

C8E

0.1

Generated by Doxygen 1.7.2

Thu Dec 23 2010 13:56:47

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Chapter 1

File Index

1.1 File List

Here is a list of all files with brief descriptions:

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Chapter 2

File Documentation

2.1 src/C8E.c File Reference

```
#include "Logs.h"  
#include "Memory.h"  
#include "CartridgeReader.h"  
#include <GLUT/glut.h>
```

Defines

- #define [IDLE_TIME](#) 16
- #define [SCREEN_WIDTH](#) 64
- #define [SCREEN_HEIGHT](#) 32

Functions

- void [render](#) ()
- void [CPUTick](#) (int)
- void [setupGlut](#) (int argc, char **argv)
- int [main](#) (int argc, char **argv)

2.1.1 Define Documentation

2.1.1.1 #define IDLE_TIME 16

Definition at line 11 of file C8E.c.

2.1.1.2 `#define SCREEN_HEIGHT 32`

Definition at line 14 of file C8E.c.

2.1.1.3 `#define SCREEN_WIDTH 64`

Definition at line 13 of file C8E.c.

2.1.2 Function Documentation

2.1.2.1 `void CPUTick (int)`

Definition at line 34 of file C8E.c.

2.1.2.2 `int main (int argc, char ** argv)`

Definition at line 48 of file C8E.c.

2.1.2.3 `void render ()`

Definition at line 16 of file C8E.c.

2.1.2.4 `void setupGlut (int argc, char ** argv)`

Definition at line 41 of file C8E.c.

2.2 `src/CartridgeReader.c` File Reference

```
#include "CartridgeReader.h"
```

```
#include <stdio.h>
```

Functions

- `int readCartridge` (const char *const filename, char *data)
Provide a pointer to the cartridge data.

2.2.1 Function Documentation

2.2.1.1 `int readCartridge (const char *const filename, char * data)`

Provide a pointer to the cartridge data.

Parameters

in	<i>filename</i>	Point the file to load into memory
out	<i>data</i>	Buffer that eventually receive the cardridge data. It must be initialized and big enough.

Returns

0 if the file exists, 1 otherwise.

Definition at line 31 of file CartridgeReader.c.

2.3 src/CartridgeReader.h File Reference

Define all functions, variables and defines for cartridge management.

Functions

- int [readCartridge](#) (const char *const filename, char *data)
Provide a pointer to the cardridge data.

2.3.1 Detailed Description

Define all functions, variables and defines for cartridge management.

Version

0.1

Date

December 12, 2010

Author

Maxime Gaudin

Definition in file [CartridgeReader.h](#).

2.3.2 Function Documentation

2.3.2.1 int readCartridge (const char *const filename, char * data)

Provide a pointer to the cardridge data.

Parameters

in	<i>filename</i>	Point the file to load into memory
out	<i>data</i>	Buffer that eventually receive the cardridge data. It must be initialized and big enough.

Returns

0 if the file exists, 1 otherwise.

Definition at line 31 of file CartridgeReader.c.

2.4 src/CPU.c File Reference

```
#include "CPU.h"
#include "Logs.h"
#include "Display.h"
#include "Memory.h"
```

Functions

- int [setupCPU](#) ()
- void [cleanupCPU](#) ()
- void [tick](#) ()
- void [handleOpCode](#) ()

2.4.1 Detailed Description

Version

0.1

Date

December 13, 2010

Author

Maxime Gaudin

Definition in file [CPU.c](#).

2.4.2 Function Documentation

2.4.2.1 void [cleanupCPU](#) ()

Definition at line 71 of file CPU.c.

2.4.2.2 void [handleOpCode](#) ()

Definition at line 353 of file CPU.c.

2.4.2.3 int setupCPU ()

Definition at line 54 of file CPU.c.

2.4.2.4 void tick ()

Definition at line 348 of file CPU.c.

2.5 src/CPU.h File Reference

Defines

- #define [MAX_STACK_SIZE](#) 0xF

Define the maximum stack size, i.e. the maximum amount of subroutine calls.

Functions

- int [setupCPU](#) ()
- void [cleanupCPU](#) ()
- void [tick](#) ()

2.5.1 Detailed Description

Version

0.1

Date

December 12, 2010

Author

Maxime Gaudin

Definition in file [CPU.h](#).

2.5.2 Define Documentation

2.5.2.1 #define MAX_STACK_SIZE 0xF

Define the maximum stack size, i.e. the maximum amount of subroutine calls.

Definition at line 31 of file CPU.h.

2.5.3 Function Documentation

2.5.3.1 void cleanupCPU ()

Definition at line 71 of file CPU.c.

2.5.3.2 int setupCPU ()

Definition at line 54 of file CPU.c.

2.5.3.3 void tick ()

Definition at line 348 of file CPU.c.

