Horizontal Sliding Mechanism using Rack & Pinion and MG995 Servo

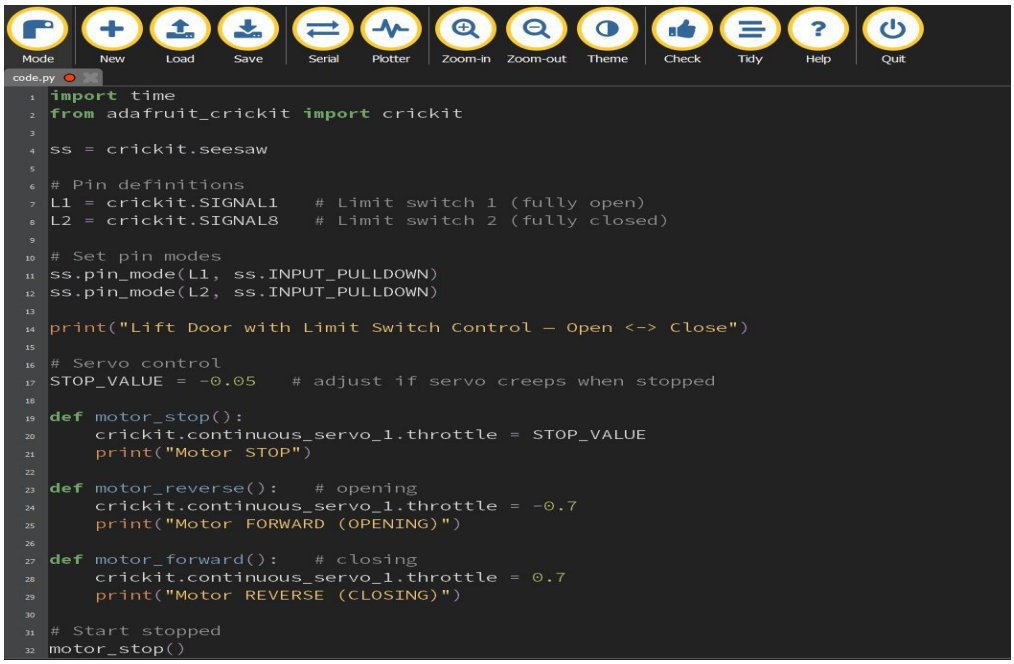
Step 1: Components Required

- MG995 Servo motor
- Rack & Pinion gear set
- Arduino / CPX + Crickit controller
- Jumper wires and breadboard
- Power supply (5–6V, 2A for servo)
- Mounting base (wood/acrylic)

Step 2: Connect Components

- Fix the rack horizontally on a mounting base.
- Attach the pinion gear to the MG995 servo horn.
- Connect the servo motor to the Arduino/CPX controller.

Step 3:Code



```
while True:
    # Start opening
    print("Opening door...")
    motor_reverse()

    # Keep opening until fully open (L1 triggered)
    while ss.digital_read(L1) == 1:
        time.sleep(0.01)

    # Door is fully open → stop
    motor_stop()
    print("Door fully open → waiting")
    time.sleep(2)

    # Start closing
    print("Closing door...")
    motor_forward()

    # Keep closing until fully closed (L2 triggered)
    while ss.digital_read(L2) == 1:
        time.sleep(0.01)

    # Door fully closed → stop
    motor_stop()
    print("Door fully closed → waiting")
    time.sleep(2)
```

Step 4: Save & Run

- Save the code as an Arduino sketch and upload to the controller.
- Observe the servo turning the pinion gear to slide the rack horizontally.
- The rack will move left, right, and stop at middle position.