ZarDynamix

PORTs

I/O is the only means by which a user gets some sort of response or result when using a PIC.

I/O or input and outputs are the means by which the PIC receives an input signal or produces an output.

Although PICs have shared features, the best way to become familiar with a PIC and its specific features, is to consult the data sheet.

This 1 pager will introduce you to the principles which govern how they work and ultimately how to use them.

I/O Types

I/O available from a PIC can be grouped into the following categories. Note, this is not intended to be comprehensive it is just intended to define the scope for purposes of explanation.

Digital I/O	Input
	Output
Analogue	Input
	Output *
PWM	Output
Serial (Bi directional)	USART
	ESUART
	USB
	SPI
	CAN / LIN **
*Only available on PICS with a DAC ** Automotive protocols	

Digital I/O

Configured as Digital the I/O pins have two states when used as an output: high and low. When configured as an input the stat is determine by the signal that is present.

Since TTL applies if a high signal is applied then the PIN has been set high and if no signal then it's low.

I/O Drive

When driving the Pins be aware that the maximum current which can be sourced from the PIC is 20mA. This is enough current to drive an LED or a small 5VDC PCB mount relay, beyond that however the PIN will have to switch a secondary device, for example a transistor if your larger load needs to be switched or actuated.

Multiplexed Ports

Since the PIC manufacturers are trying to pack as many features as possible into modern devices, multiplexed PINs are the result. What this means is that 1 pin may be capable of more than one function. What this means for the code you flash the device with, it must disable features of the PIC that you do not want to use or the features that will conflict with your running code.

On device reset for example RA which is also digital I/O defaults to an Analogue input. If analogue is what you want then no problem. However, if digital I/O is required then the Digital to Analogue converted would need to be disable or that particular pin reconfigured as a Digital Pin.

This is something that you need to keep an eye out for on new devices especially if you have worked for a long time on one specific device with fewer features.

Code Example

```
/*copyright (c) 2011, ZarDynamix: An
embedded solutions company
Hello World Code Sample for ProtoDev
*/

void led(){

    TRISB=0xfc;
    PORTB.B1=1;
    Delay_ms(1000);   /* second pause */
    PORTB.B1 = 0;
    Delay_ms(1000);
    }

void main(){

    ANSEL  = 0;               // Configure
AN pins as digital
    ANSELH = 0;
    C1ON_bit = 0;             // Disable
comparators
    C2ON_bit = 0;

    while (1) {                        //
Endless loop
              led();
               }
     }
}
```