import can

import time

def check\_and\_connect\_ecu(bus, txid, rxid):

"""

Check if the ECU is connected by sending a diagnostic query and awaiting a response.

Attempt reconnection if no response is received.

"""

try:

msg = can.Message(arbitration\_id=txid, data=[0x01, 0x00], is\_extended\_id=True)

print("Sending diagnostic query to ECU...")

bus.send(msg)

timeout = 2 # seconds

start\_time = time.time()

while time.time() - start\_time < timeout:

response = bus.recv(timeout)

if response and response.arbitration\_id == rxid: # Expected response ID

print("ECU is connected: Response received.")

return True

print("No response received from ECU. Attempting reconnection...")

return attempt\_reconnection(bus, txid)

except Exception as e:

print(f"Error checking ECU connection: {e}")

return False

def attempt\_reconnection(bus, txid):

"""

Attempt to reconnect to the ECU by resending a query multiple times.

"""

try:

retries = 3

for attempt in range(1, retries + 1):

print(f"Reconnection attempt {attempt}...")

msg = can.Message(arbitration\_id=txid, data=[0x01, 0x00], is\_extended\_id=True)

bus.send(msg)

time.sleep(1) # Wait for 1 second before next attempt

response = bus.recv(2) # Wait up to 2 seconds for a response

if response:

print(f"ECU reconnected successfully on attempt {attempt}.")

return True

print("Reconnection failed after multiple attempts.")

return False

except Exception as e:

print(f"Error during reconnection attempts: {e}")

return False

if \_\_name\_\_ == "\_\_main\_\_":

# Define your CAN bus configuration

channel = 'can0' # Replace with the correct channel, e.g., 'COM3' on Windows

bitrate = 500000 # Standard bitrate; adjust as needed

txid = 0x18DA03FA # Transmit ID

rxid = 0x18DAFA03 # Receive ID

try:

# Initialize CAN bus

bus = can.interface.Bus(channel=channel, bustype='socketcan', bitrate=bitrate)

print("CAN bus initialized.")

# Check ECU connection and try to reconnect if necessary

if check\_and\_connect\_ecu(bus, txid, rxid):

print("ECU connection is active.")

else:

print("Failed to establish ECU connection.")

except Exception as e:

print(f"Failed to initialize CAN bus: {e}")