2.6 src/Display.h File Reference

Define all functions, variables and defines for display management.

Functions

- int [setupDisplay](#) ()
Setup all display related memory buffer and glut framework.
- int [drawSprite](#) (unsigned char X, unsigned char Y, const char *const spriteData, unsigned char len)
Display a [len] byte sprite contained into [spriteData] at ([X], [Y]). DESCRIPTION TODO.
- int [clearScreen](#) ()
Clear screen.

2.6.1 Detailed Description

Define all functions, variables and defines for display management.

Version

0.1

Date

December 12, 2010

Author

Maxime Gaudin

Definition in file [Display.h](#).

2.6.2 Function Documentation**2.6.2.1 int clearScreen ()**

Clear screen.

Returns

1 if any pixel has been erase, 0 Otherwise.

2.6.2.2 int drawSprite (unsigned char X, unsigned char Y, const char *const spriteData, unsigned char len)

Display a [len] byte sprite contained into [spriteData] at ([X], [Y]). DESCRIPTION TODO.

Returns

1 if any pixel has been erase, 0 Otherwise.

2.6.2.3 int setupDisplay ()

Setup all display related memory buffer and glut framework.

2.7 src/Logs.c File Reference

```
#include "Logs.h"
```

Functions

- int [setupLogs](#) (int redirect, unsigned char debugLevel, char *const outputFile-name)
Setup output log file and debug level to values passed in paramaters. Moreover, a file descriptor is created and initialized. if [redirect], log are also written in stdout.
- int [closeLogs](#) ()
Close output log file descriptor and flush file buffer.
- void [addEntry](#) (unsigned char level, const char *const message)
Add new entry in output log file if [level] is below or equal to debug level.

2.7.1 Function Documentation

2.7.1.1 void addEntry (unsigned char *level*, const char *const *message*)

Add new entry in output log file if [level] is below or equal to debug level.

Definition at line 56 of file Logs.c.

2.7.1.2 int closeLogs ()

Close output log file descriptor and flush file buffer.

Returns

0 if success, 0 otherwise.

Definition at line 50 of file Logs.c.

2.7.1.3 int setupLogs (int *redirect*, unsigned char *debugLevel*, char *const *outputFilename*)

Setup output log file and debug level to values passed in paramaters. Moreover, a file descriptor is created and initialized. if [redirect], log are also written in stdou.

Returns

0 if success, 0 otherwise.

Definition at line 36 of file Logs.c.

2.8 src/Logs.h File Reference

```
#include <stdio.h>
```

Defines

- #define `DEFAULT_DEBUG_LEVEL` 1
Specifies teh default debug level : Warning.
- #define `DEFAULT_OUTPUT_FILENAME` "DEBUG_LOGS"
Specifies the default output filename, i.e. the file where log will be written.

Enumerations

- enum `DEBUG_LEVELS` {
 `ERROR` = 0, `WARNING` = 1, `DRAWING` = 2, `DISASSEMBLY` = 3,
 `LOW_LEVEL_OPERATION` = 4 }

Functions

- int `setupLogs` (int redirect, unsigned char debugLevel, char *const outputFile-name)
Setup output log file and debug level to values passed in paramaters. Moreover, a file descriptor is created and initialized. if [redirect], log are also written in stdout.
- int `closeLogs` ()
Close output log file descriptor and flush file buffer.
- void `addEntry` (unsigned char level, const char *const message)
Add new entry in output log file if [level] is below or equal to debug level.

2.8.1 Define Documentation

2.8.1.1 `#define DEFAULT_DEBUG_LEVEL 1`

Specifies teh default debug level : Warning.

Definition at line 23 of file Logs.h.

2.8.1.2 `#define DEFAULT_OUTPUT_FILENAME "DEBUG.LOGS"`

Specifies the default output filename, i.e. the file where log will be written.

Definition at line 26 of file Logs.h.

2.8.2 Enumeration Type Documentation

2.8.2.1 enum `DEBUG_LEVELS`

Enumerator:

`ERROR`
`WARNING`
`DRAWING`
`DISASSEMBLY`
`LOW_LEVEL_OPERATION`

Definition at line 20 of file Logs.h.

2.8.3 Function Documentation

2.8.3.1 void addEntry (unsigned char *level*, const char *const *message*)

Add new entry in output log file if [level] is below or equal to debug level.

Definition at line 56 of file Logs.c.

2.8.3.2 int closeLogs ()

Close output log file descriptor and flush file buffer.

Returns

0 if success, 0 otherwise.

Definition at line 50 of file Logs.c.

2.8.3.3 int setupLogs (int *redirect*, unsigned char *debugLevel*, char *const *outputFilename*)

Setup output log file and debug level to values passed in paramaters. Moreover, a file descriptor is created and initialized. if [redirect], log are also written in stdout.

Returns

0 if success, 0 otherwise.

