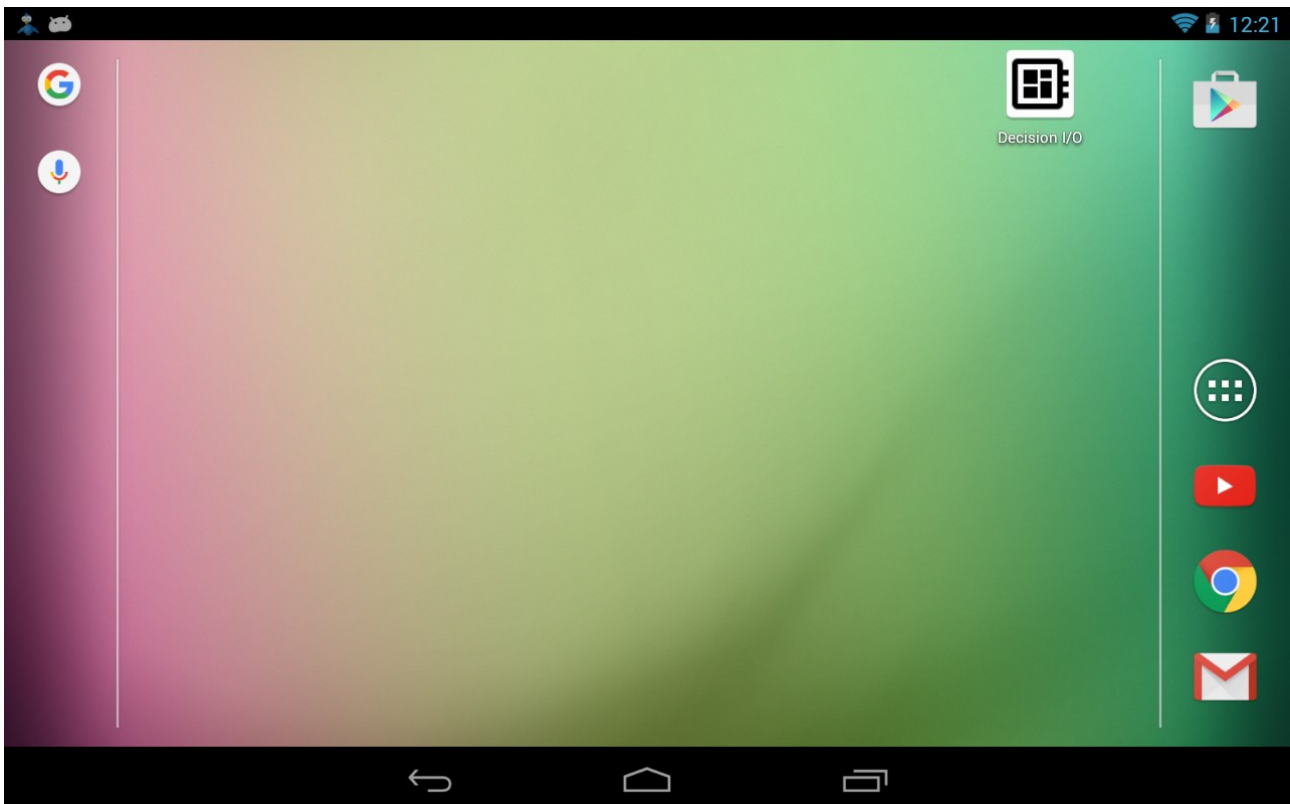# Decision I/O Android APP

Decision I/O Android APP is a rich example to show you how to access and control the Decision Industrial I/O card by Android applications. The features of the APP describes as below:

- Real-time monitoring/controlling functions.
- Embedded Web Server for remote controlling.
- Support the controlling script (Lua) to execute the logic flow as your design.
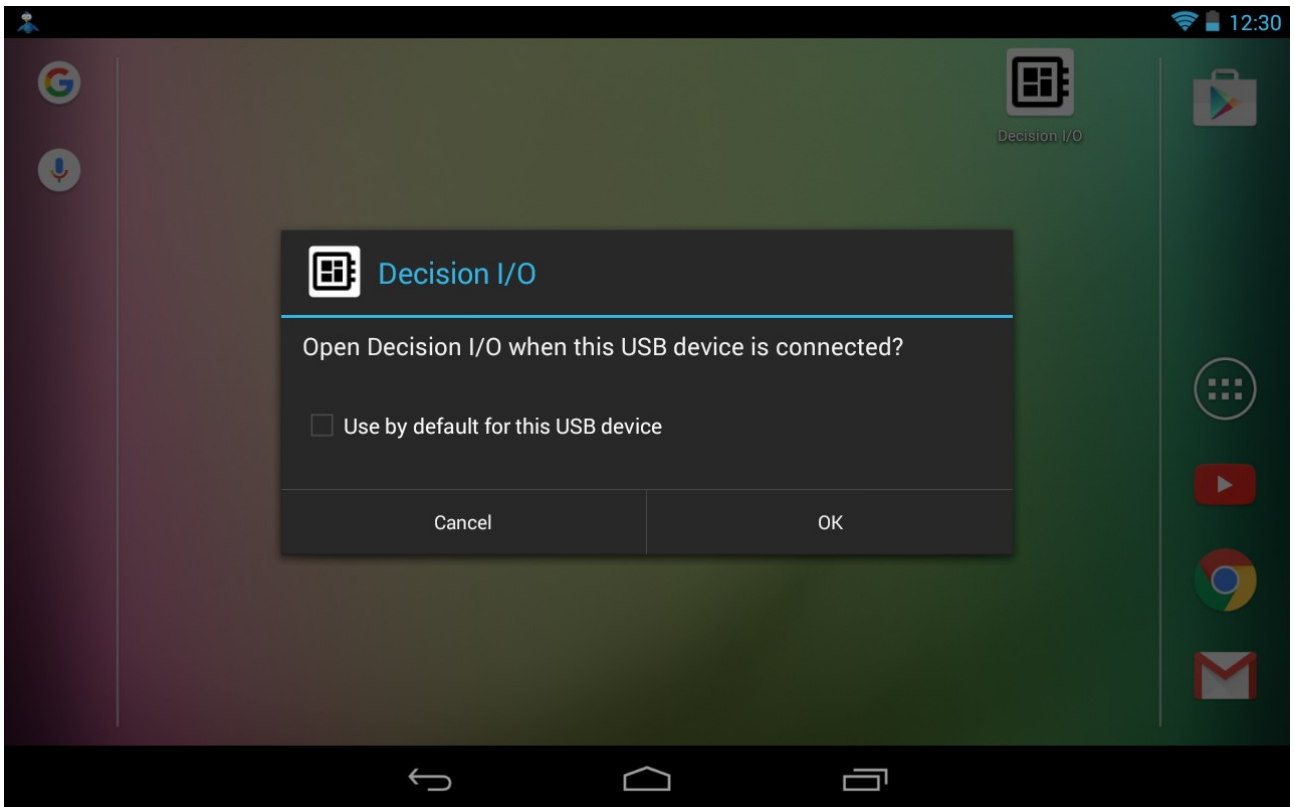- Modbus/TCP slave is ready.

