

## **Methods of Working with Animations in the Scratch Program**

**Djumoboyeva Yanglish Egamnazarovna**  
Gulistan State University, Independent Researcher

The modern stage of educational reforms promotes urgent tasks related to the rapidity of changes taking place in society, faster adaptation to new and higher demands placed on educational institutions.

The development of computer technology today makes it possible to create compact and elegant, user-friendly mobile programs.

To learn Scratch programming concepts from a computer, students use a building block visual interface to create interactive experiences. Actions are implemented by combining software components such as events and operators. Each block has a shape that only allows it to be combined with a compatible object. Scratch can be used to make realistic animations and games by uploading pre-filled images and symbols or new files. Readers can volunteer to share their creations in Scratch's online and offline community.

Because Scratch is free and so well supported, it's one of the first offerings for children's programming, and it's easy to see Scratch's influence in many children's programming languages, such as Blockly, shown here.

Since the Scratch programming language is simple and understandable, not only students, but also children of kindergarten age can implement their projects in it. The Scratch programming environment is based on the LEGO construction program, and therefore is his successor. Projects can be exported to standalone HTML5, Android apps, Bundle (macOS) and EXE files using external tools. The service was developed by the MIT Media Lab and has been translated into more than 70 languages and is used in most parts of the world. Scratch is taught and used in after-school centers, schools and colleges, as well as in other public educational institutions. As of February 15, 2023, community statistics on the language's official website show over 123 million projects shared by over 103 million users, a total of over 804 million projects created so far (including unshared projects), and shows more than 95 million monthly visits to websites.

The basic concepts of the Scratch programming environment are (Script, Sprite and Scene).

Script (program) - colored blocks that are laid out in a row based on a certain algorithm

Sprite (sprit - guardian spirit, angel) is an object (character) created in the style of the Scratch program. Sprites are made up of their costumes (costumes) and commands (scripts) that make them move.

Stage is a working window in which sprites can be watched after the program is launched.

A website like Scratch allows users to mix different media (including graphics, sound, and other programs) in creative ways by creating and "remixing" projects such as video games, animations, music, and simulations. Block — the smallest (minimum) fragment of the program. It can be a command, operator, variable, or function. The blocks are divided into 9 colors according to their function.

№	Bloklar	Buyruqlar
1.	Harakat	Burchaklar va yo'nalishlar kabi spritlarning harakat bloklari
2.	Ko'rinish	Spraytning vizual tasvirlarini boshqaradi ya'ni tashqi ko'rinish(kostyumlar)
3.	Ovoz	Audio fayllar va effektlarni ijro etadi ovoz, musiqa bloki hisoblanadi
4.	Voqealar	Voqealar boshqaruvchilari va eshittirishlar.Jarayonlar bloki
5.	Boshqaruv	Shartlar, sikllar va klonlash ya'ni boshqaruv bloki
6.	Sensing	Spraytlar boshqa spraytlar, sichqoncha ko'rsatkichi va fon bilan o'zaro aloqada bo'lishi mumkin.qisqa nom bilan sensor bloki
7.	Operatorlar	Matematik operatorlar va taqqoslashlar
8.	O'zgaruvchilar va ro'yxatlar	O'zgaruvchilarga kirish va o'rnatishni bloklaydi. Bulutli o'zgaruvchilarga loyihaning barcha ishlaydigan versiyalari kirishi mumkin.
9.	Mening bloklarim	Foydalanuvchi tomonidan belgilangan funktsiyalar, bloklar sifatida foydalanish mumkin. Ular ekranni yangilamasdan ishlash imkoniyatiga ega.
10.	Kengaytmalar	Quyida tushuntirilgan

