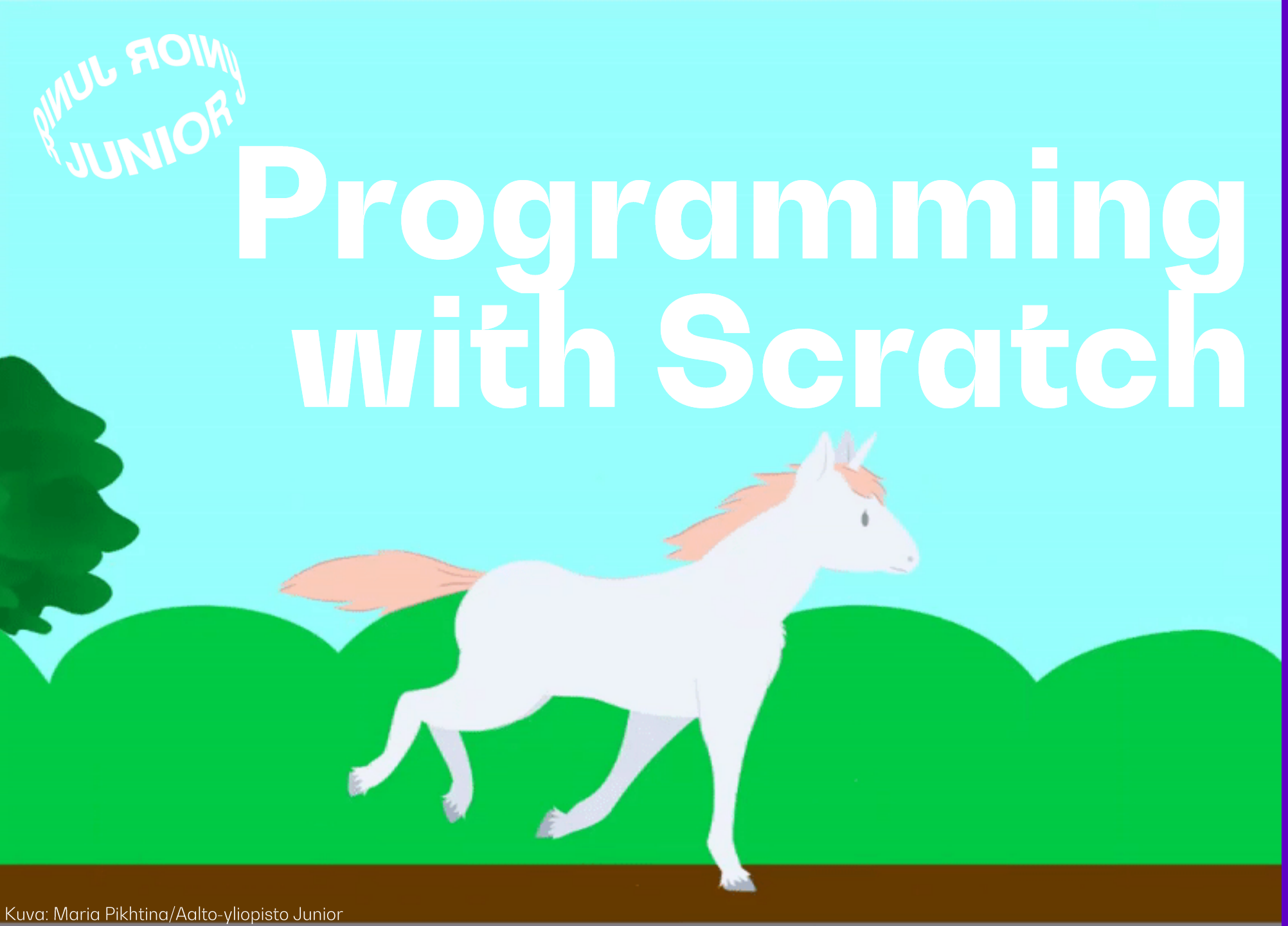
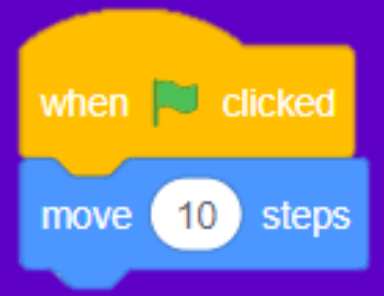
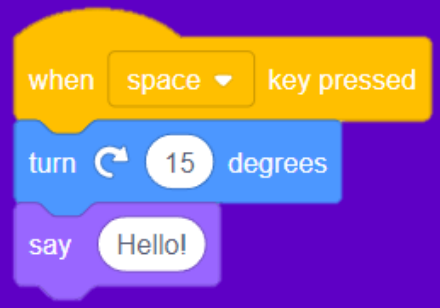
Programming with Scratch



Kuva: Maria Pikhtina/Aalto-yliopisto Junior





Introduction

In this activity, you will learn about programming and animation, get familiar with the Scratch programming language, and create your own animations.

Getting started with the basics of Scratch using these instructions takes about 40 minutes. After that, you can continue programming freely based on your own ideas.