1. You can import the project source from GitHub by Android Studio.

   https://github.com/YunYenWang/DecisionIndustrialCard

2. Check the Decision I/O is ready to use.

3. Plug the Decision Digital I/O card with OTG cable into your Android powered device. The dialog will be shown to giant the USB access authentication.

4. After open the Decision I/O, the layout of the I/O Card will be shown on the panel. You can check the module type and control the digital output by switch buttons.
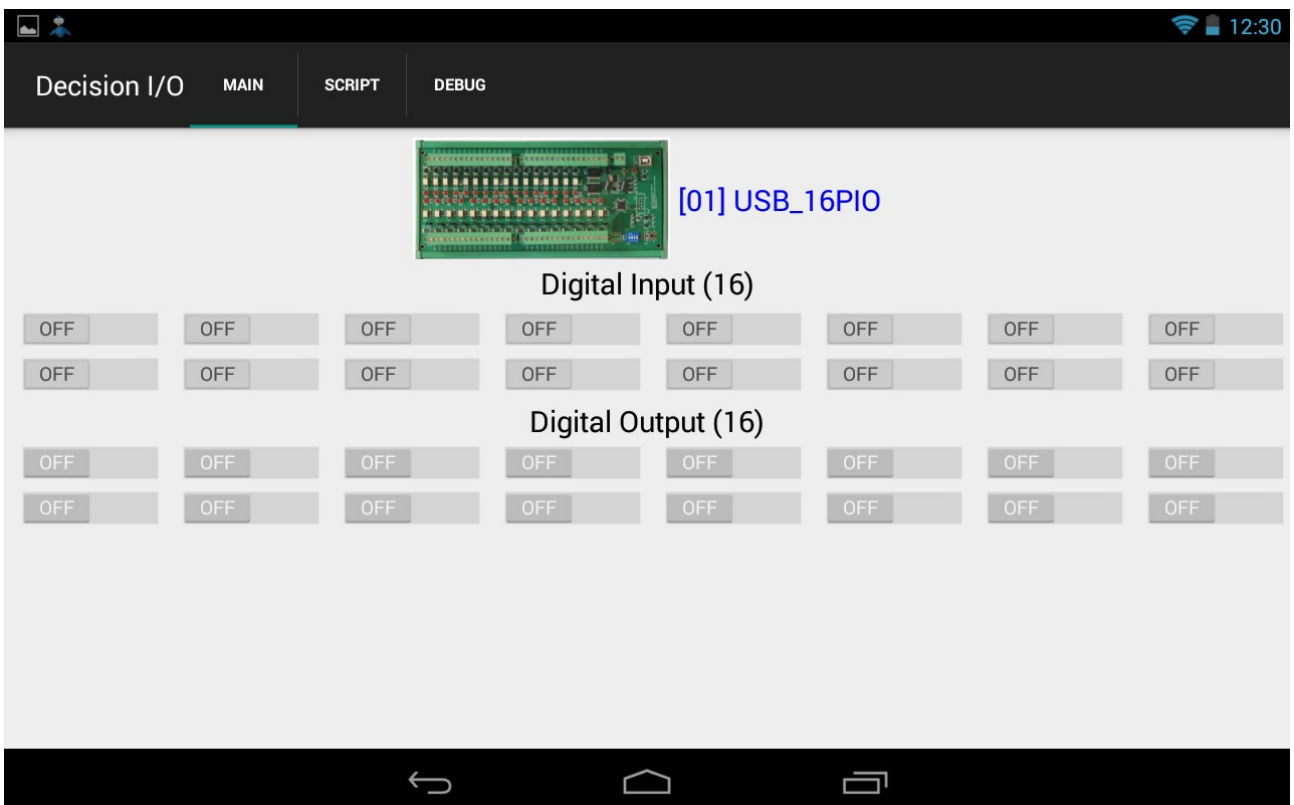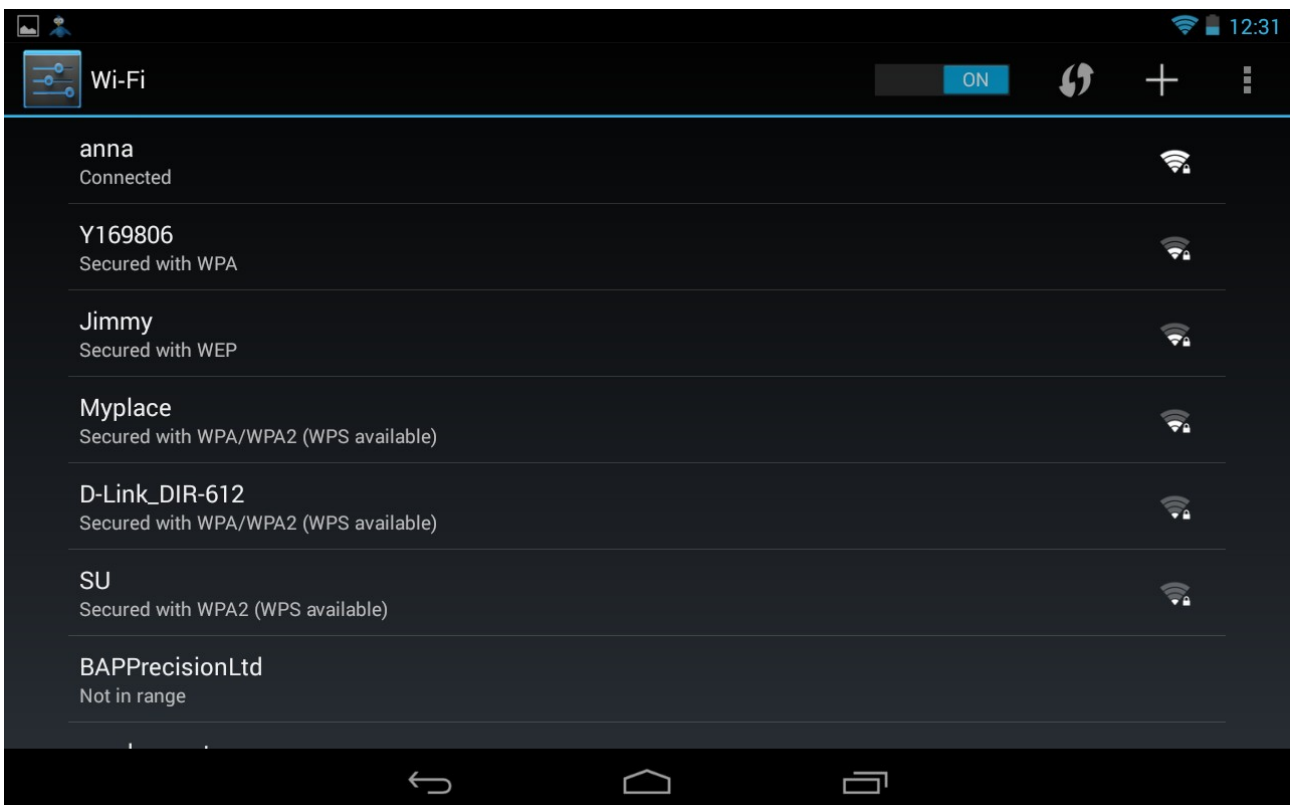

5. Decision I/O also embedded a lite web server for user to remote control you card directly. Please link you Android powered device to WiFi environment and retrieve the WiFi IP