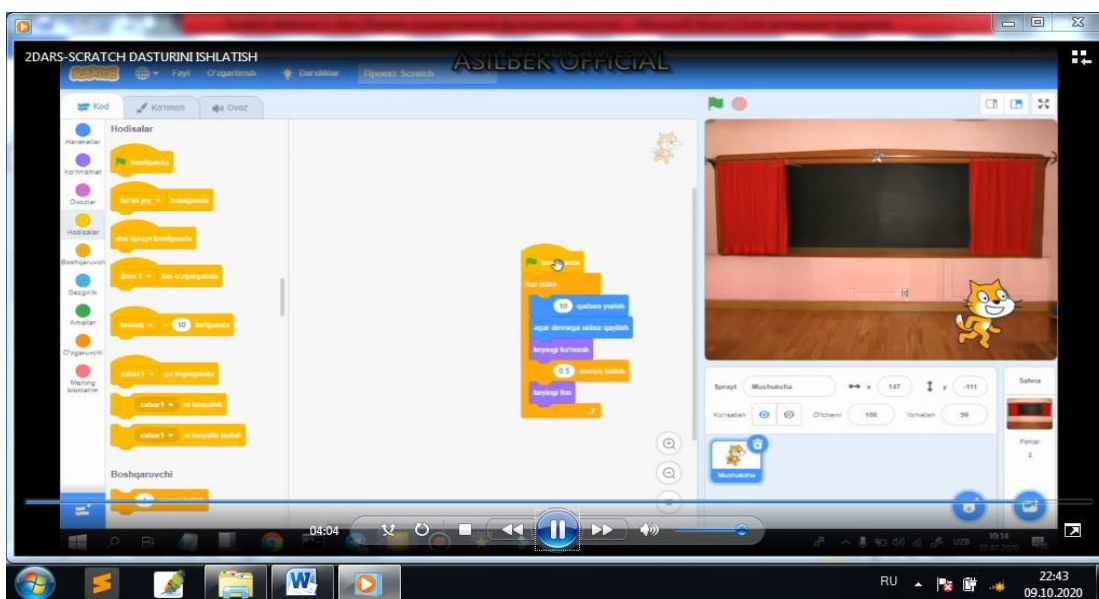
### Getting SCRATCH into Action

Today I want to teach you how to work with several sprites. We can change the language of our program, enter the Globe at the top of the window and select the Uzbek language. Now we're going to start moving our mouse. This mouse is called a sprite. Let's start the program to move the mouse. First of all, from the Events section, when the flag is clicked, the block is selected, and from the Actions section, we select the command to walk 10 steps and place it according to the flag. Now, when we click on the flag above, our sprite will start to move. It will continue to move even if you click the flag in the workspace without clicking the flag. we can give it a certain number of repetitions without clicking the flag each time. We put 10 repetitions from the control section. We take the command to repeat 10 times and put the command ALWAYS. We need it from the actions section. We need to make our sprite go back if there is an obstacle in front of it. If you hit the wall, IF BACK TO THE WALL block is selected from the action command and 10 steps is placed under the block, and you can see the result on the big screen. It will be as follows. When our sprite goes straight, it will go back to the top. The section we will need is the Appearance section, in this section we will select the View command to make our Sprite's movement clearer.

