Avrsynth

0.1.1

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Contents

Chapter 1

Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

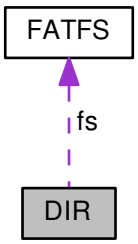
Chapter 3

Data Structure Documentation

3.1 DIR Struct Reference

`#include <ff.h>`

Collaboration diagram for DIR:



Data Fields

- FATFS * fs
- WORD id
- WORD index
- DWORD sclust
- DWORD clust
- DWORD sect
- BYTE * dir
- BYTE * fn

3.1.1 Field Documentation

3.1.1.1 DWORD DIR::clust

Referenced by dir_next(), and dir_sdi().

3.1.1.2 BYTE* DIR::dir

Referenced by dir_alloc(), dir_find(), dir_next(), dir_read(), dir_register(), dir_sdi(), f_getlabel(), f_open(), f_setlabel(), and follow_path().

3.1.1.3 BYTE* DIR::fn

Referenced by create_name(), dir_find(), dir_register(), and follow_path().

3.1.1.4 FATFS* DIR::fs

Referenced by dir_alloc(), dir_find(), dir_next(), dir_read(), dir_register(), dir_sdi(), f_getlabel(), f_open(), f_setlabel(), and follow_path().

3.1.1.5 WORD DIR::id

3.1.1.6 WORD DIR::index

Referenced by dir_find(), dir_next(), dir_read(), dir_register(), and dir_sdi().

3.1.1.7 DWORD DIR::sclust

Referenced by dir_sdi(), f_getlabel(), f_setlabel(), and follow_path().

3.1.1.8 DWORD DIR::sect

Referenced by dir_alloc(), dir_find(), dir_next(), dir_read(), dir_register(), and dir_sdi().

The documentation for this struct was generated from the following file:

- sd_card/ff.h

3.2 FATFS Struct Reference

`#include <ff.h>`

Data Fields

- BYTE fs_type
- BYTE drv
- BYTE csize
- BYTE n_fats
- BYTE wflag

- BYTE fsi_flag
- WORD id
- WORD n_rootdir
- DWORD last_clust
- DWORD free_clust
- DWORD fsi_sector
- DWORD n_fatent
- DWORD fsize
- DWORD volbase
- DWORD fatbase
- DWORD dirbase
- DWORD database
- DWORD winsect
- BYTE win [_MAX_SS]

3.2.1 Field Documentation

3.2.1.1 BYTE FATFS::csize

Referenced by chk_mounted(), clust2sect(), dir_next(), dir_sdi(), f_lseek(), f_read(), f_write(), and remove_chain().

3.2.1.2 DWORD FATFS::database

Referenced by chk_mounted(), and clust2sect().

3.2.1.3 DWORD FATFS::dirbase

Referenced by chk_mounted(), and dir_sdi().

3.2.1.4 BYTE FATFS::drv

Referenced by check_fs(), chk_mounted(), f_lseek(), f_read(), f_sync(), f_write(), move_window(), remove_chain(), sync_fs(), sync_window(), and validate().

3.2.1.5 DWORD FATFS::fatbase

Referenced by chk_mounted(), get_fat(), put_fat(), and sync_window().

3.2.1.6 DWORD FATFS::free_clust

Referenced by chk_mounted(), create_chain(), remove_chain(), and sync_fs().

3.2.1.7 BYTE FATFS::fs_type

Referenced by chk_mounted(), dir_sdi(), f_getlabel(), f_mount(), get_fat(), ld_clust(), put_fat(), sync_fs(), and validate().

3.2.1.8 BYTE FATFS::fsi_flag

Referenced by chk_mounted(), create_chain(), remove_chain(), and sync_fs().

3.2.1.9 DWORD FATFS::fsi_sector

Referenced by chk_mounted(), and sync_fs().

3.2.1.10 DWORD FATFS::fsize

Referenced by chk_mounted(), and sync_window().

3.2.1.11 WORD FATFS::id

Referenced by chk_mounted(), f_open(), and validate().

3.2.1.12 DWORD FATFS::last_clust

Referenced by chk_mounted(), create_chain(), f_open(), and sync_fs().

3.2.1.13 DWORD FATFS::n_fatent

Referenced by chk_mounted(), clust2sect(), create_chain(), dir_next(), dir_sdi(), f_lseek(), get_fat(), put_fat(), and remove_chain().

3.2.1.14 BYTE FATFS::n_fats

Referenced by chk_mounted(), and sync_window().

3.2.1.15 WORD FATFS::n_rootdir

Referenced by chk_mounted(), dir_next(), and dir_sdi().

3.2.1.16 DWORD FATFS::volbase

Referenced by chk_mounted(), and f_getlabel().

3.2.1.17 BYTE FATFS::wflag

Referenced by chk_mounted(), dir_next(), dir_register(), f_open(), f_read(), f_setlabel(), f_sync(), f_write(), put_fat(), and sync_window().

3.2.1.18 BYTE FATFS::win[_MAX_SS]

Referenced by check_fs(), chk_mounted(), dir_next(), dir_sdi(), f_getlabel(), f_read(), f_write(), get_fat(), move_window(), put_fat(), sync_fs(), and sync_window().

3.2.1.19 DWORD FATFS::winsect

Referenced by chk_mounted(), dir_next(), f_open(), f_read(), f_write(), move_window(), sync_fs(), and sync_window().

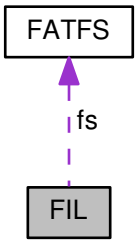
The documentation for this struct was generated from the following file:

- sd_card/ff.h

3.3 FIL Struct Reference

`#include <ff.h>`

Collaboration diagram for FIL:



Data Fields

- FATFS * fs
- WORD id
- BYTE flag
- BYTE pad1
- DWORD fptr
- DWORD fsize
- DWORD sclust
- DWORD clust
- DWORD dsect
- DWORD dir_sect
- BYTE * dir_ptr

3.3.1 Field Documentation

3.3.1.1 DWORD FIL::clust

Referenced by f_lseek(), f_read(), and f_write().

3.3.1.2 BYTE* FIL::dir_ptr

Referenced by f_open(), and f_sync().

3.3.1.3 DWORD FIL::dir_sect

Referenced by f_open(), and f_sync().

3.3.1.4 DWORD FIL::dsect

Referenced by f_lseek(), f_open(), f_read(), f_sync(), and f_write().

3.3.1.5 BYTE FIL::flag

Referenced by f_lseek(), f_open(), f_read(), f_sync(), and f_write().

3.3.1.6 DWORD FIL::fptr

Referenced by f_lseek(), f_open(), f_read(), and f_write().

3.3.1.7 FATFS* FIL::fs

Referenced by f_close(), f_lseek(), f_open(), f_read(), f_sync(), f_write(), and validate().

3.3.1.8 DWORD FIL::fsize

Referenced by f_lseek(), f_open(), f_read(), f_sync(), and f_write().

3.3.1.9 WORD FIL::id

Referenced by f_open(), and validate().

3.3.1.10 BYTE FIL::pad1

3.3.1.11 DWORD FIL::sclust

Referenced by f_lseek(), f_open(), f_read(), f_sync(), and f_write().

The documentation for this struct was generated from the following file:

- sd_card/ff.h

3.4 FILINFO Struct Reference

```
#include <ff.h>
```

Data Fields

- DWORD fsize
- WORD fdate
- WORD ftime
- BYTE fattrib
- TCHAR fname [13]

3.4.1 Field Documentation

3.4.1.1 BYTE FILINFO::fattrib

3.4.1.2 WORD FILINFO::fdate

3.4.1.3 TCHAR FILINFO::fname[13]

3.4.1.4 DWORD FILINFO::fsize

3.4.1.5 WORD FILINFO::ftime

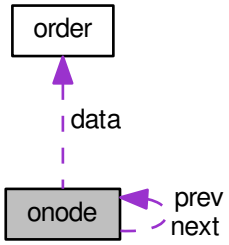
The documentation for this struct was generated from the following file:

- sd_card/ff.h

3.5 onode Struct Reference

```
#include <list.h>
```

Collaboration diagram for onode:



Data Fields

- struct order * data
- struct onode * next
- struct onode * prev

3.5.1 Field Documentation

3.5.1.1 struct order* onode::data

Referenced by deleteList(), deleteNode(), getOrderData(), getOrderNode(), main(), newNodeByRef(), printList(), sort(), and swap().

3.5.1.2 struct onode* onode::next

Referenced by deleteJustList(), deleteList(), evictNode(), getNextOrder(), getOrderNode(), insertNode(), printList(), and pushNode().

3.5.1.3 struct onode* onode::prev

Referenced by evictNode(), getPrevOrder(), insertNode(), and pushNode().

The documentation for this struct was generated from the following file:

- list/list.h

3.6 order Struct Reference

```
#include <list.h>
```

Data Fields

- int id
- char bank1_startstop
- char bank1_note
- char bank2_startstop
- char bank2_note
- char bank3_startstop
- char bank3_note

3.6.1 Field Documentation

3.6.1.1 char order::bank1_note

Referenced by getOrderNote(), main(), newNode(), and setOrderNote().

3.6.1.2 char order::bank1_startstop

Referenced by getOrderStartstop(), main(), newNode(), and setOrderStartstop().

3.6.1.3 char order::bank2_note

Referenced by getOrderNote(), main(), newNode(), and setOrderNote().

3.6.1.4 char order::bank2_startstop

Referenced by getOrderStartstop(), main(), newNode(), and setOrderStartstop().

3.6.1.5 char order::bank3_note

Referenced by getOrderNote(), main(), newNode(), and setOrderNote().

3.6.1.6 char order::bank3_startstop

Referenced by getOrderStartstop(), main(), newNode(), and setOrderStartstop().

3.6.1.7 int order::id

Referenced by getOrderId(), getOrderNode(), main(), newNode(), and setOrderId().

The documentation for this struct was generated from the following file:

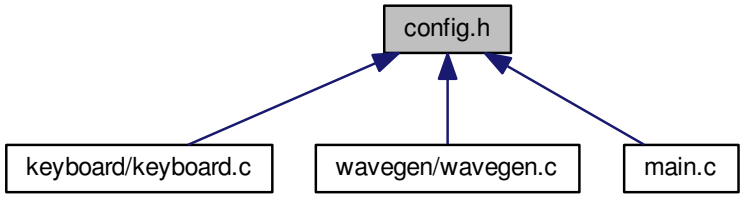
- list/list.h

Chapter 4

File Documentation

4.1 config.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define F_CPU 32000000UL

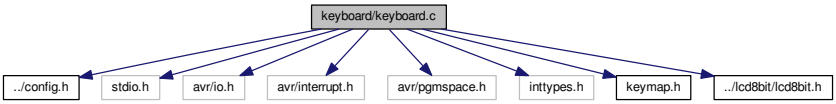
4.1.1 Macro Definition Documentation

4.1.1.1 #define F_CPU 32000000UL

4.2 keyboard/keyboard.c File Reference

```
#include "../config.h"
#include <stdio.h>
#include <avr/io.h>
#include <avr/interrupt.h>
#include <avr/pgmspace.h>
#include <inttypes.h>
#include "keymap.h"
#include "../lcd8bit/lcd8bit.h"
```

Include dependency graph for keyboard.c:



Macros

- #define KB_CLK PIN2_bm
- #define KB_DATA PIN1_bm
- #define KB_PORT PORTF

Functions

- ISR (PORTF_INT1_vect)
- void clock_init (void)
- char render_scan_code (uint8_t data)
- uint8_t read_char ()
- void init_keyboard ()
- int main ()

Variables

- char st [20] =" "
- volatile uint8_t kbd_data
- volatile uint8_t char_waiting
- uint8_t started
- uint8_t bit_count
- uint8_t shift
- uint8_t caps_lock
- uint8_t extended
- uint8_t release

4.2.1 Macro Definition Documentation

4.2.1.1 #define KB_CLK PIN2_bm

Referenced by init_keyboard(), and ISR().

4.2.1.2 #define KB_DATA PIN1_bm

Referenced by init_keyboard(), and ISR().

4.2.1.3 #define KB_PORT PORTF

Referenced by init_keyboard(), and ISR().

4.2.2 Function Documentation

4.2.2.1 void clock_init (void)

Referenced by main().

4.2.2.2 void init_keyboard ( )

References bit_count, KB_CLK, KB_DATA, KB_PORT, kbd_data, and started.

Referenced by main().

4.2.2.3 ISR (PORTF_INT1_vect)

References bit_count, char_waiting, KB_CLK, KB_DATA, KB_PORT, kbd_data, release, shift, and started.

4.2.2.4 int main ( )

References char_waiting, clock_init(), init_keyboard(), lcd_clear_and_home(), lcd_init(), lcd_line_one(), lcd_line_two(), lcd_write_string_0(), read_char(), render_scan_code(), and shift.

4.2.2.5 uint8_t read_char ( )

References char_waiting, and kbd_data.

Referenced by main().

4.2.2.6 char render_scan_code (uint8_t *data*)

References shift.

Referenced by main().

4.2.3 Variable Documentation

4.2.3.1 uint8_t bit_count

Referenced by init_keyboard(), and ISR().

4.2.3.2 uint8_t caps_lock

4.2.3.3 volatile uint8_t char_waiting

Referenced by ISR(), main(), and read_char().

4.2.3.4 uint8_t extended

4.2.3.5 volatile uint8_t kbd_data

Referenced by init_keyboard(), ISR(), and read_char().

4.2.3.6 uint8_t release

Referenced by ISR().

4.2.3.7 uint8_t shift

Referenced by ISR(), main(), and render_scan_code().

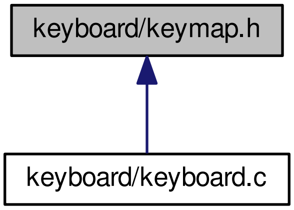
4.2.3.8 char st[20] =" "

4.2.3.9 uint8_t started

Referenced by init_keyboard(), and ISR().

4.3 keyboard/keymap.h File Reference

This graph shows which files directly or indirectly include this file:



Variables

- const char keymap[128] PROGMEM = {'?','q','1','?','?','?','z','s','a','w','2','?','?','?','c','
  ','v','f','t','r','5','?','?','?','n','b','h','g','y','6','?','?','?','m','j','u','7','8','?','?','?','k','i','o','0','9','?','?','?','?','l','?','p','?','?','?','?','?','?','?','?','?','?','?','?','?','?',

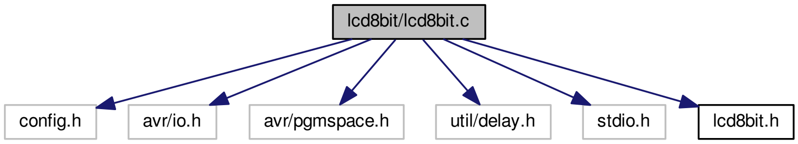
4.3.1 Variable Documentation

4.3.1.1 const char keymap [128] PROGMEM = {'?','q','1','?','?','?','z','s','a','w','2','?','?','c','x','d','e','4','3','?','?',' ','v','f','t','r','5','?','?','?','n','b','h','g','y','6','?','?','?','m','j','u','7','8','?','?','?','k','i','o','0','9','?','?','?','?','l','?','p','?','?','?','?','?','?','?','?','?','?','?','?','?','?','?','?','

4.4 lcd8bit/lcd8bit.c File Reference

```
#include "config.h"
#include <avr/io.h>
#include <avr/pgmspace.h>
#include <util/delay.h>
#include <stdio.h>
#include "lcd8bit.h"
```

Include dependency graph for lcd8bit.c:



Macros

- #define DATA_PORT PORTB
- #define LCD_RS PIN0_bm /* RS on pin PB3 */
- #define LCD_E PIN1_bm /* E on pin PB1 */
- #define COMM_PORT PORTA

Functions

- void lcd_set_write_instruction ()
- void lcd_set_write_data ()
- void lcd_write_byte (char c)
- void lcd_clear_and_home ()
- void lcd_home ()
- void lcd_goto (uint8_t line, uint8_t pos)
- void lcd_line_one ()
- void lcd_line_two ()
- void lcd_write_data (char c)
- void lcd_write_string (char *x, uint8_t len)
- void lcd_write_string_0 (char *x)
- void lcd_write_string_p (const char *s)
- void lcd_init ()

4.4.1 Macro Definition Documentation

4.4.1.1 #define COMM_PORT PORTA

Referenced by lcd_init(), lcd_set_write_data(), lcd_set_write_instruction(), and lcd_write_byte().