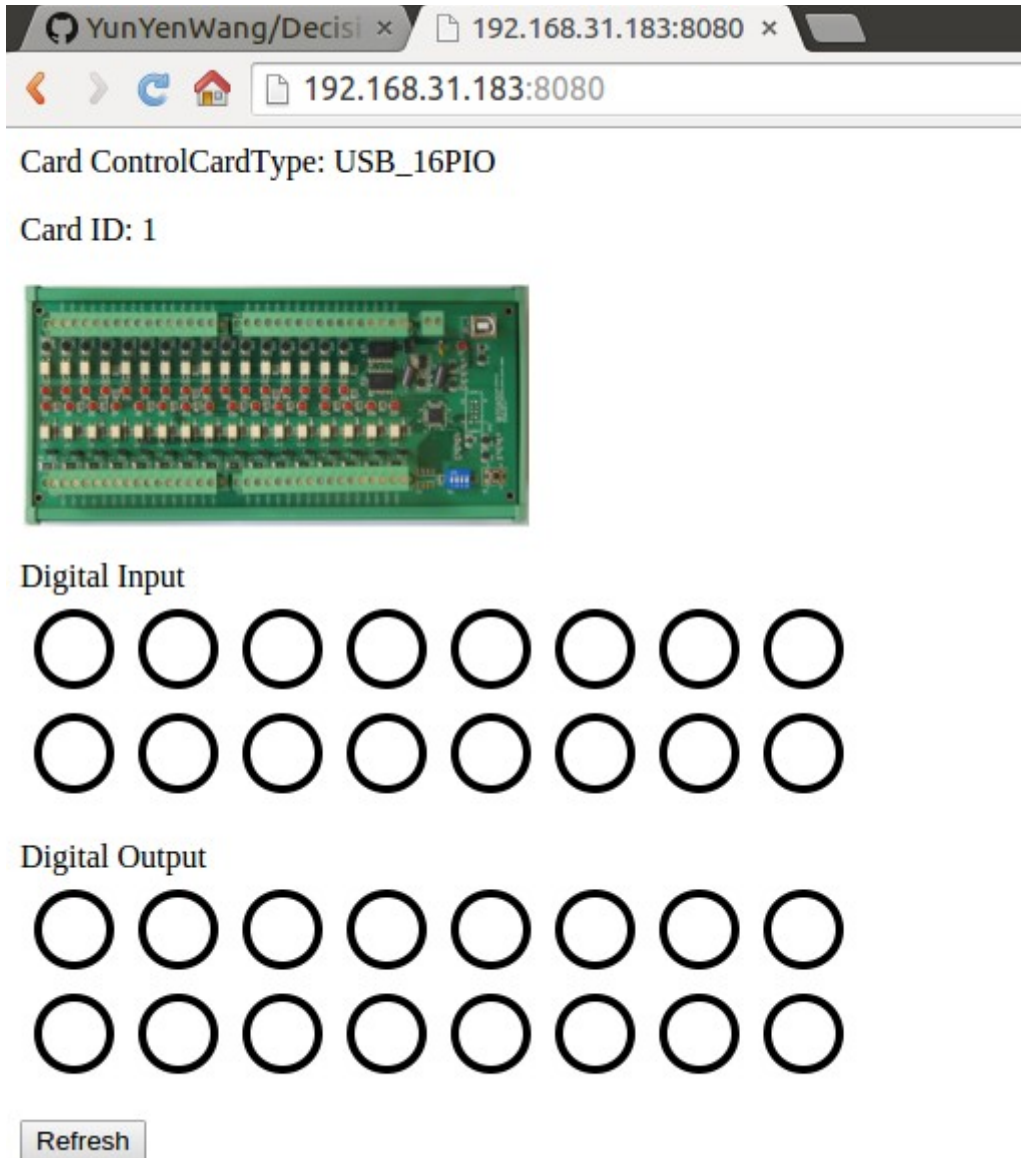address by Android settings.

Step 1: click your WiFi settings.
