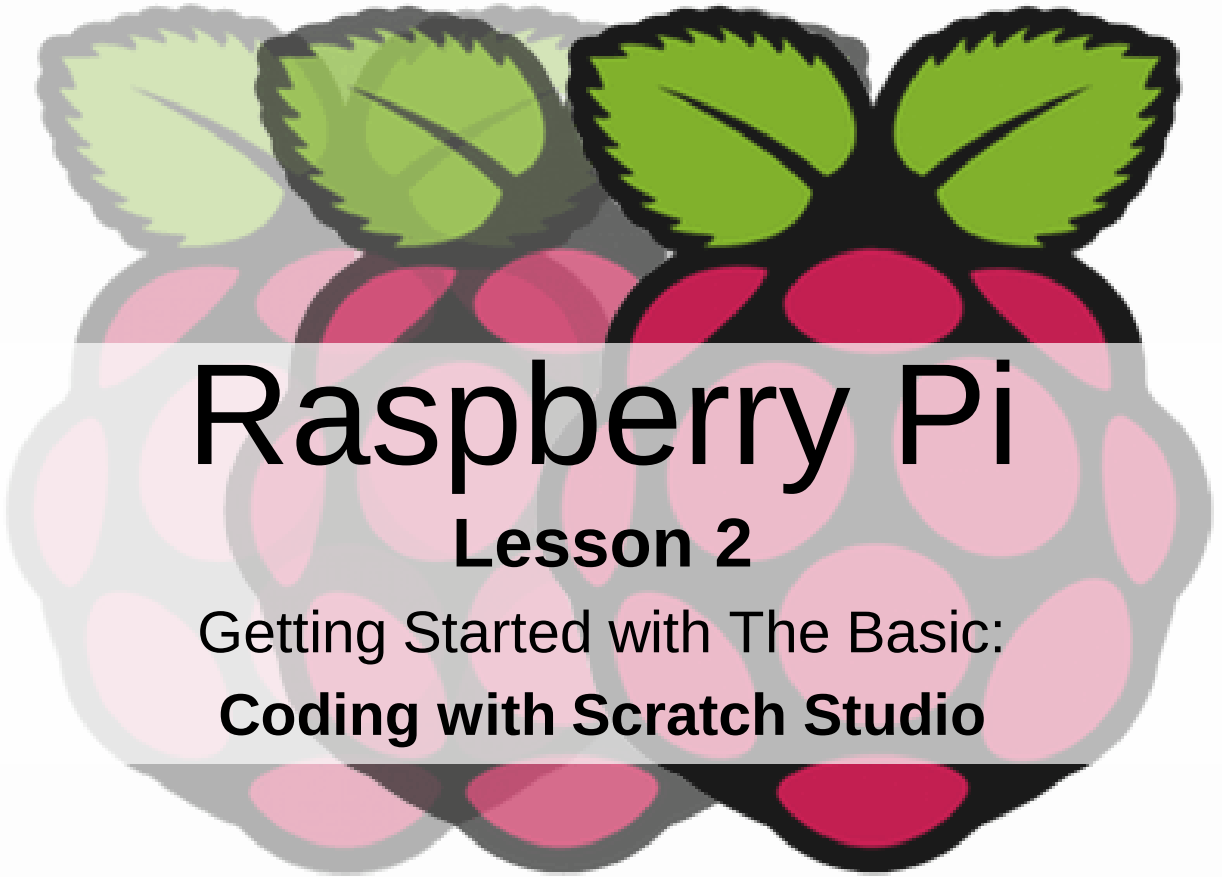


Raspberry Pi

Lesson 2

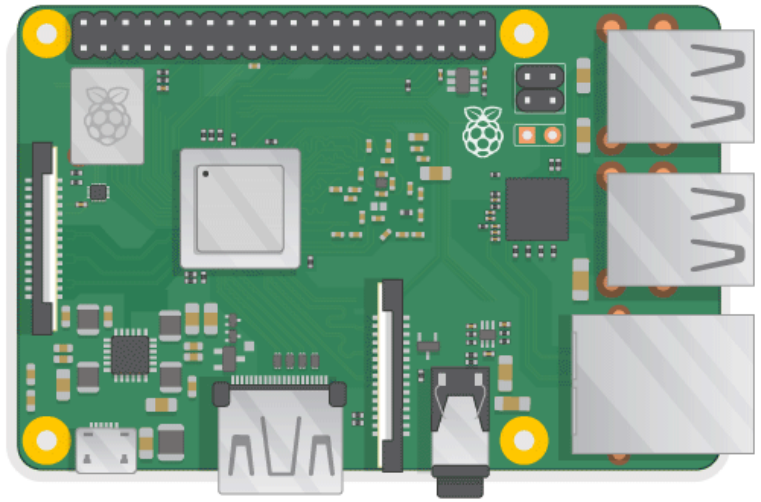
Getting Started with The Basic:

Coding with Scratch Studio

MAKERHOUSE
EMPOWERING MAKERS

Contents

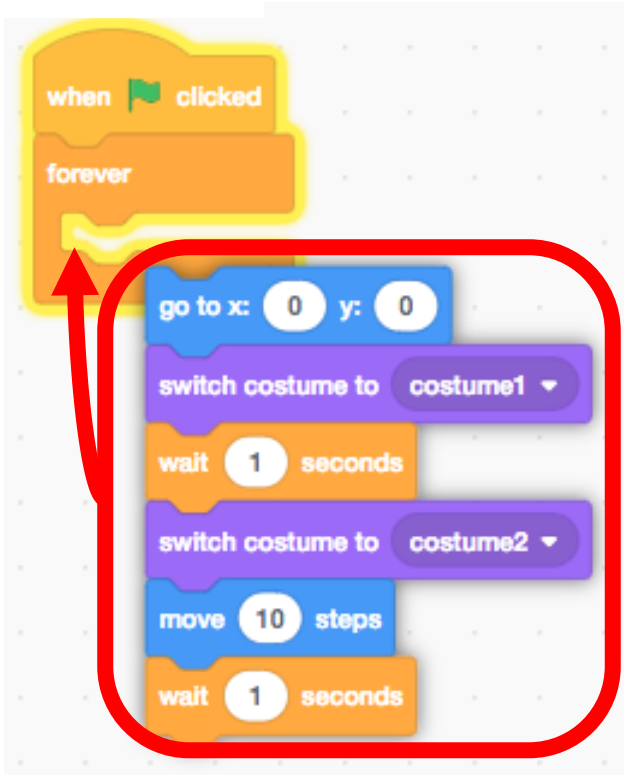
Required Parts

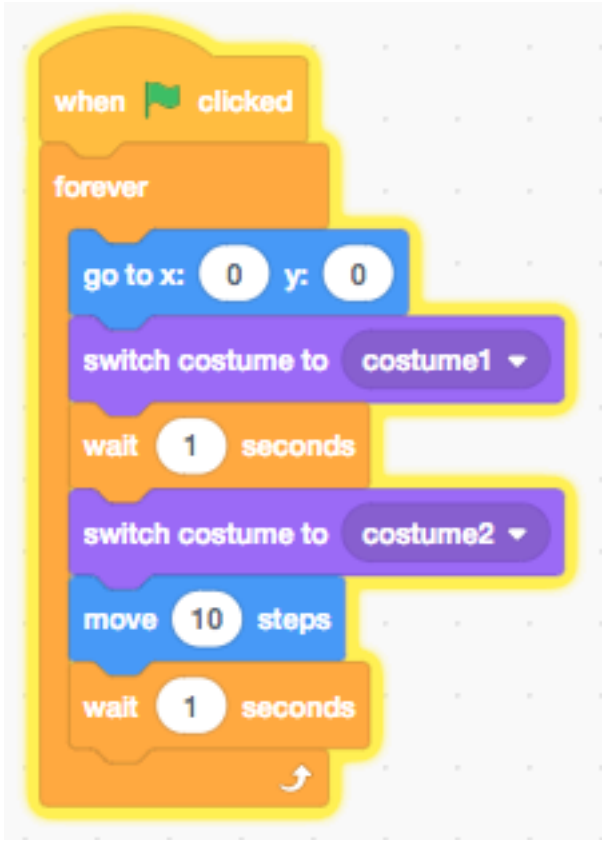


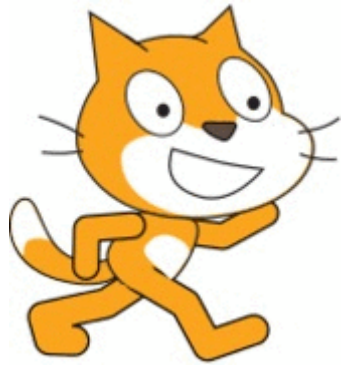
No	Parts	Qty
1	Raspberry Pi Computer	1
2	Breadboard	1
3	LED	1
4	Tactile Push Button	1
5	330 ohm Resistor	1
6	Male to Male Jumper	set
7	T-Cobbler Breakout Board	1

