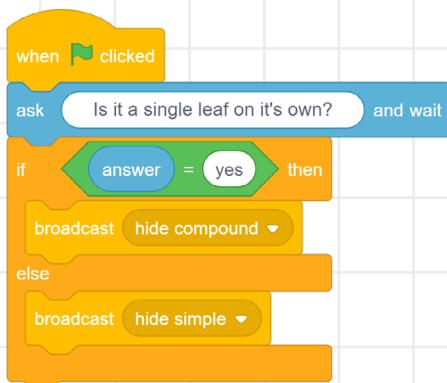
Community and sharing

Young people should have the chance to tell everyone else about their code (or how they found or fixed a bug).

Have a look at the printed leaf identification guide on page three. When you answer the questions, the guide helps you to identify different leaves. In this activity, you'll make a digital version of the guide.

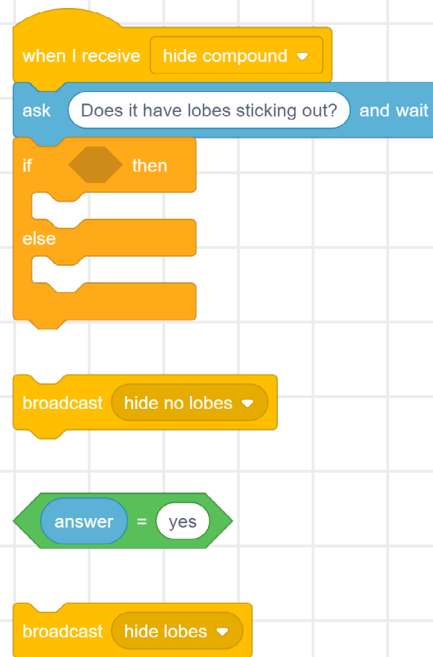
[Click here to start](#)

- 1 Open the project at rpf.io/scoutsleaf-id-on (or open the offline one that's already downloaded).
- 2 Click the green flag to start the script, and then answer the question. What happens?
- 3 Find the script that looks like this:



- 4 It does the same job as the first question on the printed chart. If you answer **yes**, then it'll hide all the compound leaves; if you answer **no**, it'll hide all the simple leaves.

- 5 Now, find the set of blocks shown below. Try to arrange the blocks so that the program can hide the leaves without lobes, or the leaves with lobes.



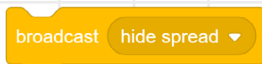
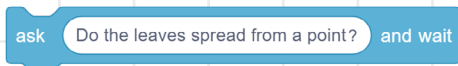
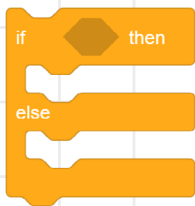
Tip



The only scripts you need to play with are on the Scratch Cat sprite.

6 Test your program by clicking on the green flag.

7 Now, find these blocks and drag them to the stage. Arrange them to make a third script that's similar to the one you made for leaves with lobes. Test your program when you've finished.



Trivia

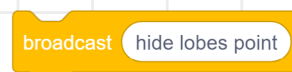
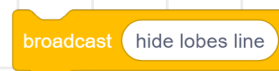
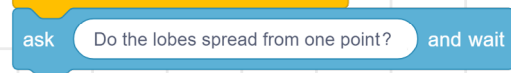
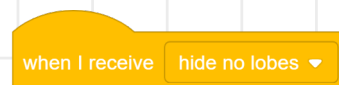


Did you know that in 2014, a popular webcomic made a joke about how hard it is to make a computer recognise whether a photo contains a bird (rpf.io/xkcd-tasks)?

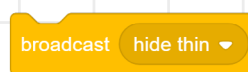
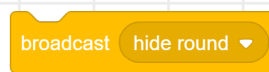
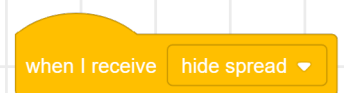
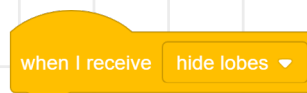
Today, we have computer programs that can tell what species of bird is in a photo. Technology's moved on very quickly!



