LECTURE 25 - NXP DAC
(Digital - To - Analog Converter)

We use DAC to generate analog signals, say sound for an example. It can also be used to generate sinusoidal waves, triangular waves, etc. This is the simplest peripheral in NXP LPC2148 ARM. It contains only one DAC, i.e., one channel output.

P0.25/AD0.4/AOUT - DAC Pin

* **STEPS FOR DAC CONFIGURATION :**

① Configure P0.25 as DAC pin (AOUT)

PINSEL1 |= (1<<19);

② Configure value of DAC output

DACR = (value <<6);

* STEP 1 - PINSEL1 |= (1<<19);

Bit	Symbol	Value	Function	Reset value
19:18	P0.25	00	GPIO Port 0.25	0
		01	AD0.4	
		10	Reserved or Aout (DAC)	
		11	Reserved	

* STEP 2 - DACR = (value <<6); [10-bit value input] ↗ same as ADC

Table - DAC Register (DACR - address 0xE006 C000) bit description

Bit	Symbol	Value	Description	Reset value
5:0	-		Reserved, user software should not write ones to reserved bits. The value read from a reserved bit is not defined.	NA
15:6	VALUE		After the selected settling time after this field is written with a new VALUE, the voltage on the AOUT pin (with respect to V_{SSA}) is VALUE/1024 * V_{REF}.	0

16	BIAS	0	The settling time of the DAC is 1 µs max, and the maximum current is 700 µA.	0
		1	The settling time of the DAC is 2.5 µs and the maximum current is 350 µA.	
31:17	-		Reserved, user software should not write ones to reserved bits. The value read from a reserved bit is not defined.	NA

* **DAC - REGISTER SUMMARY:**

	31 17	16	15 6	5 0
DACR		BIAS	VALUE	