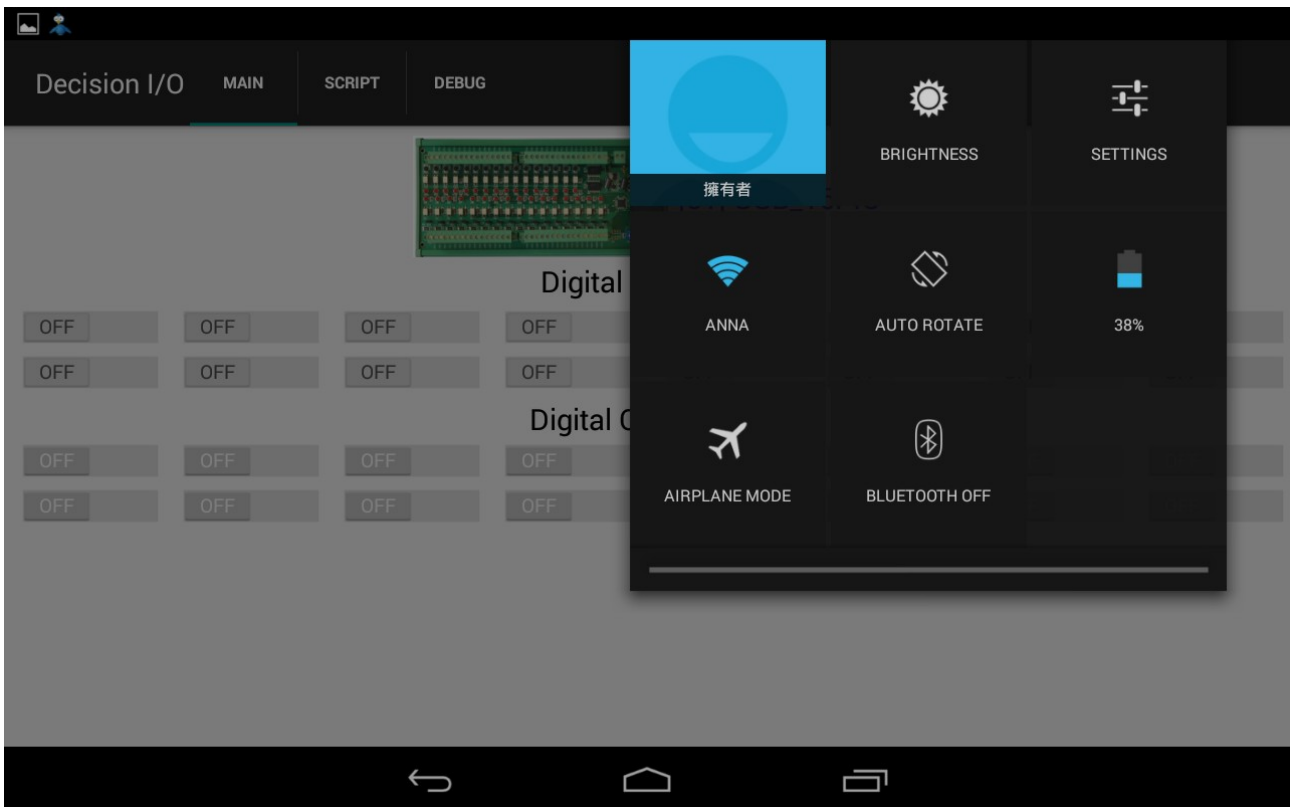
Step 2: check the connection detail.

