

# CAIET DE ACTIVITATI NR 1

PROGRAMARE PENTRU COPII 7 - 17 ANI



# SCRATCH

# Caiet de Activitati Nr1-Scratch

## Caiet de Activitati Nr 01/17 - Programarea in Scratch

Scopul acestui document este de a furniza cunoștințe de bază în algoritmică pentru copiii între 7-14+ ANI la distanță fără sau cu foarte puțină experiență în codificare computerizată și algoritmică.

Obiectivul este ca ei să treacă prin acest document să obțină definiții și practică de bază necesară codării computerizate, independent de orice limbaj de programare.

Copii vor afla ce sunt declarațiile, variabilele, proceduri, funcții, bucle și cum pot fi manipulate. De asemenea, vor avea o primă privire la ceea ce este codarea computerizată orientată pe obiecte

În acest document, vom folosi Scratch 3.0 pentru a dezvolta algoritmi.

Are avantajul de a permite dezvoltatorilor să implementeze algoritmi folosind instrumente de programare grafică. În fiecare secțiune sunt propuse exerciții folosind Scratch

Majoritatea exercițiilor sunt ușoare și permit înțelegerea conceptelor.

Cu toate acestea, au fost inserate și exerciții notate cu stele \*\*.

Începătorii ar trebui să facă mai ușor exerciții cu prioritate și pot păstra exercițiile \*\* mai complicate pentru mai târziu!

Scratch este un software și un portal web gratuit dezvoltat de MIT pentru a le permite copiilor să învețe cum să dezvolte povești interactive și animații într-o manieră colaborativă.

Într-un proiect Scratch, poți controla spritele și le poți face să se miște, să interacționeze ... Dar limba

propusă pentru controlul acestor sprite conține toate structurile de bază necesare în orice

algoritmi.

Scratch poate fi folosit pentru a dezvolta orice fel de algoritmi. În continuare, pentru fiecare parte vor exista exerciții care vizează controlul spritelor, dar exerciții, de asemenea, pentru a proiecta algoritmi clasici mai teoretici.

# Caiet de Activitati Nr1-Scratch

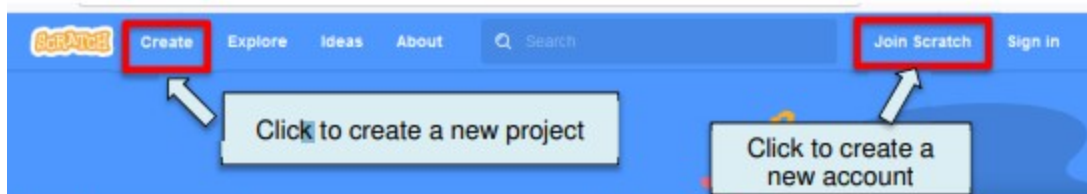
Instrumentul este disponibil online la adresa: <https://scratch.mit.edu/>.

Este disponibil și un wiki: [http://wiki.scratch.mit.edu/wiki/Scratch\\_Wiki](http://wiki.scratch.mit.edu/wiki/Scratch_Wiki).

În plus, este disponibil un editor offline: <https://scratch.mit.edu/scratch2download/>.

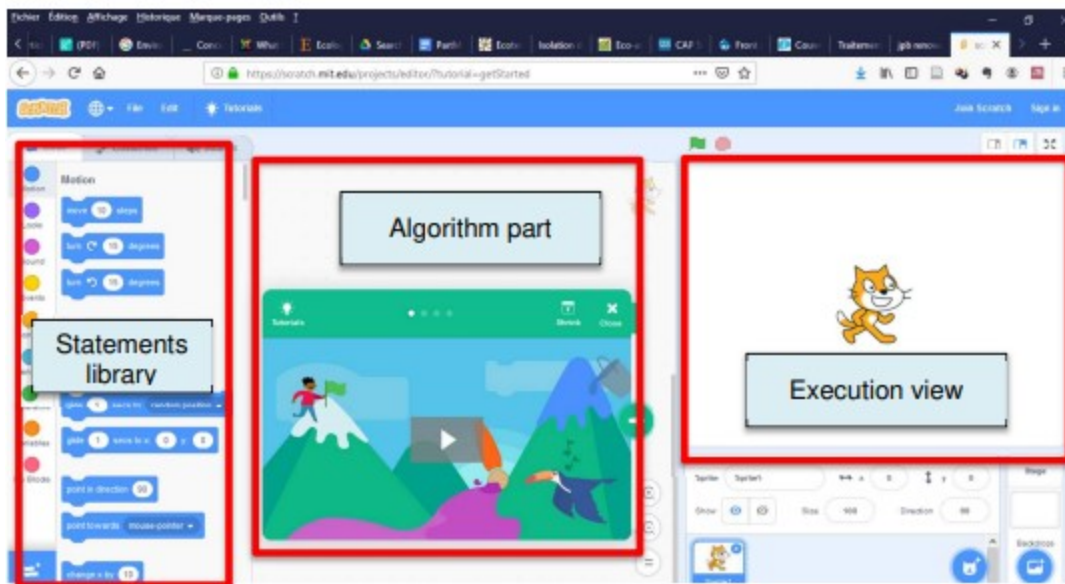
Când accesați site-ul web, puteți crea un cont gratuit pentru a vă salva proiectele.

Poti crea un proiect nou făcând clic pe meniul dedicat (Creare), chiar dacă nu ai un cont.



După ce ați creat un nou proiect, accesați interfața de unde vă puteți crea

algoritmi și observați rezultatul execuției lor (cu sprite-ul).



Cele trei părți principale ale interfeței sunt:

Faceți clic pentru a crea un proiect nou Faceți clic pentru a crea un cont nou

1. Vedere de execuție - Partea algoritmului Declarații bibliotecă
2. În dreapta: interfața grafică de utilizator care arată execuția algoritmului.
3. În special, puteți observa aici spritele, mișcările lor ...;

- în stânga: biblioteca de blocuri (instrucțiuni), pe care o puteți folosi pentru a construi algoritmi (în partea dreaptă);
- în centru: unde algoritmul va fi scris prin asamblarea blocurilor.

Pentru a construi un algoritm, trebuie doar să glisăm și să fixăm elemente din biblioteca de blocuri în partea algoritmului. Biblioteca conține un set imens de blocuri, ordonate pe categorii.

Fiecare categorie are o culoare. De exemplu, toate blocurile legate de mișcarea spritei sunt albastre.

Mișcare: blocuri pentru a muta sprite (mișcare, rotire, ...) și variabile

care se ocupă de poziția sau direcția lor

- Arată: blocuri pentru a modifica aspectul spritei. De asemenea

conține blocuri care permit spritei să spună orice.

- Sunet: tot ce ține de sunet.

- Evenimente: blocuri pentru a reacționa la evenimente, în special atunci când utilizatorul

face clic pe steagul verde.

- Control: blocuri care controlează execuția algoritmului, de ex.

condiționate, bucle ...

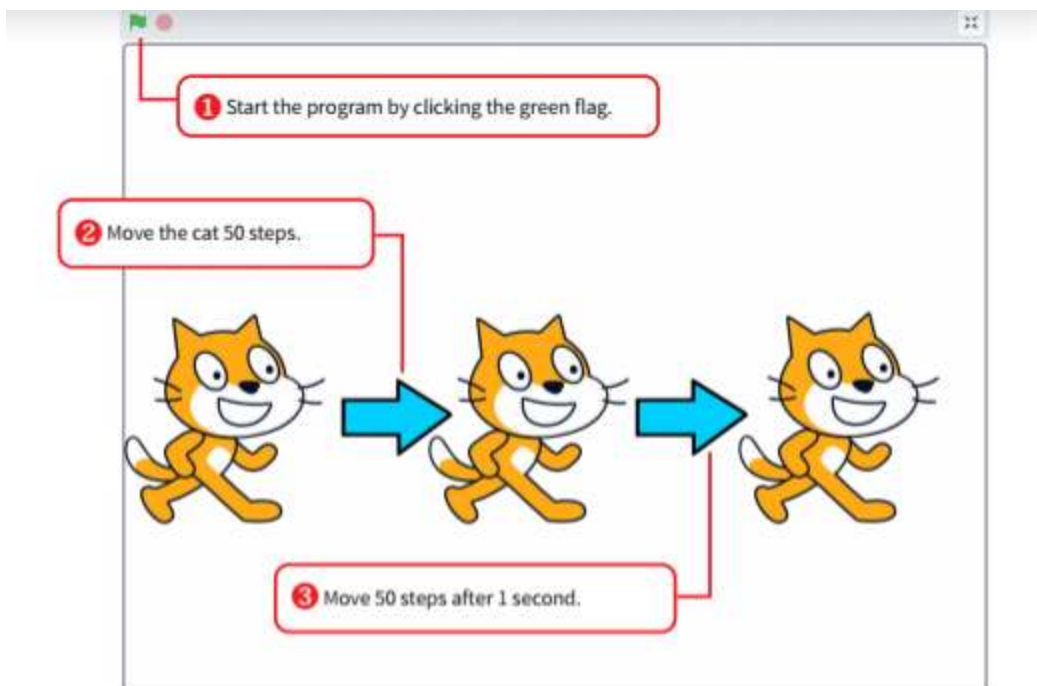
- Sensing: blocuri care tratează interacțiunile cu utilizatorul, în

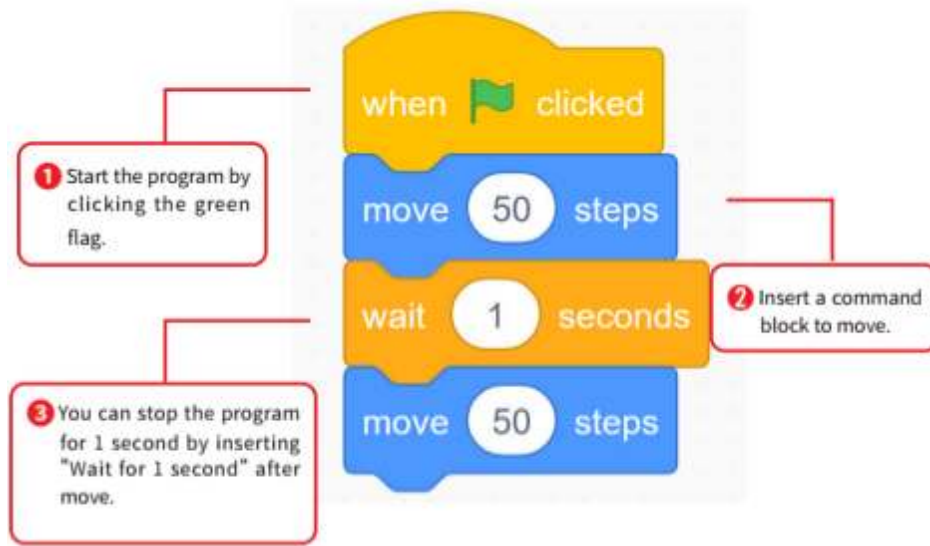
în special cu clicurile mouse-ului ... Permite, de asemenea, spritei să întrebe utilizatorii

a da o valoare.

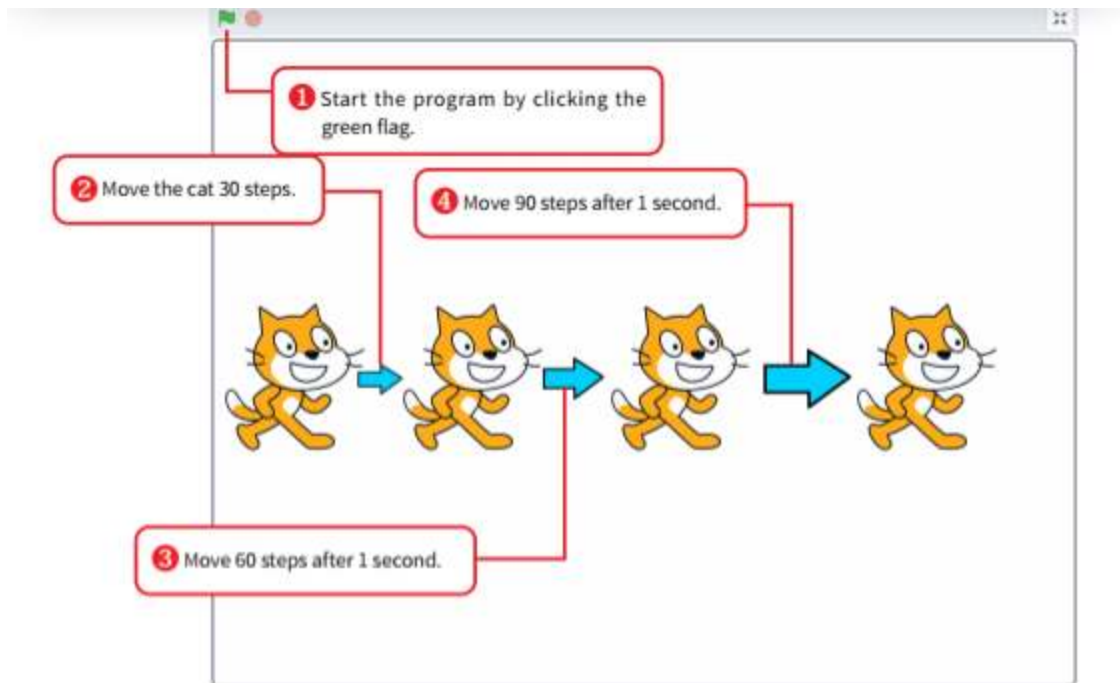
- Operatori: blocuri pentru a face calculul (adăugare, multiplicare ...), pentru a alege un număr aleatoriu, concatenează două șiruri, condiții de calcul ...
- Variabile: permit crearea de noi variabile și liste. Acestea oferă, de asemenea, declarații pentru a le gestiona.
- Blocurile mele: acestea permit crearea de blocuri noi, care vor fi utilizate în proceduri definite.

