

E-Classroom Display Server

1

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Contents

1	E-Classroom Display server	1
1.1	Introduction	1
1.2	Using the software	1
1.2.1	neccesary packages	1
1.2.2	Running the software	1
2	Class Index	3
2.1	Class List	3
3	File Index	5
3.1	File List	5
4	Class Documentation	7
4.1	CurlHandler Class Reference	7
4.1.1	Member Function Documentation	8
4.1.1.1	curlRequest()	8
4.1.1.2	formatFullTime()	9
4.1.1.3	formatTime()	9
4.1.1.4	getCurlURL()	9
4.1.1.5	getCurrentTime()	9
4.1.1.6	getDate()	10
4.1.1.7	getDateField()	10
4.1.1.8	getFreeFrom()	10
4.1.1.9	getIdField()	10
4.1.1.10	getLessonInfo()	11

4.1.1.11	getLessonTeachers()	11
4.1.1.12	getLessonTime()	11
4.1.1.13	moveLessonTimes()	11
4.1.1.14	outputInfo()	12
4.1.1.15	parseJson()	12
4.1.1.16	WriteCallback()	12
4.2	ECDH Class Reference	13
4.2.1	Member Function Documentation	13
4.2.1.1	getMAC()	13
4.2.1.2	getRoomId()	14
4.2.1.3	string_to_mac()	14
4.3	MysqlHandler Class Reference	14
4.3.1	Member Function Documentation	15
4.3.1.1	close()	15
4.3.1.2	connect()	15
4.3.1.3	executeSQL()	16
4.3.1.4	printMysqlRes()	16
4.4	Server Class Reference	17
4.4.1	Constructor & Destructor Documentation	17
4.4.1.1	Server()	18
4.4.2	Member Function Documentation	18
4.4.2.1	connect()	18
4.4.2.2	disconnect()	18
4.4.2.3	getData()	19
4.4.2.4	sendData()	19
4.4.2.5	startup()	19
4.4.2.6	toString()	20
4.4.3	Member Data Documentation	20
4.4.3.1	data	20

5	File Documentation	21
5.1	/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.cpp File Reference	21
5.2	/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.h File Reference	21
5.2.1	Macro Definition Documentation	22
5.2.1.1	BUFFER_SIZE	22
5.2.2	Variable Documentation	23
5.2.2.1	BaseUrl	23
5.2.2.2	RequestClassData	23
5.3	/home/rso16/projects/ECDS/src/ECDH/ECDH.cpp File Reference	23
5.4	/home/rso16/projects/ECDS/src/ECDH/ECDH.h File Reference	24
5.4.1	Macro Definition Documentation	25
5.4.1.1	__STDC_FORMAT_MACROS	25
5.4.1.2	BEGIN_OF_MAC	25
5.4.1.3	BOX	25
5.4.1.4	DATABASE	25
5.4.1.5	MAC_SIZE	25
5.4.1.6	PASSWORD	26
5.4.1.7	PI_BOX	26
5.4.1.8	SERVER	26
5.4.1.9	SQL_SIZE	26
5.4.1.10	SQL_STM	26
5.4.1.11	U_BOX	26
5.4.1.12	USER	26
5.5	/home/rso16/projects/ECDS/src/main.cpp File Reference	27
5.5.1	Function Documentation	27
5.5.1.1	main()	27
5.6	/home/rso16/projects/ECDS/src/main.h File Reference	27
5.6.1	Function Documentation	28
5.6.1.1	main()	28
5.6.2	Variable Documentation	28
5.6.2.1	cHandler	28
5.6.2.2	eHandler	29
5.6.2.3	mHandler	29
5.6.2.4	server	29
5.7	/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.cpp File Reference	29
5.8	/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.h File Reference	30
5.9	/home/rso16/projects/ECDS/src/Server/Server.cpp File Reference	31
5.10	/home/rso16/projects/ECDS/src/Server/Server.h File Reference	31
	Index	33

Chapter 1

E-Classroom Display server

Author

Rick Ovehorst, Gerjon Eilander & Gerben van 't Ooster

Version

1.0

1.1 Introduction

This server program sends schedule data from the Windesheim's systems to the modules upon request.

1.2 Using the software

1.2.1 necessary packages

The packages that are necessary, can be obtained by using following commands :

```
sudo apt-get install libmysqlclient-dev
sudo apt-get install libcurl4-nss-dev
sudo apt-get install libjsoncpp-nss-dev
sudo apt-get install mysql-server
sudo apt-get install mysql-client
```

Packages necessary for compiling:

```
sudo apt-get install gcc
sudo apt-get install make
```