4.4.1.2 #define DATA_PORT PORTB

Referenced by lcd_init(), and lcd_write_byte().

4.4.1.3 #define LCD_E PIN1_bm /* E on pin PB1 */

Referenced by lcd_init(), and lcd_write_byte().

4.4.1.4 #define LCD_RS PIN0_bm /* RS on pin PB3 */

Referenced by lcd_init(), lcd_set_write_data(), and lcd_set_write_instruction().

4.4.2 Function Documentation

4.4.2.1 void lcd_clear_and_home ( )

References lcd_set_write_instruction(), and lcd_write_byte().

Referenced by die(), lcd_init(), and main().

4.4.2.2 void lcd_goto (uint8_t *line,* uint8_t *pos*)

References lcd_set_write_instruction(), and lcd_write_byte().

Referenced by lcd_line_one(), and lcd_line_two().

4.4.2.3 void lcd_home ( )

References lcd_set_write_instruction(), and lcd_write_byte().

4.4.2.4 void lcd_init ( )

References COMM_PORT, DATA_PORT, lcd_clear_and_home(), LCD_E, LCD_RS, and lcd_write_byte().

Referenced by main().

4.4.2.5 void lcd_line_one ( )

References lcd_goto().

Referenced by die(), and main().

4.4.2.6 void lcd_line_two ( )

References lcd_goto().

Referenced by die(), and main().

4.4.2.7 void lcd_set_write_data ( )

References COMM_PORT, and LCD_RS.

Referenced by lcd_write_data().

4.4.2.8 void lcd_set_write_instruction ( )

References COMM_PORT, and LCD_RS.

Referenced by lcd_clear_and_home(), lcd_goto(), and lcd_home().

4.4.2.9 void lcd_write_byte (char *c*)

References COMM_PORT, DATA_PORT, and LCD_E.

Referenced by lcd_clear_and_home(), lcd_goto(), lcd_home(), lcd_init(), and lcd_write_data().

4.4.2.10 void lcd_write_data (char *c*)

References lcd_set_write_data(), and lcd_write_byte().

Referenced by lcd_write_string(), lcd_write_string_0(), and lcd_write_string_p().

4.4.2.11 void lcd_write_string (char * x, uint8_t len)

References lcd_write_data().

4.4.2.12 void lcd_write_string_0 (char * x)

References lcd_write_data().

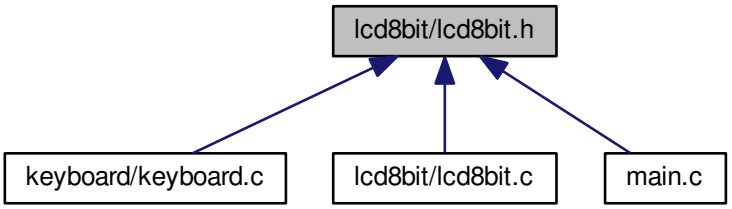
Referenced by die(), and main().

4.4.2.13 void lcd_write_string_p (const char * s)

References lcd_write_data().

4.5 lcd8bit/lcd8bit.h File Reference

This graph shows which files directly or indirectly include this file:



Functions

- void lcd_set_write_instruction ()
- void lcd_set_write_data ()
- void lcd_write_byte (char c)
- void lcd_clear_and_home ()
- void lcd_home ()
- void lcd_goto (uint8_t line, uint8_t pos)
- void lcd_line_one ()
- void lcd_line_two ()
- void lcd_write_data (char c)
- void lcd_write_string (char *x, uint8_t len)
- void lcd_write_string_0 (char *x)
- void lcd_write_string_p (const char *s)
- void lcd_init ()

4.5.1 Function Documentation

4.5.1.1 void lcd_clear_and_home ( )

References lcd_set_write_instruction(), and lcd_write_byte().

Referenced by die(), lcd_init(), and main().

4.5.1.2 void lcd_goto (uint8_t *line,* uint8_t *pos*)

References lcd_set_write_instruction(), and lcd_write_byte().

Referenced by lcd_line_one(), and lcd_line_two().

4.5.1.3 void lcd_home ( )

References lcd_set_write_instruction(), and lcd_write_byte().

4.5.1.4 void lcd_init ( )

References COMM_PORT, DATA_PORT, lcd_clear_and_home(), LCD_E, LCD_RS, and lcd_write_byte().

Referenced by main().

4.5.1.5 void lcd_line_one ( )

References lcd_goto().

Referenced by die(), and main().

4.5.1.6 void lcd_line_two ( )

References lcd_goto().

Referenced by die(), and main().

4.5.1.7 void lcd_set_write_data ( )

References COMM_PORT, and LCD_RS.

Referenced by lcd_write_data().

4.5.1.8 void lcd_set_write_instruction ( )

References COMM_PORT, and LCD_RS.

Referenced by lcd_clear_and_home(), lcd_goto(), and lcd_home().

4.5.1.9 void lcd_write_byte (char *c*)

References COMM_PORT, DATA_PORT, and LCD_E.

Referenced by lcd_clear_and_home(), lcd_goto(), lcd_home(), lcd_init(), and lcd_write_data().

4.5.1.10 void lcd_write_data (char *c*)

References lcd_set_write_data(), and lcd_write_byte().

Referenced by lcd_write_string(), lcd_write_string_0(), and lcd_write_string_p().

4.5.1.11 void lcd_write_string (char * *x*, uint8_t *len*)

References lcd_write_data().

4.5.1.12 void lcd_write_string_0 (char * *x*)

References lcd_write_data().

Referenced by die(), and main().

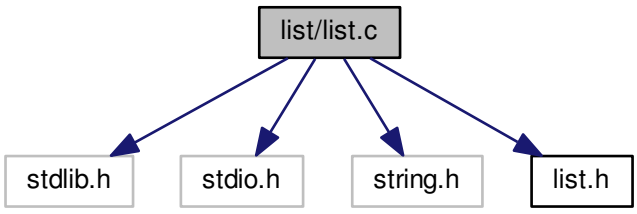
4.5.1.13 void lcd_write_string_p (const char * *s*)

References lcd_write_data().

4.6 list/list.c File Reference

```
#include <stdlib.h>
#include <stdio.h>
#include <string.h>
#include "list.h"
```

Include dependency graph for list.c:



Functions

- struct onode * newNode (struct order *data)

  Returns a new linked list node filled in with the given order.

- struct onode * newNodeByRef (struct order *data)

  Returns a new linked list node filled in with the given order.
- void pushNode (struct onode **head, struct onode *node)

  *In a linked list with *head as the head pointer, adds the given node to the front of the list.*
- void sort (struct onode **head)

  Performes insertion sort on the list by comparing the OrderID.
- void swap (struct onode **head, struct onode *node1, struct onode *node2)
- void insertNode (struct onode **head, struct onode *prevNode, struct onode *insertingNode)

  Insert the given node after the prevNode.
- void evictNode (struct onode **head, struct onode *node)

  Internally removes the specified node from the list, and updates the linked list.
- void deleteNodeOnly (struct onode **head, struct onode *node)

  Removes the specified node from the list, and does NOT free memory the node is using.
- void deleteNode (struct onode **head, struct onode *node)

  Removes the specified node from the list, and frees all memory the node is using.
- void printList (struct onode *node, void(*printItem)(struct order *, FILE *), FILE *out)
- struct onode * getNextOrder (struct onode *order_node)

  Simply returns the next node in the list, or NULL if there are no further nodes.
- struct onode * getPrevOrder (struct onode *order_node)
- struct order * getOrderData (struct onode *order_node)
- int getOrderId (struct order *orderData)
- char getOrderStartstop (struct order *orderData, char bankNum)
- int getOrderNote (struct order *orderData, char bankNum)
- void setOrderStartstop (struct order *orderData, char newStartstop, char bankNum)
- void setOrderNote (struct order *orderData, char newNote, char bankNum)
- void setOrderId (struct order *orderData, int id)
- void deleteList (struct onode **head)

  *Deletes every node in the list with *head as the head pointer.*
- void deleteJustList (struct onode **head)

  *Deletes every node EXCEPT the head in the list with *head as the head pointer.*

group1 Content Management: Setters and Getters for linkedList

Setters and Getters for linkedList

- struct onode * getOrderNode (struct onode *head, int id)

  Returns the pointer to the node containing the given word in the linked list with head as the head pointer.

Variables

- int g =0

4.6.1 Function Documentation

4.6.1.1 void deleteJustList (struct onode ** *head*)

Deletes every node EXCEPT the head in the list with *head as the head pointer.

After calling this function, all memory used by the list should be freed, and *head should be NULL.

References onode::next.

4.6.1.2 void deleteList (struct onode ** *head*)

Deletes every node in the list with *head as the head pointer.

After calling this function, all memory used by the list should be freed, and *head should be NULL.

References onode::data, and onode::next.

4.6.1.3 void deleteNode (struct onode ** *head,* struct onode * *node*)

Removes the specified node from the list, and frees all memory the node is using.

Remember if *head is the node being deleted, it must be updated.

References onode::data, and deleteNodeOnly().

4.6.1.4 void deleteNodeOnly (struct onode ** *head,* struct onode * *node*)

Removes the specified node from the list, and does NOT free memory the node is using.

Remember if *head is the node being deleted, it must be updated.

References evictNode().

Referenced by deleteNode().

4.6.1.5 void evictNode (struct onode ** *head,* struct onode * *node*)

Internally removes the specified node from the list, and updates the linked list.

References onode::next, and onode::prev.

Referenced by deleteNodeOnly().

4.6.1.6 struct onode* getNextOrder (struct onode * *order_node*)

Simply returns the next node in the list, or NULL if there are no further nodes.

References onode::next.

Referenced by sort().

4.6.1.7 struct order* getOrderData (struct onode * *order_node*)

References onode::data.

4.6.1.8 int getOrderId (struct order * *orderData*)

References order::id.

Referenced by sort().

4.6.1.9 struct onode * getOrderNode (struct onode * *head,* int *id*)

Returns the pointer to the node containing the given word in the linked list with head as the head pointer.

In a linked list with ∗head as the head pointer, returns the onode with the given order id.

If a node with the given word cannot be found, the function returns NULL.

References onode::data, order::id, and onode::next.

Referenced by main().

4.6.1.10 int getOrderNote (struct order ∗ *orderData,* char *bankNum*)

References order::bank1_note, order::bank2_note, and order::bank3_note.

Referenced by main().

4.6.1.11 char getOrderStartstop (struct order ∗ *orderData,* char *bankNum*)

References order::bank1_startstop, order::bank2_startstop, and order::bank3_startstop.

Referenced by main().

4.6.1.12 struct onode∗ getPrevOrder (struct onode ∗ *order_node*)

References onode::prev.

Referenced by sort().

4.6.1.13 void insertNode (struct onode ∗∗ *head,* struct onode ∗ *prevNode,* struct onode ∗ *insertingNode*)

Insert the given node after the prevNode.

If the prevNode is NULL, then the given node is inserted at the head of the list.

References onode::next, onode::prev, and pushNode().

4.6.1.14 struct onode∗ newNode (struct order ∗ *data*)

Returns a new linked list node filled in with the given order.

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

The order is copied into the node as a new instance.

References order::bank1_note, order::bank1_startstop, order::bank2_note, order::bank2_startstop, order::bank3_note, order::bank3_startstop, g, and order::id.

Referenced by main().

4.6.1.15 struct onode∗ newNodeByRef (struct order ∗ *data*)

Returns a new linked list node filled in with the given order.

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

The order is inserted by reference.

References onode::data.

4.6.1.16 void printList (struct onode * *node*, void(*)(struct order *, FILE *) *printItem*, FILE * *out*)

References onode::data, and onode::next.

4.6.1.17 void pushNode (struct onode ** *head*, struct onode * *node*)

In a linked list with *head as the head pointer, adds the given node to the front of the list.

References onode::next, and onode::prev.

Referenced by insertNode(), and main().

4.6.1.18 void setOrderId (struct order * *orderData*, int *id*)

References order::id.

4.6.1.19 void setOrderNote (struct order * *orderData*, char *newNote*, char *bankNum*)

References order::bank1_note, order::bank2_note, and order::bank3_note.

4.6.1.20 void setOrderStartstop (struct order * *orderData*, char *newStartstop*, char *bankNum*)

References order::bank1_startstop, order::bank2_startstop, and order::bank3_startstop.

4.6.1.21 void sort (struct onode ** *head*)

Performes insertion sort on the list by comparing the OrderID.

Sorts from largest(head) to smallest.

References onode::data, getNextOrder(), getOrderId(), getPrevOrder(), and swap().

Referenced by main().

4.6.1.22 void swap (struct onode ** *head*, struct onode * *node1*, struct onode * *node2*)

References onode::data.

Referenced by sort().

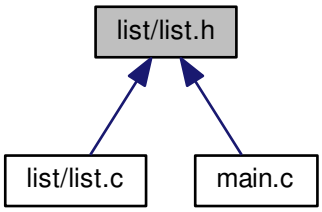
4.6.2 Variable Documentation

4.6.2.1 int g =0

Referenced by newNode().

4.7 list/list.h File Reference

This graph shows which files directly or indirectly include this file:



Data Structures

- struct order
- struct onode

Functions

- struct onode * newNode (struct order *data)

  Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.
- struct onode * newNodeByRef (struct order *data)

  Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.
- void pushNode (struct onode **head, struct onode *node)

  *In a linked list with *head as the head pointer, adds the given node to the front of the list.*
- struct onode * getOrderNode (struct onode *head, int id)

  *In a linked list with *head as the head pointer, returns the onode with the given order id.*
- void insertNode (struct onode **head, struct onode *prevNode, struct onode *insertingNode)

  Insert the given node after the prevNode.
- void evictNode (struct onode **head, struct onode *node)

  Internally removes the specified node from the list, and updates the linked list.
- void deleteNode (struct onode **head, struct onode *node)

  Removes the specified node from the list, and frees all memory the node is using.
- void deleteNodeOnly (struct onode **head, struct onode *node)

  Removes the specified node from the list, and does NOT free memory the node is using.
- void deleteList (struct onode **head)

  *Deletes every node in the list with *head as the head pointer.*
- void deleteJustList (struct onode **head)

  *Deletes every node EXCEPT the head in the list with *head as the head pointer.*
- void printList (struct onode *node, void(*printItem)(struct order *, FILE *), FILE *out)

group1 Content Management: Setters and Getters for linkedList

Setters and Getters for linkedList

- struct onode * getNextOrder (struct onode *order_node)

  Simply returns the next node in the list, or NULL if there are no further nodes.
- struct onode * getPrevOrder (struct onode *order_node)
- struct order * getOrderData (struct onode *order_node)

group2 Content Management: Setters and Getters for order data

Setters and Getters for linkedList

- int getOrderId (struct order *orderData)
- char getOrderStartstop (struct order *orderData, char bankNum)
- int getOrderNote (struct order *orderData, char bankNum)
- void setOrderId (struct order *orderData, int id)
- void setOrderStartstop (struct order *orderData, char newStartstop, char bankNum)
- void setOrderNote (struct order *orderData, char newNote, char bankNum)

group3 Sorting functions

- void swap (struct onode **head, struct onode *n1, struct onode *n2)
- void sort (struct onode **head)

  Performes insertion sort on the list by comparing the OrderID.

4.7.1 Function Documentation

4.7.1.1 void deleteJustList (struct onode ** *head*)

Deletes every node EXCEPT the head in the list with *head as the head pointer.

After calling this function, all memory used by the list should be freed, and *head should be NULL.

References onode::next.

4.7.1.2 void deleteList (struct onode ** *head*)

Deletes every node in the list with *head as the head pointer.

After calling this function, all memory used by the list should be freed, and *head should be NULL.

References onode::data, and onode::next.