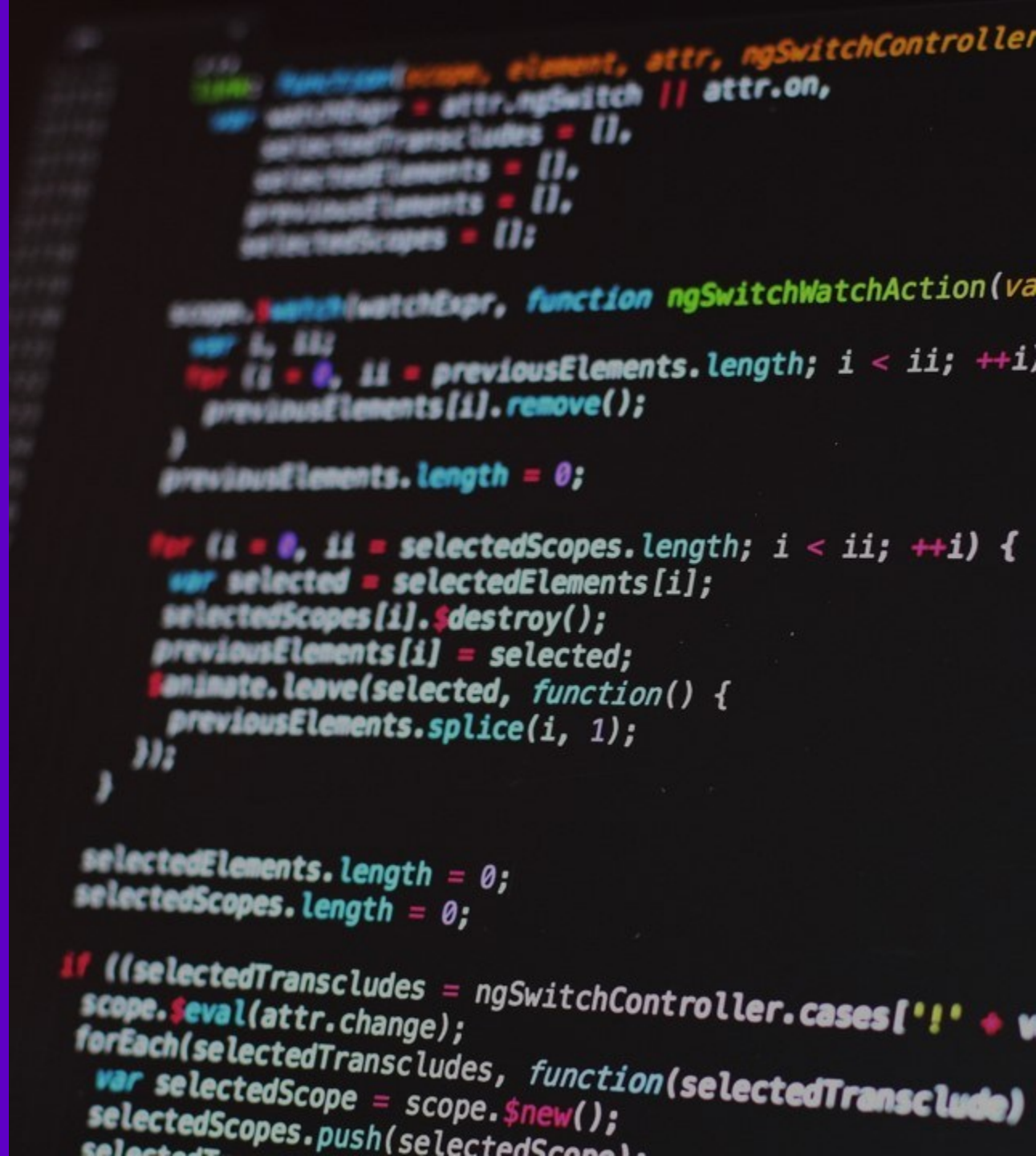
The instructions and workshop are designed for primary school students in grades 3–6. (They are also suitable for younger children who can already read.)

