扫雷

1.0.3

制作者 Doxygen 1.9.6

Chapter 1

继承关系索引

1.1 类继承关系

此继承关系列表按字典顺序粗略的排序:

Chapter 2

类索引

2.1 类列表

这里列出了所有类、结构、联合以及接口定义等，并附带简要说明:

Chapter 3

文件索引

3.1 文件列表

这里列出了所有文件，并附带简要说明:

Chapter 4

类说明

4.1 Player::GameMode结构体 参考

```
#include <Player.h>
```

Public 成员函数

- GameMode (QString mod, qint32 rowNum, qint32 colNum, qint32 bombNum)

Public 属性

- QString mod
- qint32 rowNum
- qint32 colNum
- qint32 bombNum

4.1.1 构造及析构函数说明

4.1.1.1 GameMode()

```
Player::GameMode::GameMode (
            QString mod,
            qint32 rowNum,
            qint32 colNum,
            qint32 bombNum )  [inline]
```

4.1.2 类成员变量说明

4.1.2.1 bombNum

```
qint32 Player::GameMode::bombNum
```

4.1.2.2 colNum

```
qint32 Player::GameMode::colNum
```

4.1.2.3 mod

```
QString Player::GameMode::mod
```

4.1.2.4 rowNum

```
qint32 Player::GameMode::rowNum
```

该结构体的文档由以下文件生成:

- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Player.h

4.2 Packet< T > 模板类 参考

用于socket协议的信息封装和解包，可以绑定信息–回调函数,Packet.cpp和Packet.h都得放在头文件中(-I Packet.cpp Packet.h) 如果要绑定私有行为，应该将Packet<T>声明为友元 T为parent对应的类名,installClassFunctionEvent 会在触发时调用parent的成员函数 所有要绑定的函数都应该以void为返回值,QStringList为参数

```
#include <Packet.h>
```

Public 成员函数

- Packet (T *parent)

    Packet::Packet 构造函数,T为callBack所在的类名,会在触发事件的是否调用T::callBack(StringList)
- virtual void pushMessage (QString newMes)

    Packet::pushMessage 压入信息,并判断是否满足触发event的条件
- virtual QString formatMes (QStringList newMesList)

    Packet::formatMes 返回封装好的信息
- virtual QString formatMes (QString newMes)

    Packet::formatMes 重载方法，方便使用
- virtual void installClassFunctionEvent (QString funcName, qint32 parameterNum, void(T::*callBack)(QStringList))

    Packet::installClassFunctionEvent 注册事件

4.2.1 详细描述

template<typename T>
class Packet< T >

用于socket协议的信息封装和解包，可以绑定信息–回调函数,Packet.cpp和Packet.h都得放在头文件中(-l Packet.cpp Packet.h) 如果要绑定私有行为，应该将Packet<T>声明为友元 T为parent对应的类名,install↩ ClassFunctionEvent 会在触发时调用parent的成员函数 所有要绑定的函数都应该以void为返回值,QString↩ List为参数

4.2.2 构造及析构函数说明

4.2.2.1 Packet()

```
template<typename T >
Packet< T >::Packet (
            T * parent )
```

Packet::Packet 构造函数,T为callBack所在的类名,会在触发事件的是否调用T::callBack(StringList)

参数

parent	不能为空

4.2.3 成员函数说明

4.2.3.1 formatMes() [1/2]

```
template<typename T >
QString Packet< T >::formatMes (
            QString newMes )  [virtual]
```

Packet::formatMes 重载方法，方便使用

参数

newMes	

返回

4.2.3.2 formatMes() [2/2]

```
template<typename T >
QString Packet< T >::formatMes (
            QStringList newMesList )  [virtual]
```

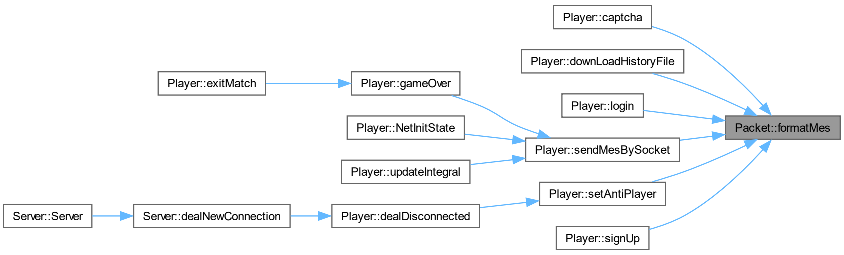
Packet::formatMes 返回封装好的信息

参数

newMesList	要封装的信息

返回

这是这个函数的调用关系图:



4.2.3.3 installClassFunctionEvent()

```
template<typename T >
void Packet< T >::installClassFunctionEvent (
            QString funcName,
            qint32 parameterNum,
            void(T::*)(QStringList) callBack )  [virtual]
```

Packet::installClassFunctionEvent 注册事件

参数

funcName	触发事件对应的消息
parameterNum	回调函数的参数个数 （后期可维护成自动判断的可取消这个函数）//todo标记为废弃
void	(T::∗callBack)(QStringList) 回调函数

4.2.3.4 pushMessage()

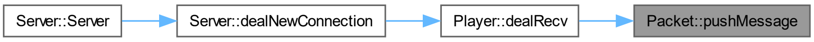
```
template<typename T >
void Packet< T >::pushMessage (
            QString newMes )  [virtual]
```

Packet::pushMessage 压入信息,并判断是否满足触发event的条件

参数

newMes	

这是这个函数的调用关系图:



该类的文档由以下文件生成:

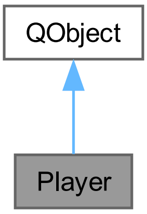
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Packet/Packet.h
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Packet/Packet.cpp

4.3 Player类 参考

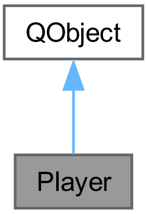
The Player class 玩家对象

```
#include <Player.h>
```

类 Player 继承关系图:



Player 的协作图:



类

- struct GameMode

Public 槽

- void dealConnected ()

  Player::dealConnected 连接成功处理函数
- void dealRecv ()

  Player::dealRecv socket有新消息时的槽函数,将消息托管给packet
- void dealDisconnected ()

  Player::dealDisconnected 掉线处理函数

信号

- void signalMatchNewGame (GameMode gm)

Public 成员函数

- Player ()

  todo：显然这个项目的Net部分还有很多尚未处理，比如安全性、掉线等；留坑待补
- Player (QTcpSocket ∗socket)

  Player::Player
- ∼Player ()

  Player::∼Player
- const QString & getEmail () const

  Player::getEmail
- void setAntiPlayer (Player ∗newAntiPlayer, bool isHeadStart=false)

  Player::setAntiPlayer 设置自己的对手
- void sendMesBySocket (QStringList List)

  Player::sendMesBySocket 发送消息给对应的客户端
- virtual void updateIntegral (QString matchID, QString integral)

  Player::updateIntegral 更新自己的分数
- void setLastGameMatchID (const QString &newLastGameMatchID)

  Player::setLastGameMatchID 给最近的匹配绑定一个uuid
- virtual void insertPlayHistory (GameMode gameMod, QString player1, QString player2, QString player1Integral, QString player2Integral)

  Player::insertPlayHistory 插入新的对局记录

Protected 成员函数

- virtual void login (QStringList list)
  Player::login 登录时间的回调函数
- virtual void signUp (QStringList list)
  Player::signUp 注册事件的回调函数
- virtual void captcha (QStringList list)
  Player::captcha 验证码验证事件的回调函数
- virtual void match (QStringList list)
  Player::match 进行新的匹配事件的回调函数
- virtual void NetInitState (QStringList list)
  Player::NetInitState 转发网络对战更新事件给对手
- virtual void updateIntegral (QStringList list)
  更新自己的游戏积分事件的回调函数
- virtual void gameOver (QStringList list)
  Player::gameOver 游戏结束事件的回调函数 这个事件同时会转发给对手
- virtual void upLoadHistory (QStringList list)
  Player::upLoadHistory 更新单机模式的战绩
- virtual void exitMatch (QStringList list)
  Player::exitMatch 退出匹配事件的回调函数
- virtual void downLoadHistoryFile (QStringList list)
  Player::downLoadHistoryFile 下载历史战绩事件的回调函数

友元

- class Packet< Player >

4.3.1 详细描述

The Player class 玩家对象

4.3.2 构造及析构函数说明

4.3.2.1 Player() [1/2]

```
Player::Player ( )
```

todo：显然这个项目的Net部分还有很多尚未处理，比如安全性、掉线等；留坑待补

Player::Player

4.3.2.2 Player() [2/2]

```
Player::Player (
            QTcpSocket * s )
```

Player::Player

参数

s	为每个socket建立一个玩家对象

4.3.2.3 ∼Player()

```
Player::∼Player ( )
```

Player::∼Player

4.3.3 成员函数说明

4.3.3.1 captcha()

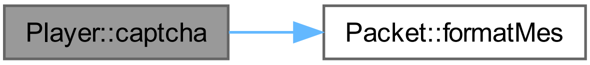
```
void Player::captcha (
             QStringList list )  [protected], [virtual]
```

Player::captcha 验证码验证事件的回调函数

参数

list	length:1 {0/1}

函数调用图:

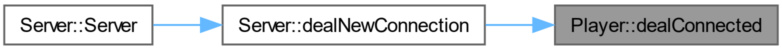


4.3.3.2 dealConnected

```
void Player::dealConnected ( )  [slot]
```

Player::dealConnected 连接成功处理函数

这是这个函数的调用关系图:

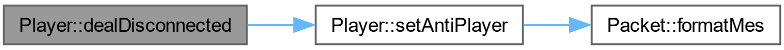


4.3.3.3 dealDisconnected

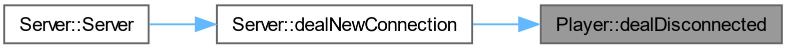
```
void Player::dealDisconnected ( )  [slot]
```

Player::dealDisconnected 掉线处理函数

函数调用图:



这是这个函数的调用关系图:

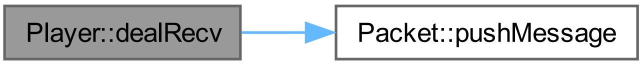


4.3.3.4 dealRecv

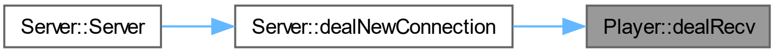
```
void Player::dealRecv ( )  [slot]
```

Player::dealRecv socket有新消息时的槽函数,将消息托管给packet

函数调用图:



这是这个函数的调用关系图:



4.3.3.5 downLoadHistoryFile()

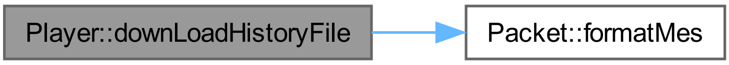
```
void Player::downLoadHistoryFile (
            QStringList list )  [protected], [virtual]
```

Player::downLoadHistoryFile 下载历史战绩事件的回调函数

参数

list	length↩ :0

create table playHistory(matchID varchar(40) primary key,Date varchar(20),\ gameMod varchar(20),rowNum varchar(4),colNum varchar(4),bombNum varchar(4),\ player1 varchar(50),player2 varchar(50),player1Integral varchar(128),player2Integral varchar(128))" 共计10个参数函数调用图:



4.3.3.6 exitMatch()

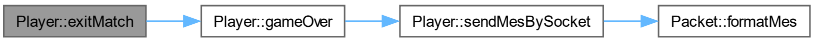
```
void Player::exitMatch (
            QStringList list )  [protected], [virtual]
```

Player::exitMatch 退出匹配事件的回调函数

参数

list	length↩ :0

函数调用图:



4.3.3.7 gameOver()

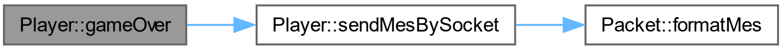
```
void Player::gameOver (
             QStringList list )  [protected], [virtual]
```

Player::gameOver 游戏结束事件的回调函数 这个事件同时会转发给对手

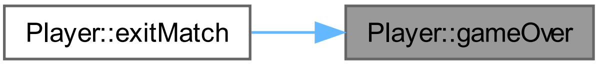
参数

list	length :0

函数调用图:



这是这个函数的调用关系图:



4.3.3.8 getEmail()

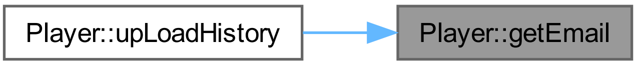
```
const QString & Player::getEmail ( ) const
```

Player::getEmail

返回

返回对象的email属性

这是这个函数的调用关系图:



4.3.3.9 insertPlayHistory()

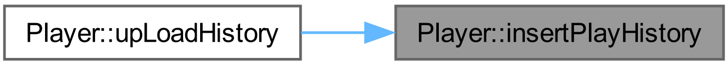
```
void Player::insertPlayHistory (
            GameMode gameMod,
            QString player1,
            QString player2,
            QString player1Integral,
            QString player2Integral )  [virtual]
```

Player::insertPlayHistory 插入新的对局记录

参数

gameMod	模式
player1	玩家1email
player2	玩家2email
player1Integral	玩家1积分
player2Integral	玩家2积分

""create table playHistory(matchID varchar(40) primary key,Date varchar(20),\ gameMod varchar(20),rowNum varchar(4),colNum varchar(4),bombNum varchar(4),\ player1 varchar(50),player2 varchar(50),player1Integral varchar(128),player2Integral varchar(128))" 共计10个参数这是这个函数的调用关系图:



4.3.3.10 login()

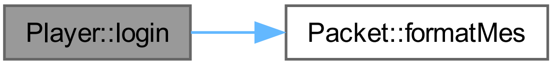
```
void Player::login (
             QStringList list )  [protected], [virtual]
```

Player::login 登录时间的回调函数

参数

list	length:2 {邮箱,密码}

函数调用图:



4.3.3.11 match()

```
void Player::match (
             QStringList list )  [protected], [virtual]
```

Player::match 进行新的匹配事件的回调函数

参数

list	length:4{模式,行数，列数,雷数}

4.3.3.12 NetInitState()

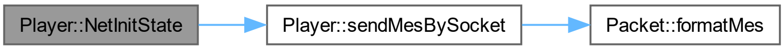
```
void Player::NetInitState (
             QStringList list )  [protected], [virtual]
```

Player::NetInitState 转发网络对战更新事件给对手

参数

list	length: {1}{12∗ rowNum ∗ colNum in lastGamMod split by /}

函数调用图:



4.3.3.13 sendMesBySocket()

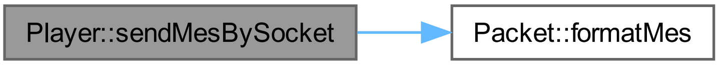
```
void Player::sendMesBySocket (
            QStringList list )
```

Player::sendMesBySocket 发送消息给对应的客户端

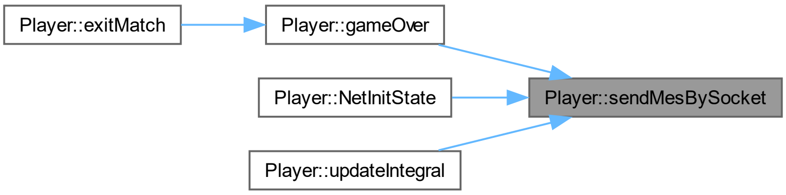
参数

list	

函数调用图:



这是这个函数的调用关系图:



4.3.3.14 setAntiPlayer()

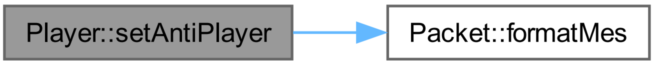
```
void Player::setAntiPlayer (
            Player * newAntiPlayer,
            bool isHeadStart = false )
```

Player::setAntiPlayer 设置自己的对手

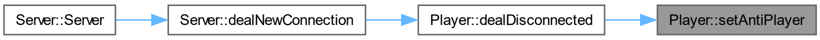
参数

newAntiPlayer	对手的指针
isHeadStart	是否是先手->更新棋盘

函数调用图:



这是这个函数的调用关系图:



4.3.3.15 setLastGameMatchID()

```
void Player::setLastGameMatchID (
            const QString & newLastGameMatchID )
```