Step 3: Read the WiFi IP Address

6. Launch the browser such as Google Chrome or Safari to open the web page. The URL is http://aaa.bbb.ccc.ddd:8080. 'aaa.bbb.ccc.ddd' is your Android powered devices's WiFi IP Address.
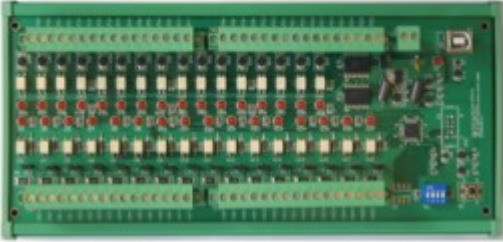

7. You can click buttons of Digital Output to test the remote controlling or read the input status.
8. Decision I/O provides the capability to execute the logic controlling script. Right now we support the 'Lua' script language and provide the basic controlling function. You can use web browser to edit the controlling script. After saving the controlling script, you must enable the Decision I/O to run the script every 1 second in the script tab.

   Step 1: Write you own controlling script by Lua language by web browser. The URL is http://aaa.bbb.ccc.ddd:8080/lua. Please reference the documents of the Lua language and samples from http://www.lua.org/.
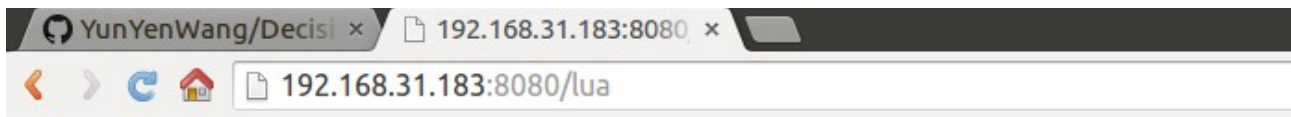
Lua Logic Control Script

```
require 'dgdio'

slaveId = 1

address = dgdio.get('last')

if address then
  dgdio.writeDo(slaveId, address, 0)
end

address = math.random(16) - 1

dgdio.writeDo(slaveId, address, 1)

print('set ' .. address .. ' to 1')

dgdio.put('last', address)
```

Save & Apply

You must import 'digdio' module first. (As above example, using *require 'digdi'*)

| Function	Description
void dgdio.put(string, value)	Put your customized cache value.
value dgdio.get(string)	Read you customized cache value
integer readDi(cardId, cardAddress)	Read value of the Digital Input by card ID and address
integer readDo(cardId, cardAddress)	Read value of the Digital Output by card ID and address
void writeDo(cardId, cardAddress, value)	Write value of the Digital Output

Step 2: Enable to execute the controlling script. You can edit the script in the Decision I/O APP.
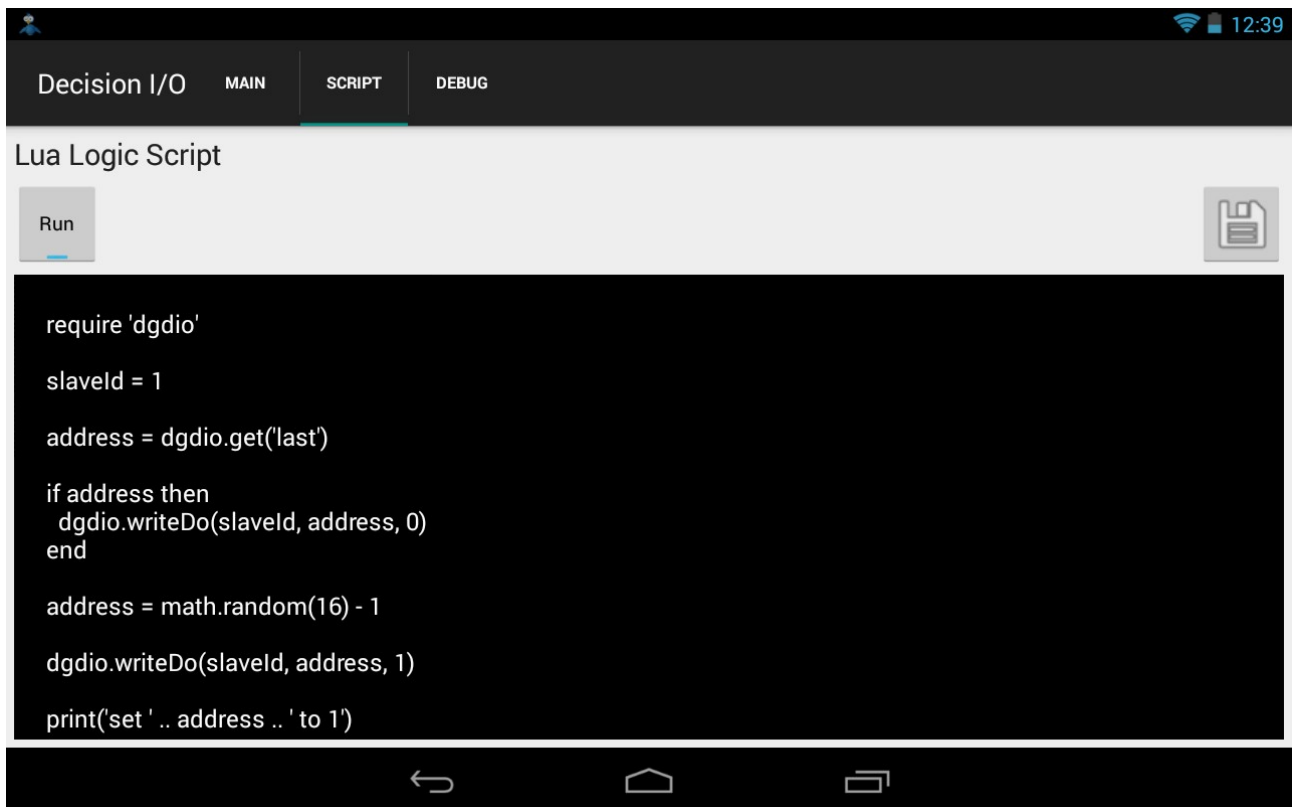
9. Decision I/O supports the Modbus/TCP for SCADA system to provide the industrial control for large scale area such as Smart Building, Smart Home and Smart Factory. You can use and Modbus client tool to monitor and control the Decision Industrial Cards. We suggest you can use ModScan32 to evaluate this function.