4.7.1.3 void deleteNode (struct onode ** *head*, struct onode * *node*)

Removes the specified node from the list, and frees all memory the node is using.

Remember if *head is the node being deleted, it must be updated.

References onode::data, and deleteNodeOnly().

4.7.1.4 void deleteNodeOnly (struct onode ** *head,* struct onode * *node*)

Removes the specified node from the list, and does NOT free memory the node is using.

Remember if *head is the node being deleted, it must be updated.

References evictNode().

Referenced by deleteNode().

4.7.1.5 void evictNode (struct onode ** *head,* struct onode * *node*)

Internally removes the specified node from the list, and updates the linked list.

References onode::next, and onode::prev.

Referenced by deleteNodeOnly().

4.7.1.6 struct onode* getNextOrder (struct onode * *order_node*)

Simply returns the next node in the list, or NULL if there are no further nodes.

References onode::next.

Referenced by sort().

4.7.1.7 struct order* getOrderData (struct onode * *order_node*)

References onode::data.

4.7.1.8 int getOrderId (struct order * *orderData*)

References order::id.

Referenced by sort().

4.7.1.9 struct onode* getOrderNode (struct onode * *head,* int *id*)

In a linked list with *head as the head pointer, returns the onode with the given order id.

In a linked list with *head as the head pointer, returns the onode with the given order id.

If a node with the given word cannot be found, the function returns NULL.

References onode::data, order::id, and onode::next.

Referenced by main().

4.7.1.10 int getOrderNote (struct order * *orderData,* char *bankNum*)

References order::bank1_note, order::bank2_note, and order::bank3_note.

Referenced by main().

4.7.1.11 char getOrderStartstop (struct order * *orderData,* char *bankNum*)

References order::bank1_startstop, order::bank2_startstop, and order::bank3_startstop.

Referenced by main().

4.7.1.12 struct onode* getPrevOrder (struct onode * *order_node*)

References onode::prev.

Referenced by sort().

4.7.1.13 void insertNode (struct onode ** *head,* struct onode * *prevNode,* struct onode * *insertingNode*)

Insert the given node after the prevNode.

If the prevNode is NULL, then the given node is inserted at the head of the list.

References onode::next, onode::prev, and pushNode().

4.7.1.14 struct onode* newNode (struct order * *data*)

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

If you are implementing this function make sure that you duplicate, as the original data may be modified by the calling function.

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

The order is copied into the node as a new instance.

References order::bank1_note, order::bank1_startstop, order::bank2_note, order::bank2_startstop, order::bank3_note, order::bank3_startstop, g, and order::id.

Referenced by main().

4.7.1.15 struct onode* newNodeByRef (struct order * *data*)

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

This function is different that newNode in that the new node is created by reference and not copied

Returns a new linked list node filled in with the given order, The function allocates a new order and copy the values stored in data then allocate a linked list node.

The order is inserted by reference.

References onode::data.

4.7.1.16 void printList (struct onode * *node,* void(*)(struct order *, FILE *) *printItem,* FILE * *out*)

References onode::data, and onode::next.

4.7.1.17 void pushNode (struct onode ** *head,* struct onode * *node*)

In a linked list with *head as the head pointer, adds the given node to the front of the list.

References onode::next, and onode::prev.

Referenced by insertNode(), and main().

4.7.1.18 void setOrderId (struct order * *orderData,* int *id*)

References order::id.

4.7.1.19 void setOrderNote (struct order * *orderData,* char *newNote,* char *bankNum*)

References order::bank1_note, order::bank2_note, and order::bank3_note.

4.7.1.20 void setOrderStartstop (struct order * *orderData,* char *newStartstop,* char *bankNum*)

References order::bank1_startstop, order::bank2_startstop, and order::bank3_startstop.

4.7.1.21 void sort (struct onode ** *head*)

Performes insertion sort on the list by comparing the OrderID.

Sorts from largest(head) to smallest.

References onode::data, getNextOrder(), getOrderId(), getPrevOrder(), and swap().

Referenced by main().

4.7.1.22 void swap (struct onode ** *head,* struct onode * *n1,* struct onode * *n2*)

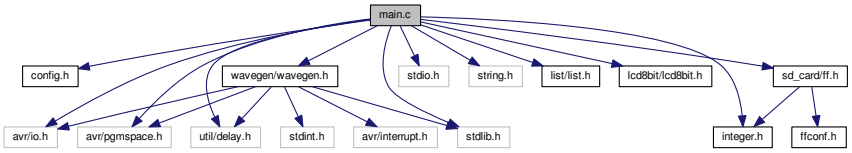
References onode::data.

Referenced by sort().

4.8 main.c File Reference

```
#include "config.h"
#include <avr/io.h>
#include <avr/pgmspace.h>
#include <util/delay.h>
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include "list/list.h"
#include "lcd8bit/lcd8bit.h"
#include "sd_card/ff.h"
#include "sd_card/integer.h"
#include "wavegen/wavegen.h"
```

Include dependency graph for main.c:



Functions

- DWORD get_fattime (void)
- void die (char ∗message)
- int main ()

Variables

- FATFS FatFs
- FIL ∗ fp

4.8.1 Function Documentation

4.8.1.1 void die (char ∗ *message*)

References lcd_clear_and_home(), lcd_line_one(), lcd_line_two(), and lcd_write_string_0().

Referenced by main().

4.8.1.2 DWORD get_fattime (void)

Referenced by f_open(), f_setlabel(), and f_sync().

4.8.1.3 int main ( )

References order::bank1_note, order::bank1_startstop, order::bank2_note, order::bank2_startstop, order::bank3_note, order::bank3_startstop, onode::data, die(), f_close(), f_getlabel(), f_mount(), f_open(), f_read(), f_write(), FA_CREATE_ALWAYS, FA_READ, FA_WRITE, FR_OK, getOrderNode(), getOrderNote(), getOrderStartstop(), order::id, lcd_clear_and_home(), lcd_init(), lcd_line_one(), lcd_write_string_0(), newNode(), pushNode(), sort(), wavegen_clock_init(), wavegen_noiseWave(), wavegen_pwmInit(), wavegen_setFrequency(), wavegen_setFrequency2(), wavegen_setSound(), and wavegen_sineWave().

4.8.2 Variable Documentation

4.8.2.1 FATFS FatFs

4.8.2.2 FIL∗ fp

4.9 Makefile File Reference

Variables

- DEVICE
- gc sections Wl

4.9.1 Variable Documentation

4.9.1.1 DEVICE

Initial value:

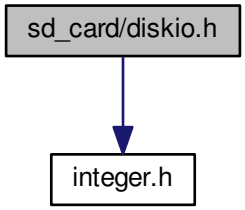
```
=atxmega256d3
AVRDUDE_DEVICE=x256d3

PROG= -c avrispmkII -P usb

CFLAGS=-g -Wall -mcall-prologues -mmcu=$(DEVICE) -Os -std=c99 -fno-strict-aliasing -
      g
CC=avr-gcc
OBJ2HEX=avr-objcopy
LDFLAGS=-Wl
```

4.9.1.2 gc sections Wl

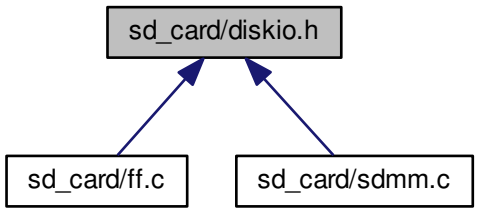
4.10 sd_card/diskio.h File Reference

```
#include "integer.h"
```

Include dependency graph for diskio.h:



This graph shows which files directly or indirectly include this file:



Macros

- #define STA_NOINIT 0x01 /* Drive not initialized */
- #define STA_NODISK 0x02 /* No medium in the drive */
- #define STA_PROTECT 0x04 /* Write protected */
- #define CTRL_SYNC 0 /* Flush disk cache (for write functions) */
- #define GET_SECTOR_COUNT 1 /* Get media size (for only f_mkfs()) */
- #define GET_BLOCK_SIZE 3 /* Get erase block size (for only f_mkfs()) */
- #define CTRL_ERASE_SECTOR 4 /* Force erased a block of sectors (for only _USE_ERASE) */
- #define CTRL_POWER 5 /* Get/Set power status */
- #define MMC_GET_TYPE 10 /* Get card type */
- #define MMC_GET_CSD 11 /* Get CSD */
- #define MMC_GET_CID 12 /* Get CID */
- #define MMC_GET_OCR 13 /* Get OCR */
- #define MMC_GET_SDSTAT 14 /* Get SD status */
- #define ATA_GET_REV 20 /* Get F/W revision */
- #define ATA_GET_MODEL 21 /* Get model name */
- #define ATA_GET_SN 22 /* Get serial number */
- #define CT_MMC 0x01 /* MMC ver 3 */
- #define CT_SD1 0x02 /* SD ver 1 */
- #define CT_SD2 0x04 /* SD ver 2 */
- #define CT_SDC (CT_SD1|CT_SD2) /* SD */
- #define CT_BLOCK 0x08 /* Block addressing */

Typedefs

- typedef BYTE DSTATUS

Enumerations

- enum DRESULT {
  RES_OK = 0, RES_ERROR, RES_WRPRT, RES_NOTRDY,
  RES_PARERR }

Functions

- DSTATUS disk_initialize (BYTE pdrv)
- DSTATUS disk_status (BYTE pdrv)
- DRESULT disk_read (BYTE pdrv, BYTE *buff, DWORD sector, BYTE count)
- DRESULT disk_write (BYTE pdrv, const BYTE *buff, DWORD sector, BYTE count)
- DRESULT disk_ioctl (BYTE pdrv, BYTE cmd, void *buff)

4.10.1 Macro Definition Documentation

4.10.1.1 #define ATA_GET_MODEL 21 /* Get model name */

4.10.1.2 #define ATA_GET_REV 20 /* Get F/W revision */

4.10.1.3 #define ATA_GET_SN 22 /* Get serial number */

4.10.1.4 #define CT_BLOCK 0x08 /* Block addressing */

Referenced by disk_initialize(), disk_read(), and disk_write().

4.10.1.5 #define CT_MMC 0x01 /* MMC ver 3 */

Referenced by disk_initialize().

4.10.1.6 #define CT_SD1 0x02 /* SD ver 1 */

Referenced by disk_initialize().

4.10.1.7 #define CT_SD2 0x04 /* SD ver 2 */

Referenced by disk_initialize().

4.10.1.8 #define CT_SDC (CT_SD1|CT_SD2) /* SD */

Referenced by disk_write().

4.10.1.9 #define CTRL_ERASE_SECTOR 4 /* Force erased a block of sectors (for only _USE_ERASE) */

Referenced by remove_chain().

4.10.1.10 #define CTRL_POWER 5 /* Get/Set power status */

4.10.1.11 #define CTRL_SYNC 0 /* Flush disk cache (for write functions) */

Referenced by disk_ioctl(), and sync_fs().

4.10.1.12 #define GET_BLOCK_SIZE 3 /* Get erase block size (for only f_mkfs()) */

Referenced by disk_ioctl().

4.10.1.13 #define GET_SECTOR_COUNT 1 /* Get media size (for only f_mkfs()) */

Referenced by disk_ioctl().

4.10.1.14 #define MMC_GET_CID 12 /* Get CID */

4.10.1.15 #define MMC_GET_CSD 11 /* Get CSD */

4.10.1.16 #define MMC_GET_OCR 13 /* Get OCR */

4.10.1.17 #define MMC_GET_SDSTAT 14 /* Get SD status */

4.10.1.18 #define MMC_GET_TYPE 10 /* Get card type */

4.10.1.19 #define STA_NODISK 0x02 /* No medium in the drive */

4.10.1.20 #define STA_NOINIT 0x01 /* Drive not initialized */

Referenced by chk_mounted(), disk_initialize(), disk_ioctl(), disk_read(), disk_status(), disk_write(), and validate().

4.10.1.21 #define STA_PROTECT 0x04 /* Write protected */

Referenced by chk_mounted().

4.10.2 Typedef Documentation

4.10.2.1 typedef BYTE DSTATUS

4.10.3 Enumeration Type Documentation

4.10.3.1 enum DRESULT

Enumerator

RES_OK

RES_ERROR

RES_WRPRT

RES_NOTRDY

RES_PARERR

4.10.4 Function Documentation

4.10.4.1 DSTATUS disk_initialize (BYTE *pdrv*)

References ACMD41, CardType, CK_INIT, CK_L, CMD0, CMD1, CMD16, CMD58, CMD8, CS_H, CS_INIT, CT_BLOCK, CT_MMC, CT_SD1, CT_SD2, deselect(), DI_INIT, dly_us(), DO_INIT, rcvr_mmc(), RES_NOTRDY, send_cmd(), STA_NOINIT, and Stat.

Referenced by chk_mounted().

4.10.4.2 DRESULT disk_ioctl (BYTE *pdrv,* BYTE *cmd,* void * *buff*)

References CMD9, CTRL_SYNC, deselect(), disk_status(), GET_BLOCK_SIZE, GET_SECTOR_COUNT, rcvr_datablock(), RES_ERROR, RES_NOTRDY, RES_OK, RES_PARERR, select(), send_cmd(), and STA_NOINIT.

Referenced by chk_mounted(), remove_chain(), and sync_fs().

4.10.4.3 DRESULT disk_read (BYTE *pdrv,* BYTE * *buff,* DWORD *sector,* BYTE *count*)

References CardType, CMD12, CMD17, CMD18, CT_BLOCK, deselect(), disk_status(), rcvr_datablock(), RES_ERROR, RES_NOTRDY, RES_OK, send_cmd(), and STA_NOINIT.

Referenced by check_fs(), chk_mounted(), f_lseek(), f_read(), f_write(), and move_window().

4.10.4.4 DSTATUS disk_status (BYTE *pdrv*)

References STA_NOINIT, and Stat.

Referenced by chk_mounted(), disk_ioctl(), disk_read(), disk_write(), and validate().

4.10.4.5 DRESULT disk_write (BYTE *pdrv,* const BYTE * *buff,* DWORD *sector,* BYTE *count*)

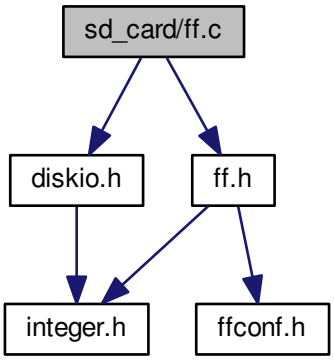
References ACMD23, CardType, CMD24, CMD25, CT_BLOCK, CT_SDC, deselect(), disk_status(), RES_ERROR, RES_NOTRDY, RES_OK, send_cmd(), STA_NOINIT, and xmit_datablock().

Referenced by f_lseek(), f_read(), f_sync(), f_write(), sync_fs(), and sync_window().

