Embedded OS Implementation, Fall 2020

Homework #1 (due October 21, 2020 (Wednesday) 13:00)

Hello uC/OS-II

Problem Definition:

(a) Please draw the system flow of "Hello μC/OS-II (the modified main.c in Lab1)" and explain the process (functions). **Note: Please start from the function "OSTaskCreateExt".**

(b) Consider two periodic tasks (τ_1, τ_2) and their delay time are 3 ticks and 6 ticks, respectively. Task priority of two tasks (τ_1, τ_2) are 1 and 2, respectively. Please add some code to the μC/OS-II scheduler **in the kernel level** to observe how CPU is switched among tasks by means of context switches.

The output results are shown below:

```
OSTick    created, Thread ID  1552
Task[ 63] created, Thread ID  3300
Task[  1] created, Thread ID  9304
Task[  2] created, Thread ID 10752

Tick    From Task       To Task
0       ********        task(1)
0       task(1)         task(2)
0       task(2)         task(63)
3       task(63)        task(1)
3       task(1)         task(63)
6       task(63)        task(1)
6       task(1)         task(2)
6       task(2)         task(63)
9       task(63)        task(1)
9       task(1)         task(63)
12      task(63)        task(1)
12      task(1)         task(2)
12      task(2)         task(63)
15      task(63)        task(1)
15      task(1)         task(63)
18      task(63)        task(1)
18      task(1)         task(2)
18      task(2)         task(63)
21      task(63)        task(1)
21      task(1)         task(63)
24      task(63)        task(1)
24      task(1)         task(2)
24      task(2)         task(63)
```

Crediting :

Your homework needs to show the following information:

- The system flow and the explanation of the process(functions). (45%)
- The screenshot of the result. (10%)
- A report that describes your implementation (please attach the screenshot of the code and **MARK** the modified part). (45%)

Homework submit:

Submit to Moodle.

Submit deadline : October 21, 2020 (Wednesday) 13:00

File name format : RTOS_ your student ID_HW1.zip

RTOS_ your student ID_HW1.zip includes :

※ The report (RTOS_ your student ID_HW1.pdf).

※ The file you modify(hello_ucosii.c, os_core.c, etc.)

Hints:

1. The time tick when OS starting is not 0 because of the overhead of system initialization. Therefore, you need to call the function OSTimeSet(0) before OS start.
2. Using OSTimeGet() to get the current tick in the system.
3. Using OSTimeDly() to delay the task.