IT @ SCHOOL

Computer Science - Book 5

TERM 2

IT @ SCHOOL

Computer Science - Book 5

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This book has been prepared by the Computer Science team of the DAV Group of Schools, Chennai (managed by the Tamil Nadu Arya Samaj Educational Society).

This is the first version of the book and could contain not only omissions, but also areas of improvement. We request the reader to excuse us for the omissions, but please do bring to our notice any feedback for correction and improvement in subsequent versions. We will remain grateful to you for your support and feedback. You can write to **'Tamil Nadu Arya Samaj Educational Society'** 212-213, Avvai Shanmugam Salai, Gopalapuram, Chennai – 600 086 or email to publications@davchennai.org. You may also write to us to seek permission to print all or only certain chapters of the book.

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PREFACE

Computers play a vital role in the modern world, and even the most basic jobs today involve technology. Therefore, computer education becomes essential in any student's development. Expertise in computing enables children think critically, be more creative and innovative, giving space for collaborative work and individual effort.

The series of books (Class III – IX) aim to holistically develop digital skills, keeping pace with the dynamically changing industry requirements.

IT education has no boundaries and irrespective of the field of work, each one is expected to have the following digital skills:

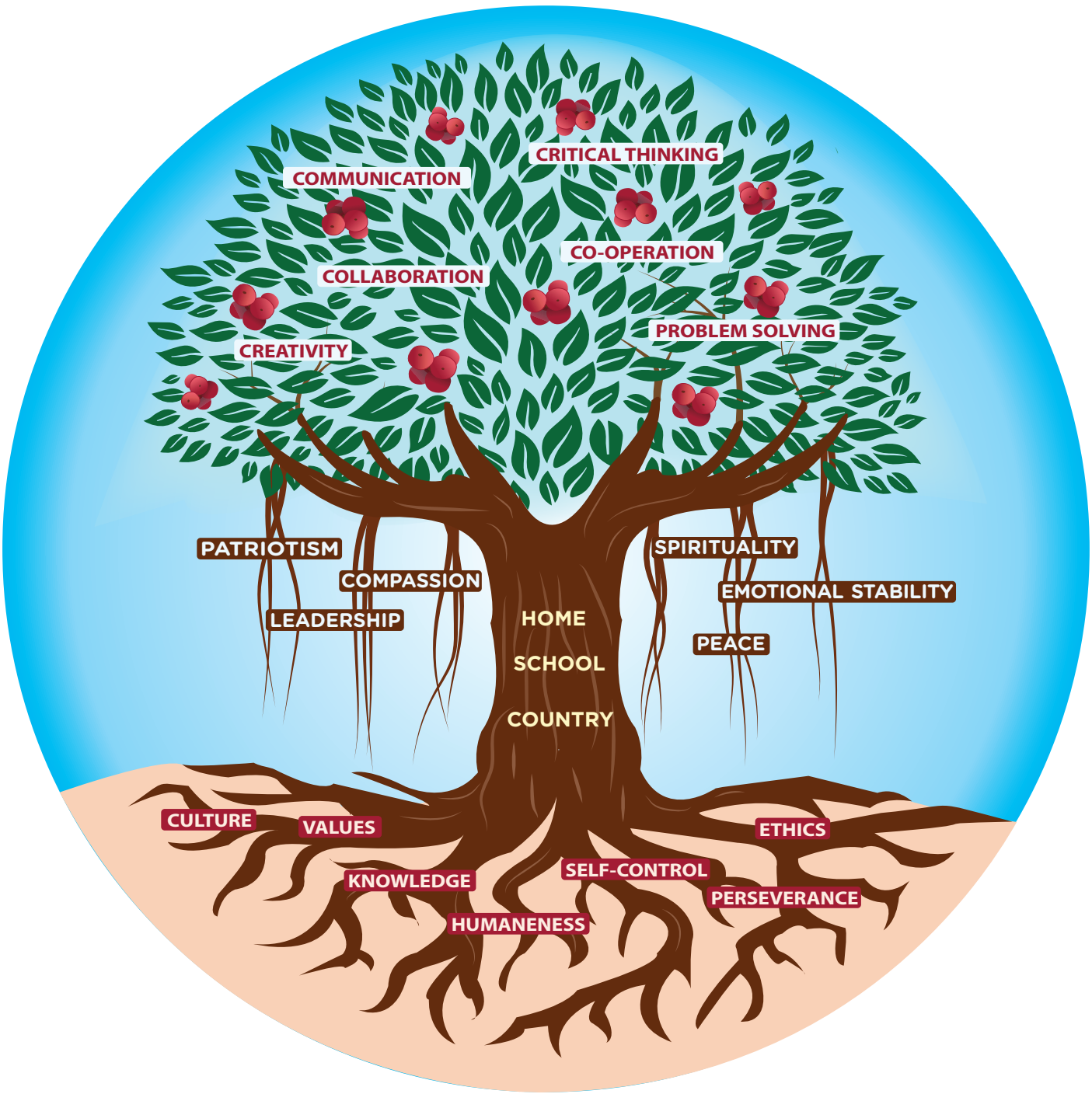
- MS Office (MS Word, MS Excel, MS PowerPoint)
- Photo / Image Editing
- Programming
- Website development

The enriched curriculum therefore covers a wide variety of topics across various classes: *TUXPAINT; MS Word 2007 (Level I, II & III) ; MS Excel 2007 (Level I, II & III); MS PowerPoint 2007 (Level I & II); Image / Photo editing software using GIMP 2.8; Scratch Programming; HTML Programming; Web creation tool using WordPress.*

The curriculum uses only open source software (freely available on the Internet) installed in Windows 7 Operating system.

A brief description of every concept and its application / purpose is provided in every lesson with colorful screen shots. This not only attracts the readers but also gives them an experience of self-learning. **'Activity Based Learning'** exercises have been included as part of the curriculum.

We hope this text book finds its place in the readers' library for future references.


CRITICAL THINKING
COMMUNICATION
CO-OPERATION
COLLABORATION
PROBLEM SOLVING
CREATIVITY
PATRIOTISM
SPIRITUALITY
COMPASSION
EMOTIONAL STABILITY
LEADERSHIP
HOME
PEACE
SCHOOL
COUNTRY
CULTURE
VALUES
ETHICS
SELF-CONTROL
KNOWLEDGE
PERSEVERANCE
HUMANENESS

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CHAPTER 1

Introduction to Scratch program

INTRODUCTION

Scratch is a graphical programming language, developed by the Lifelong Kindergarten group at the Massachusetts Institute of Technology. Children can drag and combine code blocks to make a range of programs, including animations, stories, musical instruments and games. It's a bit like the programming equivalent of LOGO!

Scratch allows children to learn coding concepts and create interactive projects without needing to learn a text-based programming language.

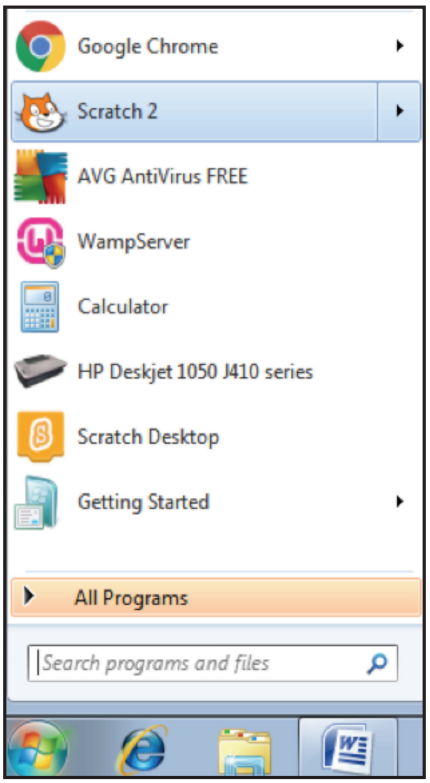
How to start Scratch 2 program?

Step 1: Go to **Start.**

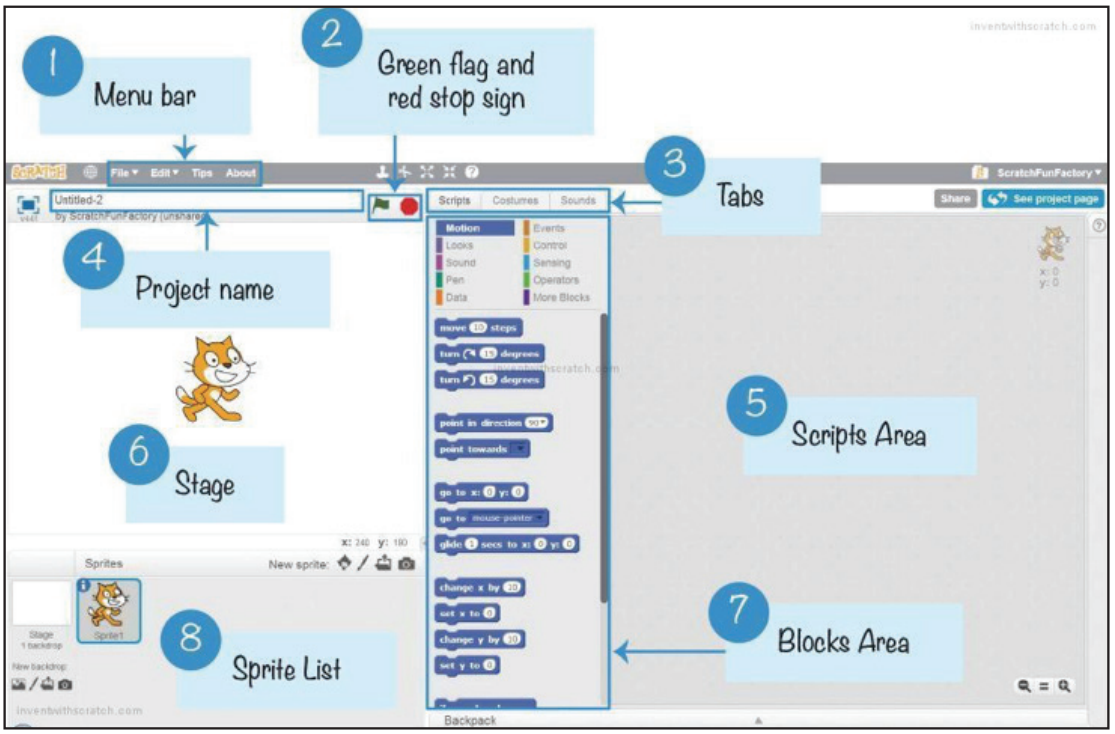
Step 2: Click on **All Programs.**

Step 3: Select **Scratch 2.**

Step 4: The Scratch Window Opens.



The components of the scratch window are as follows.



The most basic object in Scratch is the sprite. Sprites appear on the Stage❻, and their code blocks control their behavior. The editor automatically starts with a cat sprite for all new projects, but you can add more sprites.

You can program a sprite by adding code blocks to the Scripts Area❺ on the right side of the screen. In Scratch, a stack of code blocks is called a *script.*

The text field at the top of the editor contains the project name❹. After you've named your project using a descriptive name, remember to occasionally save your project by clicking **File** ▶ **Save Now** from the menu bar❶ to avoid losing your work if your browser crashes.

You access the code blocks from the Blocks Area❼ in the center. At the top of the Blocks Area are 10 categories of codeblocks: *Motion, Looks, Sound, Pen, Data, Events, Control, Sensing, Operators,* and *More Blocks.*

Each sprite has its own scripts. When you click the sprite in the Sprite List❽, that sprite's scripts will display in the Scripts Area. Select the Scripts tab❸ to display the Scripts Area. The Scripts Area is replaced by the Paint Editor and Sound Editor when the Costumes and Sounds tabs are selected, respectively.

Clicking the green flag will start your program, and clicking the red stop sign will stop it❷.

BRAIN DEVELOPER

I) CHOSE THE BEST ANSWER

1. You access the code blocks from the Blocks Area in the_____

   a) center b) Left c) Right d) up

2. Select the _____tab to display the Scripts Area

   a) block b) Scripts c) project d) sound

3. Click the _____ sign will stop it.

   a) red b) blue c) green d) black

4. To avoid losing the content click

   a) load now b) open now c) edit now d) save now

5. Which is not a code block category?

   a) Motion b) Looks c) Sound d) video

II) FILL IN THE BLANKS

1. Sprites appear on the_____.
2. You can add code blocks to the _____.
3. A stack of code blocks is called a _____.
4. The text field at the top of the editor contains the _____.
5. Clicking the _____ will start your program

Teacher's Signature

CHAPTER 2

WORKING WITH CODE BLOCKS

INTRODUCTION:

Blocks are lines or blocks of code which you drag into your project to create a script. Each asset can have more than one script associated with it, and each script can have as many blocks as you need.

Motion Blocks

Motion blocks are what you use to place your sprites on the stage or move them. They are dark blue. You can only use motion blocks with sprites, not with the stage.

Looks Blocks

Looks blocks are coloured purple, and they control what your sprites and backdrop look like, how big they are, and whether they are displayed in front of or behind other assets. Looks blocks also include blocks that let you display text.

Sound Blocks

Sound blocks are used to add sound. They are coloured pinks.

Pen Blocks

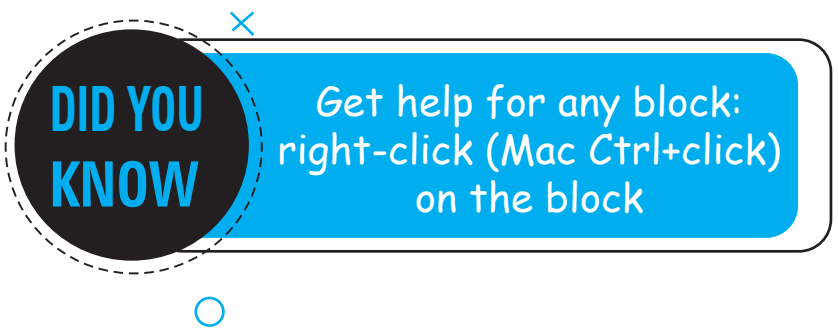
You can use the green Pen blocks to create interactive games where the user can draw on the stage.