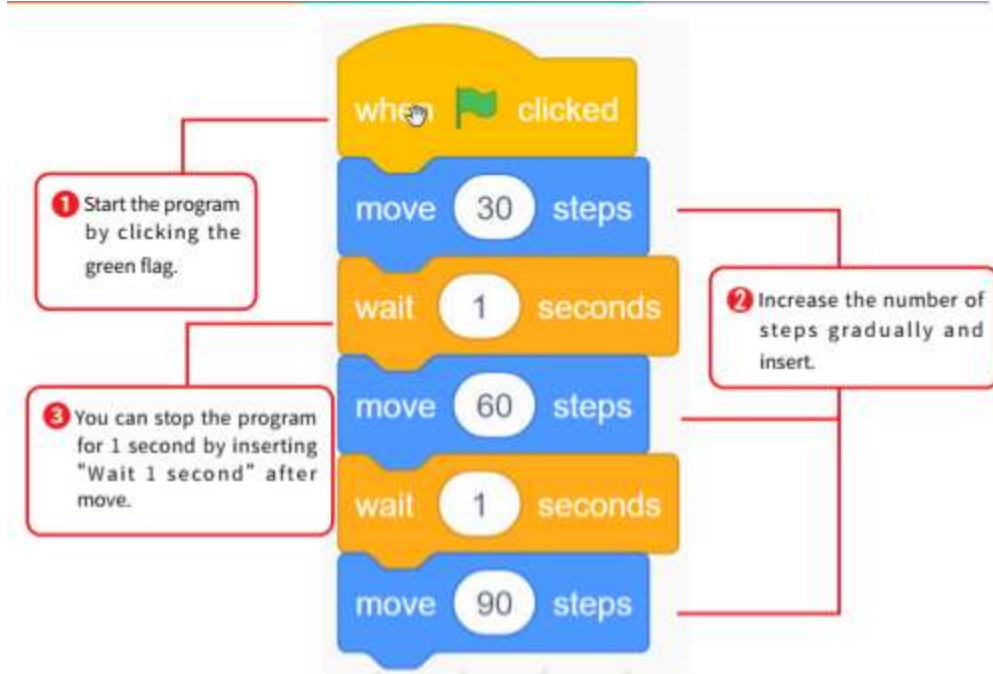
## A1 Înțelege Mișcarea Sprite



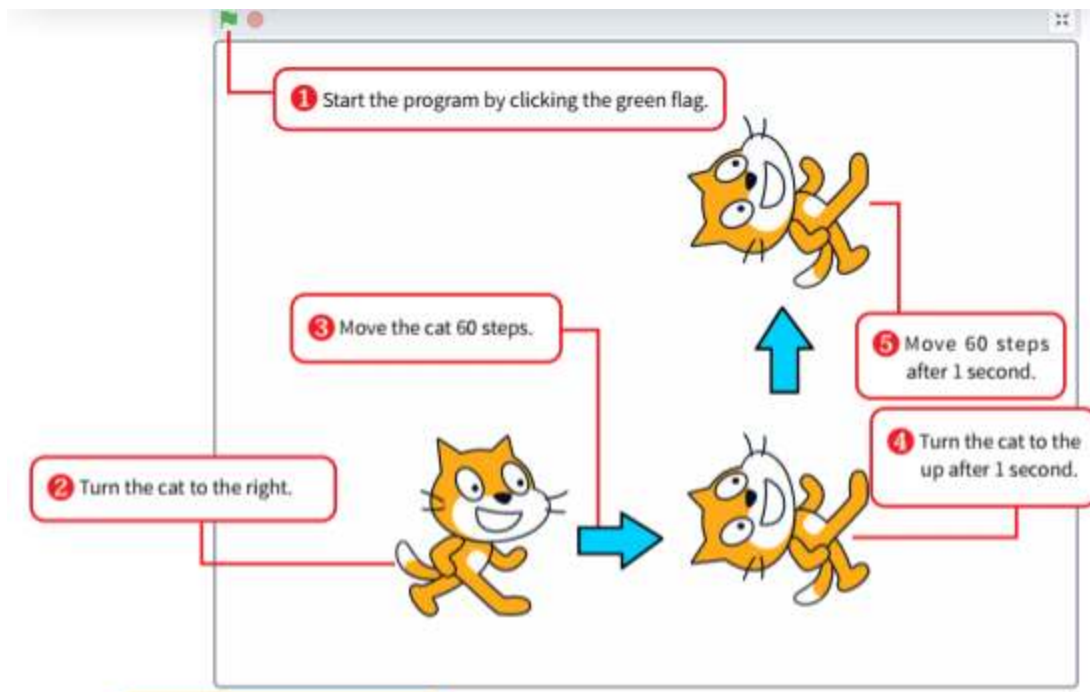


## A2 Intelege Miscarea Sprite 2

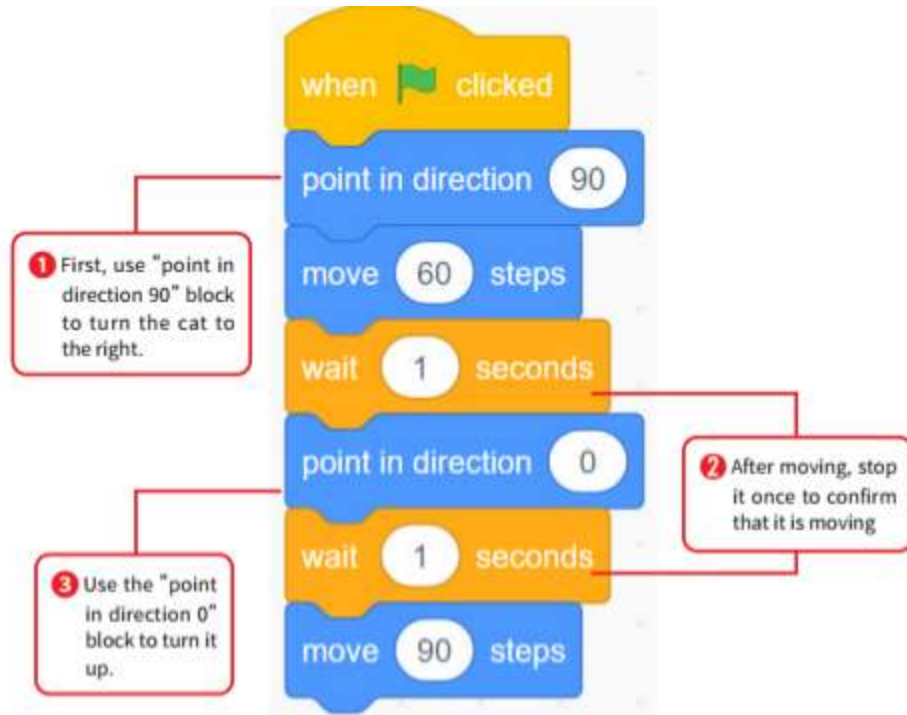




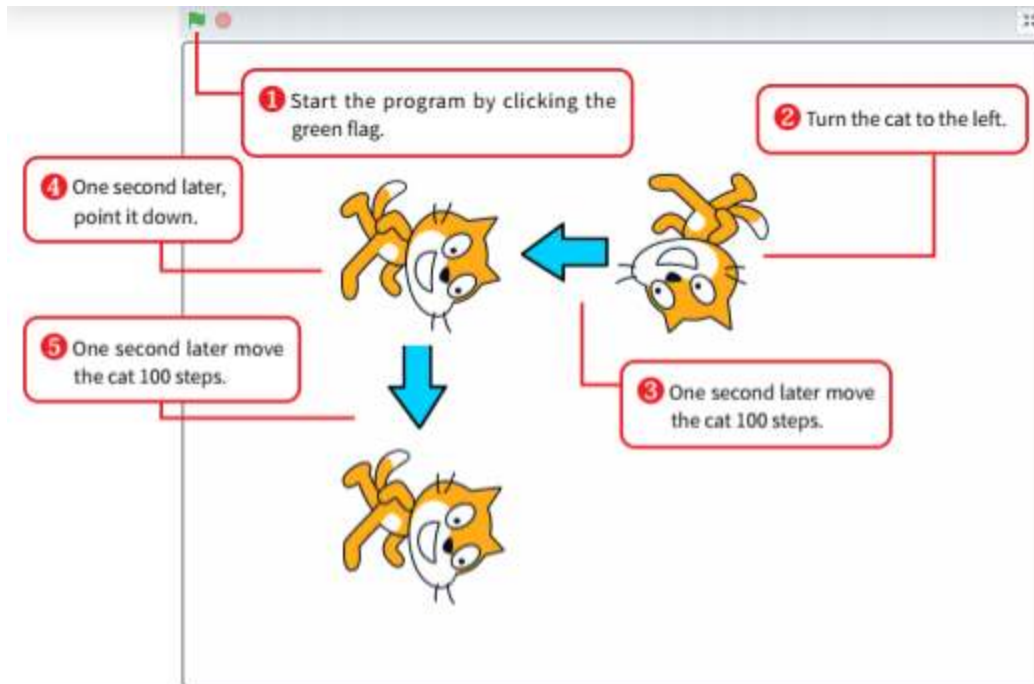
## A3 Orienteaza te in directia



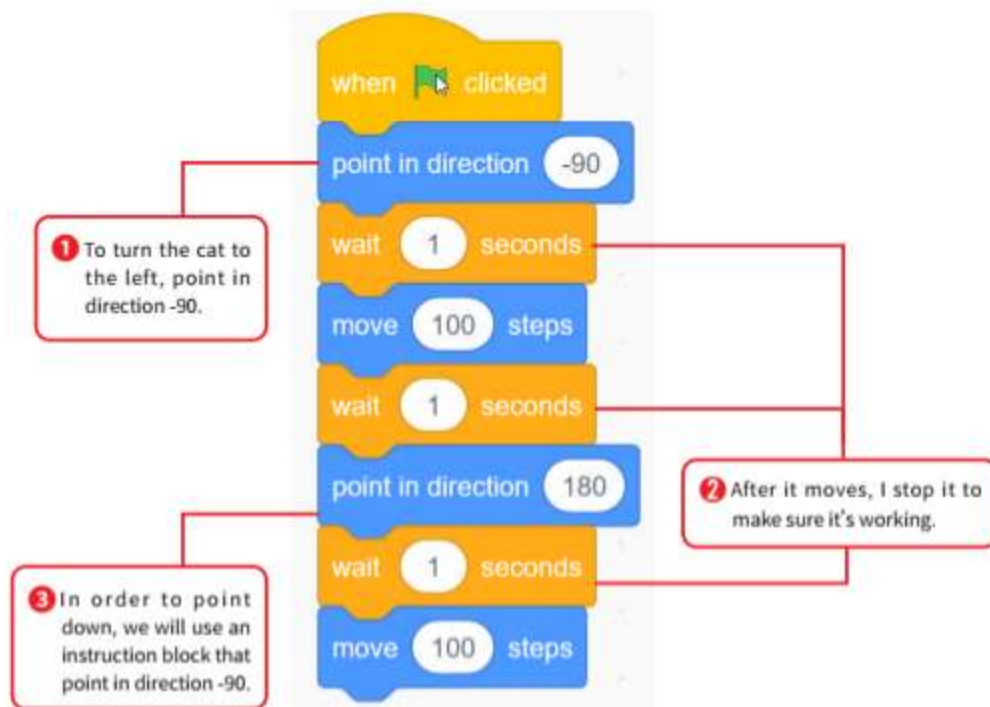




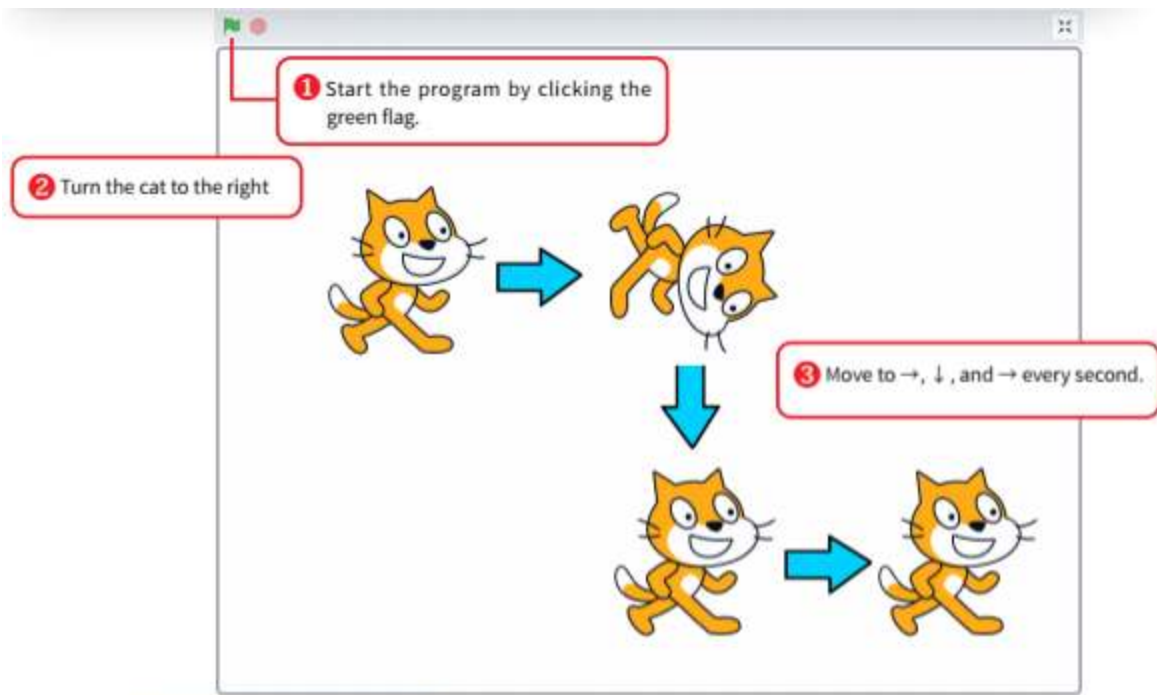
## A4 Orienteaza te in directia 2

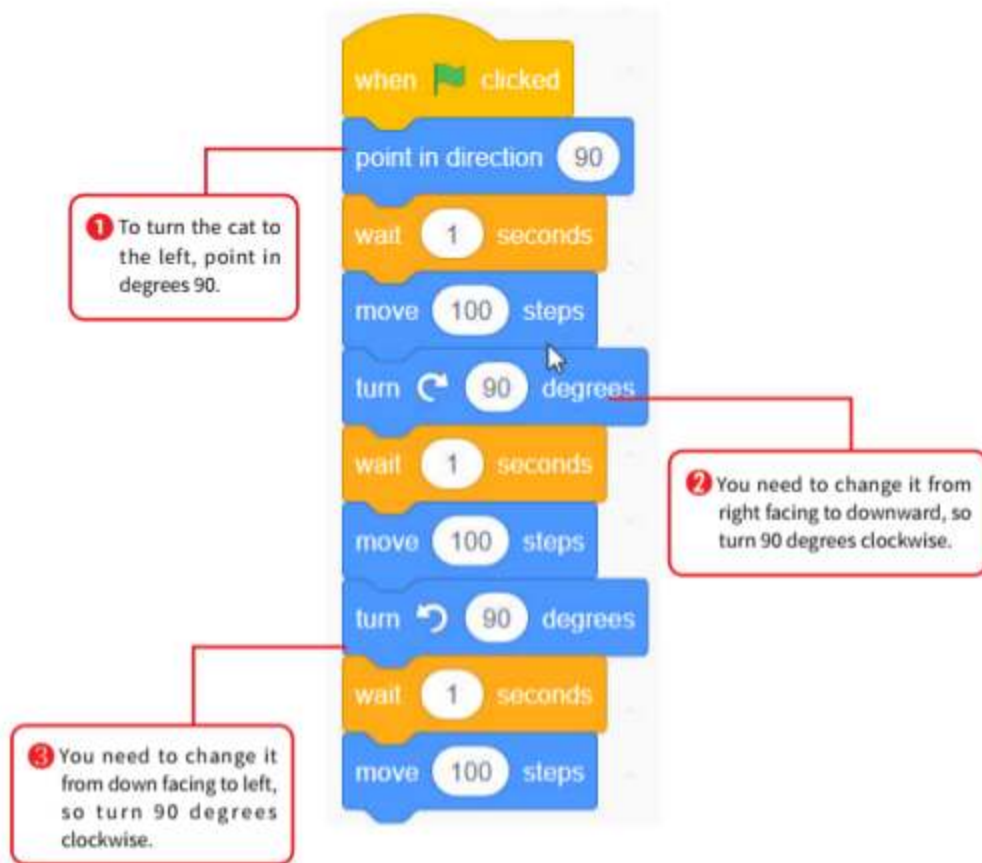






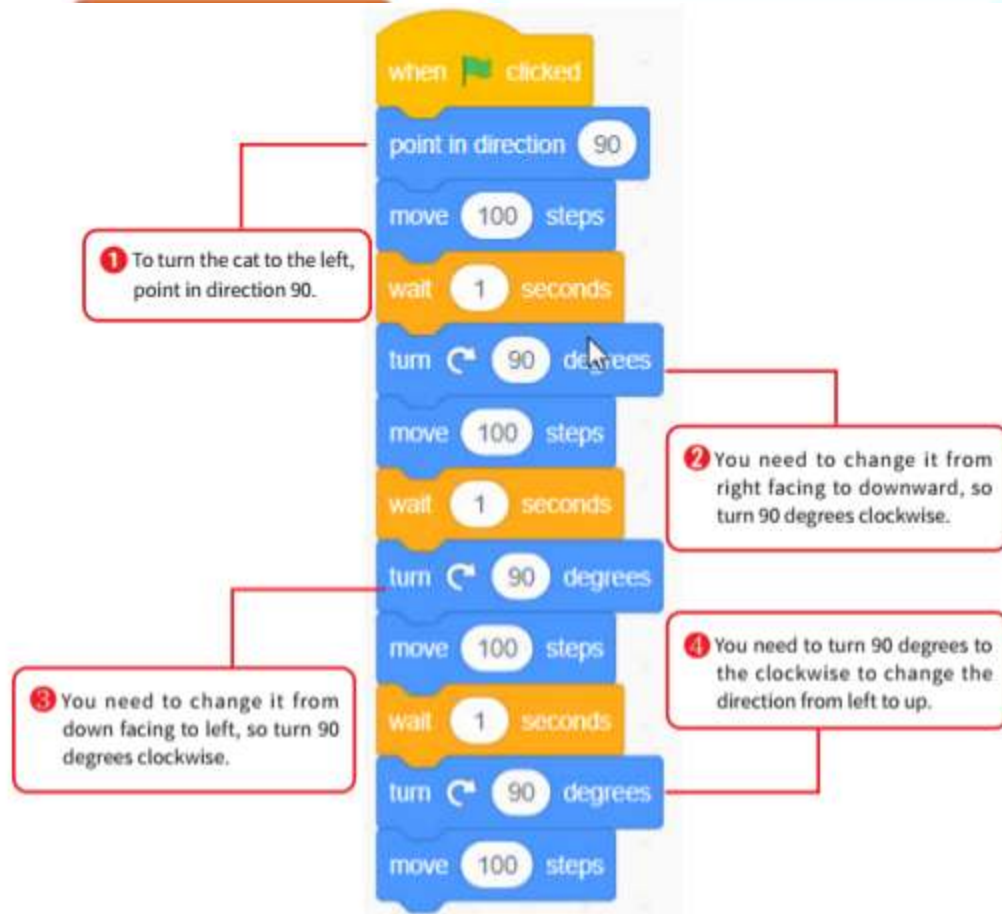
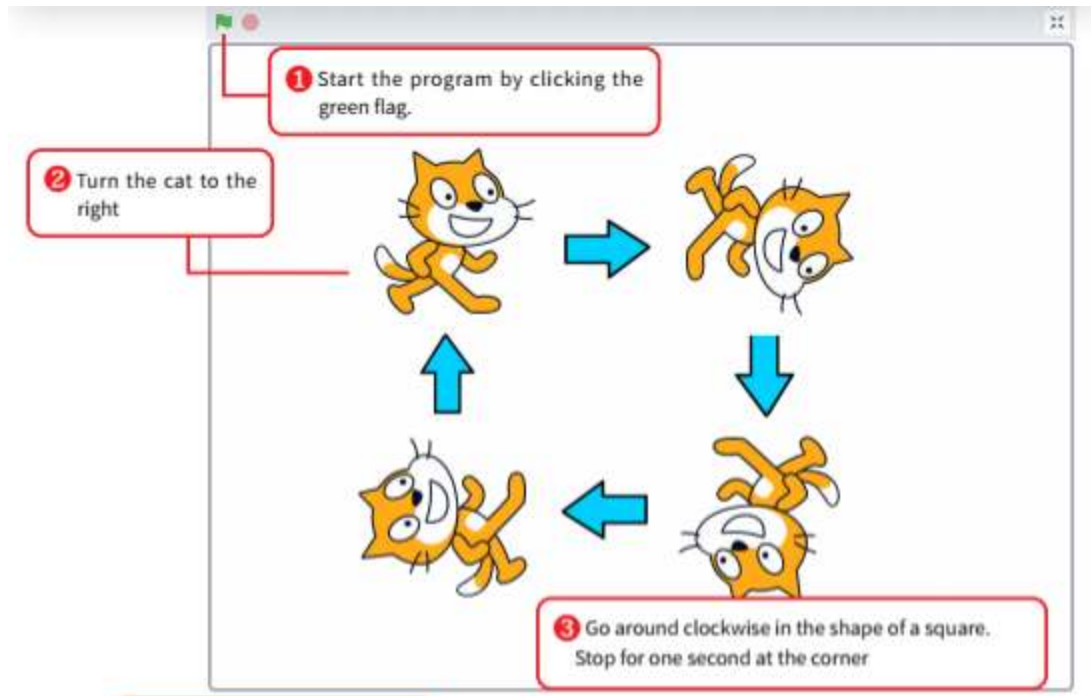
## A5 Miscare Zig Zag



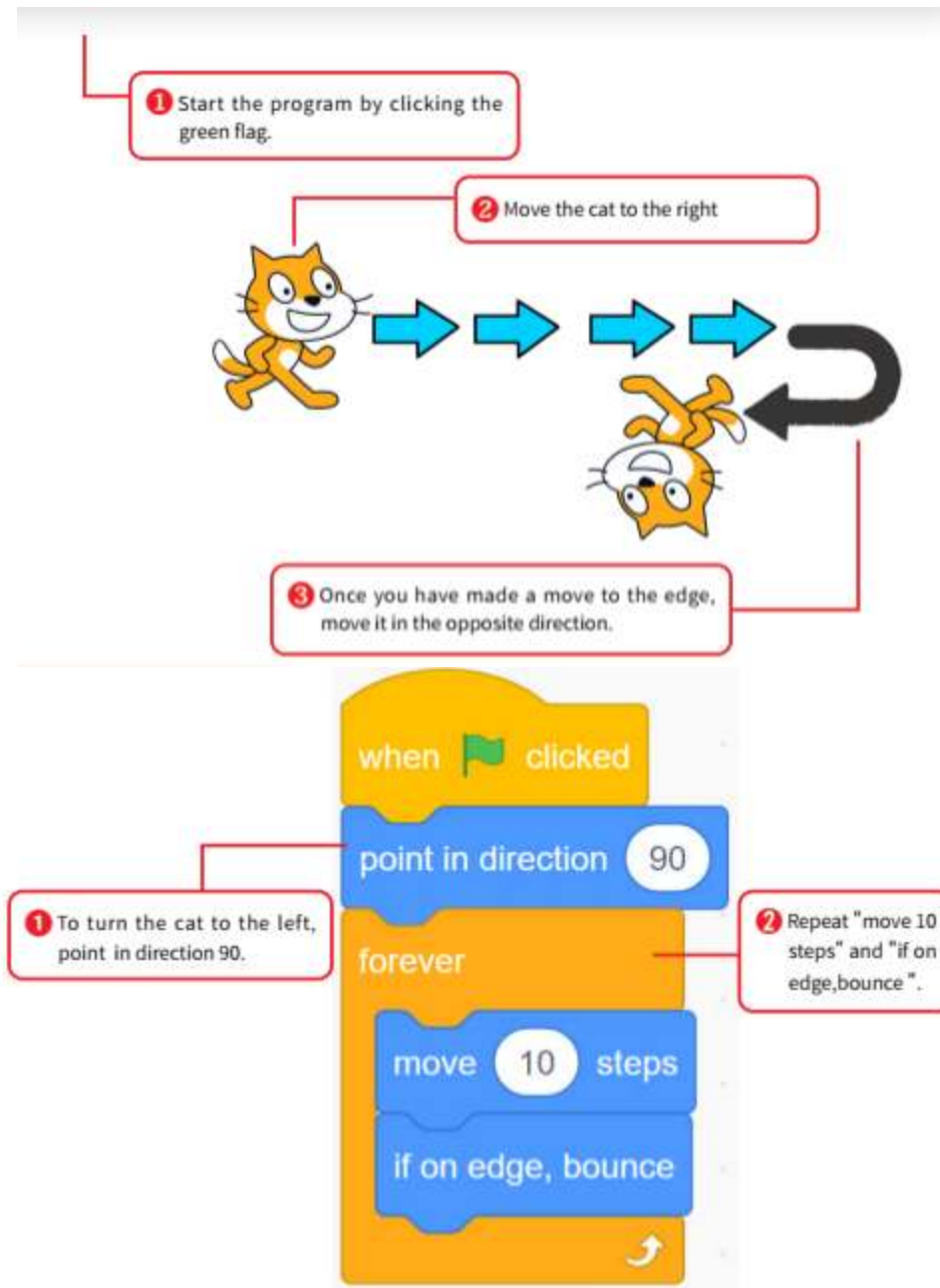


A6 Miscare in Patrat

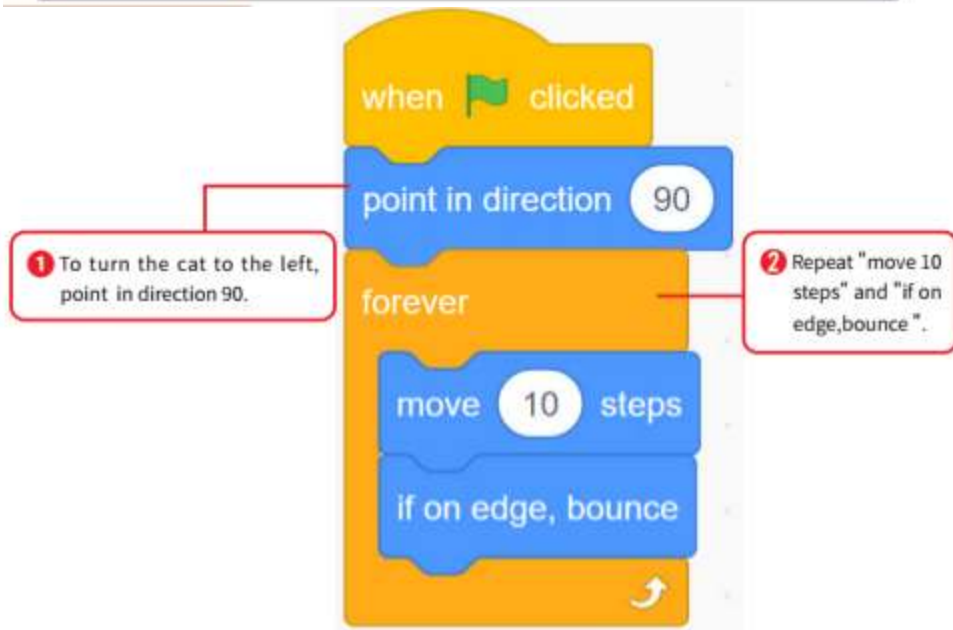
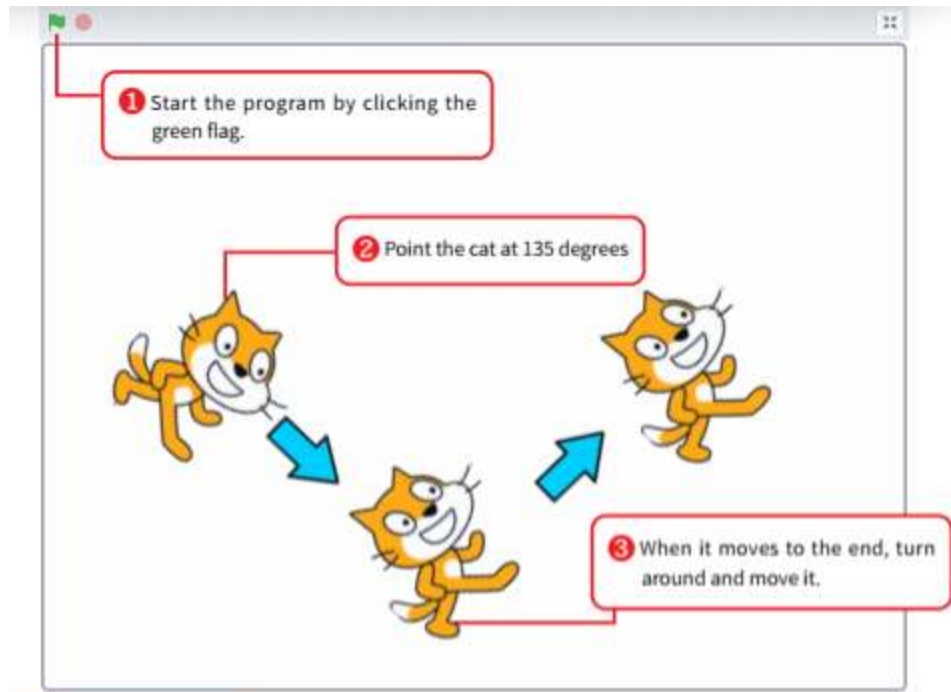
# CaietdeActivitatiNr1-Scratch



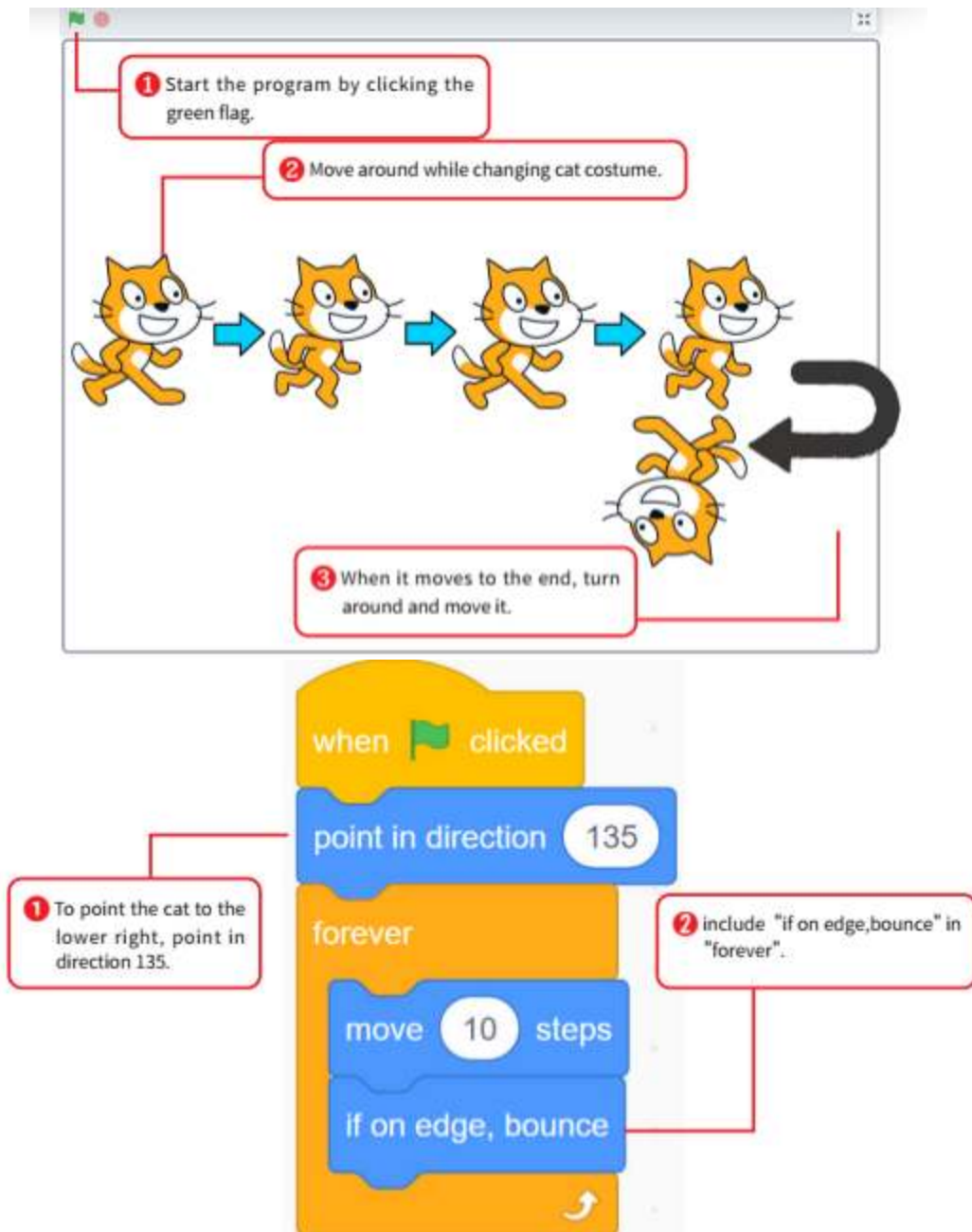
## A7 Animatie cu miscare staga dreapta



## A8 Animatie in unghi

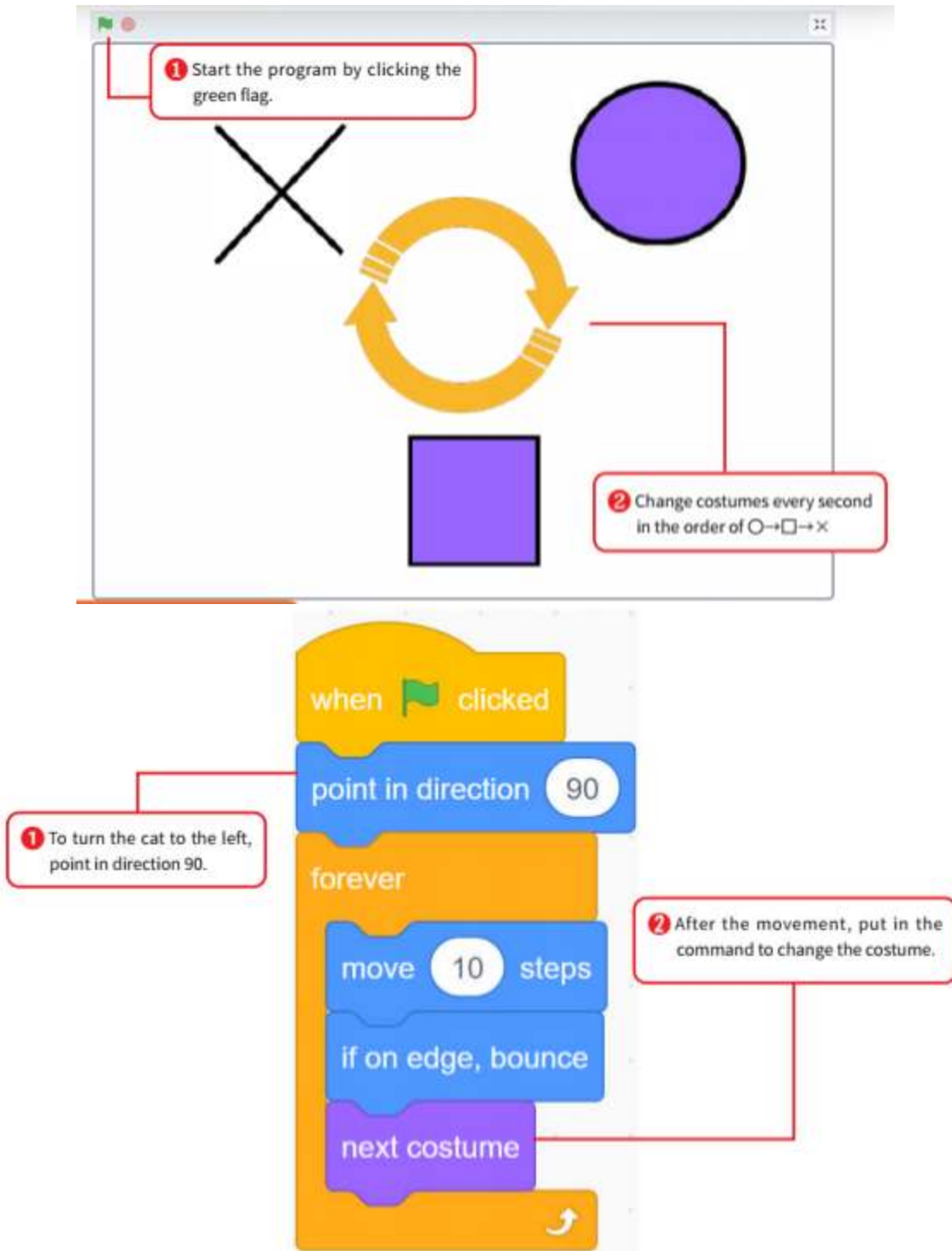


## A8 Animatie Plimbare



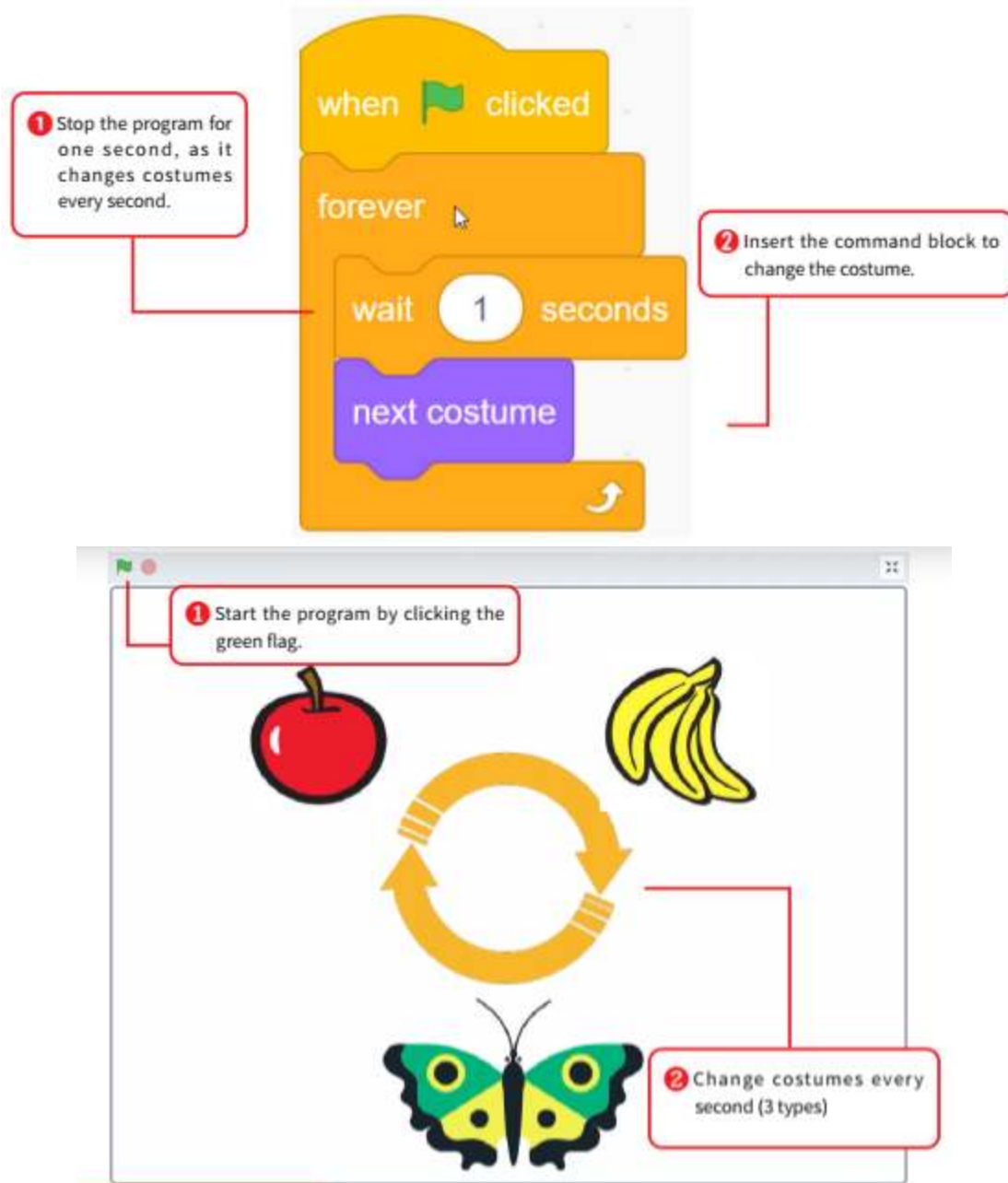
A10 Mai multe costume





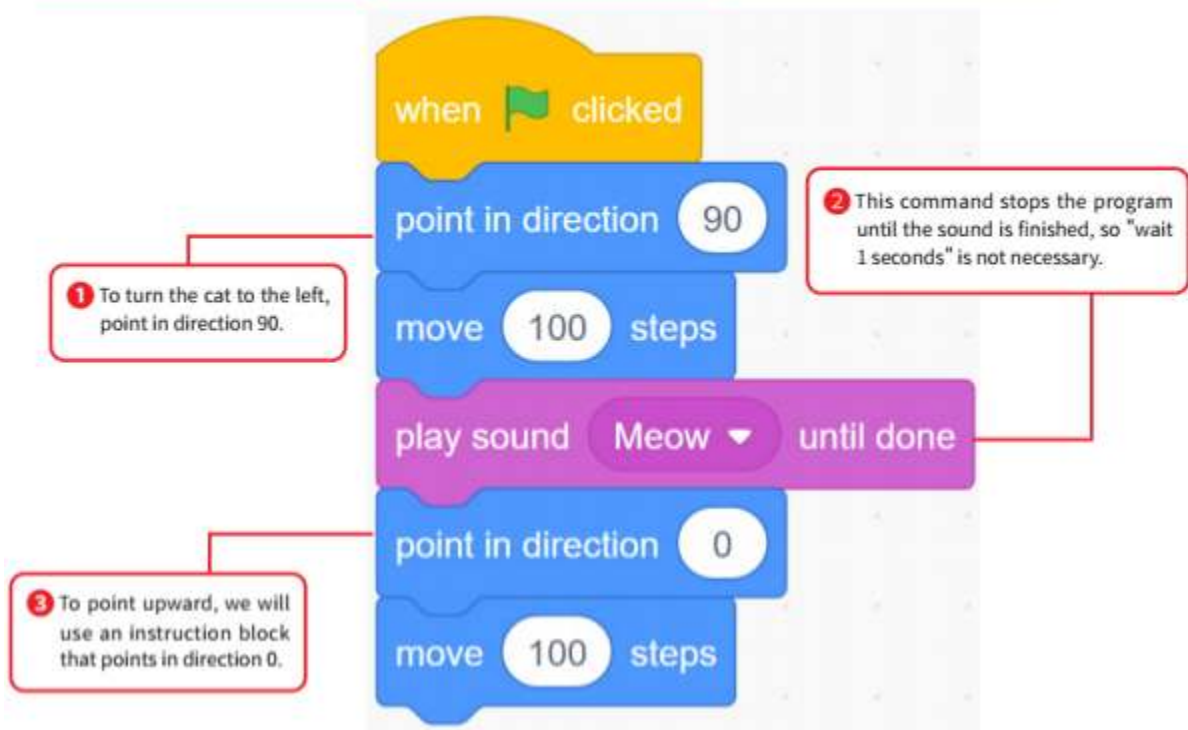
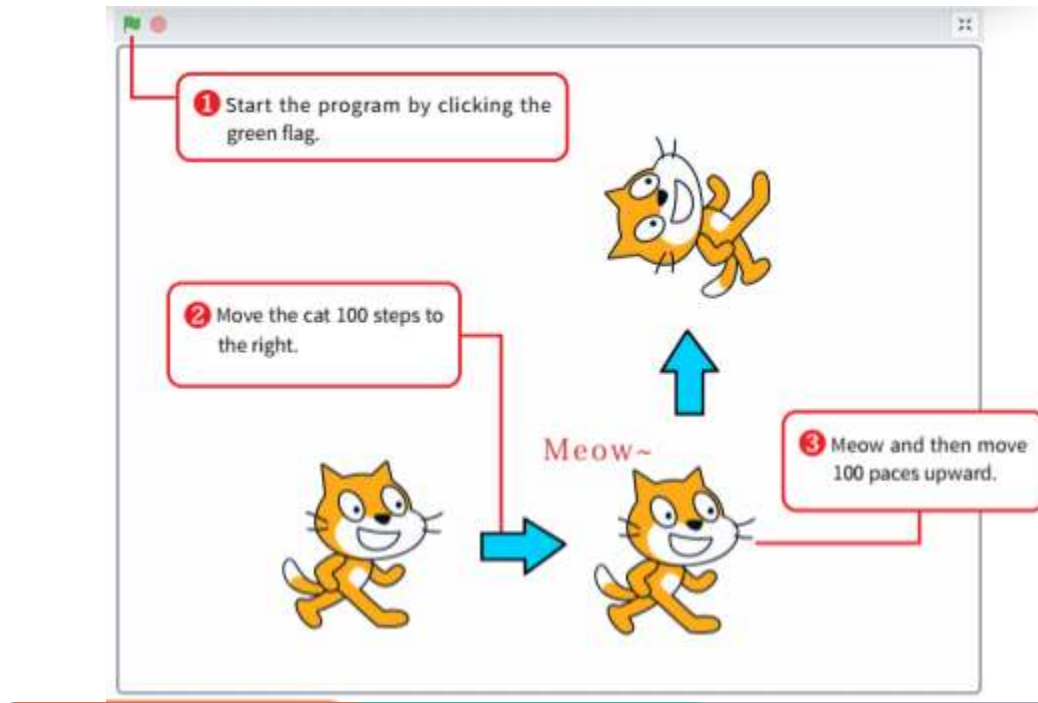
A11 Mai multe costume 2