Introduction

Drag and Drop Programming Style







Getting Started

Opening Software

1

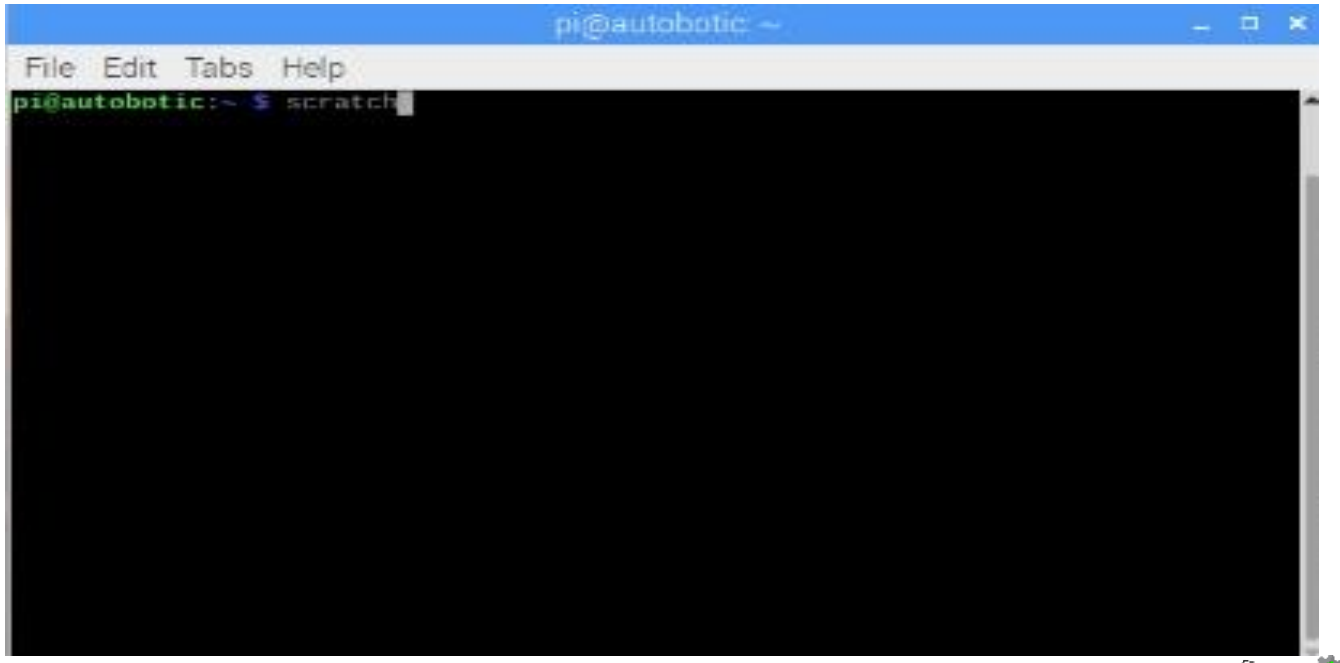
Raspberry Pi icon > Programming > Scratch