Player::setLastGameMatchID 给最近的匹配绑定一个uuid

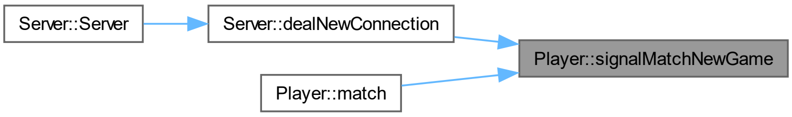
参数

newLastGameMatchID	uuid

4.3.3.16 signalMatchNewGame

```
void Player::signalMatchNewGame (
            GameMode gm )  [signal]
```

这是这个函数的调用关系图:



4.3.3.17 signUp()

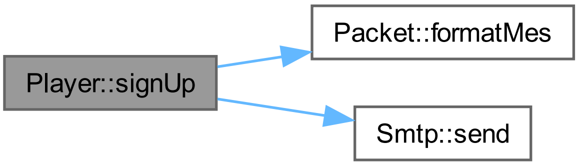
```
void Player::signUp (
            QStringList list )  [protected], [virtual]
```

Player::signUp 注册事件的回调函数

参数

list	length :2 {email,password}

函数调用图:



4.3.3.18 updateIntegral() [1/2]

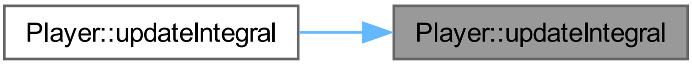
```
void Player::updateIntegral (
            QString matchID,
            QString integral )  [virtual]
```

Player::updateIntegral 更新自己的分数

参数

integral	积分

create table playHistory(matchID varchar(40) primary key,Date varchar(20),\ gameMod varchar(20),rowNum varchar(4),colNum varchar(4),bombNum varchar(4),\ player1 varchar(50),player2 varchar(50),player1Integral varchar(128),player2Integral varchar(128))" 共计10个参数这是这个函数的调用关系图:



4.3.3.19 updateIntegral() [2/2]

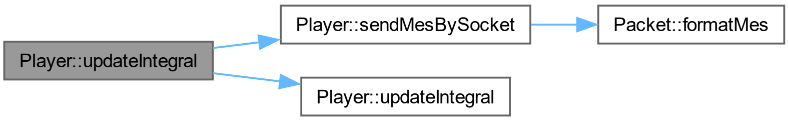
```
void Player::updateIntegral (
             QStringList list )  [protected], [virtual]
```

更新自己的游戏积分事件的回调函数

参数

list	length:1{integral}

函数调用图:



4.3.3.20 upLoadHistory()

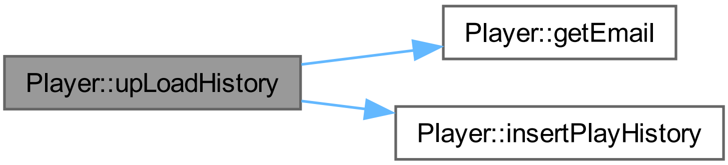
```
void Player::upLoadHistory (
             QStringList list )  [protected], [virtual]
```

Player::upLoadHistory 更新单机模式的战绩

参数

list	length← :5

函数调用图:



4.3.4 友元及相关函数文档

4.3.4.1 Packet< Player >

```
friend class Packet< Player > [friend]
```

该类的文档由以下文件生成:

- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Player.h
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_Player.cpp
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Player.cpp

4.4 qt_meta_stringdata_Player_t结构体 参考

Public 属性

- QByteArrayData data [8]
- char stringdata0 [79]

4.4.1 类成员变量说明

4.4.1.1 data

```
QByteArrayData qt_meta_stringdata_Player_t::data[8]
```

4.4.1.2 stringdata0

```
char qt_meta_stringdata_Player_t::stringdata0[79]
```

该结构体的文档由以下文件生成:

- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_Player.cpp

4.5 qt_meta_stringdata_Server_t结构体 参考

Public 属性

- QByteArrayData data [6]
- char stringdata0 [63]

4.5.1 类成员变量说明

4.5.1.1 data

```
QByteArrayData qt_meta_stringdata_Server_t::data[6]
```

4.5.1.2 stringdata0

```
char qt_meta_stringdata_Server_t::stringdata0[63]
```

该结构体的文档由以下文件生成:

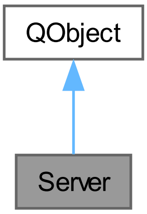
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_Server.cpp

4.6 Server类 参考

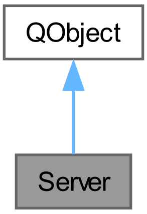
The Server class 服务器类,管理多个客户端

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

类 Server 继承关系图:



Server 的协作图:



Public 成员函数

- Server (QObject ∗parent=nullptr)

  Server::Server
- ∼Server ()

  Server::∼Server

Protected 槽

- virtual void dealNewConnection ()

  Server::dealNewConnection 有新的客户端连接时的处理函数
- virtual void dealMatchNewGame (Player::GameMode gm)

  Server::dealMatchNewGame 给客户端匹配新的对局

4.6.1 详细描述

The Server class 服务器类,管理多个客户端

4.6.2 构造及析构函数说明

4.6.2.1 Server()

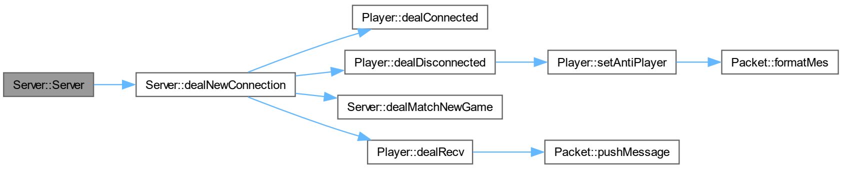
```
Server::Server (
            QObject * parent = nullptr )
```

Server::Server

参数

parent	

函数调用图:



4.6.2.2 ∼Server()

```
Server::∼Server ( )
```

Server::∼Server

4.6.3 成员函数说明

4.6.3.1 dealMatchNewGame

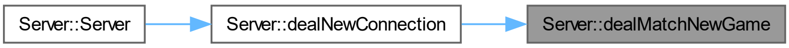
```
void Server::dealMatchNewGame (
            Player::GameMode gm )  [protected], [virtual], [slot]
```

Server::dealMatchNewGame 给客户端匹配新的对局

参数

gm	游戏模式

这是这个函数的调用关系图:

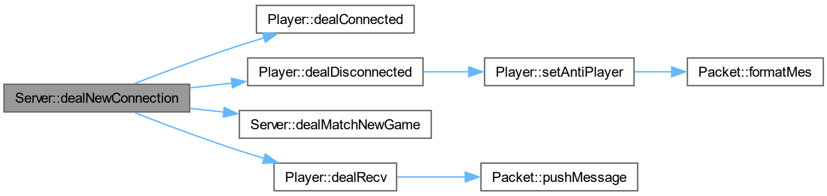


4.6.3.2 dealNewConnection

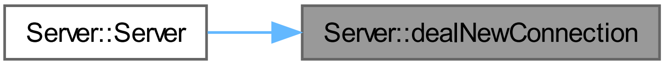
```
void Server::dealNewConnection ( ) [protected], [virtual], [slot]
```

Server::dealNewConnection 有新的客户端连接时的处理函数

函数调用图:



这是这个函数的调用关系图:



该类的文档由以下文件生成:

- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Server.h
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Server.cpp

4.7 Smtp类 参考

The Smtp class 实现简单的通过网易163邮箱发送plain text的功能 代码借鉴自csdn

```
#include <Smtp.h>
```

Public 成员函数

- Smtp (QByteArray username, QByteArray password)

  Smtp::Smtp
- ∼Smtp ()

  Smtp::∼Smtp
- void send (QByteArray recvaddr, QString subject, QString content)

  Smtp::send 发送新的邮件

4.7.1 详细描述

The Smtp class 实现简单的通过网易163邮箱发送plain text的功能 代码借鉴自csdn

4.7.2 构造及析构函数说明

4.7.2.1 Smtp()

```
Smtp::Smtp (
         QByteArray username,
         QByteArray password )
```

Smtp::Smtp

参数

username	163账号
password	授权码

4.7.2.2 ∼Smtp()

```
Smtp::∼Smtp ( )
```

Smtp::∼Smtp

4.7.3 成员函数说明

4.7.3.1 send()

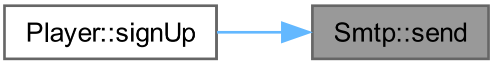
```
void Smtp::send (
             QByteArray recvaddr,
             QString subject,
             QString content )
```

Smtp::send 发送新的邮件

参数

recvaddr	接收方邮箱
subject	主题
content	内容

这是这个函数的调用关系图:



该类的文档由以下文件生成:

- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Smtp.h
- C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Smtp.cpp

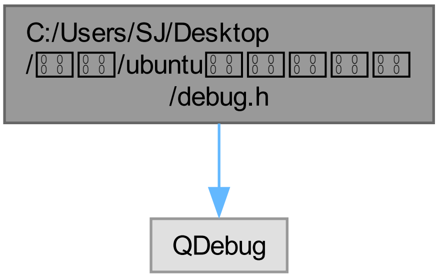
Chapter 5

文件说明

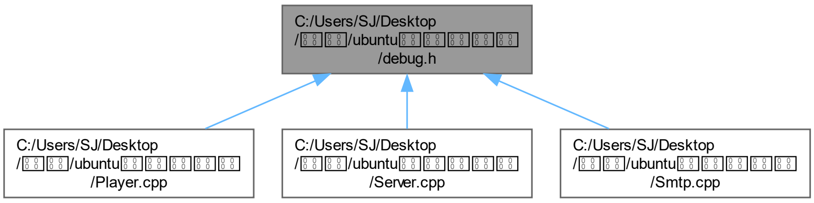
5.1 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/debug.h 文件参考

`#include <QDebug>`

debug.h 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:



宏定义

- #define dout qDebug()<<”[”<<__LINE__<<”,”<<__FUNCTION__<<”,”<<__FILE__<<”]”
- #define dendl Qt::endl

5.1.1 宏定义说明

5.1.1.1 dendl

```
#define dendl Qt::endl
```

5.1.1.2 dout

```
#define dout qDebug()<<"["<<__LINE__<<","<<__FUNCTION__<<","<<__FILE__<<"]"
```

调试相关的宏定义

5.2 debug.h

浏览该文件的文档.

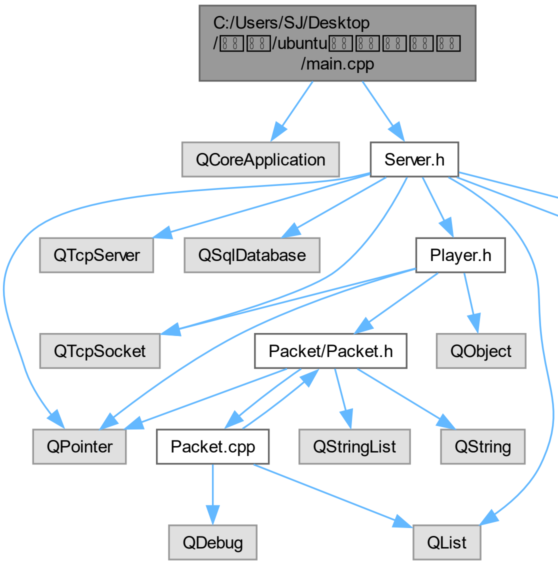
```

#include<QDebug>
#define dout qDebug()<<"["<<__LINE__<<","<<__FUNCTION__<<","<<__FILE__<<"]"//< debug out (line,function name,file)
#define dendl Qt::endl//< debug endl
```

5.3 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/main.cpp 文件参考

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

main.cpp 的引用(Include)关系图:



函数

- int main (int argc, char ∗argv[ ])

5.3.1 函数说明

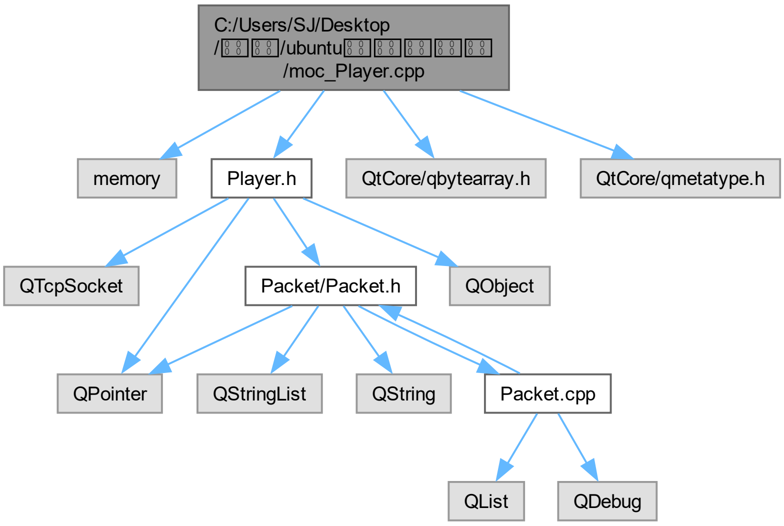
5.3.1.1 main()

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

5.4 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_Player.cpp 文件参考

```
#include <memory>
#include "Player.h"
#include <QtCore/qbytearray.h>
#include <QtCore/qmetatype.h>
```

moc_Player.cpp 的引用(Include)关系图:



类

- struct qt_meta_stringdata_Player_t

宏定义

- #define QT_MOC_LITERAL(idx, ofs, len)

5.4.1 宏定义说明

5.4.1.1 QT_MOC_LITERAL

```
#define QT_MOC_LITERAL(
                idx,
                ofs,
                len )
```

值:

```
    Q_STATIC_BYTE_ARRAY_DATA_HEADER_INITIALIZER_WITH_OFFSET(len, \
    qptrdiff(offsetof(qt_meta_stringdata_Player_t, stringdata0) + ofs \
        - idx * sizeof(QByteArrayData)) \
    )
```

5.5 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_predefs.h 文件参考

宏定义

- #define __SSP_STRONG__ 3
- #define __DBL_MIN_EXP__ (-1021)
- #define __cpp_attributes 200809L
- #define __cpp_nontype_template_parameter_auto 201606L
- #define __UINT_LEAST16_MAX__ 0xffff
- #define __ATOMIC_ACQUIRE 2
- #define __FLT128_MAX_10_EXP__ 4932
- #define __FLT_MIN__ 1.17549435082228750796873653722224568e-38F
- #define __GCC_IEC_559_COMPLEX 2
- #define __cpp_aggregate_nsdmi 201304L
- #define __UINT_LEAST8_TYPE__ unsigned char
- #define __SIZEOF_FLOAT80__ 16
- #define __INTMAX_C(c) c ## L
- #define __CHAR_BIT__ 8
- #define __UINT8_MAX__ 0xff
- #define __SCHAR_WIDTH__ 8
- #define __WINT_MAX__ 0xffffffffU
- #define __FLT32_MIN_EXP__ (-125)
- #define __cpp_static_assert 201411L
- #define __ORDER_LITTLE_ENDIAN__ 1234
- #define __SIZE_MAX__ 0xffffffffffffffffUL
- #define __WCHAR_MAX__ 0x7fffffff
- #define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_1 1
- #define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_2 1
- #define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_4 1
- #define __DBL_DENORM_MIN__ double(4.94065645841246544176568792868221372e-324L)