1.2.2 Running the software

To run the software use the following command: `sudo bin/server <ip> <port>`

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

CurlHandler	7
ECDH	13
MysqlHandler	14
Server	17

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

/home/rso16/projects/ECDS/src/ main.cpp	27
/home/rso16/projects/ECDS/src/ main.h	27
/home/rso16/projects/ECDS/src/CurlHandler/ CurlHandler.cpp	21
/home/rso16/projects/ECDS/src/CurlHandler/ CurlHandler.h	21
/home/rso16/projects/ECDS/src/ECDH/ ECDH.cpp	23
/home/rso16/projects/ECDS/src/ECDH/ ECDH.h	24
/home/rso16/projects/ECDS/src/MysqlHandler/ MysqlHandler.cpp	29
/home/rso16/projects/ECDS/src/MysqlHandler/ MysqlHandler.h	30
/home/rso16/projects/ECDS/src/Server/ Server.cpp	31
/home/rso16/projects/ECDS/src/Server/ Server.h	31

Chapter 4

Class Documentation

4.1 CurlHandler Class Reference

```
#include <CurlHandler.h>
```

Collaboration diagram for CurlHandler:

CurlHandler
<div><div>+ getLessonInfo() + curlRequest() + getCurlURL() + getDateField() + getDate() + getIdField() + parseJson() + getCurrentTime() + moveLessonTimes() + getLessonTime() + formatFullTime() + formatTime() + getLessonTeachers() + getFreeFrom() + outputInfo() + WriteCallback()</div></div>

Public Member Functions

- char * [getLessonInfo](#) (int classId)
This function retrieves & parses json.

- `std::string curlRequest (int ID)`
This function requests Room data from roostertest.windesheim.nl by RoomID.
- `std::string getCurlURL (int ID)`
This function creates the curl request URL with Date & RoomID.
- `std::string getDateField ()`
This function creates Date part of the curl request URL.
- `std::string getDate ()`
This function returns current date.
- `std::string getIdField (int ID)`
This function creates RoomID part of the curl request URL.
- `void parseJson (std::string *buffer)`
This function parses json and saves lesson data.
- `int getCurrentTime ()`
This function returns current time.
- `void moveLessonTimes (int lesson)`
This function movesLessonTimes.
- `std::string getLessonTime (Json::Value obj, int lessonId, int lesson)`
This function gets the endTime of a lesson and returns lesstime.
- `std::string formatFullTime (std::string startTime, std::string endTime)`
This function merges startTime & endTime String into single formatted string.
- `std::string formatTime (std::string time)`
This function adds : to time string HHMM -> HH:MM.
- `std::string getLessonTeachers (Json::Value obj, int i)`
This function gets the teachers from a lesson.
- `void getFreeFrom ()`
This function calculates when the room is free.
- `char * outputInfo ()`
Outputs Lesson info in used format.

Static Public Member Functions

- `static size_t WriteCallback (void *contents, size_t size, size_t nmemb, void *userp)`
This function is used by curlRequest as WriteCallback.

4.1.1 Member Function Documentation

4.1.1.1 curlRequest()

```
std::string CurlHandler::curlRequest (
    int ID )
```

This function requests Room data from roostertest.windesheim.nl by RoomID.

Returns

Room data

Note

needs a pointer to a string buffer & RoomID int

4.1.1.2 formatFullTime()

```
std::string CurlHandler::formatFullTime (
    std::string startTime,
    std::string endTime )
```

This function merges startTime & endTime String into single formatted string.

Returns

String with lesson times in following format: HH:MM - HH:MM

4.1.1.3 formatTime()

```
std::string CurlHandler::formatTime (
    std::string time )
```

This function adds : to time string HHMM -> HH:MM.

Returns

String with times in following format: HH:MM

4.1.1.4 getCurlURL()

```
std::string CurlHandler::getCurlURL (
    int ID )
```

This function creates the curl request URL with Date & RoomID.

Returns

String of URL

Note

Needs a RoomID

4.1.1.5 getCurrentTime()

```
int CurlHandler::getCurrentTime ( )
```

This function returns current time.

Returns

int with hour and minutes in following format: HHMM

4.1.1.6 getDate()

```
std::string CurlHandler::getDate ( )
```

This function returns current date.

Returns

String with date in following format: YYYYMMDD

4.1.1.7 getDateField()

```
std::string CurlHandler::getDateField ( )
```

This function creates Date part of the curl request URL.

Returns

String with date in following format: data=YYYYMMDD&

4.1.1.8 getFreeFrom()

```
void CurlHandler::getFreeFrom ( )
```

This function calculates when the room is free.

Returns

none

Note

sets the freeFrom String

4.1.1.9 getIdField()

```
std::string CurlHandler::getIdField (
    int ID )
```

This function creates RoomID part of the curl request URL.

Returns

String with RoomID in following format: elementId=RoomID.

Note

Needs a RoomID

4.1.1.10 getLessonInfo()

```
char * CurlHandler::getLessonInfo (
    int classID )
```

This function retrieves & parses json.

Returns

Lesson info

4.1.1.11 getLessonTeachers()

```
std::string CurlHandler::getLessonTeachers (
    Json::Value obj,
    int i )
```

This function gets the teachers from a lesson.

Returns

String with teacher(s) of a lesson

4.1.1.12 getLessonTime()

```
std::string CurlHandler::getLessonTime (
    Json::Value obj,
    int lessonId,
    int lesson )
```

This function gets the endTime of a lesson and returns lesstime.