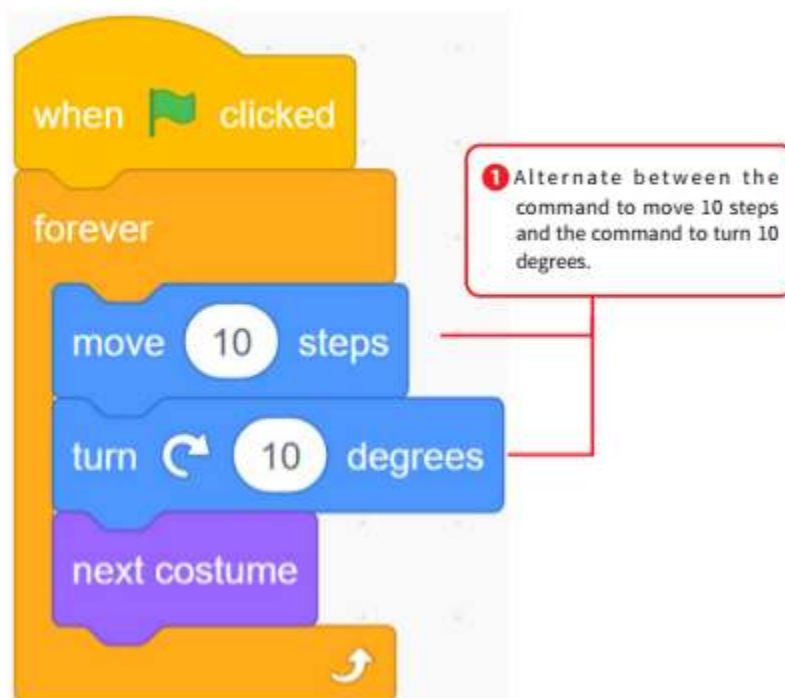
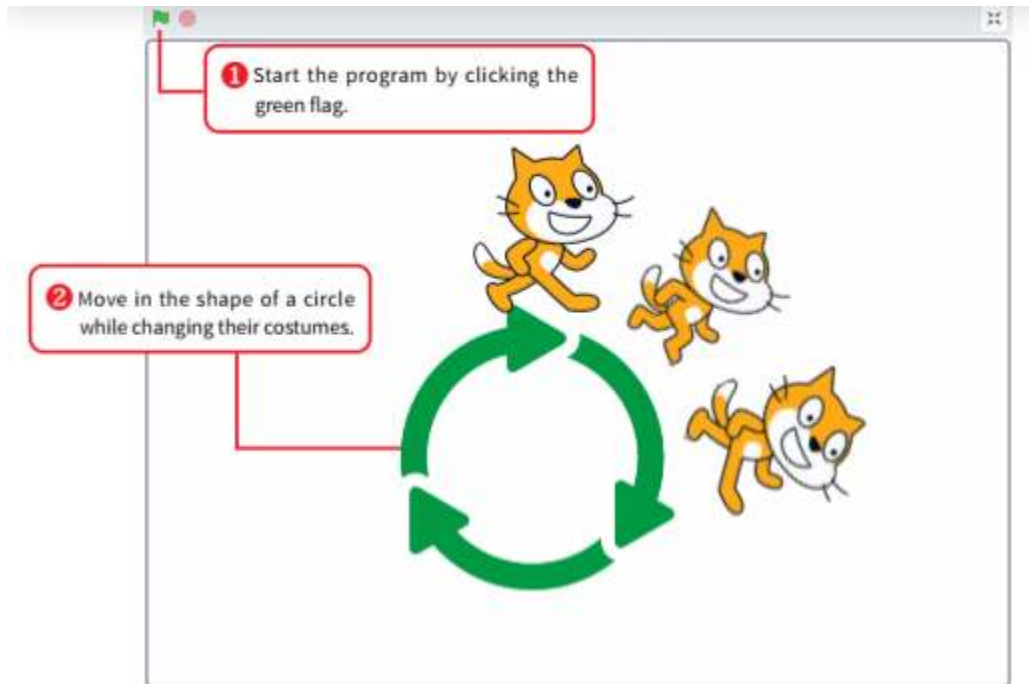
A12 Mieunat si miscare

# CaietdeActivitatiNr1-Scratch

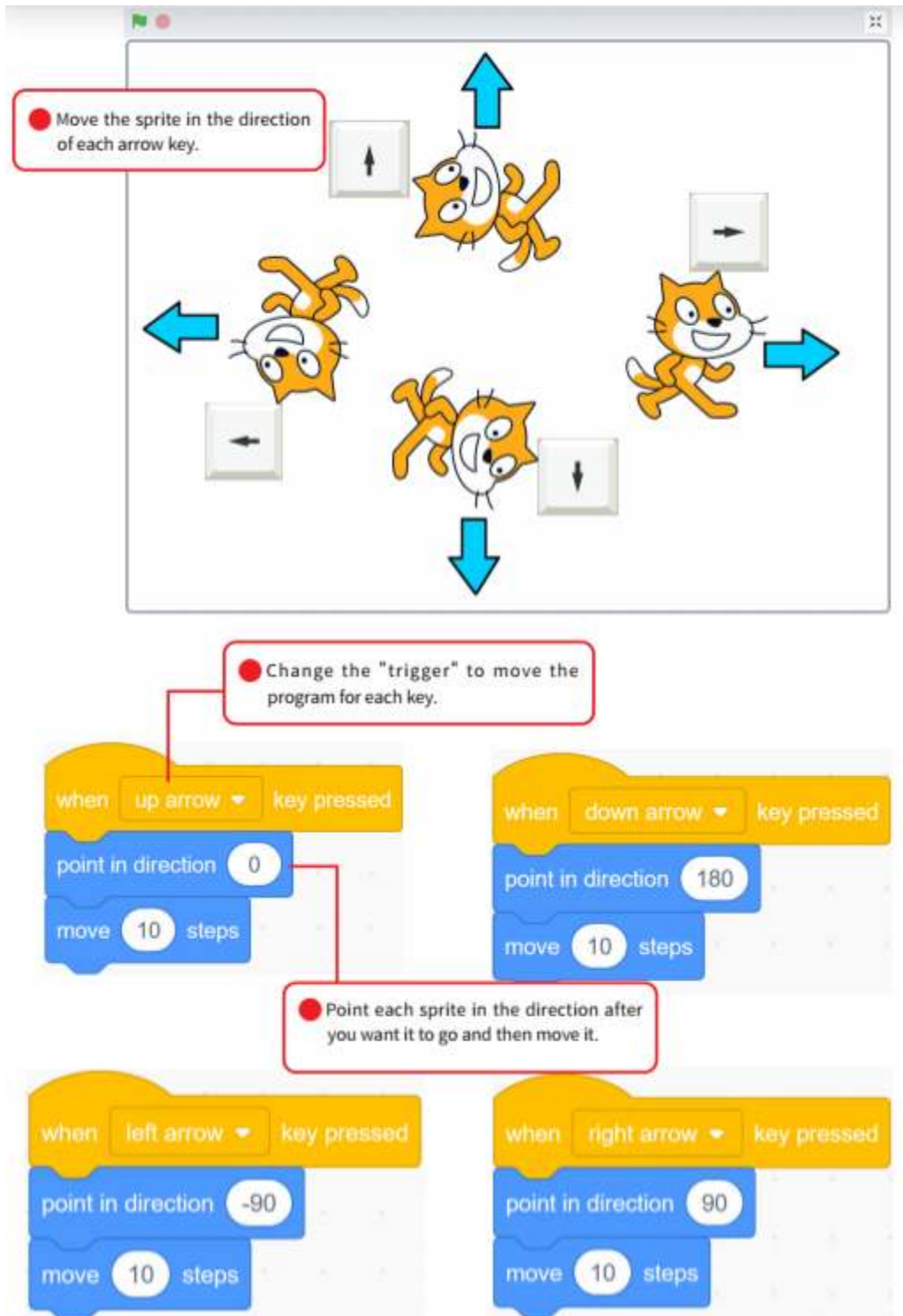


# Level 2

A13 Miscare in forma de cerc

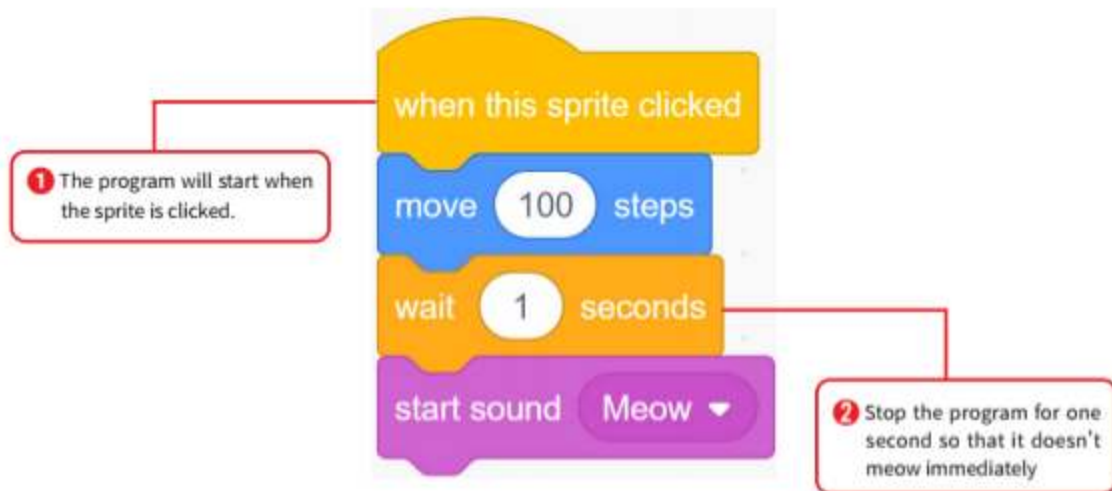
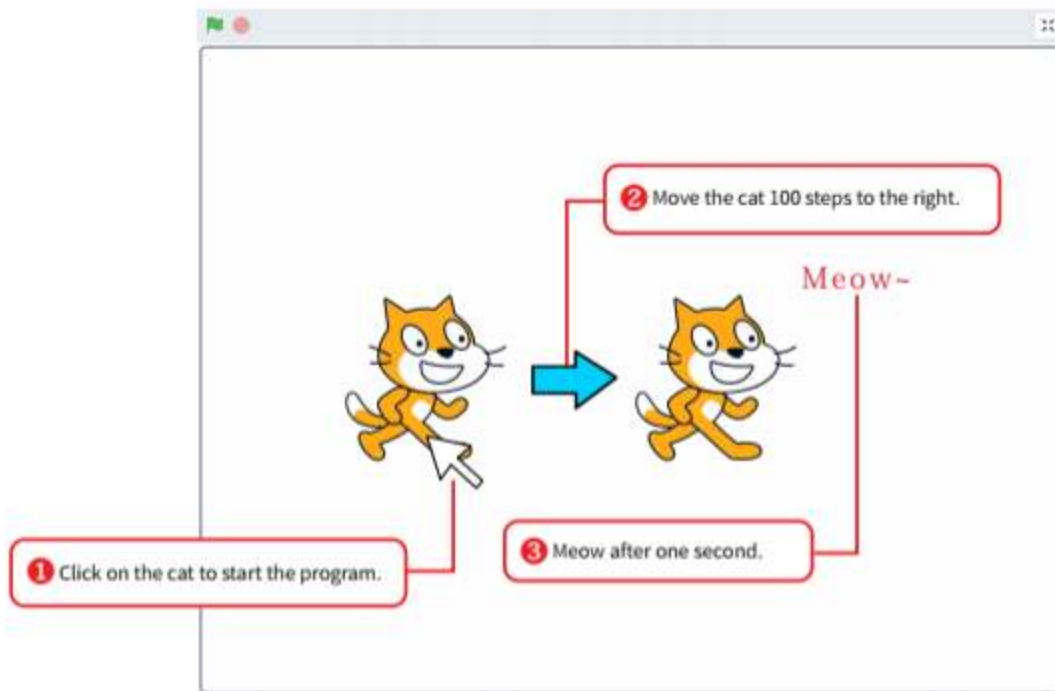


A14 Miscare cu sagetile

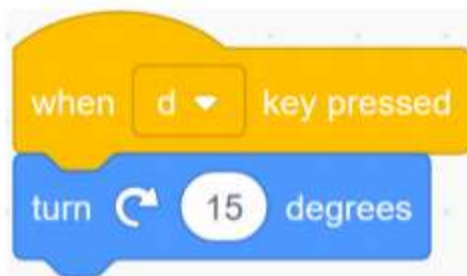
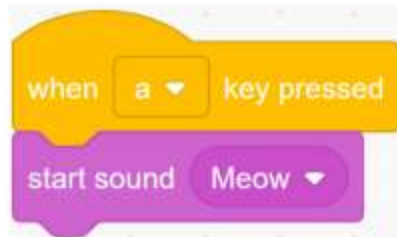
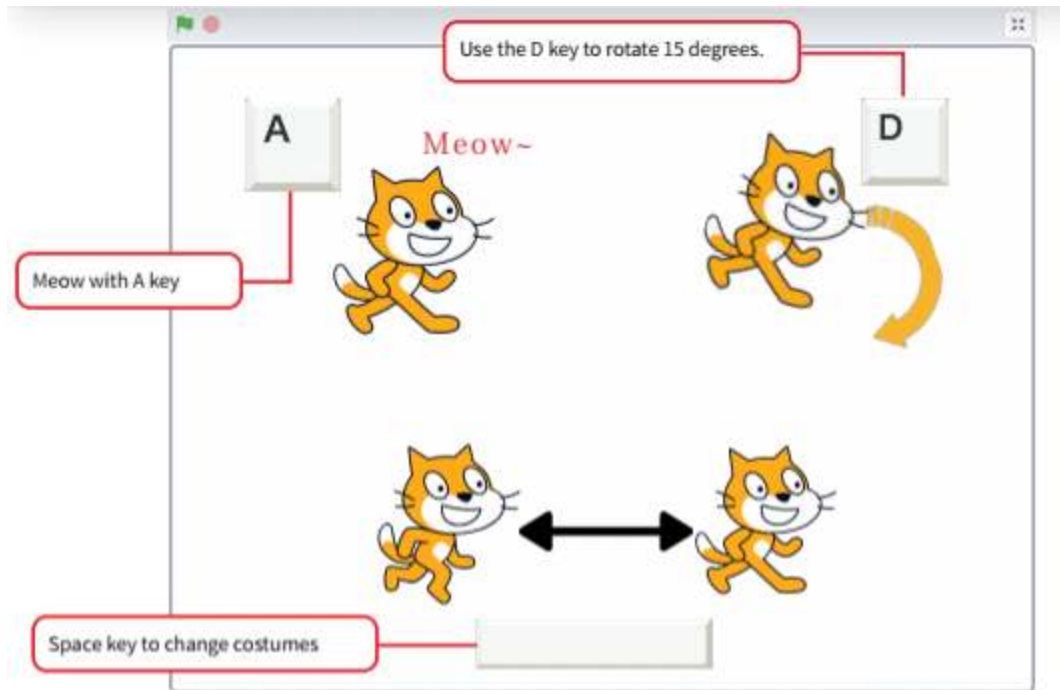


A15 Click Miscare sprite

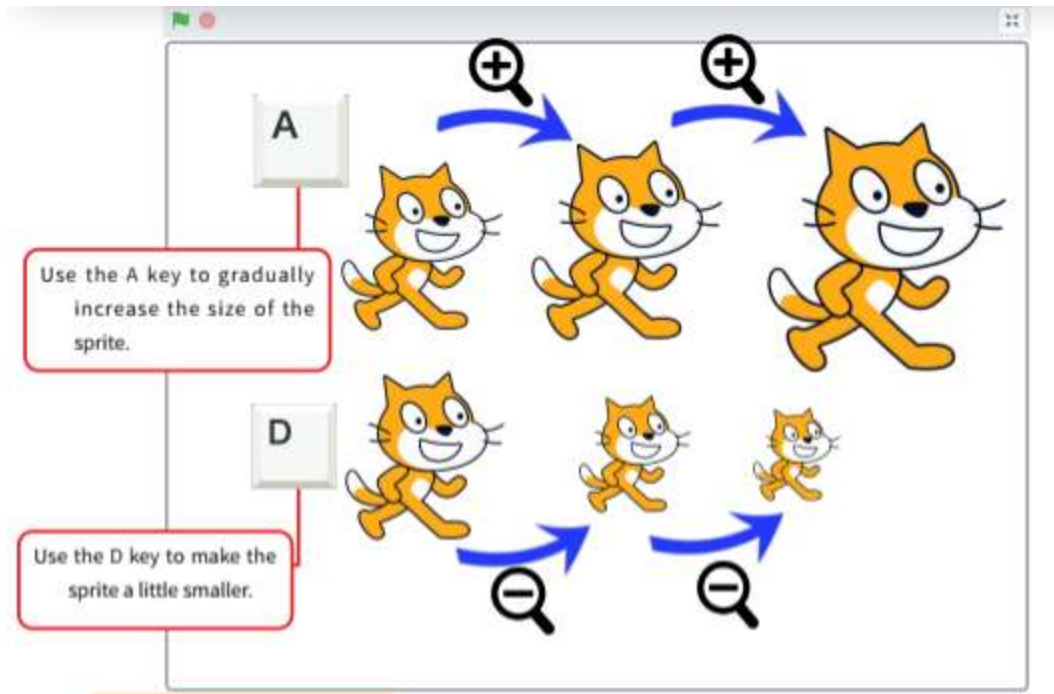
## CaietdeActivitatiNr1-Scratch



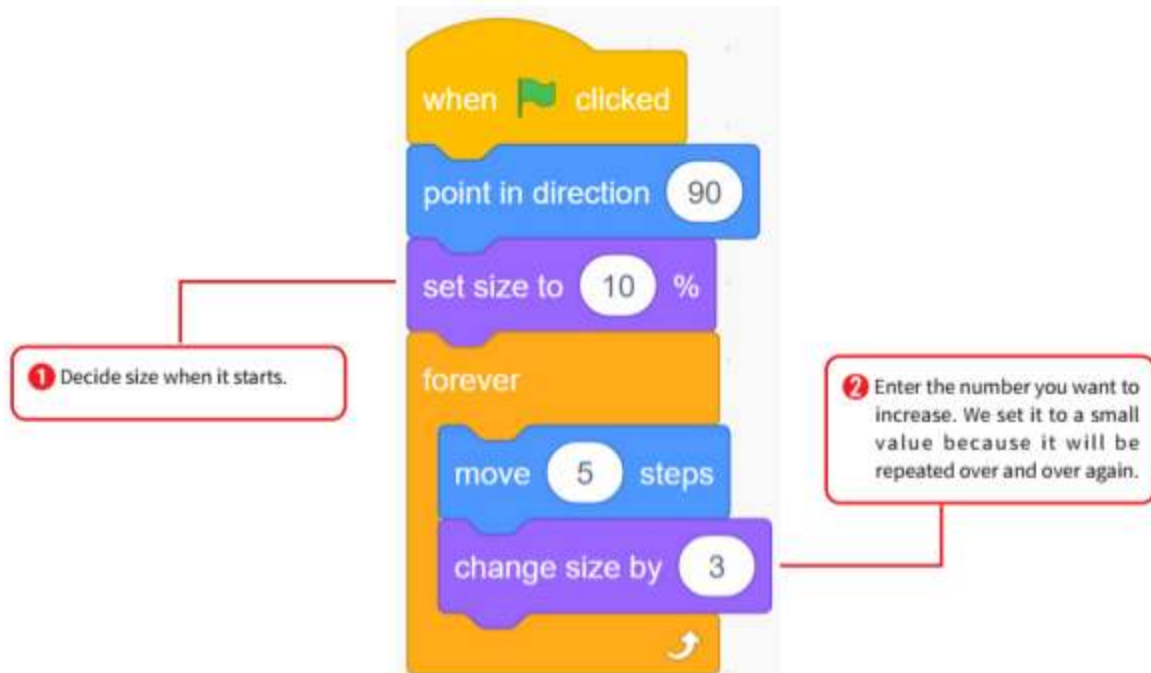
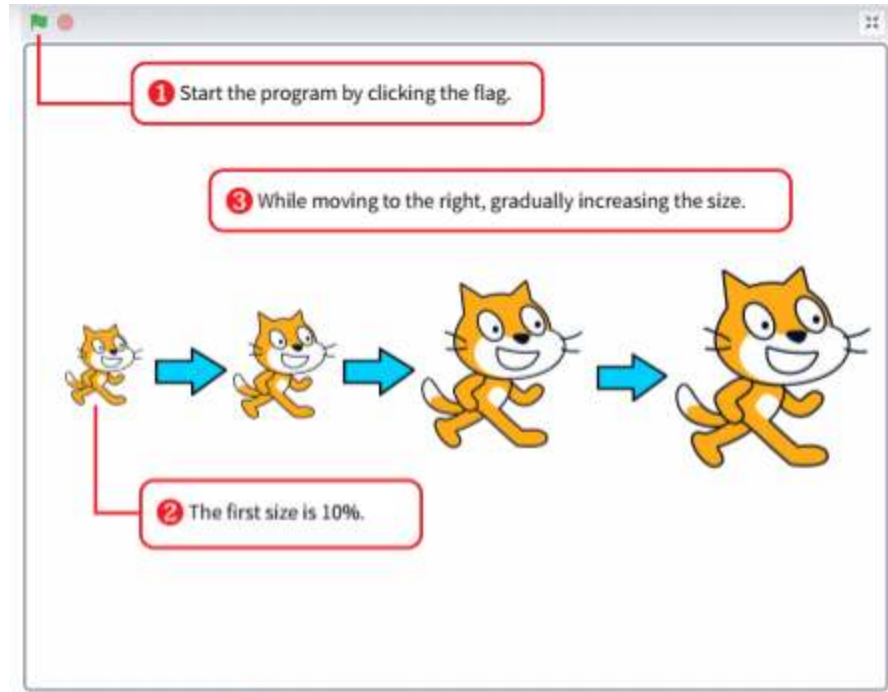
## Caiet de ActivitatiNr1-Scratch



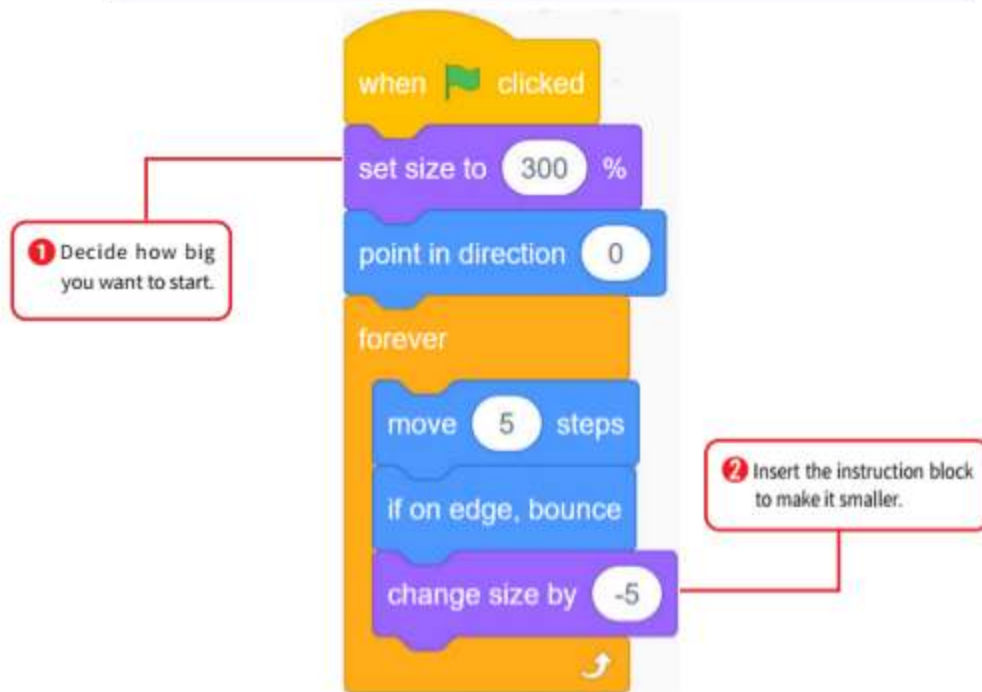
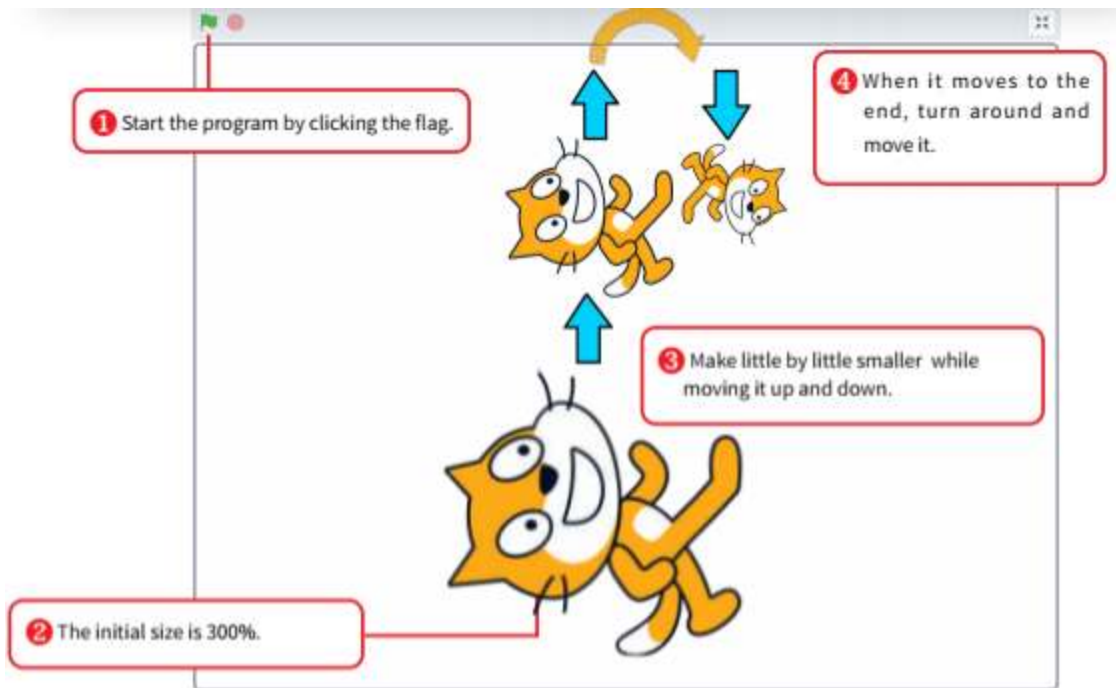




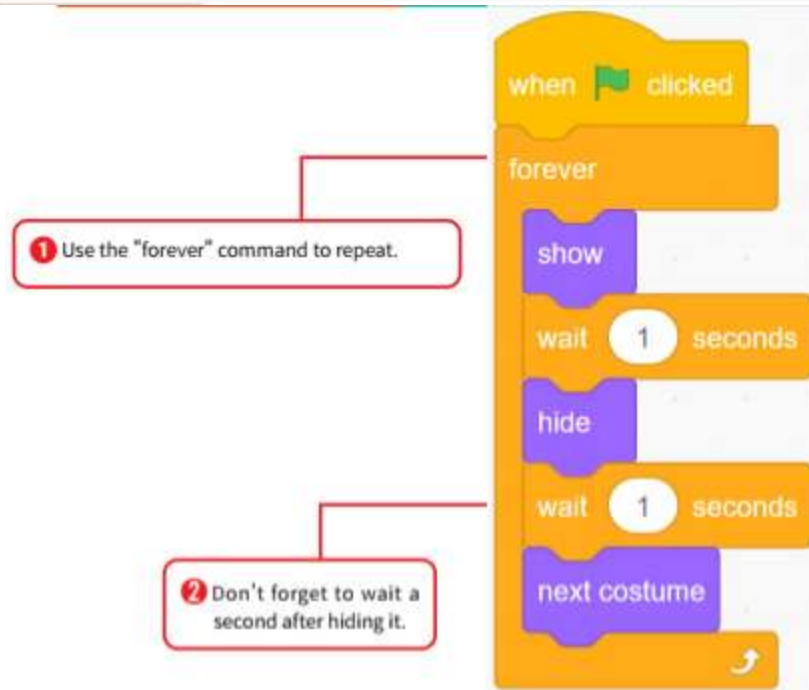
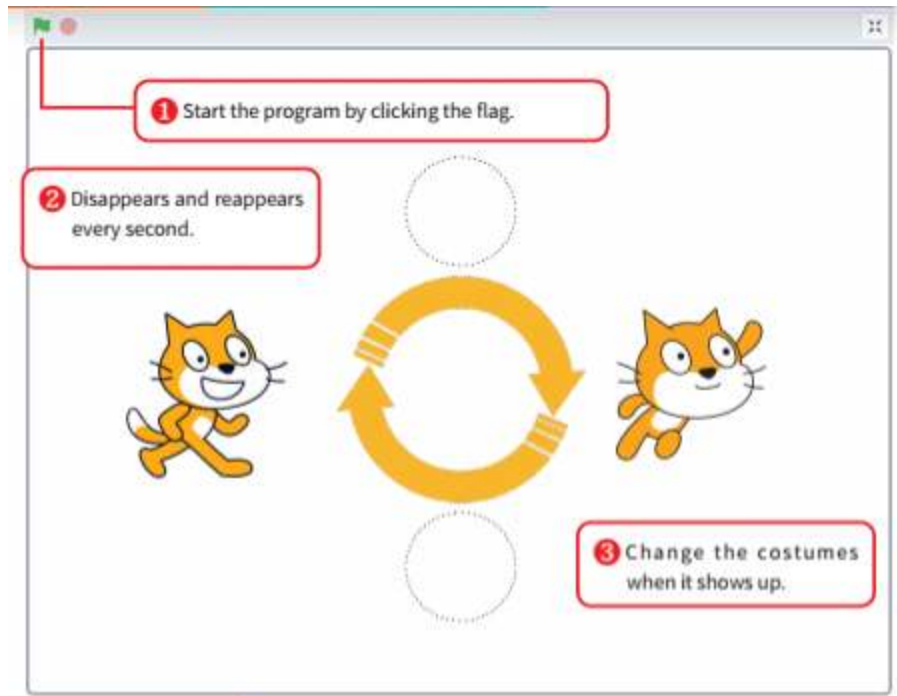
# CaietdeActivitatiNr1-Scratch