- #define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_8 1
- #define __GCC_ATOMIC_CHAR_LOCK_FREE 2
- #define __GCC_IEC_559 2
- #define __FLT32X_DECIMAL_DIG__ 17
- #define __FLT_EVAL_METHOD__ 0
- #define __cpp_binary_literals 201304L
- #define __FLT64_DECIMAL_DIG__ 17
- #define __CET__ 3
- #define __cpp_noexcept_function_type 201510L
- #define __GCC_ATOMIC_CHAR32_T_LOCK_FREE 2
- #define __cpp_variadic_templates 200704L
- #define __UINT_FAST64_MAX__ 0xffffffffffffffffUL
- #define __SIG_ATOMIC_TYPE__ int
- #define __DBL_MIN_10_EXP__ (-307)
- #define __FINITE_MATH_ONLY__ 0
- #define __cpp_variable_templates 201304L
- #define __FLT32X_MAX_EXP__ 1024
- #define __FLT32_HAS_DENORM__ 1
- #define __UINT_FAST8_MAX__ 0xff
- #define __cpp_rvalue_reference 200610L
- #define __cpp_nested_namespace_definitions 201411L
- #define __DEC64_MAX_EXP__ 385
- #define __INT8_C(c) c
- #define __INT_LEAST8_WIDTH__ 8
- #define __cpp_variadic_using 201611L
- #define __UINT_LEAST64_MAX__ 0xffffffffffffffffUL
- #define __INT_LEAST8_MAX__ 0x7f
- #define __cpp_capture_star_this 201603L
- #define __SHRT_MAX__ 0x7fff
- #define __LDBL_MAX__ 1.18973149535723176502126385303097021e+4932L
- #define __FLT64X_MAX_10_EXP__ 4932
- #define __cpp_if_constexpr 201606L
- #define __LDBL_IS_IEC_60559__ 2
- #define __FLT64X_HAS_QUIET_NAN__ 1
- #define __UINT_LEAST8_MAX__ 0xff
- #define __GCC_ATOMIC_BOOL_LOCK_FREE 2
- #define __FLT128_DENORM_MIN__ 6.47517511943802511092443895822764655e-4966F128
- #define __UINTMAX_TYPE__ long unsigned int
- #define __linux 1
- #define __DEC32_EPSILON__ 1E-6DF
- #define __FLT_EVAL_METHOD_TS_18661_3__ 0
- #define __OPTIMIZE__ 1
- #define __unix 1
- #define __UINT32_MAX__ 0xffffffffU
- #define __GXX_EXPERIMENTAL_CXX0X__ 1
- #define __FLT128_MIN_EXP__ (-16381)
- #define __WINT_MIN__ 0U
- #define __FLT128_MIN_10_EXP__ (-4931)
- #define __FLT32X_IS_IEC_60559__ 2
- #define __INT_LEAST16_WIDTH__ 16
- #define __SCHAR_MAX__ 0x7f
- #define __FLT128_MANT_DIG__ 113
- #define __WCHAR_MIN__ (-__WCHAR_MAX__ - 1)
- #define __INT64_C(c) c ## L
- #define __GCC_ATOMIC_POINTER_LOCK_FREE 2

- #define _FORTIFY_SOURCE 2
- #define __FLT32X_MANT_DIG__ 53
- #define __GCC_ATOMIC_CHAR16_T_LOCK_FREE 2
- #define __cpp_aligned_new 201606L
- #define __USER_LABEL_PREFIX__
- #define __FLT32_MAX_10_EXP__ 38
- #define __FLT64X_EPSILON__ 1.08420217248550443400745280086994171e-19F64x
- #define __STDC_HOSTED__ 1
- #define __DEC64_MIN_EXP__ (-382)
- #define __cpp_decltype_auto 201304L
- #define __DBL_DIG__ 15
- #define __FLT32_DIG__ 6
- #define __FLT_EPSILON__ 1.19209289550781250000000000000000000e-7F
- #define __GXX_WEAK__ 1
- #define __SHRT_WIDTH__ 16
- #define __FLT32_IS_IEC_60559__ 2
- #define __LDBL_MIN__ 3.36210314311209350626267781732175260e-4932L
- #define __DBL_IS_IEC_60559__ 2
- #define __DEC32_MAX__ 9.999999E96DF
- #define __cpp_threadsafe_static_init 200806L
- #define __cpp_enumerator_attributes 201411L
- #define __FLT64X_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951F64x
- #define __FLT32X_HAS_INFINITY__ 1
- #define __INT32_MAX__ 0x7fffffff
- #define __unix__ 1
- #define __INT_WIDTH__ 32
- #define __SIZEOF_LONG__ 8
- #define __STDC_IEC_559__ 1
- #define __STDC_ISO_10646__ 201706L
- #define __UINT16_C(c) c
- #define __DECIMAL_DIG__ 21
- #define __STDC_IEC_559_COMPLEX__ 1
- #define __FLT64_EPSILON__ 2.22044604925031308084726333618164062e-16F64
- #define __gnu_linux__ 1
- #define __INT16_MAX__ 0x7fff
- #define __FLT64_MIN_EXP__ (-1021)
- #define __FLT64X_MIN_10_EXP__ (-4931)
- #define __LDBL_HAS_QUIET_NAN__ 1
- #define __FLT64_MANT_DIG__ 53
- #define __FLT64X_MANT_DIG__ 64
- #define __GNUC__ 11
- #define __GXX_RTTI 1
- #define __pie__ 2
- #define __MMX__ 1
- #define __FLT_HAS_DENORM__ 1
- #define __SIZEOF_LONG_DOUBLE__ 16
- #define __BIGGEST_ALIGNMENT__ 16
- #define __STDC_UTF_16__ 1
- #define __FLT64_MAX_10_EXP__ 308
- #define __cpp_delegating_constructors 200604L
- #define __FLT32_HAS_INFINITY__ 1
- #define __DBL_MAX__ double(1.79769313486231570814527423731704357e+308L)
- #define __cpp_raw_strings 200710L
- #define __INT_FAST32_MAX__ 0x7fffffffffffffffL
- #define __DBL_HAS_INFINITY__ 1

- #define __SIZEOF_FLOAT__ 4
- #define __HAVE_SPECULATION_SAFE_VALUE 1
- #define __cpp_fold_expressions 201603L
- #define __DEC32_MIN_EXP__ (-94)
- #define __INTPTR_WIDTH__ 64
- #define __FLT64X_HAS_INFINITY__ 1
- #define __UINT_LEAST32_MAX__ 0xffffffffU
- #define __FLT32X_HAS_DENORM__ 1
- #define __INT_FAST16_TYPE__ long int
- #define __MMX_WITH_SSE__ 1
- #define __LDBL_HAS_DENORM__ 1
- #define __cplusplus 201703L
- #define __cpp_ref_qualifiers 200710L
- #define __DEC32_MIN__ 1E-95DF
- #define __DEPRECATED 1
- #define __cpp_rvalue_references 200610L
- #define __DBL_MAX_EXP__ 1024
- #define __WCHAR_WIDTH__ 32
- #define __FLT32_MAX__ 3.40282346638528859811704183484516925e+38F32
- #define __DEC128_EPSILON__ 1E-33DL
- #define __SSE2_MATH__ 1
- #define __ATOMIC_HLE_RELEASE 131072
- #define __PTRDIFF_MAX__ 0x7fffffffffffffffL
- #define __amd64 1
- #define __ATOMIC_HLE_ACQUIRE 65536
- #define __GNUG__ 11
- #define __LONG_LONG_MAX__ 0x7fffffffffffffffLL
- #define __SIZEOF_SIZE_T__ 8
- #define __cpp_nsdmi 200809L
- #define __FLT64X_MIN_EXP__ (-16381)
- #define __SIZEOF_WINT_T__ 4
- #define __LONG_LONG_WIDTH__ 64
- #define __cpp_initializer_lists 200806L
- #define __FLT32_MAX_EXP__ 128
- #define __cpp_hex_float 201603L
- #define __GXX_ABI_VERSION 1016
- #define __FLT128_HAS_INFINITY__ 1
- #define __FLT_MIN_EXP__ (-125)
- #define __GCC_HAVE_DWARF2_CFI_ASM 1
- #define __x86_64 1
- #define __cpp_lambdas 200907L
- #define __INT_FAST64_TYPE__ long int
- #define __FLT64_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F64
- #define __cpp_template_auto 201606L
- #define __DBL_MIN__ double(2.22507385850720138309023271733240406e-308L)
- #define __FLT128_EPSILON__ 1.92592994438723585305597794258492732e-34F128
- #define __FLT64X_NORM_MAX__ 1.18973149535723176502126385303097021e+4932F64x
- #define __SIZEOF_POINTER__ 8
- #define __LP64__ 1
- #define __DBL_HAS_QUIET_NAN__ 1
- #define __FLT32X_EPSILON__ 2.22044604925031308084726333618164062e-16F32x
- #define __DECIMAL_BID_FORMAT__ 1
- #define __FLT64_MIN_10_EXP__ (-307)
- #define __FLT64X_DECIMAL_DIG__ 21
- #define __DEC128_MIN__ 1E-6143DL

- #define __REGISTER_PREFIX__
- #define __UINT16_MAX__ 0xffff
- #define __LDBL_HAS_INFINITY__ 1
- #define __FLT32_MIN__ 1.17549435082228750796873653722224568e-38F32
- #define __UINT8_TYPE__ unsigned char
- #define __FLT_DIG__ 6
- #define __DEC_EVAL_METHOD__ 2
- #define __DEC128_MAX__ 9.999999999999999999999999999999999E6144DL
- #define __FLT_MANT_DIG__ 24
- #define __LDBL_DECIMAL_DIG__ 21
- #define __VERSION__ ”11.3.0”
- #define __UINT64_C(c) c ## UL
- #define __cpp_unicode_characters 201411L
- #define _STDC_PREDEF_H 1
- #define __INT_LEAST32_MAX__ 0x7fffffff
- #define __GCC_ATOMIC_INT_LOCK_FREE 2
- #define __FLT128_MAX_EXP__ 16384
- #define __FLT32_MANT_DIG__ 24
- #define __FLOAT_WORD_ORDER__ __ORDER_LITTLE_ENDIAN__
- #define __STDC_IEC_60559_COMPLEX__ 201404L
- #define __cpp_aggregate_bases 201603L
- #define __FLT128_HAS_DENORM__ 1
- #define __FLT32_DECIMAL_DIG__ 9
- #define __FLT128_DIG__ 33
- #define __INT32_C(c) c
- #define __DEC64_EPSILON__ 1E-15DD
- #define __ORDER_PDP_ENDIAN__ 3412
- #define __DEC128_MIN_EXP__ (-6142)
- #define __INT_FAST32_TYPE__ long int
- #define __UINT_LEAST16_TYPE__ short unsigned int
- #define unix 1
- #define __DBL_HAS_DENORM__ 1
- #define __cpp_rtti 199711L
- #define __SIZE_TYPE__ long unsigned int
- #define __UINT64_MAX__ 0xffffffffffffffffUL
- #define __FLT_IS_IEC_60559__ 2
- #define __GNUC_WIDE_EXECUTION_CHARSET_NAME ”UTF-32LE”
- #define __FLT64X_DIG__ 18
- #define __INT8_TYPE__ signed char
- #define __cpp_digit_separators 201309L
- #define __ELF__ 1
- #define __GCC_ASM_FLAG_OUTPUTS__ 1
- #define __UINT32_TYPE__ unsigned int
- #define __FLT_RADIX__ 2
- #define __INT_LEAST16_TYPE__ short int
- #define __LDBL_EPSILON__ 1.08420217248550443400745280086994171e-19L
- #define __UINTMAX_C(c) c ## UL
- #define __GLIBCXX_BITSIZE_INT_N_0 128
- #define __k8 1
- #define __FLT32X_MIN__ 2.22507385850720138309023271733240406e-308F32x
- #define __SIG_ATOMIC_MAX__ 0x7fffffff
- #define __GCC_ATOMIC_WCHAR_T_LOCK_FREE 2
- #define __STDC_IEC_60559_BFP__ 201404L
- #define __SIZEOF_PTRDIFF_T__ 8
- #define __LDBL_DIG__ 18

- #define __FLT64_IS_IEC_60559__ 2
- #define __x86_64__ 1
- #define __FLT32X_MIN_EXP__ (-1021)
- #define __DEC32_SUBNORMAL_MIN__ 0.000001E-95DF
- #define __INT_FAST16_MAX__ 0x7fffffffffffffffL
- #define __FLT64_DIG__ 15
- #define __UINT_FAST32_MAX__ 0xffffffffffffffffUL
- #define __UINT_LEAST64_TYPE__ long unsigned int
- #define __FLT_HAS_QUIET_NAN__ 1
- #define __FLT_MAX_10_EXP__ 38
- #define __LONG_MAX__ 0x7fffffffffffffffL
- #define __FLT64X_HAS_DENORM__ 1
- #define __DEC128_SUBNORMAL_MIN__ 0.000000000000000000000000000000001E-6143DL
- #define __FLT_HAS_INFINITY__ 1
- #define __GNUC_EXECUTION_CHARSET_NAME ”UTF-8”
- #define __cpp_unicode_literals 200710L
- #define __UINT_FAST16_TYPE__ long unsigned int
- #define __DEC64_MAX__ 9.999999999999999E384DD
- #define __INT_FAST32_WIDTH__ 64
- #define __CHAR16_TYPE__ short unsigned int
- #define __PRAGMA_REDEFINE_EXTNAME 1
- #define __SIZE_WIDTH__ 64
- #define __SEG_FS 1
- #define __INT_LEAST16_MAX__ 0x7fff
- #define __DEC64_MANT_DIG__ 16
- #define __INT64_MAX__ 0x7fffffffffffffffL
- #define __SEG_GS 1
- #define __FLT32_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F32
- #define __SIG_ATOMIC_WIDTH__ 32
- #define __INT_LEAST64_TYPE__ long int
- #define __INT16_TYPE__ short int
- #define __INT_LEAST8_TYPE__ signed char
- #define __cpp_structured_bindings 201606L
- #define __SIZEOF_INT__ 4
- #define __DEC32_MAX_EXP__ 97
- #define __INT_FAST8_MAX__ 0x7f
- #define __FLT128_MAX__ 1.18973149535723176508575932662800702e+4932F128
- #define __INTPTR_MAX__ 0x7fffffffffffffffL
- #define __cpp_sized_deallocation 201309L
- #define __cpp_guaranteed_copy_elision 201606L
- #define linux 1
- #define __FLT64_HAS_QUIET_NAN__ 1
- #define __FLT32_MIN_10_EXP__ (-37)
- #define __EXCEPTIONS 1
- #define __PTRDIFF_WIDTH__ 64
- #define __LDBL_MANT_DIG__ 64
- #define __cpp_range_based_for 201603L
- #define __FLT64_HAS_INFINITY__ 1
- #define __FLT64X_MAX__ 1.18973149535723176502126385303097021e+4932F64x
- #define __STDCPP_DEFAULT_NEW_ALIGNMENT__ 16
- #define __SIG_ATOMIC_MIN__ (-__SIG_ATOMIC_MAX__ - 1)
- #define __code_model_small__ 1
- #define __GCC_ATOMIC_LONG_LOCK_FREE 2
- #define __cpp_nontype_template_args 201411L
- #define __DEC32_MANT_DIG__ 7

- #define __cpp_return_type_deduction 201304L
- #define __k8__ 1
- #define __INTPTR_TYPE__ long int
- #define __UINT16_TYPE__ short unsigned int
- #define __WCHAR_TYPE__ int
- #define __pic__ 2
- #define __UINTPTR_MAX__ 0xffffffffffffffffUL
- #define __INT_FAST64_WIDTH__ 64
- #define __cpp_decltype 200707L
- #define __INT_FAST64_MAX__ 0x7fffffffffffffffL
- #define __GCC_ATOMIC_TEST_AND_SET_TRUEVAL 1
- #define __FLT_NORM_MAX__ 3.40282346638528859811704183484516925e+38F
- #define __FLT64X_MAX_EXP__ 16384
- #define __UINT_FAST64_TYPE__ long unsigned int
- #define __cpp_inline_variables 201606L
- #define __INT_MAX__ 0x7fffffff
- #define __linux__ 1
- #define __INT64_TYPE__ long int
- #define __FLT_MAX_EXP__ 128
- #define __ORDER_BIG_ENDIAN__ 4321
- #define __DBL_MANT_DIG__ 53
- #define __cpp_inheriting_constructors 201511L
- #define __SIZEOF_FLOAT128__ 16
- #define __INT_LEAST64_MAX__ 0x7fffffffffffffffL
- #define __DEC64_MIN__ 1E-383DD
- #define __WINT_TYPE__ unsigned int
- #define __UINT_LEAST32_TYPE__ unsigned int
- #define __SIZEOF_SHORT__ 2
- #define __FLT32_NORM_MAX__ 3.40282346638528859811704183484516925e+38F32
- #define __SSE__ 1
- #define __LDBL_MIN_EXP__ (-16381)
- #define __FLT64_MAX__ 1.79769313486231570814527423731704357e+308F64
- #define __amd64__ 1
- #define __WINT_WIDTH__ 32
- #define __INT_LEAST64_WIDTH__ 64
- #define __LDBL_MAX_EXP__ 16384
- #define __FLT32X_MAX_10_EXP__ 308
- #define __SIZEOF_INT128__ 16
- #define __FLT64X_IS_IEC_60559__ 2
- #define __LDBL_MAX_10_EXP__ 4932
- #define __ATOMIC_RELAXED 0
- #define __DBL_EPSILON__ double(2.22044604925031308084726333618164062e-16L)
- #define __FLT128_MIN__ 3.36210314311209350626267781732175260e-4932F128
- #define _LP64 1
- #define __UINT8_C(c) c
- #define __FLT64_MAX_EXP__ 1024
- #define __INT_LEAST32_TYPE__ int
- #define __SIZEOF_WCHAR_T__ 4
- #define __GNUC_PATCHLEVEL__ 0
- #define __FLT128_NORM_MAX__ 1.18973149535723176508575932662800702e+4932F128
- #define __FLT64_NORM_MAX__ 1.79769313486231570814527423731704357e+308F64
- #define __FLT128_HAS_QUIET_NAN__ 1
- #define __INTMAX_MAX__ 0x7fffffffffffffffL
- #define __INT_FAST8_TYPE__ signed char
- #define __cpp_namespace_attributes 201411L

