

# TRIBALSTUDIOZ

roboacademy | codeacademy | gameacademy | makeracademy

# Learning Objectives

In this topic you will learn...

## T-Scratch Light Sabre Coding (2/3)

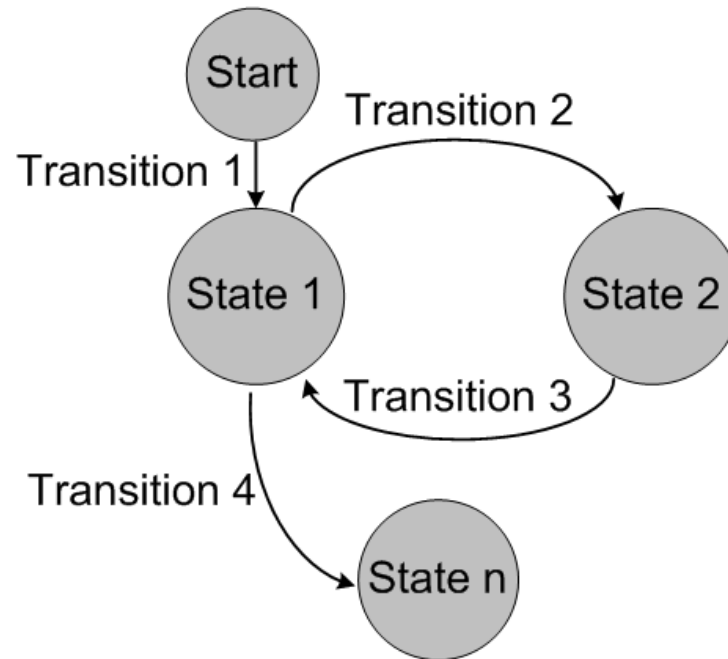
- Coding Sound files for “On” State
- Coding the glowing for Sabre state
- Increment and decrement coding (++, --)

# State Machine Coding (Part 1/2)



## What is state machine?

- A logic state that transits from state to state when given condition is fulfilled.

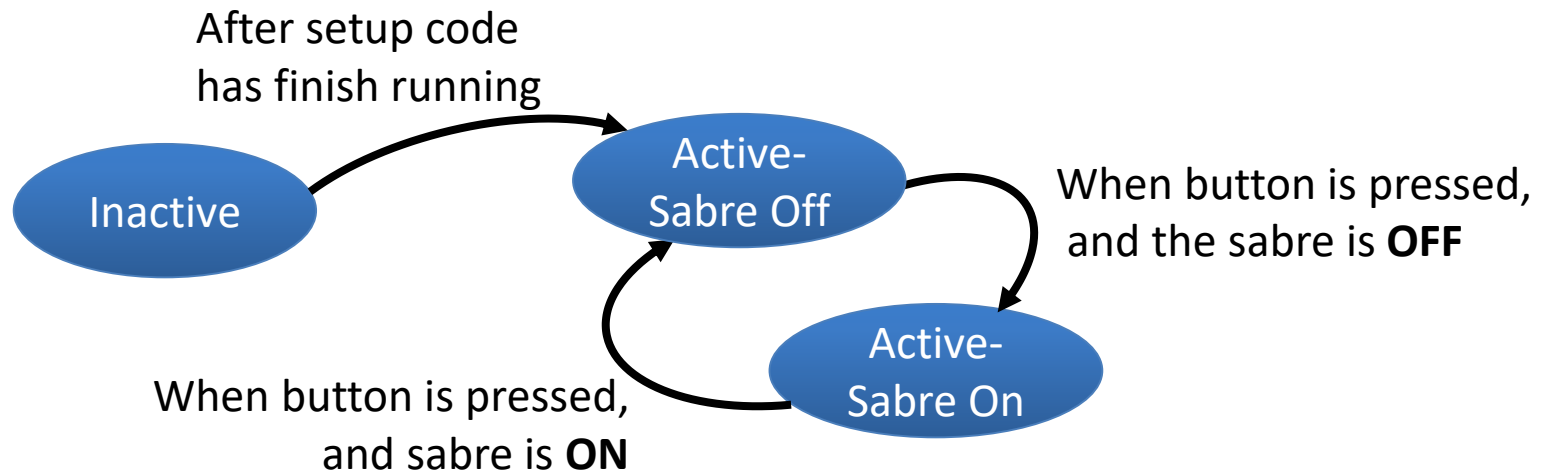


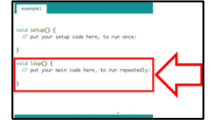
# State Machine Coding (Part 2/2)



## How is it going to be used?

- 3 different state will be introduced
  - Inactive [state = -1]
  - Active - Sabre Off [state = 0]
  - Active - Sabre On [state = 1]





# Main Code (Part 1/3)

## Combine testing condition with state machine, code the Active-Sabre ON mode

```
if (digitalRead(button) && state == 0) {  
  while (digitalRead(button) != 0) {  
  }  
  mp3_play(1);  
  state = 1;  
  for (glow = 0; glow <= 150; glow++) {  
    analogWrite(led, glow);  
    delay(10);  
  }  
  mp3_play(3);  
}
```

### Conditional test

&& is testing for both button to be pressed and if sabre is "OFF"

### Update of State logic

State logic is updated and changed to 1 (active-sabre ON)

### Glow & Sound Simulation

Gradual glow of lightsaber light and play the "On" Sound



# Main Code (Part 2/3)

## Combine testing condition with state machine, code the Active-Sabre OFF mode

```

if (digitalRead(button) && state == 1) {
  while (digitalRead(button) != 0) {
  }
  mp3_play(2);
  state = 0;
  glow_temp = glow;
  for (glow = glow_temp; glow >= 0; glow--) {
    analogWrite(led, glow);
    delay(5);
  }
}
    
```

Conditional test  
 && is testing for both button to be pressed and if sabre is "ON"

Update of State logic  
 State logic is updated and changed to 0 (active-sabre OFF)

Glow & Sound Simulation  
 Gradual dim of lightsaber light and play the "Off" sound

# Main Code (Part 3/3)



**Complete the project with a Humming Mode while the sabre is turned on.**

- Sound looping
- Gradual light intensity difference
- Only loops when in Active-Sabre On state [1].
- Still responds quickly to button.



# Main Code (Part 3/3)

Code the Humming Mode with the following scripts

```

if (state == 1) {
  if (millis() - timer > 30000) {
    timer = millis();
    mp3_play(3);
  }

  if (glow > 150) {
    glow_count = -1;
  }
  if (glow < 50) {
    glow_count = 1;
  }
  glow = glow + glow_count;
  analogWrite(led, glow);
  delay(5);
}
    
```

Conditional test  
Test if sabre is "ON"

Reloop the sound  
replay sound file if more than 30s

Glow Simulation  
Alternate glow and dim of lightsaber light



You have completely coded the button function learnt state machine coding

# END OF PART 2/3