

# Scratch Coding

Get your entire class/club  
coding successfully!

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World Economic Forum: By 2018, the reports says, almost one-third of robotic deployments will be smarter, more efficient robots capable of collaborating with other robots and working safely alongside humans.

By 2019, 30% or more of the world's leading companies will employ a chief robotics officer, and several governments around the world will have drafted or implemented specific legislation surrounding robots and safety, security and privacy.

By 2020, average salaries in the robotics sector will increase by at least 60% – yet more than one-third of the available jobs in robotics will remain vacant due to shortages of skilled workers.

The Guardian Jan 11, 2017

Data from the Robotics Industries Association (RIA), one of the largest robotic automation advocacy organizations in North America, reveals just how prevalent robots are likely to be in the workplace of tomorrow. During the first half of 2016 alone, North American robotics technology vendors sold 14,583 robots worth \$817m to companies around the world. The RIA further estimates that more than 265,000 robots are currently deployed at factories across the country, placing the US third worldwide in terms of robotics deployments behind only China and Japan.

In a recent report, the World Economic Forum predicted that robotic automation will result in the net loss of more than 5m jobs across 15 developed nations by 2020, a conservative estimate...

...for every job created by robotic automation, several more will be eliminated entirely. At scale, this disruption will have a devastating impact on our workforce.

The Guardian Jan 11, 2017





## Learning Skills and Work Habits

E – Excellent    G – Good    S – Satisfactory    N – Needs Improvement

### Responsibility

- Fulfils responsibilities and commitments within the learning environment.
- ☹️▪ Completes and submits class work, homework, and assignments according to agreed-upon timelines.
- Takes responsibility for and manages own behaviour.

### Organization

- Devises and follows a plan and process for completing work and tasks.
- ☹️▪ Establishes priorities and manages time to complete tasks and achieve goals.
- Identifies, gathers, evaluates, and uses information, technology, and resources to complete tasks.

### Independent Work

- Independently monitors, assesses, and revises plans to complete tasks and meet goals.
- ☹️▪ Uses class time appropriately to complete tasks.
- ☹️▪ Follows instructions with minimal supervision.
- ☹️

### Collaboration

- Accepts various roles and an equitable share of work in a group.
- Responds positively to the ideas, opinions, values, and traditions of others.
- ☹️▪ Builds healthy peer-to-peer relationships through personal and media-assisted interactions.
- Works with others to resolve conflicts and build consensus to achieve group goals.
- Shares information, resources, and expertise, and promotes critical thinking to solve problems and make decisions.

### Initiative

- Looks for and acts on new ideas and opportunities for learning.
- ☹️▪ Demonstrates the capacity for innovation and a willingness to take risks.
- ☹️▪ Demonstrates curiosity and interest in learning.
- Approaches new tasks with a positive attitude.
- Recognizes and advocates appropriately for the rights of self and others.

### Self-Regulation

- Sets own individual goals and monitors progress towards achieving them.
- Seeks clarification or assistance when needed.
- ☹️▪ Assesses and reflects critically on own strengths, needs, and interests.
- Identifies learning opportunities, choices, and strategies to meet personal needs and achieve goals.
- Perseveres and makes an effort when responding to challenges.



## Tips & Tricks for a successful 50 min lesson:

- Call it video game making software
- Students sit on floor for mini-lessons
- Demonstrate code on a Smartboard/Projector
- Each student codes on their own computer
- Focus on small coding tasks
- Leave the code up on display to copy
- Regroup 2-3 times/lesson: review task, share ideas, give out next task.
- Walk around to help and ensure that students are not off-task
  - ie. fooling around with backgrounds
  - These students more likely to lose interest
- Allow some free time at end of the lesson for improving game
- Older students helping younger students (to learn quickly!)
- Neighbours helping neighbours
- Teacher need not be a pro!
- Three lessons geared towards creating a real game!

# Game #1

## Avoid the Bananas!

Lesson 1 Move your sprite with the arrow keys.

Lesson 2 Make your sprite look like it's running/flying.

Lesson 3 Create a starting point. Add a background.

Lesson 4 Add Obstacles!