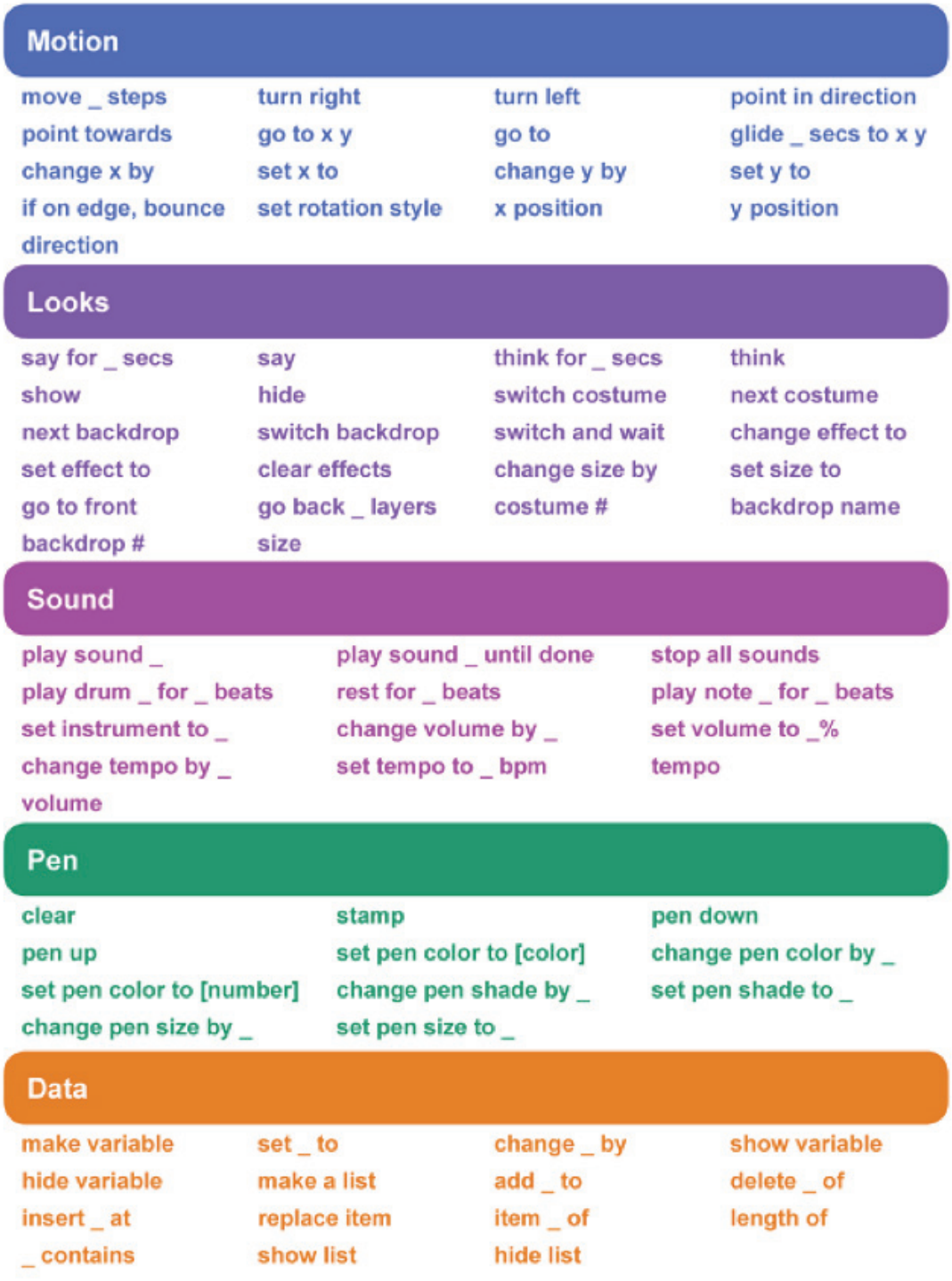
Data Blocks

Data blocks let you create and manipulate data in your animations and games.

Events Blocks

The brown **Events** blocks are fundamental to Scratch as without them, nothing will happen. Each script will have an event at its start which tells the script to run.

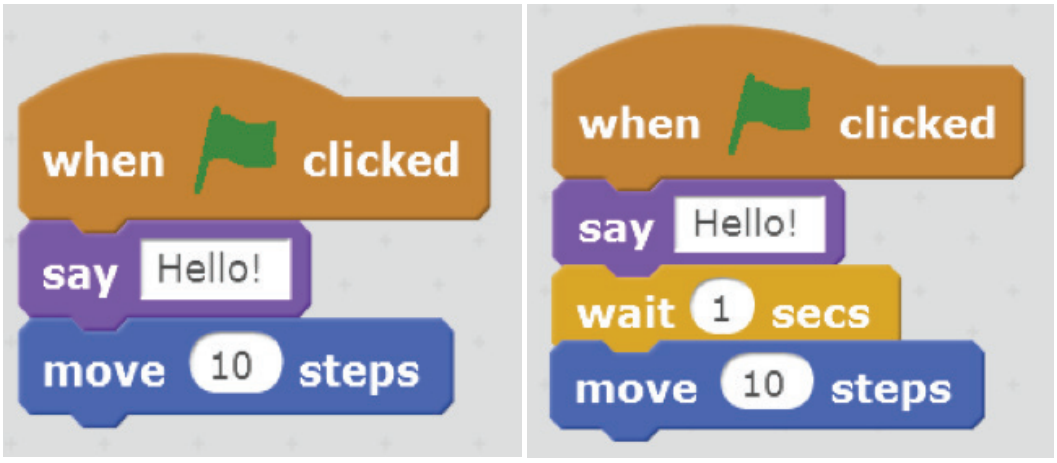




Adding Blocks

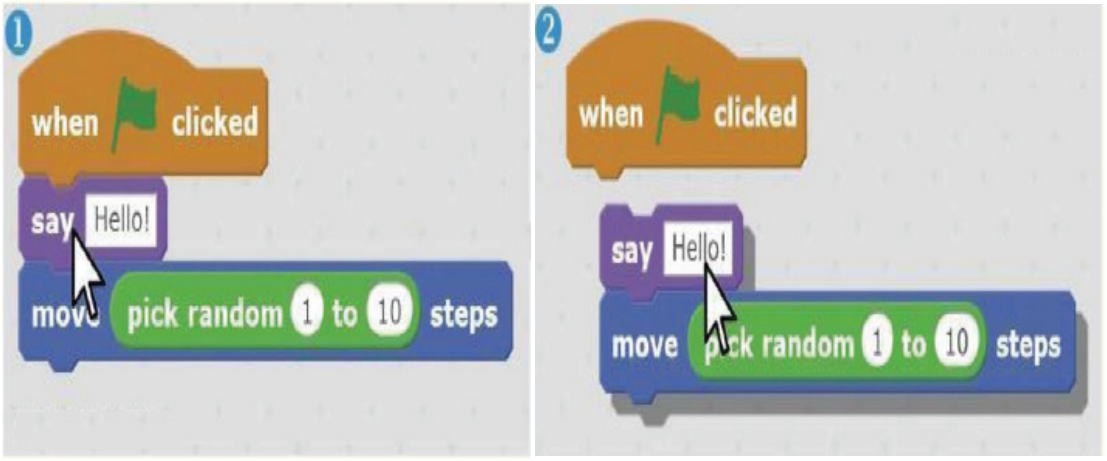
To create a new code block, drag it from the center Blocks Area to the Scripts Area. The code blocks that have a notch on top and bump on the bottom are called stack blocks. To snap a stack block together with another stack block, drag the block close to the bottom of the other. When a white outline appears, drop the block to connect it to the stack.

Stack blocks can also fit in between blocks. Look carefully at where the white outline appears in the script: this is where the block will snap into place. This figure shows a wait 1 secs block being moved into the middle of a script:



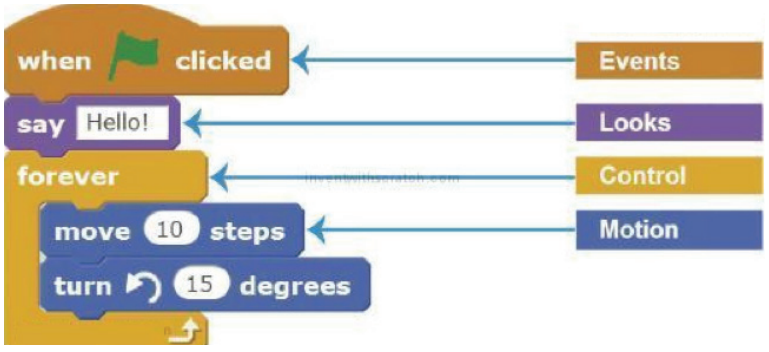
Deleting Blocks

To remove blocks, drag them out of the script. If you remove a stack block, you'll also remove the stack blocks connected under it. You may need to set aside these blocks if you want to reconnect some of them to the script. Drag the blocks you want to delete over the center Blocks Area to remove them from the Stage. You can always add more blocks from the Blocks Area when you need them.



Running Programs

Create the following program by dragging blocks from the Blocks Area to the Scripts Area:



When you click the green flag at the top of the Stage, this program will start. Programs begin at the top block

(when green flag clicked) and then run the next code block in the script.

In this example, a speech bubble appears above the sprite and displays the word "Hello!" In the forever loop, the sprite moves forward 10 steps and then turns counterclockwise by 15 degrees. When the program gets to the last block, it loops back to the top. All the blocks in the forever block will run in a loop forever. The program stops only when you click the red stop sign.

BRAIN DEVELOPER

I) MATCH THE FOLLOWING

1.	MOTION BLOCK	–	ADDS SOUND
2.	LOOKS BLOCK	–	INTERACTIVE GAMES
3.	SOUND BLOCK	–	MANIPULATE DATA
4.	PEN BLOCK	–	TO MOVE SPRITE
5.	DATA BLOCK	–	PURPLE COLOUR

II) FILL IN THE BLANKS

1. The brown _____ blocks are fundamental to Scratch.
2. _____ can also fit in between blocks.
3. The code blocks that have a notch on top and bump on the bottom are called _____
4. When a_____ outline appears, drop the block to connect it to the stack.
5. The program stops only when you click the_____ stop sign.

Teacher's Signature

CHAPTER 3

CONTROLLING SCRIPT EXECUTION AND ADDING SOUNDS

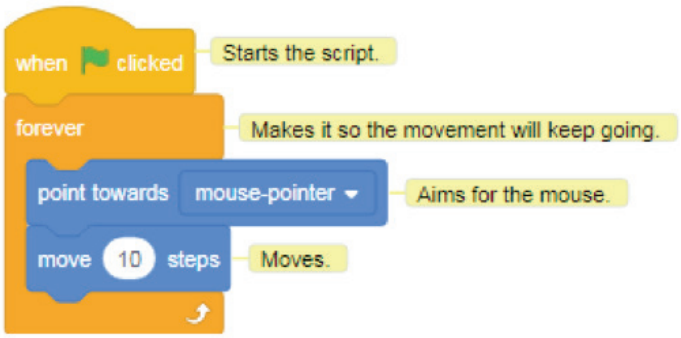
INTRODUCTION

Movement is used to show action. It is easy to make different types of movement on scratch. Goto x y command is used to move the sprite.

Sound can be added to sprite from sound library so that it adds more effects to the project.

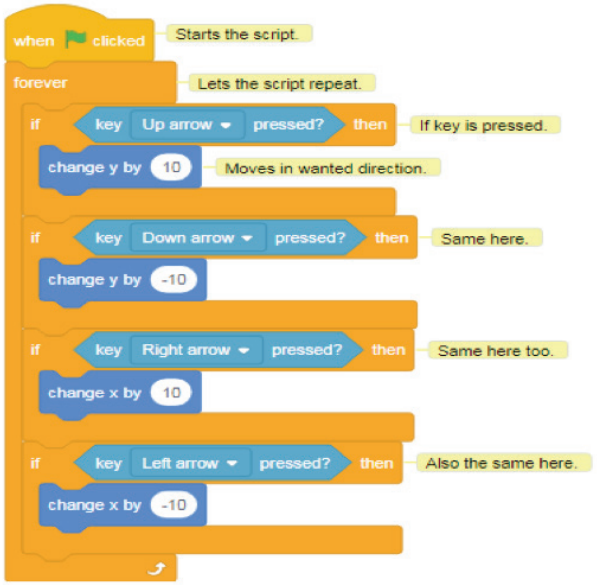
Following the Mouse

It is easy to script an object following the mouse. It is commonly used for top down games. It looks best to set the rotation style to "Full rotation".



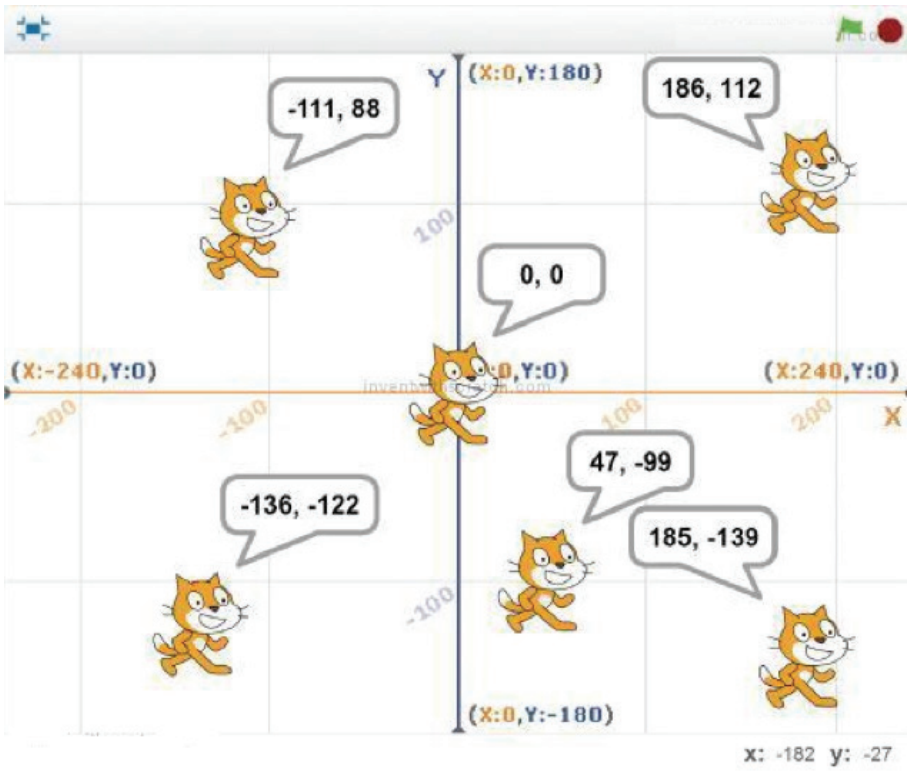
Top-Down Arrow Keys Movement

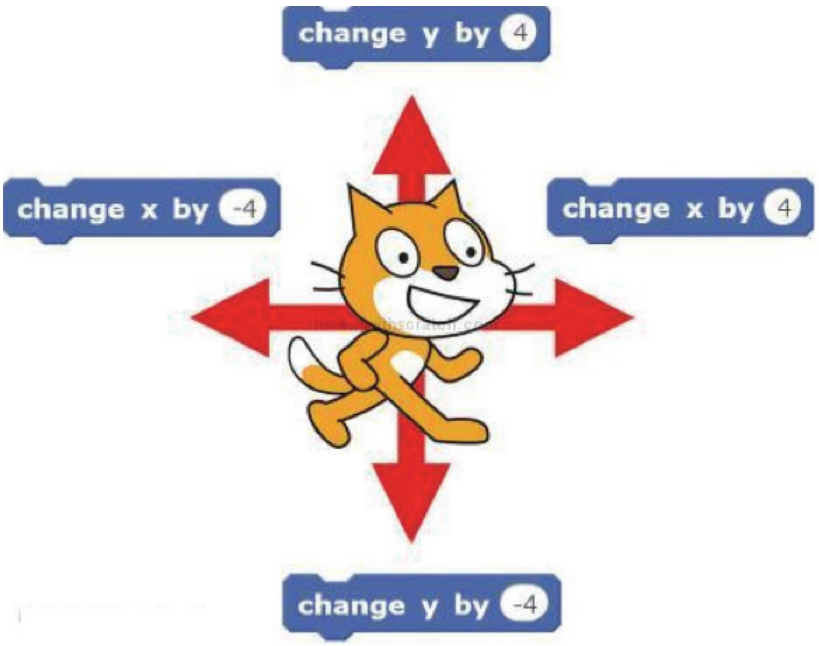
This command gives the sprite more control over where they move. It is an alternative to the mouse following command. But this command allows sprite to move horizontally and vertically.



