INDIAN SCHOOL AL WADI AL KABIR

Class: IX	DEPARTMENT OF COMPUTER SCIENCE	Date of submission:
Topic: Getting started with scratch		Handout 1

Scratch is a graphical programming language that makes it easy to create those applications and more. In this introductory chapter, you will:

- Explore Scratch's programming environment
- Learn about different types of command blocks
- Create your first game in Scratch

When you make a Scratch application, you can save it on your computer or upload it to the Scratch website.

what is Scratch?

Scratch is a *visual* pro-gramming language. It was developed in the Massachusetts Institute of Technology (MIT) Media Lab to make programming easier and more fun to learn. In Scratch, you won't type any complicated commands. Instead, you'll connect graphical blocks together to create programs
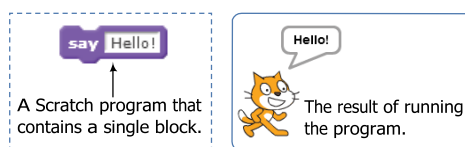

Figure 1-1: When you run this Scratch block, the cat says "Hello!" in a speech bubble.

The cat that you see in Figure 1-1 is called a *sprite*. Sprites understand and obey sets of instructions that you give them. The purple block on the left tells the cat to display "Hello!" in a speech bubble. Many of the applications you'll create in this book will contain multiple sprites, and you'll use blocks to make sprites move, turn, say things, play music, do math, and so on. You can program in Scratch by snapping those color-coded blocks together as you would

puzzle pieces or LEGO bricks. The stacks of blocks that you create are called *scripts*. For example, Figure 1-2 shows a script that changes a sprite's color four times.
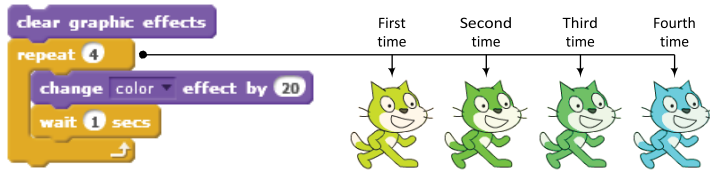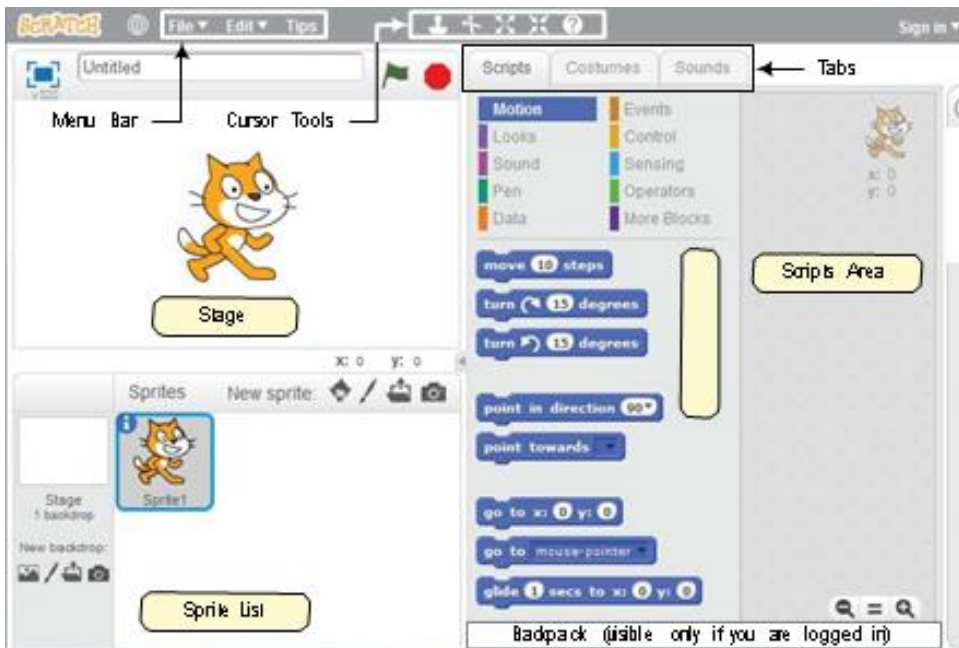

Figure 1-2: Using a script to change the Cat *sprite's color*

This script waits for one second between color changes, and the four cats you see here show the sprite's new color after each change.

Scratch Programming environment

The Scratch user interface, where you'll build your programs

This single window has the following three panes: the Stage (top left), the Sprite List (bottom left), and the Scripts tab (right), which contains the Blocks tab and the Scripts Area. The right pane also contains two additional tabs, Costumes and Sounds, which will be discussed later in this section.

The Stage

The *Stage* is where your sprites move, draw, and interact. The Stage is 480 steps wide and 360 steps tall, as illustrated in Figure 1-4. The center of the Stage has an *x*-coordinate of 0 and a *y*-coordinate of 0.
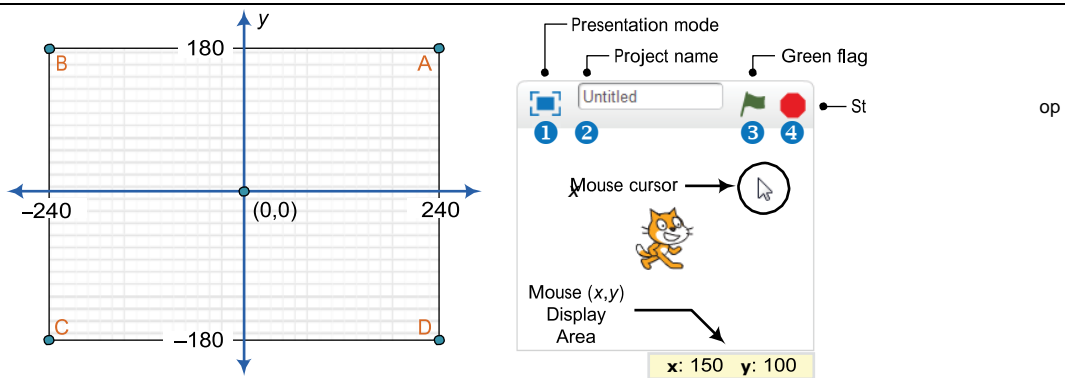
Figure 1-4: The Stage is like a coordinate plane with point (0,0) in the center.