Getting Started

Opening Software

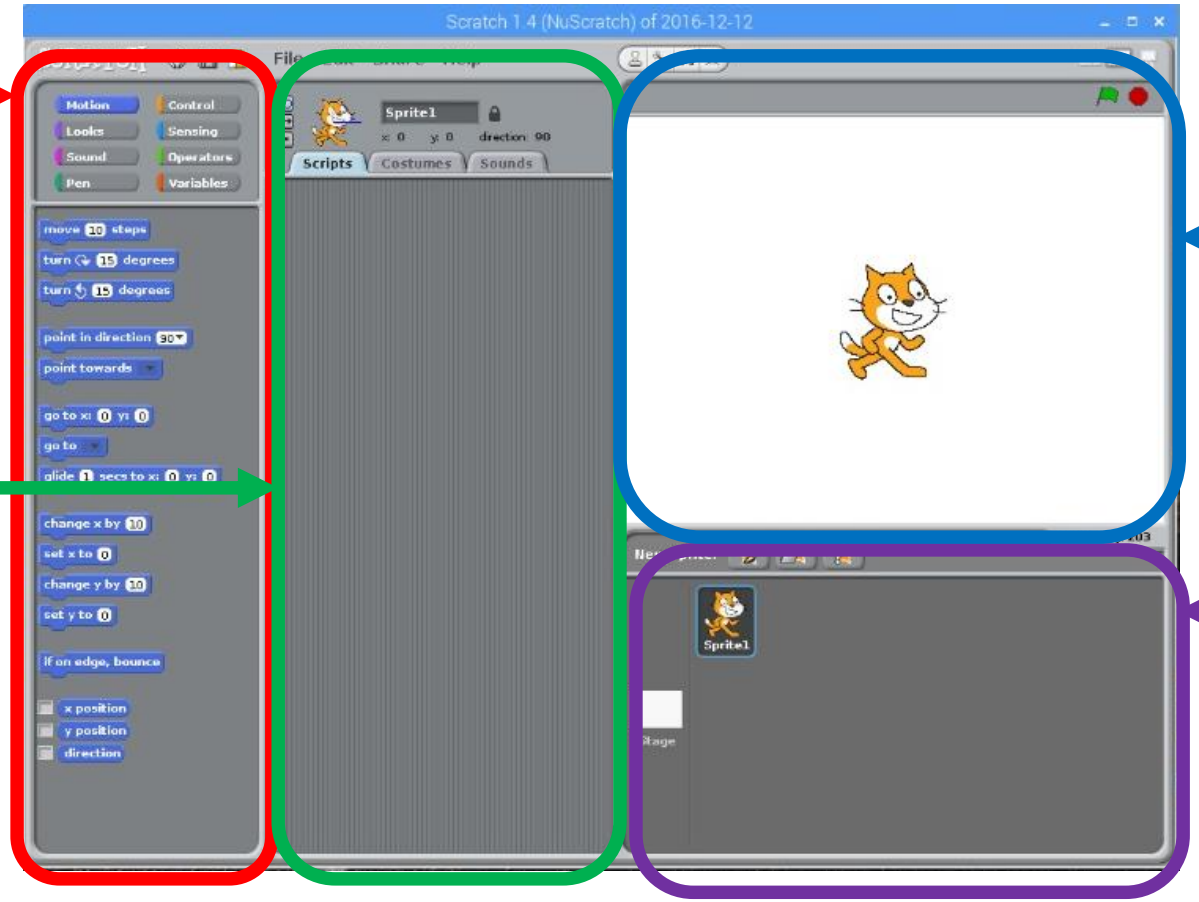
2

Type**: scratch** on terminal



Getting Started

Software Interface



Block Palette
Set of instructions

Scripts Palette
Instruction Joining Area

Stage
Area for the sprites move and interact -- animate

Sprites Area
Selection of Controllable images

Getting Started

Block Palette Categories

Used for moving sprites around the Stage

Used for animating sprites, giving them speech bubbles, and changing their size and appearance

Used for playing recordings or musical notes

Used to draw as a sprite moves around the Stage

Used to remember information, such as scores, timer values, or player names.

Used to describe what happens when, and for making bits of your program repeat.

Used to test whether your sprite is touching another sprite or another color, or to get information about other sprites. You can also use the sensor value blocks in your own electronics projects on the Raspberry Pi.

Used for maths, random numbers, and doing things to text. There are also blocks here for combining the blocks used in decision making.

MAKERHOUSE
EMPOWERING MAKERS

Getting Started

Get Things Moving with Scratch

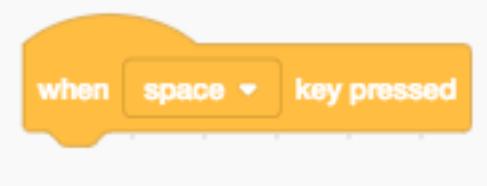
We will start the basics

Program to move the Scratch cat around the screen using by detecting the key pressed.

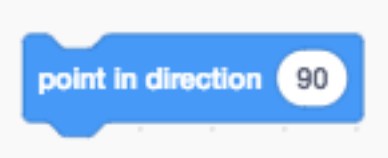
Getting Started

Get Things Moving with Scratch

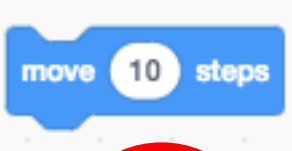
Command Instruction Required



1



2



3

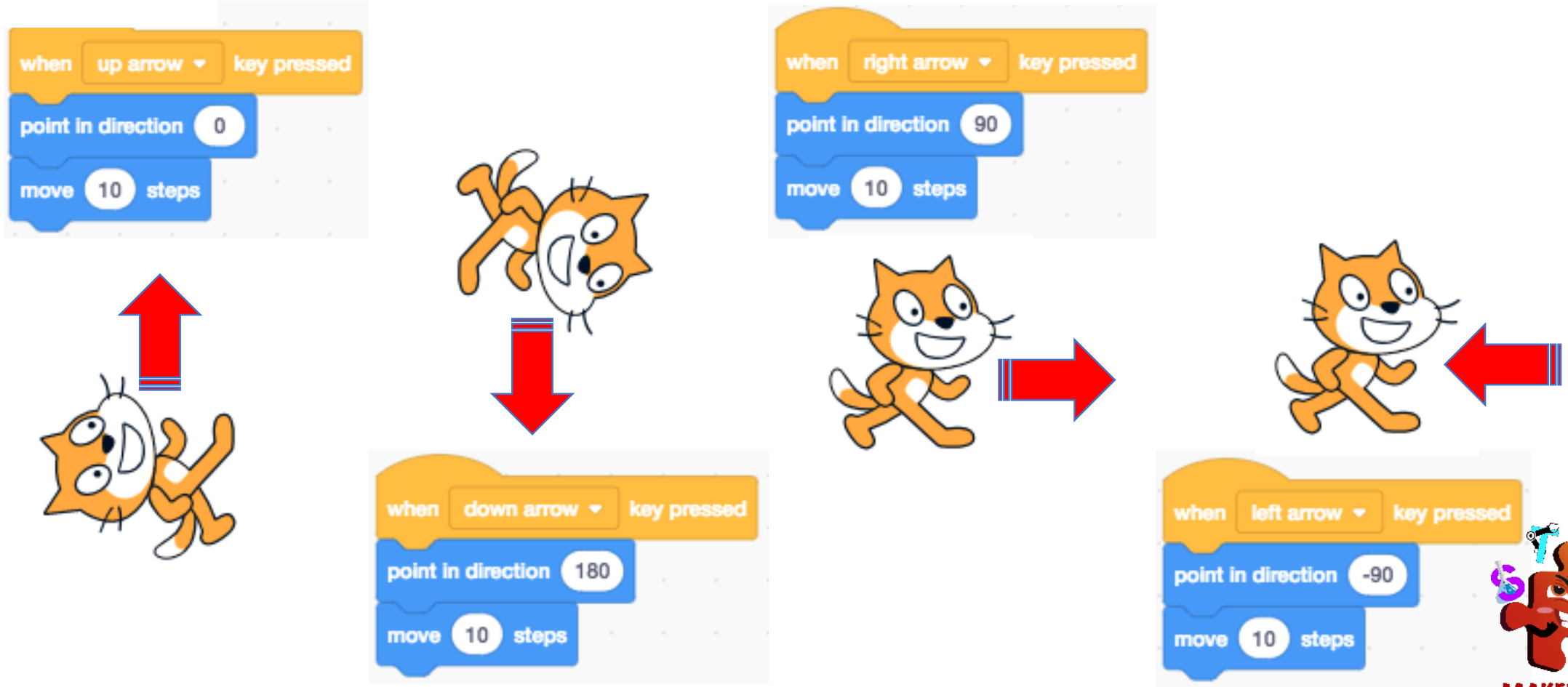
Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

