

CSE 315: Microprocessors & **Microcontrollers**

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Syllabus

1 Introduction to ATmega Digital I/O

- Reference: Aug_10_2014.pdf slide
- Understand the counter example
 - what about BCD, gray code ($\text{count} \oplus (\text{count} \gg 1)$), & fibonacci (0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233) counter
- Solve the practice problems

2 ATmega Architecture

- Reference: Aug_24_2014.pdf slide
- Understand the concept of RISC & Harvard Architecture (have a look at the cool wiki articles)
- Read about the 3 memory sections of ATmega & their necessity from the *Barrett, Pack* book

3 ATmega Built-in Features

- Reference: Sep_6_2014.pdf slide
- Understand the basic functionalities of those features
- Read enough about them from the *Barrett, Pack* book to write short-notes.

4 ATmega Timer

- Reference: Sep_13_2014.pdf slide
- Solve those (easiest ever) practice problems

5 ATmega Interrupt

- Reference: Sep_16_2014.pdf & Sep_20_2014.pdf slides
- Grasp various concepts & definitions about interrupts
 - read the detailed explanation from the *Mazidi, Naimi, Naimi* book
 - just read the topics mentioned in the slides
- Learn how to write programs to exploit ATmega interrupts

6 ATmega ADC

- Reference: Oct_18_2014.pdf & Oct_21_2014.pdf slides
- Understand the concept of ADC
- Practice the Successive Approximation in tabular format as shown in the class lecture
- Master both the polling & interrupt methods of ADC programming

7 ATmega Serial Communications

- Reference: Oct_25_2014.pdf & Oct_28_2014.pdf slides
- Learn the various modes of data communication
- Solve the baud rate related exercises
- Practice coding problems for ATmega serial communications