   * Modbus: https://en.wikipedia.org/wiki/Modbus
   * SCADA: https://en.wikipedia.org/wiki/SCADA
   * ModScan32: http://www.win-tech.com/demos/modscan32.zip

   Step 1: Download and extract the modscan32.zip.
   Step 2: Run 'ModScan32.exe' and pass the license agreements.
   Step 3: Ready to build the Modbus/TCP connection.
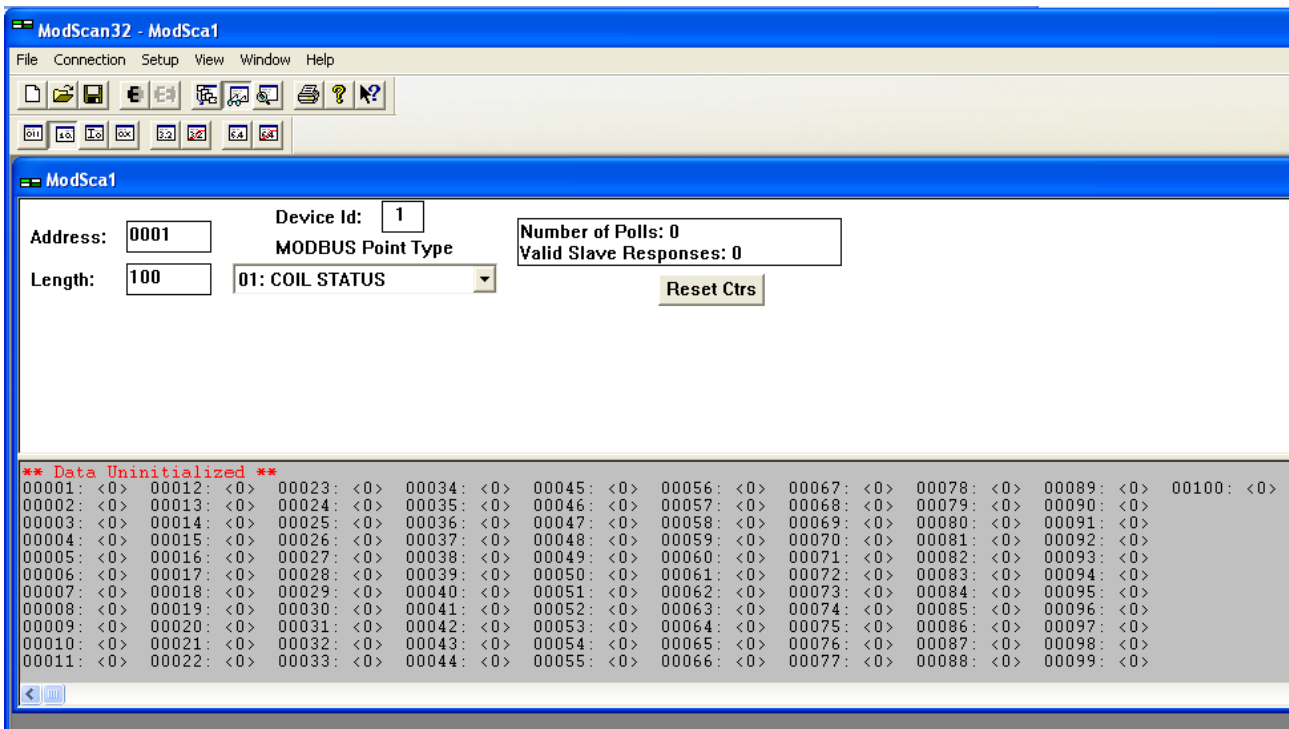