MAKERHOUSE
EMPOWERING MAKERS

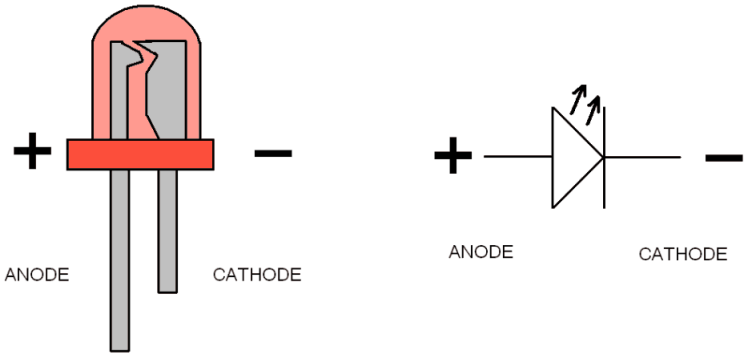
Getting Started

Get Things Moving with Scratch



Interact with GPIO

LED Blinking



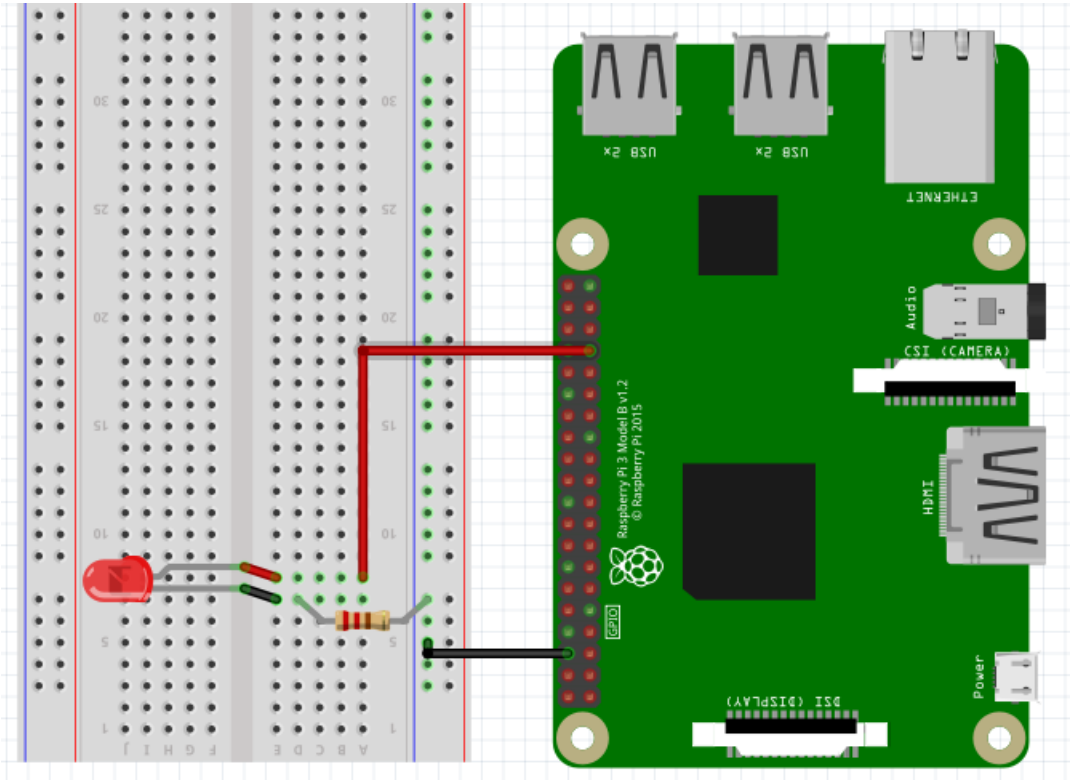
Objectives

Program to blink the LED (ON/OFF) forever.