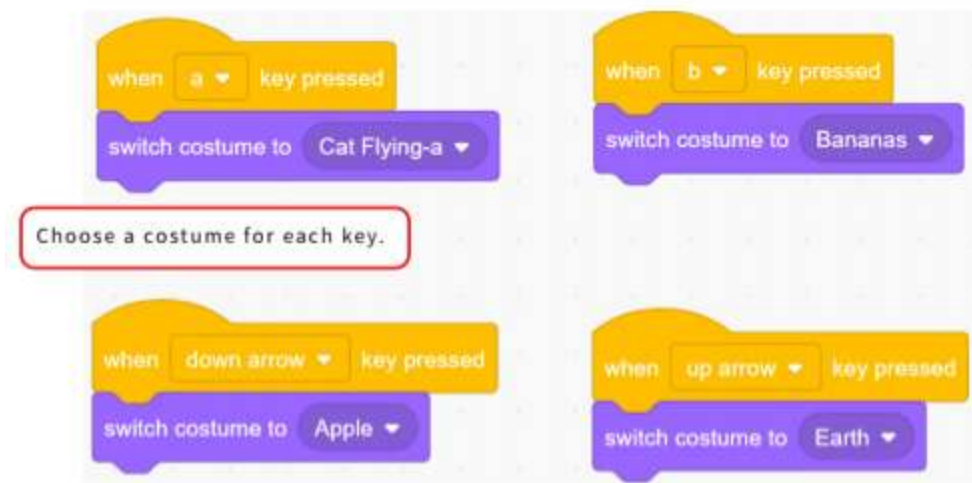
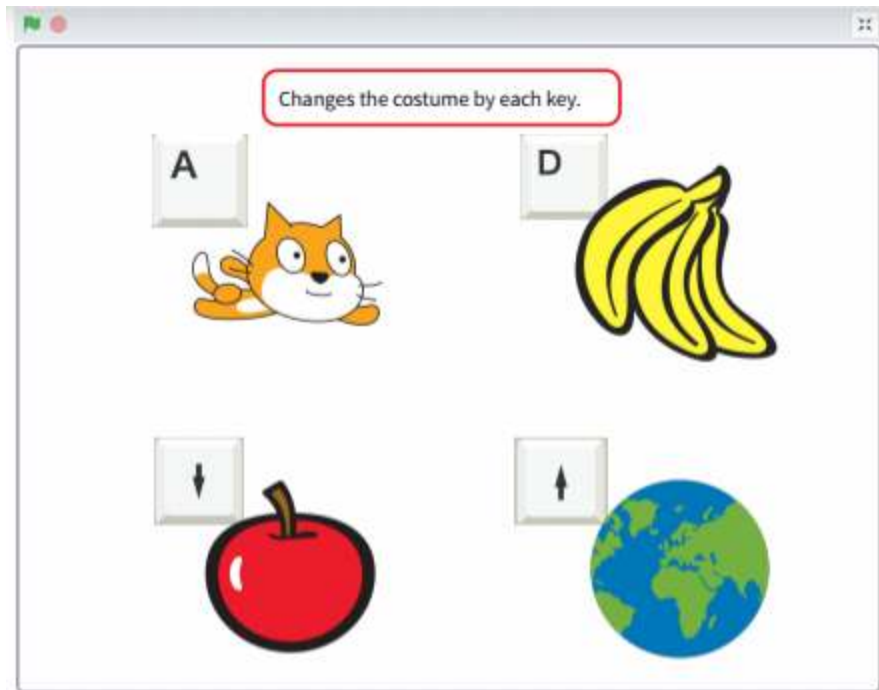
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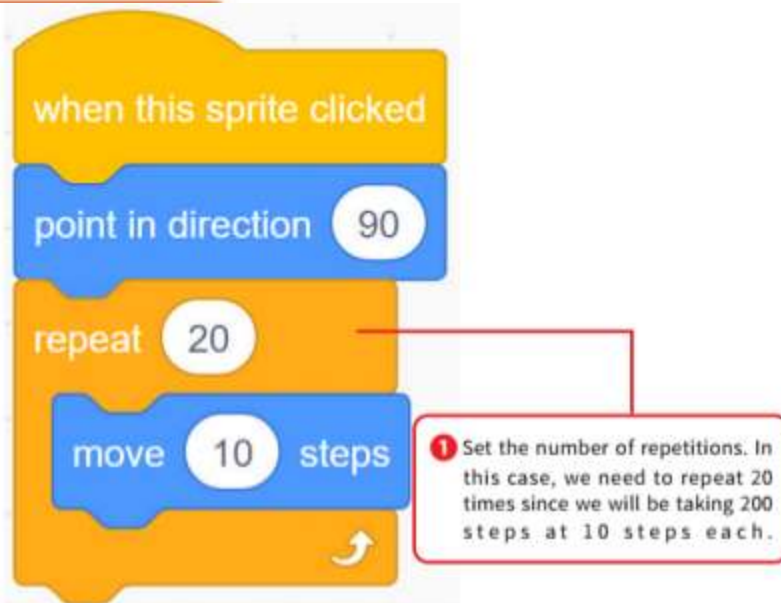
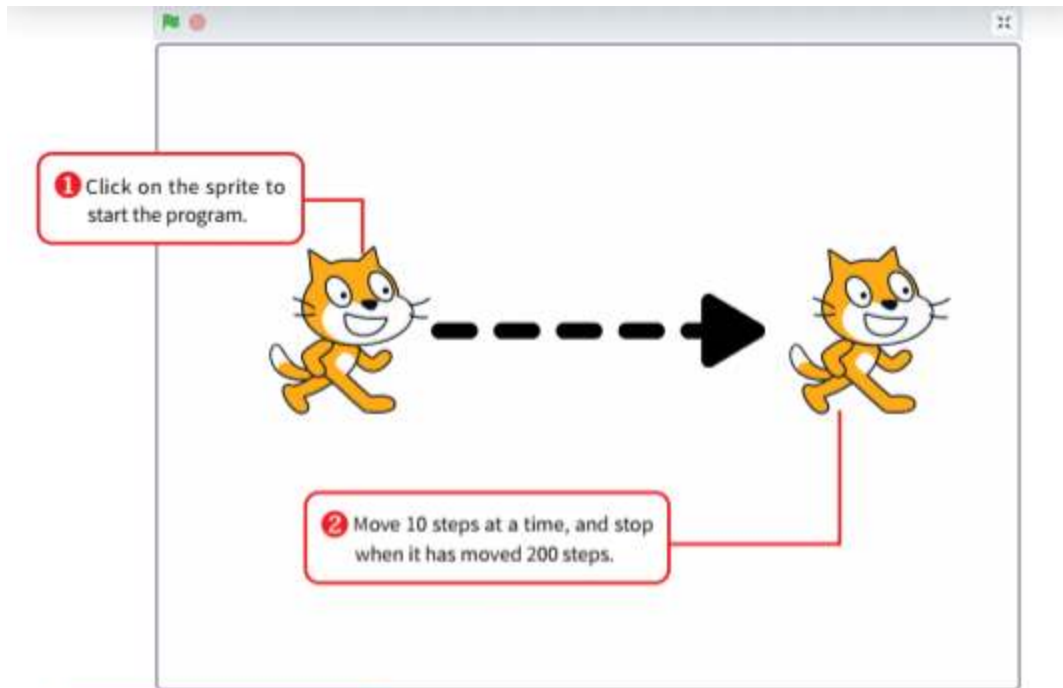
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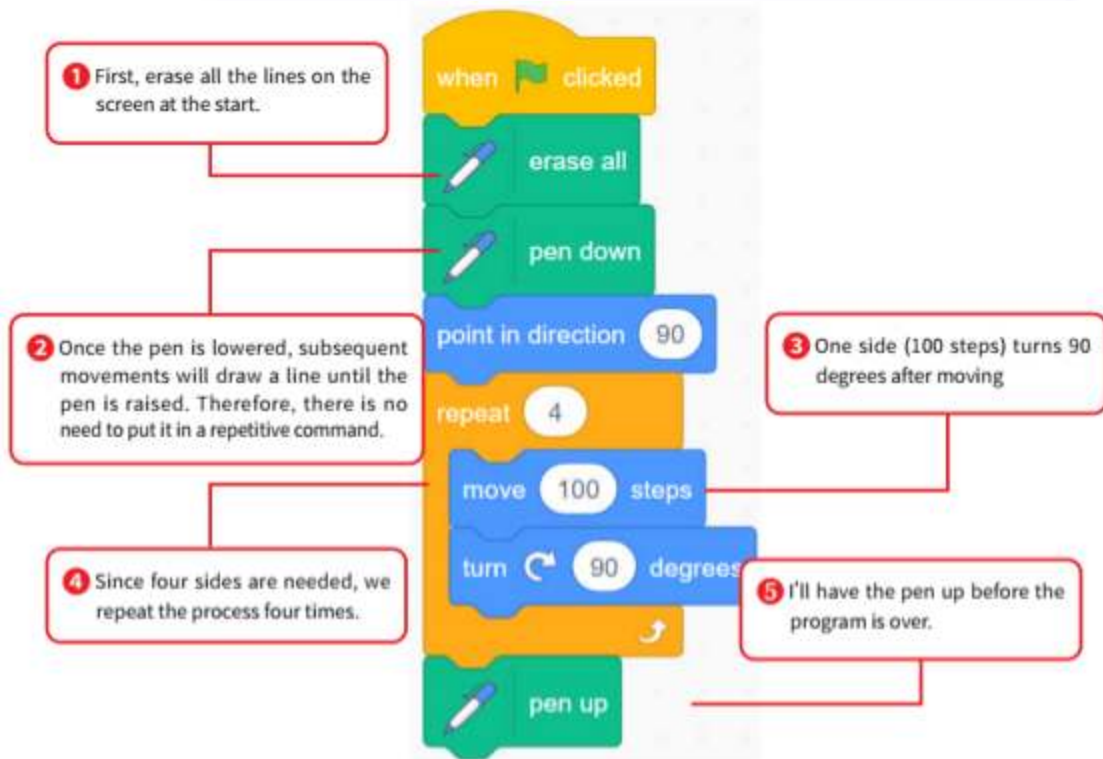
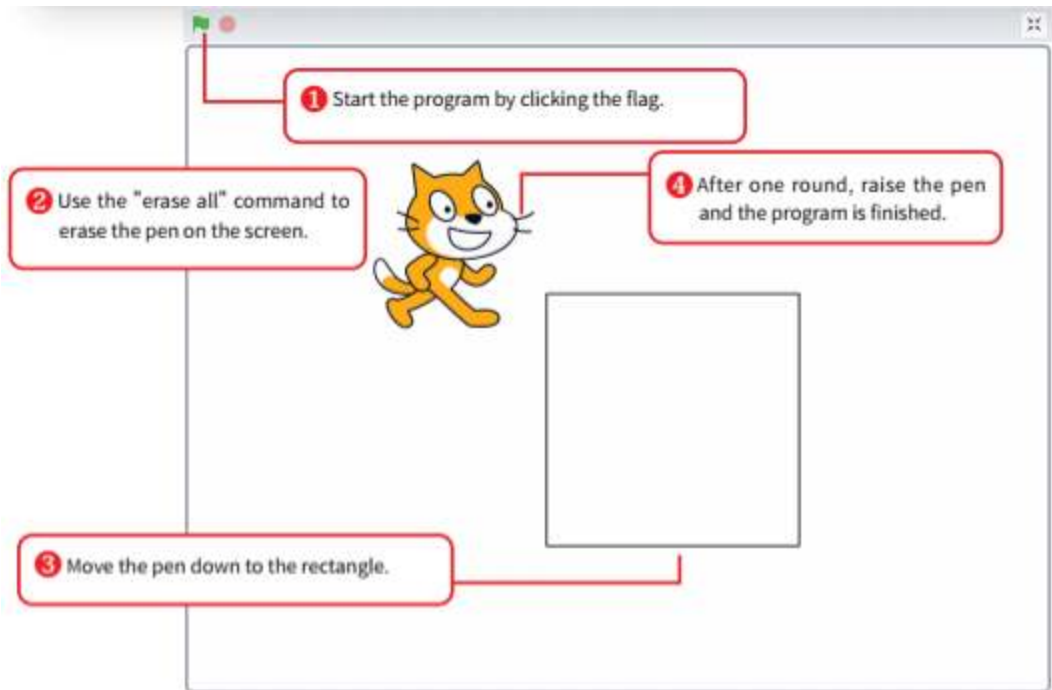
## CaietdeActivitatiNr1-Scratch



# CaietdeActivitatiNr1-Scratch

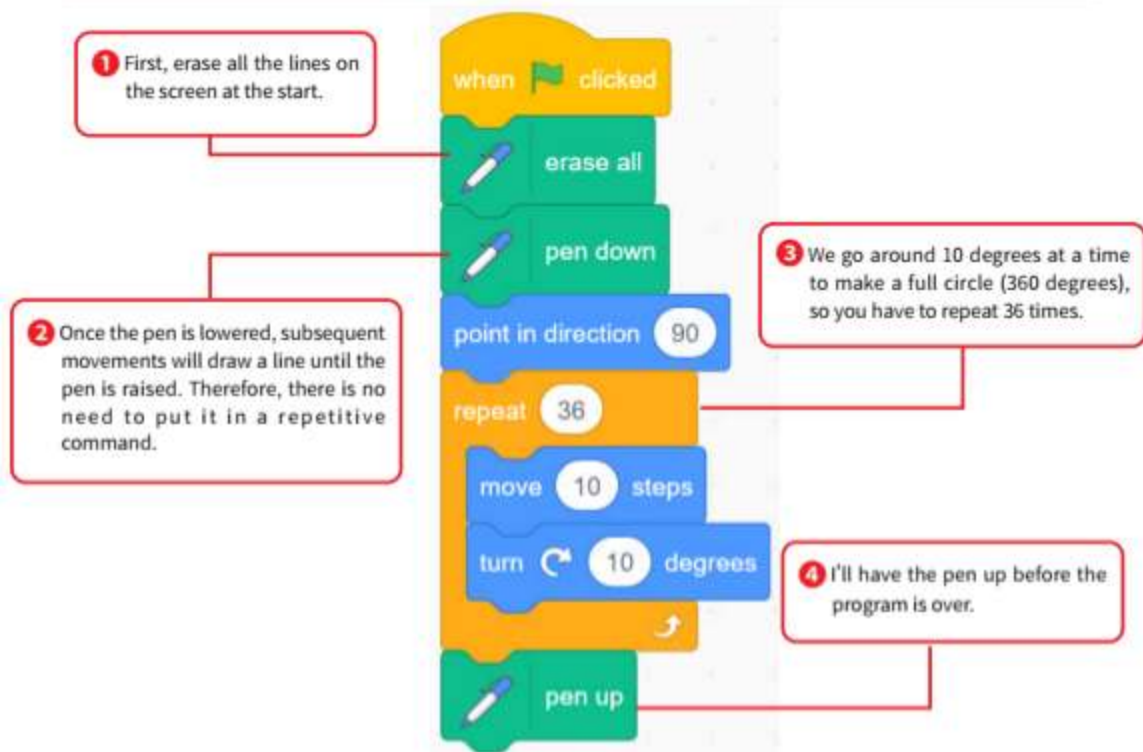
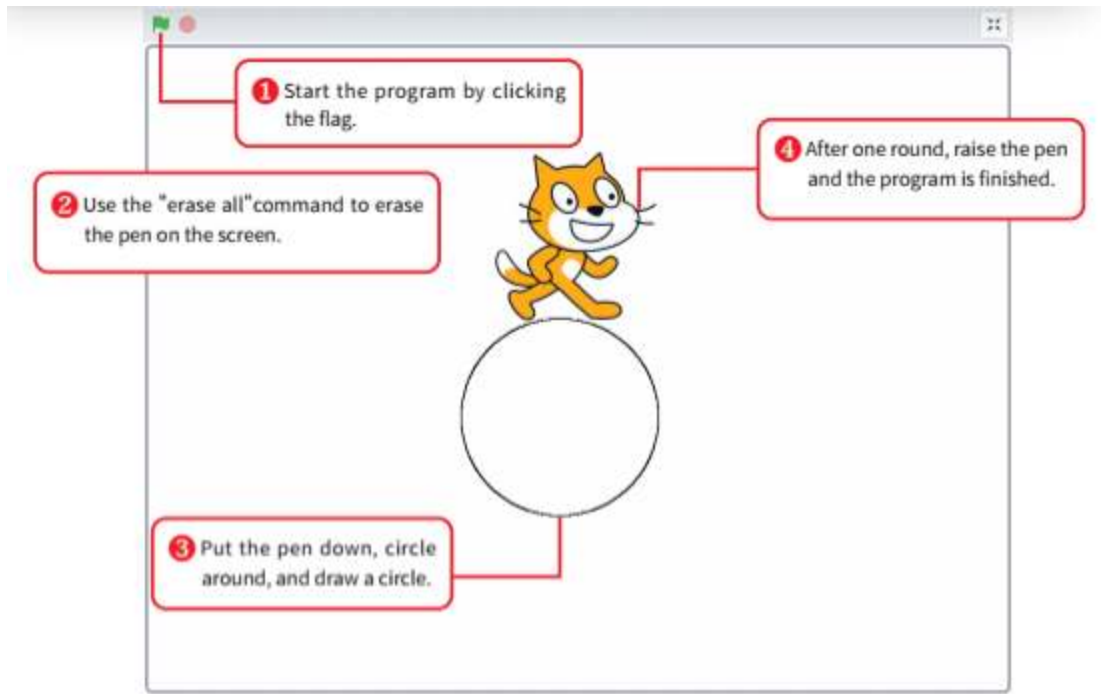


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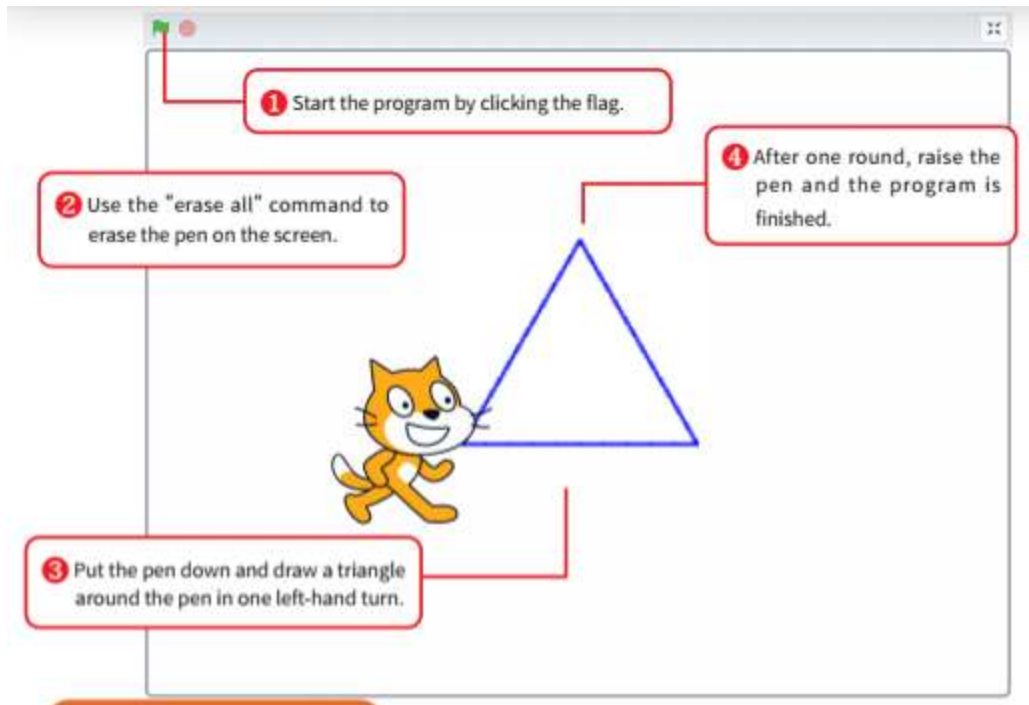


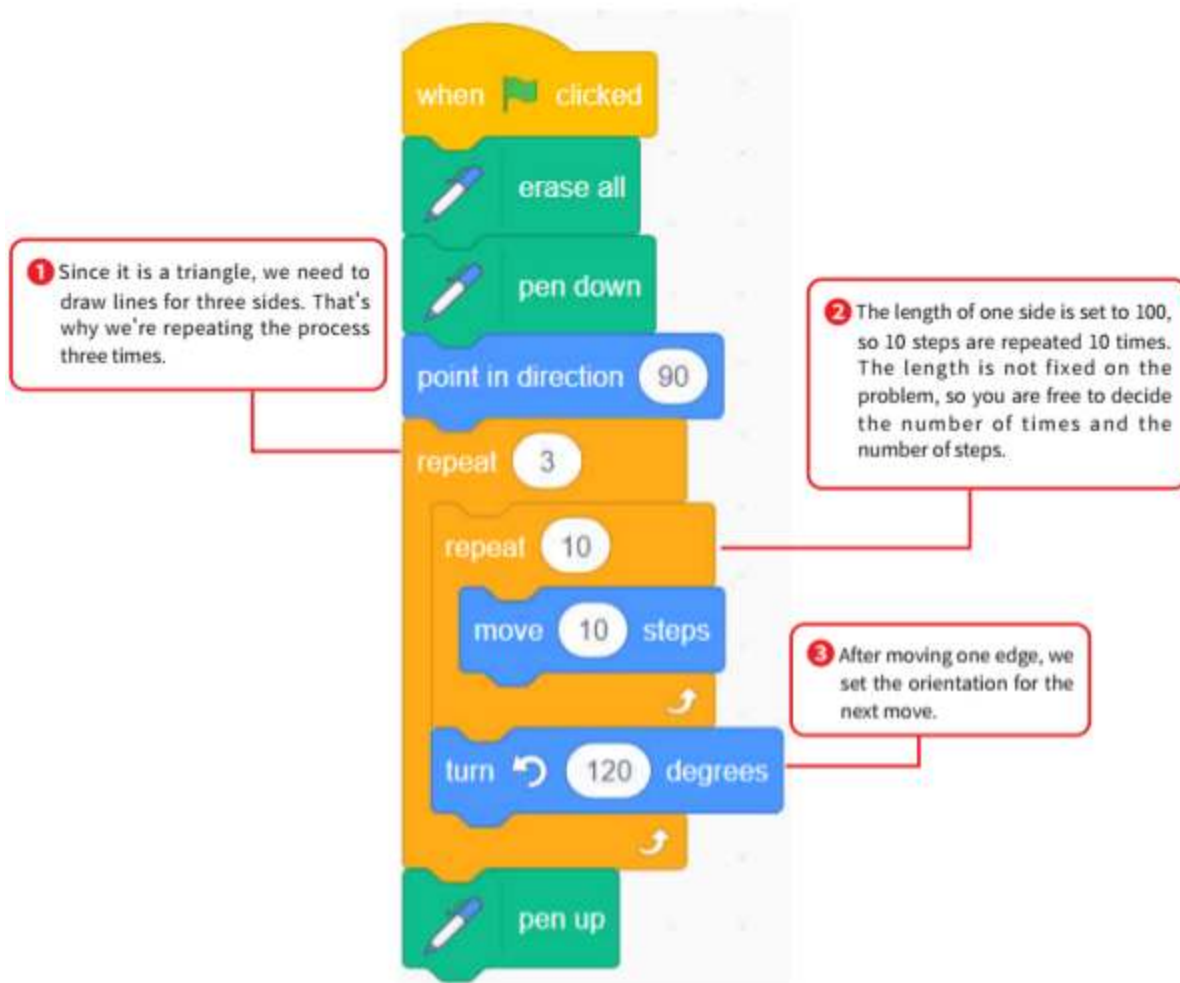


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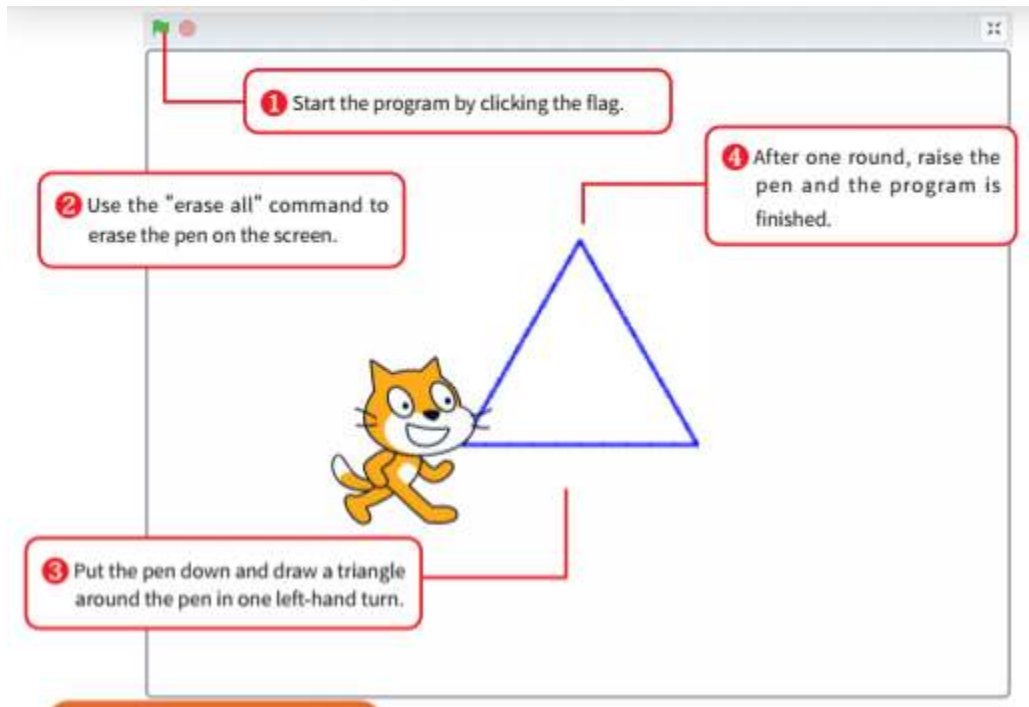


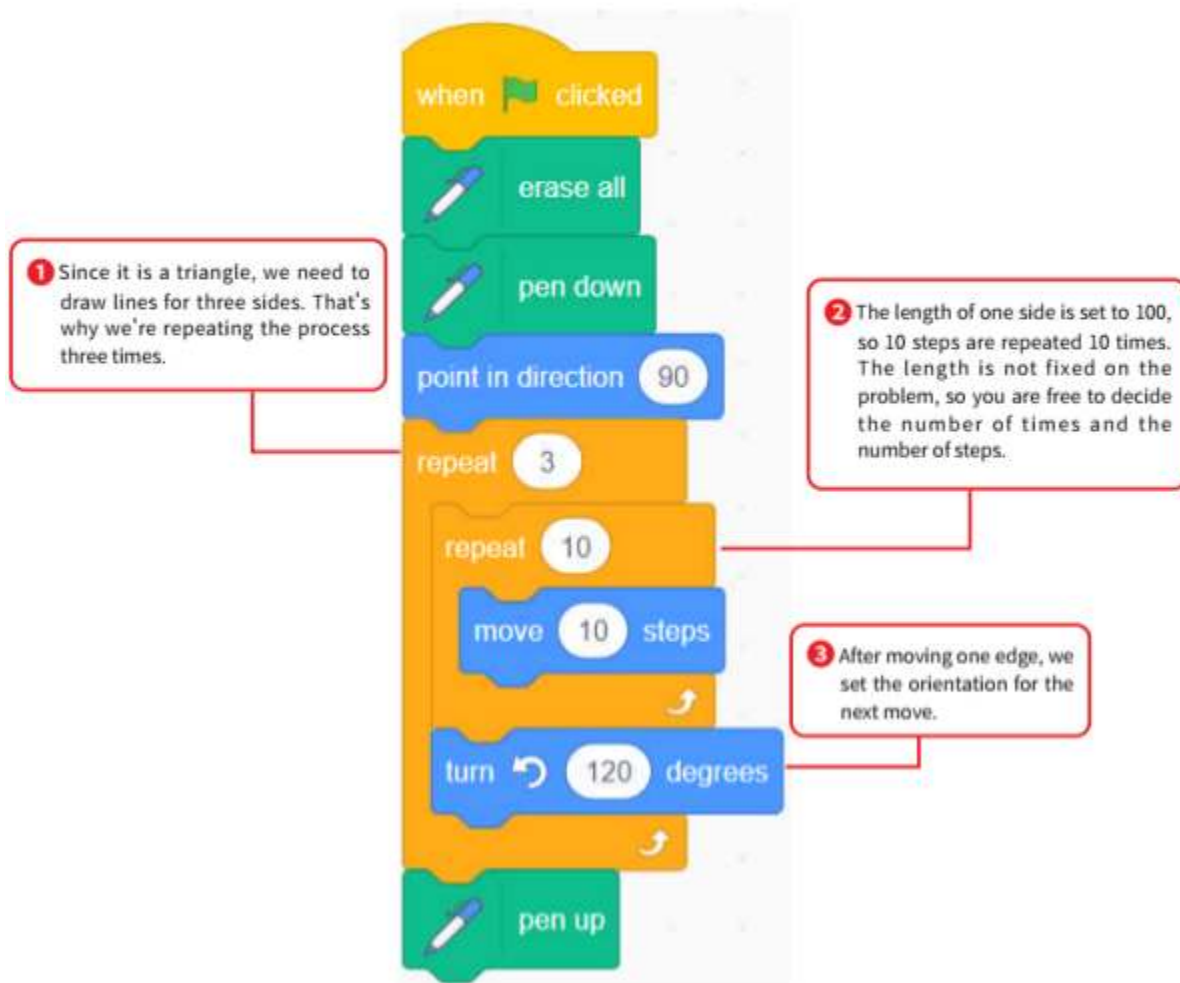
## CaietdeActivitatiNr1-Scratch



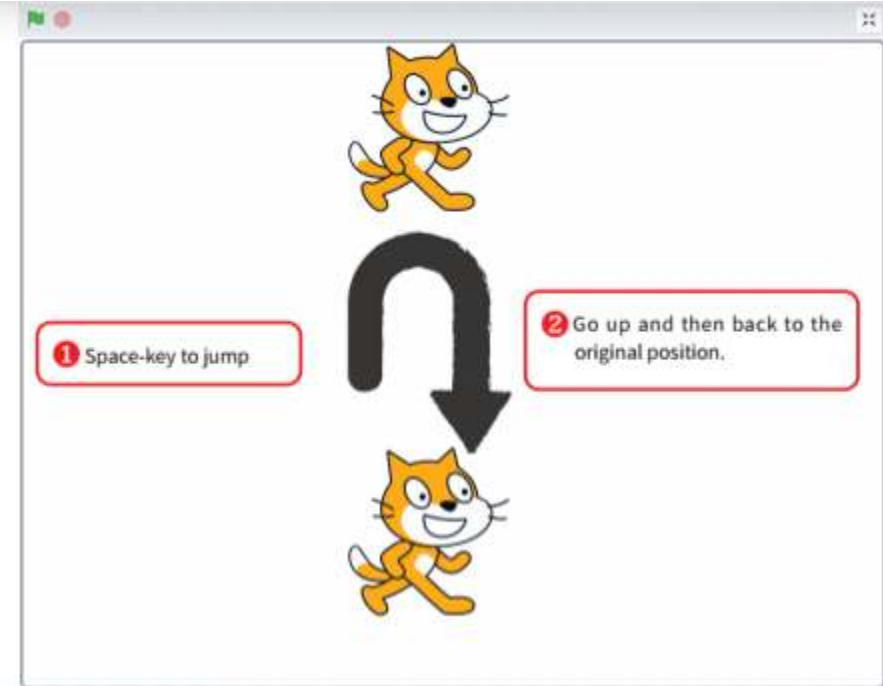


# CaietdeActivitatiNr1-Scratch





## CaietdeActivitatiNr1-Scratch



The image shows a Scratch script for a jump animation. At the top, a visual representation of the jump is shown with a cat character at the start and end positions, a large black arrow indicating the path, and two numbered instructions: 1. Space-key to jump, 2. Go up and then back to the original position.

