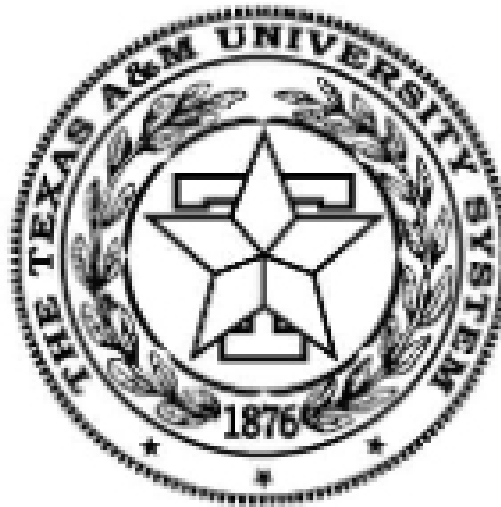


ECEN 449 – Microprocessor System Design



Hardware-Software Communication

Objectives of this Lecture Unit

- Learn basics of Hardware-Software communication
- Memory Mapped I/O
- Polling/Interrupts

Motivation

- Many reasons why we want hardware devices to interact with software programs
 - Input: keyboards, mice, scanners
 - Output: CRT, printer
 - Interact with real world: contact sensor, chemical analyzer, MEMS devices
 - Performance: ASIC/System-on-chip designs
 - Many applications require more compute power, compute-per-dollar, or compute-per-watt than microprocessors can deliver
 - Exploit 90-10 rule of software by implementing critical parts of application in HW, non-critical as SW
 - Issue: embedded apps getting more complex, less likely to have one module that consumes most of the execution time.