Coordinate system of the Scratch window:

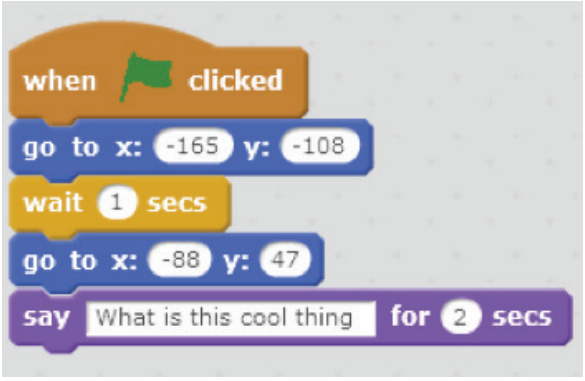
- The central coordinates of the stage lies on (0,0), with the horizontal direction as X-axis and vertical direction as Y.
- Divided by the central coordinate, the right part of the X-axis is positive X-axis (+), left negative X-axis (-); the upper part of the Y-axis divided by the central coordinate is positive Y-axis and the lower part Negative Y-axis.
- The coordinates of the 4 corners on the stage are: (-240,180), (240,180), (240,-180), (-240,-180).





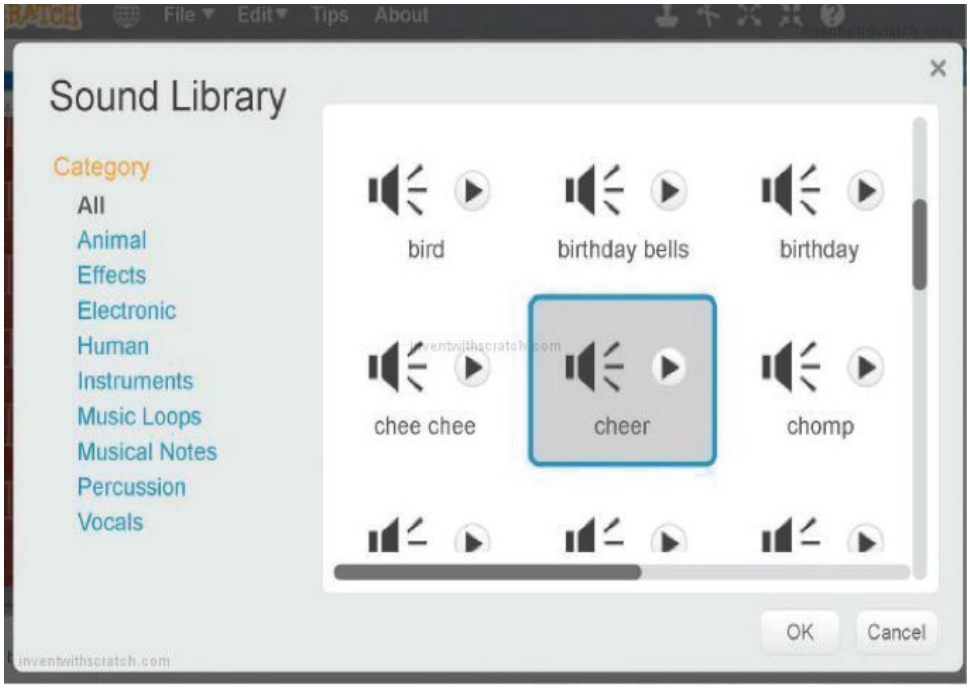
The following commands move the sprite to the designated coordinates and make the sprite glide.

The following commands and make the sprite move from one place to another and wait for 1 sec and say a dialogue for 2 seconds.

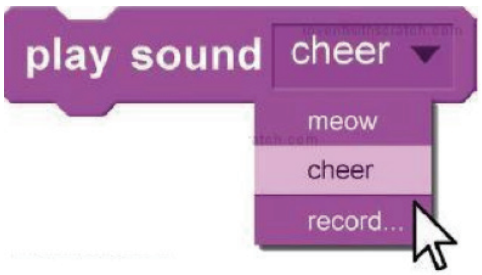


ADDING SOUND TO SPRITE:

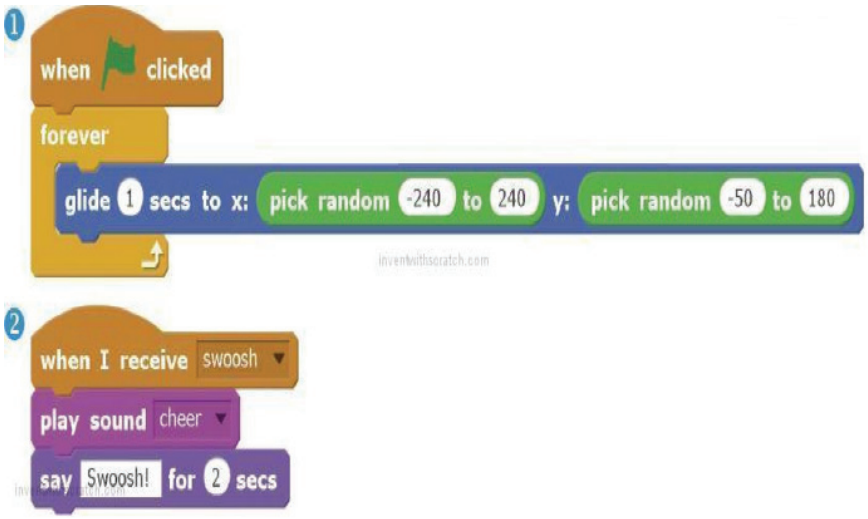
To add sound to sprite Click the **Sounds** tab at the top of the Blocks Area, and then click the **Choose sound from library** button under New sound. When the Sound Library window opens, select any sound and click **OK.**



The cheer sound will now appear as an option for the **play sound** block you can add it to sprite.

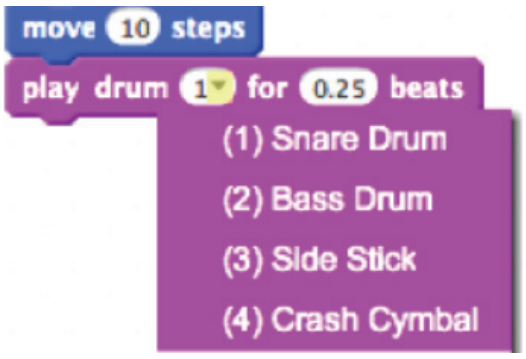


Add the following code to the Hoop sprite to make it glide randomly around the top half of the Stage. You'll need to create a broadcast message by clicking the **when I receive** block's black triangle and selecting **new message.** Name the new broadcast message swoosh.



Script ☐ makes the spite slide to a new position every second. Script ☐ plays the cheer sound and displays "Swoosh!" when the swoosh broadcast is received.

Change the drum command by dragging each of these sounds and change the code and click the green flag to get different beats.



II) FILL IN THE BLANKS

1. To add sound to sprite Click the_____ tab.
2. _____ is used to show action.
3. The _____ coordinates of the stage lies on (0,0).
4. Sounds tab is at the ¬¬¬¬¬¬¬¬¬¬_____of the Blocks Area.
5. _____command allows sprite to move horizontally and vertically.

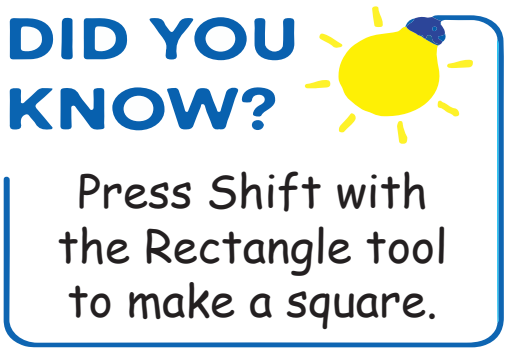
II ANSWER THE FOLLOWING QUESTIONS

1. How to move the sprite?
2. How the coordinates are divided?
3. How to add sound to sprite?

DO IT YOURSELF

Create a scratch project about your hobbies using the commands you have learned.

Teacher's Signature



CHAPTER 4 CHANGING THE BACKDROP AND EDITING COSTUME

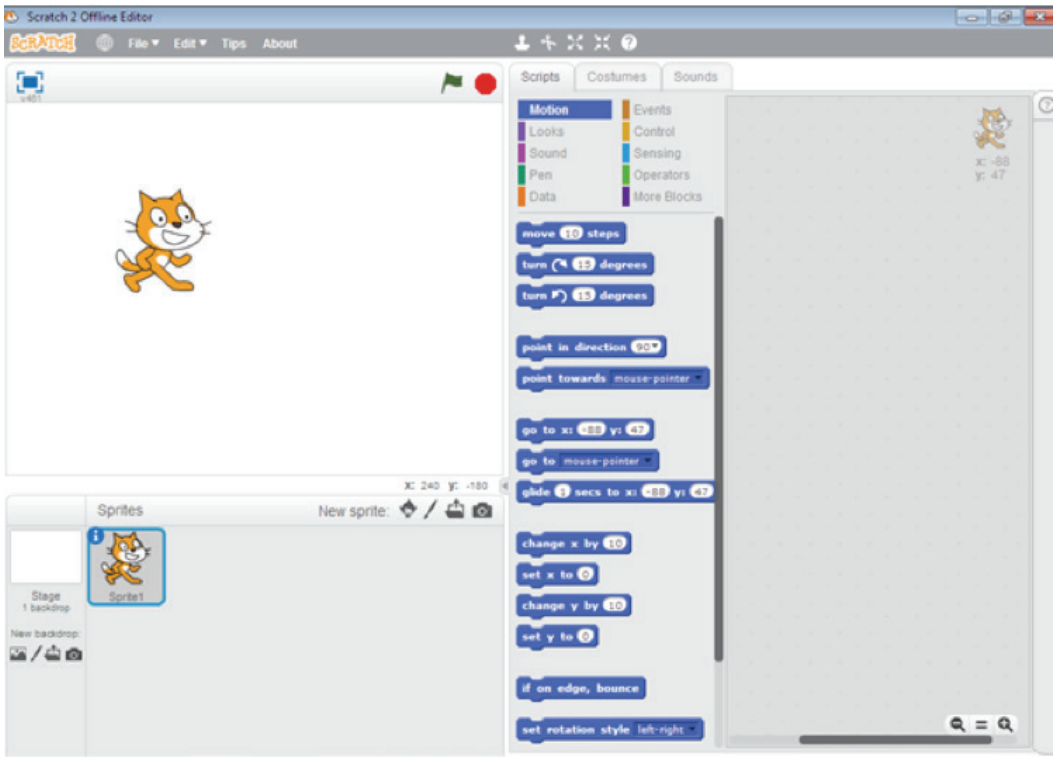
INTRODUCTION

In this lesson we are going to learn how to create backdrops and sprites. There are variety of ways of creating backdrops and sprites: We can choose them from the Scratch library, we can draw them our self, edit existing ones, or upload images.

Creating Your Project

Start by creating your project. Log in to Scratch, and then in the home page, click **Create** in the admin bar at the top of the screen.

This will take you to the new project screen:



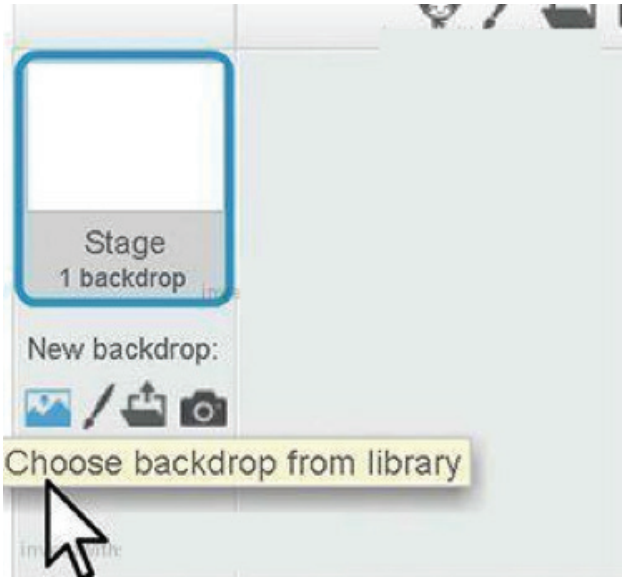
Give your project a name by typing it into the field immediately above the stage. Scratch will then automatically save your project with its new title.

