

EMBSYS100 - AU19

ASSIGNMENT 03

Goal

The goals for the assignment this week:

1. Become familiar with C programming language's pre-processor, volatile directive, and how GPIOs work.
2. Explore using the STM32MXCube tool to generate code for the evaluation board.

Problems:

1. Morse Code is considered a sequence of binaries. Please read about Morse Code and share the following findings:
 - a. What is Morse Code?
 - b. Who developed Morse Code?
2. Using the International Code below, please write a small program to present your **first name** with Morse Code using the user LED on our Nucleo-F401RE evaluation board.

International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.

A	• —	U	• • —
B	— • • •	V	• • • —
C	— • — •	W	• — —
D	— • •	X	— • • —
E	•	Y	— • — —
F	• • — •	Z	— — • •
G	— — •		
H	• • • •		
I	• •		
J	• — — —		
K	— • —	1	• — — — —
L	• — • •	2	• • — — —
M	— —	3	• • • — —
N	— •	4	• • • • —
O	— — —	5	• • • • •
P	• — — •	6	— • • • •
Q	— — • —	7	— — • • •
R	• — •	8	— — — • •
S	• • •	9	— — — — •
T	—	0	— — — — —

3. **Bonus:**

- a. Use the STM32CubeMx tool to generate the boiler plate code for controlling the LED
- b. Implement a simple blinking LED program using the code generated by the tool.
- c. For Setup:
 - i. Install the tool (available under the “general” folder in Canvas).
 - ii. Install JRE if it prompts for it.
 - iii. Reference manual for the [STM32CubeMX](#) tool

What to turn in and how:

- Check in all your homework in your repo under the folder “**assignment03**”.
- Your folder should contain the following:
 - o The main.c file for the “Morse Code” problem
 - o A video of the blinking Morse Code of your first name using the evaluation board.
 - o An MD file with the answers to the questions above.
 - o Bonus: Turn in the main.c file showing your implementation of the blinking LED using the generated code by the STM32MXCube tool.
- Submit a link to your GitHub repo assignment:
 - o Ex: “https://github.com/<account_id>/embsys100/assignment03”