

What is Block Coding?

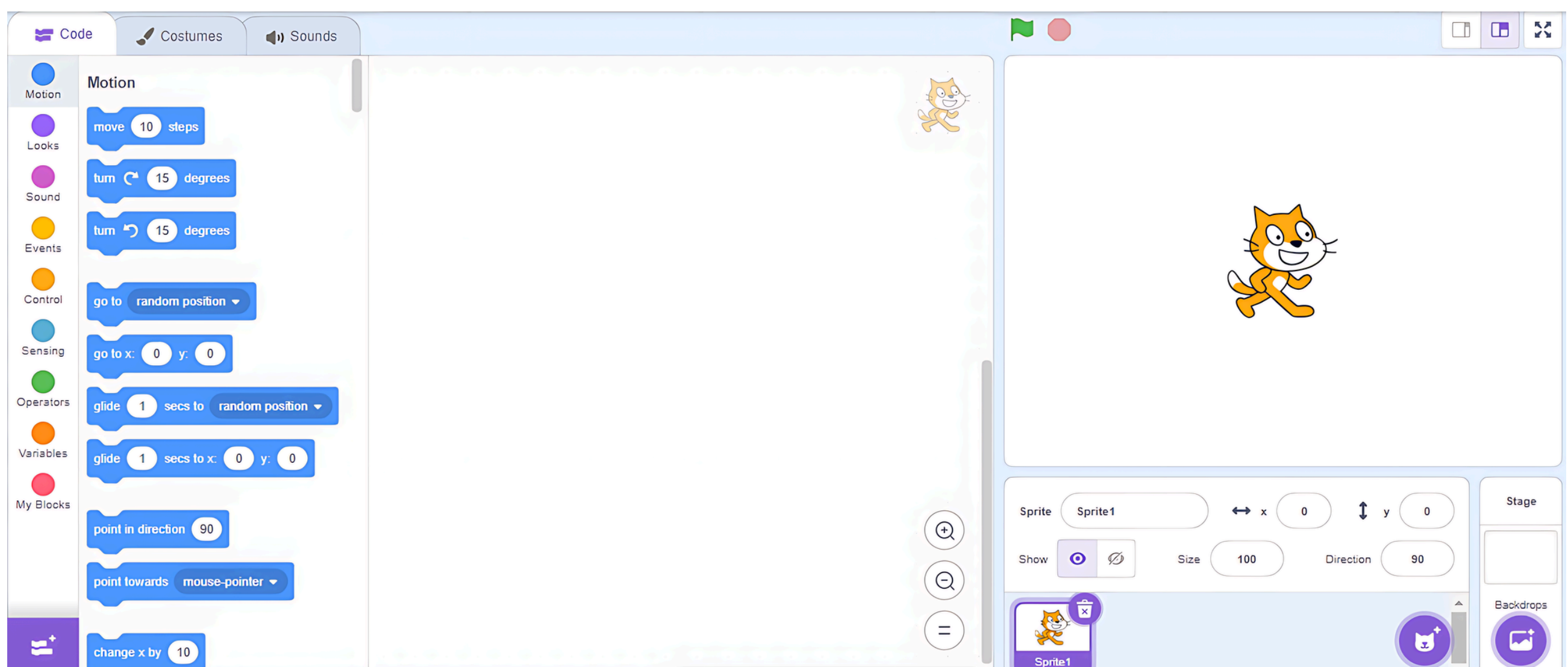
Block coding is a type of programming where instructions are represented as blocks that can be visually dragged and dropped into place, rather than typing out the code in text form. This method is especially popular for beginners and younger learners because it simplifies the process of coding by allowing them to focus on the logic and structure of their programs without needing to worry about syntax errors.

Block coding uses colorful, interlocking blocks that represent different commands, actions, or control structures. By snapping these blocks together, students can create sequences of instructions that the computer will follow. It introduces fundamental programming concepts such as sequencing, loops, conditionals, and events in a fun and engaging way.

Introducing the Scratch Interface

Scratch is one of the most popular platforms for block coding, developed by the MIT Media Lab. It's designed to be simple and intuitive for beginners, particularly for students in elementary and middle school. Platforms like Scratch Jr., PictoBlox, CS First, have similar interfaces. Having a good knowledge of the basic functionalities on Scratch can give you a head start on building projects on these other similar platforms.