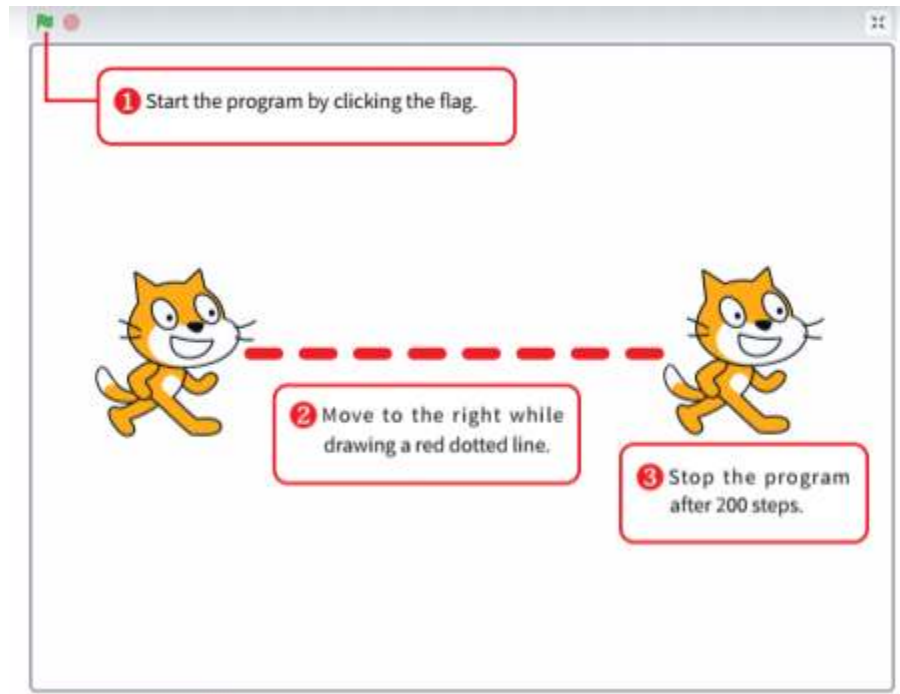
1 Set the rotation method to left or right only.

2 Move it upward. Use the repeat command to make it smooth.

3 Move it toward the downward direction. Move it the same amount as upward.

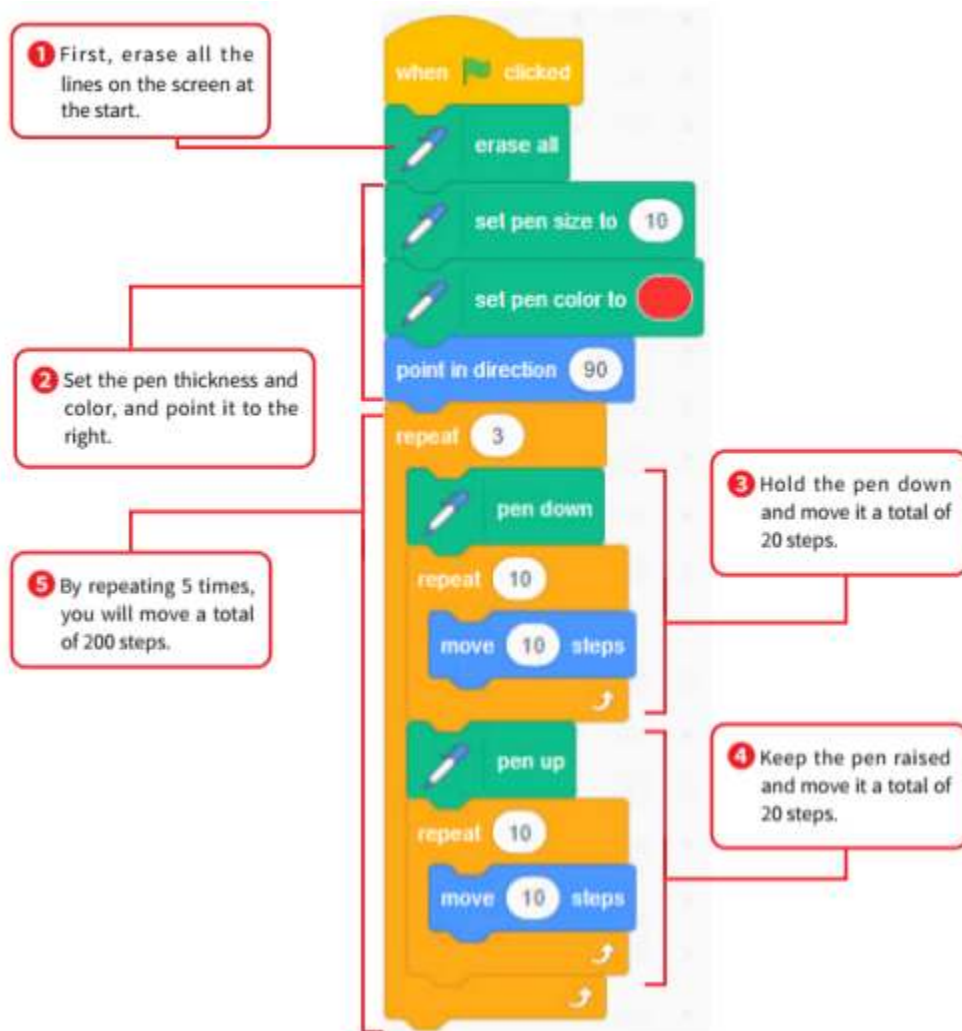
```
when space key pressed
  set rotation style left-right
  point in direction 0
  repeat 10
    move 10 steps
  point in direction 180
  repeat 10
    move 10 steps
```

# CaietdeActivitatiNr1-Scratch

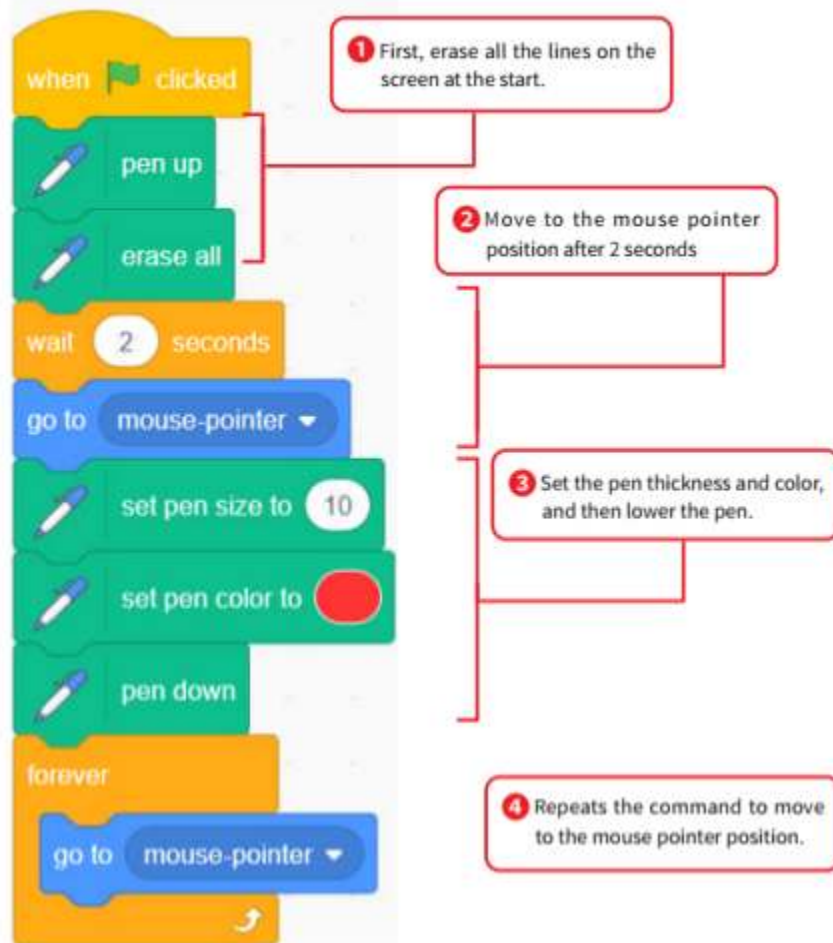
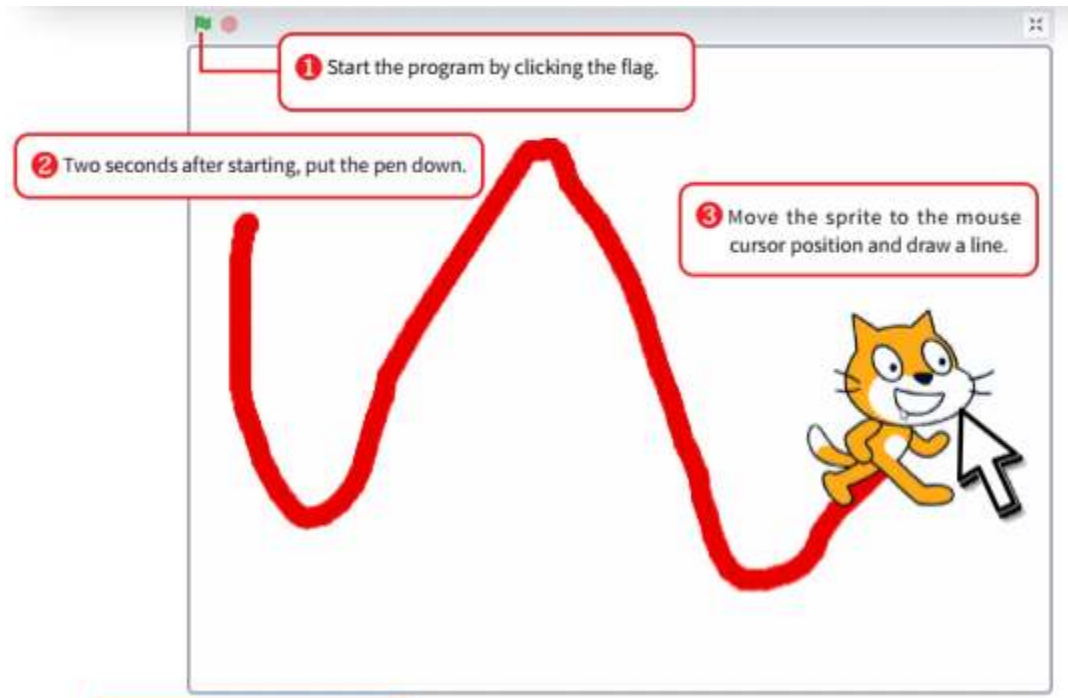




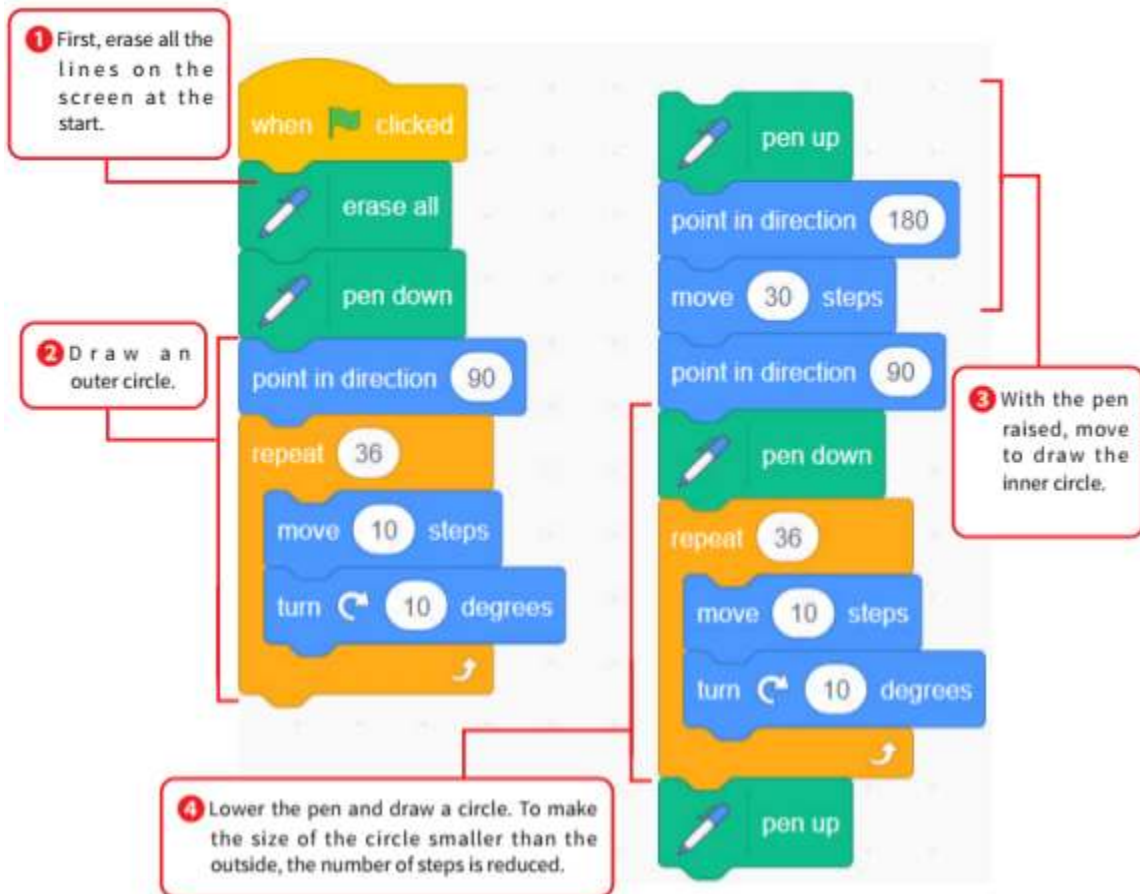
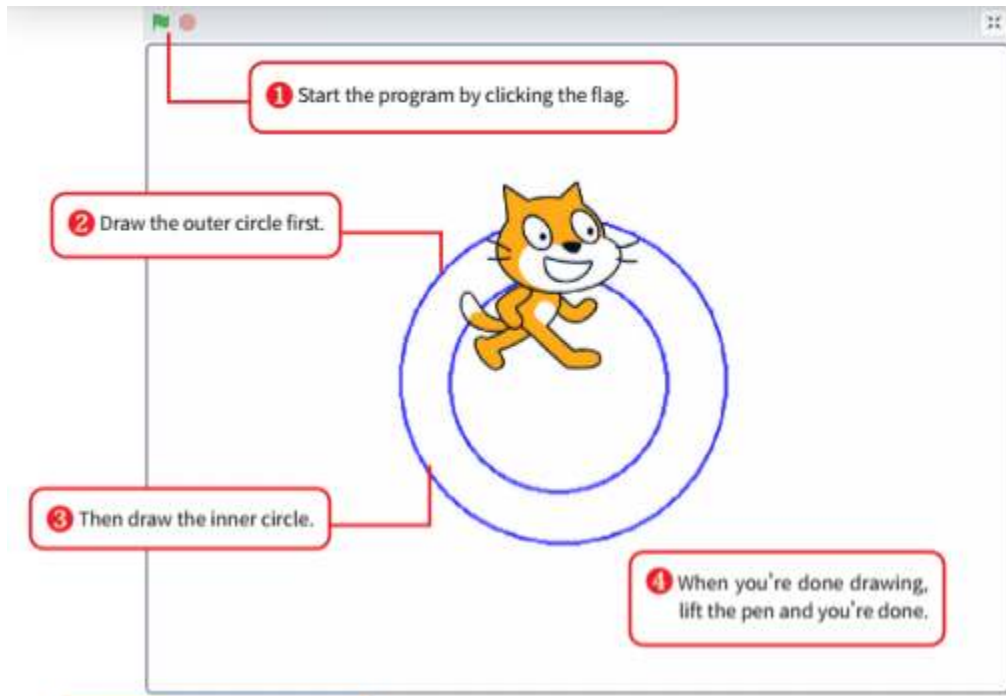
# CaietdeActivitatiNr1-Scratch



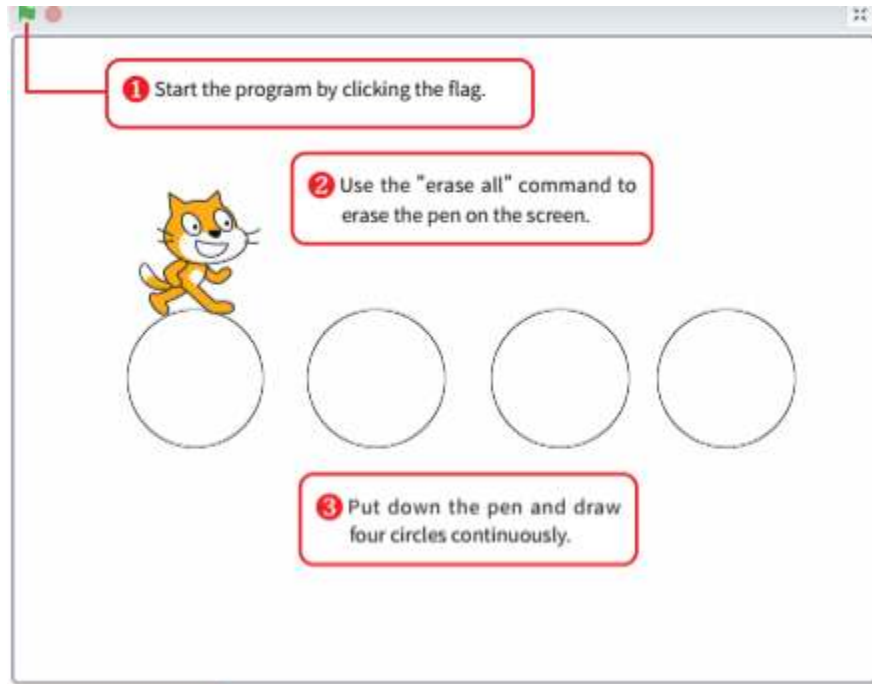
# CaietdeActivitatiNr1-Scratch

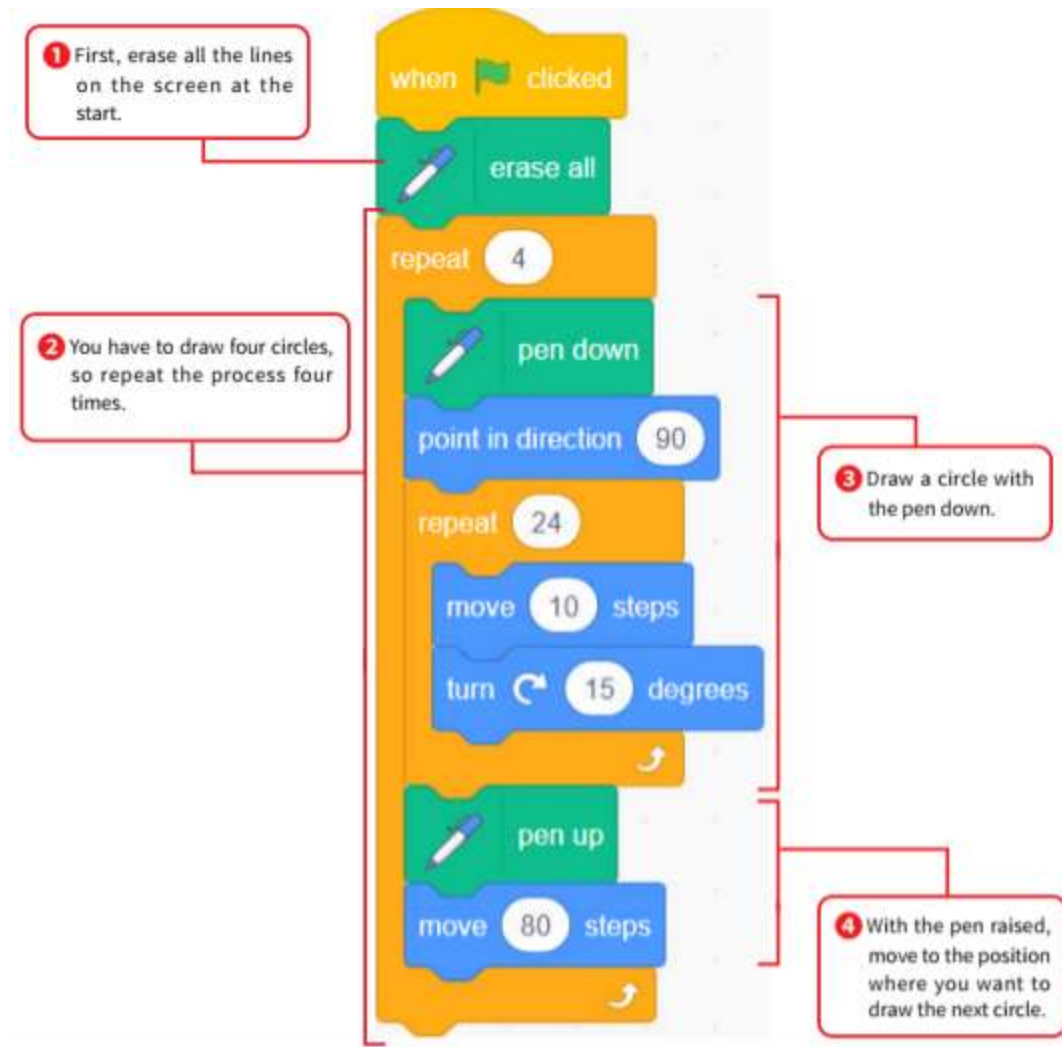


# CaietdeActivitatiNr1-Scratch



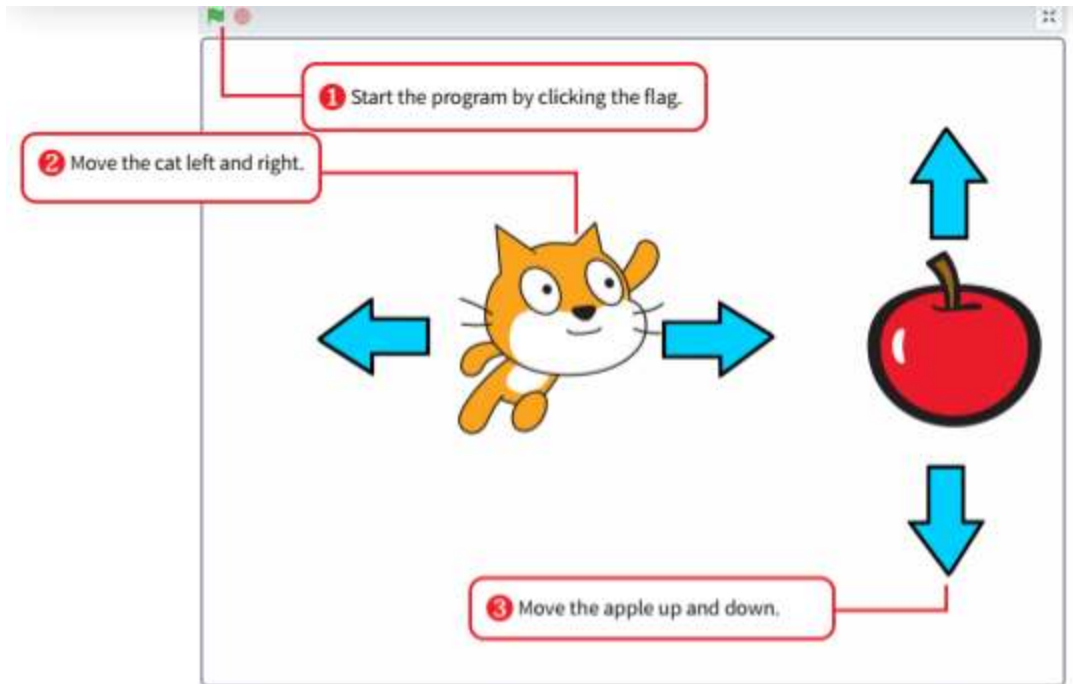
# CaietdeActivitatiNr1-Scratch



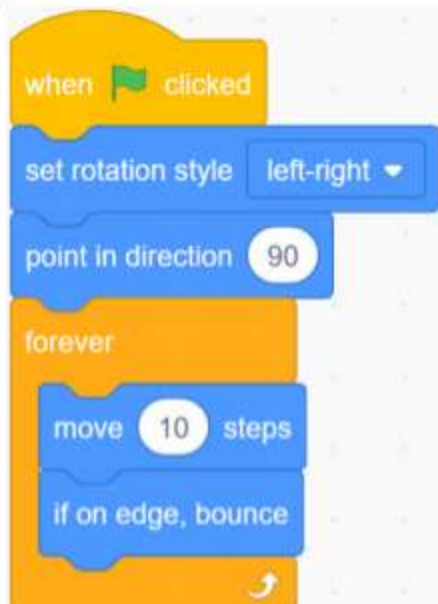


# Level 3

# CaietdeActivitatiNr1-Scratch

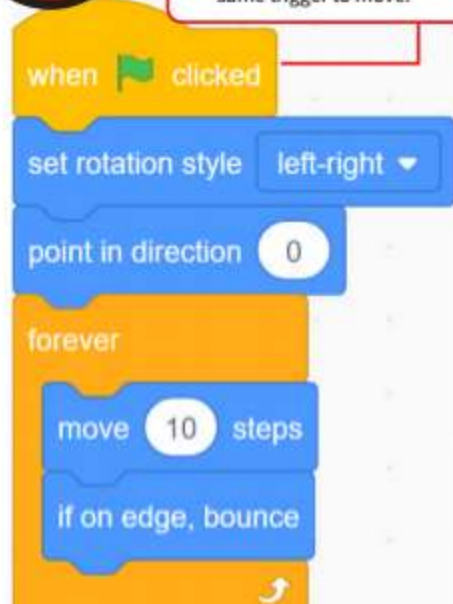


Cat Sprite



Apple Sprite

1 Each sprite should have the same trigger to move.

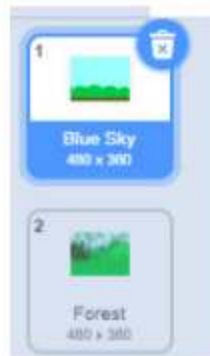




# CaietdeActivitatiNr1-Scratch



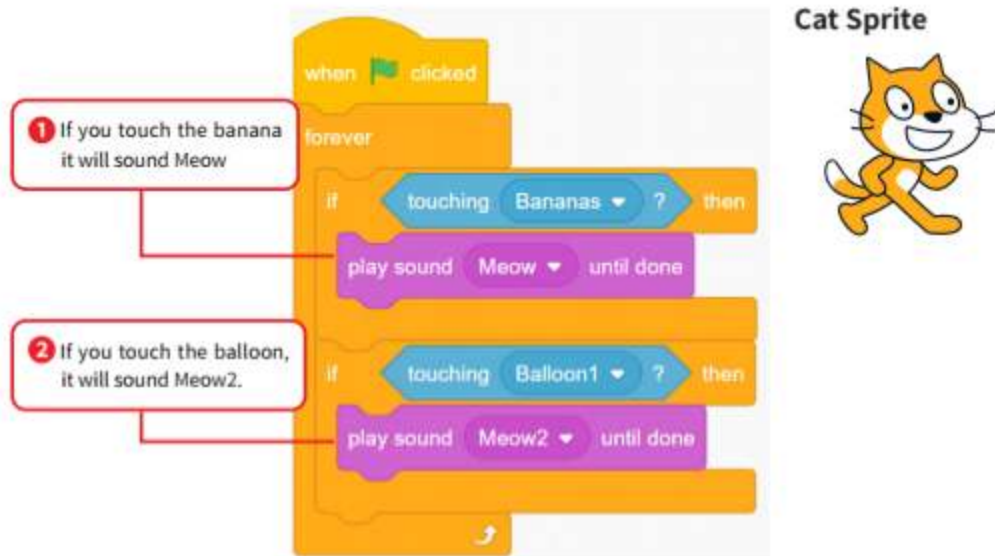
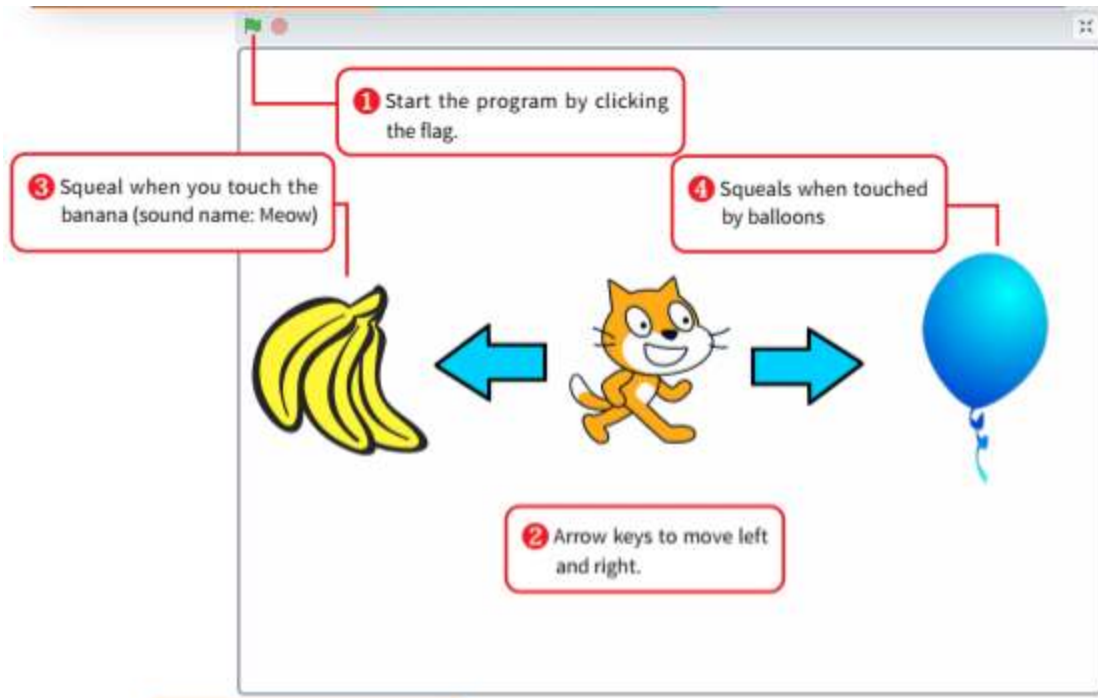
1 Prepare two different backgrounds to switch between.



