

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



EMBEDED SYSTEM

Laboratory Exercise Report N.O 1

Lecturer: Pham Hoang Anh
Author: Vuong Le Huy

May, 2020

1 Setup Environment & Build

```
mercedes-a200@Mercedes-A200:~/Downloads/esp-idf-master/examples/get-started/hello_world$ idf.py build
Executing action: all (aliases: build)
Running cmake in directory /home/mercedes-a200/Downloads/esp-idf-master/examples/get-started/hello_world/build
Executing "cmake -G Ninja -DPYTHON_DEPS_CHECKED=1 -DESP_PLATFORM=1 --warn-uninitialized -DCCACHE_ENABLE=0 /home/mercedes-a200/Downloads/esp-idf-master/examples/get-started/hello_world"...
Warn about uninitialized values.
-- Found Git: /usr/bin/git (found version "2.17.1")
fatal: not a git repository (or any of the parent directories): .git
-- IDF_TARGET not set, using default target: esp32
-- The C compiler identification is GNU 8.2.0
-- The CXX compiler identification is GNU 8.2.0
-- The ASM compiler identification is GNU
-- Found assembler: /home/mercedes-a200/.espressif/tools/xtensa-esp32-elf/esp-2020r1-8.2.0/xtensa-esp32-elf/bin/xtensa-esp32-elf-gcc
-- Check for working C compiler: /home/mercedes-a200/.espressif/tools/xtensa-esp32-elf/esp-2020r1-8.2.0/xtensa-esp32-elf/bin/xtensa-esp32-elf-gcc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /home/mercedes-a200/.espressif/tools/xtensa-esp32-elf/esp-2020r1-8.2.0/xtensa-esp32-elf/bin/xtensa-esp32-elf-g++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Project is not inside a git repository, or git repository has no commits; will not use 'git describe' to determine PROJECT_VER.
-- Building ESP-IDF components for target esp32
CMake Error at ../../tools/cmake/component.cmake:302 (message):
  Include directory
    '/home/mercedes-a200/Downloads/esp-idf-master/components/mbdrtls/mbdrtls/include'
  is not a directory.
Call Stack (most recent call first):
  ../../tools/cmake/component.cmake:470 (__component_add_include_dirs)
  ../../components/mbdrtls/CMakeLists.txt:4 (idf_component_register)
```

2 Flashing & Monitoring ESP32

```
entry 0x00000000
[ 71] boot: Chip Revision: 1
[ 71] boot_comm: chip revision: 1, min. bootloader chip revision: 0
[ 39] boot: ESP-IDF v4.0.1-dirty 2nd stage bootloader
[ 39] boot: compile time 16:14:29
[ 40] boot: Enabling RNG early entropy source...
[ 45] boot: SPI Speed      : 40MHz
[ 40] boot: SPI Mode       : DIO
[ 53] boot: SPI Flash Size : 2MB
[ 57] boot: Partition Table:
[ 61] boot: #          label              usage          type            ST          Offset      Length
[ 60] boot: 0 nvs                WiFi data      01 02 00000000 00000400
[ 75] boot: 1 phy_init           RF data       01 01 0000f700 00001000
[ 83] boot: 2 factory            factory app    00 00 00010000 00100000
[ 90] boot: End of partition table
[ 94] boot_comm: chip revision: 1, min. application chip revision: 0
[102] esp_image: segment 0: paddr=0x00010020 vaddr=0x3f500020 size=0x055a8 ( 22184) map
[119] esp_image: segment 1: paddr=0x000155d0 vaddr=0x3fffb000 size=0x020d0 (  8480) load
[123] esp_image: segment 2: paddr=0x000177b0 vaddr=0x40000000 size=0x00400 ( 1024) load
0x40000000: _WindowOverflow4 at C:/ESP32/components/freertos/xtensa_vectors.S:1778
[129] esp_image: segment 3: paddr=0x00017d00 vaddr=0x40000400 size=0x00450 ( 1104) load
[152] esp_image: segment 4: paddr=0x00010010 vaddr=0x400d0010 size=0x12c0 ( 4800) map
0x400d0010: _stext at ???:?
[179] esp_image: segment 5: paddr=0x00012cc0 vaddr=0x40080000 size=0x0122c ( 4612) load
0x40080000: vTaskDelete at C:/ESP32/components/freertos/tasks.c:1249
[188] boot: Loaded app from partition at offset 0x10000
[188] boot: Disabling RNG early entropy source...
[189] cpu_start: Pro cpu up.
[192] cpu_start: Application Information:
[197] cpu_start: Project name:      hello-world
[203] cpu_start: App version:      v4.0.1-dirty
[208] cpu_start: Compile time:      May 22 2020 16:13:50
[214] cpu_start: ELF file SHA256:  df29e161f8c60044...
[220] cpu_start: ESP-IDF:          v4.0.1-dirty
[225] cpu_start: Starting app cpu, entry point is 0x40081038
0x40081038: call_start_cpu1 at C:/ESP32/components/esp32/cpu_start.c:271
[212] cpu_start: App cpu up.
[236] heap_init: Initializing. RAM available for dynamic allocation:
[243] heap_init: At 3FFAC000 len 00001920 (6 KiB): DRAM
[249] heap_init: At 3FFB2000 len 0002CF20 (179 KiB): DRAM
[255] heap_init: At 3FFC0440 len 00003AE0 (14 KiB): D/IRAM
[261] heap_init: At 3FFC4350 len 00018C00 (111 KiB): D/IRAM
[268] heap_init: At 40020004 len 0001657C (60 KiB): IRAM
[274] cpu_start: Pro cpu start user code
[292] spi_flash: detected chip: generic
[293] spi_flash: flash io: dio
W [293] spi_flash: Detected size(4096k) larger than the size in the binary image header(2048k). Using the size in the binary image header.
[ 300] cpu_start: Starting scheduler on PRO CPU.
[ 10] cpu_start: Starting scheduler on APP CPU.
Hello world!
This is ESP32 chip with 2 CPU cores, WiFi/Bluetooth, silicon revision 1, 2MB external flash
Restarting in 10 seconds...
Restarting in 9 seconds...
Restarting in 8 seconds...
Restarting in 7 seconds...
Restarting in 6 seconds...
Restarting in 5 seconds...
Restarting in 4 seconds...
```