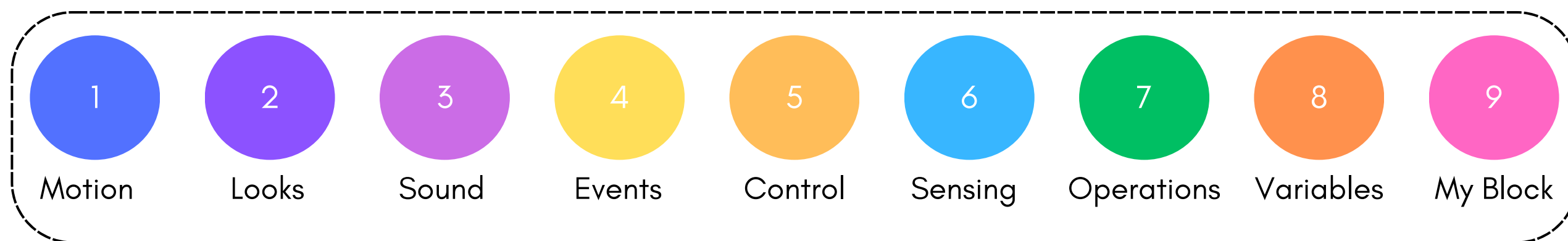
Scratch Interface Overview



1. **Stage Area:** This is where the action happens. It displays the results of your code and is where your sprites (characters or objects) perform actions.
2. **Sprite List:** Below the stage, you'll see all the sprites in your project. You can add, delete, and select sprites to work on them.
3. **Blocks Palette:** Located on the left side of the screen, this area contains all the coding blocks, categorized into different types like Motion, Looks, Sound, Events, Control, and more.
4. **Scripts Area:** In the center, this is where you drag and drop blocks to build your code. You assemble your scripts here to control what your sprites do.
5. **Toolbar:** At the top of the interface, you can access different project functions, such as saving, loading, or creating new projects.
6. **Backdrops and Costumes:** You can change the appearance of the stage or sprites by switching backdrops and costumes.

Different Types of Blocks

Scratch blocks are divided into different categories based on their function:



1. Motion Blocks: These blocks control the movement of sprites on the stage. Examples include moving forward, turning, and changing position.

Example: "move 10 steps" makes the sprite move forward by 10 units.

2. Looks Blocks: These blocks change the appearance of sprites, such as making them say something, changing their costume, or affecting their visibility.

Example: "say Hello for 2 seconds" makes the sprite display a speech bubble.

3. Sound Blocks: These blocks add audio effects to your project. They can play sounds, change volume, or even play musical notes.

Example: "play sound meow" makes the sprite play a meow sound.

4. Events Blocks: These blocks are used to trigger actions based on specific events, such as when a sprite is clicked or when the green flag (start) is clicked.

Example: "when green flag clicked" starts the program when the user clicks the green flag.

5. Control Blocks: These blocks manage the flow of your program, allowing you to control how and when things happen. They include loops, waits, and conditional statements.

Example: "repeat 10" repeats the enclosed actions 10 times, and "if on edge, bounce" checks if the sprite is touching the edge of the stage and makes it bounce back.

6. Sensing Blocks: These blocks allow sprites to detect certain conditions in your project, like touching another sprite, detecting the mouse position, or asking the user a question.

Example: "touching [mouse-pointer]?" checks if the sprite is touching the mouse pointer.

7. Operators Blocks: These blocks are used to perform mathematical operations, compare values, and work with strings (text). They are essential for creating complex logic within your projects.

Example: "+" adds two numbers together, and "join [apple] [banana]" combines the words "apple" and "banana" into "applebanana".

8. Variables Blocks: These blocks allow you to create and manipulate variables, which are used to store data that can change throughout the program, such as scores or user inputs.

Example: "set [score] to 0" initializes a variable named "score" to 0, and "change [score] by 1" increases the score by 1.

9. My Blocks: These are custom blocks that you can create to define your own functions, allowing for code reuse and simplification of complex scripts.

Example: Creating a block named "spin" that contains a sequence of motions to make the sprite spin, which you can then use multiple times in your project.