This chapter provides an introduction to **serial interfacing**, which means we send one bit at time. Serial communication is prevalent in both the computer industry in general and the embedded industry in specific. There are many serial protocols, but in this course we will show you one of the first and simplest protocols that transmit one bit at a time. We will show the theory and details of the **universal asynchronous receiver/transmitter** (UART) and then use it as an example for developing an I/O driver. We will use busy-wait to synchronize the software with the hardware.

Learning Objectives:

- I/O synchronization.
- Models of I/O devices (busy, done, off).
- Learn how to program the UART.
- Build a distributed system by connecting two systems together.
- Learn how to convert between numbers and ASCII strings