Returns

String with lesson times in following format: HH:MM - HH:MM

4.1.1.13 moveLessonTimes()

```
void CurlHandler::moveLessonTimes (
    int lesson )
```

This function movesLessonTimes.

Returns

None

Note

moves until given lesson;

4.1.1.14 outputInfo()

```
char * CurlHandler::outputInfo ( )
```

Outputs Lesson info in used format.

Returns

The lesson information in the format accepted by the module

Author

Rick Overhorst

4.1.1.15 parseJson()

```
void CurlHandler::parseJson (
    std::string * buffer )
```

This function parses json and saves lesson data.

Returns

none

4.1.1.16 WriteCallback()

```
size_t CurlHandler::WriteCallback (
    void * contents,
    size_t size,
    size_t nmemb,
    void * userp ) [static]
```

This function is used by curlRequest as WriteCallback.

Returns

memmory size

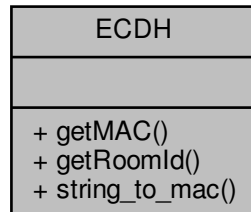
The documentation for this class was generated from the following files:

- [/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.h](#)
- [/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.cpp](#)

4.2 ECDH Class Reference

```
#include <ECDH.h>
```

Collaboration diagram for ECDH:



Public Member Functions

- uint64_t [getMAC](#) (char *serverRequest)
This Function gets the MAC-address from the server request and changes it to an int (the way the MAC-address is stored in the db).
- int [getRoomId](#) (uint64_t MAC)
Gets the room id from the db.
- uint64_t [string_to_mac](#) (std::string const &s)
This Function turns the MAC-address into an int (the way the MAC-address is stored in the db).

4.2.1 Member Function Documentation

4.2.1.1 getMAC()

```
uint64_t ECDH::getMAC (
    char * serverRequest )
```

This Function gets the MAC-address from the server request and changes it to an int (the way the MAC-address is stored in the db).

Returns

The MAC-address in database form.

Author

Rick Overhorst

4.2.1.2 getRoomId()

```
int ECDH::getRoomId (
    uint64_t MAC )
```

Gets the room id from the db.

Returns

The room Id.

Author

Rick Overhorst

4.2.1.3 string_to_mac()

```
uint64_t ECDH::string_to_mac (
    std::string const & s )
```

This Function turns the MAC-address into an int (the way the MAC-address is stored in the db).

Returns

The MAC-address in database form.

Author

Maxim Egorushkin

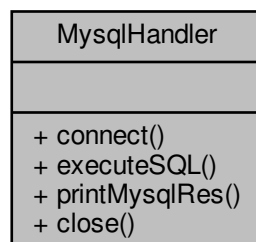
The documentation for this class was generated from the following files:

- [/home/rso16/projects/ECDS/src/ECDH/ECDH.h](#)
- [/home/rso16/projects/ECDS/src/ECDH/ECDH.cpp](#)

4.3 MysqlHandler Class Reference

```
#include <MysqlHandler.h>
```

Collaboration diagram for MysqlHandler:



Public Member Functions

- int [connect](#) (char *[server](#), char *[user](#), char *[pass](#), char *[db_name](#))
connects to the db-server.
- MYSQL_RES [executeSQL](#) (char *[sql](#))
Executes the SQL query.
- int [printMysqlRes](#) (MYSQL_RES *[res_set](#))
Prints the result of the query.
- int [close](#) ()
closes the connection with the db-server

4.3.1 Member Function Documentation

4.3.1.1 close()

```
int MysqlHandler::close ( )
```

closes the connection with the db-server

Returns

1

Warning

Error checking not yet added!

Author

Rick Overhorst

4.3.1.2 connect()

```
int MysqlHandler::connect (
    char * server,
    char * user,
    char * pass,
    char * db_name )
```

connects to the db-server.

Returns

1 if succesfull, -1 if the initialization failed & -2 if connection failed.

Author

Rick Overhorst

4.3.1.3 executeSQL()

```
MYSQL_RES MysqlHandler::executeSQL (
    char * sql )
```

Executes the SQL query.

Returns

The Results of the query.

Author

Rick Overhorst

4.3.1.4 printMysqlRes()

```
int MysqlHandler::printMysqlRes (
    MYSQL_RES * res_set )
```

Prints the result of the query.

Returns

1

Warning

Error checking not yet added!

Author

Rick Overhorst

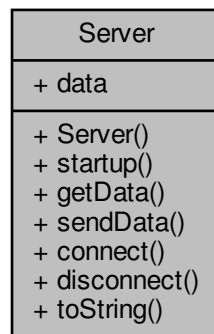
The documentation for this class was generated from the following files:

- [/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.h](#)
- [/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.cpp](#)

4.4 Server Class Reference

```
#include <Server.h>
```

Collaboration diagram for Server:



Public Member Functions

- [Server](#) (int port=80, char *ip_addr=(char *) "localhost")
Server Constructor.
- void [startup](#) ()
starts the server
- char * [getData](#) ()
Gets the data send by the client/module.
- void [sendData](#) (char *[data](#))
Sends the data to the client/module.
- void [connect](#) ()
connects the server
- void [disconnect](#) ()
disconnects the connection
- char * [toString](#) ()
Gets the ip address.