Programming

Programming means giving instructions to a computer

Instructions are given in a programming language

A programming language uses specific agreed-upon codes for different functions

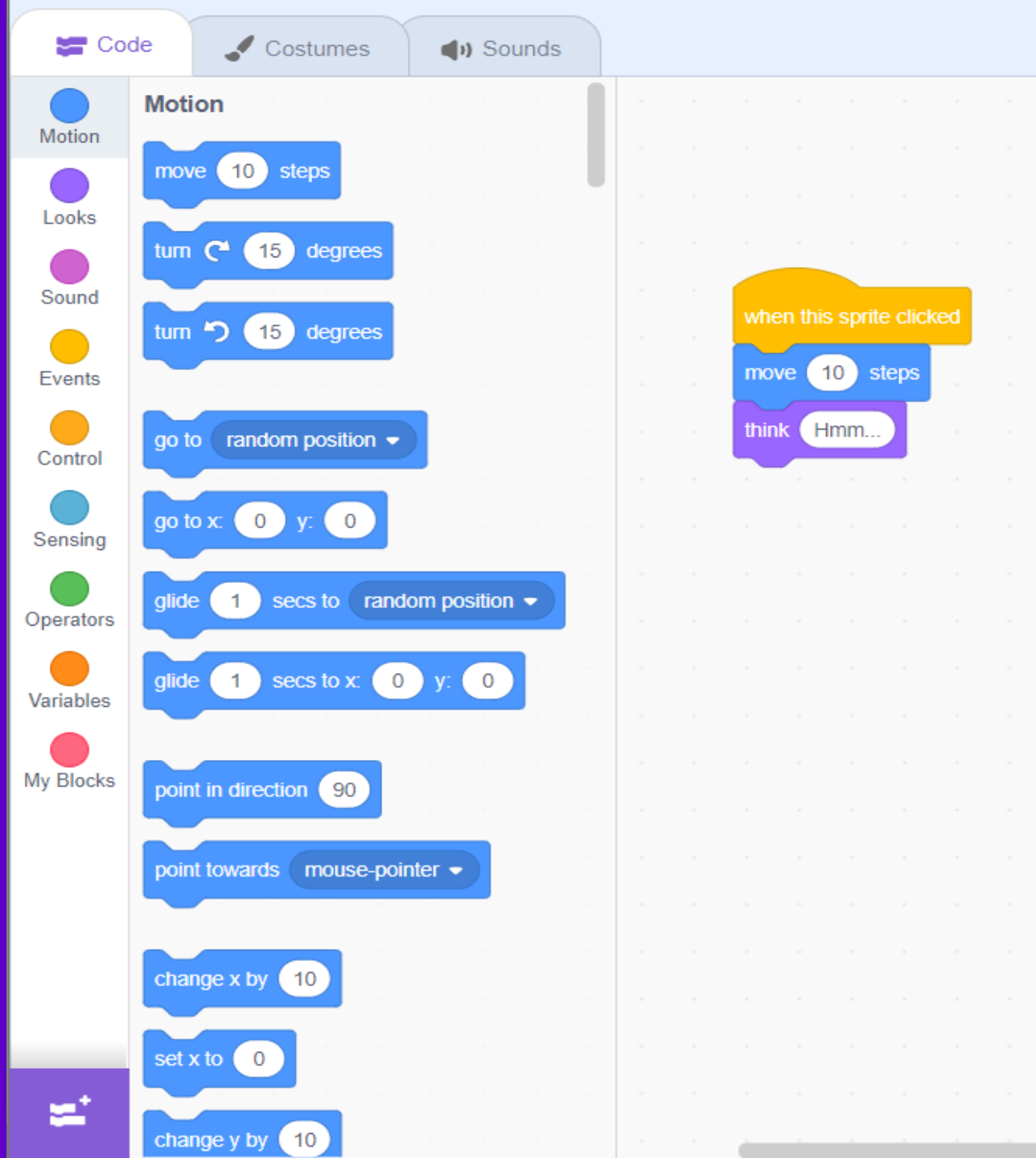


Scratch

Scratch is a programming language designed for children and young people, which is easy to learn!

The program is built using code blocks

With Scratch you can create your own animations and games

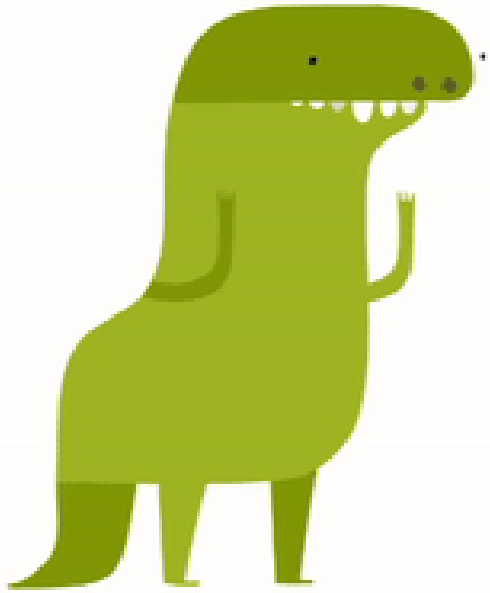


Animation

The term animation comes from the Latin word animatio (bringing to life)

Animation is a technique that makes pictures move.

Animations can be made using different techniques, like programming on a computer.

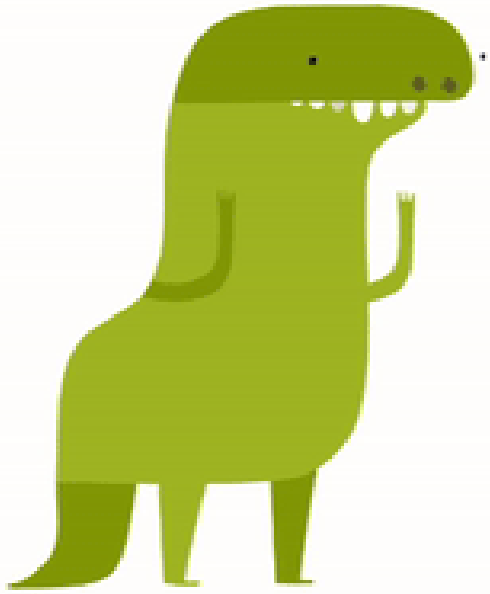


Task

Design and program a short animation:

1. Choose a character or characters
2. Choose a background or setting
3. Program your characters to move, talk, make sounds, or add other effects

The next slides will give you some tips on how to program these features

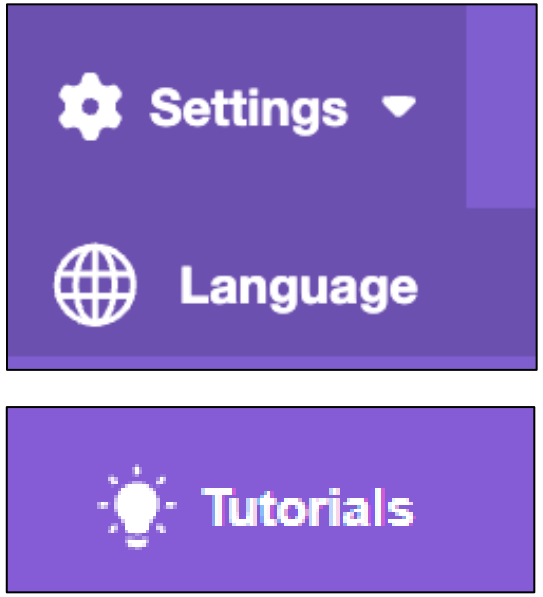


Let's start programming!