Interact with GPIO

LED Blinking

Electronics Assembly



MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Blinking

Command Instruction Required

1

2

3

4

Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Blinking

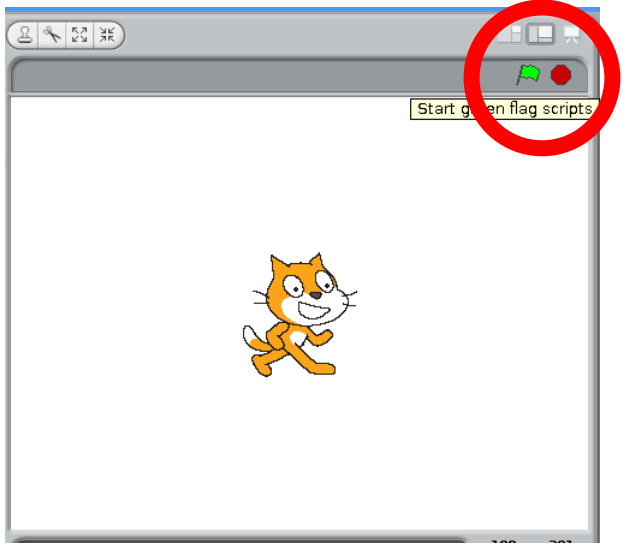
Complete Command Instruction

Set the GPIO server ON
enable RPi GPIO

Output
configure GPIO13 as Output

Loops
repeat forever

State ON/OFF
set the GPIO13 ON/OFF

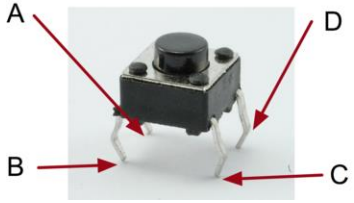


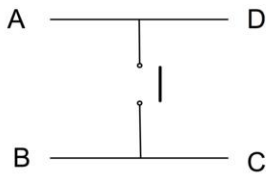
Delay
1 second delay

Interact with GPIO

Button Input

SCRATCH





Objectives

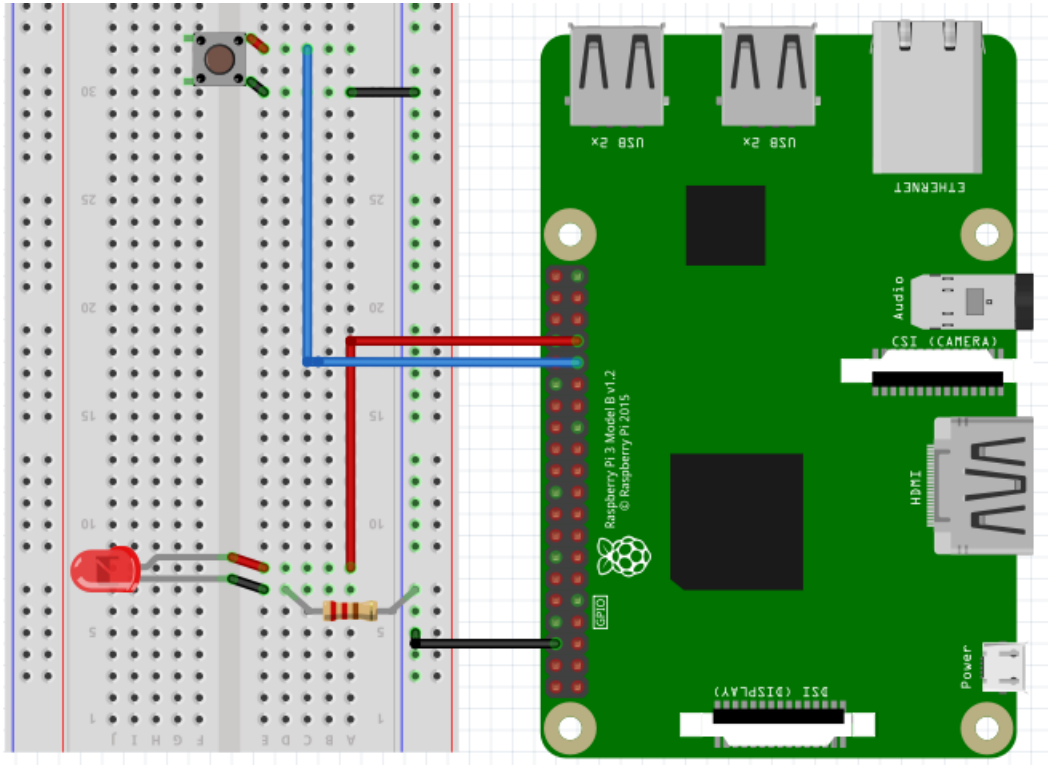
Program to change sprites costumes if button pressed.