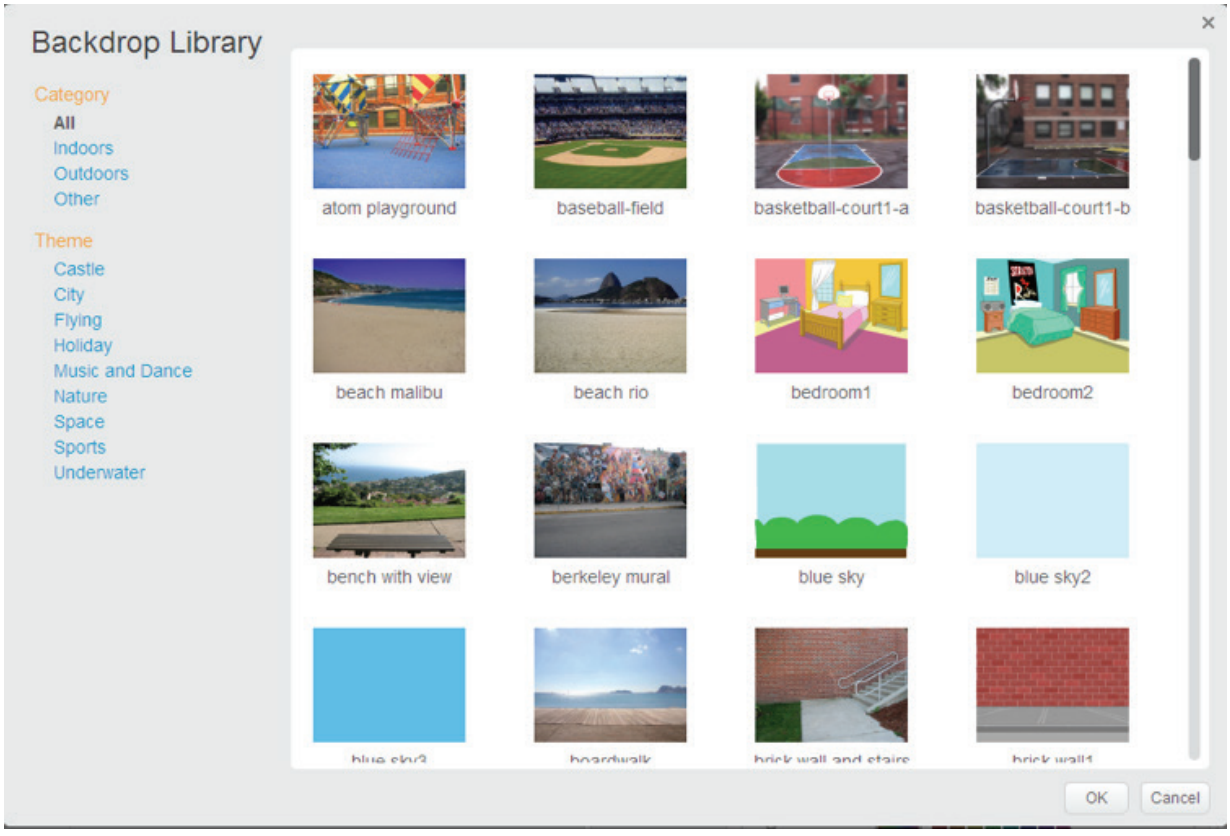
Adding Backdropsfor creating backdrops, each of which has an icon:

- Choose backdrop from library
- Paint new backdrop
- Upload backdrop from file
- New backdrop from camera

Adding a Backdrop From the Library

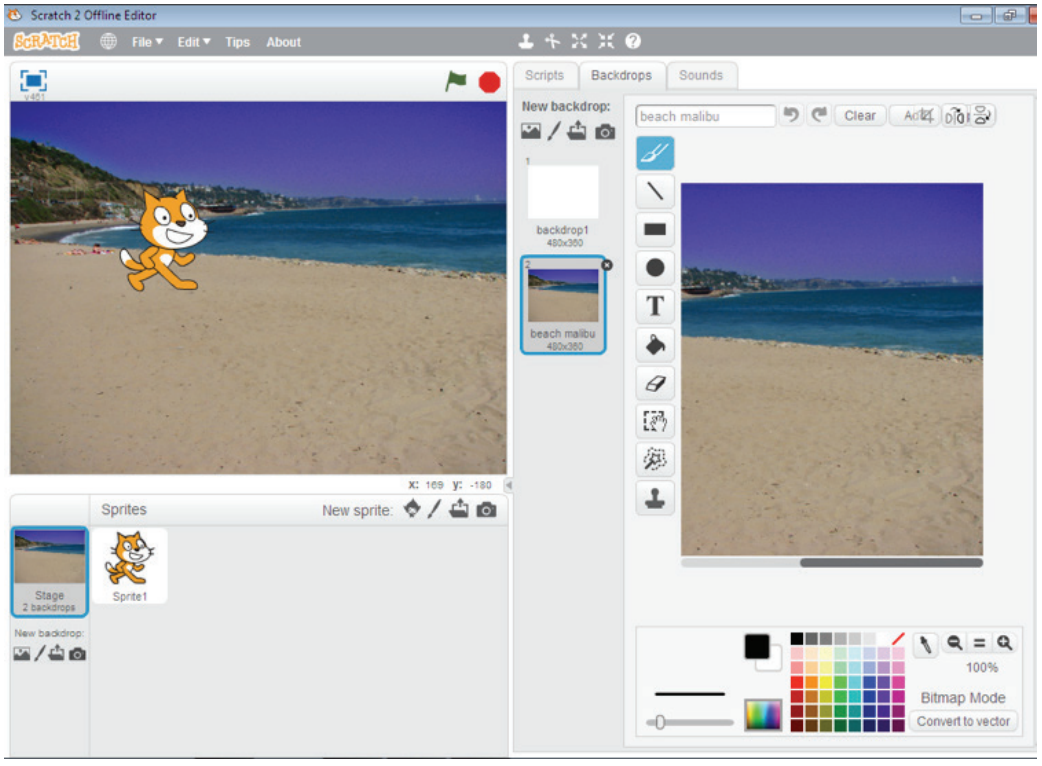
Start by using the library. Click on the left hand icon to view the backdrops library:



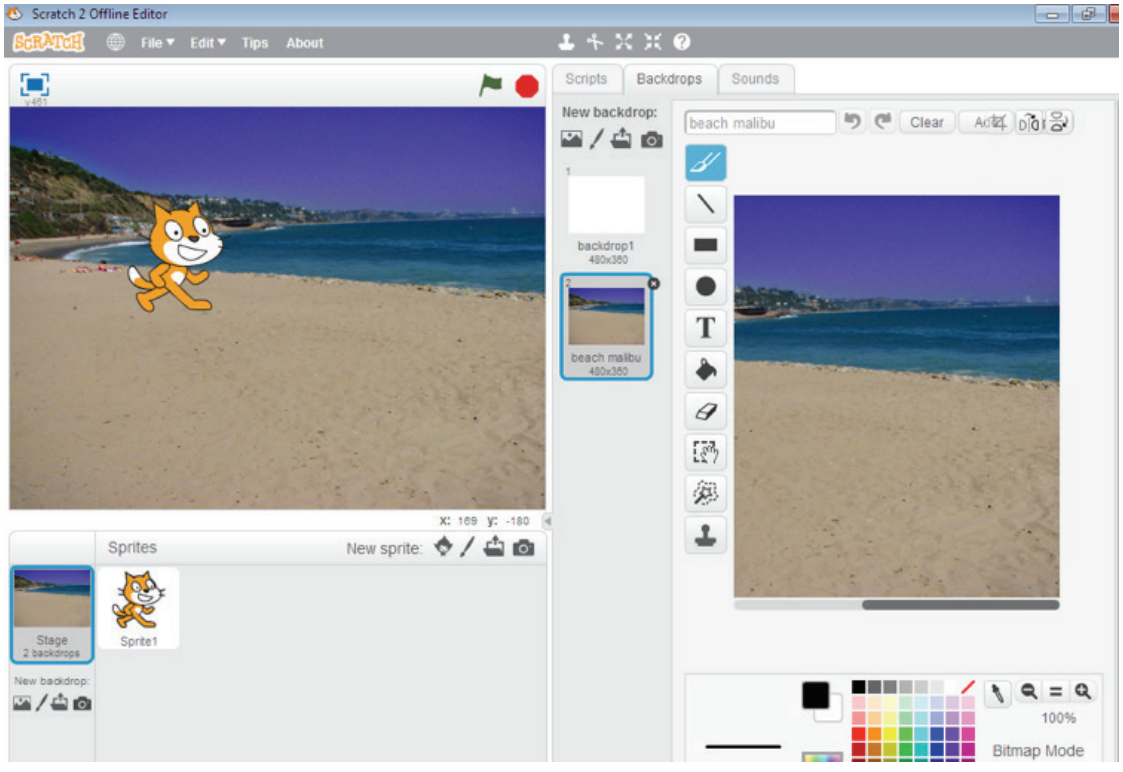


Select an image(beach Malibu) and click the **OK** button.

The cat sprite will now be in front of your background:



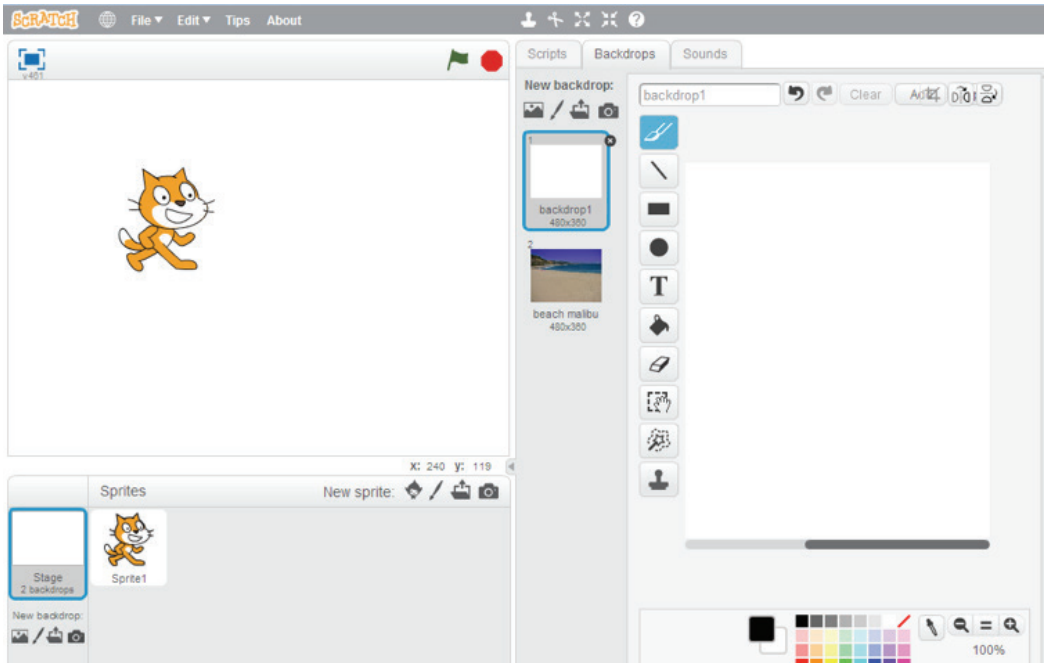
Earlier the project had a plain white backdrop when you started; it will now have two backdrops. You can view all of your backdrops by clicking on the **Stage** (next to your sprites) and then clicking on the **Backdrops** tab to the right of the stage. This reveals the backdrops pane:



Here you can add or delete backdrops and edit existing ones. We're going to delete the unwanted one and then add two new ones based on the one we've just added.

Deleting a Backdrop

Firstly, click on the white backdrop **(backdrop1)** and click on the **X** which will appear to its top right. You'll now have just one backdrop.

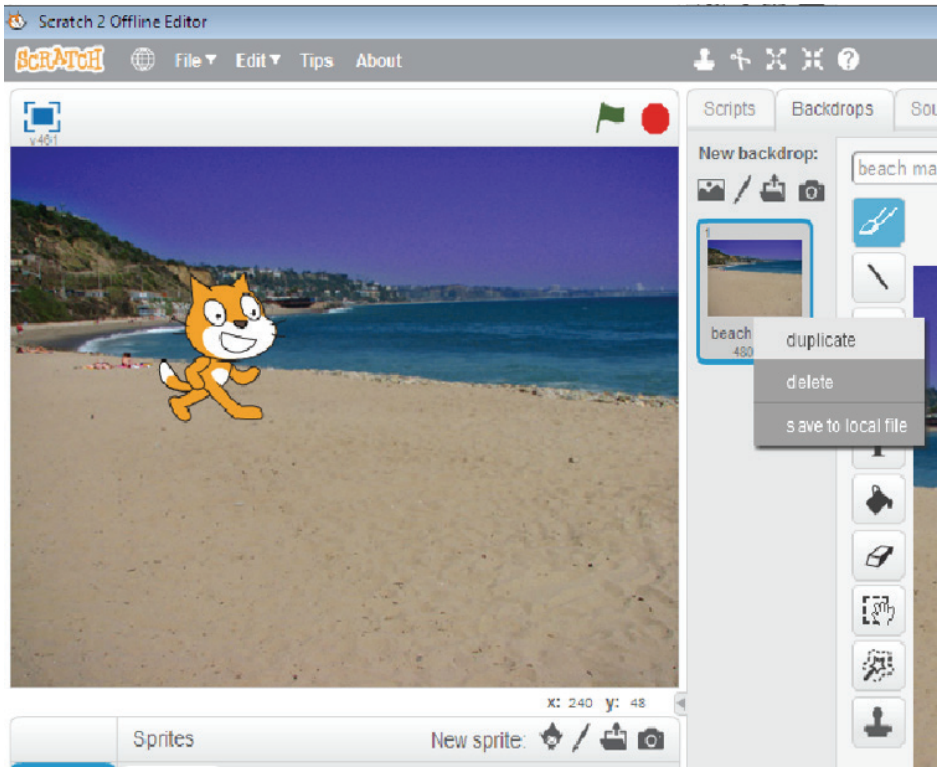


Copying a Backdrop

Now we'll copy the existing backdrop to make a second one, which we'll then edit.