- Go to the website **https://scratch.mit.edu**

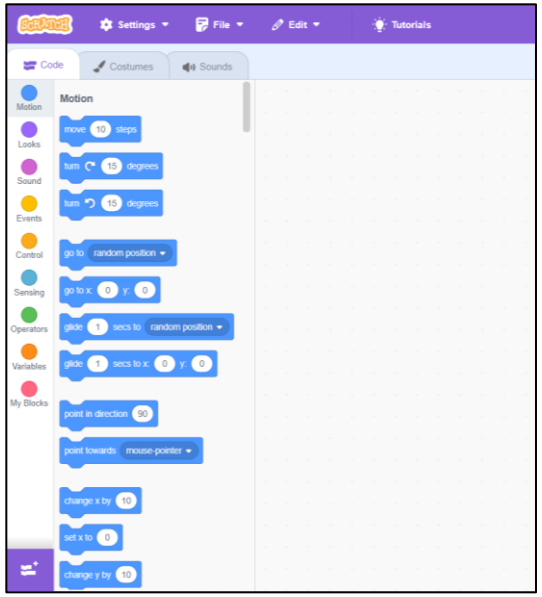
- **And click**

Quick Guide

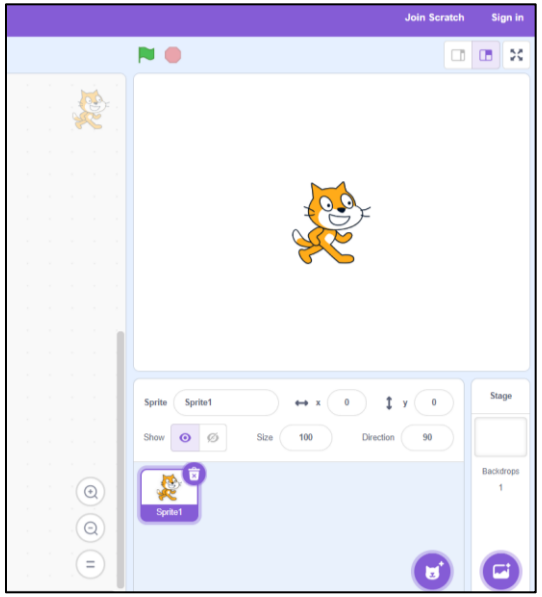


1. In the top left corner, you'll find Settings, where you can change the language.

Additionally, the top bar has Tutorials that offer great tips and ideas.



2. On the left side of the screen, there's a menu where you can find all the code blocks. To use a block, drag it to the area in the center of the screen.



3. On the right side of the screen you can see the animation you made.

4. In the bottom right corner, you'll find icons that let you add characters and backgrounds.

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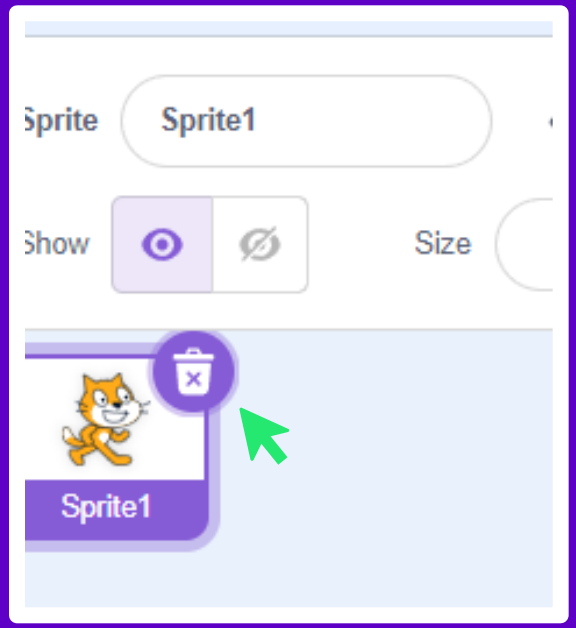
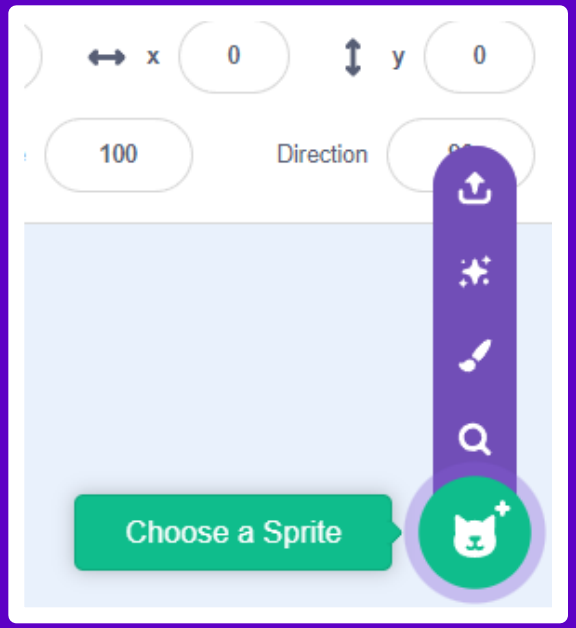
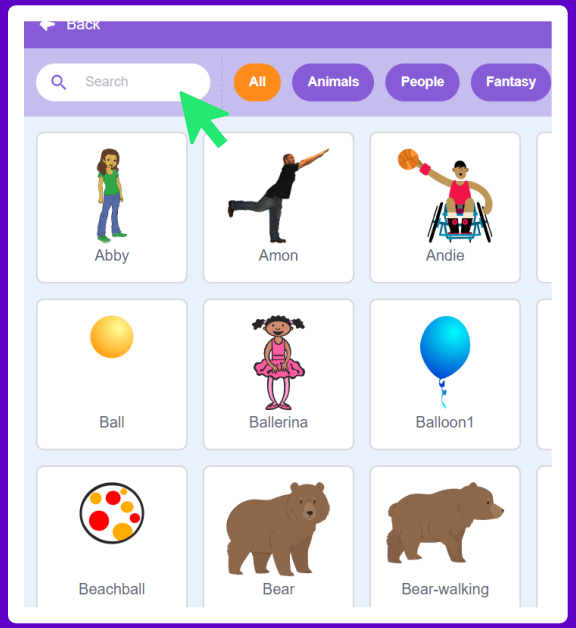
Adding a character



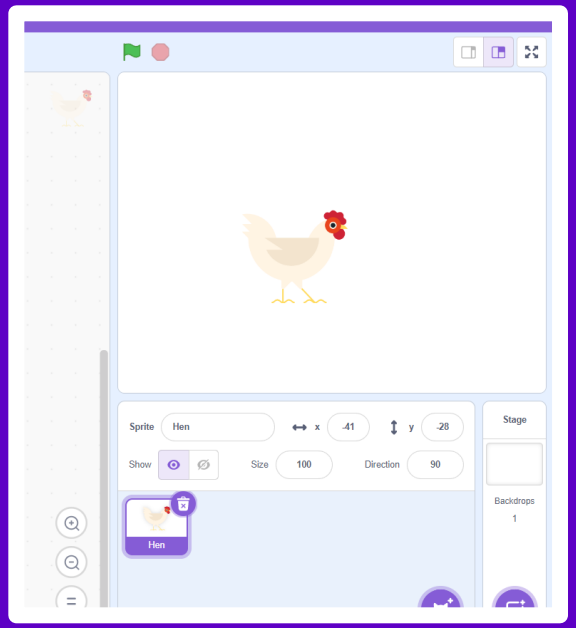
1. You can animate the Sprite/cat character or delete it by clicking the trash can.