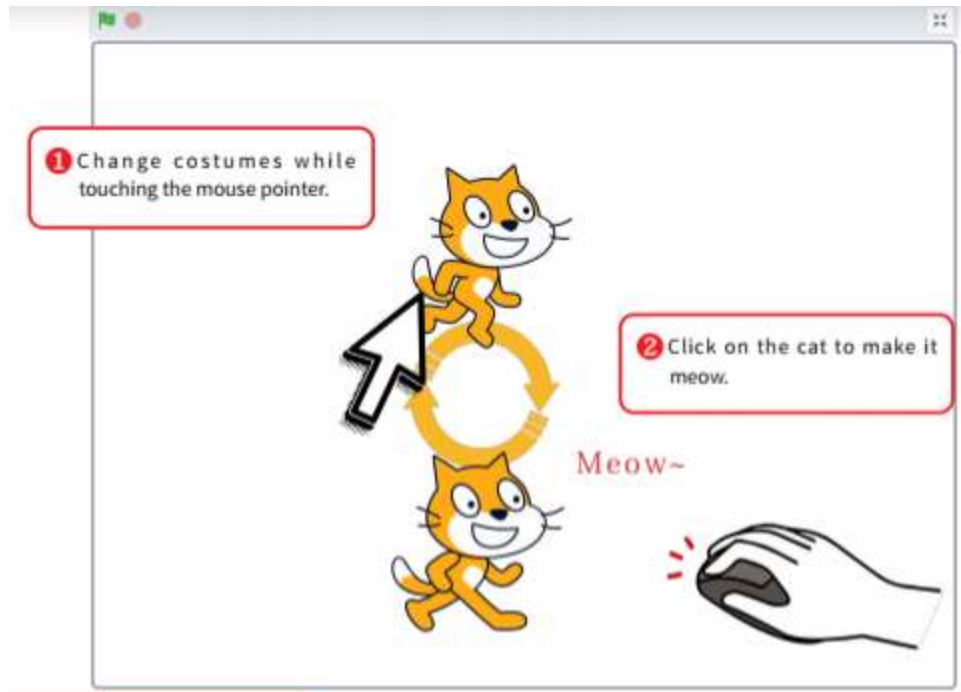
2 Wait a second, then switch to the next background.



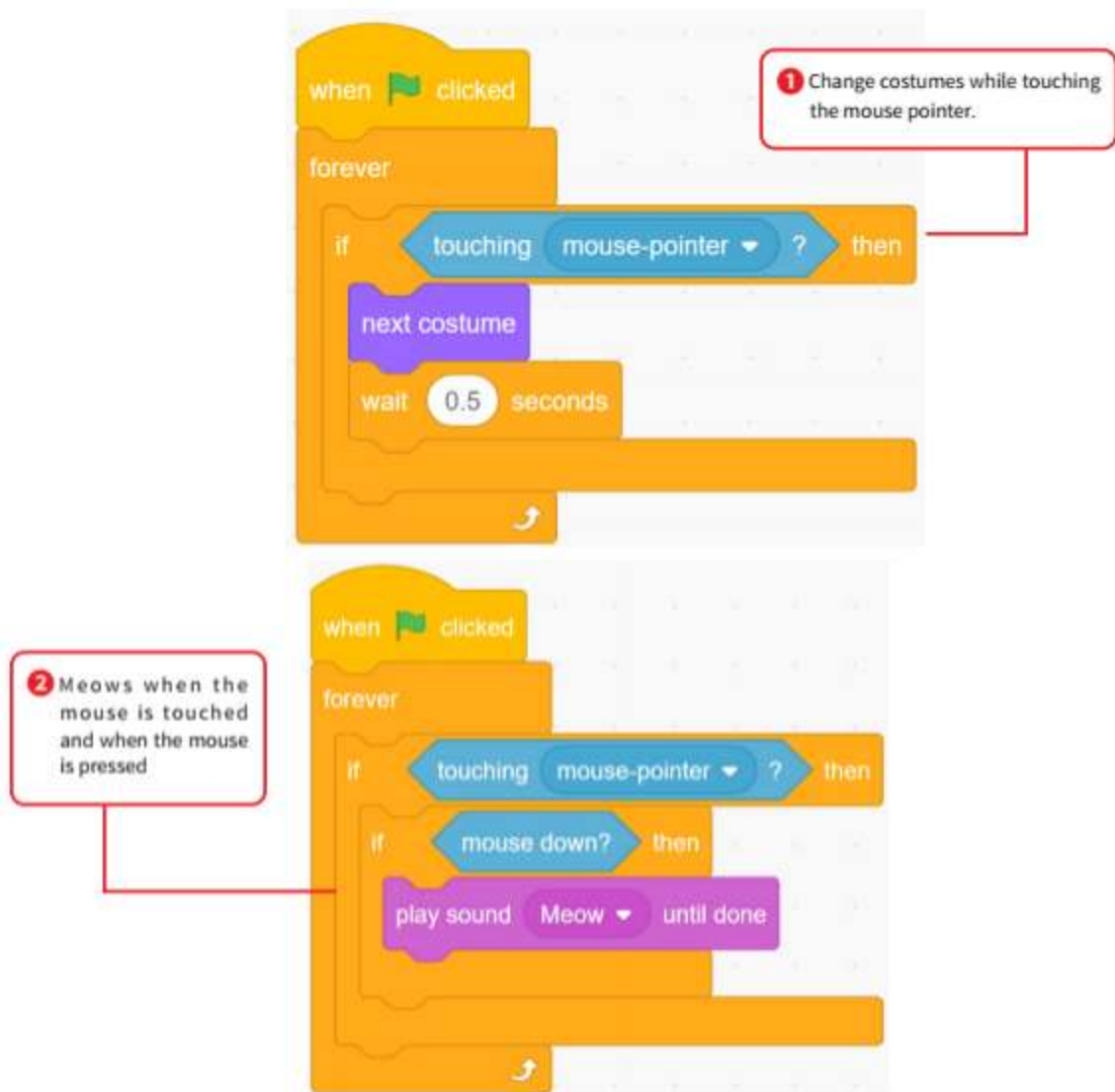
# CaietdeActivitatiNr1-Scratch



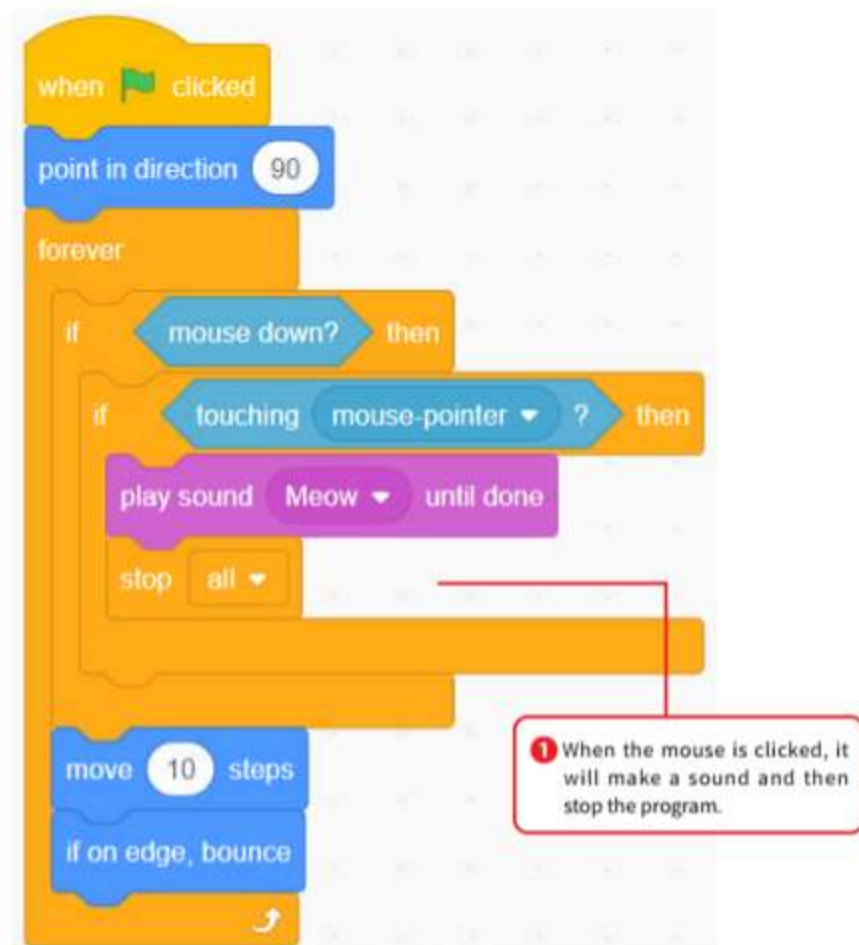
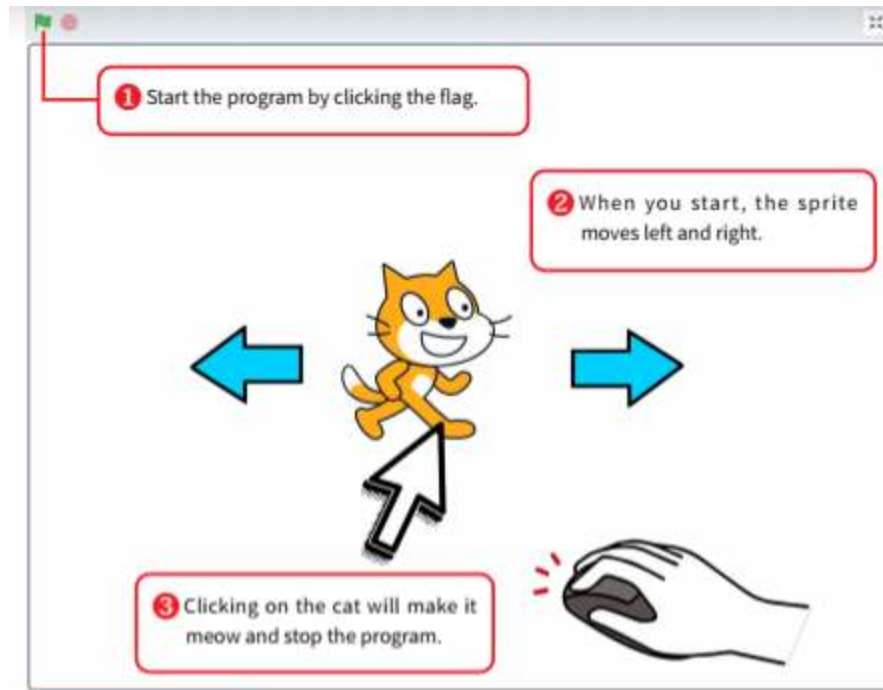
## CaietdeActivitatiNr1-Scratch



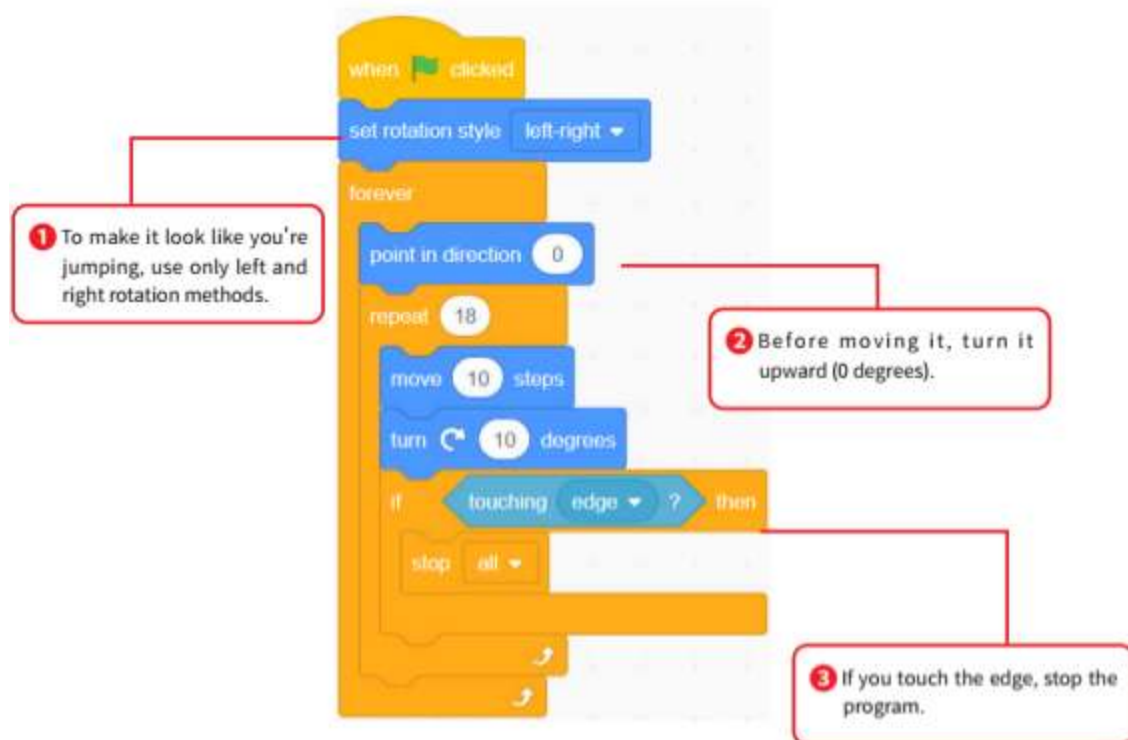
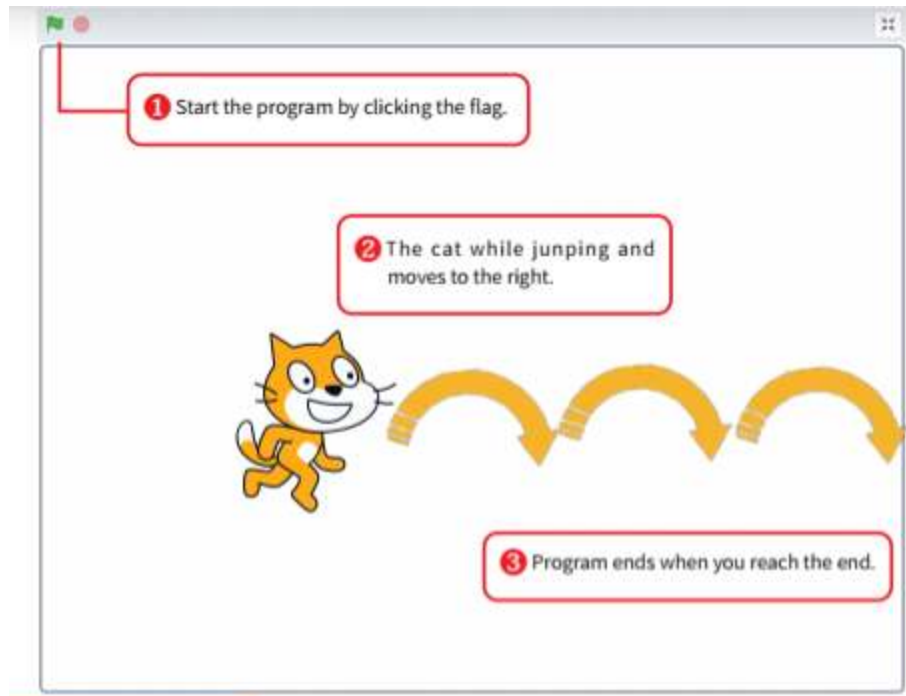
## CaietdeActivitatiNr1-Scratch



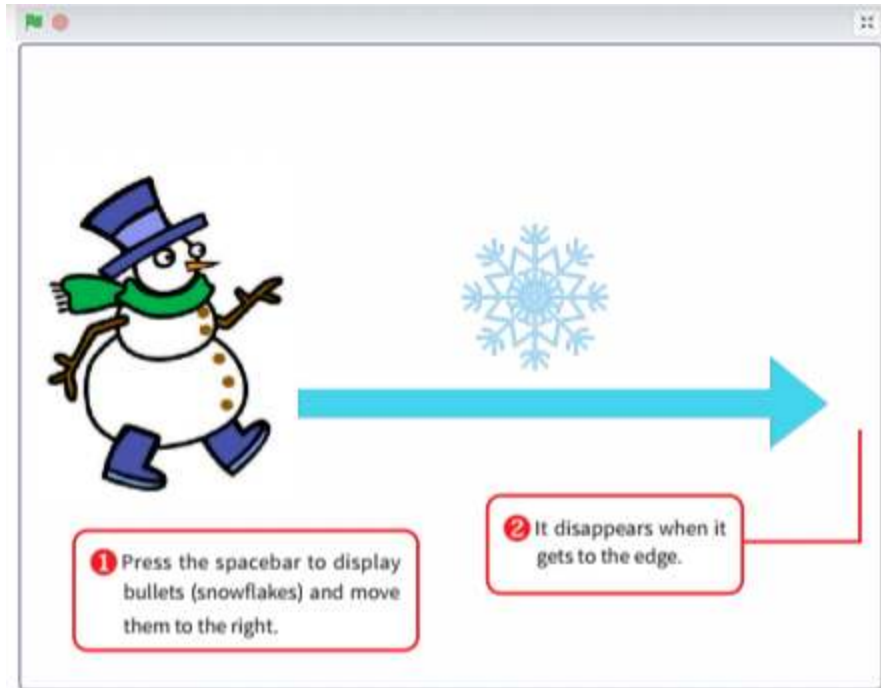
## CaietdeActivitatiNr1-Scratch



# CaietdeActivitatiNr1-Scratch

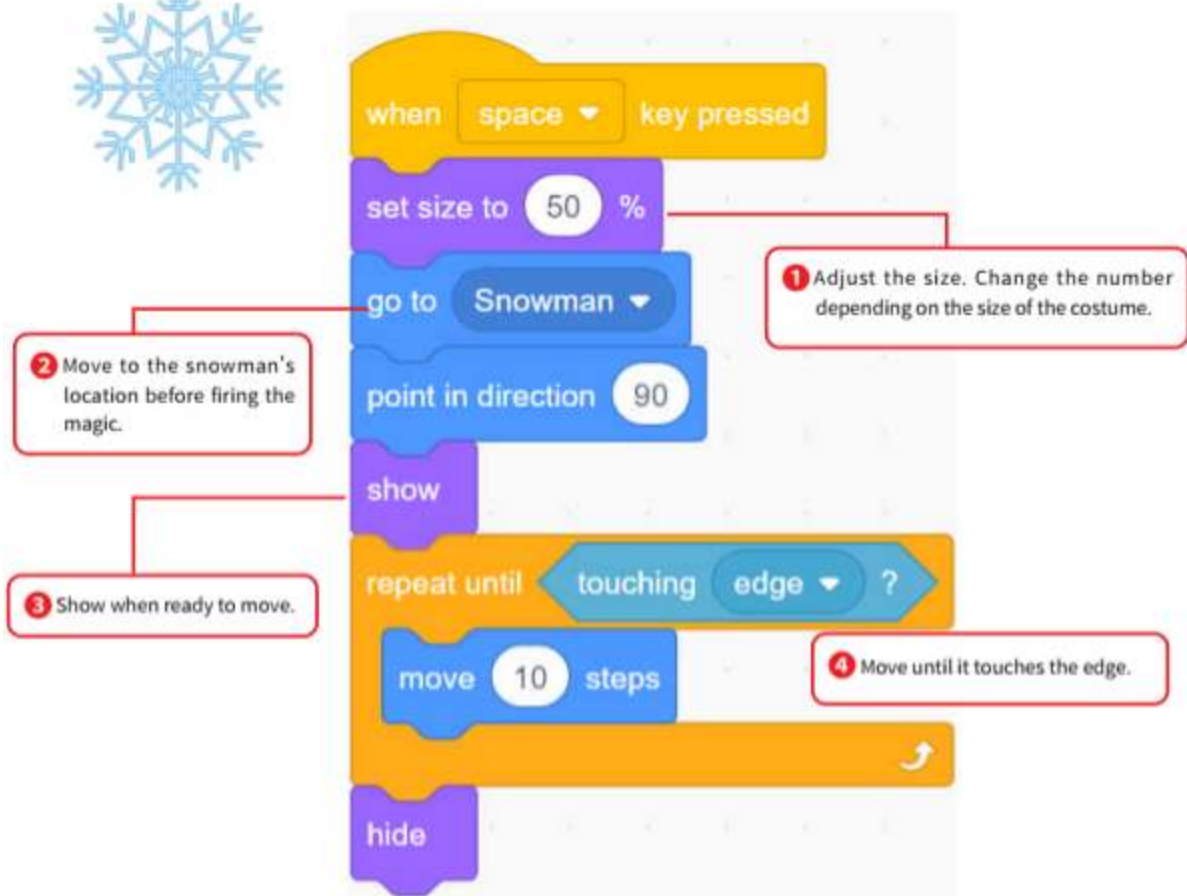


# CaietdeActivitatiNr1-Scratch

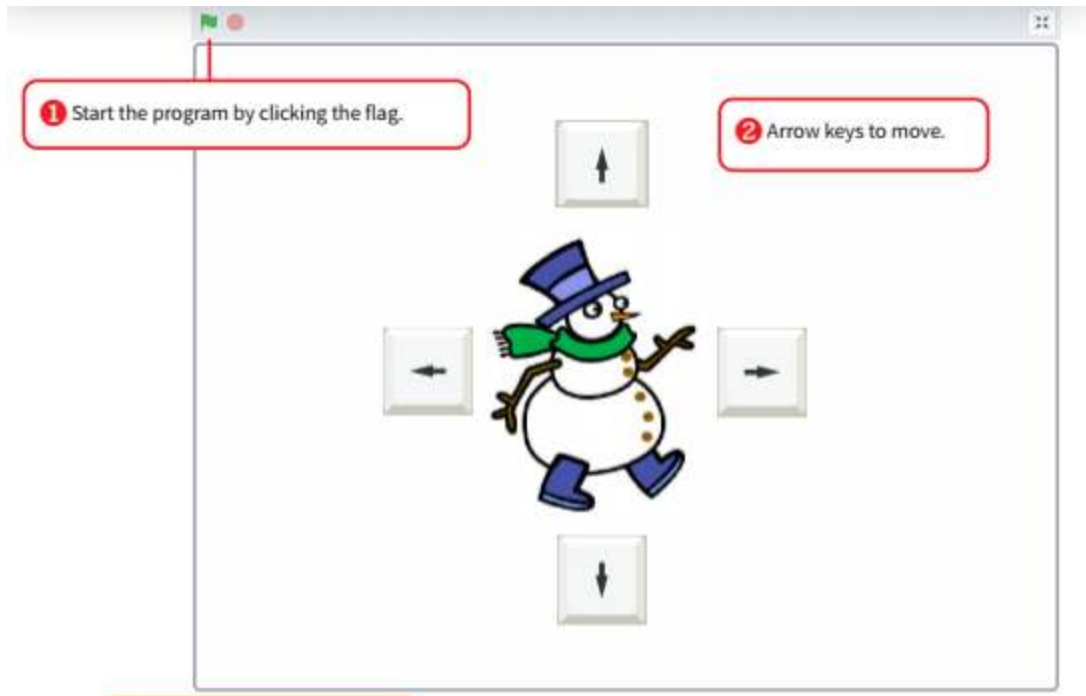


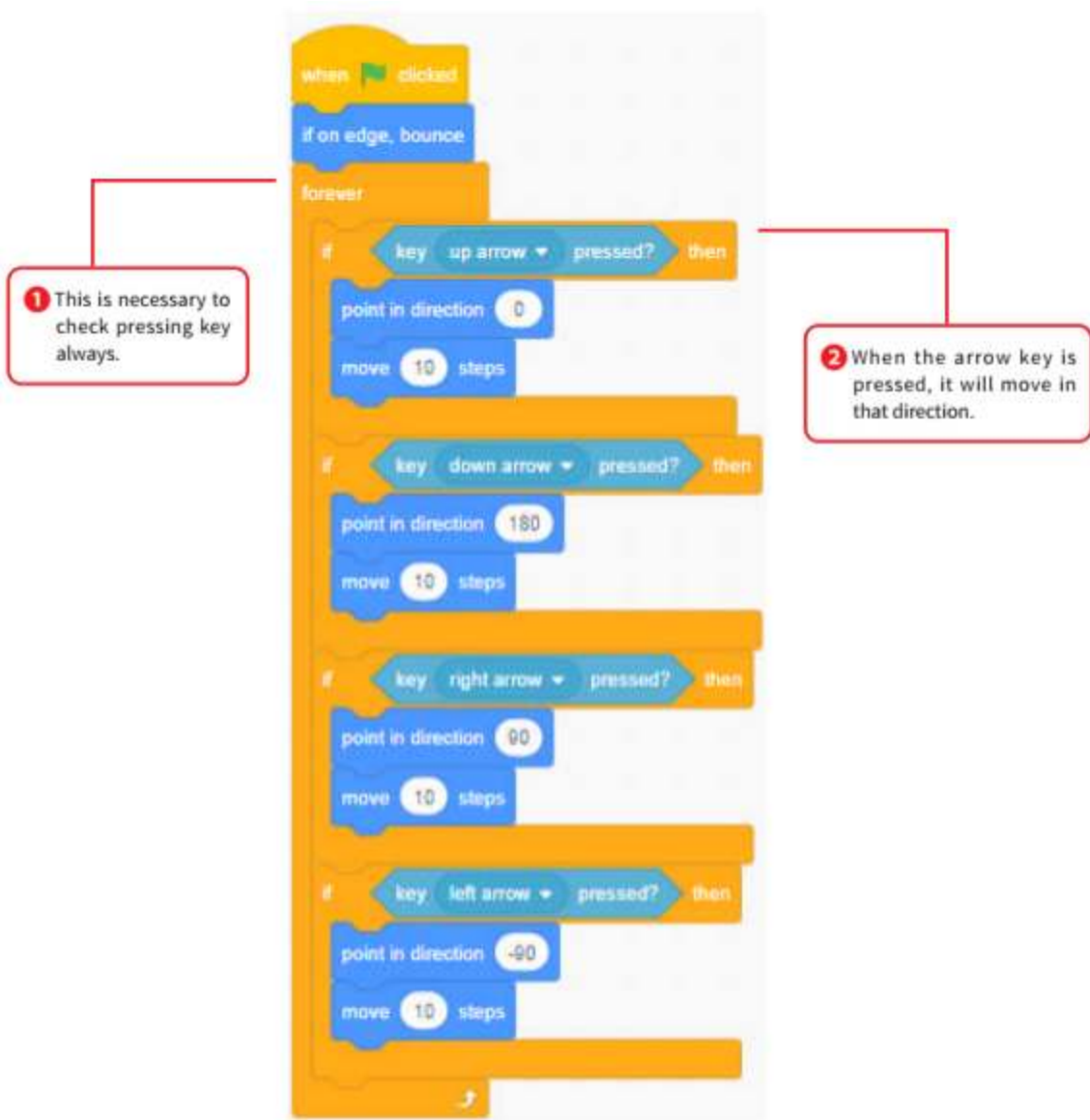


- The program is magic (snowflakes) only

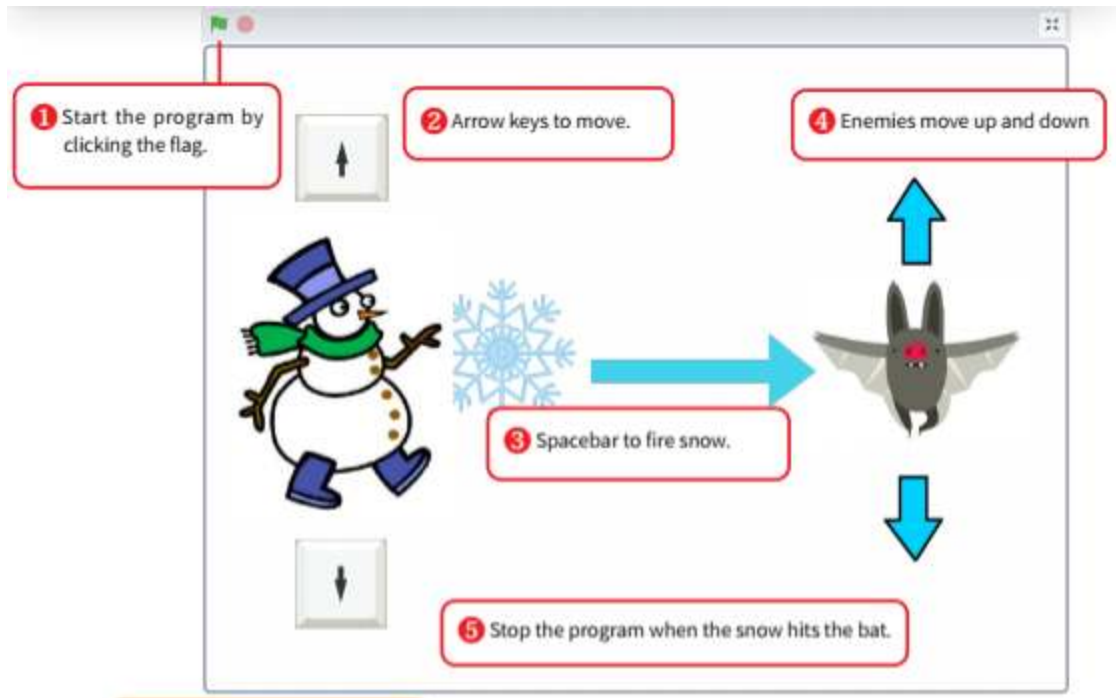


# CaietdeActivitatiNr1-Scratch



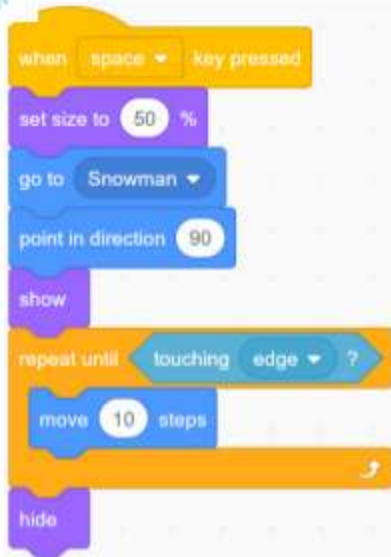


# CaietdeActivitatiNr1-Scratch





## Snowflake



## Snowman



## Bat

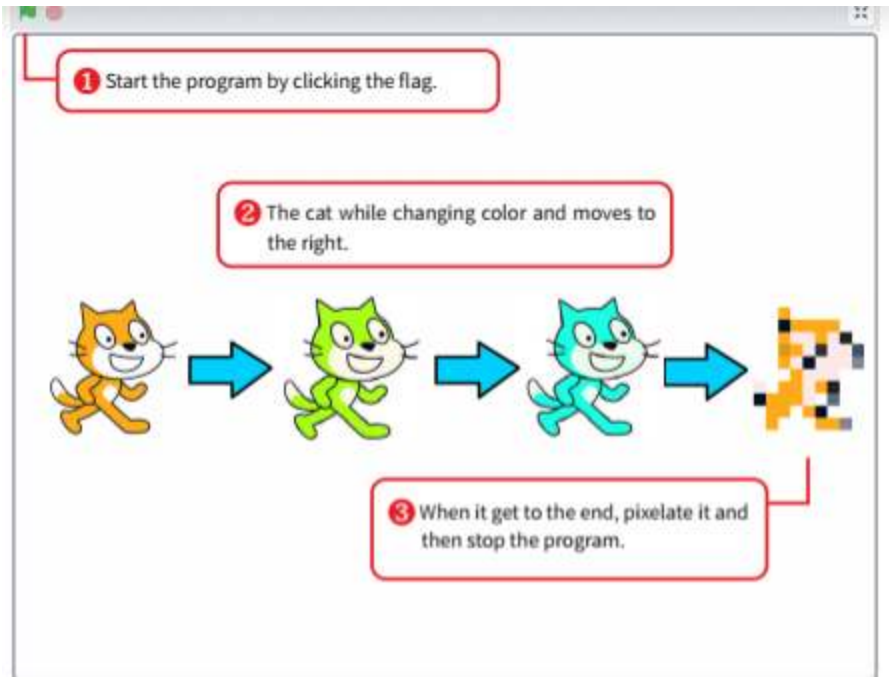


## POINT

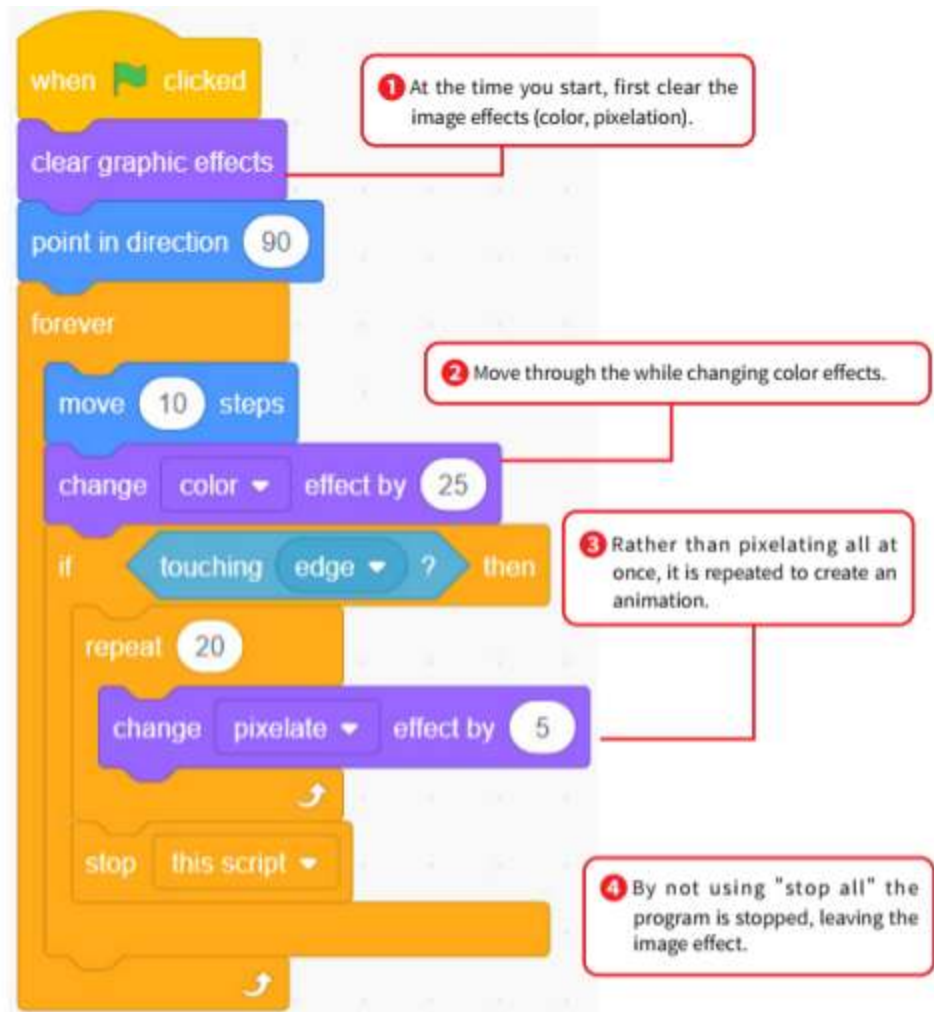
The game can be made more interesting by improving the following points.