Definition at line 36 of file Logs.c.

2.9 src/Memory.c File Reference

Define all functions, variables and defines for memory management.

```
#include "Memory.h"
#include "Logs.h"
#include <stdlib.h>
#include <string.h>
```

Functions

- int [setupMemory](#) ()
Initialize memory to 0.
- void [cleanupMemory](#) ()
Cleanup all memory.

- int [write](#) (unsigned short *addr*, char *const *data*, unsigned int *len*)
write [len] bytes from [data] into memory at adress [addr]
- int [read](#) (short *addr*, unsigned short *len*, char *const *buffer*)
Read [len] bytes of data from address [addr] to buffer.

2.9.1 Detailed Description

Define all functions, variables and defines for memory management.

Version

0.1

Date

December 12, 2010

Author

Maxime Gaudin

Definition in file [Memory.c](#).

2.9.2 Function Documentation

2.9.2.1 void cleanupMemory ()

Cleanup all memory.

Definition at line 39 of file Memory.c.

2.9.2.2 int read (short *addr*, unsigned short *len*, char *const *buffer*)

Read [len] bytes of data from address [addr] to buffer.

Parameters

in	<i>addr</i>	Address where read begins
in	<i>len</i>	Number of bytes read
out	<i>buffer</i>	Pointer to the data buffer

Returns

0 if success, 1 otherwise.

Definition at line 56 of file Memory.c.

2.9.2.3 int setupMemory ()

Initialize memory to 0.

Returns

0 if success, 1 otherwise.

Definition at line 28 of file Memory.c.

2.9.2.4 int write (unsigned short *addr*, char *const *data*, unsigned int *len*)

write [len] bytes from [data] into memory at adress [addr]

Parameters

in	<i>addr</i>	Address where data will be written
in	<i>data</i>	Pointer to data buffer
in	<i>len</i>	Number of byte written

Returns

0 if success, 1 otherwise.

Definition at line 44 of file Memory.c.

2.10 src/Memory.h File Reference

Defines

- #define [RESERVED_MEMORY_START](#) 0x0
Specifies where memory starts (0x0, what a surprise isn't it ??).
- #define [RESERVED_MEMORY_STOP](#) 0x200
Specifies where the memory stops.
- #define [DATA_SPACE_START](#) 0x200
Specifies the beginning of the data space.
- #define [DATA_SPACE_STOP](#) 0xFF
Specifies the end of the data space.
- #define [MAX_REGISTERS](#) 0xF
Specifies the maximum number of registers..

Functions

- int `setupMemory` ()
Initialize memory to 0.
- void `cleanupMemory` ()
Cleanup all memory.
- int `write` (unsigned short addr, char *const data, unsigned int len)
write [len] bytes from [data] into memory at adress [addr]
- int `read` (short addr, unsigned short len, char *const buffer)
Read [len] bytes of data from address [addr] to buffer.

2.10.1 Define Documentation

2.10.1.1 `#define DATA_SPACE_START 0x200`

Specifies the beginning of the data space.

Definition at line 36 of file Memory.h.

2.10.1.2 `#define DATA_SPACE_STOP 0xFFFF`

Specifies the end of the data space.

Definition at line 38 of file Memory.h.

2.10.1.3 `#define MAX_REGISTERS 0xF`

Specifies the maximum number of registers..

Definition at line 41 of file Memory.h.

2.10.1.4 `#define RESERVED_MEMORY_START 0x0`

Specifies where memory starts (0x0, what a surprise isn't it ??).

Definition at line 31 of file Memory.h.

2.10.1.5 `#define RESERVED_MEMORY_STOP 0x200`

Specifies where the memory stops.

Definition at line 33 of file Memory.h.

2.10.2 Function Documentation

2.10.2.1 void cleanupMemory ()

Cleanup all memory.

Definition at line 39 of file Memory.c.

2.10.2.2 int read (short *addr*, unsigned short *len*, char *const *buffer*)

Read [*len*] bytes of data from address [*addr*] to buffer.

Parameters

in	<i>addr</i>	Address where read begins
in	<i>len</i>	Number of bytes read
out	<i>buffer</i>	Pointer to the data buffer

Returns

0 if success, 1 otherwise.

Definition at line 56 of file Memory.c.

2.10.2.3 int setupMemory ()

Initialize memory to 0.

Returns

0 if success, 1 otherwise.

Definition at line 28 of file Memory.c.

2.10.2.4 int write (unsigned short *addr*, char *const *data*, unsigned int *len*)

write [*len*] bytes from [*data*] into memory at adress [*addr*]

Parameters

in	<i>addr</i>	Address where data will be written
in	<i>data</i>	Pointer to data buffer
in	<i>len</i>	Number of byte written

Returns

0 if success, 1 otherwise.

Definition at line 44 of file Memory.c.

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