HO CHI MINH CITY UNIVERSITY OF TECHNOOLOGY

FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING

EMBEDDED SYSTEM – GROUP 02

SCHEMATIC EXPLAINATION

RFID CARD READER/WRITTER

Lecturer: PhD – Bui Quoc Bao

	Name	ID	Class
1	Trần Quang Nguyên Ánh	2151047	TT01
2	Văn Thiên Lâm	2151110	TT01

Thành phố Hồ Chí Minh, tháng …, năm …

I. Overview

1) Introduce

This system allows users to read the normal by MFRC 522 and then send the card's id to the computer via wifi. And write the data to the white card through MFRC 522.

2) Main components

Through its used purporses, the system has 6 main components:

+ MCU: Atmega 328-P
+ RFID RC 522
+ Node MCU Wifi ESP 8266
+ LCD Display
+ Switch and buttons for choosing mode
+ Power

II. Schematic explaination

1) MCU: Atmega 328-p

With this MCU we use the adruino nano V3 with has 1 MCU Atmega328 and 1 IC CH340G for load program.

2) RFID RC 522 (SPI protocol)

Pins D11, D12, D13 of MCU Atmega328-P connect to D7, D6, D5 of RC 522 respectively.

And the data off ID card will from the antenna to RX and TX1 and TX2 of RC522 and then transfer to MCU Atmega 328-p via SPI protocol.

3) Node MCU Wifi ESP 8266 (UARST protocol)

Pin RX of node MCU ESP 8266 connects to pin TX0 of ATMega 328-p. It means that the node MCU will receive data and Atmega 328-p will transmit data.

Although the core is ESP 12E, the main MCU in this node is the ESP 8266 which combines into the core with antenna.

4) LCD Display

LCD will connect to Pins D2 – D8 which Pins D2, D3, D8 are RS, R/W, E respectively. And D4 – D7 is the data bus connecting to DB4 – DB7 of LCD.

5) Switch and buttons (pull-down resistor connection)

Switch will connect to pin A0 with the signal of A0 = 0 (read), A0 = 1 (write).
Buttons will connect to pin A1, A2 respectively for choosing copied ID and enter.

6) Buzzer

The buzzer will be connected to pin D10 of MCU Atmega328-p for the user know when the processes of reading and writing has been done.

7) Power

We use 2 circuits using two 2 IC: LM7805 and AS1117 respectively for drop 9V(adapter) to 5V and 5V to 3.3V, which is the power source for all the components of the system.