2. You can choose a new character by clicking the “Choose a Sprite” button.

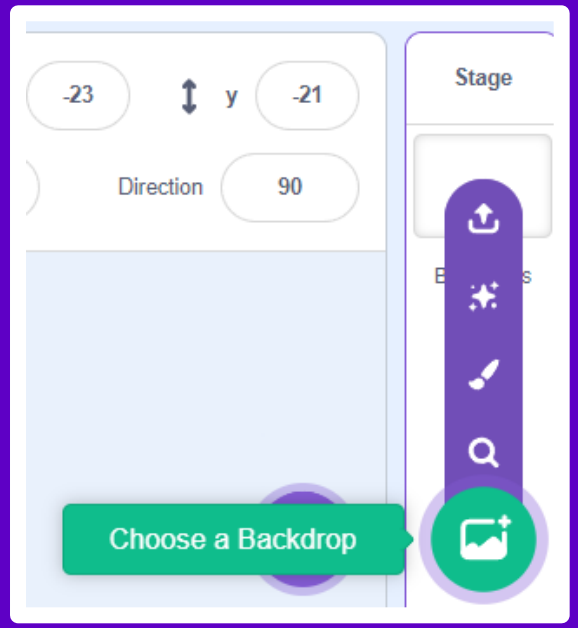


3. Choose a character you like from the menu and click on it. In the top left corner, you'll find a search bar where you can look for a specific character.

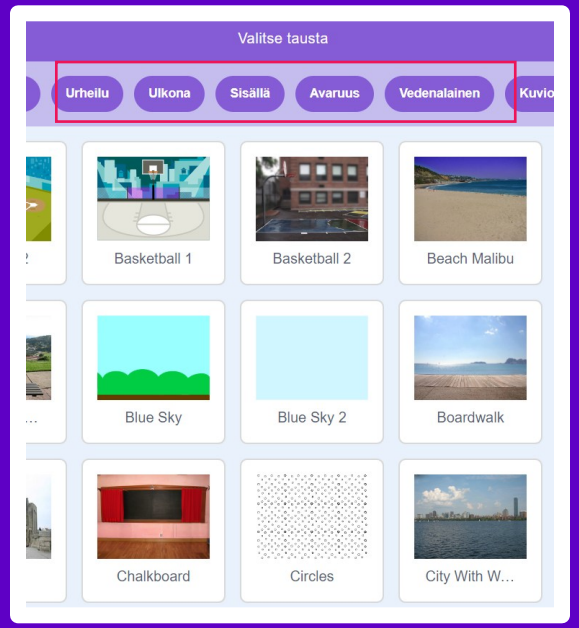


4. The character/Sprite can now be found on the start page.

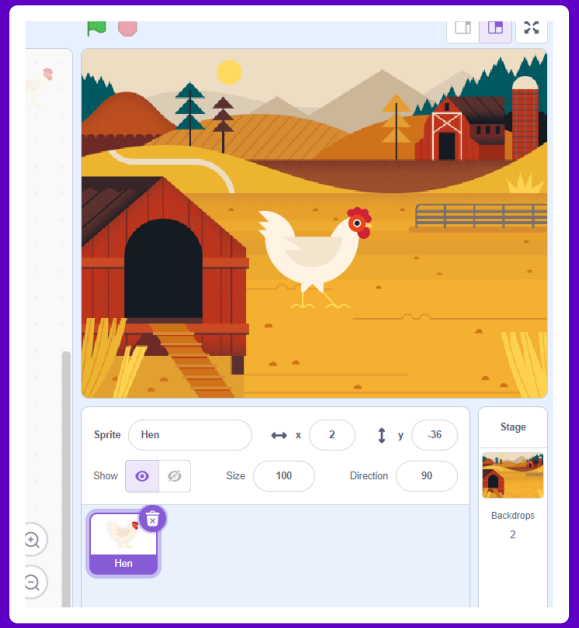
Adding a background



1. Let's add a background for the character. You can choose a background by clicking 'Choose a Backdrop'.

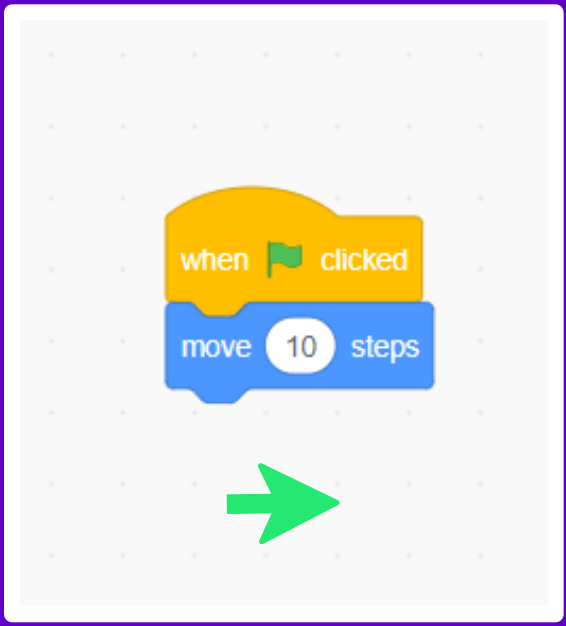


2. Choose a background by clicking on the option you like. Note that at the top, you can find categories for backgrounds where you can explore different options.