- Make a sound when you touch an enemy (Bat).
- Change the size of enemies and bullets (Snowflake).
- Make a change the movement of the enemy.

# CaietdeActivitatiNr1-Scratch

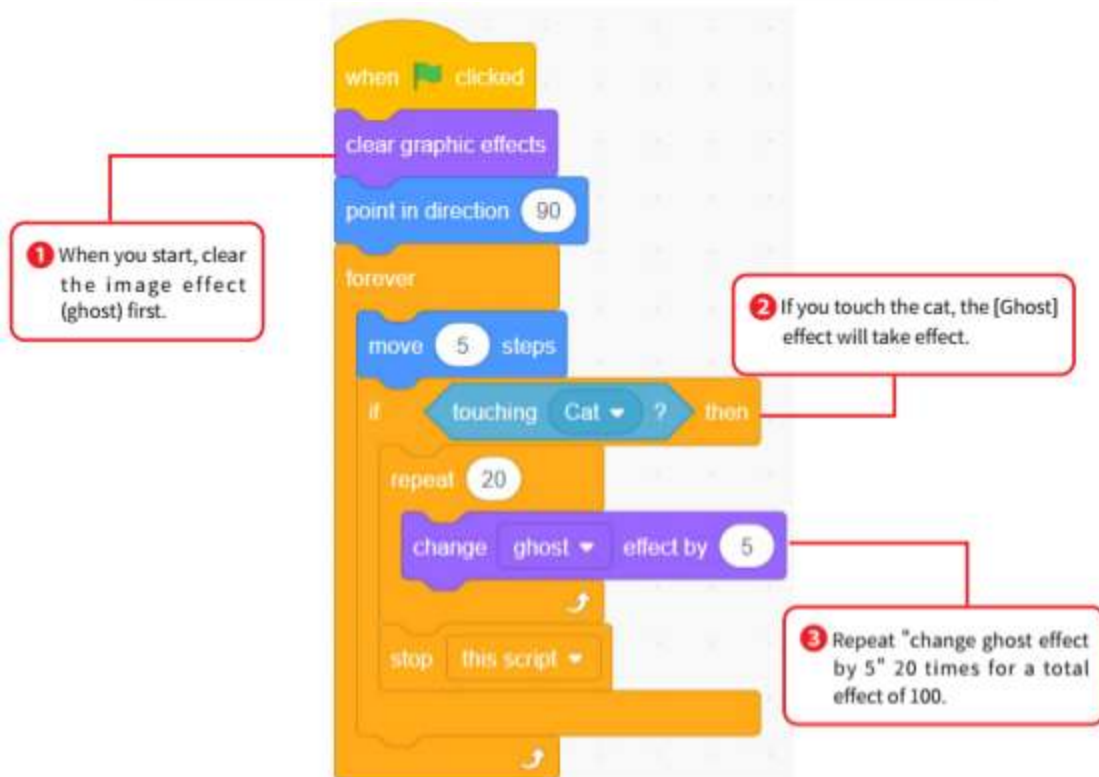
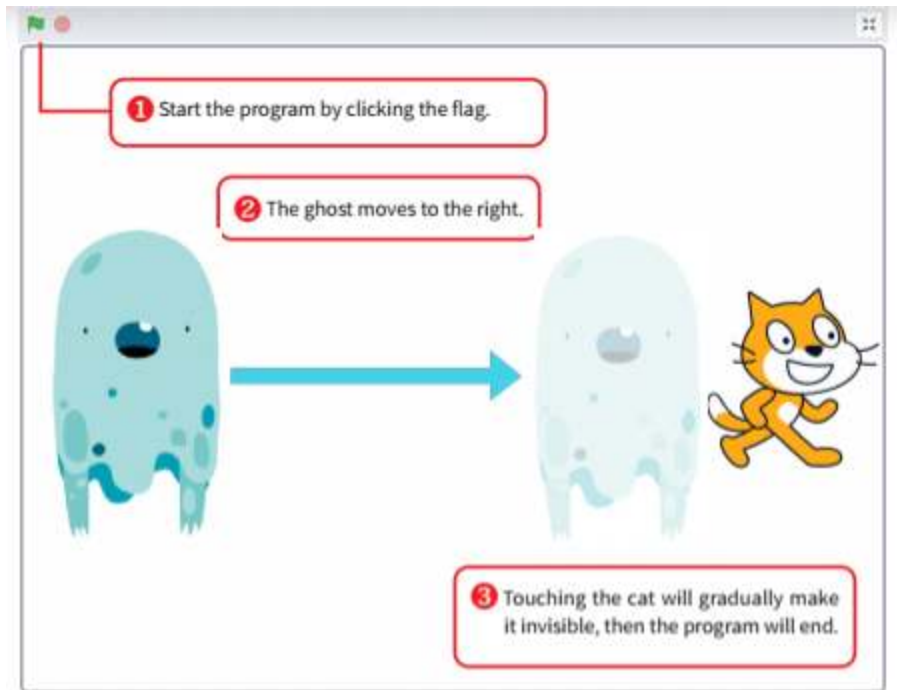


# CaietdeActivitatiNr1-Scratch

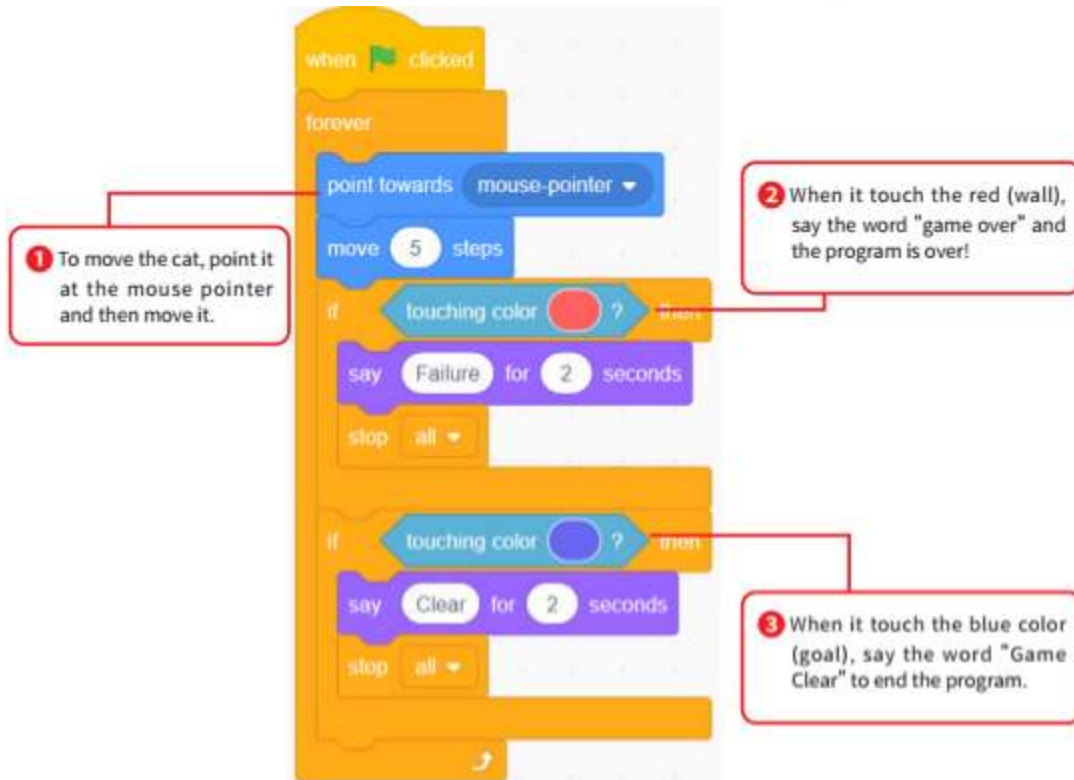
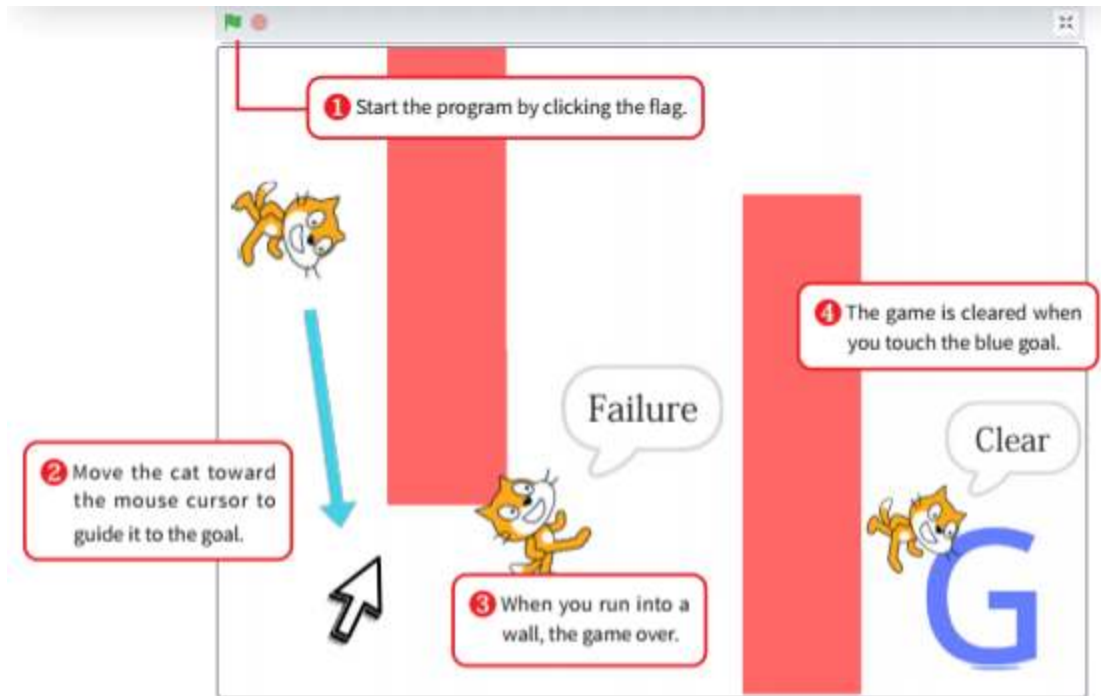