Scratch v452.1

File Edit Tips About

Untitled

Sprites Costumes Sounds

Motion Looks Sound Pen Data Events Control Sensing Operators More Blocks

wait 1 secs

repeat 10

forever

if then

if then else

wait until

repeat until

stop all

when I start as a clone

create clone of myself

delete this clone

when clicked

go to x: 0 y: 0

when right arrow key pressed

change x by 10

when left arrow key pressed

change x by -10

when up arrow key pressed

change y by 10

when down arrow key pressed

change y by -10

when space key pressed

repeat 10

turn 15 degrees

change color effect by 25

change whirl effect by 25

change fisheye effect by 25

X: 240 Y: -172

Sprites

New sprite: [Cat] [Fish] [Bird] [Other]

Stage 1 backdrop

New backdrop: [Image] [Image] [Image] [Image]

Sprite1

Lesson 1 Change x by 10 Change y by 10



Untitled



X: 240 Y: -180

Sprites

New sprite:

Stage  
2 backdrops

New backdrop:



Bat1

Scripts Costumes Sounds

**Motion**  
Looks  
Sound  
Pen  
Data

Events  
Control  
Sensing  
Operators  
More Blocks

move 10 steps

turn 15 degrees

turn 15 degrees

point in direction 90

point towards mouse-pointer

go to x: -100 y: 0

go to mouse-pointer

glide 1 secs to x: -100 y: 0

change x by 10

set x to 0

change y by 10

set y to 0

if on edge, bounce

set rotation style left-right

x position

y position

direction

when green flag clicked

go to x: 0 y: 0

when right arrow key pressed

repeat 10

change x by 10

next costume

wait 0.1 secs

when left arrow key pressed

repeat 10

change x by -10

next costume

wait 0.1 secs

when up arrow key pressed

repeat 10

change y by 10

next costume

wait 0.1 secs

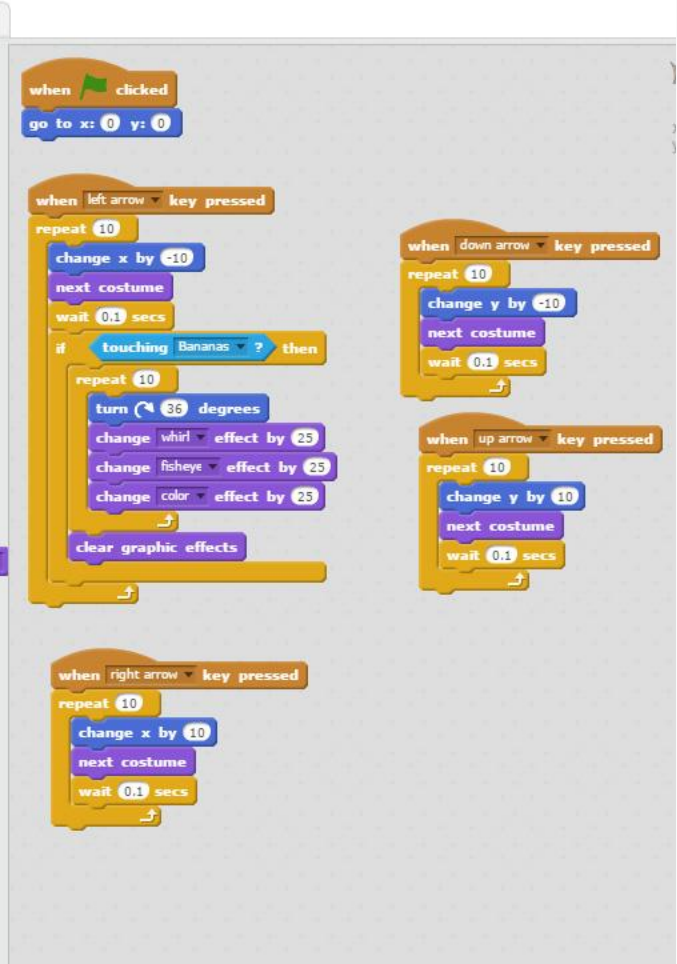
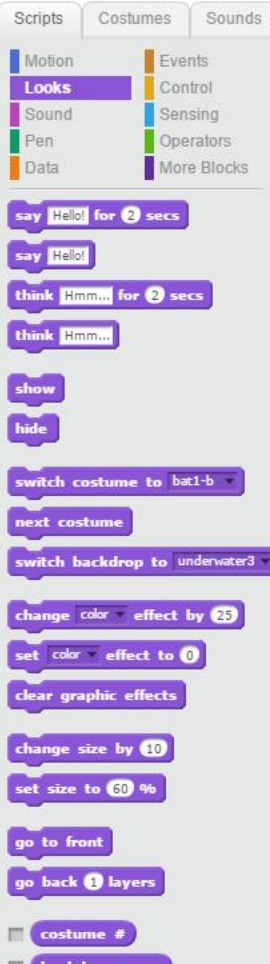
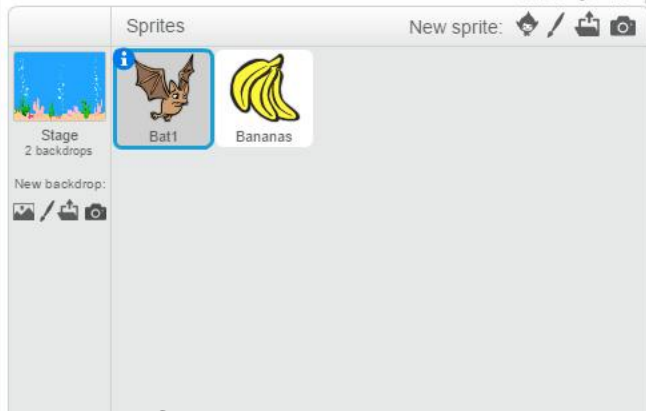
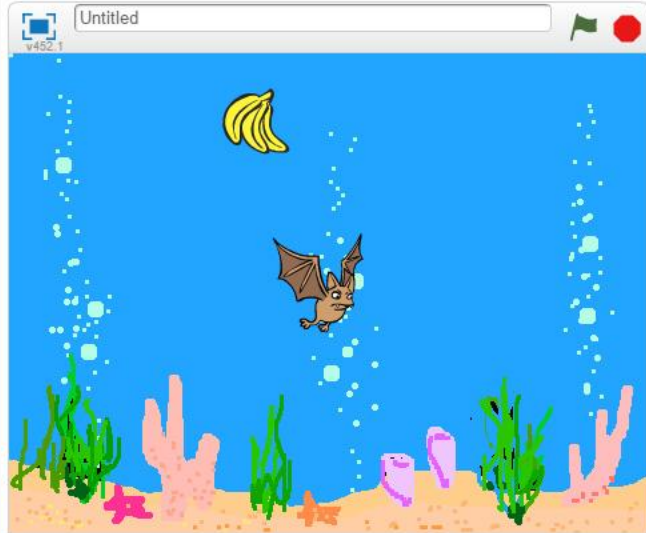
when down arrow key pressed

