**Bounce Sprite Off Canvas Edge**

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

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**Getting Ready**

You will need these components in your design screen:
- **Canvas**
- **Sprite**

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**Blocks Editor**

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**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°).

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

Get Ready

You will need these components in your design screen:

- Button
- Sound
- Player

Try These Blocks

- When Screen1 is initialized, do call BackgroundMusic to start playing.
- When Button1 is clicked, do call Meow to play.

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.

Get Ready

You will need these components in your design screen:
- Canvas
- ImageSprite
- Clock

Try These Blocks

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 Clock 1.Timer fires the Sprite will move to the right 10 pixels since the Sprite’s Interval is
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.

Get Ready

You will need these components in the design screen:
- Canvas
- ImageSprite
- Clock
- Button

Try These Blocks

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.

Now try making the object change also directions each time the button is clicked.
Speech Recognition

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

Get Ready

You will need these components in the Designer:
- Label, Button, & SpeechRecognizer

Try These Blocks

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

Get Ready
You will need these components in your design screen:
- Canvas, ImageSprite, OrientationSensor, Clock

Try These Blocks

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.

Get Ready

You will need these components in your design screen:
- Canvas
- ImageSprite
- Clock

Try These Blocks

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.

How can you use this for a game?
Multiple Screens

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

Getting Ready

You will need these components in your design screens:
- Screen1 : Button
- Screen2: Label

Blocks Editor

(For Screen1)

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

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.

Can you make a Turquoise color?
**Fling Movement**

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

**Getting Ready**

You will need these components in the Designer:
- Canvas
- ImageSprite

**Blocks Editor**

**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.

Get Ready

You will need these components in your design screen:

- Canvas
- Button
- Label

Try These Blocks

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.

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

Make something to happen when you shake your phone.

Get Ready

You will need these components in your design screen:

• Image
• Sound
• AccelerometerSensor
• Label

Try These Blocks

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.

Get Ready

You will need these components in your design screen:
- Canvas
- Sprite
- Button

Try These Blocks

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.

Can you add multiple aphids? How about adding a sound every time the ladybug eats an aphid?
Getting Ready

You will need these components in your design screen:
- Canvas
- ImageSprite
- Clock

Blocks Editor

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.

Get Ready

You will need these components in the design screen:
- Canvas
- Sprite
- Button

Try These Blocks

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.

Can you add buttons to make the ball move up and down?