Step 4: Execute the 'Connection' in upper menu to input the target device. Please choice 'Remote modbusTCP Server' and give the IP address of the Android powered device. The 'Server Port' is 10502. Finally click 'OK' to start the connection.
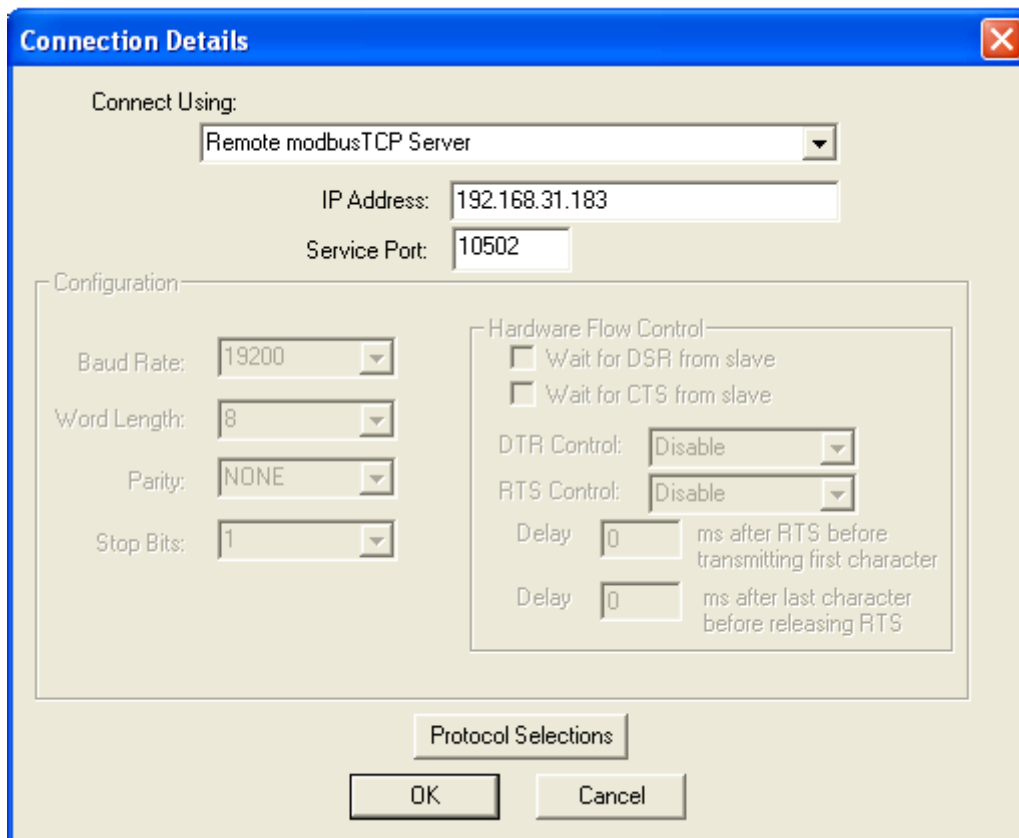
Step 5: Monitor Modbus registers' value. The 'Device Id' is Card's address which you specified. We can support '01: COIL STATUS' for digital output and '02: INPUT STATUS' for digital input. The