Bounce Sprite Off Canvas Edge

Make a ball bounce when it hits an edge of a Canvas.

Edge = 1

Edges are assigned values (1,3,-1,-3)
For top, right, bottom, left

Getting Ready
You will need the following components in your design screen:
* Canvas
* Sprite

Blocks Editor

When Ball1.EdgeReached

Do

Call Ball1.Bounce

Edge

What does it mean?
The Ball1.EdgeReached event will detect when the Ball sprite hits the edge of the Canvas and provides an argument edge. Each edge of a Canvas holds a numeric value. So just feed back the same value edge into the Bounce call.

Ball1.Bounce causes the ball to bounce and move in the opposite direction off the wall (Ball1.Heading is changed by 180 degrees).
Adding Sound

Add sound by either adding short audio files
Like a crash sound when two objects collide
Or longer audio files like background music.

Getting Ready
You will need the following components
in your design screen:
* Button
* Sound
* Player

Blocks Editor

```
when Button1 .Click
  do call Meow .Play

when Screen1 .Initialize
  do call BackgroundMusic .Start
```

What does it mean?
When Button1 is clicked the Meow
Sound will play.
When Screen1 comes up on your phone
The BackgroundMusic will start playing.
Movement on a Timer

Move an ImageSprite with the passing of time.

Getting Ready

You will need the following components in your design screen:
* Canvas
* ImageSprite
* Clock

Blocks Editor

What does it mean?

**MoveTo** moves an object to an absolute Location on the canvas, not a relative Amount.

**Clock1** has an Interval that specifies how Often the Timer should go off and the Timer Event should be called.

Whenever the **Clock1.Timer** fires the Sprite will move to the right 10 Pixels since the Sprite’s Interval is 1.
Start/Stop Timed Movement

This allows the end user to touch a button to start and stop an ImageSprite moving with the passing of time.

Getting Ready

You will need the following components in your design screen:
* Canvas, ImageSprite, Clock, Button

Blocks Editor

What does it mean?

When the StartStopButton.Click is touched, if the Clock is enabled then stop the timer and display Start on the button. This will stop the Sprite's Movement. The opposite will happen when the clock is disabled.
Speech Recognition

Display the text of what is being said on the phone screen.

Getting Ready
You will need the following components in your design screen:
* Label, Button, SpeechRecognizer

Blocks Editor

```
when [PressAndSpeakButton].Click
do
call SpeechRecognizer1.GetText

when [SpeechRecognizer1].AfterGettingText
result
do
set [Label1].Text to [SpeechRecognizer1].Result

when [SpeechRecognizer1].BeforeGettingText
do
set [Label1].Text to ""
```

What does it mean?
When the PressAndSpeakButton is clicked the SpeechRecognizer event is called and is ready for you to speak.
The BeforeGettingText event will be triggered before speech has been received and recognized. Then the Label will display no text on the screen.
The AfterGettingText event will be triggered once speech has been received and recognized. Then the Label will display the text on the screen.
Movement with Sensors

Move an ImageSprite by tilting your phone

Getting Ready
You will need the following components in your design screen:
* Canvas, ImageSprite, OrientationSensor, Clock

Blocks Editor

What does it mean?
A procedure called MoveBug was created that moves the bug in the direction that the phone is tilted.
The OrientationSensor.Angle is used to tell the bug which direction to move based on what angle your phone is tilted.
The OrientationSensor.Magnitude is used to tell the bug what speed to move based on how much tilt you are putting on your phone.
Whenever the Clock1.Timer fires, the event MoveBug will be called.
Random Numbers

Generate random numbers to make ImageSprites appear in random (x,y) Coordinate locations.

Getting Ready

You will need the following components in your design screen:
* Canvas
* ImageSprite
* Clock

Blocks Editor

When the Clock1.Timer event is triggered, then Frog.MoveTo moves the frog to a random coordinates between the values of 1 and 300 for the x coordinate and 1 and 400 for the y coordinate.

What does it mean?

When the Clock1.Timer event is triggered, then Frog.MoveTo moves the frog to a random coordinates between the values of 1 and 300 for the x coordinate and 1 and 400 for the y coordinate.
Multiple Screens

Use multiple screens in your app.
Get the next screen by clicking a button.