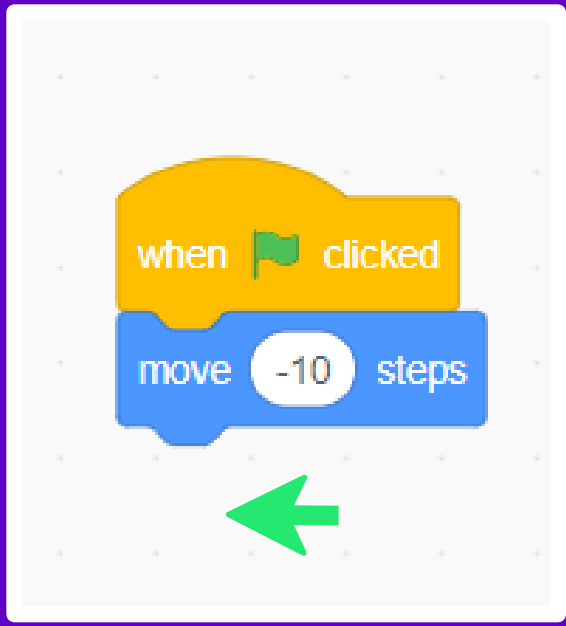


3. The chosen background will appear on the start page.

Make the character move

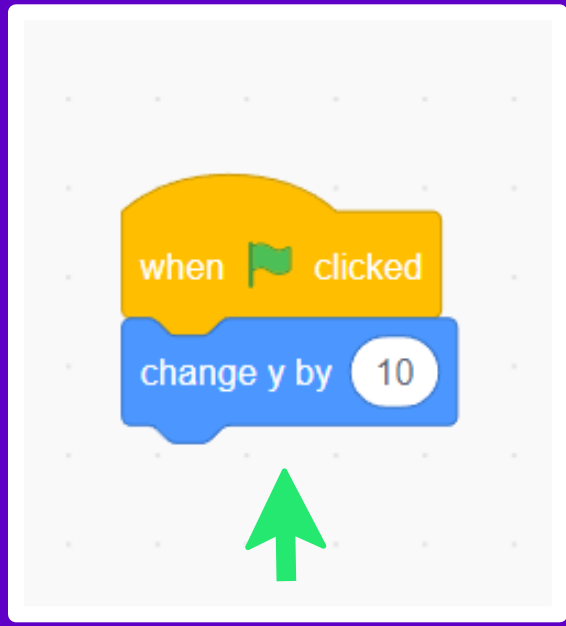


1. You can make the character move to the right by choosing the blocks shown in the picture. You can find the blocks in the Events and Motion categories. The larger the number, the more the character moves.

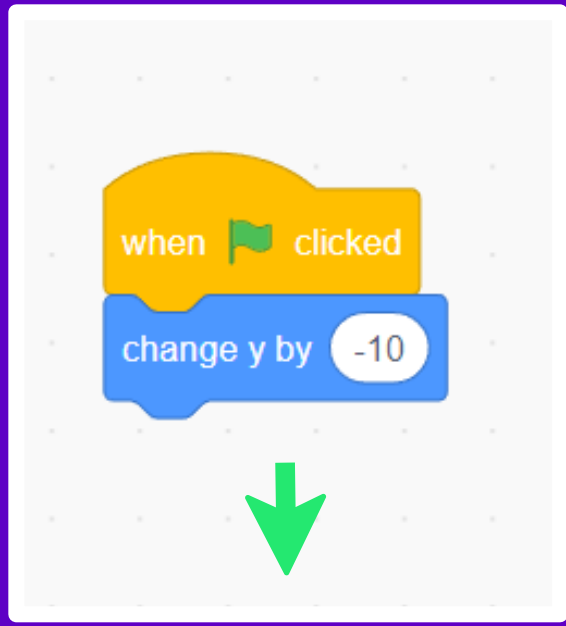


2. You can make the character move left by changing the value to

-10, which means making the number negative by putting a minus sign in front of it.

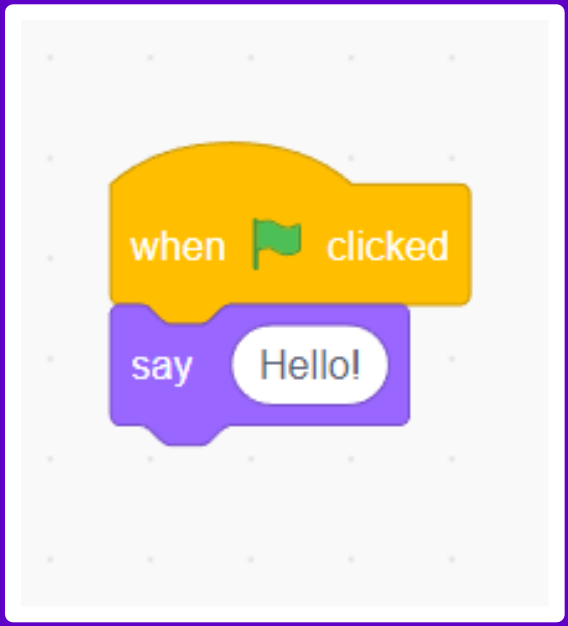


3. You can move the character up by selecting the blocks shown in the picture.



4. You can make the character move down by changing the value of y to a negative number.

Adding a speech bubble

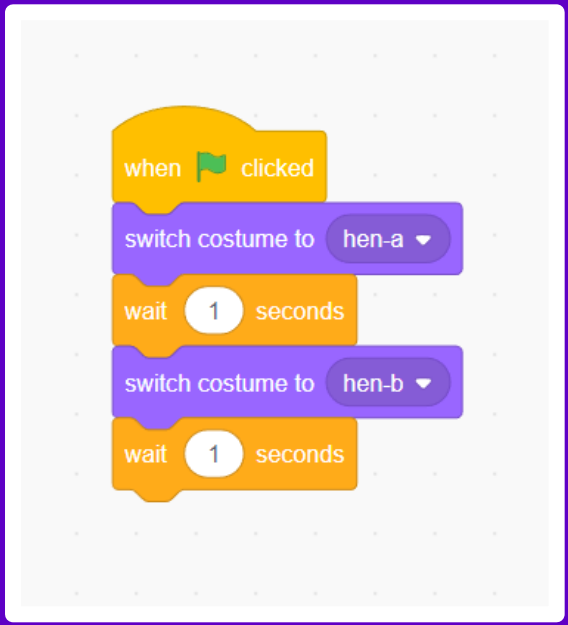


1. You can add a speech bubble to the character by selecting the blocks shown in the picture from the Events and Looks categories.

