ECE4144 – Intro to Embedded System Design

NYU Tandon School of Engineering

Assignment 1: Architecture and Base Review

1. According to the Atmel 32U4 datasheet posted:
    a. How many bits comprise the data bus?
    b. What are the available voltage levels?
    c. What is the speed of the internal sys clock?
    d. How many bits comprise the address bus?
    e. How many general purpose registers are available?
        i. How many GPIO pins are available and specify the GPIO Ports/Pins on the 32U4.
    f. From the datasheet, specify how many of the following resources are available on the 32U4
        i. UART Serial Bus
        ii. SPI Serial Bus
        iii. I2C Serial Bus
        iv. PWM Channels
        v. General purpose Timers
        vi. Analog to Digital Converters (ADC)
        vii. Digital to Analog Converters (DAC)
2. Memory
    a. How may bits are in each memory location?
    b. According to the memory map, specify which type of memory and which addresses are used for:
        i. Registers
        ii. Memory mapped I/O
        iii. User Code
        iv. SRAM for data, variables, stack etc.
    c. Sketch a memory map as a single column table.