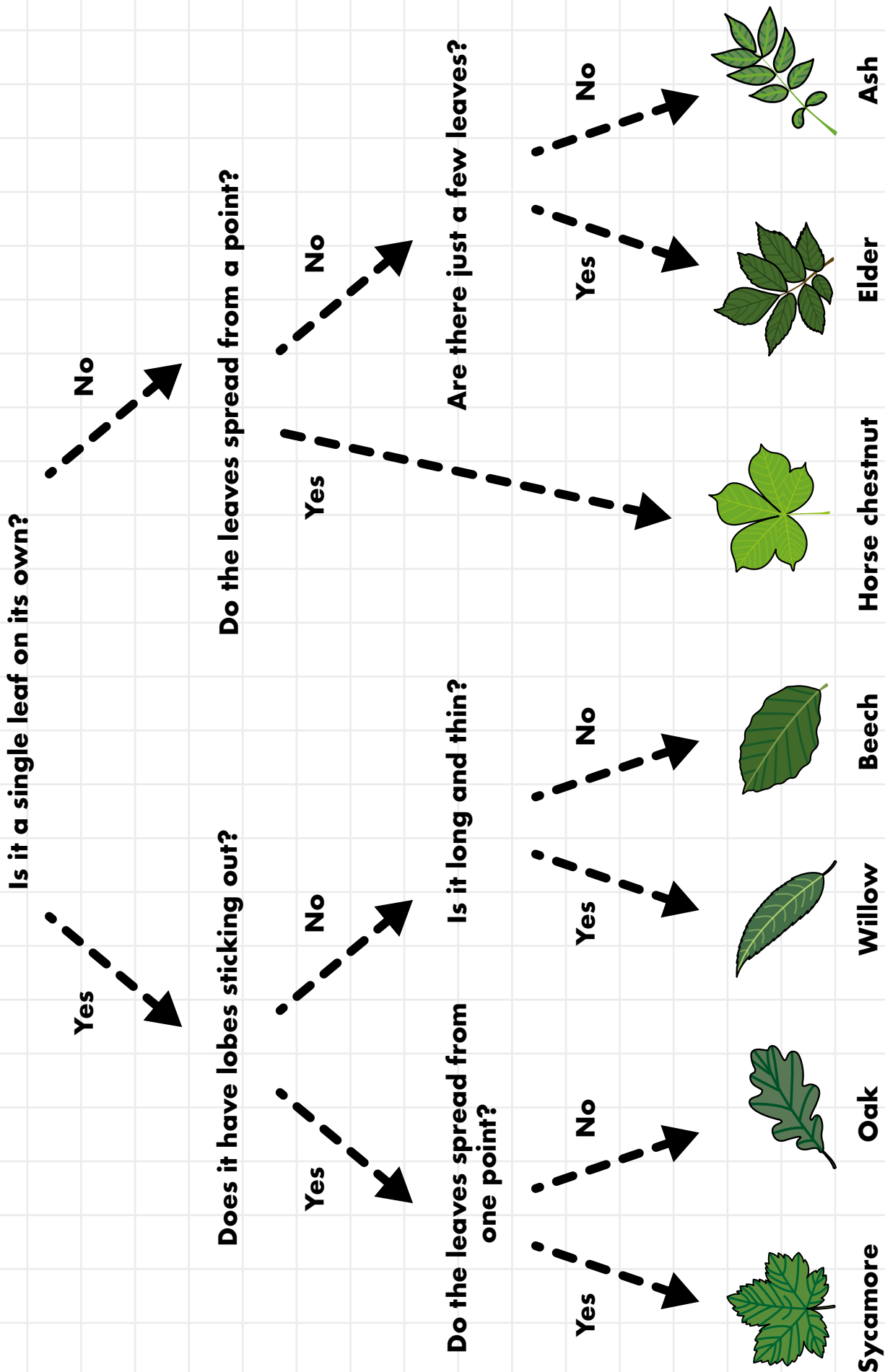
8 For the next script, you'll need some extra blocks from the 'Code' tab. Click the green flag to test your program once you've made it.



9 Finish the last two scripts below. You'll have to choose the right broadcasts for the last one.



Leaf identification guide



Note – leaf lobes are small or large bumps around the edge of a leaf

Finished code



Leaves (printable)

Use these images if you can't collect real leaves.