4.11 sd_card/ff.c File Reference

```
#include "ff.h"
#include "diskio.h"
```

Include dependency graph for ff.c:



Macros

- #define SS(fs) 512U /* Fixed sector size */
- #define ENTER_FF(fs)
- #define LEAVE_FF(fs, res) return res
- #define ABORT(fs, res) { fp->flag |= FA__ERROR; LEAVE_FF(fs, res); }
- #define _DF1S 0
- #define _EXCVT
- #define IsUpper(c) (((c)>='A')&&((c)<='Z'))
- #define IsLower(c) (((c)>='a')&&((c)<='z'))
- #define IsDigit(c) (((c)>='0')&&((c)<='9'))
- #define IsDBCS1(c) 0
- #define IsDBCS2(c) 0
- #define NS 11 /* Index of name status byte in fn[] */
- #define NS_LOSS 0x01 /* Out of 8.3 format */
- #define NS_LFN 0x02 /* Force to create LFN entry */
- #define NS_LAST 0x04 /* Last segment */
- #define NS_BODY 0x08 /* Lower case flag (body) */
- #define NS_EXT 0x10 /* Lower case flag (ext) */
- #define NS_DOT 0x20 /* Dot entry */
- #define MIN_FAT16 4086 /* Minimum number of clusters for FAT16 */
- #define MIN_FAT32 65526 /* Minimum number of clusters for FAT32 */
- #define BS_jmpBoot 0 /* Jump instruction (3) */
- #define BS_OEMName 3 /* OEM name (8) */
- #define BPB_BytsPerSec 11 /* Sector size [byte] (2) */
- #define BPB_SecPerClus 13 /* Cluster size [sector] (1) */
- #define BPB_RsvdSecCnt 14 /* Size of reserved area [sector] (2) */
- #define BPB_NumFATs 16 /* Number of FAT copies (1) */
- #define BPB_RootEntCnt 17 /* Number of root dir entries for FAT12/16 (2) */
- #define BPB_TotSec16 19 /* Volume size [sector] (2) */

- #define BPB_Media 21 /* Media descriptor (1) */
- #define BPB_FATSz16 22 /* FAT size [sector] (2) */
- #define BPB_SecPerTrk 24 /* Track size [sector] (2) */
- #define BPB_NumHeads 26 /* Number of heads (2) */
- #define BPB_HiddSec 28 /* Number of special hidden sectors (4) */
- #define BPB_TotSec32 32 /* Volume size [sector] (4) */
- #define BS_DrvNum 36 /* Physical drive number (2) */
- #define BS_BootSig 38 /* Extended boot signature (1) */
- #define BS_VolID 39 /* Volume serial number (4) */
- #define BS_VolLab 43 /* Volume label (8) */
- #define BS_FilSysType 54 /* File system type (1) */
- #define BPB_FATSz32 36 /* FAT size [sector] (4) */
- #define BPB_ExtFlags 40 /* Extended flags (2) */
- #define BPB_FSVer 42 /* File system version (2) */
- #define BPB_RootClus 44 /* Root dir first cluster (4) */
- #define BPB_FSInfo 48 /* Offset of FSInfo sector (2) */
- #define BPB_BkBootSec 50 /* Offset of backup boot sector (2) */
- #define BS_DrvNum32 64 /* Physical drive number (2) */
- #define BS_BootSig32 66 /* Extended boot signature (1) */
- #define BS_VolID32 67 /* Volume serial number (4) */
- #define BS_VolLab32 71 /* Volume label (8) */
- #define BS_FilSysType32 82 /* File system type (1) */
- #define FSI_LeadSig 0 /* FSI: Leading signature (4) */
- #define FSI_StrucSig 484 /* FSI: Structure signature (4) */
- #define FSI_Free_Count 488 /* FSI: Number of free clusters (4) */
- #define FSI_Nxt_Free 492 /* FSI: Last allocated cluster (4) */
- #define MBR_Table 446 /* MBR: Partition table offset (2) */
- #define SZ_PTE 16 /* MBR: Size of a partition table entry */
- #define BS_55AA 510 /* Boot sector signature (2) */
- #define DIR_Name 0 /* Short file name (11) */
- #define DIR_Attr 11 /* Attribute (1) */
- #define DIR_NTres 12 /* NT flag (1) */
- #define DIR_CrtTimeTenth 13 /* Created time sub-second (1) */
- #define DIR_CrtTime 14 /* Created time (2) */
- #define DIR_CrtDate 16 /* Created date (2) */
- #define DIR_LstAccDate 18 /* Last accessed date (2) */
- #define DIR_FstClusHI 20 /* Higher 16-bit of first cluster (2) */
- #define DIR_WrtTime 22 /* Modified time (2) */
- #define DIR_WrtDate 24 /* Modified date (2) */
- #define DIR_FstClusLO 26 /* Lower 16-bit of first cluster (2) */
- #define DIR_FileSize 28 /* File size (4) */
- #define LDIR_Ord 0 /* LFN entry order and LLE flag (1) */
- #define LDIR_Attr 11 /* LFN attribute (1) */
- #define LDIR_Type 12 /* LFN type (1) */
- #define LDIR_Chksum 13 /* Sum of corresponding SFN entry */
- #define LDIR_FstClusLO 26 /* Filled by zero (0) */
- #define SZ_DIR 32 /* Size of a directory entry */
- #define LLE 0x40 /* Last long entry flag in LDIR_Ord */
- #define DDE 0xE5 /* Deleted directory entry mark in DIR_Name[0] */
- #define NDDE 0x05 /* Replacement of the character collides with DDE */
- #define DEF_NAMEBUF BYTE sfn[12]
- #define INIT_BUF(dobj) (dobj).fn = sfn
- #define FREE_BUF()

Functions

- static void mem_cpy (void *dst, const void *src, UINT cnt)
- static void mem_set (void *dst, int val, UINT cnt)
- static int mem_cmp (const void *dst, const void *src, UINT cnt)
- static int chk_chr (const char *str, int chr)
- static FRESULT sync_window (FATFS *fs)
- static FRESULT move_window (FATFS *fs, DWORD sector)
- static FRESULT sync_fs (FATFS *fs)
- DWORD clust2sect (FATFS *fs, DWORD clst)
- DWORD get_fat (FATFS *fs, DWORD clst)
- FRESULT put_fat (FATFS *fs, DWORD clst, DWORD val)
- static FRESULT remove_chain (FATFS *fs, DWORD clst)
- static DWORD create_chain (FATFS *fs, DWORD clst)
- static FRESULT dir_sdi (DIR *dj, WORD idx)
- static FRESULT dir_next (DIR *dj, int stretch)
- static FRESULT dir_alloc (DIR *dj, UINT nent)
- static DWORD ld_clust (FATFS *fs, BYTE *dir)
- static void st_clust (BYTE *dir, DWORD cl)
- static FRESULT dir_find (DIR *dj)
- static FRESULT dir_read (DIR *dj, int vol)
- static FRESULT dir_register (DIR *dj)
- static FRESULT create_name (DIR *dj, const TCHAR **path)
- static FRESULT follow_path (DIR *dj, const TCHAR *path)
- static BYTE check_fs (FATFS *fs, DWORD sect)
- static FRESULT chk_mounted (const TCHAR **path, FATFS **rfs, BYTE wmode)
- static FRESULT validate (void *obj)
- FRESULT f_mount (BYTE vol, FATFS *fs)
- FRESULT f_open (FIL *fp, const TCHAR *path, BYTE mode)
- FRESULT f_read (FIL *fp, void *buff, UINT btr, UINT *br)
- FRESULT f_write (FIL *fp, const void *buff, UINT btw, UINT *bw)
- FRESULT f_sync (FIL *fp)
- FRESULT f_close (FIL *fp)
- FRESULT f_lseek (FIL *fp, DWORD ofs)
- FRESULT f_getlabel (const TCHAR *path, TCHAR *label, DWORD *sn)
- FRESULT f_setlabel (const TCHAR *label)

Variables

- static FATFS * FatFs [_VOLUMES]
- static WORD Fsid
- static const BYTE ExCvt [] = _EXCVT

4.11.1 Macro Definition Documentation

4.11.1.1 #define _DF1S 0

Referenced by create_name(), and f_setlabel().

4.11.1.2 #define _EXCVT

Value:

```
{0x80,0x9A,0x90,0x41,0x8E,0x41,0x8F,0x80,0x45,0x45,0x45,0x49,0x49,0x49,0x8E,0x8F,0x90,0x92,0x92,0x4F,0x99,
      0x4F,0x55,0x55,0x59,0x99,0x9A,0x9B,0x9C,0x9D,0x9E,0x9F, \
                                0x41,0x49,0x4F,0x55,0xA5,0xA5,0xA6,0xA7,0xA8,0xA9,0xAA,0xAB,0xAC,0x21,0xAE,
      0xAF,0xB0,0xB1,0xB2,0xB3,0xB4,0xB5,0xB6,0xB7,0xB8,0xB9,0xBA,0xBB,0xBC,0xBD,0xBE,0xBF, \
                                0xC0,0xC1,0xC2,0xC3,0xC4,0xC5,0xC6,0xC7,0xC8,0xC9,0xCA,0xCB,0xCC,0xCD,0xCE,
      0xCF,0xD0,0xD1,0xD2,0xD3,0xD4,0xD5,0xD6,0xD7,0xD8,0xD9,0xDA,0xDB,0xDC,0xDD,0xDE,0xDF, \
                                0xE0,0xE1,0xE2,0xE3,0xE4,0xE5,0xE6,0xE7,0xE8,0xE9,0xEA,0xEB,0xEC,0xED,0xEE,
      0xEF,0xF0,0xF1,0xF2,0xF3,0xF4,0xF5,0xF6,0xF7,0xF8,0xF9,0xFA,0xFB,0xFC,0xFD,0xFE,0xFF}
```

4.11.1.3 #define ABORT(*fs, res*) { fp->flag |= FA__ERROR; LEAVE_FF(fs, res); }

Referenced by f_lseek(), f_read(), and f_write().

4.11.1.4 #define BPB_BkBootSec 50 /* Offset of backup boot sector (2) */

4.11.1.5 #define BPB_BytsPerSec 11 /* Sector size [byte] (2) */

Referenced by chk_mounted().

4.11.1.6 #define BPB_ExtFlags 40 /* Extended flags (2) */

4.11.1.7 #define BPB_FATSz16 22 /* FAT size [sector] (2) */

Referenced by chk_mounted().

4.11.1.8 #define BPB_FATSz32 36 /* FAT size [sector] (4) */

Referenced by chk_mounted().

4.11.1.9 #define BPB_FSInfo 48 /* Offset of FSInfo sector (2) */

Referenced by chk_mounted().

4.11.1.10 #define BPB_FSVer 42 /* File system version (2) */

4.11.1.11 #define BPB_HiddSec 28 /* Number of special hidden sectors (4) */

4.11.1.12 #define BPB_Media 21 /* Media descriptor (1) */

4.11.1.13 #define BPB_NumFATs 16 /* Number of FAT copies (1) */

Referenced by chk_mounted().

4.11.1.14 #define BPB_NumHeads 26 /* Number of heads (2) */

4.11.1.15 #define BPB_RootClus 44 /* Root dir first cluster (4) */

Referenced by chk_mounted().

4.11.1.16 #define BPB_RootEntCnt 17 /* Number of root dir entries for FAT12/16 (2) */

Referenced by chk_mounted().

4.11.1.17 #define BPB_RsvdSecCnt 14 /* Size of reserved area [sector] (2) */

Referenced by chk_mounted().

4.11.1.18 #define BPB_SecPerClus 13 /* Cluster size [sector] (1) */

Referenced by chk_mounted().

4.11.1.19 #define BPB_SecPerTrk 24 /* Track size [sector] (2) */

4.11.1.20 #define BPB_TotSec16 19 /* Volume size [sector] (2) */

Referenced by chk_mounted().

4.11.1.21 #define BPB_TotSec32 32 /* Volume size [sector] (4) */

Referenced by chk_mounted().

4.11.1.22 #define BS_55AA 510 /* Boot sector signature (2) */

Referenced by check_fs(), chk_mounted(), and sync_fs().

4.11.1.23 #define BS_BootSig 38 /* Extended boot signature (1) */

4.11.1.24 #define BS_BootSig32 66 /* Extended boot signature (1) */

4.11.1.25 #define BS_DrvNum 36 /* Physical drive number (2) */

4.11.1.26 #define BS_DrvNum32 64 /* Physical drive number (2) */

4.11.1.27 #define BS_FilSysType 54 /* File system type (1) */

Referenced by check_fs().

4.11.1.28 #define BS_FilSysType32 82 /* File system type (1) */

Referenced by check_fs().

4.11.1.29 #define BS_jmpBoot 0 /* Jump instruction (3) */

4.11.1.30 #define BS_OEMName 3 /* OEM name (8) */

4.11.1.31 #define BS_VolID 39 /* Volume serial number (4) */

Referenced by f_getlabel().

4.11.1.32 #define BS_VolID32 67 /* Volume serial number (4) */

Referenced by f_getlabel().

4.11.1.33 #define BS_VolLab 43 /* Volume label (8) */

4.11.1.34 #define BS_VolLab32 71 /* Volume label (8) */

4.11.1.35 #define DDE 0xE5 /* Deleted directory entry mark in DIR_Name[0] */

Referenced by create_name(), dir_alloc(), dir_find(), dir_read(), and f_setlabel().

4.11.1.36 #define DEF_NAMEBUF BYTE sfn[12]

Referenced by f_open().

4.11.1.37 #define DIR_Attr 11 /* Attribute (1) */

Referenced by dir_find(), dir_read(), f_open(), f_setlabel(), f_sync(), and follow_path().

4.11.1.38 #define DIR_CrtDate 16 /* Created date (2) */

4.11.1.39 #define DIR_CrtTime 14 /* Created time (2) */

Referenced by f_open().

4.11.1.40 #define DIR_CrtTimeTenth 13 /* Created time sub-second (1) */

4.11.1.41 #define DIR_FileSize 28 /* File size (4) */

Referenced by f_open(), and f_sync().

4.11.1.42 #define DIR_FstClusHI 20 /* Higher 16-bit of first cluster (2) */

Referenced by ld_clust(), and st_clust().

4.11.1.43 #define DIR_FstClusLO 26 /* Lower 16-bit of first cluster (2) */

Referenced by ld_clust(), and st_clust().

4.11.1.44 #define DIR_LstAccDate 18 /* Last accessed date (2) */

Referenced by f_sync().

4.11.1.45 #define DIR_Name 0 /* Short file name (11) */

Referenced by dir_find(), and dir_read().

4.11.1.46 #define DIR_NTres 12 /* NT flag (1) */

Referenced by dir_register().

4.11.1.47 #define DIR_WrtDate 24 /* Modified date (2) */

4.11.1.48 #define DIR_WrtTime 22 /* Modified time (2) */

Referenced by f_setlabel(), and f_sync().

4.11.1.49 #define ENTER_FF(*fs*)

Referenced by chk_mounted(), and validate().

4.11.1.50 #define FREE_BUF( )

Referenced by f_open().

4.11.1.51 #define FSI_Free_Count 488 /* FSI: Number of free clusters (4) */

Referenced by chk_mounted(), and sync_fs().

4.11.1.52 #define FSI_LeadSig 0 /* FSI: Leading signature (4) */

Referenced by chk_mounted(), and sync_fs().

4.11.1.53 #define FSI_Nxt_Free 492 /* FSI: Last allocated cluster (4) */

Referenced by chk_mounted(), and sync_fs().

4.11.1.54 #define FSI_StrucSig 484 /* FSI: Structure signature (4) */

Referenced by chk_mounted(), and sync_fs().

4.11.1.55 #define INIT_BUF(*dobj*) (dobj).fn = sfn

Referenced by f_open().

4.11.1.56 #define IsDBCS1(c) 0

Referenced by create_name(), f_getlabel(), and f_setlabel().

4.11.1.57 #define IsDBCS2(c) 0

Referenced by create_name(), f_getlabel(), and f_setlabel().

4.11.1.58 #define IsDigit(c) (((c)>='0')&&((c)<='9'))

4.11.1.59 #define IsLower(c) (((c)>='a')&&((c)<='z'))

Referenced by create_name(), and f_setlabel().

4.11.1.60 #define IsUpper(c) (((c)>='A')&&((c)<='Z'))

Referenced by create_name().

4.11.1.61 #define LDIR_Attr 11 /* LFN attribute (1) */

4.11.1.62 #define LDIR_Chksum 13 /* Sum of corresponding SFN entry */

Referenced by dir_find(), and dir_read().

4.11.1.63 #define LDIR_FstClusLO 26 /* Filled by zero (0) */

4.11.1.64 #define LDIR_Ord 0 /* LFN entry order and LLE flag (1) */

4.11.1.65 #define LDIR_Type 12 /* LFN type (1) */

4.11.1.66 #define LEAVE_FF(fs, res) return res

Referenced by f_close(), f_getlabel(), f_lseek(), f_open(), f_read(), f_setlabel(), f_sync(), and f_write().

4.11.1.67 #define LLE 0x40 /* Last long entry flag in LDIR_Ord */

4.11.1.68 #define MBR_Table 446 /* MBR: Partition table offset (2) */

Referenced by chk_mounted().

4.11.1.69 #define MIN_FAT16 4086 /* Minimum number of clusters for FAT16 */

Referenced by chk_mounted().

