

## HW 1. ARM architecture

Total 110 points.

Prob 1-1 (30 points). There are three kinds of demo boards from ST Microelectronics for Cortex-M based MCUs: Nucleo boards, Discovery boards, and Eval boards. Compare the pros and cons of these boards in terms of functionalities, cost, number of onboard hardware, and compatibility to other boards.

Prob 1-2 (30 points). Suppose a specific MCU has the following size of memories: 2 M byte of flash, starting from 0x0800\_0000, 256 k byte of SRAM starting from 0x2000\_0000, and 8 k byte registers for GPIOs, start at 0x4001\_0000. (Note that 0x is the prefix for hexadecimal numbers.) Draw the memory map similar to Fig 1-9 of the book. Note that you need to clearly label the starting and ending addresses of each memory/register block.

Prob 1-3 (10 points). Prob 6 of chapter 1 of the textbook.

Prob 1-4 (10 points). Prob 9 of chapter 1 of the textbook.

Prob 1-5 (30 points). Prob 12 of chapter 1 of the textbook.