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

Button Input

Electronics Assembly



****No need to take out the LED from previous lesson**

Interact with GPIO

Button Input

Command Instruction Required

1

2

3

4

Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

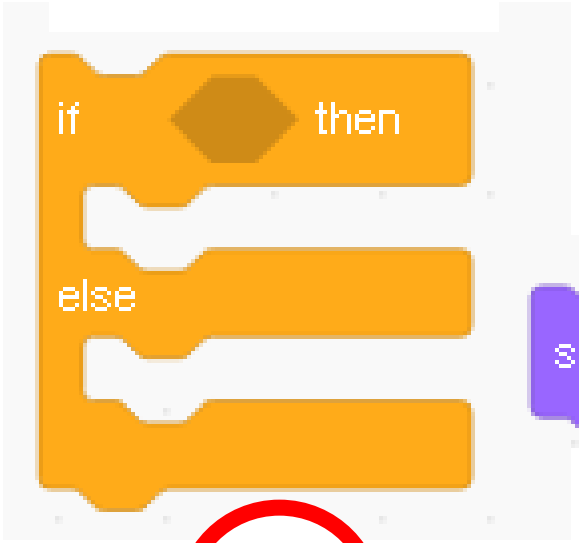
MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

Button Input

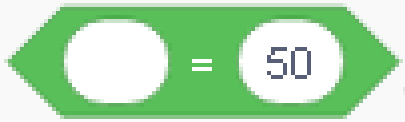
Command Instruction Required

Additional command from previous



5

6



7

8

Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Blinking

Complete Command Instruction

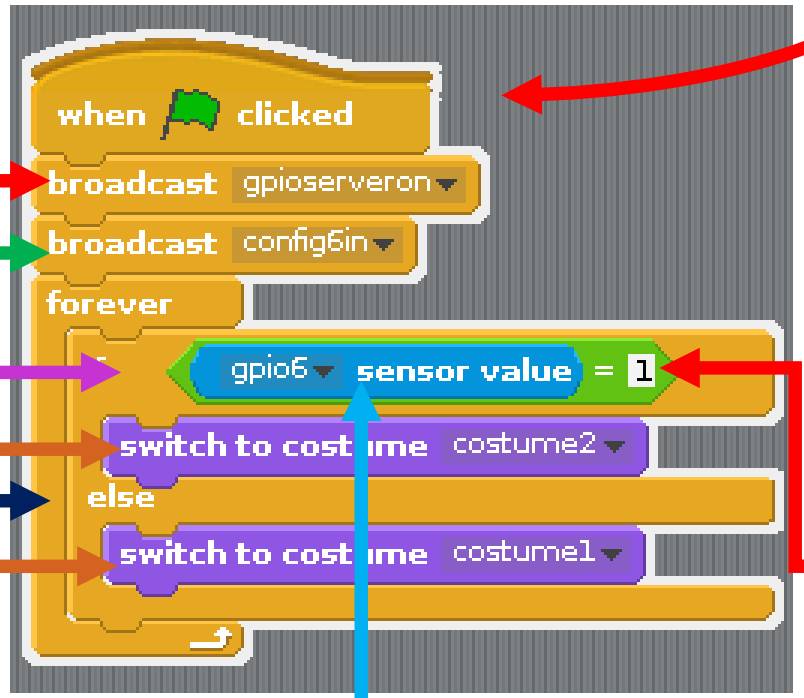
Set the GPIO server ON
enable RPi GPIO

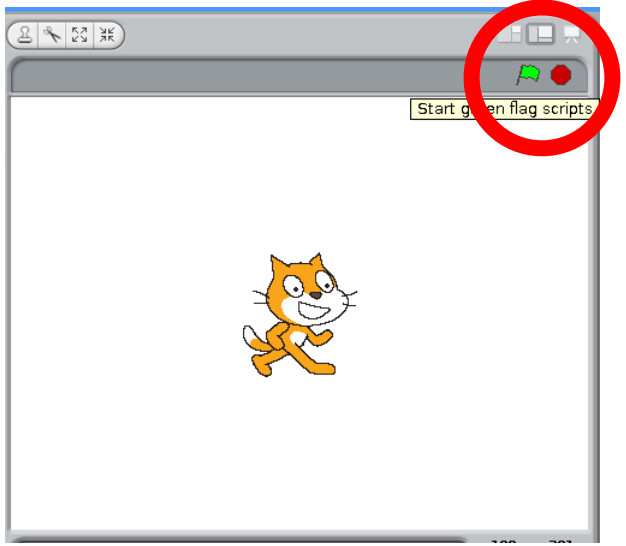
Input
configure GPIO6 as Input

Loops
repeat forever

Conditional
Is button pressed?

