

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY  
FACULTY OF COMPUTER SCIENCE AND ENGINEERING



EMBEDDED SYSTEM

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# Laboratory Exercise Report N.O 5

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Nguyen La Thong

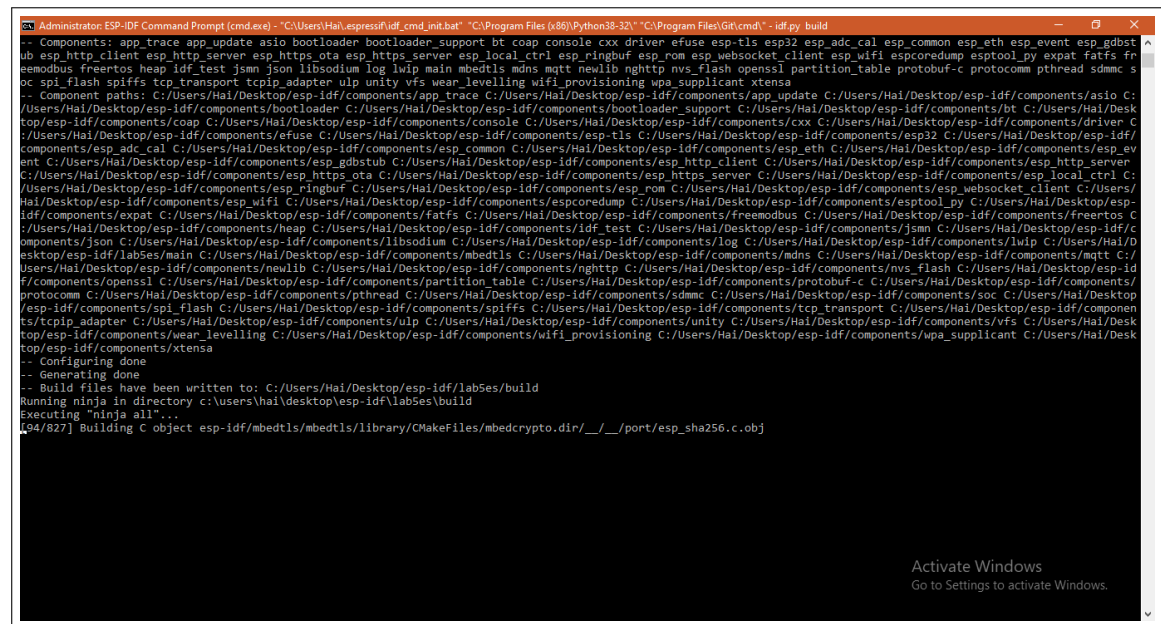
June, 2020

Table 1: GROUP'S MEMBERS

No.	Name	ID
1	Vuong Le Huy	1652252
2	Nguyen La Thong	1752522

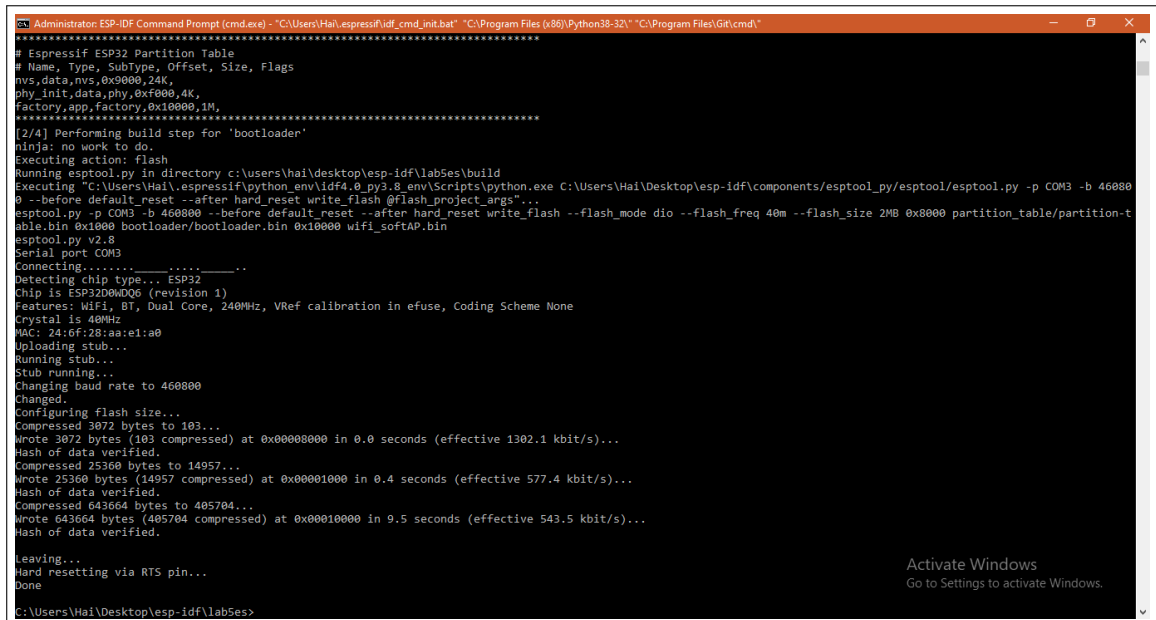
## 1 Setup Host

### 1.1 Build



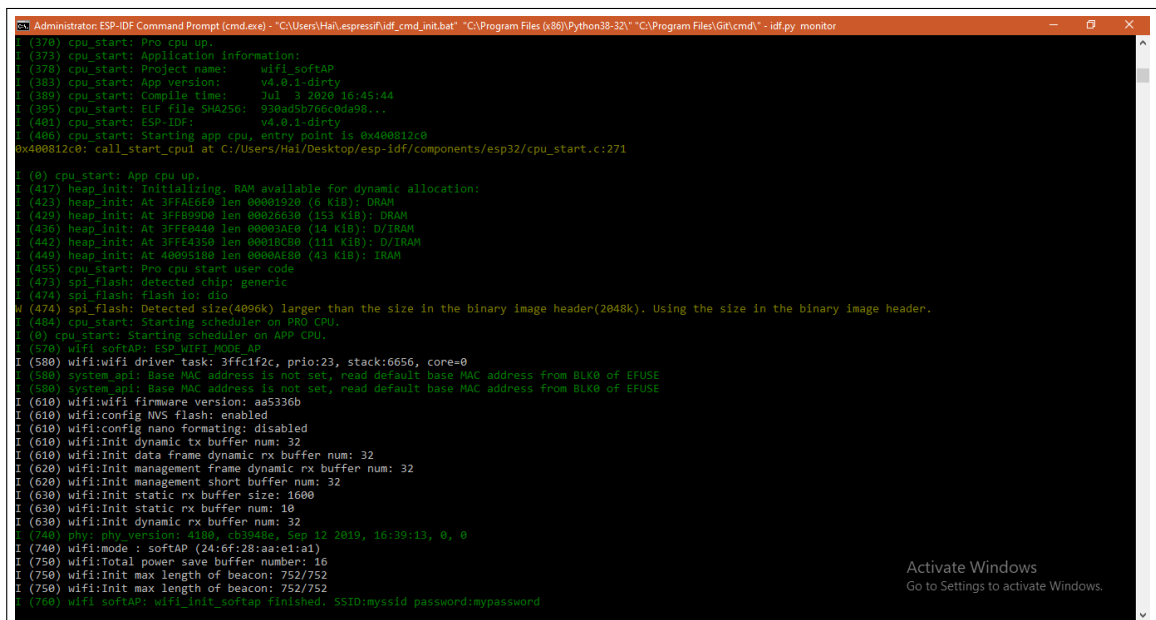
```
Administrator: ESP-IDF Command Prompt (cmd.exe) - "C:\Users\Hai\esp-idf\idf_cmd_init.bat" "C:\Program Files (x86)\Python38-32\" "C:\Program Files\Git\cmd\" - idf.py build
-- Components: app_trace app_update asio bootloader bootloader_support bt coap console cxx driver efuse esp-tls esp32 esp_adc_cal esp_common esp_eth esp_event esp_gdbstub
esp_http_client esp_http_server esp_https_ota esp_https_server esp_local_ctrl esp_ringbuf esp_rom esp_websocket_client esp_wifi espcoredump esptool_py expat fatfs fr
eemodbus freertos heap idf_test jsmn json libsodium log lwip main mbedtls mdns mqtt newlib nhttp nvs_flash openssl partition_table protobuf-c protocpp pthread sdmmc s
oc spi_flash spiiffs tcp_transport tcpip_adapter ulp unity vfs wear_levelling wifi_provisioning wpa_supplicant xtensa
-- Component paths: C:/Users/Hai/Desktop/esp-idf/components/app_trace C:/Users/Hai/Desktop/esp-idf/components/app_update C:/Users/Hai/Desktop/esp-idf/components/asio C:/
Users/Hai/Desktop/esp-idf/components/bootloader C:/Users/Hai/Desktop/esp-idf/components/bootloader_support C:/Users/Hai/Desktop/esp-idf/components/bt C:/Users/Hai/Desk