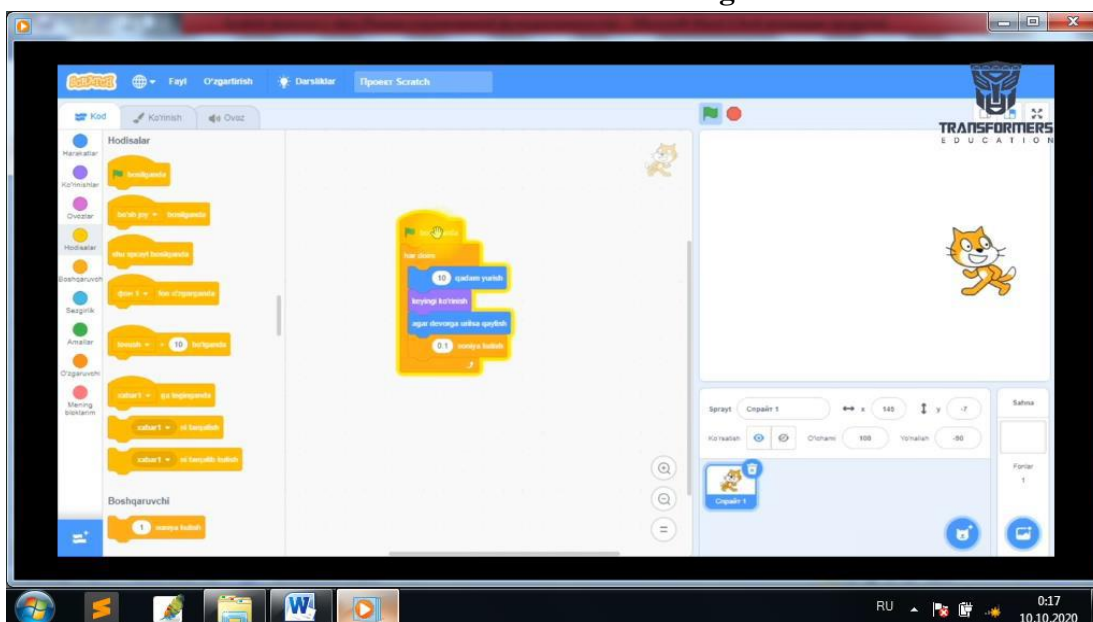
### Background to SCRATCH

In the Events section, the WHEN PRESSED block is selected and placed in the working window. Go to the control section and put the ALWAYS block. Go to the Actions section and select WALK 10 STEPS from here. Inside the Actions section, the RETURN IF HIT WALL block is placed under walk 10 steps. When we click on the flag, the kitten will move. At the top of the window there is a VIEW and you can see the kitten stepping on both legs in succession. To do this, go to the VIEWS section and put NEXT VIEW under the RETURN IF HIT WALL block. We select one background for the background of the sprite. Background SCRATCH program at the bottom of the window.

In the Events section, the WHEN PRESSED block is selected and placed in the working window. Go to the control section and put the ALWAYS block. Go to the Actions section and select WALK 10 STEPS from here. Inside the Actions section, the RETURN IF HIT WALL block is placed under walk 10 steps. When we click on the flag, the kitten will move. At the top of the window there is a VIEW and you can see the kitten stepping on both legs in succession. To do this, go to the VIEWS section and put NEXT VIEW under the RETURN IF HIT WALL block. We select one background for the background of the sprite. At the bottom of the window, go to CHOOSE BACKGROUND and choose the one you like. After you set this background, we'll add another color. To make the colors alternate with each other, in the Views section, put the Change BACKGROUND to background1 block below the NEXT VIEW block. To change the background from the block of changing the background to background1, we enter from the corner of background1 and click on Boardwalk. We'll see if this works with a flag. If you don't like it, hover over it with the mouse and press the right button to delete the block. From the Appearances section, we'll put the NEXT BACKGROUND. It's changing when we try using the flag. We make 1 0.5. When we click on the flag, the mouse and the colors will gradually change. Today I taught you how to change the background to the next one, to move the mouse, to come back when it comes to the wall, to come back down when the foot is up.



### Control the kitten on all fours using SCRATCH



We bring the block to the workspace when space is pressed from the events section. What do we do to walk to the right? Go to the Actions section and select WALK 10 STEPS from here. Again, we bring the block to the workspace when space is pressed from the Events section. What do we do to walk to the left side? Go to the Actions section and select WALK 10 STEPS from here. If you click on the right button, you should walk on the right button, if you click on the left button, you should go on the left button, but why is it not walking? That's because we didn't give him directions. Go to the Actions section and select the direction of action 90. Put 10 steps on top. We will do the same for the left side, then we will set the direction of movement to -90. Now we're left with the move up and down command, which we won't have to start over again, so we'll use the copy command. We copy both. We put 0 for the upper index, 180 for the lower index, and press the keyboard to move up, down, right and left. You need to build a program using blocks.

In order to improve the quality of teaching of computer science and information technology teachers in programming, it is necessary to use the Scratch program to create repetitive, branching, algorithms, create animations, and create games. Modern pedagogic and innovative technologies should be used effectively and appropriately, because the high level of educational work at the school depends only on the teacher's professional skills.

#### **LIST OF USED LITERATURE**

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