Public Attributes

- char [data](#) [100]

4.4.1 Constructor & Destructor Documentation

4.4.1.1 Server()

```
Server::Server (
    int port = 80,
    char * ip_addr = (char *) "localhost" )
```

[Server](#) Constructor.

Returns

none

Author

Kevin Jansen

4.4.2 Member Function Documentation

4.4.2.1 connect()

```
void Server::connect ( )
```

connects the server

Returns

none

Author

Kevin Jansen

4.4.2.2 disconnect()

```
void Server::disconnect ( )
```

disconnects the connection

Returns

none

Author

Kevin Jansen

4.4.2.3 getData()

```
char * Server::getData ( )
```

Gets the data send by the client/module.

Returns

The data reviewed

Author

Kevin Jansen

4.4.2.4 sendData()

```
void Server::sendData (
    char * data )
```

Sends the data to the client/module.

Returns

none

Author

Kevin Jansen

4.4.2.5 startup()

```
void Server::startup ( )
```

starts the server

Returns

none

Author

Kevin Jansen

4.4.2.6 toString()

```
char * Server::toString ( )
```

Gets the ip address.

Returns

The ip address

Author

Kevin Jansen

4.4.3 Member Data Documentation

4.4.3.1 data

```
char Server::data[100]
```

The documentation for this class was generated from the following files:

- [/home/rso16/projects/ECDS/src/Server/Server.h](#)
- [/home/rso16/projects/ECDS/src/Server/Server.cpp](#)

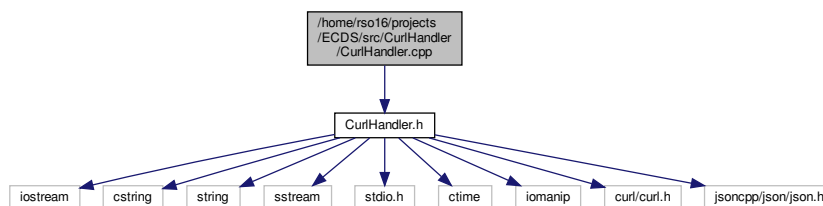
Chapter 5

File Documentation

5.1 /home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.cpp File Reference

```
#include "CurlHandler.h"
```

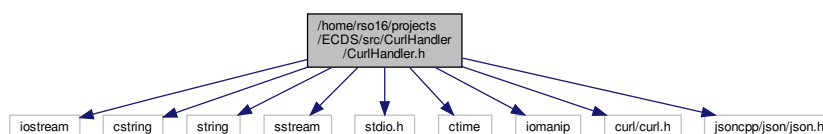
Include dependency graph for CurlHandler.cpp:



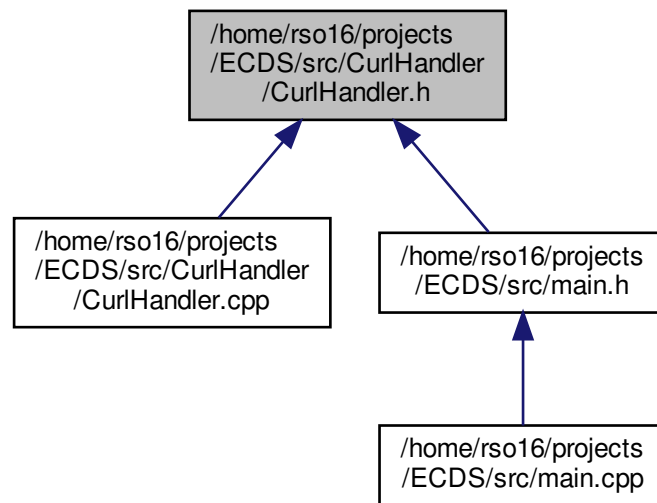
5.2 /home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.h File Reference

```
#include <iostream>
#include <cstring>
#include <string>
#include <sstream>
#include <stdio.h>
#include <ctime>
#include <iomanip>
#include <curl/curl.h>
#include <jsoncpp/json/json.h>
```

Include dependency graph for CurlHandler.h:



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



Classes

- class [CurlHandler](#)

Macros

- `#define` [BUFFER_SIZE](#) 500

Variables

- `const std::string` [BaseURL](#) = "https://roostertest.windesheim.nl/WebUntis/Timetable.do?request.prevent↵Cache=1543327601812&"
- `const std::string` [RequestClassData](#) = "ajaxCommand=getWeeklyTimetable&elementType=4&department↵Id=0&filterId=2&"

5.2.1 Macro Definition Documentation

5.2.1.1 BUFFER_SIZE

```
#define BUFFER_SIZE 500
```

5.2.2 Variable Documentation

5.2.2.1 BaseURL

```
const std::string BaseURL = "https://roostertest.windesheim.nl/WebUntis/Timetable.do?request.<→
preventCache=1543327601812&"
```

