Agenda

1. Interrupts - Basics
   - GPIO
   - SysTick
   - Timer

2. Digital to Analog conversion (DAC)

3. Sound - Hearing
   - Notes
   - Music
Interrupts

Setup for Interrupts
- Basic GPIO Interrupt (DIR, UK, AFSEL, DEN)
- ARM
- Enable (Specific)
- Enable (Global)
Setup GPIO Interrupts

1. Basic Init
2. Global enable (I bit)
3. Enable PortX Interrupts (END, ENI)
4. ARM IS, IME, IEV, IBE (pin P on PortX)

GPIO_PORT_HANDLER 

ISR 

Background Thread
What happens when an interrupt occurs?

"A Context Switch"

1. Save "state"
   Push 8 Regs
   Rd-R3, R12-LR, PC/PSR
2. Set LR
   0xFFFFF+F9
3. PC <

Foreground Thread

PC =

Handler/ISR
What happens when an interrupt occurs?

"A context switch"

1. Save "state"
   Push 8Regs
   RD-R3,R12-LR,PL/PSR

2. Set LR
   0xFFFPPPP=F9

3. PC

INT

Foreground Thread

PC

Handler ISR

BX LR

Tells the system that we are going to an ISR
What happens when an interrupt occurs?

"A Context Switch"

1. Complete current instr.
2. Save "state"
   Push 8 Regs
   RD-R3, R12-LR, PC/PSR
3. Set LR
   2XFFFFFF = F9
4. PC <

Tells the system that we are going to an ISR

 Handler ISR

AC'97 Interrupt

B X LR