repeat 10

change y by -10

next costume

wait 0.1 secs



# Game #2

## Obstacle Course!

Lesson 5 Mouse pointer and pen down.

Lesson 6 Add moving obstacles. Start and Finish Line.





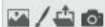
x: 240 y: -180

Sprites

New sprite: [Icons for creating new sprites]



New backdrop:



Scripts Costumes Sounds

- Motion
- Looks
- Sound
- Pen
- Data
- Events
- Control
- Sensing
- Operators
- More Blocks

wait 1 secs

repeat 10

forever

if then

if then

else

wait until

repeat until

stop all

when I start as a clone

create clone of myself

delete this clone

when clicked

go to x: 0 y: 0

clear

pen down

set pen size to 3

forever

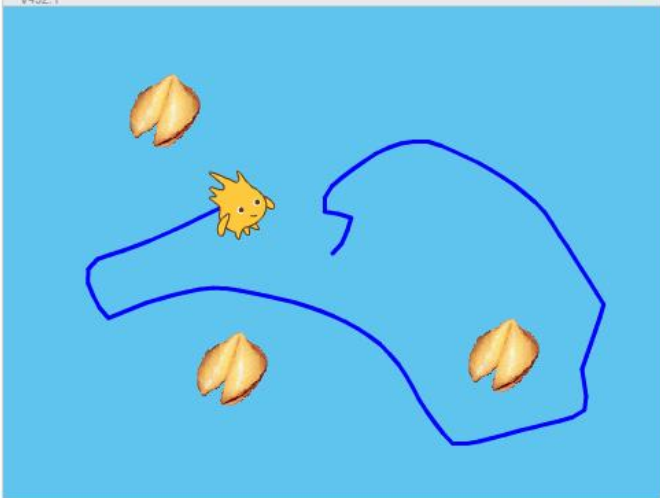
point towards mouse-pointer

move 10 steps

wait 0.1 secs



Untitled



x: 240 y: 180

Sprites

New sprite: [Icons for adding new sprites]



Stage  
2 backdrops



Gobo



Fortune C...

