Product Requirement Document.

Objective.

Develop a user-friendly Modbus software tool that facilitates seamless connectivity for users to interface with Modbus slave devices, allowing effortless reading from and writing to their respective Modbus addresses.

Context.

Over the last three years working as a test engineer in the renewable energy industry, one of my tasks involved reading and writing to modbus registers for different power converters and energy storage equipment. These equiment included different types of inverters, battery management systems and weather sensors.

There are several software tools available online that enable one to read and write to modbus registers but my favourite one was modbus poll. However, I found its learning curve relatively steep especially when it came to creation and saving of device profiles and basic UI operations like editing the register addresses of a specific device. The tool has a multiple document interface which meanest that for a user to connect to several devices at a time, they have to open an additional instance for each device.

The above experience led me to want to create a similar tool as a hobby, with an aim to address the mentioned limitations.

Scope.

The software tool will only support Modbus TCP and RTU protocols with the following Modbus functions:
- Read coils (0x01)
- Read discrete inputs (0x02)
- Read holding registers (0x03)
- Read input registers (0x04)
- Write single coil (0x05)
- Write single register (0x06)
- Write multiple coils (0x0F)

- Write multiple registers (0x10)

Requirements.

Users should be able to do the following from a graphical user interface:
- Enter connection parameters for Modbus RTU devices.
- Enter connection parameters for Modbus TCP devices.
- Enter Modbus registers to read from or write to.
- Assign an alias or custom name to a device.
- Assign an alias name to each of the provided registers.
- Save a device's connection details, registers and alias names within a profile for future access.
- Connect to Modbus RTU devices.
- Connect to Modbus TCP devices.
- See the connection parameters and be able to edit if needed.
- See if the device is connected or not.
- Disconnect from an RTU device.
- Disconnect from a TCP device.
- Start and stop the polling of registers from all or selected devices.