top/esp-idf/components/coap C:/Users/Hai/Desktop/esp-idf/components/console C:/Users/Hai/Desktop/esp-idf/components/cxx C:/Users/Hai/Desktop/esp-idf/components/driver C
:/Users/Hai/Desktop/esp-idf/components/efuse C:/Users/Hai/Desktop/esp-idf/components/esp-tls C:/Users/Hai/Desktop/esp-idf/components/esp32 C:/Users/Hai/Desktop/esp-idf/
components/esp_adc_cal C:/Users/Hai/Desktop/esp-idf/components/esp_common C:/Users/Hai/Desktop/esp-idf/components/esp_eth C:/Users/Hai/Desktop/esp-idf/components/esp_ev
ent C:/Users/Hai/Desktop/esp-idf/components/esp_gdbstub C:/Users/Hai/Desktop/esp-idf/components/esp_http_client C:/Users/Hai/Desktop/esp-idf/components/esp_http_server
C:/Users/Hai/Desktop/esp-idf/components/esp_https_ota C:/Users/Hai/Desktop/esp-idf/components/esp_https_server C:/Users/Hai/Desktop/esp-idf/components/esp_local_ctrl C:/
Users/Hai/Desktop/esp-idf/components/esp_ringbuf C:/Users/Hai/Desktop/esp-idf/components/esp_rom C:/Users/Hai/Desktop/esp-idf/components/esp_websocket_client C:/Users/
Hai/Desktop/esp-idf/components/esp_wifi C:/Users/Hai/Desktop/esp-idf/components/espcoredump C:/Users/Hai/Desktop/esp-idf/components/esptool_py C:/Users/Hai/Desktop/esp-id
f/components/expat C:/Users/Hai/Desktop/esp-idf/components/fatfs C:/Users/Hai/Desktop/esp-idf/components/freemodbus C:/Users/Hai/Desktop/esp-idf/components/freertos C
:/Users/Hai/Desktop/esp-idf/components/heap C:/Users/Hai/Desktop/esp-idf/components/idf_test C:/Users/Hai/Desktop/esp-idf/components/jsmn C:/Users/Hai/Desktop/esp-idf/c