- #define __FLT64X_MIN__ 3.36210314311209350626267781732175260e-4932F64x
- #define __STDCPP_THREADS__ 1
- #define __GNUC_STDC_INLINE__ 1
- #define __FLT64_HAS_DENORM__ 1
- #define __FLT32_EPSILON__ 1.19209289550781250000000000000000000e-7F32
- #define __DBL_DECIMAL_DIG__ 17
- #define __STDC_UTF_32__ 1
- #define __INT_FAST8_WIDTH__ 8
- #define __FXSR__ 1
- #define __FLT32X_MAX__ 1.79769313486231570814527423731704357e+308F32x
- #define __DBL_NORM_MAX__ double(1.79769313486231570814527423731704357e+308L)
- #define __BYTE_ORDER__ __ORDER_LITTLE_ENDIAN__
- #define __INTMAX_WIDTH__ 64
- #define __cpp_runtime_arrays 198712L
- #define __UINT64_TYPE__ long unsigned int
- #define __UINT32_C(c) c ## U
- #define __cpp_alias_templates 200704L
- #define __FLT_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F
- #define __FLT128_IS_IEC_60559__ 2
- #define __INT8_MAX__ 0x7f
- #define __LONG_WIDTH__ 64
- #define __PIC__ 2
- #define __UINT_FAST32_TYPE__ long unsigned int
- #define __FLT32X_NORM_MAX__ 1.79769313486231570814527423731704357e+308F32x
- #define __CHAR32_TYPE__ unsigned int
- #define __FLT_MAX__ 3.40282346638528859811704183484516925e+38F
- #define __cpp_constexpr 201603L
- #define __SSE2__ 1
- #define __cpp_deduction_guides 201703L
- #define __INT32_TYPE__ int
- #define __SIZEOF_DOUBLE__ 8
- #define __cpp_exceptions 199711L
- #define __FLT_MIN_10_EXP__ (-37)
- #define __FLT64_MIN__ 2.22507385850720138309023271733240406e-308F64
- #define __INT_LEAST32_WIDTH__ 32
- #define __INTMAX_TYPE__ long int
- #define __DEC128_MAX_EXP__ 6145
- #define __FLT32X_HAS_QUIET_NAN__ 1
- #define __ATOMIC_CONSUME 1
- #define __GNUC_MINOR__ 3
- #define __GLIBCXX_TYPE_INT_N_0 __int128
- #define __INT_FAST16_WIDTH__ 64
- #define __UINTMAX_MAX__ 0xffffffffffffffffUL
- #define __PIE__ 2
- #define __FLT32X_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F32x
- #define __cpp_template_template_args 201611L
- #define __DBL_MAX_10_EXP__ 308
- #define __LDBL_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951L
- #define __INT16_C(c) c
- #define __STDC__ 1
- #define __FLT32X_DIG__ 15
- #define __PTRDIFF_TYPE__ long int
- #define __ATOMIC_SEQ_CST 5
- #define __FLT32X_MIN_10_EXP__ (-307)
- #define __UINTPTR_TYPE__ long unsigned int

- #define __DEC64_SUBNORMAL_MIN__ 0.000000000000001E-383DD
- #define __DEC128_MANT_DIG__ 34
- #define __LDBL_MIN_10_EXP__ (-4931)
- #define __cpp_generic_lambdas 201304L
- #define __SSE_MATH__ 1
- #define __SIZEOF_LONG_LONG__ 8
- #define __cpp_user_defined_literals 200809L
- #define __FLT128_DECIMAL_DIG__ 36
- #define __GCC_ATOMIC_LLONG_LOCK_FREE 2
- #define __FLT32_HAS_QUIET_NAN__ 1
- #define __FLT_DECIMAL_DIG__ 9
- #define __UINT_FAST16_MAX__ 0xffffffffffffffffUL
- #define __LDBL_NORM_MAX__ 1.18973149535723176502126385303097021e+4932L
- #define __GCC_ATOMIC_SHORT_LOCK_FREE 2
- #define __UINT_FAST8_TYPE__ unsigned char
- #define _GNU_SOURCE 1
- #define __cpp_init_captures 201304L
- #define __ATOMIC_ACQ_REL 4
- #define __ATOMIC_RELEASE 3

5.5.1 宏定义说明

5.5.1.1 __amd64

```
#define __amd64 1
```

5.5.1.2 __amd64__

```
#define __amd64__ 1
```

5.5.1.3 __ATOMIC_ACQ_REL

```
#define __ATOMIC_ACQ_REL 4
```

5.5.1.4 __ATOMIC_ACQUIRE

```
#define __ATOMIC_ACQUIRE 2
```

5.5.1.5 __ATOMIC_CONSUME

```
#define __ATOMIC_CONSUME 1
```

5.5.1.6 __ATOMIC_HLE_ACQUIRE

```
#define __ATOMIC_HLE_ACQUIRE 65536
```

5.5.1.7 __ATOMIC_HLE_RELEASE

```
#define __ATOMIC_HLE_RELEASE 131072
```

5.5.1.8 __ATOMIC_RELAXED

```
#define __ATOMIC_RELAXED 0
```

5.5.1.9 __ATOMIC_RELEASE

```
#define __ATOMIC_RELEASE 3
```

5.5.1.10 __ATOMIC_SEQ_CST

```
#define __ATOMIC_SEQ_CST 5
```

5.5.1.11 __BIGGEST_ALIGNMENT__

```
#define __BIGGEST_ALIGNMENT__ 16
```

5.5.1.12 __BYTE_ORDER__

```
#define __BYTE_ORDER__ __ORDER_LITTLE_ENDIAN__
```

5.5.1.13 __CET__

```
#define __CET__ 3
```

5.5.1.14 __CHAR16_TYPE__

```
#define __CHAR16_TYPE__ short unsigned int
```

5.5.1.15 __CHAR32_TYPE__

```
#define __CHAR32_TYPE__ unsigned int
```

5.5.1.16 __CHAR_BIT__

```
#define __CHAR_BIT__ 8
```

5.5.1.17 __code_model_small__

```
#define __code_model_small__ 1
```

5.5.1.18 __cplusplus

```
#define __cplusplus 201703L
```

5.5.1.19 __cpp_aggregate_bases

```
#define __cpp_aggregate_bases 201603L
```

5.5.1.20 __cpp_aggregate_nsdmi

```
#define __cpp_aggregate_nsdmi 201304L
```

5.5.1.21 __cpp_alias_templates

```
#define __cpp_alias_templates 200704L
```

5.5.1.22 __cpp_aligned_new

```
#define __cpp_aligned_new 201606L
```

5.5.1.23 __cpp_attributes

```
#define __cpp_attributes 200809L
```

5.5.1.24 __cpp_binary_literals

```
#define __cpp_binary_literals 201304L
```

5.5.1.25 __cpp_capture_star_this

```
#define __cpp_capture_star_this 201603L
```

5.5.1.26 __cpp_constexpr

```
#define __cpp_constexpr 201603L
```

5.5.1.27 __cpp_decltype

```
#define __cpp_decltype 200707L
```

5.5.1.28 __cpp_decltype_auto

```
#define __cpp_decltype_auto 201304L
```

5.5.1.29 __cpp_deduction_guides

```
#define __cpp_deduction_guides 201703L
```

5.5.1.30 __cpp_delegating_constructors

```
#define __cpp_delegating_constructors 200604L
```

5.5.1.31 __cpp_digit_separators

```
#define __cpp_digit_separators 201309L
```

5.5.1.32 __cpp_enumerator_attributes

```
#define __cpp_enumerator_attributes 201411L
```

5.5.1.33 __cpp_exceptions

```
#define __cpp_exceptions 199711L
```

5.5.1.34 __cpp_fold_expressions

```
#define __cpp_fold_expressions 201603L
```

5.5.1.35 __cpp_generic_lambdas

```
#define __cpp_generic_lambdas 201304L
```

5.5.1.36 __cpp_guaranteed_copy_elision

```
#define __cpp_guaranteed_copy_elision 201606L
```

5.5.1.37 __cpp_hex_float

```
#define __cpp_hex_float 201603L
```

5.5.1.38 __cpp_if_constexpr

```
#define __cpp_if_constexpr 201606L
```

5.5.1.39 __cpp_inheriting_constructors

```
#define __cpp_inheriting_constructors 201511L
```

5.5.1.40 __cpp_init_captures

```
#define __cpp_init_captures 201304L
```

5.5.1.41 __cpp_initializer_lists

```
#define __cpp_initializer_lists 200806L
```

5.5.1.42 __cpp_inline_variables

```
#define __cpp_inline_variables 201606L
```

5.5.1.43 __cpp_lambdas

```
#define __cpp_lambdas 200907L
```

5.5.1.44 __cpp_namespace_attributes

```
#define __cpp_namespace_attributes 201411L
```

5.5.1.45 __cpp_nested_namespace_definitions

```
#define __cpp_nested_namespace_definitions 201411L
```

5.5.1.46 __cpp_noexcept_function_type

```
#define __cpp_noexcept_function_type 201510L
```

5.5.1.47 __cpp_nontype_template_args

```
#define __cpp_nontype_template_args 201411L
```

5.5.1.48 __cpp_nontype_template_parameter_auto

```
#define __cpp_nontype_template_parameter_auto 201606L
```

5.5.1.49 __cpp_nsdmi

```
#define __cpp_nsdmi 200809L
```

5.5.1.50 __cpp_range_based_for

```
#define __cpp_range_based_for 201603L
```

5.5.1.51 __cpp_raw_strings

```
#define __cpp_raw_strings 200710L
```

5.5.1.52 __cpp_ref_qualifiers

```
#define __cpp_ref_qualifiers 200710L
```

5.5.1.53 __cpp_return_type_deduction

```
#define __cpp_return_type_deduction 201304L
```

5.5.1.54 __cpp_rtti

```
#define __cpp_rtti 199711L
```

5.5.1.55 __cpp_runtime_arrays

```
#define __cpp_runtime_arrays 198712L
```

5.5.1.56 __cpp_rvalue_reference

```
#define __cpp_rvalue_reference 200610L
```

5.5.1.57 __cpp_rvalue_references

```
#define __cpp_rvalue_references 200610L
```

5.5.1.58 __cpp_sized_deallocation

```
#define __cpp_sized_deallocation 201309L
```

5.5.1.59 __cpp_static_assert

```
#define __cpp_static_assert 201411L
```

5.5.1.60 __cpp_structured_bindings

```
#define __cpp_structured_bindings 201606L
```

5.5.1.61 __cpp_template_auto

```
#define __cpp_template_auto 201606L
```

5.5.1.62 __cpp_template_template_args

```
#define __cpp_template_template_args 201611L
```

5.5.1.63 __cpp_threadsafe_static_init

```
#define __cpp_threadsafe_static_init 200806L
```

5.5.1.64 __cpp_unicode_characters

```
#define __cpp_unicode_characters 201411L
```

5.5.1.65 __cpp_unicode_literals

```
#define __cpp_unicode_literals 200710L
```

5.5.1.66 __cpp_user_defined_literals

```
#define __cpp_user_defined_literals 200809L
```

5.5.1.67 __cpp_variable_templates

```
#define __cpp_variable_templates 201304L
```

5.5.1.68 __cpp_variadic_templates

```
#define __cpp_variadic_templates 200704L
```

5.5.1.69 __cpp_variadic_using

```
#define __cpp_variadic_using 201611L
```

5.5.1.70 __DBL_DECIMAL_DIG__

```
#define __DBL_DECIMAL_DIG__ 17
```

5.5.1.71 __DBL_DENORM_MIN__

```
#define __DBL_DENORM_MIN__ double(4.94065645841246544176568792868221372e-324L)
```

5.5.1.72 __DBL_DIG__

```
#define __DBL_DIG__ 15
```

5.5.1.73 __DBL_EPSILON__

```
#define __DBL_EPSILON__ double(2.22044604925031308084726333618164062e-16L)
```

5.5.1.74 __DBL_HAS_DENORM__

```
#define __DBL_HAS_DENORM__ 1
```

5.5.1.75 __DBL_HAS_INFINITY__

```
#define __DBL_HAS_INFINITY__ 1
```

5.5.1.76 __DBL_HAS_QUIET_NAN__

```
#define __DBL_HAS_QUIET_NAN__ 1
```

5.5.1.77 __DBL_IS_IEC_60559__

```
#define __DBL_IS_IEC_60559__ 2
```

5.5.1.78 __DBL_MANT_DIG__

```
#define __DBL_MANT_DIG__ 53
```

5.5.1.79 __DBL_MAX_10_EXP__

```
#define __DBL_MAX_10_EXP__ 308
```

5.5.1.80 __DBL_MAX__

```
#define __DBL_MAX__ double(1.79769313486231570814527423731704357e+308L)
```

5.5.1.81 __DBL_MAX_EXP__

```
#define __DBL_MAX_EXP__ 1024
```

5.5.1.82 __DBL_MIN_10_EXP__

```
#define __DBL_MIN_10_EXP__ (-307)
```

5.5.1.83 __DBL_MIN__

```
#define __DBL_MIN__ double(2.22507385850720138309023271733240406e-308L)
```

5.5.1.84 __DBL_MIN_EXP__

```
#define __DBL_MIN_EXP__ (-1021)
```

5.5.1.85 __DBL_NORM_MAX__

```
#define __DBL_NORM_MAX__ double(1.79769313486231570814527423731704357e+308L)
```

5.5.1.86 __DEC128_EPSILON__

```
#define __DEC128_EPSILON__ 1E-33DL
```

5.5.1.87 __DEC128_MANT_DIG__

```
#define __DEC128_MANT_DIG__ 34
```

5.5.1.88 __DEC128_MAX__

```
#define __DEC128_MAX__ 9.999999999999999999999999999999999E6144DL
```

5.5.1.89 __DEC128_MAX_EXP__

```
#define __DEC128_MAX_EXP__ 6145
```

5.5.1.90 __DEC128_MIN__

```
#define __DEC128_MIN__ 1E-6143DL
```

5.5.1.91 __DEC128_MIN_EXP__

```
#define __DEC128_MIN_EXP__ (-6142)
```

5.5.1.92 __DEC128_SUBNORMAL_MIN__

```
#define __DEC128_SUBNORMAL_MIN__ 0.000000000000000000000000000000001E-6143DL
```

5.5.1.93 __DEC32_EPSILON__

```
#define __DEC32_EPSILON__ 1E-6DF
```

5.5.1.94 __DEC32_MANT_DIG__

```
#define __DEC32_MANT_DIG__ 7
```

5.5.1.95 __DEC32_MAX__

```
#define __DEC32_MAX__ 9.999999E96DF
```

5.5.1.96 __DEC32_MAX_EXP__

```
#define __DEC32_MAX_EXP__ 97
```

5.5.1.97 __DEC32_MIN__

```
#define __DEC32_MIN__ 1E-95DF
```

5.5.1.98 __DEC32_MIN_EXP__

```
#define __DEC32_MIN_EXP__ (-94)
```

5.5.1.99 __DEC32_SUBNORMAL_MIN__

```
#define __DEC32_SUBNORMAL_MIN__ 0.000001E-95DF
```

5.5.1.100 __DEC64_EPSILON__

```
#define __DEC64_EPSILON__ 1E-15DD
```

5.5.1.101 __DEC64_MANT_DIG__

```
#define __DEC64_MANT_DIG__ 16
```

5.5.1.102 __DEC64_MAX__

```
#define __DEC64_MAX__ 9.999999999999999E384DD
```

5.5.1.103 __DEC64_MAX_EXP__

```
#define __DEC64_MAX_EXP__ 385
```

5.5.1.104 __DEC64_MIN__

```
#define __DEC64_MIN__ 1E-383DD
```

5.5.1.105 __DEC64_MIN_EXP__

```
#define __DEC64_MIN_EXP__ (-382)
```

5.5.1.106 __DEC64_SUBNORMAL_MIN__

```
#define __DEC64_SUBNORMAL_MIN__ 0.000000000000001E-383DD
```

5.5.1.107 __DEC_EVAL_METHOD__

```
#define __DEC_EVAL_METHOD__ 2
```

5.5.1.108 __DECIMAL_BID_FORMAT__

```
#define __DECIMAL_BID_FORMAT__ 1
```

5.5.1.109 __DECIMAL_DIG__

```
#define __DECIMAL_DIG__ 21
```

5.5.1.110 __DEPRECATED

```
#define __DEPRECATED 1
```

5.5.1.111 __ELF__

```
#define __ELF__ 1
```

5.5.1.112 __EXCEPTIONS

```
#define __EXCEPTIONS 1
```

5.5.1.113 __FINITE_MATH_ONLY__

```
#define __FINITE_MATH_ONLY__ 0
```

5.5.1.114 __FLOAT_WORD_ORDER__

```
#define __FLOAT_WORD_ORDER__ __ORDER_LITTLE_ENDIAN__
```

5.5.1.115 __FLT128_DECIMAL_DIG__

```
#define __FLT128_DECIMAL_DIG__ 36
```

5.5.1.116 __FLT128_DENORM_MIN__

```
#define __FLT128_DENORM_MIN__ 6.47517511943802511092443895822764655e-4966F128
```