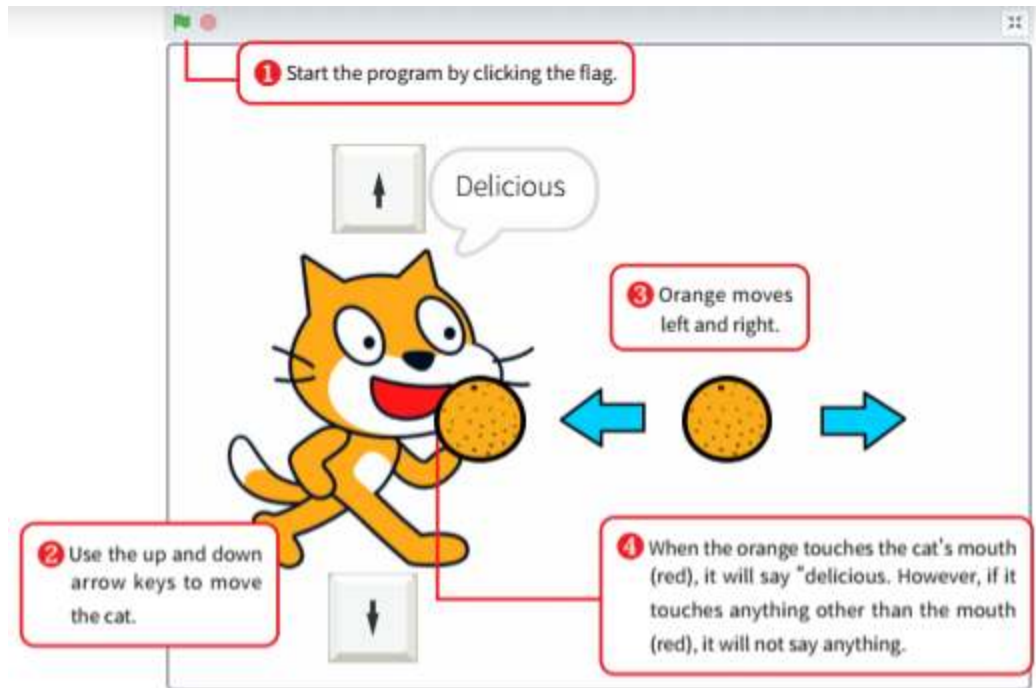
# CaietdeActivitatiNr1-Scratch



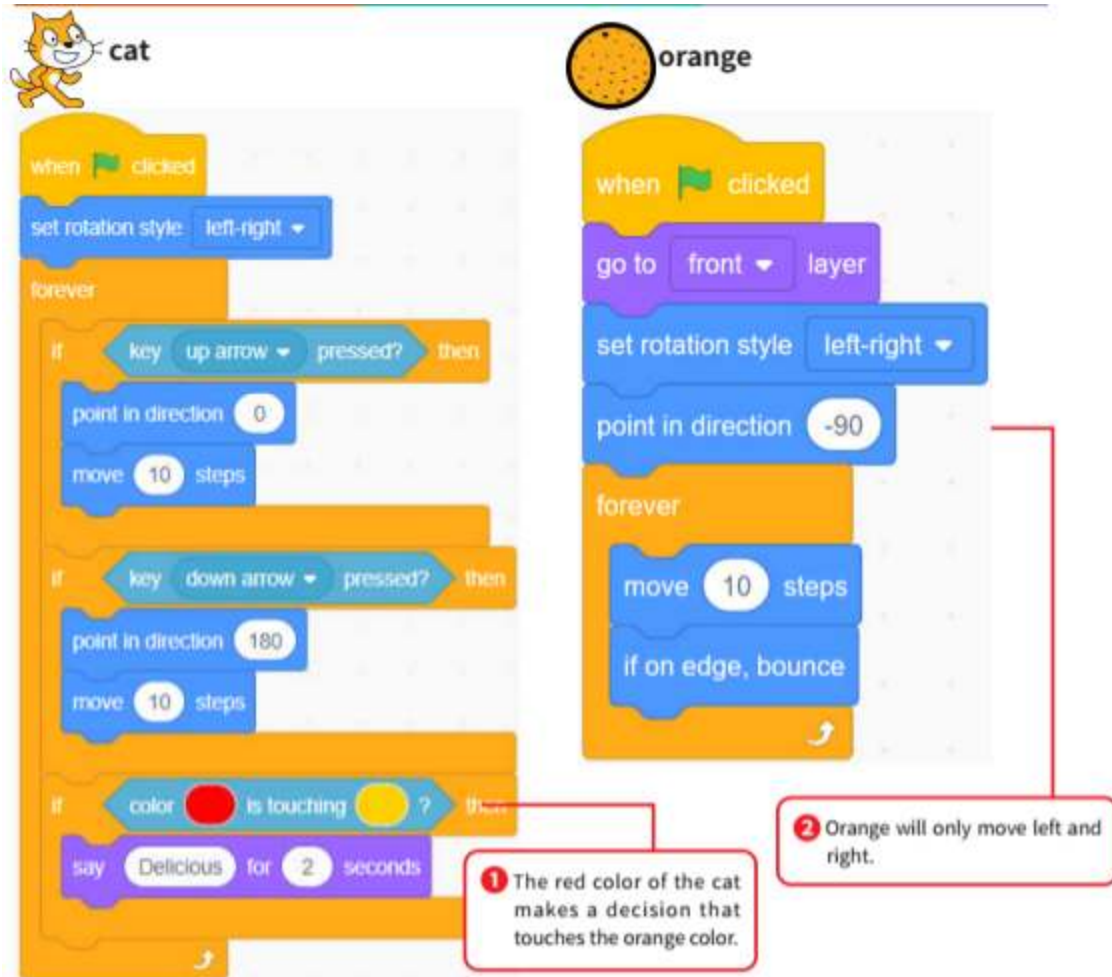
# CaietdeActivitatiNr1-Scratch



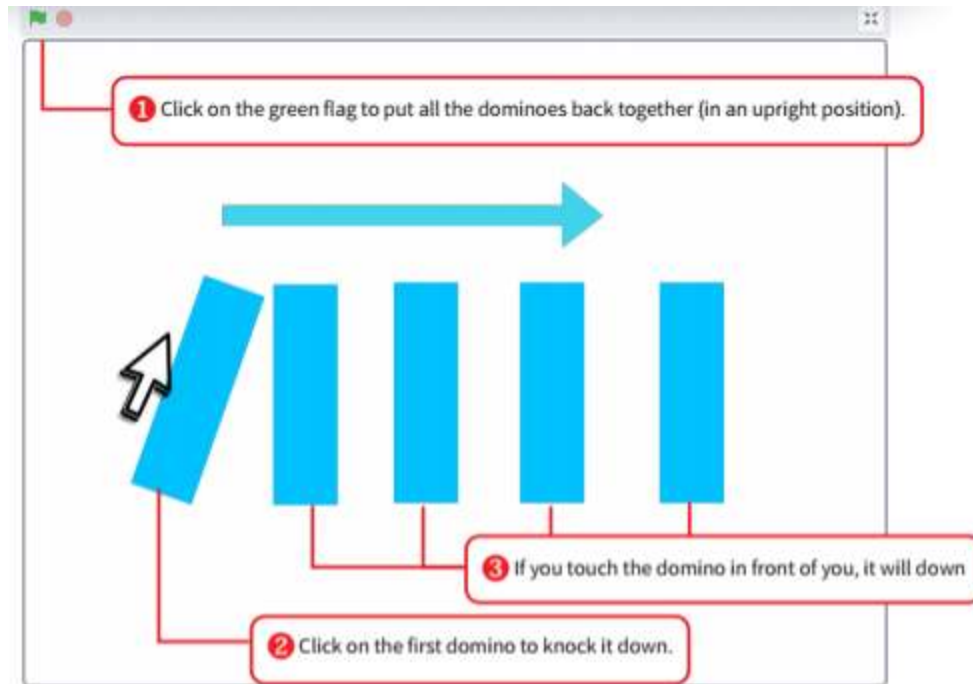
# CaietdeActivitatiNr1-Scratch



# CaietdeActivitatiNr1-Scratch

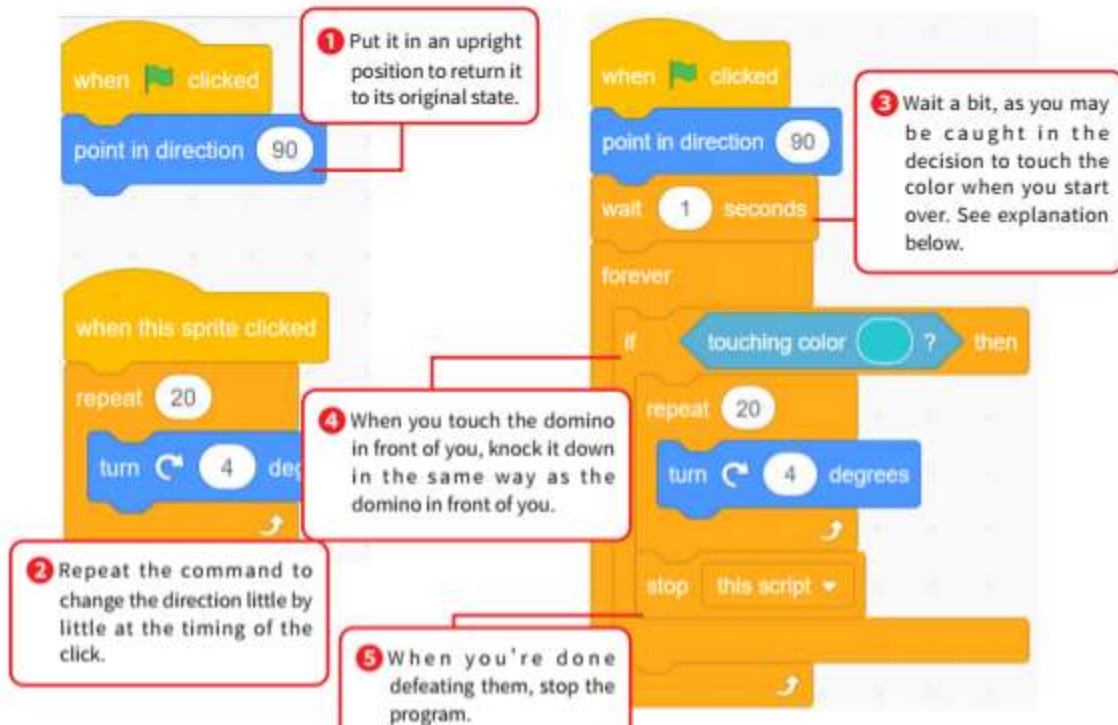


# CaietdeActivitatiNr1-Scratch

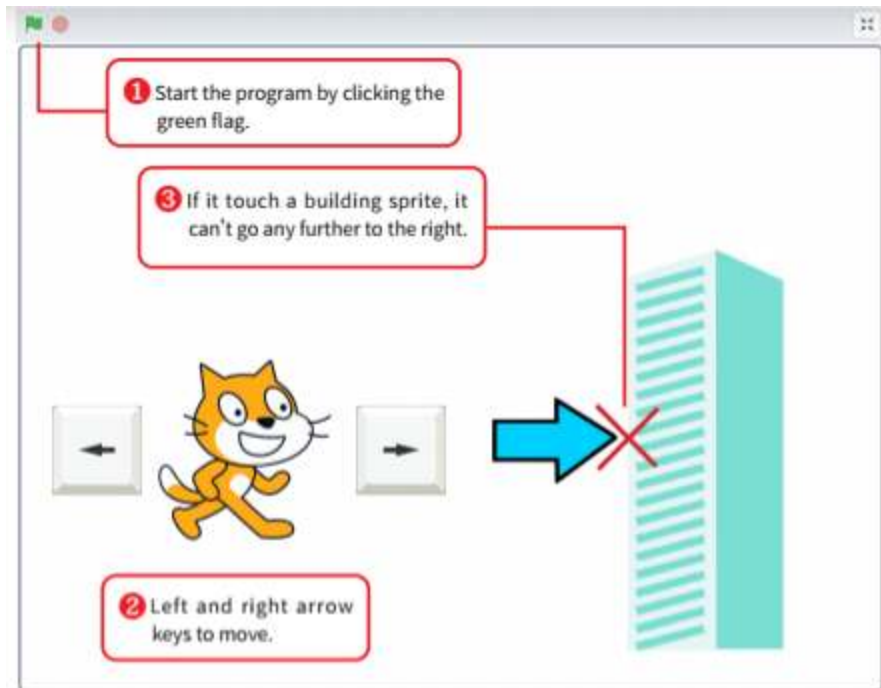


< The first domino >

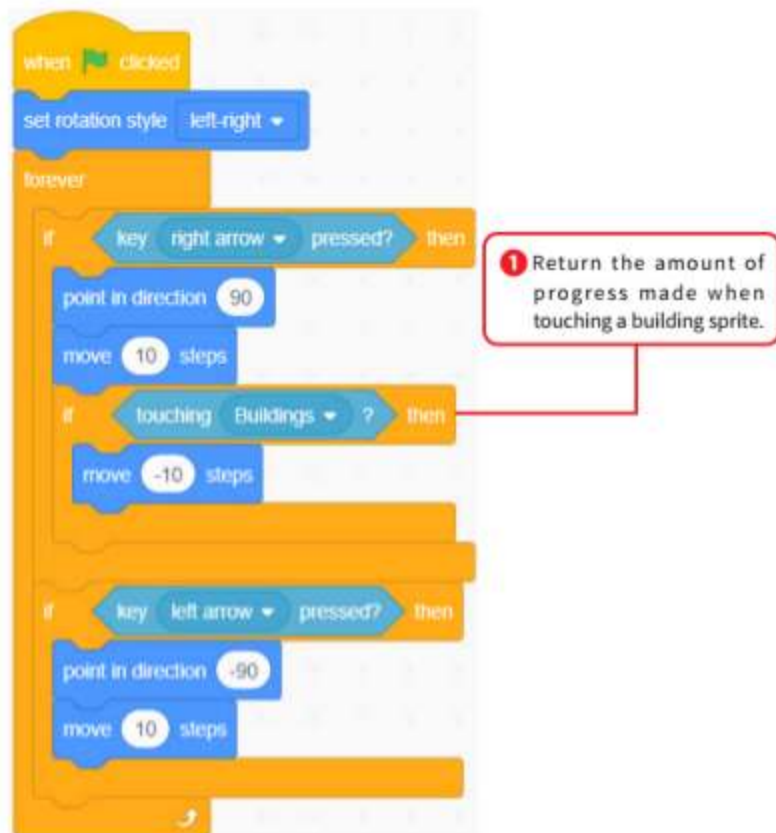
< The second and subsequent dominoes >



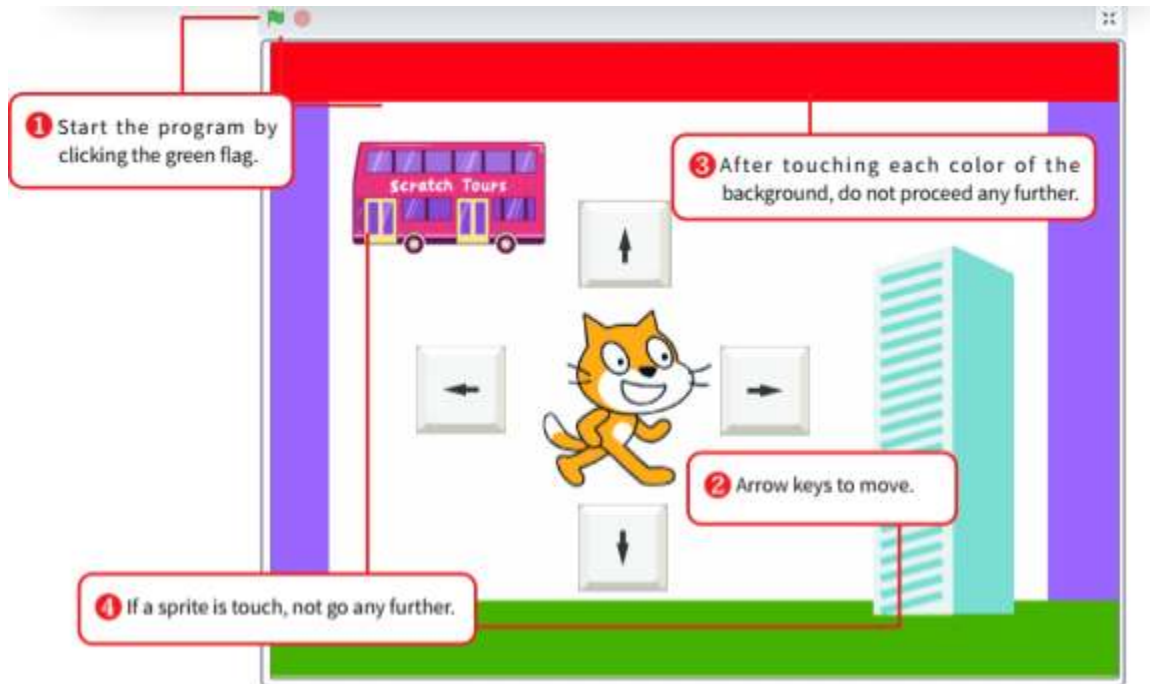
# CaietdeActivitatiNr1-Scratch



< Cat Sprite >

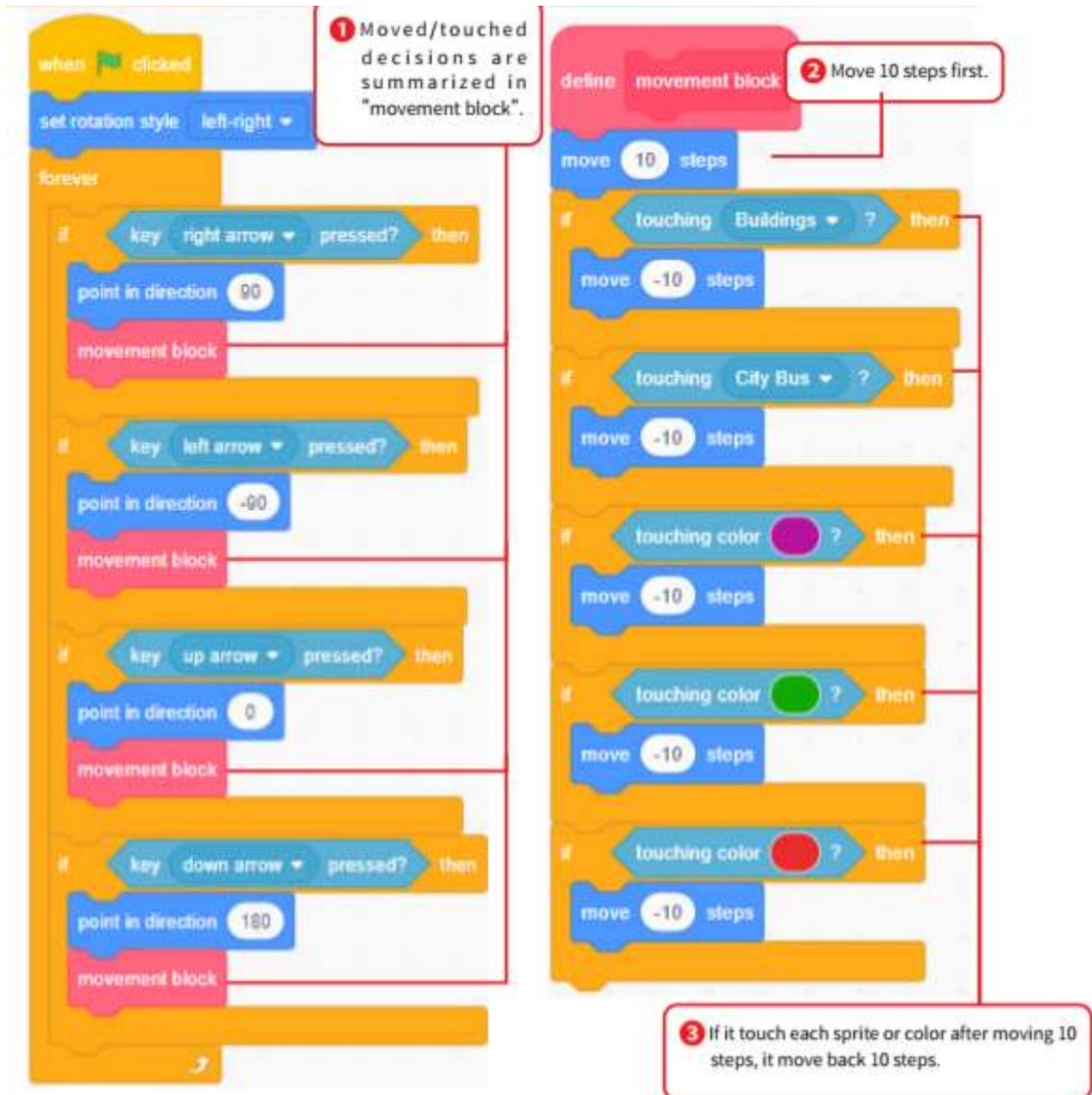


## CaietdeActivitatiNr1-Scratch

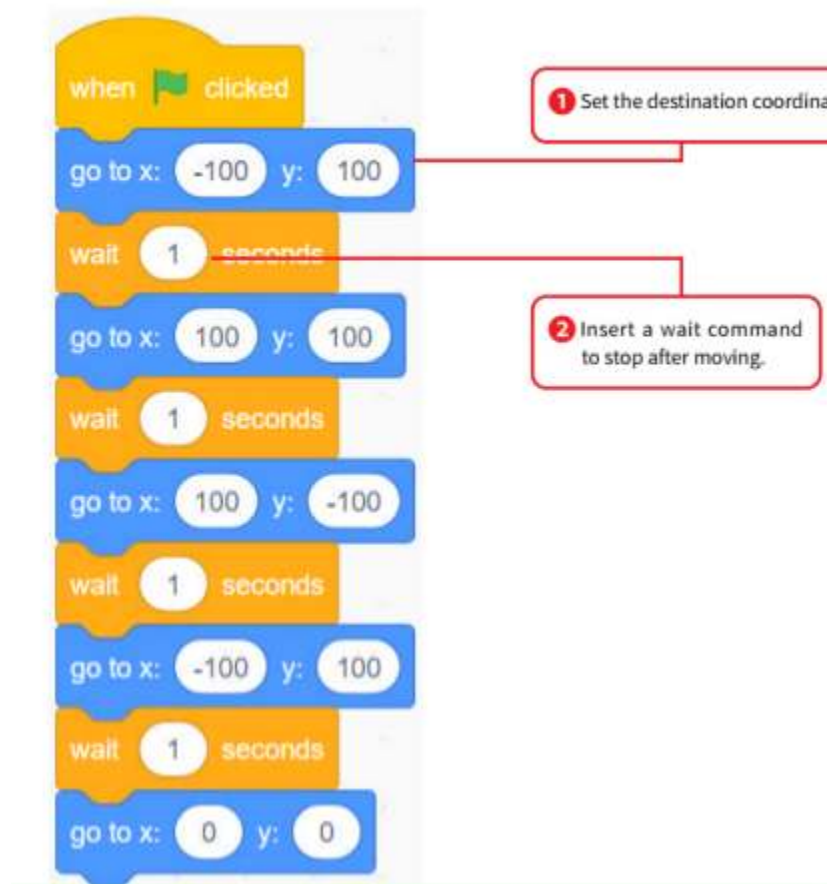
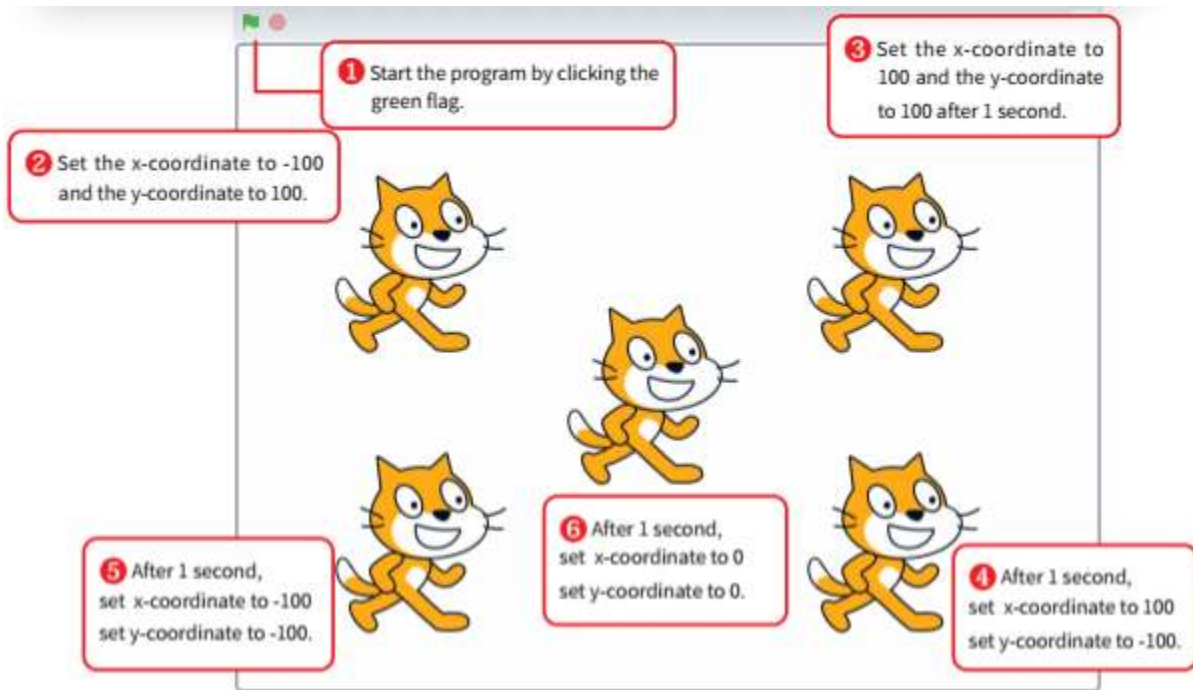




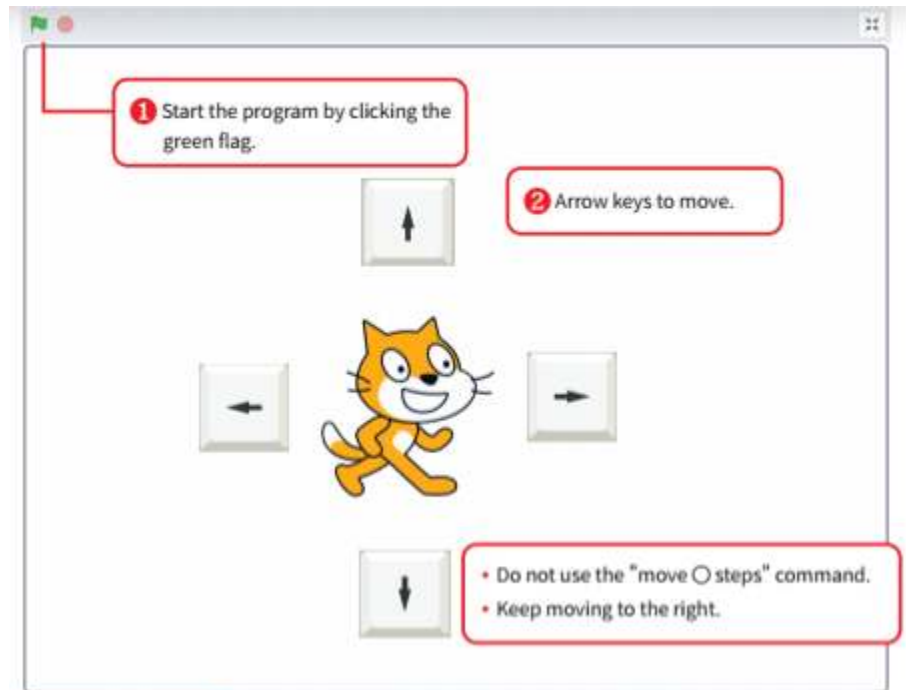
# CaietdeActivitatiNr1-Scratch



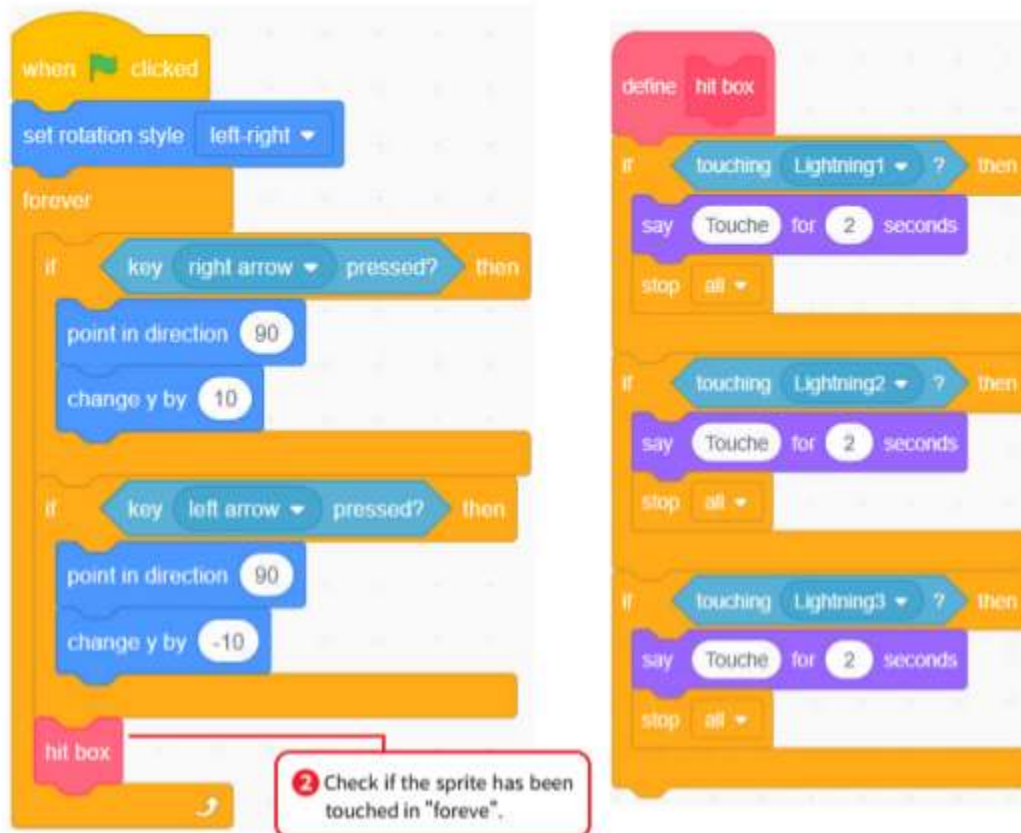
# CaietdeActivitatiNr1-Scratch



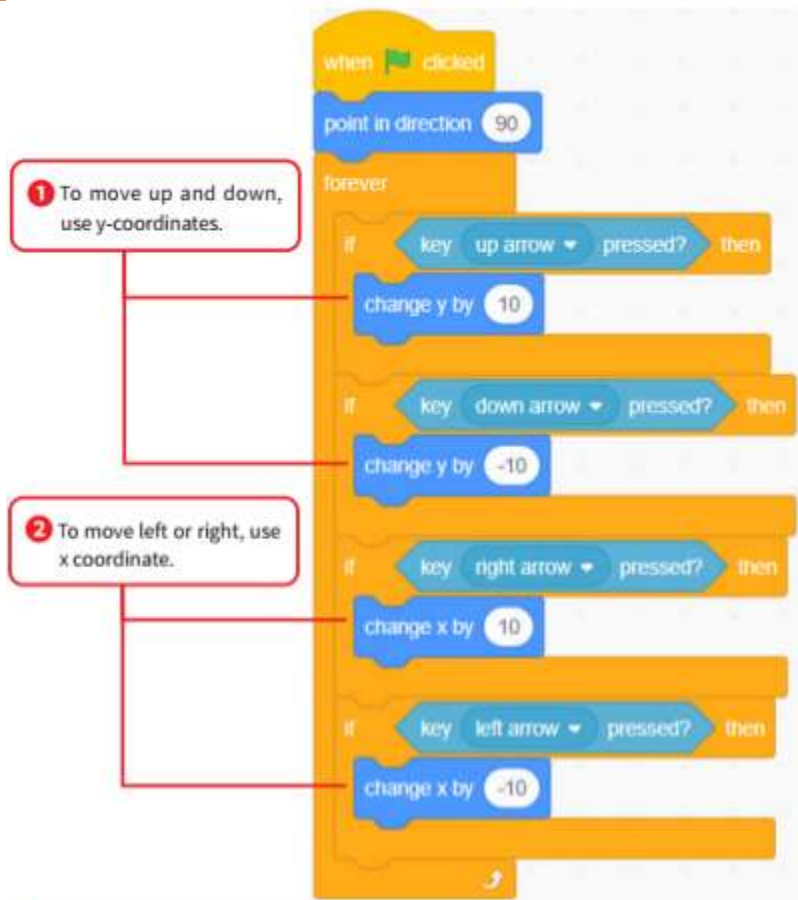
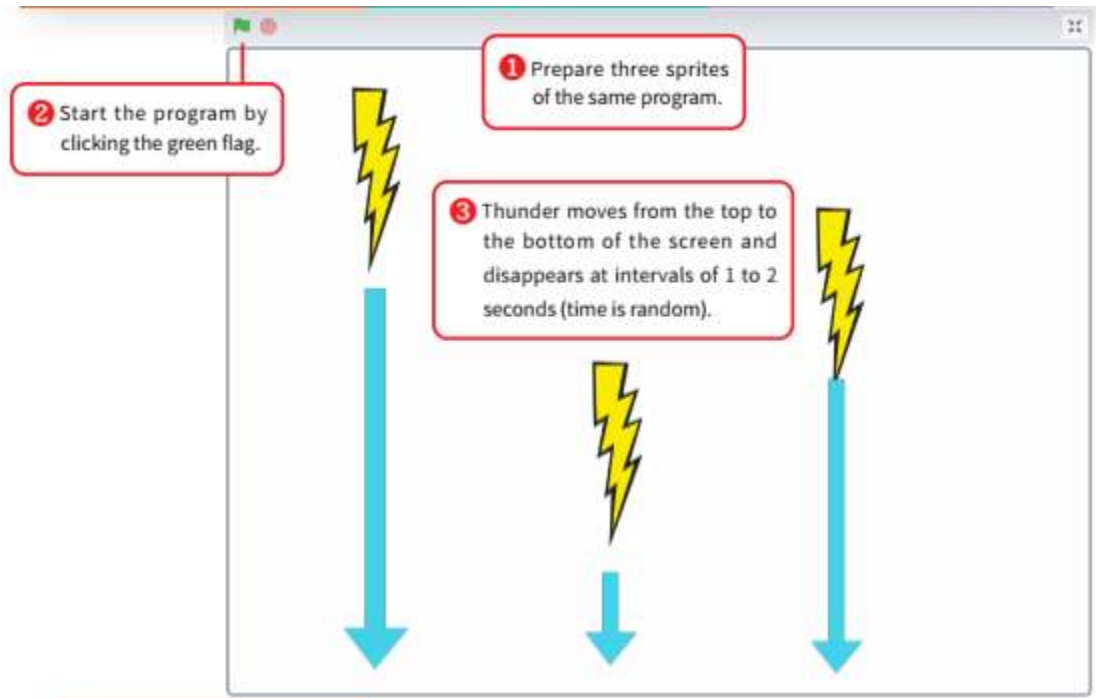
## CaietdeActivitatiNr1-Scratch



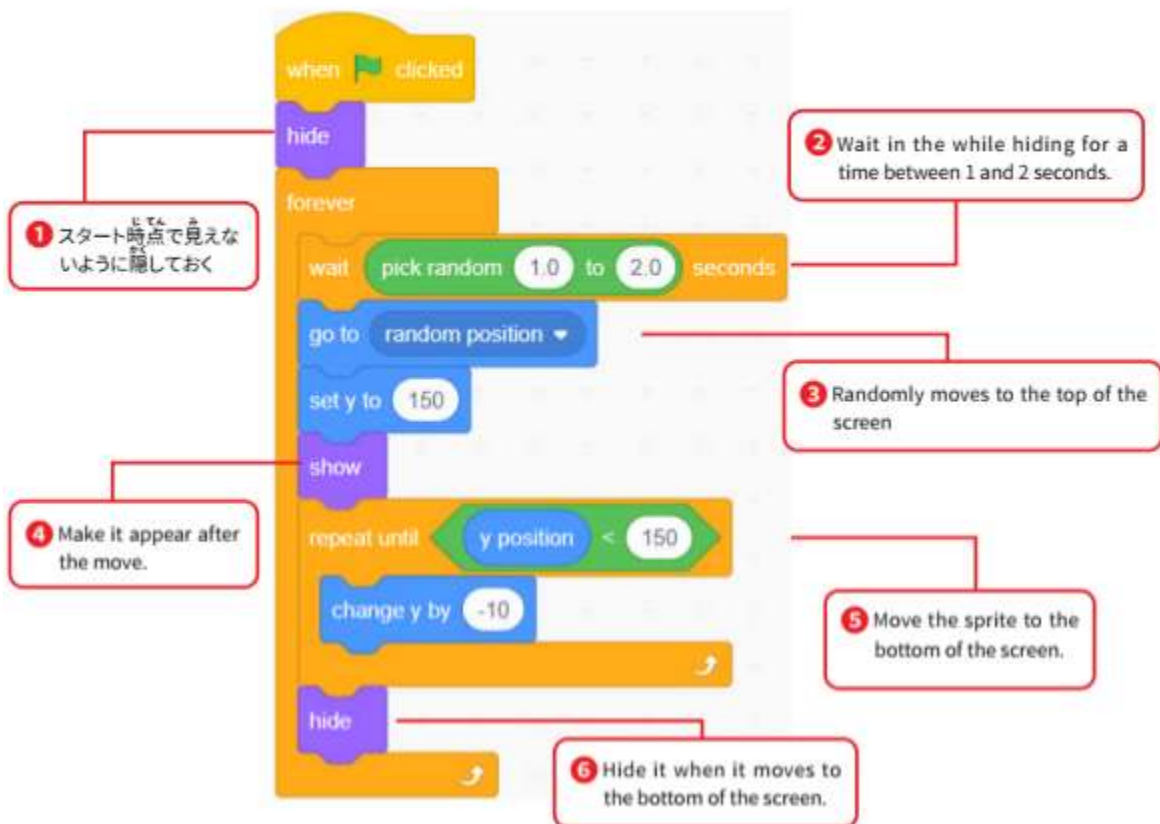
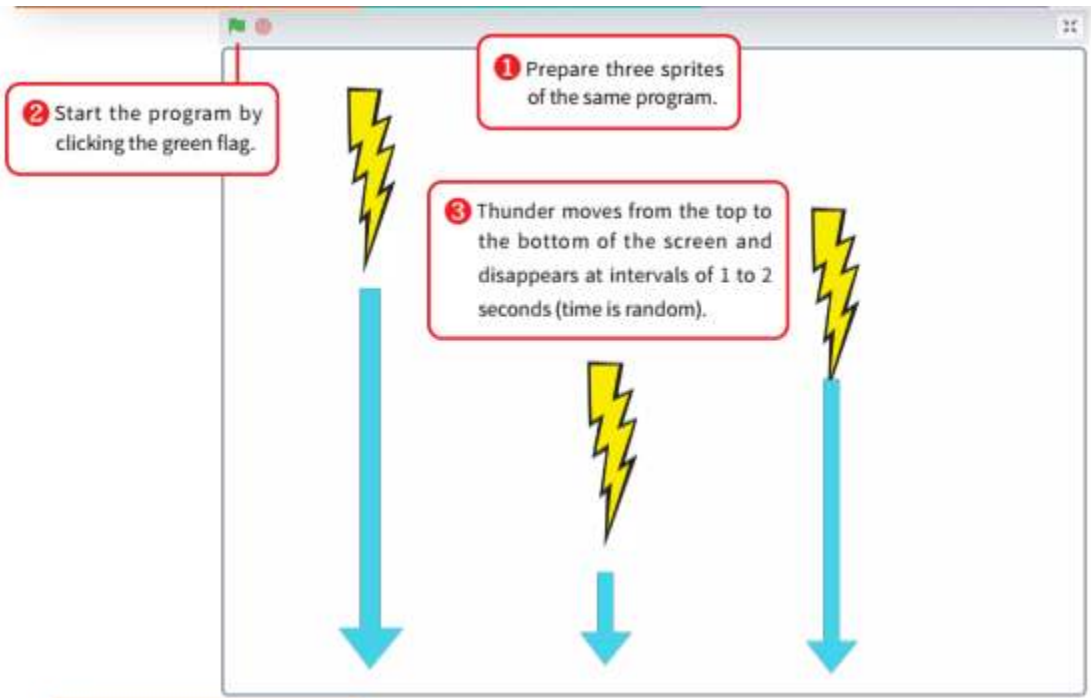
### < Cat Sprite >



# CaietdeActivitatiNr1-Scratch

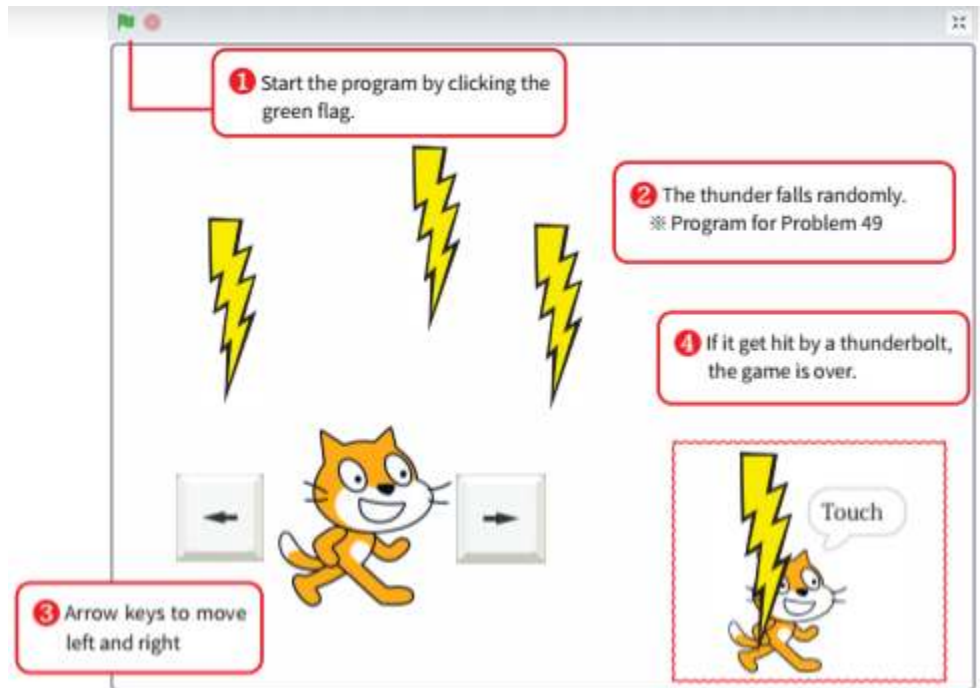


# CaietdeActivitatiNr1-Scratch

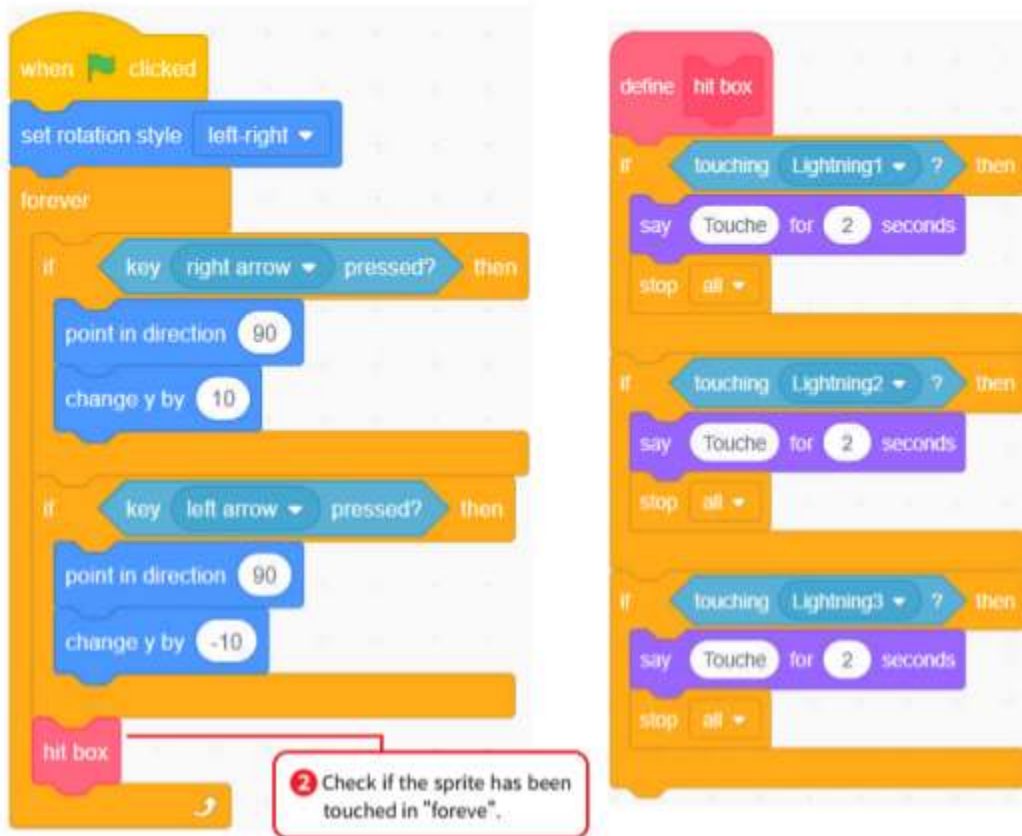




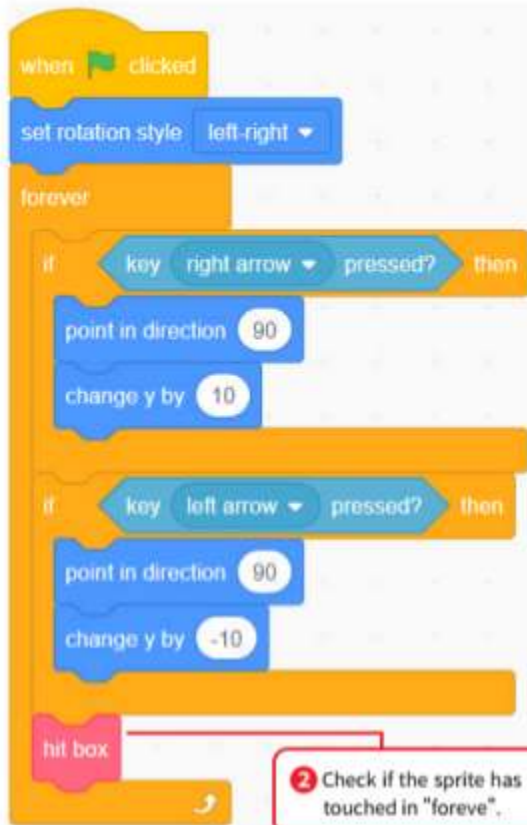
# CaietdeActivitatiNr1-Scratch



## < Cat Sprite >



## < Cat Sprite >



2 Check if the sprite has been touched in "foreve".