Looks
1 second delay





Comparison
button not pressed – **0**
button pressed -- **1**

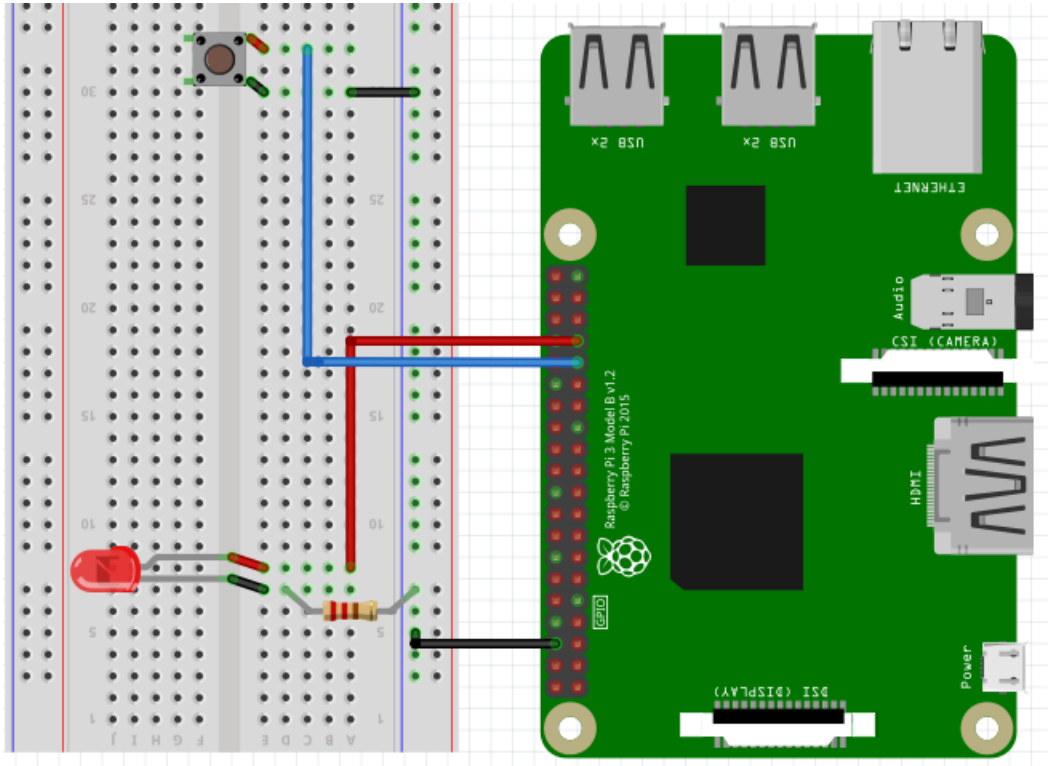
Input
Read input

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Controlled Button

Challenge



Can we use the button to control the LED?

If button pressed – LED lights on
else LED lights off

****We will be using same circuit**

Interact with GPIO

LED Controlled Button

Command Instruction Required

1

2

3

4

Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Controlled Button

Command Instruction Required

1

2

3

4

Can you find the required instruction?

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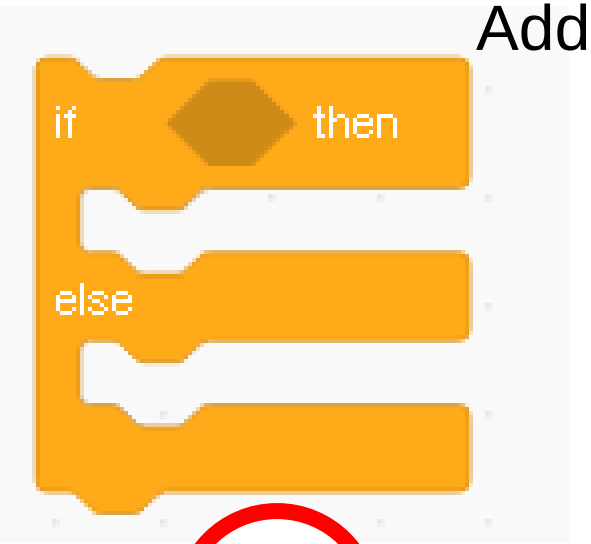
MAKERHOUSE
EMPOWERING MAKERS

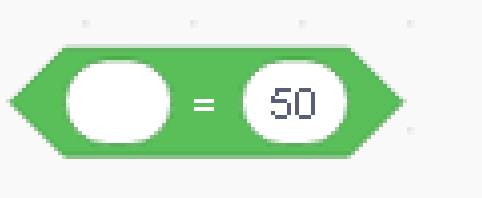
Interact with GPIO

LED Controlled Button

Command Instruction Required

Additional command from previous





5

6

7

Can you find the required instruction?

Hint: Block Instruction Command categorized by colour -- colour coded

MAKERHOUSE
EMPOWERING MAKERS

Interact with GPIO

LED Controlled Button

Complete Command Instruction

Did you succeed?