Getting Ready

You will need the following components in your design screen:
* Screen1: Button
* Screen2: Label

Blocks Editor

(For Screen1

```plaintext
when Button1 . Click
do open another screen screenName "Screen2"
```

What does it mean?

Open another screen takes in a text block. The text inside this block is the name of another screen. When the button is clicked, Screen2 will be opened.
Creating Your Own Color

Create your own colors using the make a color block.

Getting Ready

No components are necessary to use Make color.

Blocks Editor

```
initialize global Purple to [157 57 252]

when Screen1 . Initialize
do
  set Screen1 . BackgroundColor to get global Purple
```

What does it mean?

Make color takes in a list of 4 numbers. The first three numbers represent the RGB values. The last is the alpha or how strong the color is. Purple is made from using 157 as R, 57 as G, 252 as B and 100 as alpha. When Screen1 is initialized, the background color is set the color we created in the variable Purple.
Fling Movement

Change the heading and speed of a Sprite by flinging your fingers.

Getting Ready

You will need the following components in your design screen:

* Canvas
* ImageSprite

Blocks Editor

Flung detects when the user makes a fling motion with the sprite across the screen.

The user sets the heading and speed from the fling to the PirateSprite’s Heading and Speed.

What does it mean?

Flung detects when the user makes a fling motion with the sprite across the screen.

The user sets the heading and speed from the fling to the PirateSprite’s Heading and Speed.
Drawing on a Canvas

Drag your finger across the screen to draw a curved line along the path of your finger.

Getting Ready

You will need the following components in your design screen:

* Canvas
* Button
* Label

Blocks Editor

When the Canvas1.Dragged event is triggered, a curved line will be drawn from where you finger started on the screen to where it was dragged.

When the Clear.Button.Click button is touched the canvas will be cleared.

What does it mean?

When the Canvas1.Dragged event is triggered, a curved line will be drawn from where you finger started on the screen to where it was dragged.
Shaking Phone

Make something to happen when you Shake your phone.

Getting Ready
You will need the following components in your design screen:
* Image, Sound, AccelerometerSensor, Label

Blocks Editor

```
when AccelerometerSensor1 . Shaking
do
  call Meow . Play
  call Meow . Vibrate
  millisecs 20
```

What does it mean?
The AccelerometerSensor.Shaking event will detect when the phone is shaking and then the Meow sound will play and the phone will vibrate for 20 milliseconds.
Collision Detection

Make something happen when one Sprite Collides with another.

Getting Ready
You will need the following components in your design screen:
* Canvas
* Sprite
* Button

Blocks Editor
HINT: To make your ladybug move by clicking Buttons, check out the Movement cards.

What does it mean?
The LadyBugCollidedWith event is Triggered when the Ladybug touches the Aphid. Then this will make the Aphid disappear.
Drag A Sprite

Move a sprite side to side by dragging your finger

Getting Ready
You will need the following components in your design screen:
* Canvas, ImageSprite, Clock

Blocks Editor

```
when MonkeySprite.Dragged
startX startY prevX prevY currentX currentY
do call MonkeySprite.MoveTo
  x get currentX
  y MonkeySprite.Y
```

What does it mean?

While the user is dragging the sprite, `MonkeySprite.Dragged` gets called multiple times. Each call has 6 arguments:
- `startX` and `startY`, where the user initially touched the screen.
- `currentX` and `currentY`, where the user is currently touching
- `prevX` and `prevY` hold whatever values were in `currentX` and `currentY` on the previous call to the event. (On the first call of this event, `prevX` and `prevY` are the same as `startX` and `startY`.)

When the user drags the MonkeySprite, it will be moved to the new X location, `currentX`, of the drag. The Y stays the same so the monkey can only move in the X-direction.
Movement with Buttons

Move a sprite by touching a button.

Getting Ready
You will need the following components in your design screen:
* Canvas, Sprite, Button

Blocks Editor

```blocks
initialize global [speed] to 1
when [Left .Click]
do set [Ball1 .X] to [Ball1 .X] - 1 get global [speed]
when [Right .Click]
do set [Ball1 .X] to [Ball1 .X] + 1 get global [speed]
```

What does it mean?
Define a `speed` variable to 1 to set the how far the sprite will move each time the button is clicked.

The `Left.Click` event moves the ball to the left every time the button is touched.
The `Right.Click` event moves the ball to the right every time the button is touched.