omponents/json C:/Users/Hai/Desktop/esp-idf/components/libsodium C:/Users/Hai/Desktop/esp-idf/components/log C:/Users/Hai/Desktop/esp-idf/components/lwip C:/Users/Hai/D
esktop/esp-idf/lab5es/main C:/Users/Hai/Desktop/esp-idf/components/mbedtls C:/Users/Hai/Desktop/esp-idf/components/mdns C:/Users/Hai/Desktop/esp-idf/components/mqtt C:/
Users/Hai/Desktop/esp-idf/components/newlib C:/Users/Hai/Desktop/esp-idf/components/nhttp C:/Users/Hai/Desktop/esp-idf/components/nvs_flash C:/Users/Hai/Desktop/esp-id
f/components/openssl C:/Users/Hai/Desktop/esp-idf/components/partition_table C:/Users/Hai/Desktop/esp-idf/components/protobuf-c C:/Users/Hai/Desktop/esp-idf/components/
protocpp C:/Users/Hai/Desktop/esp-idf/components/pthread C:/Users/Hai/Desktop/esp-idf/components/sdmmc C:/Users/Hai/Desktop/esp-idf/components/soc C:/Users/Hai/Desktop
/esp-idf/components/spi_flash C:/Users/Hai/Desktop/esp-idf/components/spiffs C:/Users/Hai/Desktop/esp-idf/components/tcp_transport C:/Users/Hai/Desktop/esp-idf/componen
ts/tcpip_adapter C:/Users/Hai/Desktop/esp-idf/components/ulp C:/Users/Hai/Desktop/esp-idf/components/unity C:/Users/Hai/Desktop/esp-idf/components/vfs C:/Users/Hai/Desk
top/esp-idf/components/wear_levelling C:/Users/Hai/Desktop/esp-idf/components/wifi_provisioning C:/Users/Hai/Desktop/esp-idf/components/wpa_supplicant C:/Users/Hai/Desk
top/esp-idf/components/xtensa
-- Configuring done
-- Generating done
-- Build files have been written to: C:/Users/Hai/Desktop/esp-idf/lab5es/build
Running ninja in directory c:/Users/hai/desktop/esp-idf/lab5es/build
Executing "ninja all"...
[04/027] Building C object esp-idf\mbdutils\mbdutils\library\MakeFiles\mbdutils.dir\__\port\esp_sha256.c.obj
```