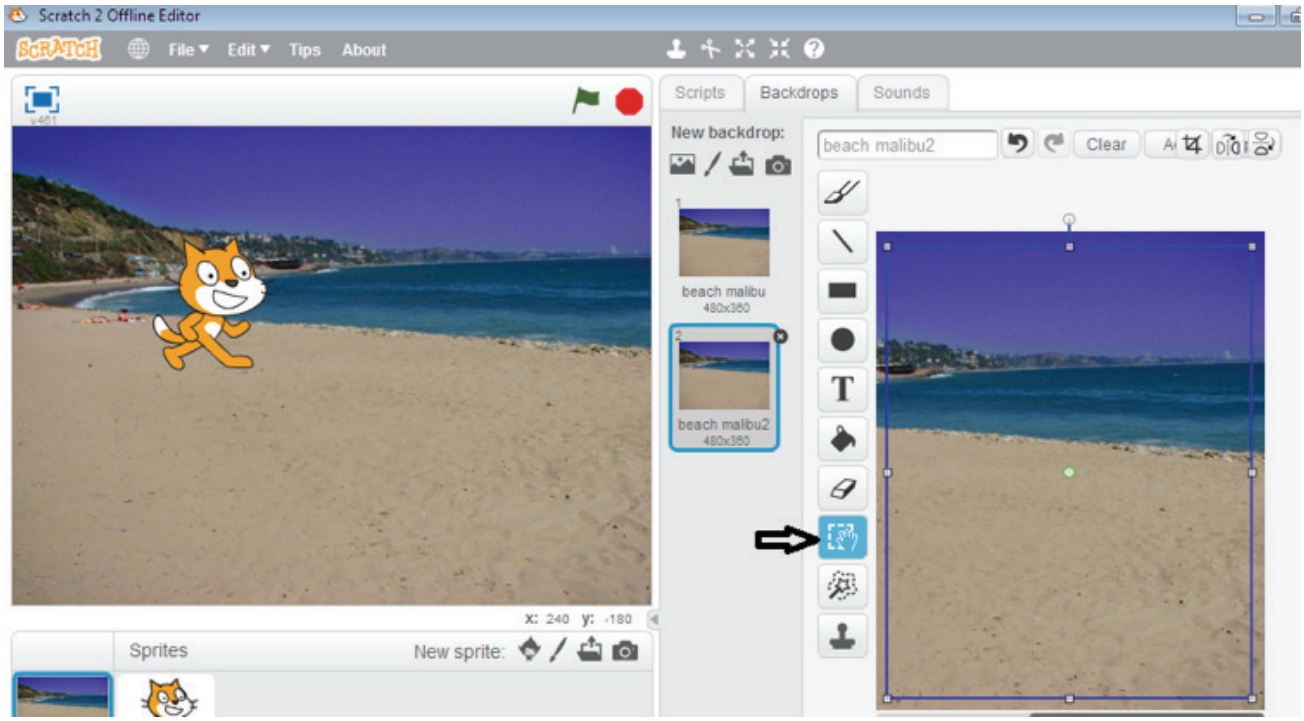
Make sure your backdrop is selected in the backdrops pane, and right-click on it. In the shortcut menu, click **duplicate.**

You'll now have two backdrops which are the same:



Editing a Backdrop

Now you need to edit the new backdrop. Select the backdrop called **beach-malibu2** and click the **Select** icon to the left of the backdrop editing pane (it's second from the bottom and looks like a hand over a dotted rectangle). Select a portion of your backdrop by dragging the mouse over it. Select central portion which is about 75% of the backdrop:

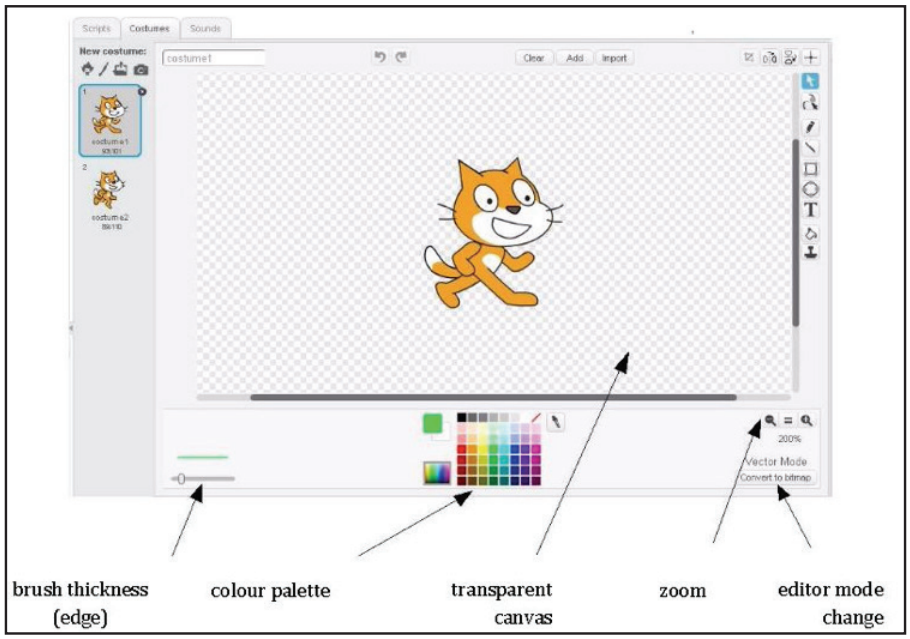


Now drag the handles of that selected portion out to the edge of the backdrop so that it takes up the whole backdrop. You'll end up with a backdrop that looks like a slightly zoomed in version of the first one.

> *Note: if you go wrong, just click on **Edit** and **Undo** in the admin bar, or delete your backdrop and start again!*

Steps to edit the costume of the sprite:

1. Choose the costume button to change to editing mode.
2. Select the name of the costume and apply to the sprite.
3. You can also select from the edit tool to create your own design and colour of the costume.
4. If you want to adjust the display of the colour of the costume, you can increase or decrease per the buttons.
5. To delete a costume we need to choose one from the tray and click the "x" in the right upper hand corner of the picture.

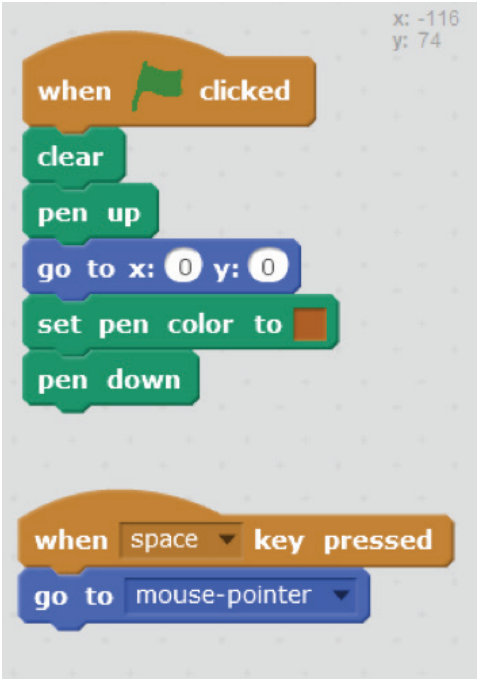


Block	Explanation	Example
pen down	Start using pen	pen down move 100 steps
pen up	Stop the pen	pen up move 20 steps pen down move 20 steps
clear	Clear all drawings	pen down move 20 steps wait 2 secs clear

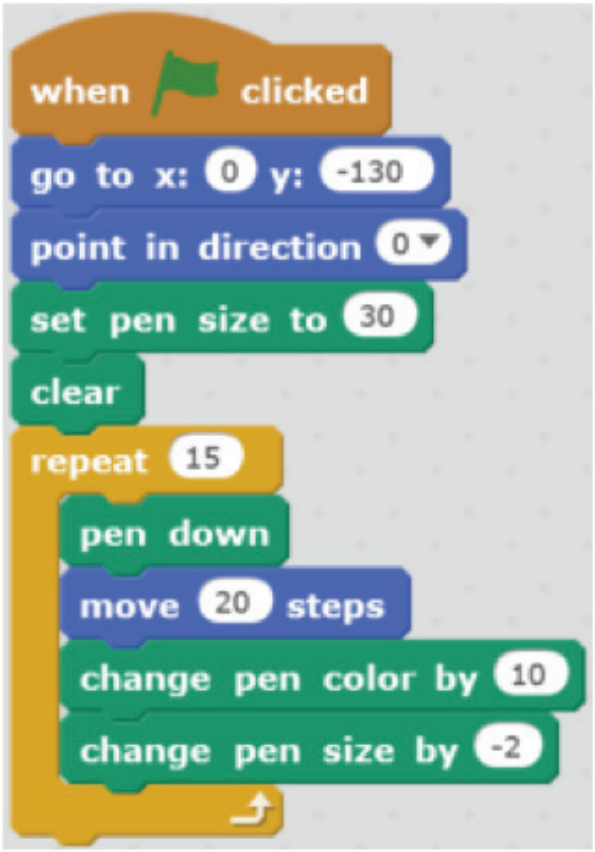
Use pen down block to draw lines.

Block	Explanation	Example
set pen color to	Click the color square on this block, click on any color from the stage you want, then the pen will be set to the color you pick.	set pen color to pen down move 20 steps
set pen size to 1	Set the size of the pen.	set pen size to 8 pen down move 20 steps

Change the pen colour and size as given above.



Use the code given below and draw the line in various colours.

Program	Effect
	

BRAIN DEVELOPER

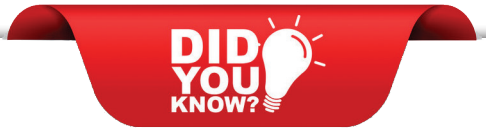
I) FILL IN THE BLANKS

1. If you go wrong, just click on ***Edit*** and _____
2. Start by creating your project. Click _____ in the admin bar at the top of the screen.
3. There are _____ options for creating backdrops, each of which has an icon:
4. Choose the _____ button to change to editing mode
5. Use _____ block to draw lines

II GIVE ANSWERS TO THE FOLLOWING

1. How to add a backdrop?
2. How to delete a backdrop?
3. How to add costume to a sprite?

Teacher's Signature



To turn a costume into a separate sprite, right-click (Mac Ctrl+click) and select "turn into a sprite".

CHAPTER 5

SPRITE MANIPULATION, CREATING OWN SPRITES

INTRODUCTION

Every new project starts with one sprite (the cat) already loaded, but you can also add as many of your own as you want, or you can edit or delete the cat.

CREATING SPRITES

As with backdrops, there are four icons for creating a sprite:

- Choose sprite from library
- Paint new sprite
- Upload sprite from file
- New sprite from camera

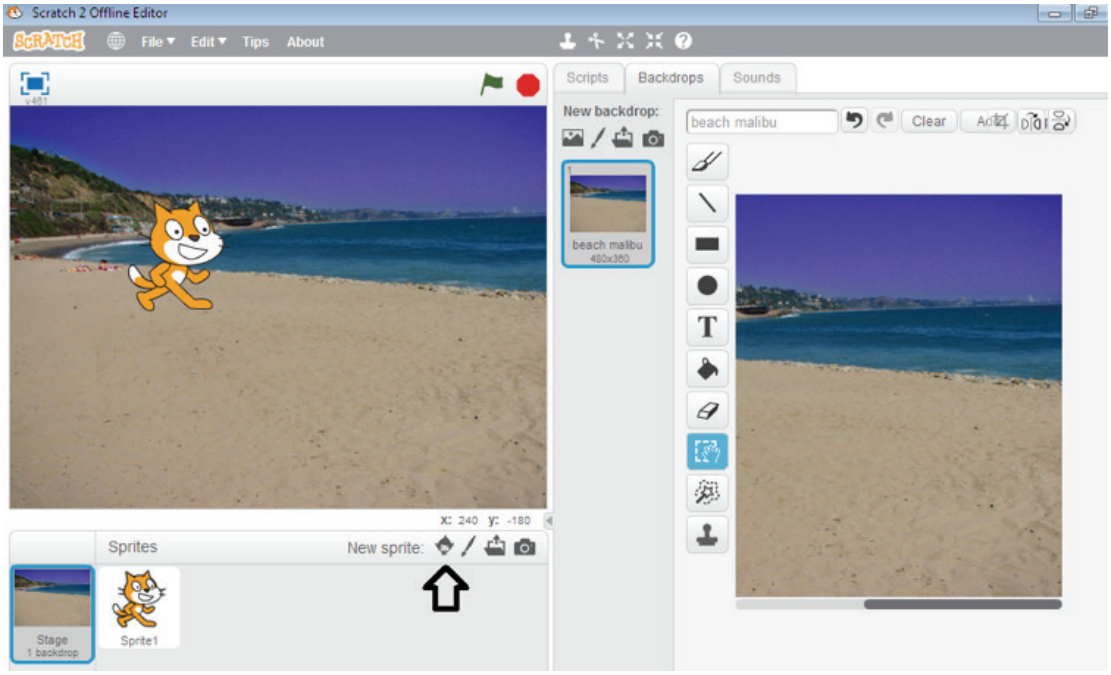
Note that if you want to use a graphics file such as a png to create your sprite, you upload that as a costume, not a sprite. Sprites are stored as a specific file type which is only usable in Scratch.

Tool	Explanation
New sprite: 	 Choose a sprite from the Sprite Library
	 Create a new sprite
	 Import (upload) a sprite from local file
	 Create a sprite via taking photo

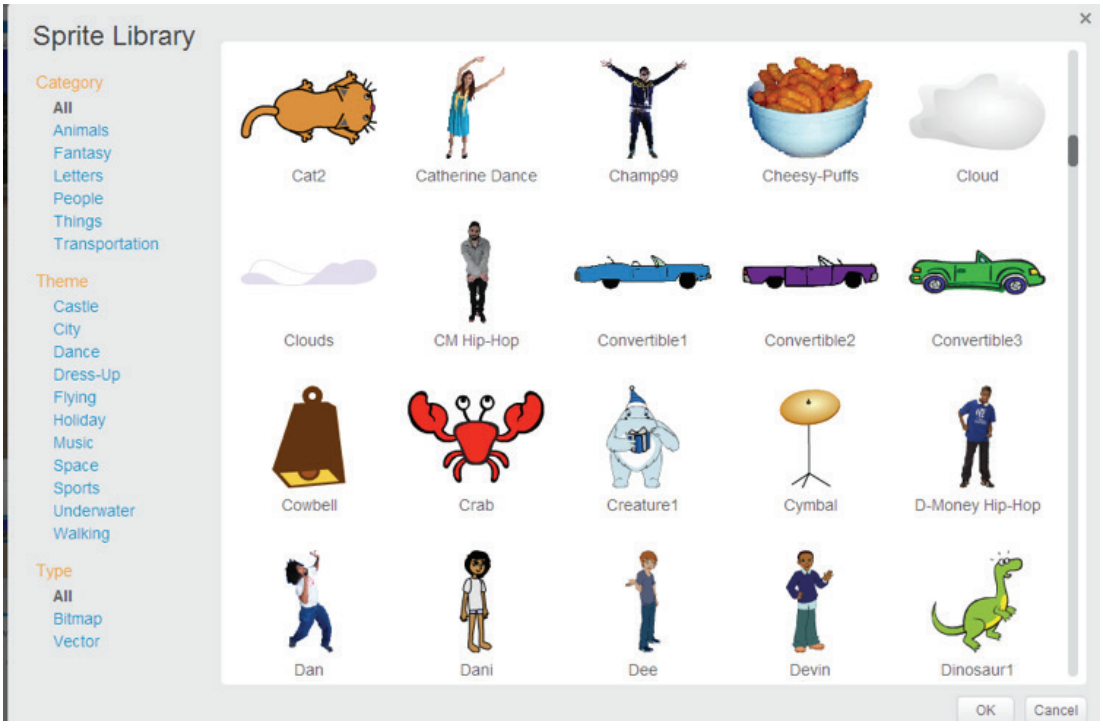
CREATING A SPRITE FROM THE LIBRARY

Let's start with the simplest way of creating a sprite: by importing one from the library.