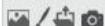


Fortune C...



Fortune C...

New backdrop:



Scripts

Costumes

Sounds

Motion  
Looks  
Sound  
Pen  
Data

Events  
Control  
Sensing  
Operators  
More Blocks

wait 1 secs

repeat 10

forever

if then

if then

else

wait until

repeat until

stop all

when I start as a clone

create clone of myself

delete this clone

when clicked

forever

turn 15 degrees

wait .1 secs

turn 15 degrees

wait .1 secs

# Game #3

## Interactive Postcard!

Lesson 7 Add music and text.

Holiday Postcard



X: 222 Y: 180

Sprites

New sprite:



Scripts Costumes Sounds

- Motion
- Looks
- Sound**
- Pen
- Data
- Events
- Control
- Sensing
- Operators
- More Blocks

play sound dance magic

play sound dance magic until done

stop all sounds

play drum 1 for 0.25 beats

rest for 0.25 beats

play note 60 for 0.5 beats

set instrument to 1

change volume by -10

set volume to 100 %

volume

change tempo by 20

set tempo to 60 bpm

tempo

when clicked

forever

point towards mouse-pointer

move 10 steps

wait .1 secs

when clicked

forever

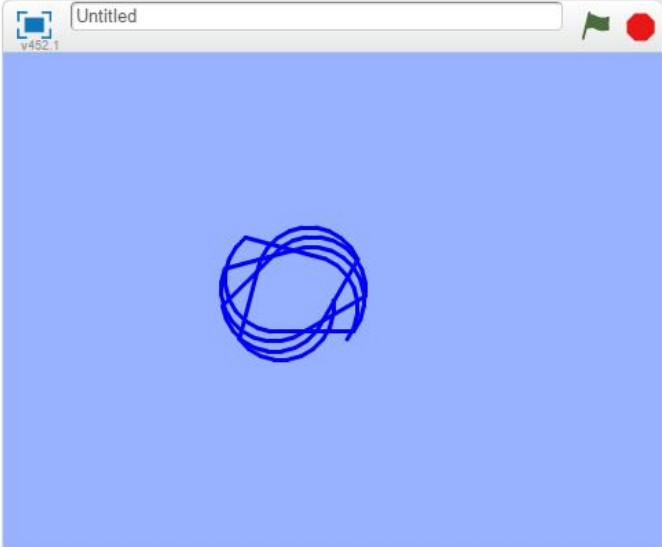
play sound dance magic until done



# Game #4

## Drawing Game!

Lesson 8 Loop within a loop, Show and Hide.



X: -129 Y: -180

Sprites

New sprite:

Stage  
1 backdrop

Sprite1

New backdrop:

Scripts Costumes Sounds

- Motion
- Looks
- Sound
- Pen
- Data
- Events
- Control
- Sensing
- Operators
- More Blocks

wait 1 secs

repeat 10

forever

if then

if then else

wait until

repeat until

stop all

when I start as a clone

create clone of myself

delete this clone

when clicked

go to x: 0 y: 0

hide

clear

set pen size to 3

pen down

forever

repeat 10

move 10 steps

turn 15 degrees

turn 45 degrees

move 50 steps

# Game #5

## Dance Game!

Lesson 9 Switch costumes to make dance moves.

Lesson 10 Add music and Stop all.



X: 240 Y: -180

Sprites

New sprite:

Stage  
3 backdrops

New backdrop:

Cassy Da...

Scripts Costumes Sounds

- Motion
- Looks
- Sound**
- Pen
- Data
- Events
- Control
- Sensing
- Operators
- More Blocks

- play sound techno2
- play sound techno2 until done
- stop all sounds
- play drum 1 for 0.25 beats
- rest for 0.25 beats
- play note 60 for 0.5 beats
- set instrument to 1
- change volume by -10
- set volume to 100 %
- ☐ volume
- change tempo by 20
- set tempo to 60 bpm
- ☐ tempo

```

when space key pressed
  play sound techno2
  repeat 10
    switch costume to cassy dance-c
    wait .2 secs
    switch costume to cassy dance-d
    wait .2 secs
  stop all sounds
    
```



# Game #6

## Snowflakes Falling!

Lesson 11 Random Numbers

Lesson 12 Catch the snowflakes!