5.5.1.117 __FLT128_DIG__

```
#define __FLT128_DIG__ 33
```

5.5.1.118 __FLT128_EPSILON__

```
#define __FLT128_EPSILON__ 1.92592994438723585305597794258492732e-34F128
```

5.5.1.119 __FLT128_HAS_DENORM__

```
#define __FLT128_HAS_DENORM__ 1
```

5.5.1.120 __FLT128_HAS_INFINITY__

```
#define __FLT128_HAS_INFINITY__ 1
```

5.5.1.121 __FLT128_HAS_QUIET_NAN__

```
#define __FLT128_HAS_QUIET_NAN__ 1
```

5.5.1.122 __FLT128_IS_IEC_60559__

```
#define __FLT128_IS_IEC_60559__ 2
```

5.5.1.123 __FLT128_MANT_DIG__

```
#define __FLT128_MANT_DIG__ 113
```

5.5.1.124 __FLT128_MAX_10_EXP__

```
#define __FLT128_MAX_10_EXP__ 4932
```

5.5.1.125 __FLT128_MAX__

```
#define __FLT128_MAX__ 1.18973149535723176508575932662800702e+4932F128
```

5.5.1.126 __FLT128_MAX_EXP__

```
#define __FLT128_MAX_EXP__ 16384
```

5.5.1.127 __FLT128_MIN_10_EXP__

```
#define __FLT128_MIN_10_EXP__ (-4931)
```

5.5.1.128 __FLT128_MIN__

```
#define __FLT128_MIN__ 3.36210314311209350626267781732175260e-4932F128
```

5.5.1.129 __FLT128_MIN_EXP__

```
#define __FLT128_MIN_EXP__ (-16381)
```

5.5.1.130 __FLT128_NORM_MAX__

```
#define __FLT128_NORM_MAX__ 1.18973149535723176508575932662800702e+4932F128
```

5.5.1.131 __FLT32_DECIMAL_DIG__

```
#define __FLT32_DECIMAL_DIG__ 9
```

5.5.1.132 __FLT32_DENORM_MIN__

```
#define __FLT32_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F32
```

5.5.1.133 __FLT32_DIG__

```
#define __FLT32_DIG__ 6
```

5.5.1.134 __FLT32_EPSILON__

```
#define __FLT32_EPSILON__ 1.19209289550781250000000000000000000e-7F32
```

5.5.1.135 __FLT32_HAS_DENORM__

```
#define __FLT32_HAS_DENORM__ 1
```

5.5.1.136 __FLT32_HAS_INFINITY__

```
#define __FLT32_HAS_INFINITY__ 1
```

5.5.1.137 __FLT32_HAS_QUIET_NAN__

```
#define __FLT32_HAS_QUIET_NAN__ 1
```

5.5.1.138 __FLT32_IS_IEC_60559__

```
#define __FLT32_IS_IEC_60559__ 2
```

5.5.1.139 __FLT32_MANT_DIG__

```
#define __FLT32_MANT_DIG__ 24
```

5.5.1.140 __FLT32_MAX_10_EXP__

```
#define __FLT32_MAX_10_EXP__ 38
```

5.5.1.141 __FLT32_MAX__

```
#define __FLT32_MAX__ 3.40282346638528859811704183484516925e+38F32
```

5.5.1.142 __FLT32_MAX_EXP__

```
#define __FLT32_MAX_EXP__ 128
```

5.5.1.143 __FLT32_MIN_10_EXP__

```
#define __FLT32_MIN_10_EXP__ (-37)
```

5.5.1.144 __FLT32_MIN__

```
#define __FLT32_MIN__ 1.17549435082228750796873653722224568e-38F32
```

5.5.1.145 __FLT32_MIN_EXP__

```
#define __FLT32_MIN_EXP__ (-125)
```

5.5.1.146 __FLT32_NORM_MAX__

```
#define __FLT32_NORM_MAX__ 3.40282346638528859811704183484516925e+38F32
```

5.5.1.147 __FLT32X_DECIMAL_DIG__

```
#define __FLT32X_DECIMAL_DIG__ 17
```

5.5.1.148 __FLT32X_DENORM_MIN__

```
#define __FLT32X_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F32x
```

5.5.1.149 __FLT32X_DIG__

```
#define __FLT32X_DIG__ 15
```

5.5.1.150 __FLT32X_EPSILON__

```
#define __FLT32X_EPSILON__ 2.22044604925031308084726333618164062e-16F32x
```

5.5.1.151 __FLT32X_HAS_DENORM__

```
#define __FLT32X_HAS_DENORM__ 1
```

5.5.1.152 __FLT32X_HAS_INFINITY__

```
#define __FLT32X_HAS_INFINITY__ 1
```

5.5.1.153 __FLT32X_HAS_QUIET_NAN__

```
#define __FLT32X_HAS_QUIET_NAN__ 1
```

5.5.1.154 __FLT32X_IS_IEC_60559__

```
#define __FLT32X_IS_IEC_60559__ 2
```

5.5.1.155 __FLT32X_MANT_DIG__

```
#define __FLT32X_MANT_DIG__ 53
```

5.5.1.156 __FLT32X_MAX_10_EXP__

```
#define __FLT32X_MAX_10_EXP__ 308
```

5.5.1.157 __FLT32X_MAX__

```
#define __FLT32X_MAX__ 1.79769313486231570814527423731704357e+308F32x
```

5.5.1.158 __FLT32X_MAX_EXP__

```
#define __FLT32X_MAX_EXP__ 1024
```

5.5.1.159 __FLT32X_MIN_10_EXP__

```
#define __FLT32X_MIN_10_EXP__ (-307)
```

5.5.1.160 __FLT32X_MIN__

```
#define __FLT32X_MIN__ 2.22507385850720138309023271733240406e-308F32x
```

5.5.1.161 __FLT32X_MIN_EXP__

```
#define __FLT32X_MIN_EXP__ (-1021)
```

5.5.1.162 __FLT32X_NORM_MAX__

```
#define __FLT32X_NORM_MAX__ 1.79769313486231570814527423731704357e+308F32x
```

5.5.1.163 __FLT64_DECIMAL_DIG__

```
#define __FLT64_DECIMAL_DIG__ 17
```

5.5.1.164 __FLT64_DENORM_MIN__

```
#define __FLT64_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F64
```

5.5.1.165 __FLT64_DIG__

```
#define __FLT64_DIG__ 15
```

5.5.1.166 __FLT64_EPSILON__

```
#define __FLT64_EPSILON__ 2.22044604925031308084726333618164062e-16F64
```

5.5.1.167 __FLT64_HAS_DENORM__

```
#define __FLT64_HAS_DENORM__ 1
```

5.5.1.168 __FLT64_HAS_INFINITY__

```
#define __FLT64_HAS_INFINITY__ 1
```

5.5.1.169 __FLT64_HAS_QUIET_NAN__

```
#define __FLT64_HAS_QUIET_NAN__ 1
```

5.5.1.170 __FLT64_IS_IEC_60559__

```
#define __FLT64_IS_IEC_60559__ 2
```

5.5.1.171 __FLT64_MANT_DIG__

```
#define __FLT64_MANT_DIG__ 53
```

5.5.1.172 __FLT64_MAX_10_EXP__

```
#define __FLT64_MAX_10_EXP__ 308
```

5.5.1.173 __FLT64_MAX__

```
#define __FLT64_MAX__ 1.79769313486231570814527423731704357e+308F64
```

5.5.1.174 __FLT64_MAX_EXP__

```
#define __FLT64_MAX_EXP__ 1024
```

5.5.1.175 __FLT64_MIN_10_EXP__

```
#define __FLT64_MIN_10_EXP__ (-307)
```

5.5.1.176 __FLT64_MIN__

```
#define __FLT64_MIN__ 2.22507385850720138309023271733240406e-308F64
```

5.5.1.177 __FLT64_MIN_EXP__

```
#define __FLT64_MIN_EXP__ (-1021)
```

5.5.1.178 __FLT64_NORM_MAX__

```
#define __FLT64_NORM_MAX__ 1.79769313486231570814527423731704357e+308F64
```

5.5.1.179 __FLT64X_DECIMAL_DIG__

```
#define __FLT64X_DECIMAL_DIG__ 21
```

5.5.1.180 __FLT64X_DENORM_MIN__

```
#define __FLT64X_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951F64x
```

5.5.1.181 __FLT64X_DIG__

```
#define __FLT64X_DIG__ 18
```

5.5.1.182 __FLT64X_EPSILON__

```
#define __FLT64X_EPSILON__ 1.08420217248550443400745280086994171e-19F64x
```

5.5.1.183 __FLT64X_HAS_DENORM__

```
#define __FLT64X_HAS_DENORM__ 1
```

5.5.1.184 __FLT64X_HAS_INFINITY__

```
#define __FLT64X_HAS_INFINITY__ 1
```

5.5.1.185 __FLT64X_HAS_QUIET_NAN__

```
#define __FLT64X_HAS_QUIET_NAN__ 1
```

5.5.1.186 __FLT64X_IS_IEC_60559__

```
#define __FLT64X_IS_IEC_60559__ 2
```

5.5.1.187 __FLT64X_MANT_DIG__

```
#define __FLT64X_MANT_DIG__ 64
```

5.5.1.188 __FLT64X_MAX_10_EXP__

```
#define __FLT64X_MAX_10_EXP__ 4932
```

5.5.1.189 __FLT64X_MAX__

```
#define __FLT64X_MAX__ 1.18973149535723176502126385303097021e+4932F64x
```

5.5.1.190 __FLT64X_MAX_EXP__

```
#define __FLT64X_MAX_EXP__ 16384
```

5.5.1.191 __FLT64X_MIN_10_EXP__

```
#define __FLT64X_MIN_10_EXP__ (-4931)
```

5.5.1.192 __FLT64X_MIN__

```
#define __FLT64X_MIN__ 3.36210314311209350626267781732175260e-4932F64x
```

5.5.1.193 __FLT64X_MIN_EXP__

```
#define __FLT64X_MIN_EXP__ (-16381)
```

5.5.1.194 __FLT64X_NORM_MAX__

```
#define __FLT64X_NORM_MAX__ 1.18973149535723176502126385303097021e+4932F64x
```

5.5.1.195 __FLT_DECIMAL_DIG__

```
#define __FLT_DECIMAL_DIG__ 9
```

5.5.1.196 __FLT_DENORM_MIN__

```
#define __FLT_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F
```

5.5.1.197 __FLT_DIG__

```
#define __FLT_DIG__ 6
```

5.5.1.198 __FLT_EPSILON__

```
#define __FLT_EPSILON__ 1.19209289550781250000000000000000000e-7F
```

5.5.1.199 __FLT_EVAL_METHOD__

```
#define __FLT_EVAL_METHOD__ 0
```

5.5.1.200 __FLT_EVAL_METHOD_TS_18661_3__

```
#define __FLT_EVAL_METHOD_TS_18661_3__ 0
```

5.5.1.201 __FLT_HAS_DENORM__

```
#define __FLT_HAS_DENORM__ 1
```

5.5.1.202 __FLT_HAS_INFINITY__

```
#define __FLT_HAS_INFINITY__ 1
```

5.5.1.203 __FLT_HAS_QUIET_NAN__

```
#define __FLT_HAS_QUIET_NAN__ 1
```

5.5.1.204 __FLT_IS_IEC_60559__

```
#define __FLT_IS_IEC_60559__ 2
```

5.5.1.205 __FLT_MANT_DIG__

```
#define __FLT_MANT_DIG__ 24
```

5.5.1.206 __FLT_MAX_10_EXP__

```
#define __FLT_MAX_10_EXP__ 38
```

5.5.1.207 __FLT_MAX__

```
#define __FLT_MAX__ 3.40282346638528859811704183484516925e+38F
```

5.5.1.208 __FLT_MAX_EXP__

```
#define __FLT_MAX_EXP__ 128
```

5.5.1.209 __FLT_MIN_10_EXP__

```
#define __FLT_MIN_10_EXP__ (-37)
```

5.5.1.210 __FLT_MIN__

```
#define __FLT_MIN__ 1.17549435082228750796873653722224568e-38F
```

5.5.1.211 __FLT_MIN_EXP__

```
#define __FLT_MIN_EXP__ (-125)
```

5.5.1.212 __FLT_NORM_MAX__

```
#define __FLT_NORM_MAX__ 3.40282346638528859811704183484516925e+38F
```

5.5.1.213 __FLT_RADIX__

```
#define __FLT_RADIX__ 2
```

5.5.1.214 __FXSR__

```
#define __FXSR__ 1
```

5.5.1.215 __GCC_ASM_FLAG_OUTPUTS__

```
#define __GCC_ASM_FLAG_OUTPUTS__ 1
```

5.5.1.216 __GCC_ATOMIC_BOOL_LOCK_FREE

```
#define __GCC_ATOMIC_BOOL_LOCK_FREE 2
```

5.5.1.217 __GCC_ATOMIC_CHAR16_T_LOCK_FREE

```
#define __GCC_ATOMIC_CHAR16_T_LOCK_FREE 2
```

5.5.1.218 __GCC_ATOMIC_CHAR32_T_LOCK_FREE

```
#define __GCC_ATOMIC_CHAR32_T_LOCK_FREE 2
```

5.5.1.219 __GCC_ATOMIC_CHAR_LOCK_FREE

```
#define __GCC_ATOMIC_CHAR_LOCK_FREE 2
```

5.5.1.220 __GCC_ATOMIC_INT_LOCK_FREE

```
#define __GCC_ATOMIC_INT_LOCK_FREE 2
```

5.5.1.221 __GCC_ATOMIC_LLONG_LOCK_FREE

```
#define __GCC_ATOMIC_LLONG_LOCK_FREE 2
```

5.5.1.222 __GCC_ATOMIC_LONG_LOCK_FREE

```
#define __GCC_ATOMIC_LONG_LOCK_FREE 2
```

5.5.1.223 __GCC_ATOMIC_POINTER_LOCK_FREE

```
#define __GCC_ATOMIC_POINTER_LOCK_FREE 2
```

5.5.1.224 __GCC_ATOMIC_SHORT_LOCK_FREE

```
#define __GCC_ATOMIC_SHORT_LOCK_FREE 2
```

5.5.1.225 __GCC_ATOMIC_TEST_AND_SET_TRUEVAL

```
#define __GCC_ATOMIC_TEST_AND_SET_TRUEVAL 1
```

5.5.1.226 __GCC_ATOMIC_WCHAR_T_LOCK_FREE

```
#define __GCC_ATOMIC_WCHAR_T_LOCK_FREE 2
```

5.5.1.227 __GCC_HAVE_DWARF2_CFI_ASM

```
#define __GCC_HAVE_DWARF2_CFI_ASM 1
```

5.5.1.228 __GCC_HAVE_SYNC_COMPARE_AND_SWAP_1

```
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_1 1
```

