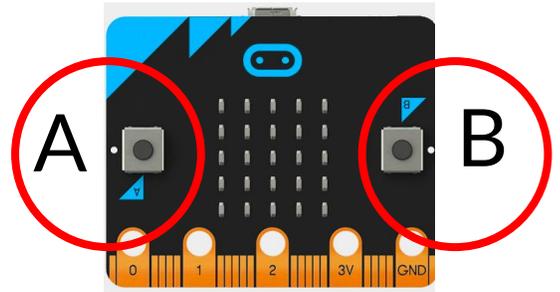# Doorbell - basics

The micro:bit has two buttons, A and B. MicroBlocks can detect three button press states: A, B, or A+B pressed at the same time.

Try changing the display based on which button or buttons are pressed.
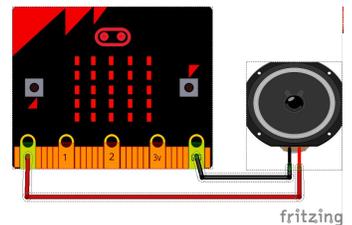
Libraries **+** ▮ **LED Display**

```
when button A pressed
display character A
```

```
when button B pressed
display character B
```

```
when button A+B pressed
display
```

Libraries **+** ▮ **Tone** ▮ **NeoPixel**

Now connect the extender board, and plug the piezo into pin 2. Add a tone and color to each of buttons.

fritzing

```
when started
attach buzzer to pin 2
```

```
when button A+B pressed
display
play note C octave 0 during 500 ms
```

```
when button B pressed
display
play note B octave 0 during 500 ms
```

```
when button A pressed
display
play note A octave 0 during 500 ms
```

http://microblocks.fun

Doorbell - radio

Use micro:bits to communicate over radio sending three button press states: A, B, or A+B pressed at the same time. Build everything you see on this page, including making a string variable and three blocks in My Blocks.

Libraries +

Radio

when radio message received?
set string ▾ to radio last string
say string ▸
if string = pressed
   pressed
else if string = double-pressed
   double-pressed
else if string = long-pressed
   long-pressed
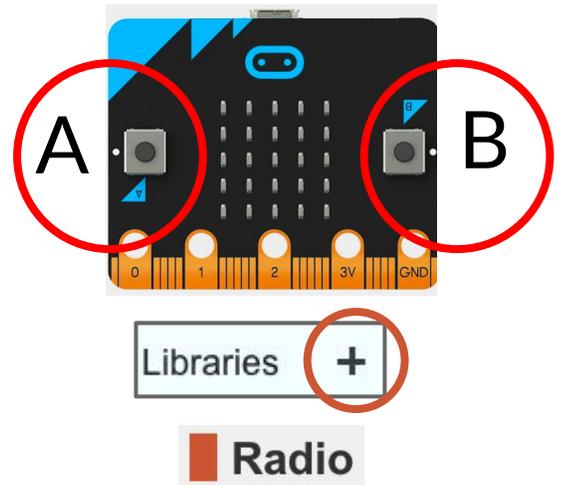
when started
attach buzzer to pin 2
attach 10 LED NeoPixel strip to pin 1 has white ⬤
display
set string ▾ to hello

when button A ▾ pressed
radio send string pressed
pressed

when button B ▾ pressed
radio send string double
double-pressed

when button A+B ▾ pressed
radio send string long-pressed
long-pressed

define pressed
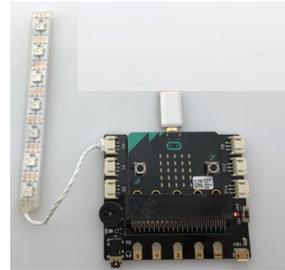display
play note A octave 0 during 500 ms
set all NeoPixels color 🟢

define double-pressed
display
play note B octave 0 during 500 ms
set all NeoPixels color 🔵

define long-pressed
display
play note C octave 0 during 500 ms
set all NeoPixels color 🔴

Doorbell - webthing

Connect both the RGB LED stick and the piezo to the micro:bit. Open the Web of Things library.

Extender
RGB LEDs
Piezo

Now tie the button presses to web of things "events" that can be displayed on the Mozilla WebThings Gateway.

```
when started
  attach buzzer to pin 2
  attach 10 LED NeoPixel strip to pin 1 has white ⬤
  define thing Doorbell capability PushButton ▾
  register event pressed type PressedEvent ▾
  register event double-pressed type PressedEvent ▾
  register event long-pressed type PressedEvent ▾
```

Libraries +

■ Web of Things

```
when button A+B ▾ pressed
  broadcast long-pressed
  display
  [LED matrix]
  play note C octave 0 during 500 ms
  set all NeoPixels color ⬤
```

```
when button B ▾ pressed
  broadcast double-pressed
  display
  [LED matrix]
  play note B octave 0 during 500 ms
  set all NeoPixels color ⬤
```

```
when button A ▾ pressed
  broadcast pressed
  display
  [LED matrix]
  play note A octave 0 during 500 ms
  set all NeoPixels color ⬤
```

Can you create more complex tones and displays that blink?

http://microblocks.fun

Doorbell - webthing

Run the example on your micro:bit, then connect it to the Mozilla WebThings Gateway USB port.
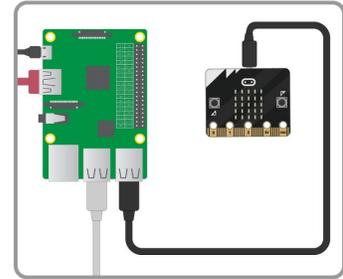
Click the "+" icon on the Things page (lower right corner) to discover the Doorbell. Click "Save", then "Done".

Now try pressing button A, B, and both A+B at the same time. What happens?

(show screen shots of pushed state too.)

NOT PUSHED

Doorbell

Click the splat bubble, in the lower right select "Event Log" to see button press history.

Event Log	
Edit	
Remove	

Doorbell

pressed	3 mins ago
double-pressed	1 hour ago
pressed	1 hour ago
long-pressed	1 hour ago

http://microblocks.fun