This document explains each part of the code in simple language so children can understand how the robot moves with joystick and button.

import time

👉 We bring a clock so the robot can wait and move smoothly.

from adafruit_crickit import crickit

👉 We call the Crickit helper. Crickit is the brain that talks to motors and sensors.

print("1 Servo demo!")

👉 This shows a welcome message “1 Servo demo!” when the robot starts.

ss = crickit.seesaw

👉 We ask the Crickit board to get ready to read sensors and control parts.

X_AXIS = crickit.SIGNAL1 # Analog input

👉 SIGNAL1 is connected to the joystick’s **X-axis** (left–right).

Y_AXIS = crickit.SIGNAL2

👉 SIGNAL2 is connected to the joystick’s **Y-axis** (up–down).

BUTTON = crickit.SIGNAL3 # Button

👉 SIGNAL3 is connected to the button we press with our finger.

ss.pin_mode(BUTTON, ss.INPUT_PULLUP)

👉 We tell the button: you are an **input**. This means the robot can check if the button is pressed.

crickit.servo_3.angle = 0 # 0 is open, 100 is closed

👉 Servo 3 is the robot’s **gripper hand**. Setting it to 0 keeps the hand **open**.

crickit.servo_2.angle = 0

👉 Servo 2 is the arm’s **up–down joint**. It starts at 0.

crickit.servo_1.angle = 0

👉 Servo 1 is the arm’s **left–right joint**. It starts at 0.

btn_prev = 1 # store previous button state

👉 We remember the button's earlier position. (1 means "not pressed").

gripper_state = 0 # 0=stopped, 1=closing, 2=stopped, 3=opening

👉 The gripper can be **stopped, closing, or opening**. We start with "stopped".

gprangle = 0

👉 This keeps track of the gripper hand's angle.

xservo = 0

👉 This keeps track of the left–right servo's angle.

yservo = 0

👉 This keeps track of the up–down servo's angle.

while True:

👉 The robot starts an **infinite loop** — it keeps checking joystick and button again and again.

y = ss.analog_read(Y_AXIS)

👉 Read the joystick's up–down value.

x = ss.analog_read(X_AXIS)

👉 Read the joystick's left–right value.

btn_val = ss.analog_read(BUTTON)

👉 Read the button value.

if btn_val < 50:

👉 If the button is pushed down…

btn = 0 # pressed

👉 We say the button = pressed.

else:

👉 Otherwise…

btn = 1 # released

👉 The button = released.

if btn == 0 and btn_prev == 1:

👉 If the button was just pressed (a new press)…

gripper_state = (gripper_state + 1) % 4

👉 Change the gripper mode: open → stop → close → stop → (repeat).

print("New state:", gripper_state)

👉 Show the new mode on screen.

if gripper_state == 1: # closing

👉 If mode = closing…

print("closing gripper")

👉 Say “closing gripper” on screen.

gprangle += 5

👉 Move the gripper 5 steps more closed.

elif gripper_state == 3: # opening

👉 If mode = opening…

print("opening gripper")

👉 Say “opening gripper” on screen.

gprangle -= 5

👉 Move the gripper 5 steps more open.

if gprangle < 0:

👉 Make sure gripper doesn’t go below 0.

gprangle = 0

👉 Set gripper angle to 0 if it goes too low.

if gprangle > 100:

👉 Make sure gripper doesn’t go above 100.

gprangle = 100

👉 Set gripper angle to 100 if it goes too high.

crickit.servo_3.angle = gprangle

👉 Move the gripper servo to the new angle.

if x < 20:

👉 If joystick goes left strongly…

xservo += 10

👉 Turn left servo 10 steps.

if x > 1000:

👉 If joystick goes right strongly…

xservo -= 10

👉 Turn right servo 10 steps.

xservo = max(0, min(180, xservo))

👉 Keep the servo safe between 0° and 180°.

crickit.servo_1.angle = xservo

👉 Move left–right servo to new angle.

if y < 20:

👉 If joystick goes down strongly…

yservo += 10

👉 Turn down servo 10 steps.

if y > 1000:

👉 If joystick goes up strongly…

yservo -= 10

👉 Turn up servo 10 steps.

yservo = max(0, min(180, yservo))

👉 Keep the servo safe between 0° and 180°.

crickit.servo_2.angle = yservo

👉 Move up–down servo to new angle.

btn_prev = btn

👉 Save the current button state for next time.

time.sleep(0.1)

👉 Wait for a short time (0.1s) so the robot doesn’t move too fast.