

Scratch: Basic introduction into visual Coding



Summary: Scratch is a visual coding language and environment, to teach pupils and students to code in a fun, easy way. Your students can use Scratch to code their own interactive stories, animations, and games. In the process, they learn to think creatively, reason systematically, and work collaboratively — essential skills for everyone in today's society.

The Scratch coding language was created by Mitch Resnick and the MIT LifeLong Kindergarten Lab. Take a look at his TED talk on the importance of learning to code here: https://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code.

In the following Scratch activities, your students will learn the basics of coding with blocks: movement, colour changes, animations and so on; as well as create a first fun project and design their own digital game.

Timeframe: three times 60 minutes

Learning outcomes:

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|----------------------------------------|------------------------------------------|
| 1.1 Algorithms | 2.6 Information: collection & management |
| 1.2 Sequences | 3.1 Working together |
| 1.3 Repetition and loops | 3.2 Negotiation practices |
| 1.4 Events and selection | 3.3 Describing thought processes |
| 1.5 Parallelism | 3.4 Learning from vicarious experiences |
| 1.6 Conditionals and logical operators | 4.1 Combination |
| 1.7 Mathematical operators | 4.2 Exploration |
| 1.8 Variables and data management | 4.3 Transformation |
| 1.9 Functions | 5.1 Problem identification |
| 2.1 Incremental & iterative work | 5.2 ideation and brainstorming |
| 2.2 Testing and debugging | 5.3 Implementation |
| 2.3 Reusing and Remixing | 5.4 Evaluation & reflection |
| 2.4 Abstraction | 5.5 Iteration |
| 2.5 Modularization | |

Implementation: Basic Introduction

In this activity, your students will make a first acquaintance with the Scratch coding language and environment. In Scratch, you use building blocks to create a digital game, animation or app.

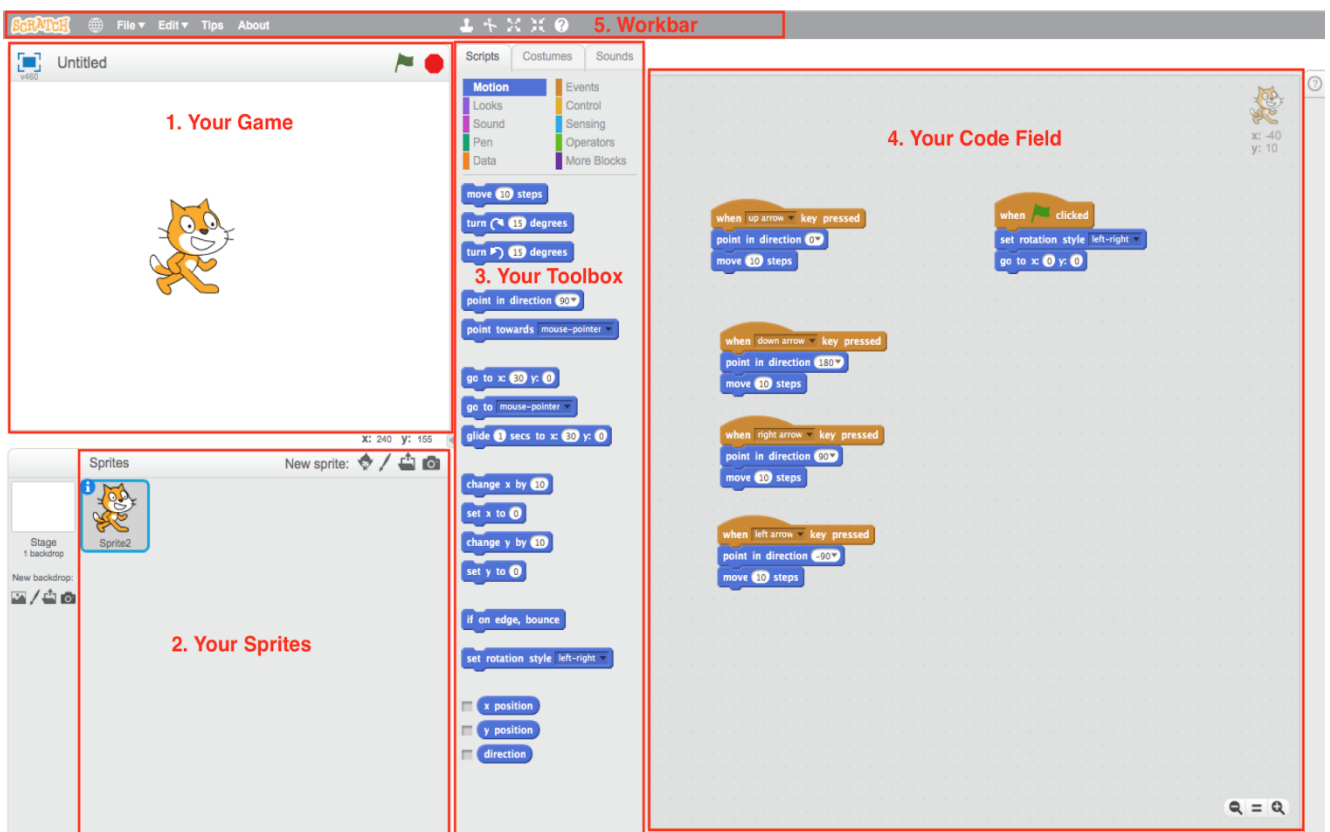
Getting started

You can choose to use the Scratch environment on computer (1) online at <https://scratch.mit.edu/> or (2) without internet by installing the offline editor

(<https://scratch.mit.edu/download>). If you want your students to work online and save their work (recommended), have them create an account. Follow the instructions at <https://scratch.mit.edu/educators/faq> to help you create a teacher and individual student accounts.

First view on the program

Of course, you first want to show your students what Scratch is before diving in. You can either do this by sharing your own screen on a beamer and making a few first coding moves. Or you can show an introductory YouTube video. There are plenty of them out there, but we suggest one made by a student called "Matt the Scratch Kid": <http://bit.ly/intro-scratch>.



Playing to discover

Now your students are ready to learn programming in the most fun way possible: by playing and experimenting. Hand out the sets of **starter cards**, which show a basic coding procedure each, such as moving with the keyboard arrows, using a mouse to move, changing a character's colour and so on. Challenge your students to try out all the cards in the set.

The image shows a Scratch 'Key Moves' starter card. On the left, a mouse sprite is shown in four different orientations: up, down, left, and right. Below the sprite are four arrow keys: up, down, left, and right. The text 'Use the arrow keys to move your sprite.' is written above the sprite. The URL 'http://scratch.mit.edu' and the Scratch logo are at the bottom left. On the right, the code area is titled 'Key Moves' and 'TRY THIS CODE'. It contains four event-driven code blocks: 'when up arrow key pressed' with 'point in direction 0°' and 'move 10 steps'; 'when down arrow key pressed' with 'point in direction 180°' and 'move 10 steps'; 'when left arrow key pressed' with 'point in direction -90°' and 'move 10 steps'; and 'when right arrow key pressed' with 'point in direction 90°' and 'move 10 steps'. Below the code is a 'DO IT!' section with a keyboard icon and the text 'Press the arrow keys to move!'. At the bottom right, an 'EXTRA TIP' section asks 'Does your sprite look upside-down? You can change its rotation style.' and shows a 'set rotation style' block with 'all around' selected, and a sub-menu with 'all around', 'left-right', and 'don't rotate' options.

You can download the English set of starter cards for free at http://www.capitaldigital.org/nl/scratch_starter_cards/