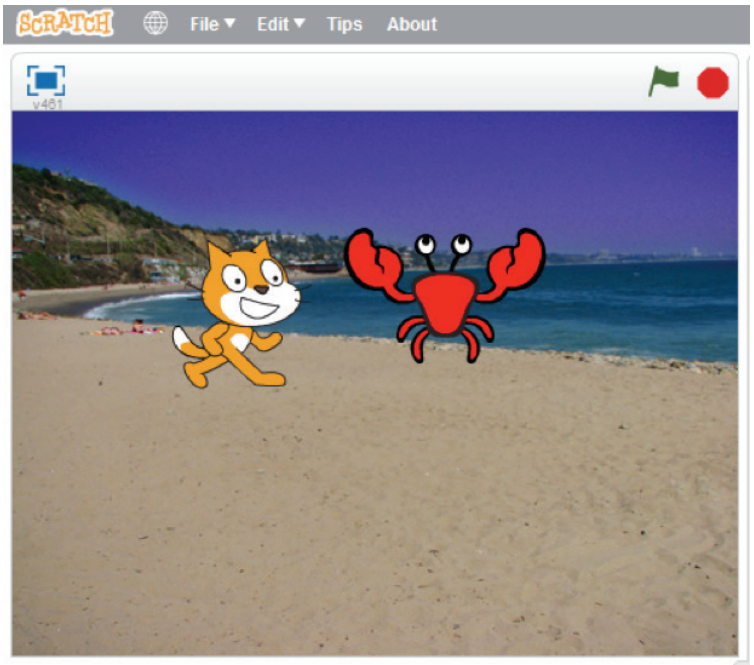
In the **Sprites** pane below the stage, click on the icon immediately to the right of the **New sprite** text, to view the library:

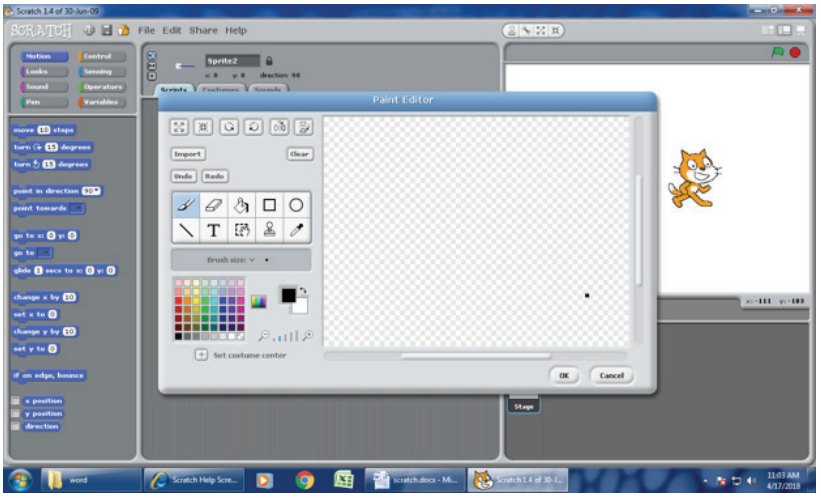


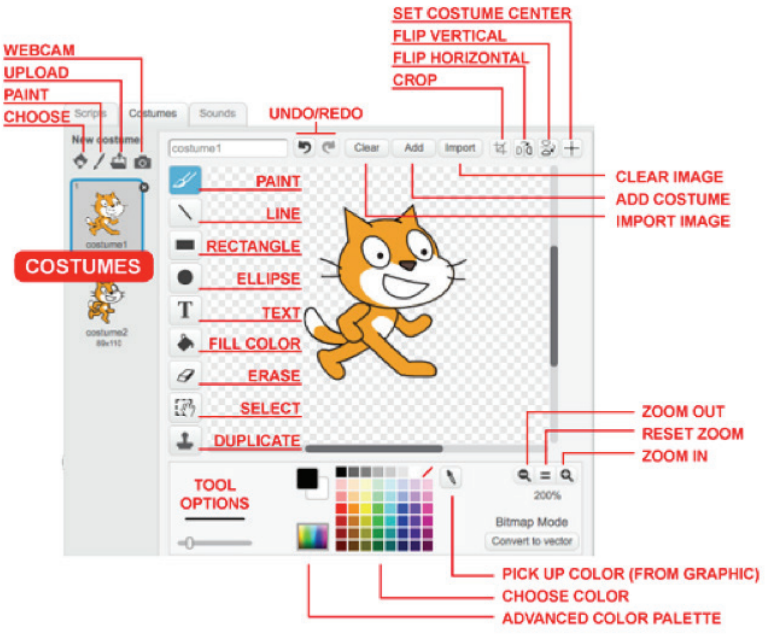
Choose a sprite from the ones on offer: Choose a crab.



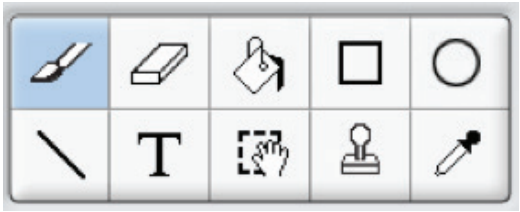
Click **OK** and the new sprite will be added to your project:


SCRATCH
File
Edit
Tips
About


SCRATCH
File Edit Share Help
Paint Editor


WEBCAM
UPLOAD
PAINT
CHOOSE
SET COSTUME CENTER
FLIP VERTICAL
FLIP HORIZONTAL
CROP
UNDO/REDO
Scripts
Costumes
Sounds
costume1
Clear
Add
Import
PAINT
LINE
RECTANGLE
ELLIPSE
TEXT
FILL COLOR
ERASE
SELECT
DUPLICATE
COSTUMES
CLEAR IMAGE
ADD COSTUME
IMPORT IMAGE
ZOOM OUT
RESET ZOOM
ZOOM IN
TOOL OPTIONS
200%
Bitmap Mode
Convert to vector
PICK UP COLOR (FROM GRAPHIC)
CHOOSE COLOR
ADVANCED COLOR PALETTE

Using paint editor, create and paint your own new sprite as shown above.



Navigate to the portion of the paint editor. The buttons found on this toolbar, reading left to right top to bottom are: Paint Brush, Eraser, Fill Tool, Rectangle Tool, Ellipse Tool, Line Tool, Text Tool, Selection Tool, Stamp Tool, and the Eyedropper Tool. Here is a brief break down of what all these tools do.

Paint Brush: This tool allows you to paint freely. You can change colors using the Eyedropper tool or clicking using the Color Palette located below the toolbar. This tool has varying sizes.

Eraser: This tool allows you to erase drawings you have already made. Like the Paint Brush, you may change its size.

Fill Tool: The Fill Tool (or Paintbucket) allows you to click somewhere and have everything of the same color that is adjacent to your cursor filled in a certain color.

Rectangle Tools: With this tool you may draw filled or unfilled rectangles by dragging a box with your cursor.

Ellipse Tool: This tool functions the same as the Rectangle Tool except it creates shapes that are circular or elliptical.

Line Tool: This tool draws lines of your chosen color from the place where you first clicked to your cursor.

Text Tool: This tool allows you to type text in a variety of fonts.

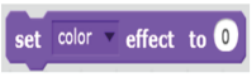
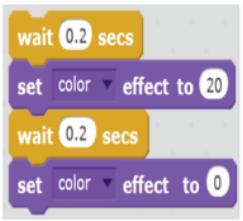
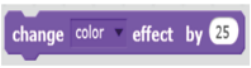
Selection Tool: This tool allows you to select a region of your picture and move it.

Stamp Tool: This tool allows you to select an area and then paste it down again elsewhere by clicking.

Eyedropper Tool: The Eyedropper Tool is used for clicking on a color and then having that become your selected color.

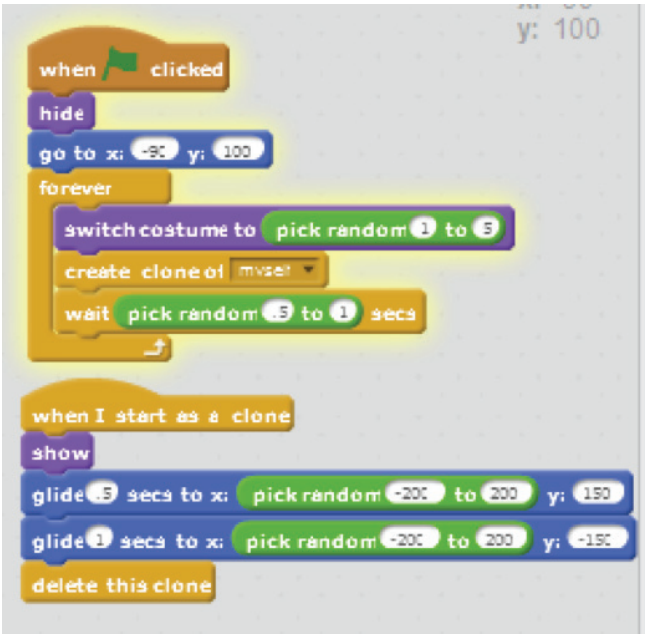
These are the main tools you will use in the Scratch paint editor.

Now you can change the colour of the spirte by following the steps

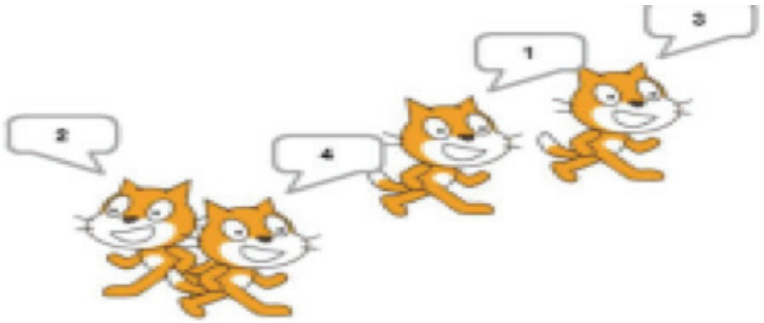
Block	Explanation	Example
	Change the sprite's color to the color number you set	
	Change the sprite's color based on its current color	

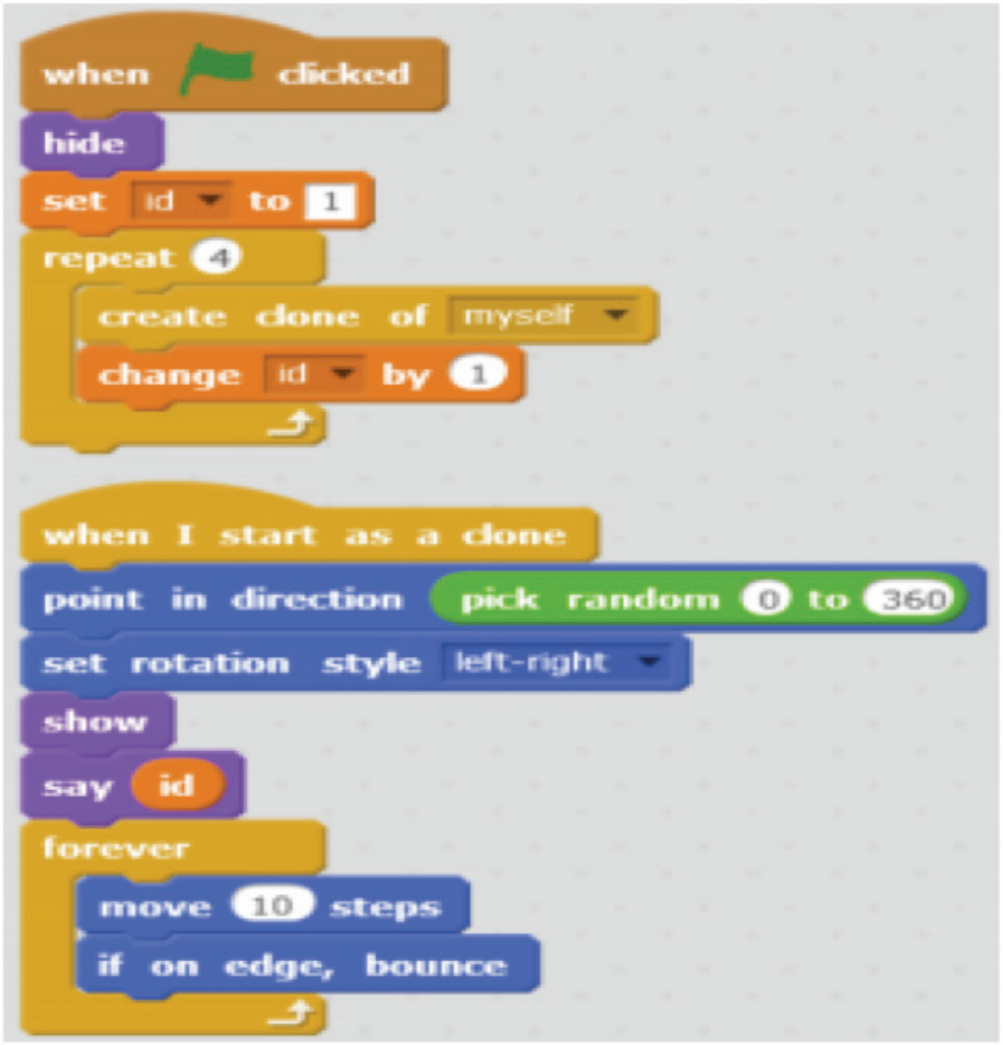
Drag in the **"set color effect"** and **"change color effect"** to change the colour of the sprite you have created.

Choose a backdrop, create a clone of your sprite, and let them race with each other. You can also use the random blocks from the Operators button as given.



Clone the sprite by dragging in the commands as shown below.