5.5.1.229 __GCC_HAVE_SYNC_COMPARE_AND_SWAP_2

```
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_2 1
```

5.5.1.230 __GCC_HAVE_SYNC_COMPARE_AND_SWAP_4

```
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_4 1
```

5.5.1.231 __GCC_HAVE_SYNC_COMPARE_AND_SWAP_8

```
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_8 1
```

5.5.1.232 __GCC_IEC_559

```
#define __GCC_IEC_559 2
```

5.5.1.233 __GCC_IEC_559_COMPLEX

```
#define __GCC_IEC_559_COMPLEX 2
```

5.5.1.234 __GLIBCXX_BITSIZE_INT_N_0

```
#define __GLIBCXX_BITSIZE_INT_N_0 128
```

5.5.1.235 __GLIBCXX_TYPE_INT_N_0

```
#define __GLIBCXX_TYPE_INT_N_0 __int128
```

5.5.1.236 __gnu_linux__

```
#define __gnu_linux__ 1
```

5.5.1.237 __GNUC__

```
#define __GNUC__ 11
```

5.5.1.238 __GNUC_EXECUTION_CHARSET_NAME

```
#define __GNUC_EXECUTION_CHARSET_NAME "UTF-8"
```

5.5.1.239 __GNUC_MINOR__

```
#define __GNUC_MINOR__ 3
```

5.5.1.240 __GNUC_PATCHLEVEL__

```
#define __GNUC_PATCHLEVEL__ 0
```

5.5.1.241 __GNUC_STDC_INLINE__

```
#define __GNUC_STDC_INLINE__ 1
```

5.5.1.242 __GNUC_WIDE_EXECUTION_CHARSET_NAME

```
#define __GNUC_WIDE_EXECUTION_CHARSET_NAME "UTF-32LE"
```

5.5.1.243 __GNUG__

```
#define __GNUG__ 11
```

5.5.1.244 __GXX_ABI_VERSION

```
#define __GXX_ABI_VERSION 1016
```

5.5.1.245 __GXX_EXPERIMENTAL_CXX0X__

```
#define __GXX_EXPERIMENTAL_CXX0X__ 1
```

5.5.1.246 __GXX_RTTI

```
#define __GXX_RTTI 1
```

5.5.1.247 __GXX_WEAK__

```
#define __GXX_WEAK__ 1
```

5.5.1.248 __HAVE_SPECULATION_SAFE_VALUE

```
#define __HAVE_SPECULATION_SAFE_VALUE 1
```

5.5.1.249 __INT16_C

```
#define __INT16_C(
              c ) c
```

5.5.1.250 __INT16_MAX__

```
#define __INT16_MAX__ 0x7fff
```

5.5.1.251 __INT16_TYPE__

```
#define __INT16_TYPE__ short int
```

5.5.1.252 __INT32_C

```
#define __INT32_C(
              c ) c
```

5.5.1.253 __INT32_MAX__

```
#define __INT32_MAX__ 0x7fffffff
```

5.5.1.254 __INT32_TYPE__

```
#define __INT32_TYPE__ int
```

5.5.1.255 __INT64_C

```
#define __INT64_C(
              c ) c ## L
```

5.5.1.256 __INT64_MAX__

```
#define __INT64_MAX__ 0x7fffffffffffffffL
```

5.5.1.257 __INT64_TYPE__

```
#define __INT64_TYPE__ long int
```

5.5.1.258 __INT8_C

```
#define __INT8_C(
              c ) c
```

5.5.1.259 __INT8_MAX__

```
#define __INT8_MAX__ 0x7f
```

5.5.1.260 __INT8_TYPE__

```
#define __INT8_TYPE__ signed char
```

5.5.1.261 __INT_FAST16_MAX__

```
#define __INT_FAST16_MAX__ 0x7fffffffffffffffL
```

5.5.1.262 __INT_FAST16_TYPE__

```
#define __INT_FAST16_TYPE__ long int
```

5.5.1.263 __INT_FAST16_WIDTH__

```
#define __INT_FAST16_WIDTH__ 64
```

5.5.1.264 __INT_FAST32_MAX__

```
#define __INT_FAST32_MAX__ 0x7fffffffffffffffL
```

5.5.1.265 __INT_FAST32_TYPE__

```
#define __INT_FAST32_TYPE__ long int
```

5.5.1.266 __INT_FAST32_WIDTH__

```
#define __INT_FAST32_WIDTH__ 64
```

5.5.1.267 __INT_FAST64_MAX__

```
#define __INT_FAST64_MAX__ 0x7fffffffffffffffL
```

5.5.1.268 __INT_FAST64_TYPE__

```
#define __INT_FAST64_TYPE__ long int
```

5.5.1.269 __INT_FAST64_WIDTH__

```
#define __INT_FAST64_WIDTH__ 64
```

5.5.1.270 __INT_FAST8_MAX__

```
#define __INT_FAST8_MAX__ 0x7f
```

5.5.1.271 __INT_FAST8_TYPE__

```
#define __INT_FAST8_TYPE__ signed char
```

5.5.1.272 __INT_FAST8_WIDTH__

```
#define __INT_FAST8_WIDTH__ 8
```

5.5.1.273 __INT_LEAST16_MAX__

```
#define __INT_LEAST16_MAX__ 0x7fff
```

5.5.1.274 __INT_LEAST16_TYPE__

```
#define __INT_LEAST16_TYPE__ short int
```

5.5.1.275 __INT_LEAST16_WIDTH__

```
#define __INT_LEAST16_WIDTH__ 16
```

5.5.1.276 __INT_LEAST32_MAX__

```
#define __INT_LEAST32_MAX__ 0x7fffffff
```

5.5.1.277 __INT_LEAST32_TYPE__

```
#define __INT_LEAST32_TYPE__ int
```

5.5.1.278 __INT_LEAST32_WIDTH__

```
#define __INT_LEAST32_WIDTH__ 32
```

5.5.1.279 __INT_LEAST64_MAX__

```
#define __INT_LEAST64_MAX__ 0x7fffffffffffffffL
```

5.5.1.280 __INT_LEAST64_TYPE__

```
#define __INT_LEAST64_TYPE__ long int
```

5.5.1.281 __INT_LEAST64_WIDTH__

```
#define __INT_LEAST64_WIDTH__ 64
```

5.5.1.282 __INT_LEAST8_MAX__

```
#define __INT_LEAST8_MAX__ 0x7f
```

5.5.1.283 __INT_LEAST8_TYPE__

```
#define __INT_LEAST8_TYPE__ signed char
```

5.5.1.284 __INT_LEAST8_WIDTH__

```
#define __INT_LEAST8_WIDTH__ 8
```

5.5.1.285 __INT_MAX__

```
#define __INT_MAX__ 0x7fffffff
```

5.5.1.286 __INT_WIDTH__

```
#define __INT_WIDTH__ 32
```

5.5.1.287 __INTMAX_C

```
#define __INTMAX_C(
              c ) c ## L
```

5.5.1.288 __INTMAX_MAX__

```
#define __INTMAX_MAX__ 0x7fffffffffffffffL
```

5.5.1.289 __INTMAX_TYPE__

```
#define __INTMAX_TYPE__ long int
```

5.5.1.290 __INTMAX_WIDTH__

```
#define __INTMAX_WIDTH__ 64
```

5.5.1.291 __INTPTR_MAX__

```
#define __INTPTR_MAX__ 0x7fffffffffffffffL
```

5.5.1.292 __INTPTR_TYPE__

```
#define __INTPTR_TYPE__ long int
```

5.5.1.293 __INTPTR_WIDTH__

```
#define __INTPTR_WIDTH__ 64
```

5.5.1.294 __k8

```
#define __k8 1
```

5.5.1.295 __k8__

```
#define __k8__ 1
```

5.5.1.296 __LDBL_DECIMAL_DIG__

```
#define __LDBL_DECIMAL_DIG__ 21
```

5.5.1.297 __LDBL_DENORM_MIN__

```
#define __LDBL_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951L
```

5.5.1.298 __LDBL_DIG__

```
#define __LDBL_DIG__ 18
```

5.5.1.299 __LDBL_EPSILON__

```
#define __LDBL_EPSILON__ 1.08420217248550443400745280086994171e-19L
```

5.5.1.300 __LDBL_HAS_DENORM__

```
#define __LDBL_HAS_DENORM__ 1
```

5.5.1.301 __LDBL_HAS_INFINITY__

```
#define __LDBL_HAS_INFINITY__ 1
```

5.5.1.302 __LDBL_HAS_QUIET_NAN__

```
#define __LDBL_HAS_QUIET_NAN__ 1
```

5.5.1.303 __LDBL_IS_IEC_60559__

```
#define __LDBL_IS_IEC_60559__ 2
```

5.5.1.304 __LDBL_MANT_DIG__

```
#define __LDBL_MANT_DIG__ 64
```

5.5.1.305 __LDBL_MAX_10_EXP__

```
#define __LDBL_MAX_10_EXP__ 4932
```

5.5.1.306 __LDBL_MAX__

```
#define __LDBL_MAX__ 1.18973149535723176502126385303097021e+4932L
```

5.5.1.307 __LDBL_MAX_EXP__

```
#define __LDBL_MAX_EXP__ 16384
```

5.5.1.308 __LDBL_MIN_10_EXP__

```
#define __LDBL_MIN_10_EXP__ (-4931)
```

5.5.1.309 __LDBL_MIN__

```
#define __LDBL_MIN__ 3.36210314311209350626267781732175260e-4932L
```

5.5.1.310 __LDBL_MIN_EXP__

```
#define __LDBL_MIN_EXP__ (-16381)
```

5.5.1.311 __LDBL_NORM_MAX__

```
#define __LDBL_NORM_MAX__ 1.18973149535723176502126385303097021e+4932L
```

5.5.1.312 __linux

```
#define __linux 1
```

5.5.1.313 __linux__

```
#define __linux__ 1
```

5.5.1.314 __LONG_LONG_MAX__

```
#define __LONG_LONG_MAX__ 0x7fffffffffffffffLL
```

5.5.1.315 __LONG_LONG_WIDTH__

```
#define __LONG_LONG_WIDTH__ 64
```

5.5.1.316 __LONG_MAX__

```
#define __LONG_MAX__ 0x7fffffffffffffffL
```

5.5.1.317 __LONG_WIDTH__

```
#define __LONG_WIDTH__ 64
```

5.5.1.318 __LP64__

```
#define __LP64__ 1
```

5.5.1.319 __MMX__

```
#define __MMX__ 1
```

5.5.1.320 __MMX_WITH_SSE__

```
#define __MMX_WITH_SSE__ 1
```

5.5.1.321 __OPTIMIZE__

```
#define __OPTIMIZE__ 1
```

5.5.1.322 __ORDER_BIG_ENDIAN__

```
#define __ORDER_BIG_ENDIAN__ 4321
```

5.5.1.323 __ORDER_LITTLE_ENDIAN__

```
#define __ORDER_LITTLE_ENDIAN__ 1234
```

5.5.1.324 __ORDER_PDP_ENDIAN__

```
#define __ORDER_PDP_ENDIAN__ 3412
```

5.5.1.325 __pic__

```
#define __pic__ 2
```

5.5.1.326 __PIC__

```
#define __PIC__ 2
```

5.5.1.327 __pie__

```
#define __pie__ 2
```

5.5.1.328 __PIE__

```
#define __PIE__ 2
```

5.5.1.329 __PRAGMA_REDEFINE_EXTNAME

```
#define __PRAGMA_REDEFINE_EXTNAME 1
```

5.5.1.330 __PTRDIFF_MAX__

```
#define __PTRDIFF_MAX__ 0x7fffffffffffffffL
```

5.5.1.331 __PTRDIFF_TYPE__

```
#define __PTRDIFF_TYPE__ long int
```

5.5.1.332 __PTRDIFF_WIDTH__

```
#define __PTRDIFF_WIDTH__ 64
```

5.5.1.333 __REGISTER_PREFIX__

```
#define __REGISTER_PREFIX__
```

5.5.1.334 __SCHAR_MAX__

```
#define __SCHAR_MAX__ 0x7f
```

5.5.1.335 __SCHAR_WIDTH__

```
#define __SCHAR_WIDTH__ 8
```

5.5.1.336 __SEG_FS

```
#define __SEG_FS 1
```

5.5.1.337 __SEG_GS

```
#define __SEG_GS 1
```

5.5.1.338 __SHRT_MAX__

```
#define __SHRT_MAX__ 0x7fff
```

5.5.1.339 __SHRT_WIDTH__

```
#define __SHRT_WIDTH__ 16
```

5.5.1.340 __SIG_ATOMIC_MAX__

```
#define __SIG_ATOMIC_MAX__ 0x7fffffff
```

5.5.1.341 __SIG_ATOMIC_MIN__

```
#define __SIG_ATOMIC_MIN__ (-__SIG_ATOMIC_MAX__ - 1)
```

5.5.1.342 __SIG_ATOMIC_TYPE__

```
#define __SIG_ATOMIC_TYPE__ int
```

5.5.1.343 __SIG_ATOMIC_WIDTH__

```
#define __SIG_ATOMIC_WIDTH__ 32
```

5.5.1.344 __SIZE_MAX__

```
#define __SIZE_MAX__ 0xffffffffffffffffUL
```

5.5.1.345 __SIZE_TYPE__

```
#define __SIZE_TYPE__ long unsigned int
```

5.5.1.346 __SIZE_WIDTH__

```
#define __SIZE_WIDTH__ 64
```

5.5.1.347 __SIZEOF_DOUBLE__

```
#define __SIZEOF_DOUBLE__ 8
```

5.5.1.348 __SIZEOF_FLOAT128__

```
#define __SIZEOF_FLOAT128__ 16
```

5.5.1.349 __SIZEOF_FLOAT80__

```
#define __SIZEOF_FLOAT80__ 16
```

5.5.1.350 __SIZEOF_FLOAT__

```
#define __SIZEOF_FLOAT__ 4
```

5.5.1.351 __SIZEOF_INT128__

```
#define __SIZEOF_INT128__ 16
```

5.5.1.352 __SIZEOF_INT__

```
#define __SIZEOF_INT__ 4
```

5.5.1.353 __SIZEOF_LONG__

```
#define __SIZEOF_LONG__ 8
```

5.5.1.354 __SIZEOF_LONG_DOUBLE__

```
#define __SIZEOF_LONG_DOUBLE__ 16
```

5.5.1.355 __SIZEOF_LONG_LONG__

```
#define __SIZEOF_LONG_LONG__ 8
```

5.5.1.356 __SIZEOF_POINTER__

```
#define __SIZEOF_POINTER__ 8
```

5.5.1.357 __SIZEOF_PTRDIFF_T__

```
#define __SIZEOF_PTRDIFF_T__ 8
```

5.5.1.358 __SIZEOF_SHORT__

```
#define __SIZEOF_SHORT__ 2
```

5.5.1.359 __SIZEOF_SIZE_T__

```
#define __SIZEOF_SIZE_T__ 8
```

5.5.1.360 __SIZEOF_WCHAR_T__

```
#define __SIZEOF_WCHAR_T__ 4
```

5.5.1.361 __SIZEOF_WINT_T__

```
#define __SIZEOF_WINT_T__ 4
```

5.5.1.362 __SSE2__

```
#define __SSE2__ 1
```

5.5.1.363 __SSE2_MATH__

```
#define __SSE2_MATH__ 1
```

5.5.1.364 __SSE__

```
#define __SSE__ 1
```

5.5.1.365 __SSE_MATH__

```
#define __SSE_MATH__ 1
```

5.5.1.366 __SSP_STRONG__

```
#define __SSP_STRONG__ 3
```

5.5.1.367 __STDC__

```
#define __STDC__ 1
```

5.5.1.368 __STDC_HOSTED__

```
#define __STDC_HOSTED__ 1
```

5.5.1.369 __STDC_IEC_559__

```
#define __STDC_IEC_559__ 1
```

5.5.1.370 __STDC_IEC_559_COMPLEX__

```
#define __STDC_IEC_559_COMPLEX__ 1
```

5.5.1.371 __STDC_IEC_60559_BFP__

```
#define __STDC_IEC_60559_BFP__ 201404L
```

5.5.1.372 __STDC_IEC_60559_COMPLEX__

```
#define __STDC_IEC_60559_COMPLEX__ 201404L
```

5.5.1.373 __STDC_ISO_10646__

```
#define __STDC_ISO_10646__ 201706L
```

5.5.1.374 __STDC_UTF_16__

```
#define __STDC_UTF_16__ 1
```

5.5.1.375 __STDC_UTF_32__

```
#define __STDC_UTF_32__ 1
```

5.5.1.376 __STDCPP_DEFAULT_NEW_ALIGNMENT__

```
#define __STDCPP_DEFAULT_NEW_ALIGNMENT__ 16
```

5.5.1.377 __STDCPP_THREADS__

```
#define __STDCPP_THREADS__ 1
```

5.5.1.378 __UINT16_C

```
#define __UINT16_C(
              c ) c
```

5.5.1.379 __UINT16_MAX__

```
#define __UINT16_MAX__ 0xffff
```

5.5.1.380 __UINT16_TYPE__

```
#define __UINT16_TYPE__ short unsigned int
```

5.5.1.381 __UINT32_C

```
#define __UINT32_C(
              c ) c ## U
```

5.5.1.382 __UINT32_MAX__

```
#define __UINT32_MAX__ 0xffffffffU
```

5.5.1.383 __UINT32_TYPE__

```
#define __UINT32_TYPE__ unsigned int
```

5.5.1.384 __UINT64_C

```
#define __UINT64_C(
              c ) c ## UL
```

5.5.1.385 __UINT64_MAX__

```
#define __UINT64_MAX__ 0xffffffffffffffffUL
```

5.5.1.386 __UINT64_TYPE__

```
#define __UINT64_TYPE__ long unsigned int
```

5.5.1.387 __UINT8_C

```
#define __UINT8_C(
              c ) c
```

5.5.1.388 __UINT8_MAX__

```
#define __UINT8_MAX__ 0xff
```

5.5.1.389 __UINT8_TYPE__

```
#define __UINT8_TYPE__ unsigned char
```

5.5.1.390 __UINT_FAST16_MAX__

```
#define __UINT_FAST16_MAX__ 0xffffffffffffffffUL
```