## 1.2 Flask



```
Administrator: ESP-IDF Command Prompt (cmd.exe) - "C:\Users\Hai\espresif\idf_cmd_init.bat" "C:\Program Files (x86)\Python38-32\" "C:\Program Files\Git\cmd\"
# Espressif ESP32 Partition Table
# Name, Type, Subtype, Offset, Size, Flags
nvs,data,nvs,0x0000,24k,
phy_init,data,phy,0xF000,4K,
factory,app,factory,0x10000,1M,
*****
[2/4] Performing build step for 'bootloader'
 ninja: no work to do.
Executing action: flash
Running esptool.py in directory c:\users\hai\desktop\esp-idf\lab5es\build
Executing "C:\Users\Hai\espresif\python_env\idf4.0_py3.8_env\Scripts\python.exe C:\Users\Hai\Desktop\esp-idf\components\esptool_py/esptool/esptool.py -p COM3 -b 460800 --before default_reset --after hard_reset write_flash @flash_project_args"...
esptool.py -p COM3 -b 460800 --before default_reset --after hard_reset write_flash --flash_mode dio --flash_freq 40m --flash_size 2MB 0x10000 partition_table/partition-table.bin 0x10000 bootloader/bootloader.bin 0x10000 wifi_softAP.bin
esptool.py v2.8
Serial port COM3
Connecting.....
Detecting chip type... ESP32
Chip is ESP32D0WQ06 (revision 1)
Features: WiFi, BT, Dual Core, 240MHz, VRef calibration in efuse, Coding Scheme None
Crystal is 40MHz
MAC: 24:6f:28:aa:e1:a0
Uploading stub...
Running stub...
Stub running...
Changing baud rate to 460800
Changed.
Configuring flash size...
Compressed 3072 bytes to 103...
Wrote 3072 bytes (103 compressed) at 0x00000000 in 0.0 seconds (effective 1302.1 kbit/s)...
Hash of data verified.
Compressed 25360 bytes to 14957...
Wrote 25360 bytes (14957 compressed) at 0x00001000 in 0.4 seconds (effective 577.4 kbit/s)...
Hash of data verified.
Compressed 643664 bytes to 405704...
Wrote 643664 bytes (405704 compressed) at 0x00010000 in 9.5 seconds (effective 543.5 kbit/s)...
Hash of data verified.
Leaving...
Hard resetting via RTS pin...
Done
C:\Users\Hai\Desktop\esp-idf\lab5es>
```