4.11.1.70 #define MIN_FAT32 65526 /* Minimum number of clusters for FAT32 */

Referenced by chk_mounted().

4.11.1.71 #define NDDE 0x05 /* Replacement of the character collides with DDE */

Referenced by create_name().

4.11.1.72 #define NS 11 /* Index of name status byte in fn[] */

Referenced by create_name(), dir_find(), dir_register(), and follow_path().

4.11.1.73 #define NS_BODY 0x08 /* Lower case flag (body) */

Referenced by create_name(), and dir_register().

4.11.1.74 #define NS_DOT 0x20 /* Dot entry */

Referenced by create_name(), dir_register(), and follow_path().

4.11.1.75 #define NS_EXT 0x10 /* Lower case flag (ext) */

Referenced by create_name(), and dir_register().

4.11.1.76 #define NS_LAST 0x04 /* Last segment */

Referenced by create_name(), and follow_path().

4.11.1.77 #define NS_LFN 0x02 /* Force to create LFN entry */

Referenced by create_name(), and dir_register().

4.11.1.78 #define NS_LOSS 0x01 /* Out of 8.3 format */

Referenced by create_name(), dir_find(), and dir_register().

4.11.1.79 #define SS(*fs*) 512U /* Fixed sector size */

Referenced by chk_mounted(), dir_next(), dir_sdi(), f_lseek(), f_read(), f_write(), get_fat(), and put_fat().

4.11.1.80 #define SZ_DIR 32 /* Size of a directory entry */

Referenced by chk_mounted(), dir_next(), dir_register(), dir_sdi(), and f_setlabel().

4.11.1.81 #define SZ_PTE 16 /* MBR: Size of a partition table entry */

Referenced by chk_mounted().

4.11.2 Function Documentation

4.11.2.1 static BYTE check_fs (FATFS * fs, DWORD sect) [static]

References BS_55AA, BS_FilSysType, BS_FilSysType32, disk_read(), FATFS::drv, LD_DWORD, LD_WORD, RES_OK, and FATFS::win.

Referenced by chk_mounted().

4.11.2.2 static int chk_chr (const char * str, int chr) [static]

Referenced by create_name(), and f_setlabel().

4.11.2.3 static FRESULT chk_mounted (const TCHAR ** path, FATFS ** rfs, BYTE wmode) [static]

References _FS_READONLY, _VOLUMES, BPB_BytsPerSec, BPB_FATSz16, BPB_FATSz32, BPB_FSInfo, BPB_NumFATs, BPB_RootClus, BPB_RootEntCnt, BPB_RsvdSecCnt, BPB_SecPerClus, BPB_TotSec16, BPB_TotSec32, BS_55AA, check_fs(), FATFS::csize, FATFS::database, FATFS::dirbase, disk_initialize(), disk_ioctl(), disk_read(), disk_status(), FATFS::drv, ENTER_FF, FATFS::fatbase, FR_DISK_ERR, FR_INVALID_DRIVE, FR_NO_FILESYSTEM, FR_NOT_ENABLED, FR_NOT_READY, FR_OK, FR_WRITE_PROTECTED, FATFS::free_clust, FS_FAT12, FS_FAT16, FS_FAT32, FATFS::fs_type, FATFS::fsi_flag, FSI_Free_Count, FSI_LeadSig, FSI_Nxt_Free, FATFS::fsi_sector, FSI_StrucSig, Fsid, FATFS::fsize, FATFS::id, FATFS::last_clust, LD2PD, LD2PT, LD_DWORD, LD_WORD, MBR_Table, MIN_FAT16, MIN_FAT32, FATFS::n_fatent, FATFS::n_fats, FATFS::n_rootdir, RES_OK, SS, STA_NOINIT, STA_PROTECT, SZ_DIR, SZ_PTE, FATFS::volbase, FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by f_getlabel(), f_open(), and f_setlabel().

4.11.2.4 DWORD clust2sect (FATFS * fs, DWORD clst)

References FATFS::csize, FATFS::database, and FATFS::n_fatent.

Referenced by dir_next(), dir_sdi(), f_lseek(), f_read(), f_write(), and remove_chain().

4.11.2.5 static DWORD create_chain (FATFS * fs, DWORD clst) [static]

References FR_DISK_ERR, FR_OK, FATFS::free_clust, FATFS::fsi_flag, get_fat(), FATFS::last_clust, FATFS::n_fatent, and put_fat().

Referenced by dir_next(), f_lseek(), and f_write().

4.11.2.6 static FRESULT create_name (DIR * dj, const TCHAR ** path) [static]

References _DF1S, _MAX_LFN, chk_chr(), DDE, ExCvt, DIR::fn, FR_INVALID_NAME, FR_OK, IsDBCS1, IsDBCS2, IsLower, IsUpper, mem_set(), NDDE, NS, NS_BODY, NS_DOT, NS_EXT, NS_LAST, NS_LFN, and NS_LOSS.

Referenced by follow_path().

4.11.2.7 static FRESULT dir_alloc (DIR * dj, UINT nent) [static]

References DDE, DIR::dir, dir_next(), dir_sdi(), FR_OK, DIR::fs, move_window(), and DIR::sect.

Referenced by dir_register(), and f_setlabel().

4.11.2.8 static FRESULT dir_find (DIR * *dj*) [static]

References AM_LFN, AM_MASK, AM_VOL, DDE, DIR::dir, DIR_Attr, DIR_Name, dir_next(), dir_sdi(), DIR::fn, FR_NO_FILE, FR_OK, DIR::fs, DIR::index, LDIR_Chksum, mem_cmp(), move_window(), NS, NS_LOSS, and DIR::sect.

Referenced by dir_register(), and follow_path().

4.11.2.9 static FRESULT dir_next (DIR * *dj,* int *stretch*) [static]

References DIR::clust, clust2sect(), create_chain(), FATFS::csize, DIR::dir, FR_DENIED, FR_DISK_ERR, FR_INT_ERR, FR_NO_FILE, FR_OK, DIR::fs, get_fat(), DIR::index, mem_set(), FATFS::n_fatent, FATFS::n_rootdir, DIR::sect, SS, sync_window(), SZ_DIR, FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by dir_alloc(), dir_find(), dir_read(), and dir_register().

4.11.2.10 static FRESULT dir_read (DIR * *dj,* int *vol*) [static]

References _FS_RPATH, AM_LFN, AM_MASK, AM_VOL, DDE, DIR::dir, DIR_Attr, DIR_Name, dir_next(), FR_NO_FILE, FR_OK, DIR::fs, DIR::index, LDIR_Chksum, move_window(), and DIR::sect.

Referenced by f_getlabel(), and f_setlabel().

4.11.2.11 static FRESULT dir_register (DIR * *dj*) [static]

References _FS_RPATH, DIR::dir, dir_alloc(), dir_find(), dir_next(), DIR_NTres, dir_sdi(), DIR::fn, FR_DENIED, FR_INVALID_NAME, FR_NO_FILE, FR_OK, DIR::fs, DIR::index, mem_cpy(), mem_set(), move_window(), NS, NS_BODY, NS_DOT, NS_EXT, NS_LFN, NS_LOSS, DIR::sect, SZ_DIR, and FATFS::wflag.

Referenced by f_open().

4.11.2.12 static FRESULT dir_sdi (DIR * *dj,* WORD *idx*) [static]

References DIR::clust, clust2sect(), FATFS::csize, DIR::dir, FATFS::dirbase, FR_DISK_ERR, FR_INT_ERR, FR_OK, DIR::fs, FS_FAT32, FATFS::fs_type, get_fat(), DIR::index, FATFS::n_fatent, FATFS::n_rootdir, DIR::sclust, DIR::sect, SS, SZ_DIR, and FATFS::win.

Referenced by dir_alloc(), dir_find(), dir_register(), f_getlabel(), f_setlabel(), and follow_path().

4.11.2.13 FRESULT f_close (FIL * *fp*)

References f_sync(), FR_OK, FIL::fs, LEAVE_FF, and validate().

Referenced by main().

4.11.2.14 FRESULT f_getlabel (const TCHAR * *path,* TCHAR * *label,* DWORD * *sn*)

References BS_VolID, BS_VolID32, chk_mounted(), DIR::dir, dir_read(), dir_sdi(), FR_NO_FILE, FR_OK, DIR::fs, FS_FAT32, FATFS::fs_type, IsDBCS1, IsDBCS2, LD_DWORD, LEAVE_FF, mem_cpy(), move_window(), DIR::sclust, FATFS::volbase, and FATFS::win.

Referenced by main().

4.11.2.15 FRESULT f_lseek (FIL * *fp,* DWORD *ofs*)

References _FS_READONLY, ABORT, FIL::clust, clust2sect(), create_chain(), CREATE_LINKMAP, FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA__WRITTEN, FA_WRITE, FIL::flag, FIL::fptr, FR_DISK_ERR, FR_INT_ERR, FR_NOT_ENOUGH_CORE, FR_OK, FIL::fs, FIL::fsize, get_fat(), LEAVE_FF, FATFS::n_fatent, RES_OK, FIL::sclust, SS, and validate().

4.11.2.16 FRESULT f_mount (BYTE *vol,* FATFS * *fs*)

References _VOLUMES, FR_INT_ERR, FR_INVALID_DRIVE, FR_OK, and FATFS::fs_type.

Referenced by main().

4.11.2.17 FRESULT f_open (FIL * *fp,* const TCHAR * *path,* BYTE *mode*)

References AM_DIR, AM_RDO, chk_mounted(), DEF_NAMEBUF, DIR::dir, DIR_Attr, DIR_CrtTime, DIR_FileSize, FIL::dir_ptr, dir_register(), FIL::dir_sect, FIL::dsect, FA__WRITTEN, FA_CREATE_ALWAYS, FA_CREATE_NEW, FA_OPEN_ALWAYS, FA_READ, FA_WRITE, FIL::flag, follow_path(), FIL::fptr, FR_DENIED, FR_EXIST, FR_INT_ERR, FR_INVALID_NAME, FR_INVALID_OBJECT, FR_NO_FILE, FR_OK, FR_TOO_MANY_OPEN_FILES, FREE_BUF, FIL::fs, DIR::fs, FIL::fsize, get_fattime(), FATFS::id, FIL::id, INIT_BUF, FATFS::last_clust, ld_clust(), LD_DWORD, LEAVE_FF, move_window(), remove_chain(), FIL::sclust, st_clust(), ST_DWORD, FATFS::wflag, and FATFS::winsect.

Referenced by main().

4.11.2.18 FRESULT f_read (FIL * *fp,* void * *buff,* UINT *btr,* UINT * *br*)

References ABORT, FIL::clust, clust2sect(), FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA_READ, FIL::flag, FIL::fptr, FR_DENIED, FR_DISK_ERR, FR_INT_ERR, FR_OK, FIL::fs, FIL::fsize, get_fat(), LEAVE_FF, mem_cpy(), move_window(), RES_OK, FIL::sclust, SS, validate(), FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by main().

4.11.2.19 FRESULT f_setlabel (const TCHAR * *label*)

References _DF1S, AM_VOL, chk_chr(), chk_mounted(), DDE, DIR::dir, dir_alloc(), DIR_Attr, dir_read(), dir_sdi(), DIR_WrtTime, ExCvt, FR_INVALID_NAME, FR_NO_FILE, FR_OK, DIR::fs, get_fattime(), IsDBCS1, IsDBCS2, IsLower, LEAVE_FF, mem_cpy(), mem_set(), DIR::sclust, ST_DWORD, sync_fs(), SZ_DIR, and FATFS::wflag.

4.11.2.20 FRESULT f_sync (FIL * *fp*)

References AM_ARC, DIR_Attr, DIR_FileSize, DIR_LstAccDate, FIL::dir_ptr, FIL::dir_sect, DIR_WrtTime, disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__WRITTEN, FIL::flag, FR_DISK_ERR, FR_OK, FIL::fs, FIL::fsize, get_fattime(), LEAVE_FF, move_window(), RES_OK, FIL::sclust, st_clust(), ST_DWORD, ST_WORD, sync_fs(), validate(), and FATFS::wflag.

Referenced by f_close().

4.11.2.21 FRESULT f_write (FIL * *fp,* const void * *buff,* UINT *btw,* UINT * *bw*)

References ABORT, FIL::clust, clust2sect(), create_chain(), FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA__WRITTEN, FA_WRITE, FIL::flag, FIL::fptr, FR_DENIED, FR_DISK_ERR,

FR_INT_ERR, FR_OK, FIL::fs, FIL::fsize, LEAVE_FF, mem_cpy(), move_window(), RES_OK, FIL::sclust, SS, sync_window(), validate(), FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by main().

4.11.2.22 static FRESULT follow_path (DIR * *dj,* const TCHAR * *path*) [static]

References _FS_RPATH, AM_DIR, create_name(), DIR::dir, DIR_Attr, dir_find(), dir_sdi(), DIR::fn, FR_NO_FILE, FR_NO_PATH, FR_OK, DIR::fs, ld_clust(), NS, NS_DOT, NS_LAST, and DIR::sclust.

Referenced by f_open().

4.11.2.23 DWORD get_fat (FATFS * *fs,* DWORD *clst*)

References FATFS::fatbase, FS_FAT12, FS_FAT16, FS_FAT32, FATFS::fs_type, LD_DWORD, LD_WORD, move_window(), FATFS::n_fatent, SS, and FATFS::win.

Referenced by create_chain(), dir_next(), dir_sdi(), f_lseek(), f_read(), and remove_chain().

4.11.2.24 static DWORD ld_clust (FATFS * *fs,* BYTE * *dir*) [static]

References DIR_FstClusHI, DIR_FstClusLO, FS_FAT32, FATFS::fs_type, and LD_WORD.

Referenced by f_open(), and follow_path().

4.11.2.25 static int mem_cmp (const void * *dst,* const void * *src,* UINT *cnt*) [static]

Referenced by dir_find().

4.11.2.26 static void mem_cpy (void * *dst,* const void * *src,* UINT *cnt*) [static]

Referenced by dir_register(), f_getlabel(), f_read(), f_setlabel(), and f_write().

4.11.2.27 static void mem_set (void * *dst,* int *val,* UINT *cnt*) [static]

Referenced by create_name(), dir_next(), dir_register(), f_setlabel(), and sync_fs().

4.11.2.28 static FRESULT move_window (FATFS * *fs,* DWORD *sector*) [static]

References disk_read(), FATFS::drv, FR_DISK_ERR, FR_OK, RES_OK, sync_window(), FATFS::win, and FATFS::winsect.

Referenced by dir_alloc(), dir_find(), dir_read(), dir_register(), f_getlabel(), f_open(), f_read(), f_sync(), f_write(), get_fat(), and put_fat().

4.11.2.29 FRESULT put_fat (FATFS * *fs,* DWORD *clst,* DWORD *val*)

References FATFS::fatbase, FR_INT_ERR, FR_OK, FS_FAT12, FS_FAT16, FS_FAT32, FATFS::fs_type, LD_DWORD, move_window(), FATFS::n_fatent, SS, ST_DWORD, ST_WORD, FATFS::wflag, and FATFS::win.

Referenced by create_chain(), and remove_chain().

4.11.2.30 static FRESULT remove_chain (FATFS * fs, DWORD clst) [static]

References clust2sect(), FATFS::csize, CTRL_ERASE_SECTOR, disk_ioctl(), FATFS::drv, FR_DISK_ERR, FR_INT_ERR, FR_OK, FATFS::free_clust, FATFS::fsi_flag, get_fat(), FATFS::n_fatent, and put_fat().

Referenced by f_open().

4.11.2.31 static void st_clust (BYTE * dir, DWORD cl) [static]

References DIR_FstClusHI, DIR_FstClusLO, and ST_WORD.

Referenced by f_open(), and f_sync().

