```c
#ifndef __Talkthrough_DEFINED
    #define __Talkthrough_DEFINED

//----------------------------------------------------------------------//
// Header files                                                         //
//----------------------------------------------------------------------//
#include <sys\exception.h>
#include <cdefBF533.h>
#include <ccblkfn.h>
#include <sysreg.h>
#include <sys/05000311.h>
#include "math.h"


//----------------------------------------------------------------------//
// Symbolic constants                                                   //
//----------------------------------------------------------------------//
// addresses for Port B in Flash A
#define pFlashA_PortA_Dir   (volatile unsigned char *)0x20270006
#define pFlashA_PortA_Data  (volatile unsigned char *)0x20270004

// names for codec registers, used for iCodec1836TxRegs[]
#define DAC_CONTROL_1       0x0000
#define DAC_CONTROL_2       0x1000
#define DAC_VOLUME_0        0x2000
#define DAC_VOLUME_1        0x3000
#define DAC_VOLUME_2        0x4000
#define DAC_VOLUME_3        0x5000
#define DAC_VOLUME_4        0x6000
#define DAC_VOLUME_5        0x7000
#define ADC_0_PEAK_LEVEL    0x8000
#define ADC_1_PEAK_LEVEL    0x9000
#define ADC_2_PEAK_LEVEL    0xA000
#define ADC_3_PEAK_LEVEL    0xB000
#define ADC_CONTROL_1       0xC000
#define ADC_CONTROL_2       0xD000
#define ADC_CONTROL_3       0xE000


// names for slots in ad1836 audio frame
#define INTERNAL_ADC_L0        0
#define INTERNAL_ADC_L1        1
#define INTERNAL_ADC_R0        4
#define INTERNAL_ADC_R1        5
#define INTERNAL_DAC_L0        0
#define INTERNAL_DAC_L1        1
#define INTERNAL_DAC_L2        2
#define INTERNAL_DAC_R0        4
#define INTERNAL_DAC_R1        5
#define INTERNAL_DAC_R2        6

// size of array iCodec1836TxRegs and iCodec1836RxRegs
#define CODEC_1836_REGS_LENGTH  11

// SPI transfer mode
#define TIMOD_DMA_TX 0x0003

// SPORT0 word length
#define SLEN_32 0x001f

// DMA flow mode
#define FLOW_1  0x1000

// Xcorr
#define OUTPUTLEN 2000
#define INPUTLEN 4000

#define SAMPLES 4000
#define LAGS 4000


//----------------------------------------------------------------------//
// Global variables                                                     //
//----------------------------------------------------------------------//
extern int iChannel0LeftIn;
extern int iChannel0RightIn;
```

```
extern int iChannel0LeftOut;
extern int iChannel0RightOut;
extern int iChannel1LeftIn;
extern int iChannel1RightIn;
extern int iChannel1LeftOut;
extern int iChannel1RightOut;
extern volatile short sCodec1836TxRegs[];
extern volatile int iRxBuffer1[];
extern volatile int iTxBuffer1[];

extern int yn;
extern int xn;
extern int num1;
extern int num2;
extern short sound[];
extern short sinus[];
extern short soundIn[];
extern int recFlag;
extern int playFlag;
extern int doX;

extern int totaldist;
extern int sound_factor;




//------------------------------------------------------------------------//
// Prototypes                                                             //
//------------------------------------------------------------------------//
// in file Initialisation.c
void Init_EBIU(void);
void Init_Flash(void);
void Init1836(void);
void Init_Sport0(void);
void Init_DMA(void);
void Init_Interrupts(void);
void Enable_DMA_Sport0(void);

// in file Process_data.c
void Process_Data(void);

int calc_dist(short*);

// in file ISRs.c
EX_INTERRUPT_HANDLER(Sport0_RX_ISR);

#endif //__Talkthrough_DEFINED
```