## 1.3 Monitor

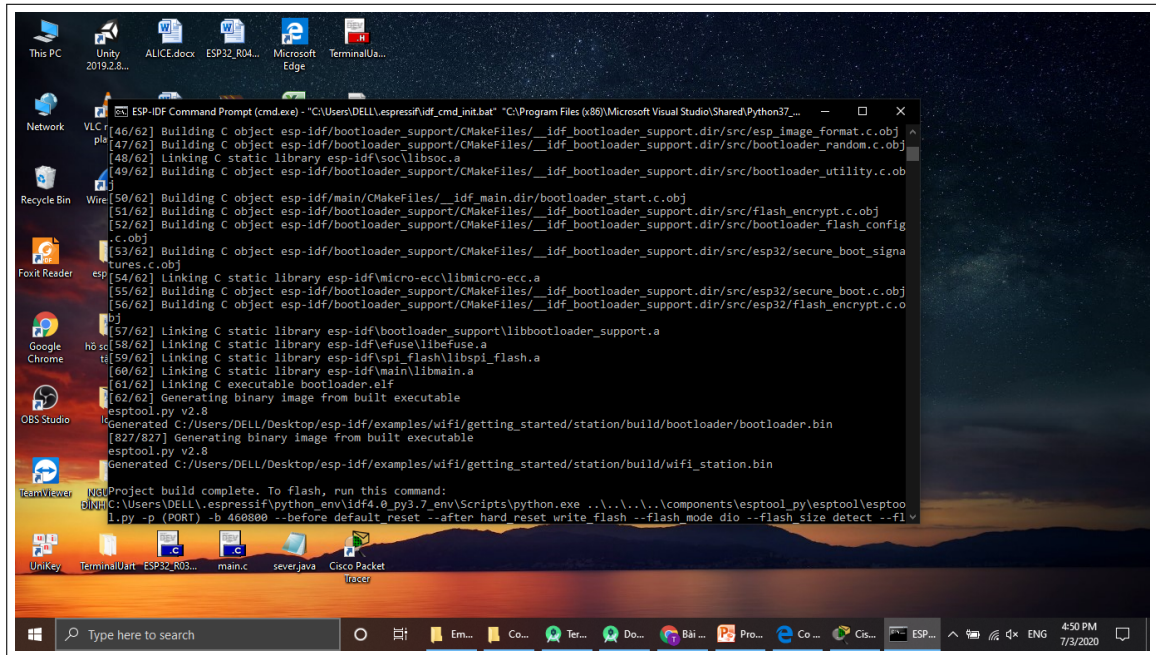


```
Administrator: ESP-IDF Command Prompt (cmd.exe) - "C:\Users\Hai\espresif\idf_cmd_init.bat" "C:\Program Files (x86)\Python38-32\" "C:\Program Files\Git\cmd\" - idf.py monitor
I (370) cpu_start: Pro cpu up.
I (373) cpu_start: Application information:
I (378) cpu_start: Project name:   wifi_softAP
I (383) cpu_start: App version:    v4.0.1-dirty
I (388) cpu_start: Compile time:   Jul  3 2020 16:45:44
I (395) cpu_start: ELF file SHA256: 930ad5b766c0da98...
I (401) cpu_start: ESP-IDF:       v4.0.1-dirty
I (406) cpu_start: Starting app cpu, entry point is 0x400812c0
0x400812c0: call_start_cpu1 at C:\Users\Hai\Desktop\esp-idf\components\esp32/cpu_start.c:271

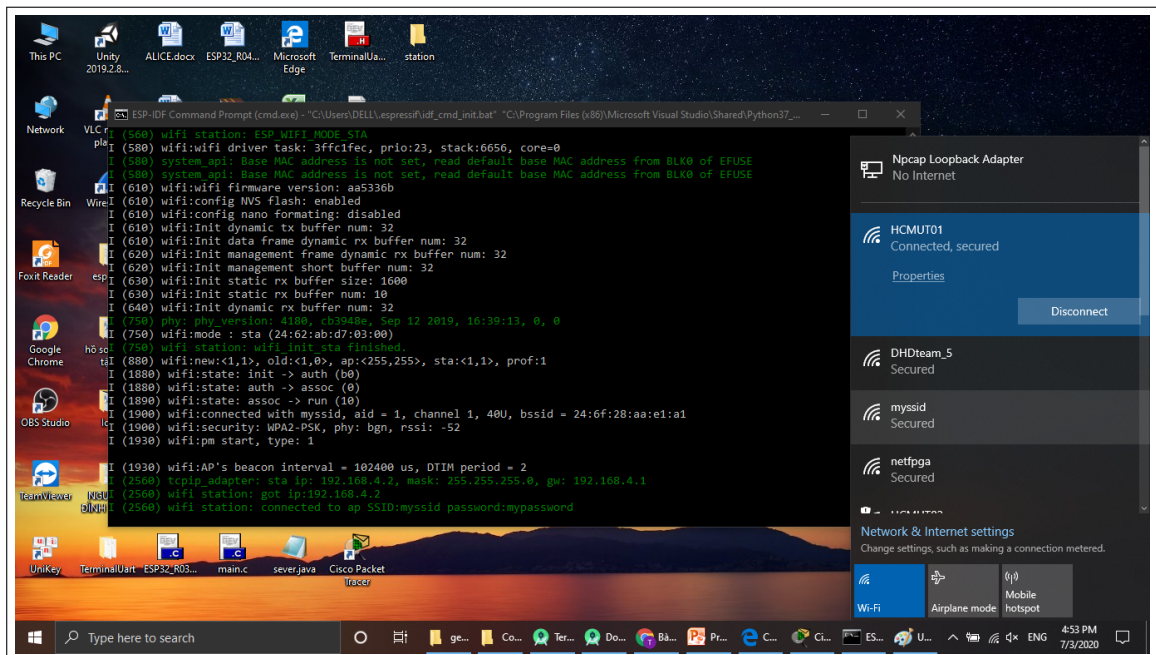
I (0) cpu_start: App cpu up.
I (417) heap_init: Initializing. RAM available for dynamic allocation:
I (423) heap_init: At 3FFAE6E0 len 00001920 (6 KiB): DRAM
I (429) heap_init: At 3FFB99D0 len 00026630 (153 KiB): DRAM
I (436) heap_init: At 3FFE0440 len 00003AE0 (14 KiB): D/IRAM
I (442) heap_init: At 3FFE4350 len 000010C0 (11 KiB): D/IRAM
I (448) heap_init: At 40095100 len 0000AE80 (43 KiB): IRAM
I (455) cpu_start: Pro cpu start user code
I (473) spi_flash: detected chip: generic
I (474) spi_flash: flash io: dio
I (474) spi_flash: Detected size(4896k) larger than the size in the binary image header(2848k). Using the size in the binary image header.