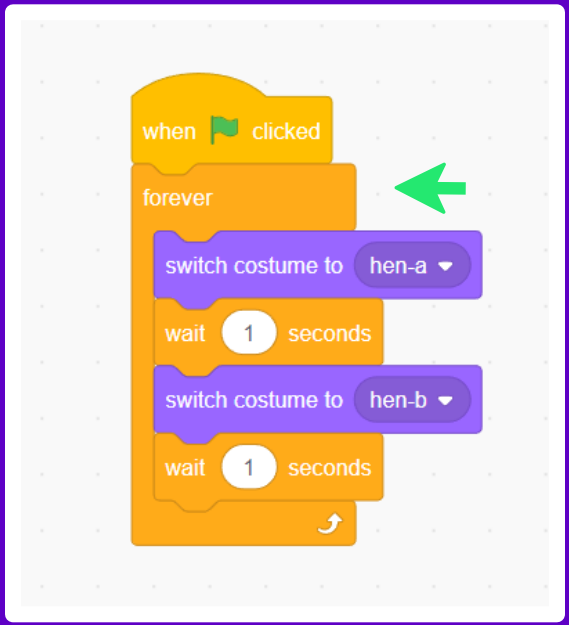
2. You can write a new text in the speech bubble by clicking on the text box.

3. Instead of a speech bubble, you can also add a thought bubble to the character.

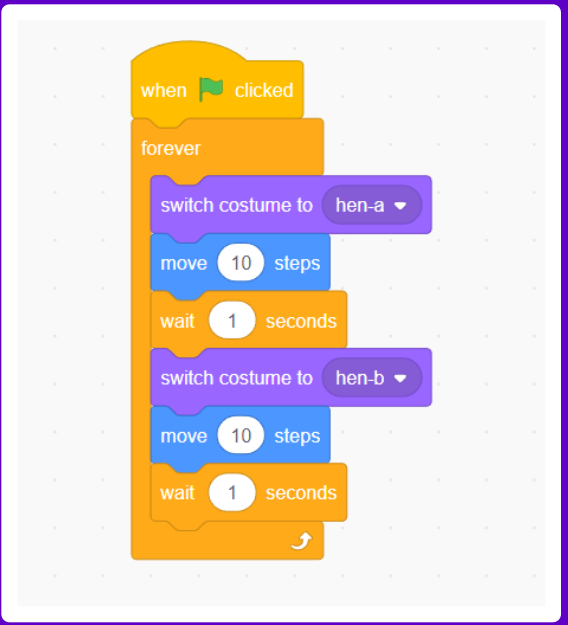
Changing the position of character



1. You can change the character's position by programming it to switch costumes as shown in the picture. Right now, the character only changes costume once.

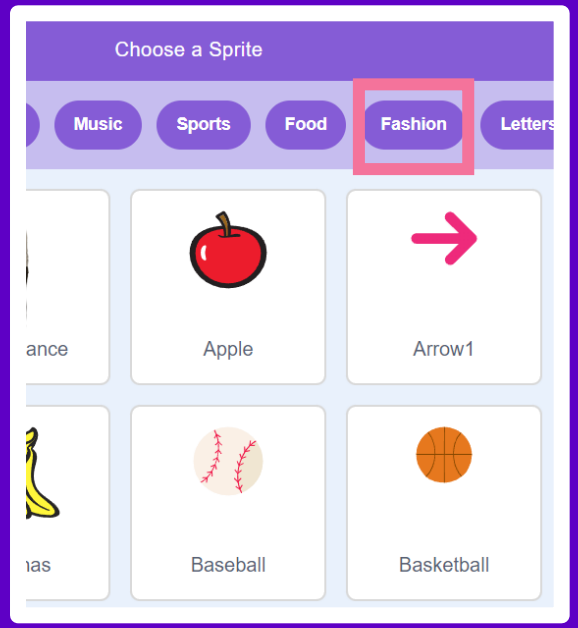


2. You can set how many times the character changes costume using the blocks in the Control category. With the code shown in the picture, the character will change costume forever.