4.11.2.32 static FRESULT sync_fs (FATFS * fs) [static]

References BS_55AA, CTRL_SYNC, disk_ioctl(), disk_write(), FATFS::drv, FR_DISK_ERR, FR_OK, FATFS::free_clust, FS_FAT32, FATFS::fs_type, FATFS::fsi_flag, FSI_Free_Count, FSI_LeadSig, FSI_Nxt_Free, FATFS::fsi_sector, FSI_StrucSig, FATFS::last_clust, mem_set(), RES_OK, ST_DWORD, ST_WORD, sync_window(), FATFS::win, and FATFS::winsect.

Referenced by f_setlabel(), and f_sync().

4.11.2.33 static FRESULT sync_window (FATFS * fs) [static]

References disk_write(), FATFS::drv, FATFS::fatbase, FR_DISK_ERR, FR_OK, FATFS::fsize, FATFS::n_fats, RES_OK, FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by dir_next(), f_write(), move_window(), and sync_fs().

4.11.2.34 static FRESULT validate (void * obj) [static]

References disk_status(), FATFS::drv, ENTER_FF, FR_INVALID_OBJECT, FR_NOT_READY, FR_OK, FIL::fs, FATFS::fs_type, FATFS::id, FIL::id, and STA_NOINIT.

Referenced by f_close(), f_lseek(), f_read(), f_sync(), and f_write().

4.11.3 Variable Documentation

4.11.3.1 const BYTE ExCvt[] = _EXCVT [static]

Referenced by create_name(), and f_setlabel().

4.11.3.2 FATFS* FatFs[_VOLUMES] [static]

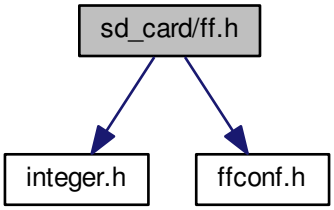
4.11.3.3 WORD Fsid [static]

Referenced by chk_mounted().

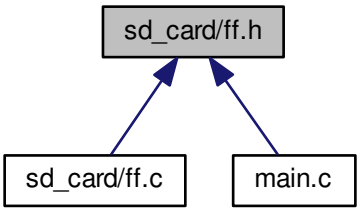
4.12 sd_card/ff.h File Reference

```
#include "integer.h"
#include "ffconf.h"
```

Include dependency graph for ff.h:



This graph shows which files directly or indirectly include this file:



Data Structures

- struct FATFS
- struct FIL
- struct DIR
- struct FILINFO

Macros

- #define _FATFS 82786 /* Revision ID */
- #define LD2PD(vol) (BYTE)(vol) /* Each logical drive is bound to the same physical drive number */
- #define LD2PT(vol) 0 /* Always mounts the 1st partition or in SFD */
- #define _T(x) x

- #define _TEXT(x) x
- #define f_eof(fp) (((fp)->fptr == (fp)->fsize) ? 1 : 0)
- #define f_error(fp) (((fp)->flag & FA__ERROR) ? 1 : 0)
- #define f_tell(fp) ((fp)->fptr)
- #define f_size(fp) ((fp)->fsize)
- #define EOF (-1)
- #define FA_READ 0x01
- #define FA_OPEN_EXISTING 0x00
- #define FA__ERROR 0x80
- #define FA_WRITE 0x02
- #define FA_CREATE_NEW 0x04
- #define FA_CREATE_ALWAYS 0x08
- #define FA_OPEN_ALWAYS 0x10
- #define FA__WRITTEN 0x20
- #define FA__DIRTY 0x40
- #define FS_FAT12 1
- #define FS_FAT16 2
- #define FS_FAT32 3
- #define AM_RDO 0x01 /* Read only */
- #define AM_HID 0x02 /* Hidden */
- #define AM_SYS 0x04 /* System */
- #define AM_VOL 0x08 /* Volume label */
- #define AM_LFN 0x0F /* LFN entry */
- #define AM_DIR 0x10 /* Directory */
- #define AM_ARC 0x20 /* Archive */
- #define AM_MASK 0x3F /* Mask of defined bits */
- #define CREATE_LINKMAP 0xFFFFFFFF
- #define LD_WORD(ptr) (WORD)(*(WORD*)(BYTE*)(ptr))
- #define LD_DWORD(ptr) (DWORD)(*(DWORD*)(BYTE*)(ptr))
- #define ST_WORD(ptr, val) *(WORD*)(BYTE*)(ptr)=(WORD)(val)
- #define ST_DWORD(ptr, val) *(DWORD*)(BYTE*)(ptr)=(DWORD)(val)

Typedefs

- typedef char TCHAR

Enumerations

- enum FRESULT {
  FR_OK = 0, FR_DISK_ERR, FR_INT_ERR, FR_NOT_READY,
  FR_NO_FILE, FR_NO_PATH, FR_INVALID_NAME, FR_DENIED,
  FR_EXIST, FR_INVALID_OBJECT, FR_WRITE_PROTECTED, FR_INVALID_DRIVE,
  FR_NOT_ENABLED, FR_NO_FILESYSTEM, FR_MKFS_ABORTED, FR_TIMEOUT,
  FR_LOCKED, FR_NOT_ENOUGH_CORE, FR_TOO_MANY_OPEN_FILES, FR_INVALID_PARAMETER }

Functions

- FRESULT f_mount (BYTE vol, FATFS *fs)
- FRESULT f_open (FIL *fp, const TCHAR *path, BYTE mode)
- FRESULT f_read (FIL *fp, void *buff, UINT btr, UINT *br)
- FRESULT f_lseek (FIL *fp, DWORD ofs)
- FRESULT f_close (FIL *fp)
- FRESULT f_opendir (DIR *dj, const TCHAR *path)
- FRESULT f_readdir (DIR *dj, FILINFO *fno)
- FRESULT f_stat (const TCHAR *path, FILINFO *fno)
- FRESULT f_write (FIL *fp, const void *buff, UINT btw, UINT *bw)
- FRESULT f_getfree (const TCHAR *path, DWORD *nclst, FATFS **fatfs)
- FRESULT f_truncate (FIL *fp)
- FRESULT f_sync (FIL *fp)
- FRESULT f_unlink (const TCHAR *path)
- FRESULT f_mkdir (const TCHAR *path)
- FRESULT f_chmod (const TCHAR *path, BYTE value, BYTE mask)
- FRESULT f_utime (const TCHAR *path, const FILINFO *fno)
- FRESULT f_rename (const TCHAR *path_old, const TCHAR *path_new)
- FRESULT f_chdrive (BYTE drv)
- FRESULT f_chdir (const TCHAR *path)
- FRESULT f_getcwd (TCHAR *buff, UINT len)
- FRESULT f_getlabel (const TCHAR *path, TCHAR *label, DWORD *sn)
- FRESULT f_setlabel (const TCHAR *label)
- FRESULT f_forward (FIL *fp, UINT(*func)(const BYTE *, UINT), UINT btf, UINT *bf)
- FRESULT f_mkfs (BYTE vol, BYTE sfd, UINT au)
- FRESULT f_fdisk (BYTE pdrv, const DWORD szt[], void *work)
- int f_putc (TCHAR c, FIL *fp)
- int f_puts (const TCHAR *str, FIL *cp)
- int f_printf (FIL *fp, const TCHAR *str,...)
- TCHAR * f_gets (TCHAR *buff, int len, FIL *fp)
- DWORD get_fattime (void)

4.12.1 Macro Definition Documentation

4.12.1.1 #define _FATFS 82786 /* Revision ID */

4.12.1.2 #define _T(*x*) x

4.12.1.3 #define _TEXT(*x*) x

4.12.1.4 #define AM_ARC 0x20 /* Archive */

Referenced by f_sync().

4.12.1.5 #define AM_DIR 0x10 /* Directory */

Referenced by f_open(), and follow_path().

4.12.1.6 #define AM_HID 0x02 /* Hidden */

4.12.1.7 #define AM_LFN 0x0F /* LFN entry */

Referenced by dir_find(), and dir_read().

4.12.1.8 #define AM_MASK 0x3F /* Mask of defined bits */

Referenced by dir_find(), and dir_read().

4.12.1.9 #define AM_RDO 0x01 /* Read only */

Referenced by f_open().

4.12.1.10 #define AM_SYS 0x04 /* System */

4.12.1.11 #define AM_VOL 0x08 /* Volume label */

Referenced by dir_find(), dir_read(), and f_setlabel().

4.12.1.12 #define CREATE_LINKMAP 0xFFFFFFFF

Referenced by f_lseek().

4.12.1.13 #define EOF (-1)

4.12.1.14 #define f_eof(fp) (((fp)->fptr == (fp)->fsize) ? 1 : 0)

4.12.1.15 #define f_error(fp) (((fp)->flag & FA__ERROR) ? 1 : 0)

4.12.1.16 #define f_size(fp) ((fp)->fsize)

4.12.1.17 #define f_tell(fp) ((fp)->fptr)

4.12.1.18 #define FA__DIRTY 0x40

Referenced by f_lseek(), f_read(), f_sync(), and f_write().

4.12.1.19 #define FA__ERROR 0x80

Referenced by f_lseek(), f_read(), and f_write().

4.12.1.20 #define FA__WRITTEN 0x20

Referenced by f_lseek(), f_open(), f_sync(), and f_write().

4.12.1.21 #define FA_CREATE_ALWAYS 0x08

Referenced by f_open(), and main().

4.12.1.22 #define FA_CREATE_NEW 0x04

Referenced by f_open().

4.12.1.23 #define FA_OPEN_ALWAYS 0x10

Referenced by f_open().

4.12.1.24 #define FA_OPEN_EXISTING 0x00

4.12.1.25 #define FA_READ 0x01

Referenced by f_open(), f_read(), and main().

4.12.1.26 #define FA_WRITE 0x02

Referenced by f_lseek(), f_open(), f_write(), and main().

4.12.1.27 #define FS_FAT12 1

Referenced by chk_mounted(), get_fat(), and put_fat().

4.12.1.28 #define FS_FAT16 2

Referenced by chk_mounted(), get_fat(), and put_fat().

4.12.1.29 #define FS_FAT32 3

Referenced by chk_mounted(), dir_sdi(), f_getlabel(), get_fat(), ld_clust(), put_fat(), and sync_fs().

4.12.1.30 #define LD2PD(*vol*) (BYTE)(vol) /* Each logical drive is bound to the same physical drive number */

Referenced by chk_mounted().

4.12.1.31 #define LD2PT(*vol*) 0 /* Always mounts the 1st partition or in SFD */

Referenced by chk_mounted().

4.12.1.32 #define LD_DWORD(*ptr*) (DWORD)(*(DWORD*)(BYTE*)(ptr))

Referenced by check_fs(), chk_mounted(), f_getlabel(), f_open(), get_fat(), and put_fat().

4.12.1.33 #define LD_WORD(*ptr*) (WORD)(*(WORD*)(BYTE*)(ptr))

Referenced by check_fs(), chk_mounted(), get_fat(), and ld_clust().

4.12.1.34 #define ST_DWORD(*ptr, val*) *(DWORD*)(BYTE*)(ptr)=(DWORD)(val)

Referenced by f_open(), f_setlabel(), f_sync(), put_fat(), and sync_fs().

4.12.1.35 #define ST_WORD(*ptr, val*) *(WORD*)(BYTE*)(ptr)=(WORD)(val)

Referenced by f_sync(), put_fat(), st_clust(), and sync_fs().

4.12.2 Typedef Documentation

4.12.2.1 typedef char TCHAR

4.12.3 Enumeration Type Documentation

4.12.3.1 enum FRESULT

Enumerator

FR_OK

FR_DISK_ERR

FR_INT_ERR

FR_NOT_READY

FR_NO_FILE

FR_NO_PATH

FR_INVALID_NAME

FR_DENIED

FR_EXIST

FR_INVALID_OBJECT

FR_WRITE_PROTECTED

FR_INVALID_DRIVE

FR_NOT_ENABLED

FR_NO_FILESYSTEM

FR_MKFS_ABORTED

FR_TIMEOUT

FR_LOCKED

FR_NOT_ENOUGH_CORE

FR_TOO_MANY_OPEN_FILES

FR_INVALID_PARAMETER

4.12.4 Function Documentation

4.12.4.1 FRESULT f_chdir (const TCHAR * path)

4.12.4.2 FRESULT f_chdrive (BYTE drv)

4.12.4.3 FRESULT f_chmod (const TCHAR * path, BYTE value, BYTE mask)

4.12.4.4 FRESULT f_close (FIL * fp)

References f_sync(), FR_OK, FIL::fs, LEAVE_FF, and validate().

Referenced by main().

4.12.4.5 FRESULT f_fdisk (BYTE pdrv, const DWORD szt[], void * work)

4.12.4.6 FRESULT f_forward (FIL * fp, UINT(*)(const BYTE *, UINT) func, UINT btf, UINT * bf)

4.12.4.7 FRESULT f_getcwd (TCHAR * buff, UINT len)

4.12.4.8 FRESULT f_getfree (const TCHAR * path, DWORD * nclst, FATFS ** fatfs)

4.12.4.9 FRESULT f_getlabel (const TCHAR * path, TCHAR * label, DWORD * sn)

References BS_VolID, BS_VolID32, chk_mounted(), DIR::dir, dir_read(), dir_sdi(), FR_NO_FILE, FR_OK, DIR::fs, FS_FAT32, FATFS::fs_type, IsDBCS1, IsDBCS2, LD_DWORD, LEAVE_FF, mem_cpy(), move_window(), DIR::sclust, FATFS::volbase, and FATFS::win.

Referenced by main().

4.12.4.10 TCHAR* f_gets (TCHAR * buff, int len, FIL * fp)

4.12.4.11 FRESULT f_lseek (FIL * fp, DWORD ofs)

References _FS_READONLY, ABORT, FIL::clust, clust2sect(), create_chain(), CREATE_LINKMAP, FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA__WRITTEN, FA_WRITE, FIL::flag, FIL::fptr, FR_DISK_ERR, FR_INT_ERR, FR_NOT_ENOUGH_CORE, FR_OK, FIL::fs, FIL::fsize, get_fat(), LEAVE_FF, FATFS::n_fatent, RES_OK, FIL::sclust, SS, and validate().

4.12.4.12 FRESULT f_mkdir (const TCHAR * path)

4.12.4.13 FRESULT f_mkfs (BYTE vol, BYTE sfd, UINT au)

4.12.4.14 FRESULT f_mount (BYTE vol, FATFS * fs)

References _VOLUMES, FR_INT_ERR, FR_INVALID_DRIVE, FR_OK, and FATFS::fs_type.

Referenced by main().

4.12.4.15 FRESULT f_open (FIL * *fp,* const TCHAR * *path,* BYTE *mode*)

References AM_DIR, AM_RDO, chk_mounted(), DEF_NAMEBUF, DIR::dir, DIR_Attr, DIR_CrtTime, DIR_FileSize, FIL::dir_ptr, dir_register(), FIL::dir_sect, FIL::dsect, FA__WRITTEN, FA_CREATE_ALWAYS, FA_CREATE_NEW, FA_OPEN_ALWAYS, FA_READ, FA_WRITE, FIL::flag, follow_path(), FIL::fptr, FR_DENIED, FR_EXIST, FR_INT_ERR, FR_INVALID_NAME, FR_INVALID_OBJECT, FR_NO_FILE, FR_OK, FR_TOO_MANY_OPEN_FILES, FREE_BUF, FIL::fs, DIR::fs, FIL::fsize, get_fattime(), FATFS::id, FIL::id, INIT_BUF, FATFS::last_clust, ld_clust(), LD_DWORD, LEAVE_FF, move_window(), remove_chain(), FIL::sclust, st_clust(), ST_DWORD, FATFS::wflag, and FATFS::winsect.

Referenced by main().

4.12.4.16 FRESULT f_opendir (DIR * *dj,* const TCHAR * *path*)

4.12.4.17 int f_printf (FIL * *fp,* const TCHAR * *str,* ...)

4.12.4.18 int f_putc (TCHAR *c,* FIL * *fp*)

4.12.4.19 int f_puts (const TCHAR * *str,* FIL * *cp*)

4.12.4.20 FRESULT f_read (FIL * *fp,* void * *buff,* UINT *btr,* UINT * *br*)

References ABORT, FIL::clust, clust2sect(), FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA_READ, FIL::flag, FIL::fptr, FR_DENIED, FR_DISK_ERR, FR_INT_ERR, FR_OK, FIL::fs, FIL::fsize, get_fat(), LEAVE_FF, mem_cpy(), move_window(), RES_OK, FIL::sclust, SS, validate(), FATFS::wflag, FATFS::win, and FATFS::winsect.