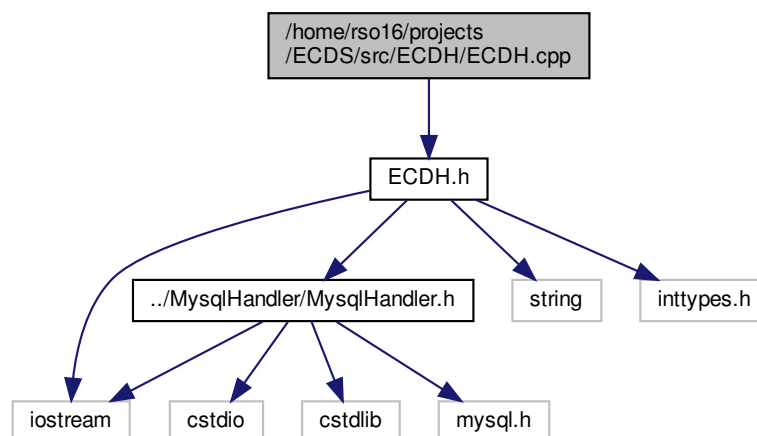
5.2.2.2 RequestClassData

```
const std::string RequestClassData = "ajaxCommand=getWeeklyTimetable&elementType=4&department<→
Id=0&filterId=2&"
```

5.3 /home/rso16/projects/ECDS/src/ECDH/ECDH.cpp File Reference

```
#include "ECDH.h"
```

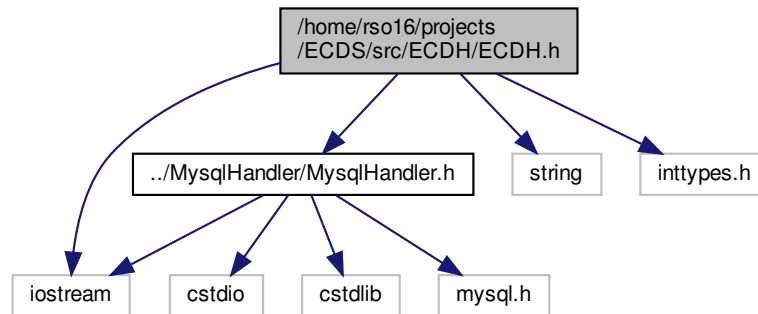
Include dependency graph for ECDH.cpp:



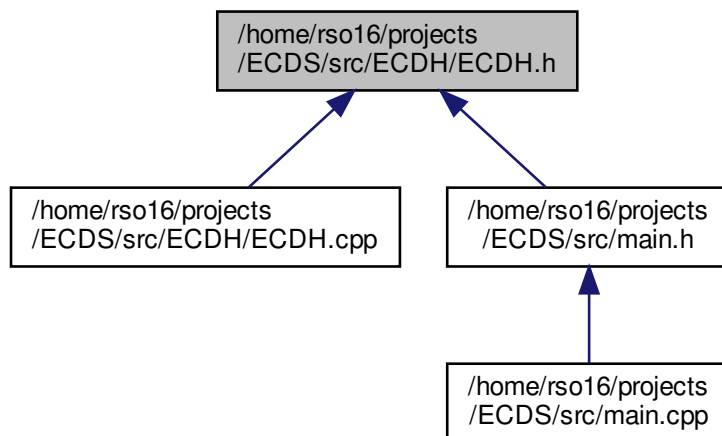
5.4 /home/rso16/projects/ECDS/src/ECDH/ECDH.h File Reference

```
#include "../MysqlHandler/MysqlHandler.h"
#include <iostream>
#include <string>
#include <inttypes.h>
```

Include dependency graph for ECDH.h:



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



Classes

- class [ECDH](#)

Macros

- #define `BEGIN_OF_MAC` 0
- #define `MAC_SIZE` 17
- #define `SQL_SIZE` 53
- #define `SQL_STM` "select RID from Boards where MAC = "
- #define `__STDC_FORMAT_MACROS`
- #define `PI_BOX` 0
- #define `U_BOX` 1
- #define `BOX` `U_BOX`
- #define `SERVER` "localhost"
- #define `USER` "root"
- #define `PASSWORD` ""
- #define `DATABASE` "windesheim"