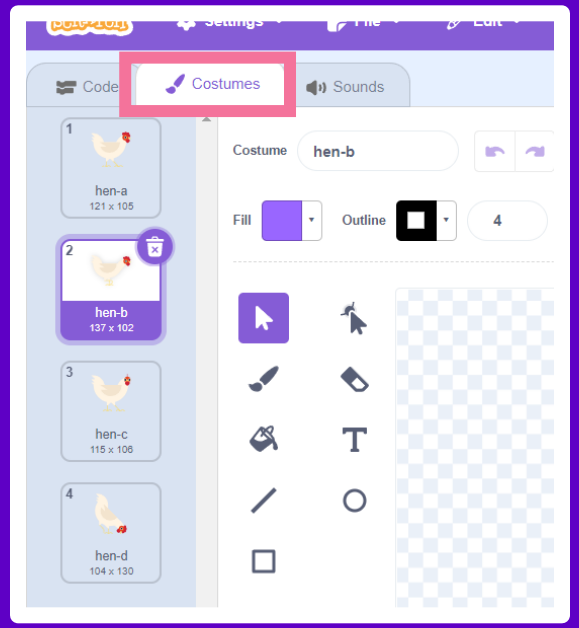


3. By combining the costume change block and the movement block, you can animate the character to walk, for example.

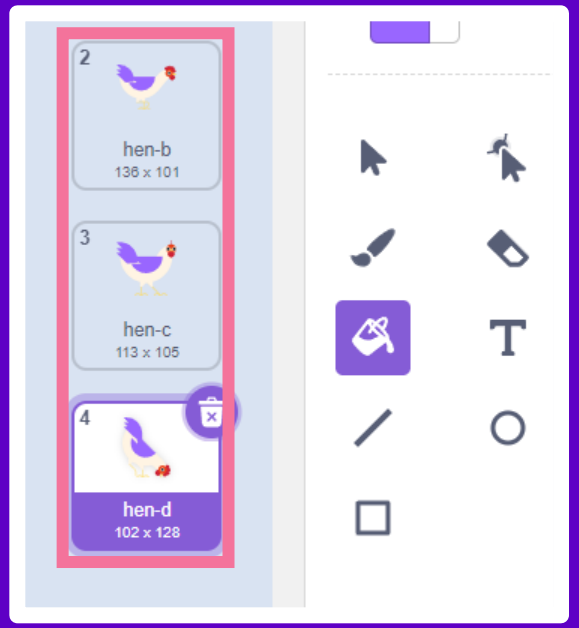
Character design



1. You can add accessories to your character. You'll find them in the 'Fashion' section of the character menu.

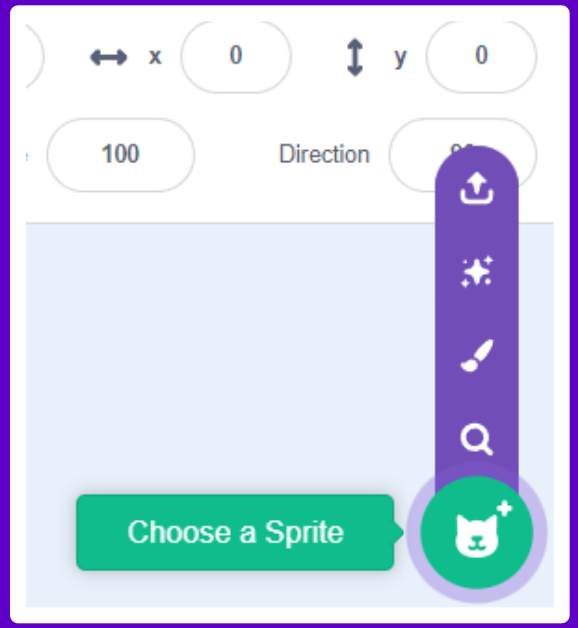


2. You can also color the character yourself or even draw accessories for the character from the ‘Costumes' section in the top right corner.

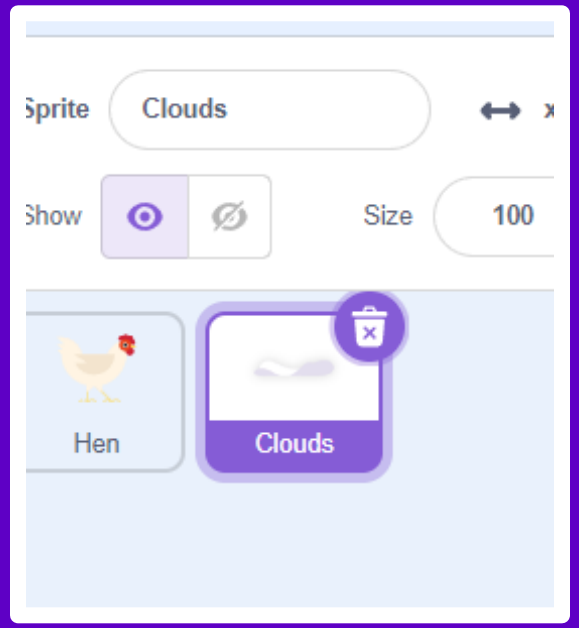


3. Note that if you have animated the character to change costume, the drawing needs to be added to all of the character’s costumes.

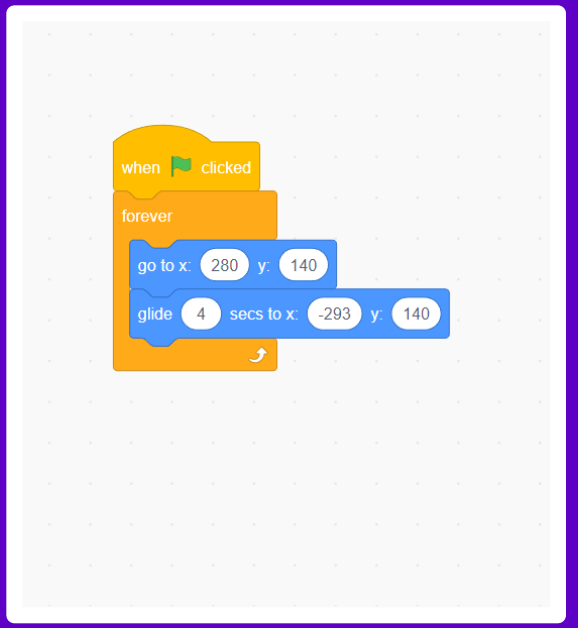
Editing the background



1. You can add clouds, rocks, or trees in the background. You can find these in the character menu.



2. Now you can program different actions for the new character.



3. By using the Motion category blocks as shown in the picture, you can make the clouds move in the background.

Connection to Aalto-University

At Aalto University, students can study programming in many different ways. At the School of Science, computer science can be studied as a major subject, and programming is also an important part of many other degree programmes.

Aalto University also offers the opportunity to specialize in game programming through the Master's Programme in Game Design and Development.

Jaa kuva

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