You can find the (*x*,*y*) coordinates of any point on the Stage by moving the mouse cursor to that point and watching the numbers in the Mouse (*x*,*y*) Display Area, located directly below the Stage.

The small bar located above the Stage has several controls. The Presentation mode icon 1 hides all scripts and programming tools and makes the Stage area take up almost your entire monitor. The edit box 2 shows the name of the current project. The green flag 3 and stop 4 icons let you start and end your program.

Sprite List

The Sprite List displays names and thumbnails for all the sprites in your project. New projects begin with a white Stage and a single cat-costumed sprite
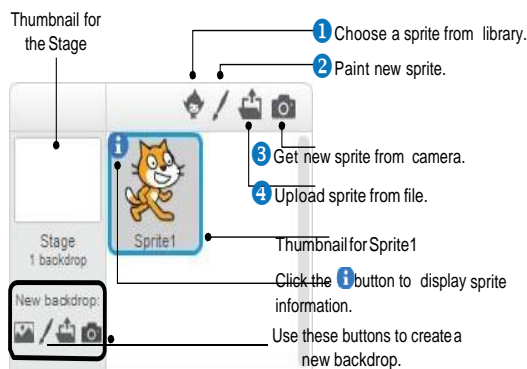

The buttons above the Sprite List let you add new sprites to your project from one of four places: Scratch's sprite library 1 the built-in Paint Editor 2 (where you can draw your own costume), a camera connected to your computer 3, or your computer 4

Each sprite in your project has its own scripts, costumes, and sounds. You can select any sprite to see its belongings. Either (1) click the sprite's thumbnail in the Sprite List or (2) double-click the sprite itself on the Stage. The currently selected sprite thumbnail is always highlighted and outlined with a blue border

Blocks in Scratch are divided into 10 categories (palettes): *Motion*, *Looks*, *Sound*, *Pen*, *Data*, *Events*, *Control*, *Sensing*, *Operators*, and *More Blocks*. Blocks are color coded to help you find related blocks easily. Scratch 2 has more than 100 blocks, though some blocks only appear under certain conditions. For example, blocks in the *Data* palette appear only after a variable or a list is created. Let's look at the various components of the Blocks tab in Figure 1-7.
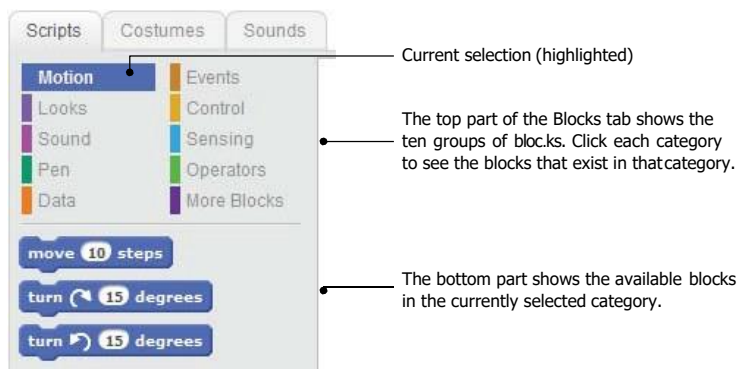
Try clicking a block to see what it does. If you click **move 10 steps** on the *Motion* palette, for example, the sprite will move 10 steps on the Stage. Click it again, and the sprite moves another 10 steps. Click the **say Hello! for 2 secs** block (in the *Looks* palette) to make the sprite display "Hello!" in a speech bubble for two seconds

Some blocks require one or more inputs (also called *arguments*) that tell the block what to do. The number 10 in the **move 10 steps** block is an example of an argument. Look at Figure 1-8 to see the different ways blocks let you change their inputs.
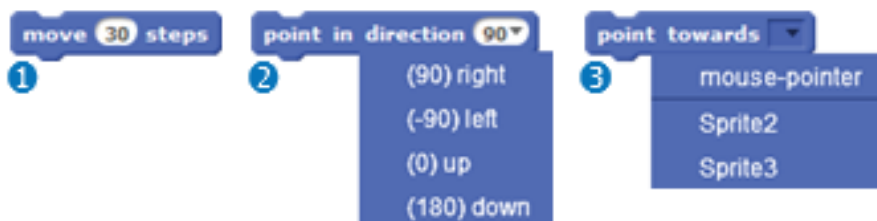

Figure 1-8: Changing the inputs of different types of blocks

You can change the number of steps in **move 10 steps** by clicking the white area where you see the 10 and entering a new number 1 perhaps 30 as you see in Figure 1-8. Some blocks, like **point in direction 90**, also have pull-down menus for their inputs 2. You can click the down arrow to see a list of available options and select one. This particular command has a white editable area, so you could also just type a value inside the white box. Other blocks, like **point towards** 3, will force you to choose a value from the drop-down menu.