2
4
1
3


when clicked
hide
set id to 1
repeat 4
create clone of myself
change id by 1
when I start as a clone
point in direction pick random 0 to 360
set rotation style left-right
show
say id
forever
move 10 steps
if on edge, bounce

BRAIN DEVELOPER

I) MATCH THE FOLLOWING

	A	B
		IMPORT
		TAKING PHOTO
		CREATE A NEW SPRITE
		SPRITE LIBRARY

II) CHOOSE THE BEST ANSWER

1. This tool allows you to paint freely.
   a) Paint brush b) eraser c) ellipse d) rectangle

2. This tool allows you to erase drawings you have already made.
   a) Paint brush b) eraser c) ellipse d) rectangle

3. With this tool you may draw filled or unfilled rectangles by dragging a box with your cursor.
   a) Paint brush b) eraser c) ellipse d) rectangle

4. This tool allows you to type text in a variety of fonts.
   a) Text I b) eraser c) ellipse d) rectangle

5. This tool allows you to select an area and then paste it down again elsewhere by clicking.
   a) Paint brush b) eraser c) stamp d) rectangle

Teacher's Signature

CHAPTER 6

CONDITIONAL DECISION MAKING STATEMENTS

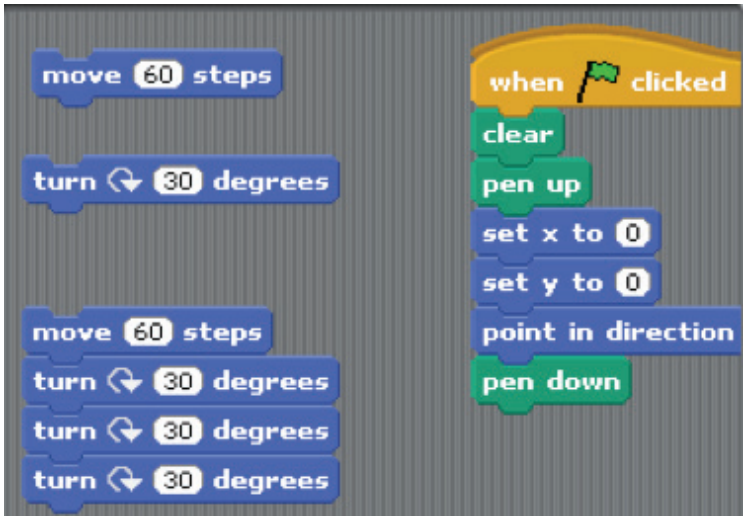
INTRODUCTION

In this chapter we are going to learn about the various decision making statements like loop, Conditional statements like if.

ONE KEY APPLICATION

Make sure the pen is down by dragging the pen down block from the pens blocks into the scripts section of the design environment and double clicking on it.

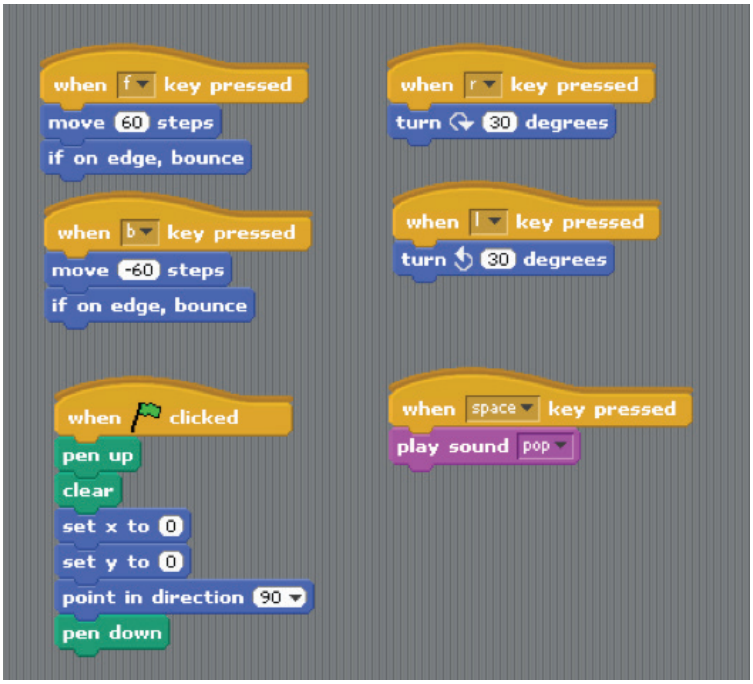
In the onekey application move 60 corresponds to the forward command and turn 30 to the right command. There is plenty of scope to draw square, triangles, and hexagons by double clicking on the relevant control block. Right click on the items to copy them and fit them together to execute a sequence of commands. Copy a collection of sequences to create the required shapes.



Now manually you can turn around the sprite by using some keys. We are using when – key pressed command.

DID YOU KNOW?

You can drag in an animated gif.



CONDITIONAL STATEMENTS

Conditional statements have slots that are shaped with points on either side which evaluate to a true or a false value and execute if the statement is true. They are found in the **controls** programming blocks and are used for program flow with if, **repeat, forever,** and **wait** blocks. The conditional part of the statement is found amongst the **numbers** and the **sensing** areas

Conditions

In programming, a **condition** is something that must be true in order for something to happen. A condition is thus said to "evaluate to true" or "evaluate to false." In Scratch, any block whose label says "if," "when," or "until" is a sort of conditional construct.

One such block is:

The construct above is generally known as an "if construct." With it can we instruct a sprite to say hello only if, say, the user has depressed the mouse button:

A related construct is the "if-else construct":

With the above construct can we instruct a sprite to say hello or goodbye, depending on whether the user has depressed the mouse button:

Realize that these constructs can be nested to allow, for example, for three different conditions:

The above construct could be called an “if-else if-else construct”.

Another conditional block is:

Yet another such block is:

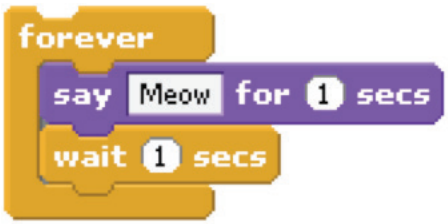
Sometimes, you want one or more statements to be executed multiple times in a row. To implement this behavior, we turn our attention to LOOPS.

Loops

In programming, a **loop** can induce multiple executions of statements. In Scratch, any block whose label begins with "forever" or "repeat" is a looping construct.

One such block is:

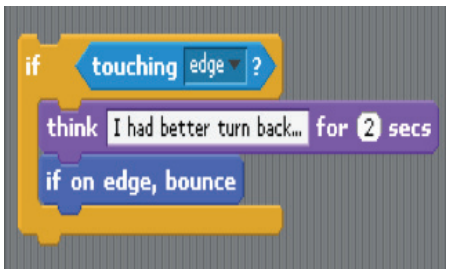
This construct allows us, for instance, to instruct a sprite to meow every other second:



Another block allows you to loop a specific number of times:

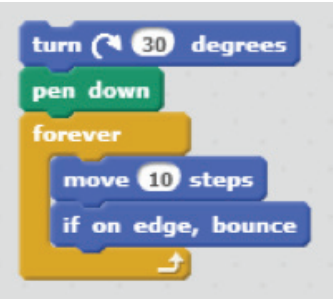
And another block allows you to loop until some condition is true:

Conditional statements ask questions about the program state to choose from a set of different sequences of commands. In Scratch for example, you can determine whether you are at the edge of the stage with the **if touching edge** control block

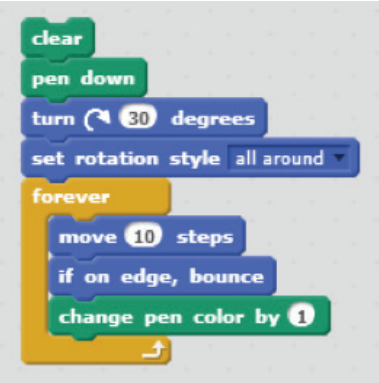


HAVE FUN IN DOING THE FOLLOWING

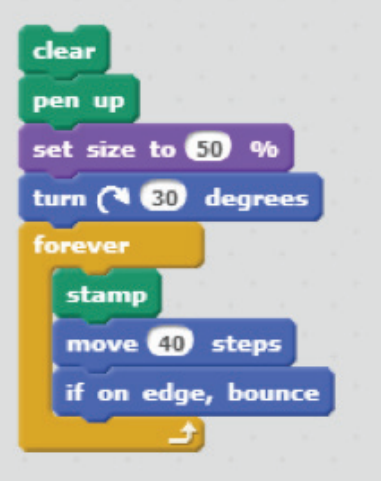
Now that it makes crazy moves, let us trace its path!



Tired of blue color? Let us change the colors along the way!



Instead of tracing its path, you want more cats?



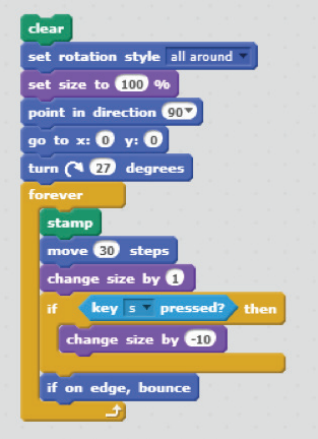
Circle of cats!

As it moves & turns, make an impression using stamp!

Extra steps above repeat loop help us to see the whole big circle of cats!

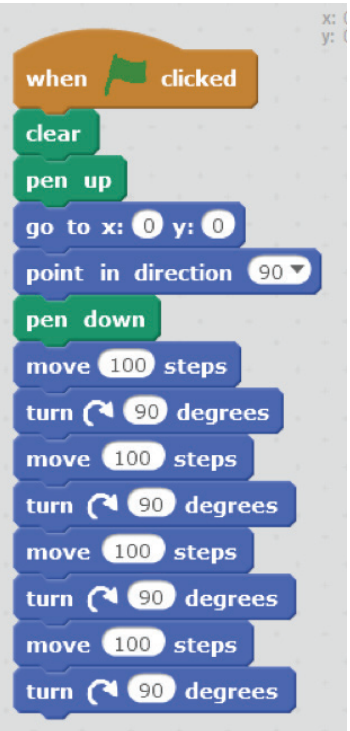
Multi-size cat problem!

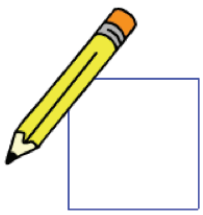
Cats keep growing until you press s! Then, it becomes small, but they start growing as soon as you release s key.



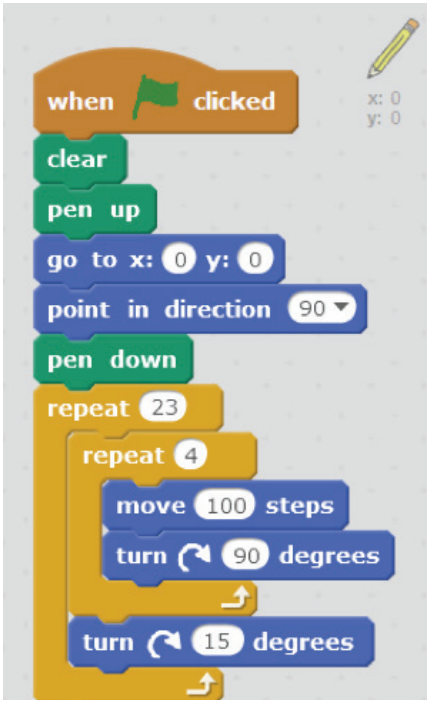
Now let us select Pencil from sprite library & delete cat. You can delete the cat. Now edit the costume of Pencil and adjust the size and position so that the tip aligns with + sign.

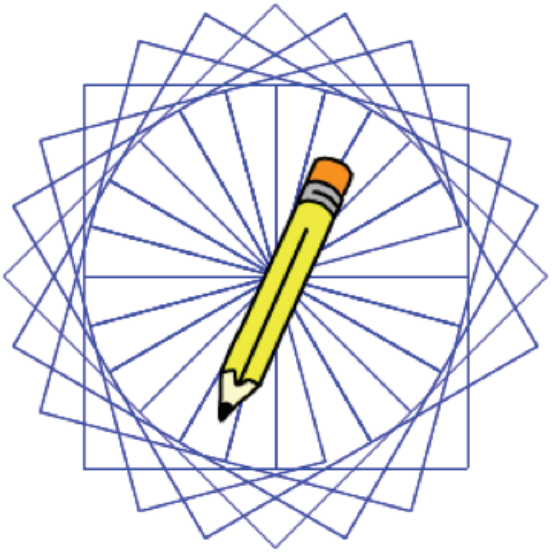
Now, review this code closely and guess what shape it is going to draw first.





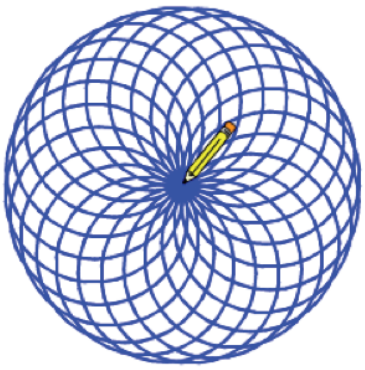
Now, modify this code and learn to draw a few other related shapes.

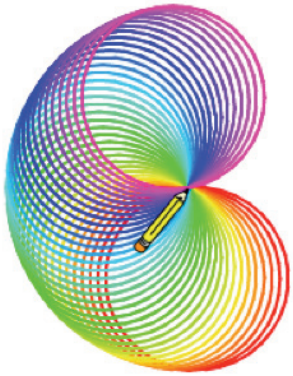




Now try these shapes on your own.

Self assessment:





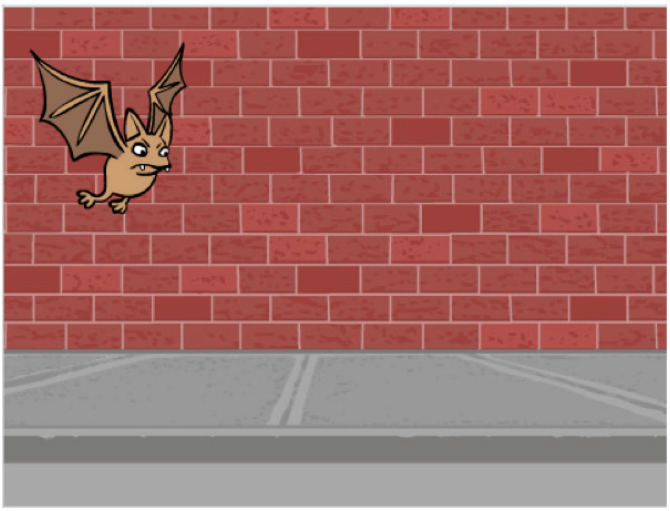
Animation In Scratch

Follow the following steps to make the project:

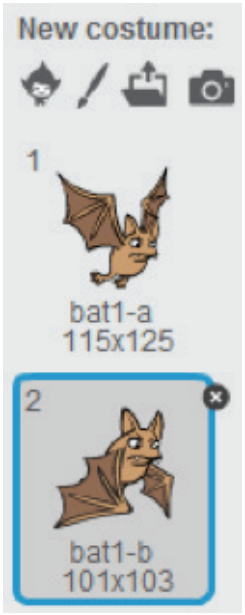
First you have to setup the stage. Select stage and import 'Brick Wall 1' from the Background library form file menu.