5.5.1.391 __UINT_FAST16_TYPE__

```
#define __UINT_FAST16_TYPE__ long unsigned int
```

5.5.1.392 __UINT_FAST32_MAX__

```
#define __UINT_FAST32_MAX__ 0xffffffffffffffffUL
```

5.5.1.393 __UINT_FAST32_TYPE__

```
#define __UINT_FAST32_TYPE__ long unsigned int
```

5.5.1.394 __UINT_FAST64_MAX__

```
#define __UINT_FAST64_MAX__ 0xffffffffffffffffUL
```

5.5.1.395 __UINT_FAST64_TYPE__

```
#define __UINT_FAST64_TYPE__ long unsigned int
```

5.5.1.396 __UINT_FAST8_MAX__

```
#define __UINT_FAST8_MAX__ 0xff
```

5.5.1.397 __UINT_FAST8_TYPE__

```
#define __UINT_FAST8_TYPE__ unsigned char
```

5.5.1.398 __UINT_LEAST16_MAX__

```
#define __UINT_LEAST16_MAX__ 0xffff
```

5.5.1.399 __UINT_LEAST16_TYPE__

```
#define __UINT_LEAST16_TYPE__ short unsigned int
```

5.5.1.400 __UINT_LEAST32_MAX__

```
#define __UINT_LEAST32_MAX__ 0xffffffffU
```

5.5.1.401 __UINT_LEAST32_TYPE__

```
#define __UINT_LEAST32_TYPE__ unsigned int
```

5.5.1.402 __UINT_LEAST64_MAX__

```
#define __UINT_LEAST64_MAX__ 0xffffffffffffffffUL
```

5.5.1.403 __UINT_LEAST64_TYPE__

```
#define __UINT_LEAST64_TYPE__ long unsigned int
```

5.5.1.404 __UINT_LEAST8_MAX__

```
#define __UINT_LEAST8_MAX__ 0xff
```

5.5.1.405 __UINT_LEAST8_TYPE__

```
#define __UINT_LEAST8_TYPE__ unsigned char
```

5.5.1.406 __UINTMAX_C

```
#define __UINTMAX_C(
              c ) c ## UL
```

5.5.1.407 __UINTMAX_MAX__

```
#define __UINTMAX_MAX__ 0xffffffffffffffffUL
```

5.5.1.408 __UINTMAX_TYPE__

```
#define __UINTMAX_TYPE__ long unsigned int
```

5.5.1.409 __UINTPTR_MAX__

```
#define __UINTPTR_MAX__ 0xffffffffffffffffUL
```

5.5.1.410 __UINTPTR_TYPE__

```
#define __UINTPTR_TYPE__ long unsigned int
```

5.5.1.411 __unix

```
#define __unix 1
```

5.5.1.412 __unix__

```
#define __unix__ 1
```

5.5.1.413 __USER_LABEL_PREFIX__

```
#define __USER_LABEL_PREFIX__
```

5.5.1.414 __VERSION__

```
#define __VERSION__ "11.3.0"
```

5.5.1.415 __WCHAR_MAX__

```
#define __WCHAR_MAX__ 0x7fffffff
```

5.5.1.416 __WCHAR_MIN__

```
#define __WCHAR_MIN__ (-__WCHAR_MAX__ - 1)
```

5.5.1.417 __WCHAR_TYPE__

```
#define __WCHAR_TYPE__ int
```

5.5.1.418 __WCHAR_WIDTH__

```
#define __WCHAR_WIDTH__ 32
```

5.5.1.419 __WINT_MAX__

```
#define __WINT_MAX__ 0xffffffffU
```

5.5.1.420 __WINT_MIN__

```
#define __WINT_MIN__ 0U
```

5.5.1.421 __WINT_TYPE__

```
#define __WINT_TYPE__ unsigned int
```

5.5.1.422 __WINT_WIDTH__

```
#define __WINT_WIDTH__ 32
```

5.5.1.423 __x86_64

```
#define __x86_64 1
```

5.5.1.424 __x86_64__

```
#define __x86_64__ 1
```

5.5.1.425 _FORTIFY_SOURCE

```
#define _FORTIFY_SOURCE 2
```

5.5.1.426 _GNU_SOURCE

```
#define _GNU_SOURCE 1
```

5.5.1.427 _LP64

```
#define _LP64 1
```

5.5.1.428 _STDC_PREDEF_H

```
#define _STDC_PREDEF_H 1
```

5.5.1.429 linux

```
#define linux 1
```

5.5.1.430 unix

```
#define unix 1
```

5.6 moc_predefs.h

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```
#define __SSP_STRONG__ 3
#define __DBL_MIN_EXP__ (-1021)
#define __cpp_attributes 200809L
#define __cpp_nontype_template_parameter_auto 201606L
#define __UINT_LEAST16_MAX__ 0xffff
#define __ATOMIC_ACQUIRE 2
#define __FLT128_MAX_10_EXP__ 4932
#define __FLT_MIN__ 1.17549435082228750796873653722224568e-38F
#define __GCC_IEC_559_COMPLEX 2
#define __cpp_aggregate_nsdmi 201304L
#define __UINT_LEAST8_TYPE__ unsigned char
#define __SIZEOF_FLOAT80__ 16
#define __INTMAX_C(c) c ## L
#define __CHAR_BIT__ 8
#define __UINT8_MAX__ 0xff
#define __SCHAR_WIDTH__ 8
#define __WINT_MAX__ 0xffffffffU
#define __FLT32_MIN_EXP__ (-125)
#define __cpp_static_assert 201411L
#define __ORDER_LITTLE_ENDIAN__ 1234
#define __SIZE_MAX__ 0xffffffffffffffffUL
#define __WCHAR_MAX__ 0x7fffffff
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_1 1
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_2 1
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_4 1
#define __DBL_DENORM_MIN__ double(4.94065645841246544176568792868221372e-324L)
#define __GCC_HAVE_SYNC_COMPARE_AND_SWAP_8 1
#define __GCC_ATOMIC_CHAR_LOCK_FREE 2
#define __GCC_IEC_559 2
#define __FLT32X_DECIMAL_DIG__ 17
#define __FLT_EVAL_METHOD__ 0
#define __cpp_binary_literals 201304L
#define __FLT64_DECIMAL_DIG__ 17
#define __CET__ 3
#define __cpp_noexcept_function_type 201510L
#define __GCC_ATOMIC_CHAR32_T_LOCK_FREE 2
#define __cpp_variadic_templates 200704L
#define __UINT_FAST64_MAX__ 0xffffffffffffffffUL
#define __SIG_ATOMIC_TYPE__ int
#define __DBL_MIN_10_EXP__ (-307)
#define __FINITE_MATH_ONLY__ 0
#define __cpp_variable_templates 201304L
#define __FLT32X_MAX_EXP__ 1024
#define __FLT32_HAS_DENORM__ 1
#define __UINT_FAST8_MAX__ 0xff
#define __cpp_rvalue_reference 200610L
#define __cpp_nested_namespace_definitions 201411L
#define __DEC64_MAX_EXP__ 385
#define __INT8_C(c) c
#define __INT_LEAST8_WIDTH__ 8
#define __cpp_variadic_using 201611L
#define __UINT_LEAST64_MAX__ 0xffffffffffffffffUL
#define __INT_LEAST8_MAX__ 0x7f
#define __cpp_capture_star_this 201603L
#define __SHRT_MAX__ 0x7fff
#define __LDBL_MAX__ 1.18973149535723176502126385303097021e+4932L
#define __FLT64X_MAX_10_EXP__ 4932
#define __cpp_if_constexpr 201606L
#define __LDBL_IS_IEC_60559__ 2
#define __FLT64X_HAS_QUIET_NAN__ 1
#define __UINT_LEAST8_MAX__ 0xff
#define __GCC_ATOMIC_BOOL_LOCK_FREE 2
#define __FLT128_DENORM_MIN__ 6.47517511943802511092443895822764655e-4966F128
#define __UINTMAX_TYPE__ long unsigned int
#define __linux 1
#define __DEC32_EPSILON__ 1E-6DF
#define __FLT_EVAL_METHOD_TS_18661_3__ 0
#define __OPTIMIZE__ 1
#define __unix 1
#define __UINT32_MAX__ 0xffffffffU
#define __GXX_EXPERIMENTAL_CXX0X__ 1
#define __FLT128_MIN_EXP__ (-16381)
#define __WINT_MIN__ 0U
#define __FLT128_MIN_10_EXP__ (-4931)
#define __FLT32X_IS_IEC_60559__ 2
#define __INT_LEAST16_WIDTH__ 16
#define __SCHAR_MAX__ 0x7f
#define __FLT128_MANT_DIG__ 113
#define __WCHAR_MIN__ (-__WCHAR_MAX__ - 1)
#define __INT64_C(c) c ## L
#define __GCC_ATOMIC_POINTER_LOCK_FREE 2
#define _FORTIFY_SOURCE 2
```

```
#define __FLT32X_MANT_DIG__ 53
#define __GCC_ATOMIC_CHAR16_T_LOCK_FREE 2
#define __cpp_aligned_new 201606L
#define __USER_LABEL_PREFIX__
#define __FLT32_MAX_10_EXP__ 38
#define __FLT64X_EPSILON__ 1.08420217248550443400745280086994171e-19F64x
#define __STDC_HOSTED__ 1
#define __DEC64_MIN_EXP__ (-382)
#define __cpp_decltype_auto 201304L
#define __DBL_DIG__ 15
#define __FLT32_DIG__ 6
#define __FLT_EPSILON__ 1.19209289550781250000000000000000000e-7F
#define __GXX_WEAK__ 1
#define __SHRT_WIDTH__ 16
#define __FLT32_IS_IEC_60559__ 2
#define __LDBL_MIN__ 3.36210314311209350626267781732175260e-4932L
#define __DBL_IS_IEC_60559__ 2
#define __DEC32_MAX__ 9.999999E96DF
#define __cpp_threadsafe_static_init 200806L
#define __cpp_enumerator_attributes 201411L
#define __FLT64X_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951F64x
#define __FLT32X_HAS_INFINITY__ 1
#define __INT32_MAX__ 0x7fffffff
#define __unix__ 1
#define __INT_WIDTH__ 32
#define __SIZEOF_LONG__ 8
#define __STDC_IEC_559__ 1
#define __STDC_ISO_10646__ 201706L
#define __UINT16_C(c) c
#define __DECIMAL_DIG__ 21
#define __STDC_IEC_559_COMPLEX__ 1
#define __FLT64_EPSILON__ 2.22044604925031308084726333618164062e-16F64
#define __gnu_linux__ 1
#define __INT16_MAX__ 0x7fff
#define __FLT64_MIN_EXP__ (-1021)
#define __FLT64X_MIN_10_EXP__ (-4931)
#define __LDBL_HAS_QUIET_NAN__ 1
#define __FLT64_MANT_DIG__ 53
#define __FLT64X_MANT_DIG__ 64
#define __GNUC__ 11
#define __GXX_RTTI 1
#define __pie__ 2
#define __MMX__ 1
#define __FLT_HAS_DENORM__ 1
#define __SIZEOF_LONG_DOUBLE__ 16
#define __BIGGEST_ALIGNMENT__ 16
#define __STDC_UTF_16__ 1
#define __FLT64_MAX_10_EXP__ 308
#define __cpp_delegating_constructors 200604L
#define __FLT32_HAS_INFINITY__ 1
#define __DBL_MAX__ double(1.79769313486231570814527423731704357e+308L)
#define __cpp_raw_strings 200710L
#define __INT_FAST32_MAX__ 0x7fffffffffffffffL
#define __DBL_HAS_INFINITY__ 1
#define __SIZEOF_FLOAT__ 4
#define __HAVE_SPECULATION_SAFE_VALUE 1
#define __cpp_fold_expressions 201603L
#define __DEC32_MIN_EXP__ (-94)
#define __INTPTR_WIDTH__ 64
#define __FLT64X_HAS_INFINITY__ 1
#define __UINT_LEAST32_MAX__ 0xffffffffU
#define __FLT32X_HAS_DENORM__ 1
#define __INT_FAST16_TYPE__ long int
#define __MMX_WITH_SSE__ 1
#define __LDBL_HAS_DENORM__ 1
#define __cplusplus 201703L
#define __cpp_ref_qualifiers 200710L
#define __DEC32_MIN__ 1E-95DF
#define __DEPRECATED 1
#define __cpp_rvalue_references 200610L
#define __DBL_MAX_EXP__ 1024
#define __WCHAR_WIDTH__ 32
#define __FLT32_MAX__ 3.40282346638528859811704183484516925e+38F32
#define __DEC128_EPSILON__ 1E-33DL
#define __SSE2_MATH__ 1
#define __ATOMIC_HLE_RELEASE 131072
#define __PTRDIFF_MAX__ 0x7fffffffffffffffL
#define __amd64 1
#define __ATOMIC_HLE_ACQUIRE 65536
#define __GNUG__ 11
#define __LONG_LONG_MAX__ 0x7fffffffffffffffLL
#define __SIZEOF_SIZE_T__ 8
#define __cpp_nsdmi 200809L
#define __FLT64X_MIN_EXP__ (-16381)
#define __SIZEOF_WINT_T__ 4
#define __LONG_LONG_WIDTH__ 64
#define __cpp_initializer_lists 200806L
```