below register addresses show you the current status. You can change the value of the COIL registers by double clicking the value number
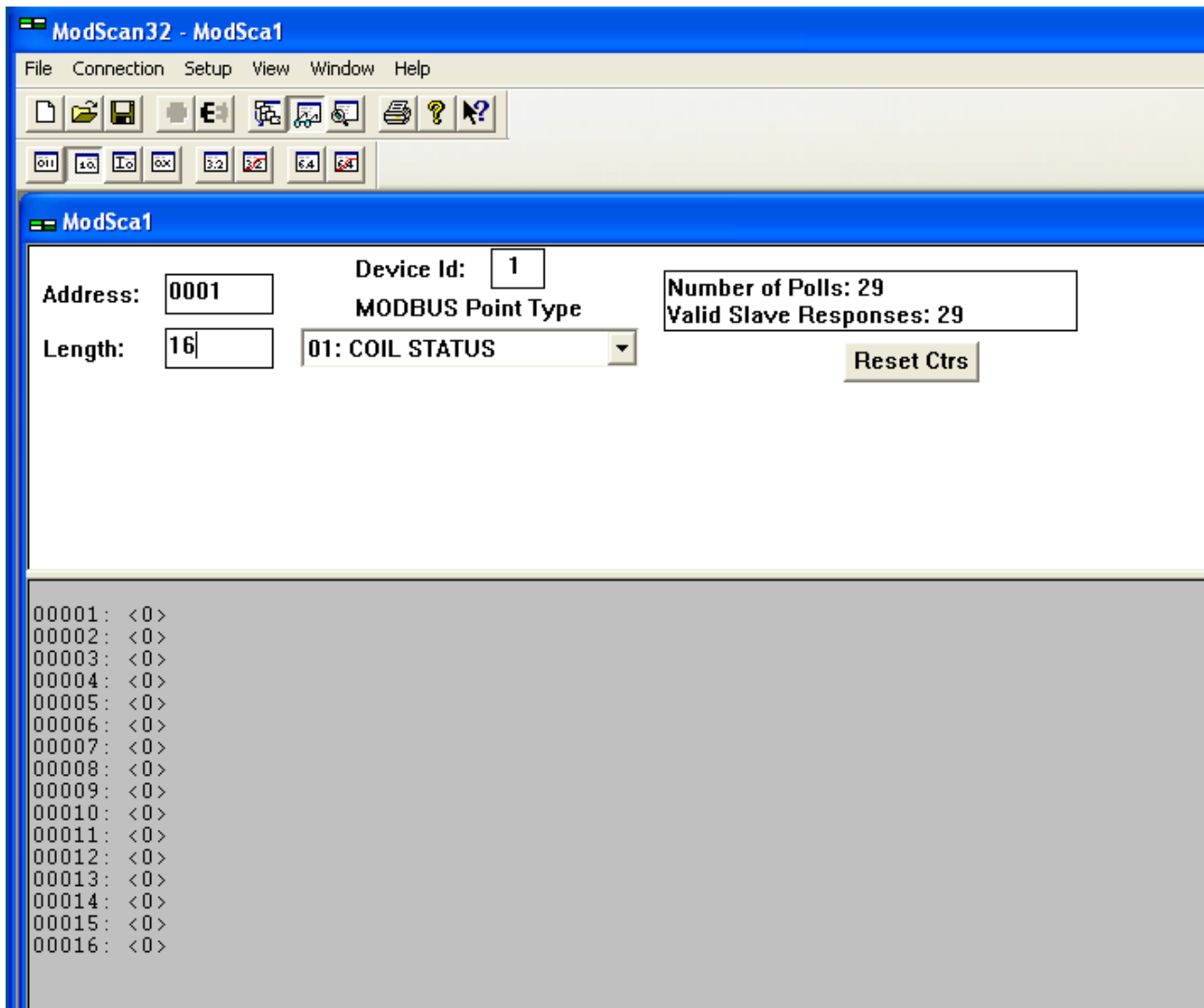
STEP 6: To change the digital output state.
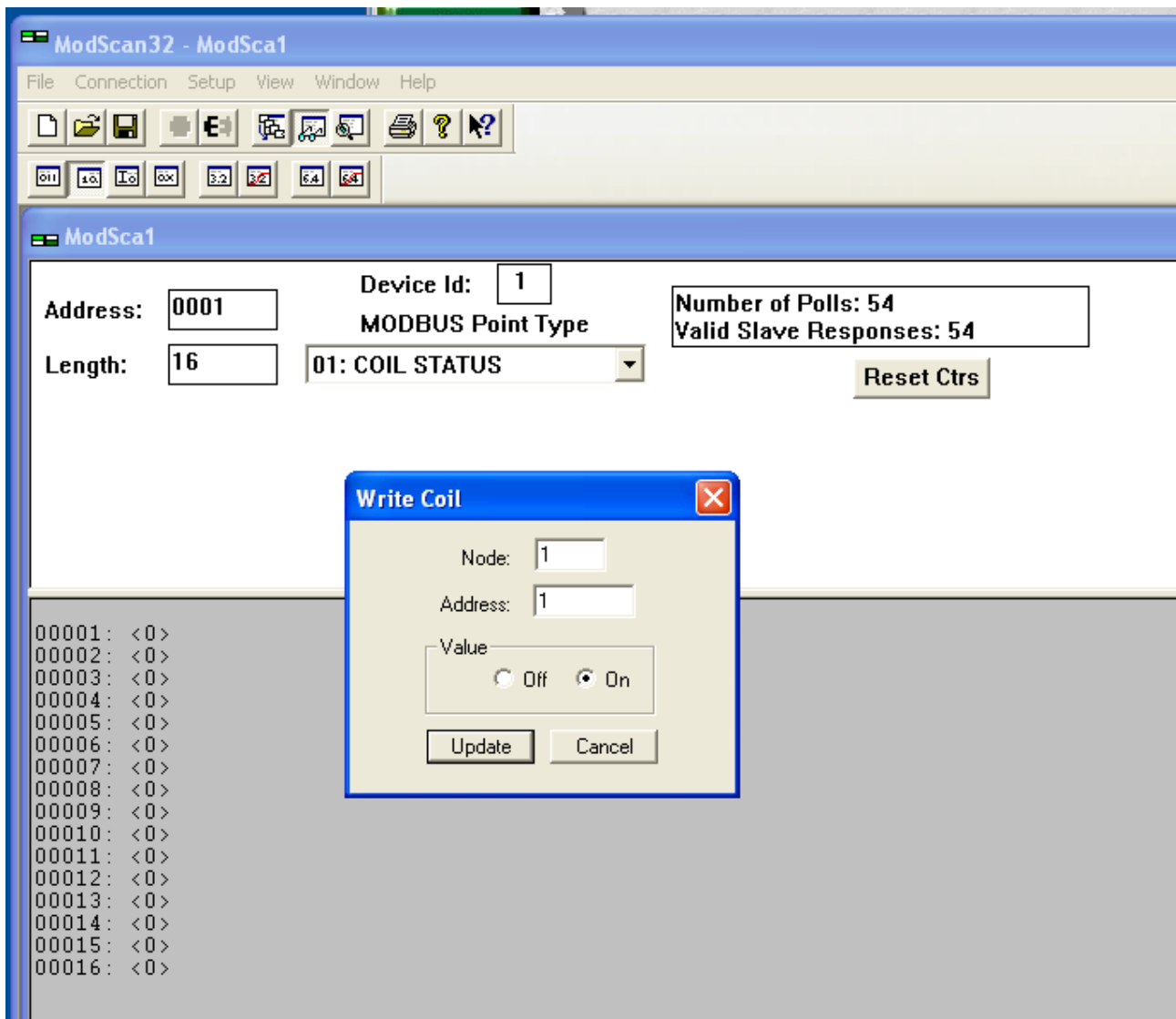
Modbus Register Table:

Register Type	ModScan Address	Hex	Description
COIL	00001~00016	0x00~0x0F	Digital Output
DISCRETE INPUT	10001~10016	0x00~0x0F	Digital Input