5.4.1 Macro Definition Documentation

5.4.1.1 `__STDC_FORMAT_MACROS`

```
#define __STDC_FORMAT_MACROS
```

5.4.1.2 `BEGIN_OF_MAC`

```
#define BEGIN_OF_MAC 0
```

5.4.1.3 `BOX`

```
#define BOX U_BOX
```

5.4.1.4 `DATABASE`

```
#define DATABASE "windesheim"
```

5.4.1.5 `MAC_SIZE`

```
#define MAC_SIZE 17
```

5.4.1.6 PASSWORD

```
#define PASSWORD ""
```

5.4.1.7 PI_BOX

```
#define PI_BOX 0
```

5.4.1.8 SERVER

```
#define SERVER "localhost"
```

5.4.1.9 SQL_SIZE

```
#define SQL_SIZE 53
```

5.4.1.10 SQL_STM

```
#define SQL_STM "select RID from Boards where MAC = "
```

5.4.1.11 U_BOX

```
#define U_BOX 1
```

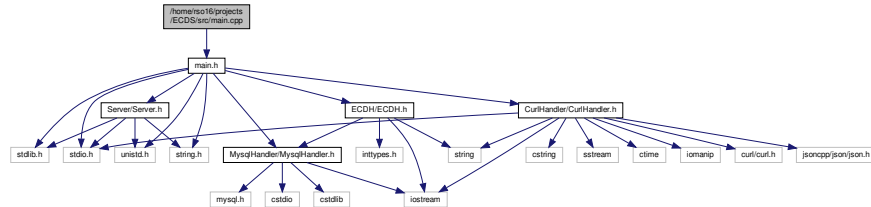
5.4.1.12 USER

```
#define USER "root"
```


5.5 /home/rso16/projects/ECDS/src/main.cpp File Reference

```
#include "main.h"
```

Include dependency graph for main.cpp:



Functions

- int [main](#) (int argc, const char *argv[])

5.5.1 Function Documentation

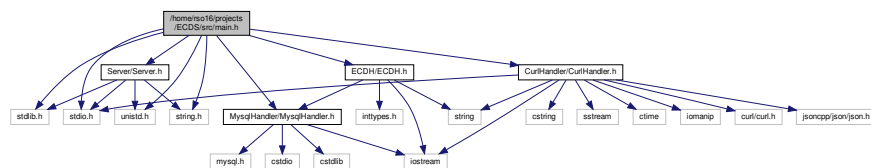
5.5.1.1 main()

```
int main (
    int argc,
    const char * argv[] )
```

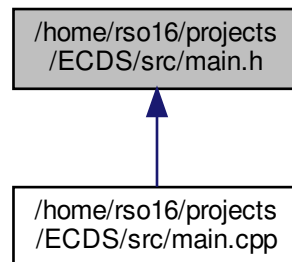
5.6 /home/rso16/projects/ECDS/src/main.h File Reference

```
#include <stdio.h>
#include "Server/Server.h"
#include <stdlib.h>
#include <unistd.h>
#include <string.h>
#include "MySQLHandler/MySQLHandler.h"
#include "ECDH/ECDH.h"
#include "CurlHandler/CurlHandler.h"
```

Include dependency graph for main.h:



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



Functions

- `int main (int argc, const char *argv[])`

Variables

- `MysqlHandler mHandler`
- `ECDH eHandler`
- `Server server`
- `CurlHandler cHandler`

5.6.1 Function Documentation

5.6.1.1 main()

```
int main (
    int argc,
    const char * argv[ ] )
```

5.6.2 Variable Documentation

5.6.2.1 cHandler

`CurlHandler cHandler`

5.6.2.2 eHandler

`ECDH` `eHandler`

5.6.2.3 mHandler

`MysqlHandler` `mHandler`

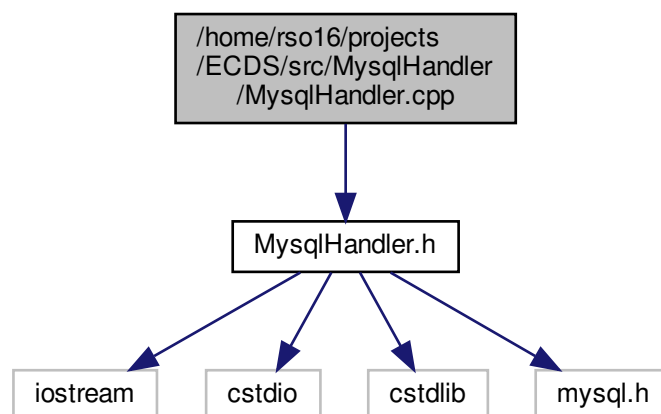
5.6.2.4 server

`Server` `server`

5.7 /home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.cpp File Reference

```
#include "MysqlHandler.h"
```

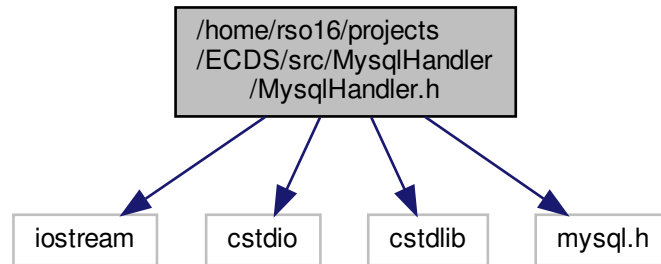
Include dependency graph for MysqlHandler.cpp:



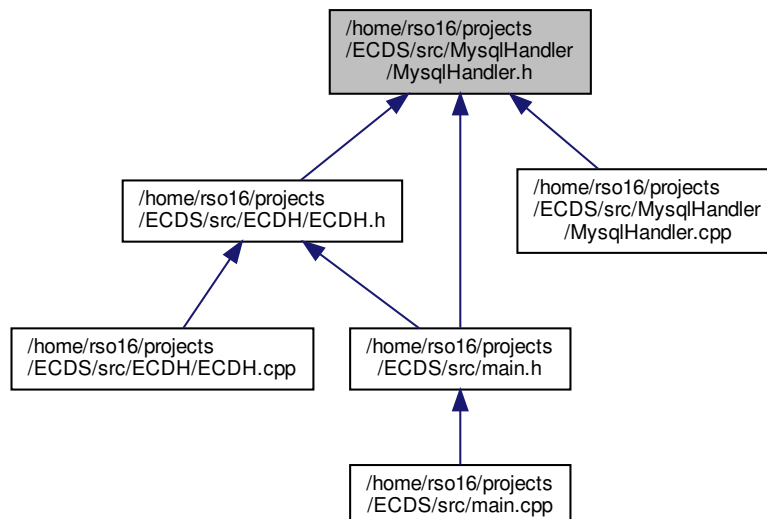
5.8 /home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.h File Reference

```
#include <iostream>
#include <cstdio>
#include <cstdlib>
#include <mysql.h>
```

Include dependency graph for MysqlHandler.h:



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



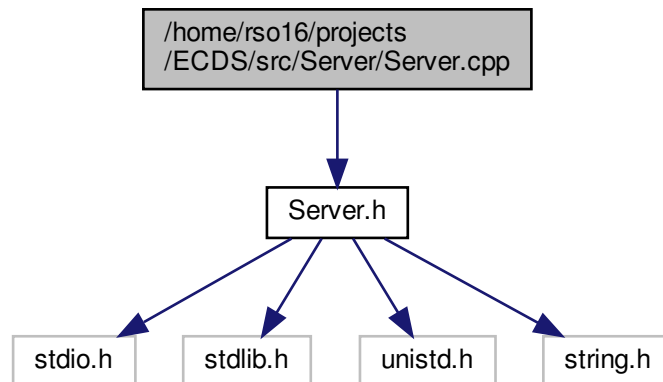
Classes

- class [MysqlHandler](#)

5.9 /home/rso16/projects/ECDS/src/Server/Server.cpp File Reference

```
#include "Server.h"
```

Include dependency graph for Server.cpp:



5.10 /home/rso16/projects/ECDS/src/Server/Server.h File Reference

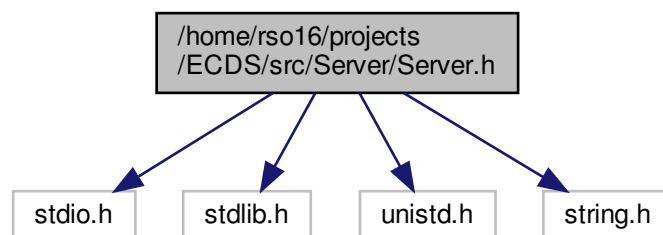
```
#include <stdio.h>
```

```
#include <stdlib.h>
```

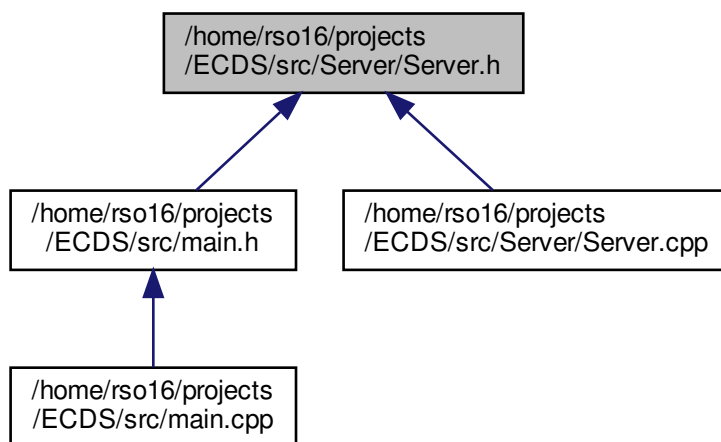
```
#include <unistd.h>
```

```
#include <string.h>
```

Include dependency graph for Server.h:



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



Classes

- class [Server](#)

