

```

////////////////////////////////////
////////////////////////////////////GRUPO 5 LABORATORIO////////////////////////////////////
//////////////////////////////////// MORALES HERNAN, TELLECHEA JONATHAN////////////////////////////////////
////////////////////////////////////

```

```
#include <500Hz TP13.h>
```

```
void main()
```

```
{
```

```
    setup_timer_0(RTCC_INTERNAL|RTCC_DIV_1);
```

```
    if (PIN_A1 == 0)
```

```
    {
```

```
        while(1)
```

```
        {
```

```
            output_high(PIN_B2);
```

```
            delay_ms(1);
```

```
            output_low(PIN_B2);
```

```
            delay_ms(1);
```

```
        }
```

```
    }
```

```
}
```

/\*El programa tiene como funcion principal la de mostrar 500Hz a la salida cuando se presiona un pulsador en la entrada.\*/

### Abriendo el archivo que tiene el Include se ve:

```
#include <16F84A.h>
```

```
#FUSES NOWDT           //No Watch Dog Timer
```

```
#FUSES XT              //Crystal osc <= 4mhz
```

```
#FUSES PUT             //Power Up Timer
```

```
#FUSES NOPROTECT      //Code not protected from reading
```

```
#use delay(clock=20000000)
```

### Abriendo el archivo que tiene el Include se nos muestra:

```
//////// Standard Header file for the PIC16F84A device //////////
```

```
#device PIC16F84A
```

```
#nolist
```

```
//////// Program memory: 1024x14  Data RAM: 68  Stack: 8
```

```
//////// I/O: 13  Analog Pins: 0
```

```
//////// Data EEPROM: 64
```

```
//////// C Scratch area: 0C  ID Location: 2000
```

```
//////// Fuses: LP,XT,HS,RC,NOWDT,WDT,NOPUT,PUT,PROTECT,NOPROTECT
```

```
////////
```

```
//////////////////////////////////// I/O
```

```
// Discrete I/O Functions: SET_TRIS_x(), OUTPUT_x(), INPUT_x(),
```

```
//          PORT_x_PULLUPS(), INPUT(),
```

```

//          OUTPUT_LOW(), OUTPUT_HIGH(),
//          OUTPUT_FLOAT(), OUTPUT_BIT()
// Constants used to identify pins in the above are:

#define PIN_A0 40
#define PIN_A1 41
#define PIN_A2 42
#define PIN_A3 43
#define PIN_A4 44

#define PIN_B0 48
#define PIN_B1 49
#define PIN_B2 50
#define PIN_B3 51
#define PIN_B4 52
#define PIN_B5 53
#define PIN_B6 54
#define PIN_B7 55

//////////////////////////////////// Useful defines
#define FALSE 0
#define TRUE 1

#define BYTE int8
#define BOOLEAN int1

#define getc getch
#define fgetc getch
#define getchar getch
#define putchar putc
#define fputc putc
#define fgets gets
#define fputs puts

//////////////////////////////////// Control
// Control Functions: RESET_CPU(), SLEEP(), RESTART_CAUSE()
// Constants returned from RESTART_CAUSE() are:
#define WDT_FROM_SLEEP 3
#define WDT_TIMEOUT 11
#define MCLR_FROM_SLEEP 16
#define MCLR_FROM_RUN 27
#define NORMAL_POWER_UP 27
#define BROWNOUT_RESTART 26

//////////////////////////////////// Timer 0
// Timer 0 (AKA RTCC) Functions: SETUP_COUNTERS() or SETUP_TIMER_0(),
//          SET_TIMER0() or SET_RTCC(),

```

```

//          GET_TIMER0() or GET_RTCC()
// Constants used for SETUP_TIMER_0() are:
#define RTCC_INTERNAL  0
#define RTCC_EXT_L_TO_H 32
#define RTCC_EXT_H_TO_L 48

#define RTCC_DIV_1    8
#define RTCC_DIV_2    0
#define RTCC_DIV_4    1
#define RTCC_DIV_8    2
#define RTCC_DIV_16   3
#define RTCC_DIV_32   4
#define RTCC_DIV_64   5
#define RTCC_DIV_128  6
#define RTCC_DIV_256  7

#define RTCC_8_BIT    0

// Constants used for SETUP_COUNTERS() are the above
// constants for the 1st param and the following for
// the 2nd param:

////////////////////// WDT
// Watch Dog Timer Functions: SETUP_WDT() or SETUP_COUNTERS() (see above)
//          RESTART_WDT()
// WDT base is 18ms
//

#define WDT_18MS      8
#define WDT_36MS      9
#define WDT_72MS     10
#define WDT_144MS     11
#define WDT_288MS     12
#define WDT_576MS     13
#define WDT_1152MS    14
#define WDT_2304MS    15

////////////////////// INT
// Interrupt Functions: ENABLE_INTERRUPTS(), DISABLE_INTERRUPTS(),
//          CLEAR_INTERRUPT(), INTERRUPT_ACTIVE(),
//          EXT_INT_EDGE()
//
// Constants used in EXT_INT_EDGE() are:
#define L_TO_H        0x40
#define H_TO_L        0
// Constants used in ENABLE/DISABLE_INTERRUPTS() are:
#define GLOBAL        0x0B80

```

```
#define INT_RTCC          0x0B20
#define INT_RB            0xFF0B08
#define INT_EXT           0x0B10
#define INT_EEPROM        0x0B40
#define INT_TIMER0        0x0B20
```

```
#list
```