Referenced by main().

4.12.4.21 FRESULT f_readdir (DIR * *dj,* FILINFO * *fno*)

4.12.4.22 FRESULT f_rename (const TCHAR * *path_old,* const TCHAR * *path_new*)

4.12.4.23 FRESULT f_setlabel (const TCHAR * *label*)

References _DF1S, AM_VOL, chk_chr(), chk_mounted(), DDE, DIR::dir, dir_alloc(), DIR_Attr, dir_read(), dir_sdi(), DIR_WrtTime, ExCvt, FR_INVALID_NAME, FR_NO_FILE, FR_OK, DIR::fs, get_fattime(), IsDBCS1, IsDBCS2, IsLower, LEAVE_FF, mem_cpy(), mem_set(), DIR::sclust, ST_DWORD, sync_fs(), SZ_DIR, and FATFS::wflag.

4.12.4.24 FRESULT f_stat (const TCHAR * *path,* FILINFO * *fno*)

4.12.4.25 FRESULT f_sync (FIL * *fp*)

References AM_ARC, DIR_Attr, DIR_FileSize, DIR_LstAccDate, FIL::dir_ptr, FIL::dir_sect, DIR_WrtTime, disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__WRITTEN, FIL::flag, FR_DISK_ERR, FR_OK, FIL::fs, FIL::fsize, get_fattime(), LEAVE_FF, move_window(), RES_OK, FIL::sclust, st_clust(), ST_DWORD, ST_WORD, sync_fs(), validate(), and FATFS::wflag.

Referenced by f_close().

4.12.4.26 FRESULT f_truncate (FIL * *fp*)

4.12.4.27 FRESULT f_unlink (const TCHAR * *path*)

4.12.4.28 FRESULT f_utime (const TCHAR * *path,* const FILINFO * *fno*)

4.12.4.29 FRESULT f_write (FIL * *fp,* const void * *buff,* UINT *btw,* UINT * *bw*)

References ABORT, FIL::clust, clust2sect(), create_chain(), FATFS::csize, disk_read(), disk_write(), FATFS::drv, FIL::dsect, FA__DIRTY, FA__ERROR, FA__WRITTEN, FA_WRITE, FIL::flag, FIL::fptr, FR_DENIED, FR_DISK_ERR, FR_INT_ERR, FR_OK, FIL::fs, FIL::fsize, LEAVE_FF, mem_cpy(), move_window(), RES_OK, FIL::sclust, SS, sync_window(), validate(), FATFS::wflag, FATFS::win, and FATFS::winsect.

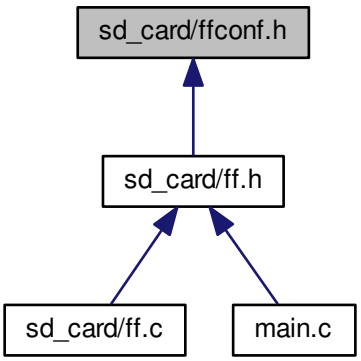
Referenced by main().

4.12.4.30 DWORD get_fattime (void)

Referenced by f_open(), f_setlabel(), and f_sync().

4.13 sd_card/ffconf.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define _FFCONF 82786 /* Revision ID */
- #define _FS_TINY 1 /* 0:Normal or 1:Tiny */
- #define _FS_READONLY 0 /* 0:Read/Write or 1:Read only */
- #define _FS_MINIMIZE 2 /* 0 to 3 */
- #define _USE_STRFUNC 0 /* 0:Disable or 1-2:Enable */
- #define _USE_MKFS 0 /* 0:Disable or 1:Enable */
- #define _USE_FASTSEEK 0 /* 0:Disable or 1:Enable */
- #define _USE_LABEL 1 /* 0:Disable or 1:Enable */

- #define _USE_FORWARD 0 /* 0:Disable or 1:Enable */
- #define _CODE_PAGE 437
- #define _USE_LFN 0 /* 0 to 3 */
- #define _MAX_LFN 255 /* Maximum LFN length to handle (12 to 255) */
- #define _LFN_UNICODE 0 /* 0:ANSI/OEM or 1:Unicode */
- #define _FS_RPATH 0 /* 0 to 2 */
- #define _VOLUMES 1
- #define _MAX_SS 512 /* 512, 1024, 2048 or 4096 */
- #define _MULTI_PARTITION 0 /* 0:Single partition, 1:Enable multiple partition */
- #define _USE_ERASE 0 /* 0:Disable or 1:Enable */
- #define _WORD_ACCESS 1 /* 0 or 1 */
- #define _FS_REENTRANT 0 /* 0:Disable or 1:Enable */
- #define _FS_TIMEOUT 1000 /* Timeout period in unit of time ticks */
- #define _SYNC_t HANDLE /* O/S dependent type of sync object. e.g. HANDLE, OS_EVENT*, ID and etc.. */
- #define _FS_LOCK 0 /* 0:Disable or >=1:Enable */

4.13.1 Macro Definition Documentation

4.13.1.1 #define _CODE_PAGE 437

4.13.1.2 #define _FFCONF 82786 /* Revision ID */

4.13.1.3 #define _FS_LOCK 0 /* 0:Disable or >=1:Enable */

4.13.1.4 #define _FS_MINIMIZE 2 /* 0 to 3 */

4.13.1.5 #define _FS_READONLY 0 /* 0:Read/Write or 1:Read only */

Referenced by chk_mounted(), and f_lseek().

4.13.1.6 #define _FS_REENTRANT 0 /* 0:Disable or 1:Enable */

4.13.1.7 #define _FS_RPATH 0 /* 0 to 2 */

Referenced by dir_read(), dir_register(), and follow_path().

4.13.1.8 #define _FS_TIMEOUT 1000 /* Timeout period in unit of time ticks */

4.13.1.9 #define _FS_TINY 1 /* 0:Normal or 1:Tiny */

4.13.1.10 #define _LFN_UNICODE 0 /* 0:ANSI/OEM or 1:Unicode */

4.13.1.11 #define _MAX_LFN 255 /* Maximum LFN length to handle (12 to 255) */

Referenced by create_name().

4.13.1.12 #define _MAX_SS 512 /* 512, 1024, 2048 or 4096 */

4.13.1.13 #define _MULTI_PARTITION 0 /* 0:Single partition, 1:Enable multiple partition */

4.13.1.14 #define _SYNC_t HANDLE /* O/S dependent type of sync object. e.g. HANDLE, OS_EVENT*, ID and etc.. */

4.13.1.15 #define _USE_ERASE 0 /* 0:Disable or 1:Enable */

4.13.1.16 #define _USE_FASTSEEK 0 /* 0:Disable or 1:Enable */

4.13.1.17 #define _USE_FORWARD 0 /* 0:Disable or 1:Enable */

4.13.1.18 #define _USE_LABEL 1 /* 0:Disable or 1:Enable */

4.13.1.19 #define _USE_LFN 0 /* 0 to 3 */

4.13.1.20 #define _USE_MKFS 0 /* 0:Disable or 1:Enable */

4.13.1.21 #define _USE_STRFUNC 0 /* 0:Disable or 1-2:Enable */

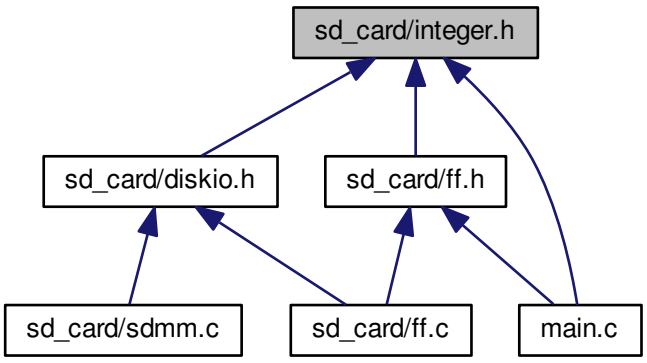
4.13.1.22 #define _VOLUMES 1

Referenced by chk_mounted(), and f_mount().

4.13.1.23 #define _WORD_ACCESS 1 /* 0 or 1 */

4.14 sd_card/integer.h File Reference

This graph shows which files directly or indirectly include this file:



Typedefs

- typedef int INT
- typedef unsigned int UINT
- typedef char CHAR
- typedef unsigned char UCHAR
- typedef unsigned char BYTE
- typedef short SHORT
- typedef unsigned short USHORT
- typedef unsigned short WORD
- typedef unsigned short WCHAR
- typedef long LONG
- typedef unsigned long ULONG
- typedef unsigned long DWORD

4.14.1 Typedef Documentation

4.14.1.1 typedef unsigned char BYTE

4.14.1.2 typedef char CHAR

4.14.1.3 typedef unsigned long DWORD

4.14.1.4 typedef int INT

4.14.1.5 typedef long LONG

4.14.1.6 typedef short SHORT

4.14.1.7 typedef unsigned char UCHAR

4.14.1.8 typedef unsigned int UINT

4.14.1.9 typedef unsigned long ULONG

4.14.1.10 typedef unsigned short USHORT

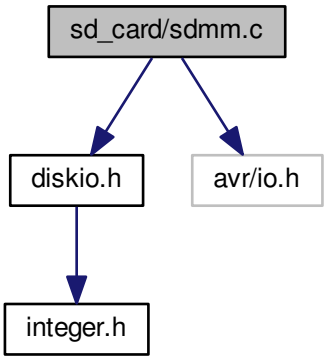
4.14.1.11 typedef unsigned short WCHAR

4.14.1.12 typedef unsigned short WORD

4.15 sd_card/sdmm.c File Reference

```
#include "diskio.h"
#include <avr/io.h>
```

Include dependency graph for sdmm.c:



Macros

- #define SD_COM_PORT PORTA
- #define DO_INIT() /* Initialize port MMC DO as input */
- #define DO_DQ 3
- #define DO (SD_COM_PORT.IN & (1<<DO_DQ)) /* Test for MMC DO ('H':true, 'L':false) */
- #define DI_DQ 6
- #define DI_INIT() SD_COM_PORT.DIRSET |= (1<<DI_DQ) /* Initialize port MMC DI as output */
- #define DI_H() SD_COM_PORT.OUT |= (1<<DI_DQ) /* Set MMC DI "high" */
- #define DI_L() SD_COM_PORT.OUT &= ~(1<<DI_DQ) /* Set MMC DI "low" */
- #define CK_DQ 4
- #define CK_INIT() SD_COM_PORT.DIRSET |= (1<<CK_DQ) /* Initialize port MMC SCLK as output */
- #define CK_H() SD_COM_PORT.OUT |= (1<<CK_DQ) /* Set MMC SCLK "high" */
- #define CK_L() SD_COM_PORT.OUT &= ~(1<<CK_DQ) /* Set MMC SCLK "low" */
- #define CS_DQ 5
- #define CS_INIT() SD_COM_PORT.DIRSET |= (1<<CS_DQ) /* Initialize port MMC CS as output */
- #define CS_H() SD_COM_PORT.OUT |= (1<<CS_DQ) /* Set MMC CS "high" */
- #define CS_L() SD_COM_PORT.OUT &= ~(1<<CS_DQ) /* Set MMC CS "low" */
- #define CMD0 (0) /* GO_IDLE_STATE */
- #define CMD1 (1) /* SEND_OP_COND */
- #define ACMD41 (0x80+41) /* SEND_OP_COND (SDC) */
- #define CMD8 (8) /* SEND_IF_COND */
- #define CMD9 (9) /* SEND_CSD */
- #define CMD10 (10) /* SEND_CID */
- #define CMD12 (12) /* STOP_TRANSMISSION */
- #define CMD13 (13) /* SEND_STATUS */
- #define ACMD13 (0x80+13) /* SD_STATUS (SDC) */
- #define CMD16 (16) /* SET_BLOCKLEN */
- #define CMD17 (17) /* READ_SINGLE_BLOCK */
- #define CMD18 (18) /* READ_MULTIPLE_BLOCK */

- #define CMD23 (23) /* SET_BLOCK_COUNT */
- #define ACMD23 (0x80+23) /* SET_WR_BLK_ERASE_COUNT (SDC) */
- #define CMD24 (24) /* WRITE_BLOCK */
- #define CMD25 (25) /* WRITE_MULTIPLE_BLOCK */
- #define CMD32 (32) /* ERASE_ER_BLK_START */
- #define CMD33 (33) /* ERASE_ER_BLK_END */
- #define CMD38 (38) /* ERASE */
- #define CMD55 (55) /* APP_CMD */
- #define CMD58 (58) /* READ_OCR */

Functions

- static void dly_us (UINT n)
- static void xmit_mmc (const BYTE *buff, UINT bc)
- static void rcvr_mmc (BYTE *buff, UINT bc)
- static int wait_ready (void)
- static void deselect (void)
- static int select (void)
- static int rcvr_datablock (BYTE *buff, UINT btr)
- static int xmit_datablock (const BYTE *buff, BYTE token)
- static BYTE send_cmd (BYTE cmd, DWORD arg)
- DSTATUS disk_status (BYTE drv)
- DSTATUS disk_initialize (BYTE drv)
- DRESULT disk_read (BYTE drv, BYTE *buff, DWORD sector, BYTE count)
- DRESULT disk_write (BYTE drv, const BYTE *buff, DWORD sector, BYTE count)
- DRESULT disk_ioctl (BYTE drv, BYTE ctrl, void *buff)

Variables

- static DSTATUS Stat = STA_NOINIT
- static BYTE CardType

4.15.1 Macro Definition Documentation

4.15.1.1 #define ACMD13 (0x80+13) /* SD_STATUS (SDC) */

4.15.1.2 #define ACMD23 (0x80+23) /* SET_WR_BLK_ERASE_COUNT (SDC) */

Referenced by disk_write().

4.15.1.3 #define ACMD41 (0x80+41) /* SEND_OP_COND (SDC) */

Referenced by disk_initialize().

4.15.1.4 #define CK_DQ 4

4.15.1.5 #define CK_H( ) SD_COM_PORT.OUT |= (1<<CK_DQ) /* Set MMC SCLK "high" */

Referenced by rcvr_mmc(), and xmit_mmc().

4.15.1.6 #define CK_INIT( ) SD_COM_PORT.DIRSET |= (1<<CK_DQ) /* Initialize port MMC SCLK as output */

Referenced by disk_initialize().

4.15.1.7 #define CK_L( ) SD_COM_PORT.OUT &= ~(1<<CK_DQ) /* Set MMC SCLK "low" */

Referenced by disk_initialize(), rcvr_mmc(), and xmit_mmc().

4.15.1.8 #define CMD0 (0) /* GO_IDLE_STATE */

Referenced by disk_initialize(), and send_cmd().

4.15.1.9 #define CMD1 (1) /* SEND_OP_COND */

Referenced by disk_initialize().

4.15.1.10 #define CMD10 (10) /* SEND_CID */

4.15.1.11 #define CMD12 (12) /* STOP_TRANSMISSION */

Referenced by disk_read(), and send_cmd().

4.15.1.12 #define CMD13 (13) /* SEND_STATUS */

4.15.1.13 #define CMD16 (16) /* SET_BLOCKLEN */

Referenced by disk_initialize().

4.15.1.14 #define CMD17 (17) /* READ_SINGLE_BLOCK */

Referenced by disk_read().

4.15.1.15 #define CMD18 (18) /* READ_MULTIPLE_BLOCK */

Referenced by disk_read().

4.15.1.16 #define CMD23 (23) /* SET_BLOCK_COUNT */

4.15.1.17 #define CMD24 (24) /* WRITE_BLOCK */

Referenced by disk_write().

4.15.1.18 #define CMD25 (25) /* WRITE_MULTIPLE_BLOCK */

Referenced by disk_write().