I (484) cpu_start: Starting scheduler on PRO CPU.
I (0) cpu_start: Starting scheduler on APP CPU.
I (570) wifi softAP: ESP_WIFI_MODE_AP
I (580) wifi:wifi driver task: 3ffc1f2c, prio:23, stack:6656, core=0
I (580) system_api: Base MAC address is not set, read default base MAC address from BLK0 of EFUSE
I (580) system_api: Base MAC address is not set, read default base MAC address from BLK0 of EFUSE
I (610) wifi:wifi firmware version: aa5336b
I (610) wifi:config NVS flash: enabled
I (610) wifi:config nano formatting: disabled
I (610) wifi:Init dynamic tx buffer num: 32
I (610) wifi:Init data frame dynamic rx buffer num: 32
I (620) wifi:Init management frame dynamic rx buffer num: 32
I (620) wifi:Init management short buffer num: 32
I (630) wifi:Init static rx buffer size: 1600
I (630) wifi:Init static rx buffer num: 10
I (630) wifi:Init dynamic rx buffer num: 32
I (740) phy: phy_version: 4100, cb3040e, Sep 12 2019, 16:39:13, 0, 0
I (740) wifi:mode : softAP (24:6f:28:aa:e1:a0)
I (750) wifi:Total power save buffer number: 16
I (750) wifi:Init max length of beacon: 752/752
I (750) wifi:Init max length of beacon: 752/752
I (760) wifi softAP: wifi_init_softap finished. SSID:myssid password:mypassword
```

## 2 Client Connect to Host

### 2.1 Build



### 2.2 Flask



## 2.3 Monitor