Index

- [/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.cpp](#), [21](#)
- [/home/rso16/projects/ECDS/src/CurlHandler/CurlHandler.h](#), [21](#)
- [/home/rso16/projects/ECDS/src/ECDH/ECDH.cpp](#), [23](#)
- [/home/rso16/projects/ECDS/src/ECDH/ECDH.h](#), [24](#)
- [/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.cpp](#), [29](#)
- [/home/rso16/projects/ECDS/src/MysqlHandler/MysqlHandler.h](#), [30](#)
- [/home/rso16/projects/ECDS/src/Server/Server.cpp](#), [31](#)
- [/home/rso16/projects/ECDS/src/Server/Server.h](#), [31](#)
- [/home/rso16/projects/ECDS/src/main.cpp](#), [27](#)
- [/home/rso16/projects/ECDS/src/main.h](#), [27](#)
- [__STDC_FORMAT_MACROS](#)
 - [ECDH.h](#), [25](#)
- [BEGIN_OF_MAC](#)
 - [ECDH.h](#), [25](#)
- [BOX](#)
 - [ECDH.h](#), [25](#)
- [BUFFER_SIZE](#)
 - [CurlHandler.h](#), [22](#)
- [BaseURL](#)
 - [CurlHandler.h](#), [23](#)
- [cHandler](#)
 - [main.h](#), [28](#)
- [close](#)
 - [MysqlHandler](#), [15](#)
- [connect](#)
 - [MysqlHandler](#), [15](#)
 - [Server](#), [18](#)
- [CurlHandler](#), [7](#)
 - [curlRequest](#), [8](#)
 - [formatFullTime](#), [8](#)
 - [formatTime](#), [9](#)
 - [getCurlURL](#), [9](#)
 - [getCurrentTime](#), [9](#)
 - [getDate](#), [9](#)
 - [getDateField](#), [10](#)
 - [getFreeFrom](#), [10](#)
 - [getIdField](#), [10](#)
 - [getLessonInfo](#), [10](#)
 - [getLessonTeachers](#), [11](#)
 - [getLessonTime](#), [11](#)
 - [moveLessonTimes](#), [11](#)
 - [outputInfo](#), [11](#)
 - [parseJson](#), [12](#)
 - [WriteCallback](#), [12](#)
- [CurlHandler.h](#)
 - [BUFFER_SIZE](#), [22](#)
 - [BaseURL](#), [23](#)
 - [RequestClassData](#), [23](#)
- [curlRequest](#)
 - [CurlHandler](#), [8](#)
- [DATABASE](#)
 - [ECDH.h](#), [25](#)
- [data](#)
 - [Server](#), [20](#)
- [disconnect](#)
 - [Server](#), [18](#)
- [ECDH.h](#)
 - [__STDC_FORMAT_MACROS](#), [25](#)
 - [BEGIN_OF_MAC](#), [25](#)
 - [BOX](#), [25](#)
 - [DATABASE](#), [25](#)
 - [MAC_SIZE](#), [25](#)
 - [PASSWORD](#), [25](#)
 - [PI_BOX](#), [26](#)
 - [SERVER](#), [26](#)
 - [SQL_SIZE](#), [26](#)
 - [SQL_STM](#), [26](#)
 - [U_BOX](#), [26](#)
 - [USER](#), [26](#)
- [ECDH](#), [13](#)
 - [getMAC](#), [13](#)
 - [getRoomId](#), [13](#)
 - [string_to_mac](#), [14](#)
- [eHandler](#)
 - [main.h](#), [28](#)
- [executeSQL](#)
 - [MysqlHandler](#), [15](#)
- [formatFullTime](#)
 - [CurlHandler](#), [8](#)
- [formatTime](#)
 - [CurlHandler](#), [9](#)
- [getCurlURL](#)
 - [CurlHandler](#), [9](#)
- [getCurrentTime](#)
 - [CurlHandler](#), [9](#)
- [getData](#)
 - [Server](#), [18](#)
- [getDate](#)
 - [CurlHandler](#), [9](#)
- [getDateField](#)

- CurlHandler, 10
- getFreeFrom
 - CurlHandler, 10
- getIdField
 - CurlHandler, 10
- getLessonInfo
 - CurlHandler, 10
- getLessonTeachers
 - CurlHandler, 11
- getLessonTime
 - CurlHandler, 11
- getMAC
 - ECDH, 13
- getRoomId
 - ECDH, 13
- MAC_SIZE
 - ECDH.h, 25
- mHandler
 - main.h, 29
- main
 - main.cpp, 27
 - main.h, 28
- main.cpp
 - main, 27
- main.h
 - cHandler, 28
 - eHandler, 28
 - mHandler, 29
 - main, 28
 - server, 29
- moveLessonTimes
 - CurlHandler, 11
- MysqlHandler, 14
 - close, 15
 - connect, 15
 - executeSQL, 15
 - printMysqlRes, 16
- outputInfo
 - CurlHandler, 11
- PASSWORD
 - ECDH.h, 25
- PI_BOX
 - ECDH.h, 26
- parseJson
 - CurlHandler, 12
- printMysqlRes
 - MysqlHandler, 16
- RequestClassData
 - CurlHandler.h, 23
- SERVER
 - ECDH.h, 26
- SQL_SIZE
 - ECDH.h, 26
- SQL_STM
 - ECDH.h, 26
- sendData
 - Server, 19
- Server, 17
 - connect, 18
 - data, 20
 - disconnect, 18
 - getData, 18
 - sendData, 19
 - Server, 17
 - startup, 19
 - toString, 19
- server
 - main.h, 29
- startup
 - Server, 19
- string_to_mac
 - ECDH, 14
- toString
 - Server, 19
- U_BOX
 - ECDH.h, 26
- USER
 - ECDH.h, 26
- WriteCallback
 - CurlHandler, 12