4.15.1.19 #define CMD32 (32) /* ERASE_ER_BLK_START */

4.15.1.20 #define CMD33 (33) /* ERASE_ER_BLK_END */

4.15.1.21 #define CMD38 (38) /* ERASE */

4.15.1.22 #define CMD55 (55) /* APP_CMD */

Referenced by send_cmd().

4.15.1.23 #define CMD58 (58) /* READ_OCR */

Referenced by disk_initialize().

4.15.1.24 #define CMD8 (8) /* SEND_IF_COND */

Referenced by disk_initialize(), and send_cmd().

4.15.1.25 #define CMD9 (9) /* SEND_CSD */

Referenced by disk_ioctl().

4.15.1.26 #define CS_DQ 5

4.15.1.27 #define CS_H( ) SD_COM_PORT.OUT |= (1<<CS_DQ) /* Set MMC CS "high" */

Referenced by deselect(), and disk_initialize().

4.15.1.28 #define CS_INIT( ) SD_COM_PORT.DIRSET |= (1<<CS_DQ) /* Initialize port MMC CS as output */

Referenced by disk_initialize().

4.15.1.29 #define CS_L( ) SD_COM_PORT.OUT &= ~(1<<CS_DQ) /* Set MMC CS "low" */

Referenced by select().

4.15.1.30 #define DI_DQ 6

4.15.1.31 #define DI_H( ) SD_COM_PORT.OUT |= (1<<DI_DQ) /* Set MMC DI "high" */

Referenced by rcvr_mmc(), and xmit_mmc().

4.15.1.32 #define DI_INIT( ) SD_COM_PORT.DIRSET |= (1<<DI_DQ) /* Initialize port MMC DI as output */

Referenced by disk_initialize().

4.15.1.33 #define DI_L( ) SD_COM_PORT.OUT &= ~(1<<DI_DQ) /* Set MMC DI "low" */

Referenced by xmit_mmc().

4.15.1.34 #define DO (SD_COM_PORT.IN & (1<<DO_DQ)) /* Test for MMC DO ('H':true, 'L':false) */

Referenced by rcvr_mmc().

4.15.1.35 #define DO_DQ 3

4.15.1.36 #define DO_INIT( ) /* Initialize port MMC DO as input */

Referenced by disk_initialize().

4.15.1.37 #define SD_COM_PORT PORTA

Referenced by dly_us().

4.15.2 Function Documentation

4.15.2.1 static void deselect (void) [static]

References CS_H, and rcvr_mmc().

Referenced by disk_initialize(), disk_ioctl(), disk_read(), disk_write(), select(), and send_cmd().

4.15.2.2 DSTATUS disk_initialize (BYTE *drv*)

References ACMD41, CardType, CK_INIT, CK_L, CMD0, CMD1, CMD16, CMD58, CMD8, CS_H, CS_INIT, CT_BLOCK, CT_MMC, CT_SD1, CT_SD2, deselect(), DI_INIT, dly_us(), DO_INIT, rcvr_mmc(), RES_NOTRDY, send_cmd(), STA_NOINIT, and Stat.

Referenced by chk_mounted().

4.15.2.3 DRESULT disk_ioctl (BYTE *drv,* BYTE *ctrl,* void * *buff*)

References CMD9, CTRL_SYNC, deselect(), disk_status(), GET_BLOCK_SIZE, GET_SECTOR_COUNT, rcvr_datablock(), RES_ERROR, RES_NOTRDY, RES_OK, RES_PARERR, select(), send_cmd(), and STA_NOINIT.

Referenced by chk_mounted(), remove_chain(), and sync_fs().

4.15.2.4 DRESULT disk_read (BYTE *drv,* BYTE * *buff,* DWORD *sector,* BYTE *count*)

References CardType, CMD12, CMD17, CMD18, CT_BLOCK, deselect(), disk_status(), rcvr_datablock(), RES_ERROR, RES_NOTRDY, RES_OK, send_cmd(), and STA_NOINIT.

Referenced by check_fs(), chk_mounted(), f_lseek(), f_read(), f_write(), and move_window().

4.15.2.5 DSTATUS disk_status (BYTE *drv*)

References STA_NOINIT, and Stat.

Referenced by chk_mounted(), disk_ioctl(), disk_read(), disk_write(), and validate().

4.15.2.6 DRESULT disk_write (BYTE *drv,* const BYTE * *buff,* DWORD *sector,* BYTE *count*)

References ACMD23, CardType, CMD24, CMD25, CT_BLOCK, CT_SDC, deselect(), disk_status(), RES_ERROR, RES_NOTRDY, RES_OK, send_cmd(), STA_NOINIT, and xmit_datablock().

Referenced by f_lseek(), f_read(), f_sync(), f_write(), sync_fs(), and sync_window().

4.15.2.7 static void dly_us (UINT *n*) [static]

References SD_COM_PORT.

Referenced by disk_initialize(), rcvr_datablock(), and wait_ready().

4.15.2.8 static int rcvr_datablock (BYTE * *buff,* UINT *btr*) [static]

References dly_us(), and rcvr_mmc().

Referenced by disk_ioctl(), and disk_read().

4.15.2.9 static void rcvr_mmc (BYTE * *buff,* UINT *bc*) [static]

References CK_H, CK_L, DI_H, and DO.

Referenced by deselect(), disk_initialize(), rcvr_datablock(), select(), send_cmd(), wait_ready(), and xmit_datablock().

4.15.2.10 static int select (void) [static]

References CS_L, deselect(), rcvr_mmc(), and wait_ready().

Referenced by disk_ioctl(), and send_cmd().

4.15.2.11 static BYTE send_cmd (BYTE *cmd,* DWORD *arg*) [static]

References CMD0, CMD12, CMD55, CMD8, deselect(), rcvr_mmc(), select(), and xmit_mmc().

Referenced by disk_initialize(), disk_ioctl(), disk_read(), and disk_write().

4.15.2.12 static int wait_ready (void) [static]

References dly_us(), and rcvr_mmc().

Referenced by select(), and xmit_datablock().

4.15.2.13 static int xmit_datablock (const BYTE * *buff,* BYTE *token*) [static]

References rcvr_mmc(), wait_ready(), and xmit_mmc().

Referenced by disk_write().

4.15.2.14 static void xmit_mmc (const BYTE * *buff*, UINT *bc*) [static]

References CK_H, CK_L, DI_H, and DI_L.

Referenced by send_cmd(), and xmit_datablock().

4.15.3 Variable Documentation

4.15.3.1 BYTE CardType [static]

Referenced by disk_initialize(), disk_read(), and disk_write().

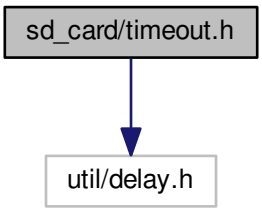
4.15.3.2 DSTATUS Stat = STA_NOINIT [static]

Referenced by disk_initialize(), and disk_status().

4.16 sd_card/timeout.h File Reference

```
#include <util/delay.h>
```

Include dependency graph for timeout.h:



Macros

- #define F_CPU 16000000UL

4.16.1 Macro Definition Documentation

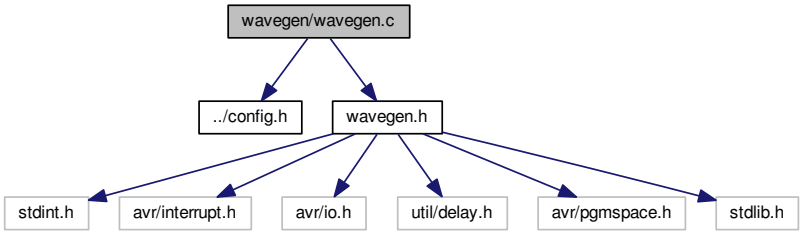
4.16.1.1 #define F_CPU 16000000UL

Referenced by wavegen_setFrequency(), and wavegen_setFrequency2().

4.17 wavegen/wavegen.c File Reference

```
#include "../config.h"
#include "wavegen.h"
```

Include dependency graph for wavegen.c:



Functions

- ISR (TCC0_CCA_vect)
- ISR (TCC0_CCB_vect)
- void wavegen_setSound (char startStop, char bankNum)
- void wavegen_disableSound (char bankNum)
- void wavegen_sineWave (char wavetableNum)
- void wavegen_noiseWave (char wavetableNum)
- void wavegen_pwmInit ()
- void wavegen_pwmSet (char channel, int value)
- void wavegen_setFrequency (unsigned int freq)
- void wavegen_setFrequency2 (unsigned int freq)
- void wavegen_clock_init (void)

Variables

- unsigned char wavetable [256]
- unsigned char wavetable2 [256]
- unsigned char wavetable3 [256]
- const unsigned char sinetable[256] PROGMEM
- unsigned int frequencyCoef =100
- unsigned int frequencyCoef2 =100
- char sound1Enabled =0
- char sound2Enabled =0
- char sound3Enabled =0
- char soundPWM =1
- int currentVoice =0

4.17.1 Function Documentation

4.17.1.1 ISR (TCC0_CCA_vect)

References frequencyCoef, sound1Enabled, soundPWM, wavegen_pwmSet(), and wavetable.

4.17.1.2 ISR (TCC0_CCB_vect)

References frequencyCoef2, sound2Enabled, soundPWM, wavegen_pwmSet(), and wavetable2.

4.17.1.3 void wavegen_clock_init (void)

Referenced by main().

4.17.1.4 void wavegen_disableSound (char *bankNum*)

References sound1Enabled, sound2Enabled, and sound3Enabled.

4.17.1.5 void wavegen_noiseWave (char *wavetableNum*)

References wavetable, wavetable2, and wavetable3.

Referenced by main().

4.17.1.6 void wavegen_pwmInit ( )

Referenced by main().

4.17.1.7 void wavegen_pwmSet (char *channel,* int *value*)

Referenced by ISR().

4.17.1.8 void wavegen_setFrequency (unsigned int *freq*)

References F_CPU, frequencyCoef, FS, and soundPWM.

Referenced by main().

4.17.1.9 void wavegen_setFrequency2 (unsigned int *freq*)

References F_CPU, frequencyCoef2, FS, and soundPWM.

Referenced by main().

4.17.1.10 void wavegen_setSound (char *startStop,* char *bankNum*)

References sound1Enabled, sound2Enabled, and sound3Enabled.

Referenced by main().

4.17.1.11 void wavegen_sineWave (char *wavetableNum*)

References wavetable, wavetable2, and wavetable3.

Referenced by main().

4.17.2 Variable Documentation

4.17.2.1 int currentVoice =0

4.17.2.2 unsigned int frequencyCoef =100

Referenced by ISR(), and wavegen_setFrequency().

4.17.2.3 unsigned int frequencyCoef2 =100

Referenced by ISR(), and wavegen_setFrequency2().

4.17.2.4 const unsigned char sinetable [256] PROGMEM

Initial value:

```
= {
128,131,134,137,140,143,146,149,152,156,159,162,165,168,171,174,
176,179,182,185,188,191,193,196,199,201,204,206,209,211,213,216,
218,220,222,224,226,228,230,232,234,236,237,239,240,242,243,245,
246,247,248,249,250,251,252,252,253,254,254,255,255,255,255,255,
255,255,255,255,255,255,254,254,253,252,252,251,250,249,248,247,
246,245,243,242,240,239,237,236,234,232,230,228,226,224,222,220,
218,216,213,211,209,206,204,201,199,196,193,191,188,185,182,179,
176,174,171,168,165,162,159,156,152,149,146,143,140,137,134,131,
128,124,121,118,115,112,109,106,103,99, 96, 93, 90, 87, 84, 81,
79, 76, 73, 70, 67, 64, 62, 59, 56, 54, 51, 49, 46, 44, 42, 39,
37, 35, 33, 31, 29, 27, 25, 23, 21, 19, 18, 16, 15, 13, 12, 10,
9,  8,  7,  6,  5,  4,  3,  3,  2,  1,  1,  0,  0,  0,  0,  0,
0,  0,  0,  0,  0,  0,  1,  1,  2,  3,  3,  4,  5,  6,  7,  8,
9,  10, 12, 13, 15, 16, 18, 19, 21, 23, 25, 27, 29, 31, 33, 35,
37, 39, 42, 44, 46, 49, 51, 54, 56, 59, 62, 64, 67, 70, 73, 76,
79, 81, 84, 87, 90, 93, 96, 99, 103,106,109,112,115,118,121,124
}
```

4.17.2.5 char sound1Enabled =0

Referenced by ISR(), wavegen_disableSound(), and wavegen_setSound().

4.17.2.6 char sound2Enabled =0

Referenced by ISR(), wavegen_disableSound(), and wavegen_setSound().

4.17.2.7 char sound3Enabled =0

Referenced by wavegen_disableSound(), and wavegen_setSound().

4.17.2.8 char soundPWM =1

Referenced by ISR(), wavegen_setFrequency(), and wavegen_setFrequency2().

4.17.2.9 unsigned char wavetable[256]

Referenced by ISR(), wavegen_noiseWave(), and wavegen_sineWave().

4.17.2.10 unsigned char wavetable2[256]

Referenced by ISR(), wavegen_noiseWave(), and wavegen_sineWave().

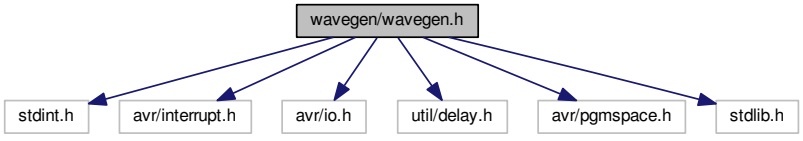
4.17.2.11 unsigned char wavetable3[256]

Referenced by wavegen_noiseWave(), and wavegen_sineWave().

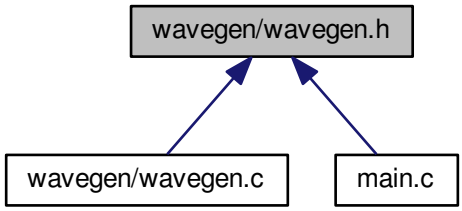
4.18 wavegen/wavegen.h File Reference

```
#include <stdint.h>
#include <avr/interrupt.h>
#include <avr/io.h>
#include <util/delay.h>
#include <avr/pgmspace.h>
#include <stdlib.h>
```

Include dependency graph for wavegen.h:



This graph shows which files directly or indirectly include this file:



Macros

- #define INTERRUPT_PERIOD 512
- #define FINT (F_CPU / INTERRUPT_PERIOD)
- #define FS (FINT)

Functions

- void wavegen_pwmInit ()
- void wavegen_clock_init (void)
- void wavegen_pwmSet (char channel, int value)
- void wavegen_sineWave (char wavetableNum)
- void wavegen_noiseWave (char wavetableNum)
- void wavegen_setFrequency2 ()
- void wavegen_setFrequency ()
- void wavegen_setSound (char startStop, char bankNum)
- void wavegen_disableSound (char bankNum)

4.18.1 Macro Definition Documentation

4.18.1.1 #define FINT (F_CPU / INTERRUPT_PERIOD)

4.18.1.2 #define FS (FINT)

Referenced by wavegen_setFrequency(), and wavegen_setFrequency2().

4.18.1.3 #define INTERRUPT_PERIOD 512

4.18.2 Function Documentation

4.18.2.1 void wavegen_clock_init (void)

Referenced by main().

4.18.2.2 void wavegen_disableSound (char *bankNum*)

References sound1Enabled, sound2Enabled, and sound3Enabled.

4.18.2.3 void wavegen_noiseWave (char *wavetableNum*)

References wavetable, wavetable2, and wavetable3.

Referenced by main().

4.18.2.4 void wavegen_pwmInit ( )

Referenced by main().

4.18.2.5 void wavegen_pwmSet (char *channel,* int *value*)

Referenced by ISR().

4.18.2.6 void wavegen_setFrequency ( )

4.18.2.7 void wavegen_setFrequency2 ( )

4.18.2.8 void wavegen_setSound (char *startStop,* char *bankNum*)

References sound1Enabled, sound2Enabled, and sound3Enabled.

Referenced by main().

4.18.2.9 void wavegen_sineWave (char *wavetableNum*)

References wavetable, wavetable2, and wavetable3.

Referenced by main().

Index