Choose the bat sprite from the library. Delete the panda sprite.

Place the bat above ground as shown in figure.



The bat have two costumes (bat1-a and bat1-b) to make the flying animation of the bat.



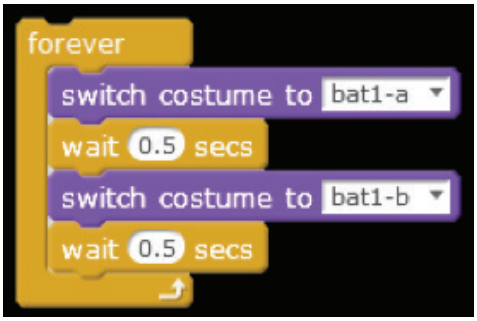
Bat Costumes

To change the costume of the bat, you have to use switch costume block from looks palette. In the drop down menu you will get the option to change the costume to bat1-a or bat1-b.

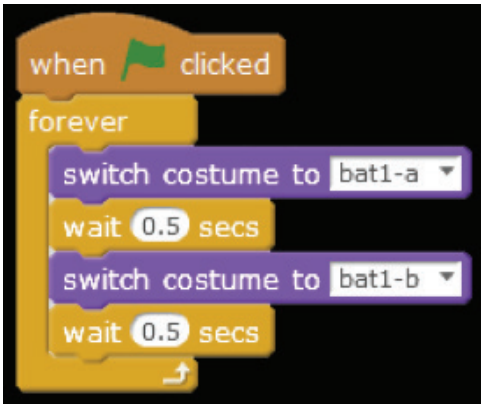
Switch costume

Once you click on the block, it will be highlighted and the command will be executed. To animate the bat at a certain speed, we will add wait block from control palette for 0.5s. Then, we will again switch costume to bat1-b.

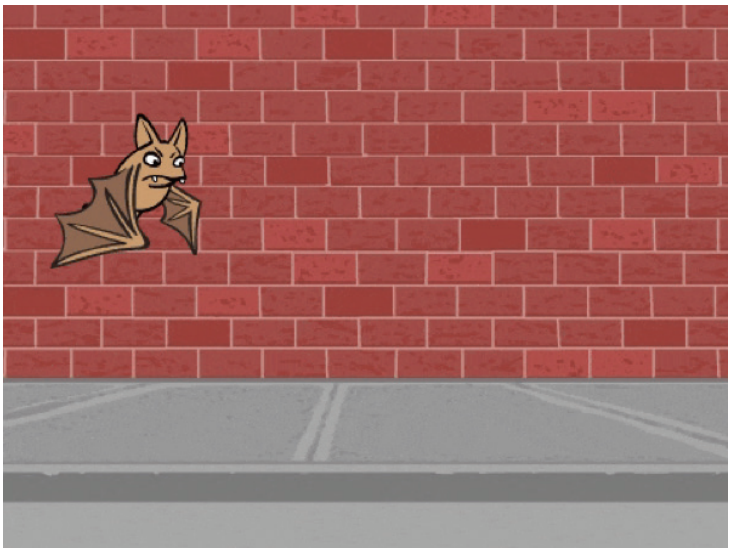
When you click the script, the bat will change costume to bat1-a, wait for 0.5s, switch costume to bat1-b and wait for 0.5s. This happens only once. Thus we will add forever block from control palette, to repeat the process.



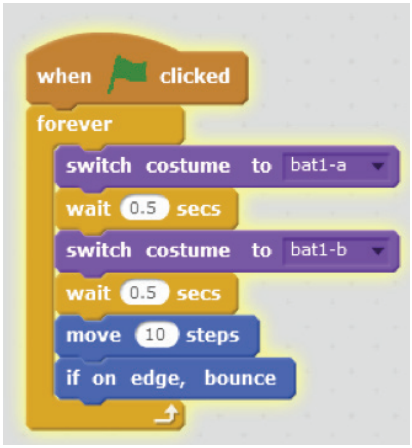
Again for running the script you have to click on the script. To run the script, whenever an action is perform, you add hat blocks. In this case we will add when flag is clicked block from event palette.



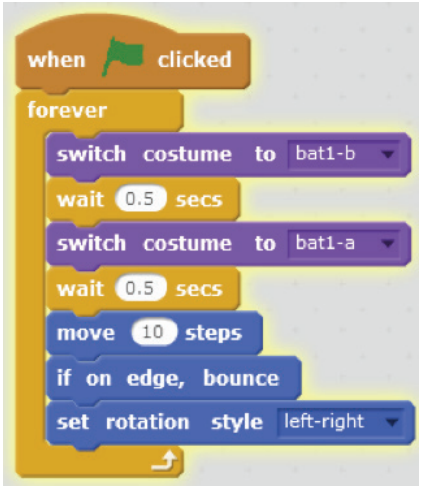
Your animation is ready



If you want your animation to move within the frame use the following code.



Other alternative code is



BRAIN DEVELOPER

I) FILL IN THE BLANKS

1. _____ is a loop statement.
2. _____ statement repeats continuously.
3. _____ statement check the condition.
4. _____ used to move pen.
5. _____ used to write with pen.

DO IT YOURSELF

1. Create and wish "happy birthday" through a scratch project to your friend as shown below.
2. Complete the conversation between two Sprite characters regarding conservation of water and use conditional decision making statements to show the effects of not conserving water like changing the backstage to desert, etc.
3. Create a small Scratch project with the sprite 1 as Mike and sprite 2 as a spaceship.Complete the Sprites' conversation with each other using message command.
4. Make a Cassy dancing sprite project with spotlight stage backdrop and play sound until 30 seconds.

Teacher's Signature

User Skill Typing Tutor

TYPING TUTOR INTRODUCTION

- The knowledge of touch typing has become inevitable today in the use of computers.
- With typing tutor, you can learn touch typing in an easier and simple way.
- It is very similar to you that there are 26 letters in English alphabet. All these 26 letters are presented in the computer keyboard too.
- But, 26 letters are not arranged in an alphabetical order.
- The letters in the keyboard is arranged in QWERTY order.

TYPING STEPS

Follow the steps below:-

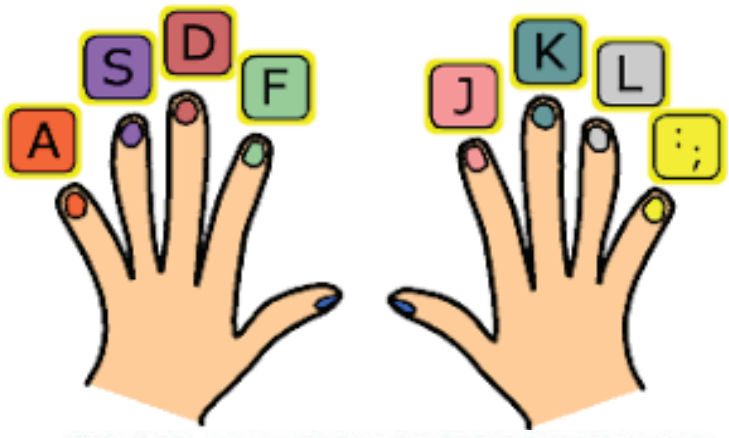
Step 1: First of all place your hand on the keyboard.

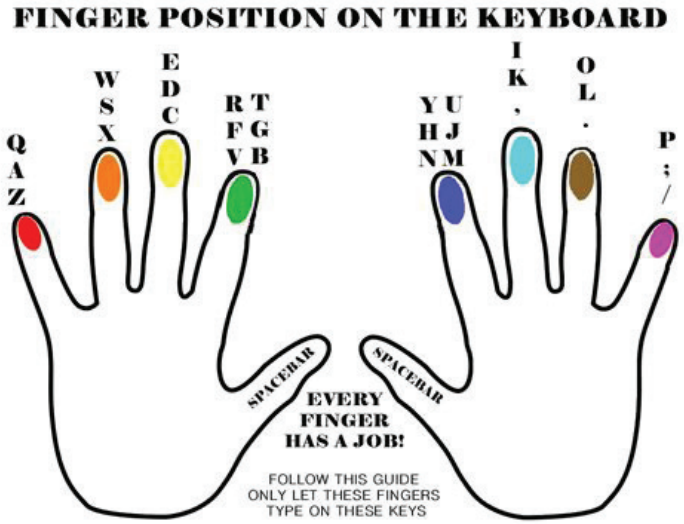
Step 2: Place your

- Little finger of your left hand gently on the 'A'
- Ring finger on ' S '
- Middle finger on ' D '
- Index finger for both ' F ' and ' G '

Step 3: Place your

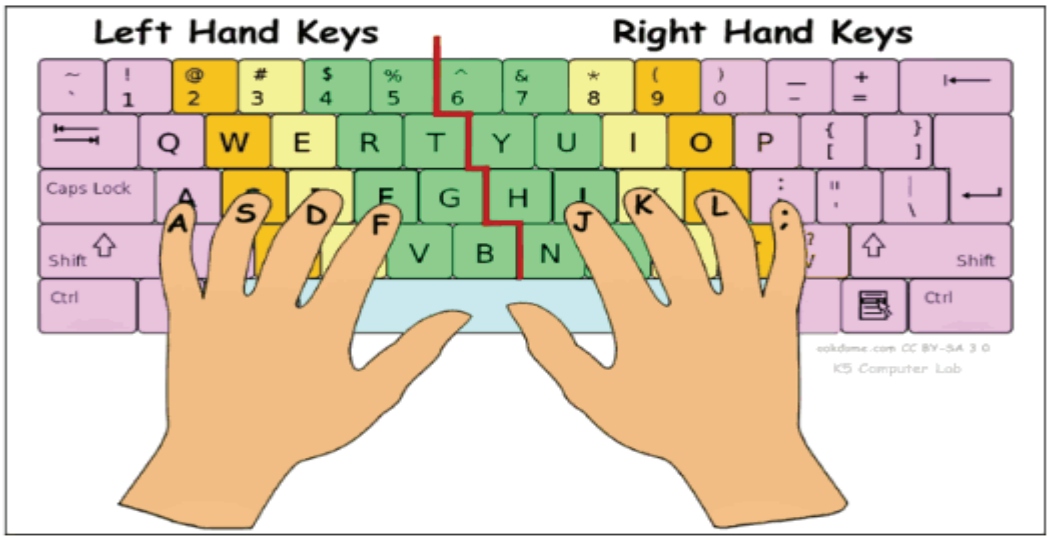
- Little finger of your right hand gently on the key semicolon ' ; '
- Ring finger on ' L '
- Middle finger on ' K '
- Index finger for both ' H ' and ' J '





Step 4: Place both your left and right thumbs on the spacebar key.

Proper Finger Placement on the Keyboard



Lets start typing. Whatever it may be letter or numbers all most all the keys you can see around your fingers.

LEFT HAND FINGER

Name of the Finger	Keys on the Keyboard
Little Finger	A
Ring Finger	S
Middle Finger	D
Index Finger	F,G
Thumb	Spacebar

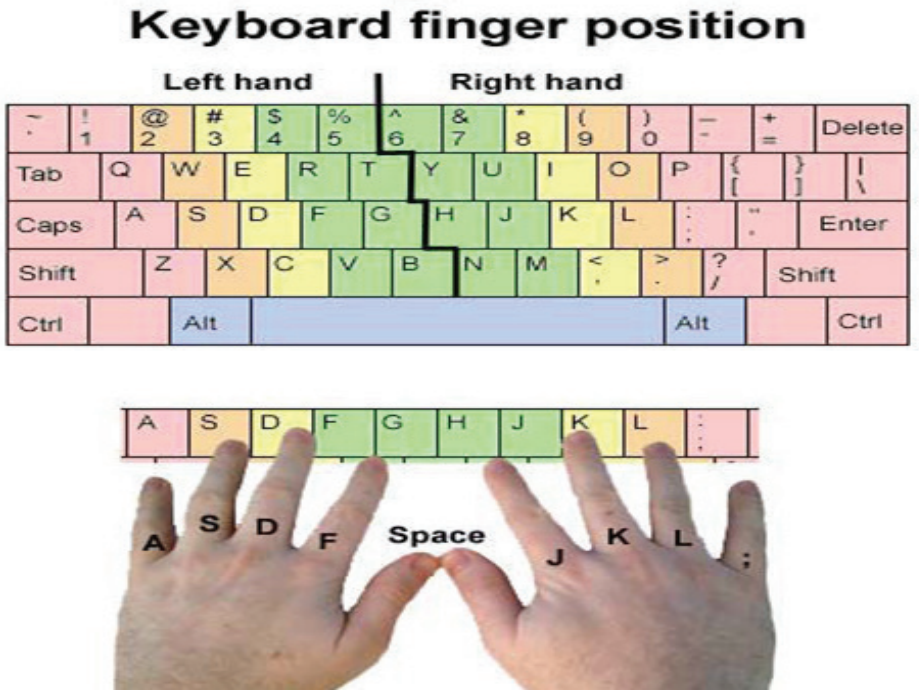
RIGHT HAND FINGER

Name of the Finger	Keys on the Keyboard
Little Finger	;
Ring Finger	L
Middle Finger	K
Index Finger	J,H
Thumb	Spacebar

THE QWERTY LAYOUT

The keys on the keyboard is arranged in QWERTY layout. The layout is referred to us as “QWERTY” because of the arrangement of the keys in the upper row is QWERTY.

HOME ROW



The finger of an experienced typist never "rest" However, if we could ask the fingers where they spend most of their time, it is over the home row.

When you are still learning to access keyboard, be careful to keep at least one finger of each hand anchored over the home row.

UPPER ROW / QWERTY ROW

QWERTY Row is located just above the Home row. It contains many number of characters.

LOWER ROW

Lower Row is located just below the home row, contains limited number of keys.

NUMBERS ROW

Numbers Row is located above the upper row, number keys are also available in a separate place at the right side of the keyboard.

ANCHORING

Anchoring means to keep a finger in very light contact with its home row key.

During the early stages of learning keyboard, this is necessary for the brain to develop a sense of position for the hands and fingers.

As you become a more skilled typist, your fingers will automatically move to the correct position of the keys.