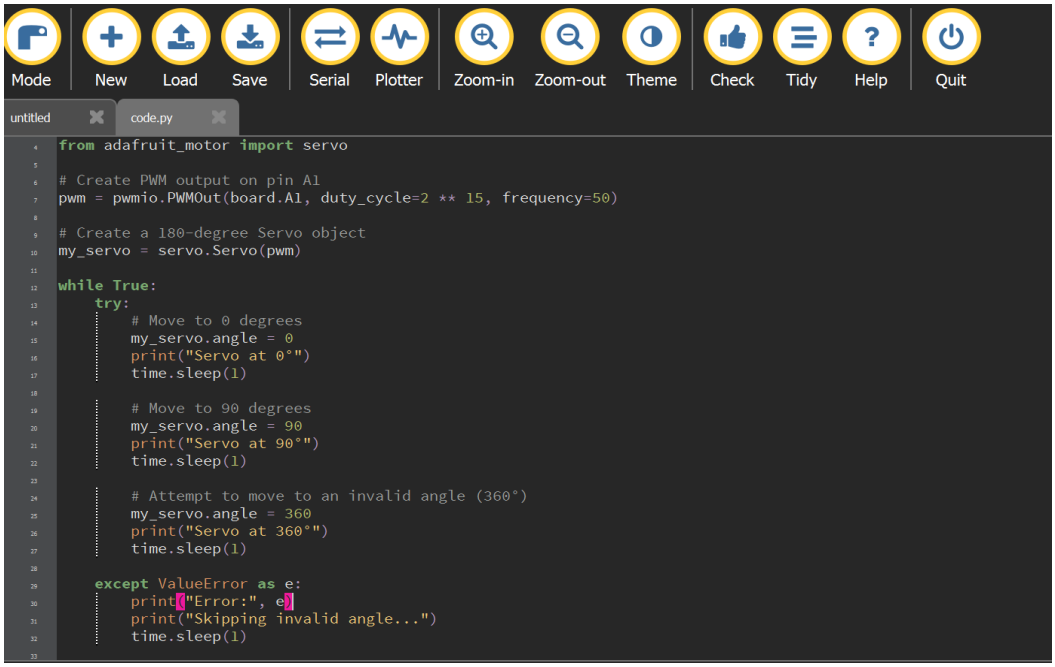
1. Handling Servo Motor Errors Using Try-Except

Objective

To teach how to prevent servo motor crashes by using **try–except** when an invalid angle is given in CircuitPython.

Code (With Try-Except)




```
from adafruit_motor import servo

# Create PWM output on pin A1
pwm = pwmio.PWMOut(board.A1, duty_cycle=2 ** 15, frequency=50)

# Create a 180-degree Servo object
my_servo = servo.Servo(pwm)

while True:
    try:
        # Move to 0 degrees
        my_servo.angle = 0
        print("Servo at 0°")
        time.sleep(1)

        # Move to 90 degrees
        my_servo.angle = 90
        print("Servo at 90°")
        time.sleep(1)

        # Attempt to move to an invalid angle (360°)
        my_servo.angle = 360
        print("Servo at 360°")
        time.sleep(1)

    except ValueError as e:
        print("Error:", e)
        print("Skipping invalid angle...")
        time.sleep(1)
```

Step-by-Step Code Explanation

`import time → used for adding delays between servo movements.`

• import board → gives access to microcontroller pins like A1.

• import pwmio → creates PWM signals needed to control a servo.

• from adafruit_motor import servo → imports the servo library so angle control becomes easy.

• pwm = pwmio.PWMOut(board.A1, duty_cycle=215, frequency=50)**

→ creates a PWM output on pin A1.

→ 50 Hz is the standard servo frequency.

→ 2^15 sets a middle duty cycle.

• my_servo = servo.Servo(pwm)

→ creates a Servo object using the PWM signal.

→ allows control using .angle.

• while True:

→ creates an infinite loop so the servo keeps moving repeatedly.

• try:

→ contains all normal servo movement commands.

→ if any invalid angle occurs, code jumps to except.

• my_servo.angle = 0 → moves the servo to 0°.

• my_servo.angle = 90 → moves the servo to 90°.

• my_servo.angle = 360 → tries to move to 360°,

→ but this is invalid, because standard servos only support 0–180°.

• except ValueError as e:

→ catches the error caused by the invalid angle.

• print("Error:", e) → displays the error message.

• print("Skipping invalid angle…") → shows that the program continues safely.

Servo Behavior

- Moves correctly to **0° → 90° → 180°**
- When 360° is attempted, program **does not crash**
- Servo resets to **0°** and continues running