Chapter 1
Introduction

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Course

Embedded Systems

- Embedded systems
  - Field-programmable gate arrays (FPGA),
  - System on chip (SoC) structures
  - Embedded Linux based systems (such as Raspberry Pi)
  - Microcontrollers
- Advantages and disadvantages of embedded systems.
- The evolution of microprocessors and how do embedded systems fit into this time line.

Microcontrollers and Their Usage Areas

- Microcontrollers belong to a larger family of microprocessors.
  - A microprocessor does not contain a peripheral unit.
  - A microcontroller should contain its peripherals to interact with the outside world.

- The microcontroller usage had two major boosts in recent years.
  - The maker movement promoted microcontrollers to solve various real-life problems.
  - Internet of things (IoT) applications has started changing all aspects of our lives, for good. IoT need at least one microcontroller to begin with.

- Therefore, learning and applying microcontroller concepts are becoming a must for a fresh graduate.

Overview of Arm Cortex M Architecture

- The Arm Cortex M architecture.
- Benefits of using an Arm Cortex M architecture based microcontroller.
- Generality of the ARM Cortex M architecture.

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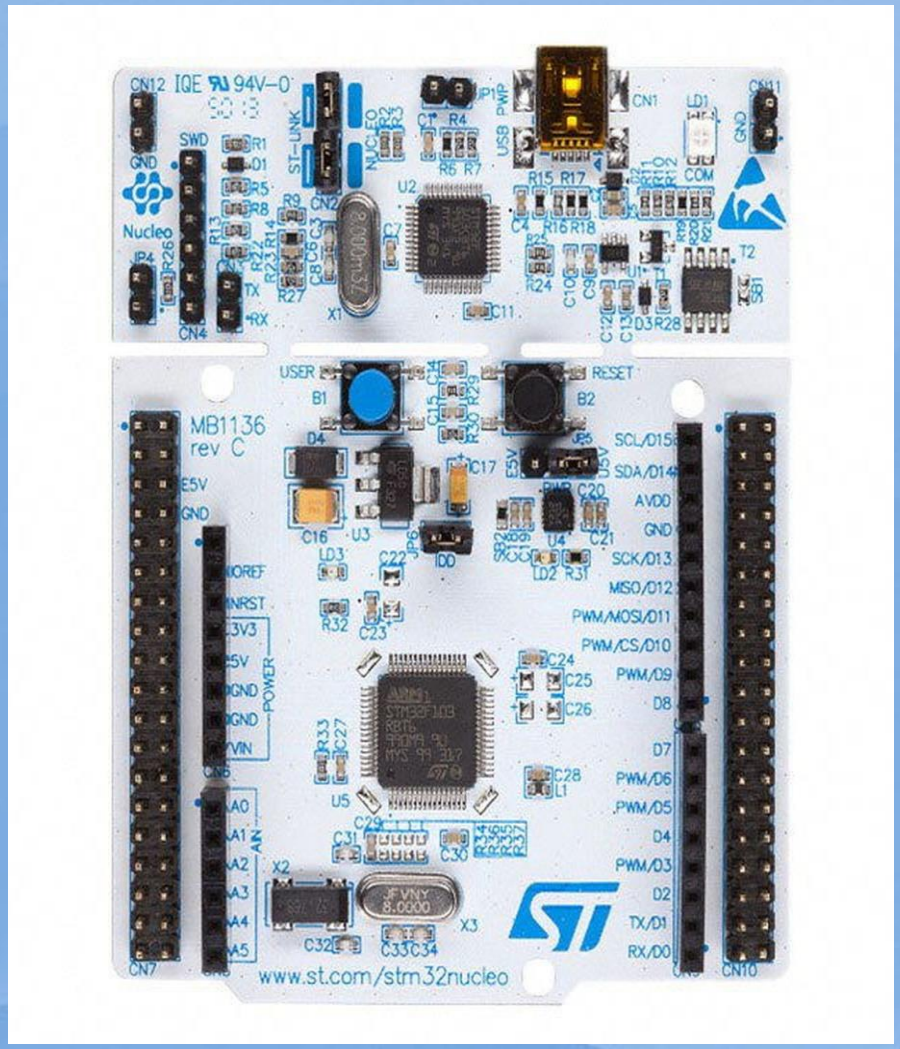

Course

Web Sites

- ST Microelectronics

  https://www.st.com

- arm

  https://www.arm.com/

- Mbed

  https://simulator.mbed.com/

  https://os.mbed.com/

  https://os.mbed.com/studio/

- Piazza

  https://piazza.com

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