```
#define __FLT32_MAX_EXP__ 128
#define __cpp_hex_float 201603L
#define __GXX_ABI_VERSION 1016
#define __FLT128_HAS_INFINITY__ 1
#define __FLT_MIN_EXP__ (-125)
#define __GCC_HAVE_DWARF2_CFI_ASM 1
#define __x86_64 1
#define __cpp_lambdas 200907L
#define __INT_FAST64_TYPE__ long int
#define __FLT64_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F64
#define __cpp_template_auto 201606L
#define __DBL_MIN__ double(2.22507385850720138309023271733240406e-308L)
#define __FLT128_EPSILON__ 1.92592994438723585305597794258492732e-34F128
#define __FLT64X_NORM_MAX__ 1.18973149535723176502126385303097021e+4932F64x
#define __SIZEOF_POINTER__ 8
#define __LP64__ 1
#define __DBL_HAS_QUIET_NAN__ 1
#define __FLT32X_EPSILON__ 2.22044604925031308084726333618164062e-16F32x
#define __DECIMAL_BID_FORMAT__ 1
#define __FLT64_MIN_10_EXP__ (-307)
#define __FLT64X_DECIMAL_DIG__ 21
#define __DEC128_MIN__ 1E-6143DL
#define __REGISTER_PREFIX__
#define __UINT16_MAX__ 0xffff
#define __LDBL_HAS_INFINITY__ 1
#define __FLT32_MIN__ 1.17549435082228750796873653722224568e-38F32
#define __UINT8_TYPE__ unsigned char
#define __FLT_DIG__ 6
#define __DEC_EVAL_METHOD__ 2
#define __DEC128_MAX__ 9.999999999999999999999999999999999E6144DL
#define __FLT_MANT_DIG__ 24
#define __LDBL_DECIMAL_DIG__ 21
#define __VERSION__ "11.3.0"
#define __UINT64_C(c) c ## UL
#define __cpp_unicode_characters 201411L
#define _STDC_PREDEF_H 1
#define __INT_LEAST32_MAX__ 0x7fffffff
#define __GCC_ATOMIC_INT_LOCK_FREE 2
#define __FLT128_MAX_EXP__ 16384
#define __FLT32_MANT_DIG__ 24
#define __FLOAT_WORD_ORDER__ __ORDER_LITTLE_ENDIAN__
#define __STDC_IEC_60559_COMPLEX__ 201404L
#define __cpp_aggregate_bases 201603L
#define __FLT128_HAS_DENORM__ 1
#define __FLT32_DECIMAL_DIG__ 9
#define __FLT128_DIG__ 33
#define __INT32_C(c) c
#define __DEC64_EPSILON__ 1E-15DD
#define __ORDER_PDP_ENDIAN__ 3412
#define __DEC128_MIN_EXP__ (-6142)
#define __INT_FAST32_TYPE__ long int
#define __UINT_LEAST16_TYPE__ short unsigned int
#define unix 1
#define __DBL_HAS_DENORM__ 1
#define __cpp_rtti 199711L
#define __SIZE_TYPE__ long unsigned int
#define __UINT64_MAX__ 0xffffffffffffffffUL
#define __FLT_IS_IEC_60559__ 2
#define __GNUC_WIDE_EXECUTION_CHARSET_NAME "UTF-32LE"
#define __FLT64X_DIG__ 18
#define __INT8_TYPE__ signed char
#define __cpp_digit_separators 201309L
#define __ELF__ 1
#define __GCC_ASM_FLAG_OUTPUTS__ 1
#define __UINT32_TYPE__ unsigned int
#define __FLT_RADIX__ 2
#define __INT_LEAST16_TYPE__ short int
#define __LDBL_EPSILON__ 1.08420217248550443400745280086994171e-19L
#define __UINTMAX_C(c) c ## UL
#define __GLIBCXX_BITSIZE_INT_N_0 128
#define __k8 1
#define __FLT32X_MIN__ 2.22507385850720138309023271733240406e-308F32x
#define __SIG_ATOMIC_MAX__ 0x7fffffff
#define __GCC_ATOMIC_WCHAR_T_LOCK_FREE 2
#define __STDC_IEC_60559_BFP__ 201404L
#define __SIZEOF_PTRDIFF_T__ 8
#define __LDBL_DIG__ 18
#define __FLT64_IS_IEC_60559__ 2
#define __x86_64__ 1
#define __FLT32X_MIN_EXP__ (-1021)
#define __DEC32_SUBNORMAL_MIN__ 0.000001E-95DF
#define __INT_FAST16_MAX__ 0x7fffffffffffffffL
#define __FLT64_DIG__ 15
#define __UINT_FAST32_MAX__ 0xffffffffffffffffUL
#define __UINT_LEAST64_TYPE__ long unsigned int
#define __FLT_HAS_QUIET_NAN__ 1
#define __FLT_MAX_10_EXP__ 38
```

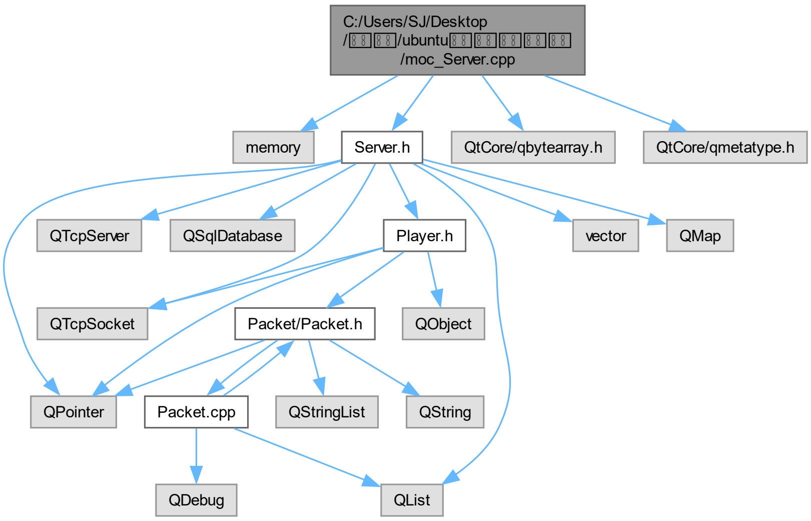
```
#define __LONG_MAX__ 0x7fffffffffffffffL
#define __FLT64X_HAS_DENORM__ 1
#define __DEC128_SUBNORMAL_MIN__ 0.000000000000000000000000000000001E-6143DL
#define __FLT_HAS_INFINITY__ 1
#define __GNUC_EXECUTION_CHARSET_NAME "UTF-8"
#define __cpp_unicode_literals 200710L
#define __UINT_FAST16_TYPE__ long unsigned int
#define __DEC64_MAX__ 9.999999999999999E384DD
#define __INT_FAST32_WIDTH__ 64
#define __CHAR16_TYPE__ short unsigned int
#define __PRAGMA_REDEFINE_EXTNAME 1
#define __SIZE_WIDTH__ 64
#define __SEG_FS 1
#define __INT_LEAST16_MAX__ 0x7fff
#define __DEC64_MANT_DIG__ 16
#define __INT64_MAX__ 0x7fffffffffffffffL
#define __SEG_GS 1
#define __FLT32_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F32
#define __SIG_ATOMIC_WIDTH__ 32
#define __INT_LEAST64_TYPE__ long int
#define __INT16_TYPE__ short int
#define __INT_LEAST8_TYPE__ signed char
#define __cpp_structured_bindings 201606L
#define __SIZEOF_INT__ 4
#define __DEC32_MAX_EXP__ 97
#define __INT_FAST8_MAX__ 0x7f
#define __FLT128_MAX__ 1.18973149535723176508575932662800702e+4932F128
#define __INTPTR_MAX__ 0x7fffffffffffffffL
#define __cpp_sized_deallocation 201309L
#define __cpp_guaranteed_copy_elision 201606L
#define linux 1
#define __FLT64_HAS_QUIET_NAN__ 1
#define __FLT32_MIN_10_EXP__ (-37)
#define __EXCEPTIONS 1
#define __PTRDIFF_WIDTH__ 64
#define __LDBL_MANT_DIG__ 64
#define __cpp_range_based_for 201603L
#define __FLT64_HAS_INFINITY__ 1
#define __FLT64X_MAX__ 1.18973149535723176502126385303097021e+4932F64x
#define __STDCPP_DEFAULT_NEW_ALIGNMENT__ 16
#define __SIG_ATOMIC_MIN__ (-__SIG_ATOMIC_MAX__ - 1)
#define __code_model_small__ 1
#define __GCC_ATOMIC_LONG_LOCK_FREE 2
#define __cpp_nontype_template_args 201411L
#define __DEC32_MANT_DIG__ 7
#define __cpp_return_type_deduction 201304L
#define __k8__ 1
#define __INTPTR_TYPE__ long int
#define __UINT16_TYPE__ short unsigned int
#define __WCHAR_TYPE__ int
#define __pic__ 2
#define __UINTPTR_MAX__ 0xffffffffffffffffUL
#define __INT_FAST64_WIDTH__ 64
#define __cpp_decltype 200707L
#define __INT_FAST64_MAX__ 0x7fffffffffffffffL
#define __GCC_ATOMIC_TEST_AND_SET_TRUEVAL 1
#define __FLT_NORM_MAX__ 3.40282346638528859811704183484516925e+38F
#define __FLT64X_MAX_EXP__ 16384
#define __UINT_FAST64_TYPE__ long unsigned int
#define __cpp_inline_variables 201606L
#define __INT_MAX__ 0x7fffffff
#define __linux__ 1
#define __INT64_TYPE__ long int
#define __FLT_MAX_EXP__ 128
#define __ORDER_BIG_ENDIAN__ 4321
#define __DBL_MANT_DIG__ 53
#define __cpp_inheriting_constructors 201511L
#define __SIZEOF_FLOAT128__ 16
#define __INT_LEAST64_MAX__ 0x7fffffffffffffffL
#define __DEC64_MIN__ 1E-383DD
#define __WINT_TYPE__ unsigned int
#define __UINT_LEAST32_TYPE__ unsigned int
#define __SIZEOF_SHORT__ 2
#define __FLT32_NORM_MAX__ 3.40282346638528859811704183484516925e+38F32
#define __SSE__ 1
#define __LDBL_MIN_EXP__ (-16381)
#define __FLT64_MAX__ 1.79769313486231570814527423731704357e+308F64
#define __amd64__ 1
#define __WINT_WIDTH__ 32
#define __INT_LEAST64_WIDTH__ 64
#define __LDBL_MAX_EXP__ 16384
#define __FLT32X_MAX_10_EXP__ 308
#define __SIZEOF_INT128__ 16
#define __FLT64X_IS_IEC_60559__ 2
#define __LDBL_MAX_10_EXP__ 4932
#define __ATOMIC_RELAXED 0
#define __DBL_EPSILON__ double(2.22044604925031308084726333618164062e-16L)
```

```
#define __FLT128_MIN__ 3.36210314311209350626267781732175260e-4932F128
#define _LP64 1
#define __UINT8_C(c) c
#define __FLT64_MAX_EXP__ 1024
#define __INT_LEAST32_TYPE__ int
#define __SIZEOF_WCHAR_T__ 4
#define __GNUC_PATCHLEVEL__ 0
#define __FLT128_NORM_MAX__ 1.18973149535723176508575932662800702e+4932F128
#define __FLT64_NORM_MAX__ 1.79769313486231570814527423731704357e+308F64
#define __FLT128_HAS_QUIET_NAN__ 1
#define __INTMAX_MAX__ 0x7fffffffffffffffL
#define __INT_FAST8_TYPE__ signed char
#define __cpp_namespace_attributes 201411L
#define __FLT64X_MIN__ 3.36210314311209350626267781732175260e-4932F64x
#define __STDCPP_THREADS__ 1
#define __GNUC_STDC_INLINE__ 1
#define __FLT64_HAS_DENORM__ 1
#define __FLT32_EPSILON__ 1.19209289550781250000000000000000000e-7F32
#define __DBL_DECIMAL_DIG__ 17
#define __STDC_UTF_32__ 1
#define __INT_FAST8_WIDTH__ 8
#define __FXSR__ 1
#define __FLT32X_MAX__ 1.79769313486231570814527423731704357e+308F32x
#define __DBL_NORM_MAX__ double(1.79769313486231570814527423731704357e+308L)
#define __BYTE_ORDER__ __ORDER_LITTLE_ENDIAN__
#define __INTMAX_WIDTH__ 64
#define __cpp_runtime_arrays 198712L
#define __UINT64_TYPE__ long unsigned int
#define __UINT32_C(c) c ## U
#define __cpp_alias_templates 200704L
#define __FLT_DENORM_MIN__ 1.40129846432481707092372958328991613e-45F
#define __FLT128_IS_IEC_60559__ 2
#define __INT8_MAX__ 0x7f
#define __LONG_WIDTH__ 64
#define __PIC__ 2
#define __UINT_FAST32_TYPE__ long unsigned int
#define __FLT32X_NORM_MAX__ 1.79769313486231570814527423731704357e+308F32x
#define __CHAR32_TYPE__ unsigned int
#define __FLT_MAX__ 3.40282346638528859811704183484516925e+38F
#define __cpp_constexpr 201603L
#define __SSE2__ 1
#define __cpp_deduction_guides 201703L
#define __INT32_TYPE__ int
#define __SIZEOF_DOUBLE__ 8
#define __cpp_exceptions 199711L
#define __FLT_MIN_10_EXP__ (-37)
#define __FLT64_MIN__ 2.22507385850720138309023271733240406e-308F64
#define __INT_LEAST32_WIDTH__ 32
#define __INTMAX_TYPE__ long int
#define __DEC128_MAX_EXP__ 6145
#define __FLT32X_HAS_QUIET_NAN__ 1
#define __ATOMIC_CONSUME 1
#define __GNUC_MINOR__ 3
#define __GLIBCXX_TYPE_INT_N_0 __int128
#define __INT_FAST16_WIDTH__ 64
#define __UINTMAX_MAX__ 0xffffffffffffffffUL
#define __PIE__ 2
#define __FLT32X_DENORM_MIN__ 4.94065645841246544176568792868221372e-324F32x
#define __cpp_template_template_args 201611L
#define __DBL_MAX_10_EXP__ 308
#define __LDBL_DENORM_MIN__ 3.64519953188247460252840593361941982e-4951L
#define __INT16_C(c) c
#define __STDC__ 1
#define __FLT32X_DIG__ 15
#define __PTRDIFF_TYPE__ long int
#define __ATOMIC_SEQ_CST 5
#define __FLT32X_MIN_10_EXP__ (-307)
#define __UINTPTR_TYPE__ long unsigned int
#define __DEC64_SUBNORMAL_MIN__ 0.000000000000001E-383DD
#define __DEC128_MANT_DIG__ 34
#define __LDBL_MIN_10_EXP__ (-4931)
#define __cpp_generic_lambdas 201304L
#define __SSE_MATH__ 1
#define __SIZEOF_LONG_LONG__ 8
#define __cpp_user_defined_literals 200809L
#define __FLT128_DECIMAL_DIG__ 36
#define __GCC_ATOMIC_LLONG_LOCK_FREE 2
#define __FLT32_HAS_QUIET_NAN__ 1
#define __FLT_DECIMAL_DIG__ 9
#define __UINT_FAST16_MAX__ 0xffffffffffffffffUL
#define __LDBL_NORM_MAX__ 1.18973149535723176502126385303097021e+4932L
#define __GCC_ATOMIC_SHORT_LOCK_FREE 2
#define __UINT_FAST8_TYPE__ unsigned char
#define _GNU_SOURCE 1
#define __cpp_init_captures 201304L
#define __ATOMIC_ACQ_REL 4
#define __ATOMIC_RELEASE 3
```

5.7 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/moc_Server.cpp 文件参考

```
#include <memory>
#include "Server.h"
#include <QtCore/qbytearray.h>
#include <QtCore/qmetatype.h>
```

moc_Server.cpp 的引用(Include)关系图:



类

- struct qt_meta_stringdata_Server_t

宏定义

- #define QT_MOC_LITERAL(idx, ofs, len)

5.7.1 宏定义说明

5.7.1.1 QT_MOC_LITERAL

```
#define QT_MOC_LITERAL(
                idx,
                ofs,
                len )
```

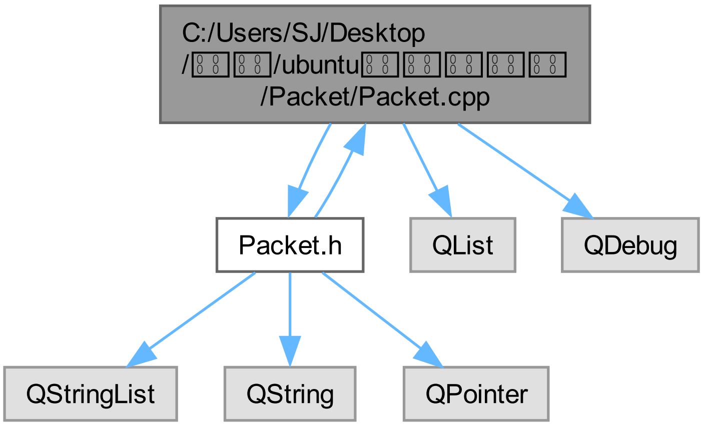
值:

```
    Q_STATIC_BYTE_ARRAY_DATA_HEADER_INITIALIZER_WITH_OFFSET(len, \
    qptrdiff(offsetof(qt_meta_stringdata_Server_t, stringdata0) + ofs \
        - idx * sizeof(QByteArrayData)) \
    )
```

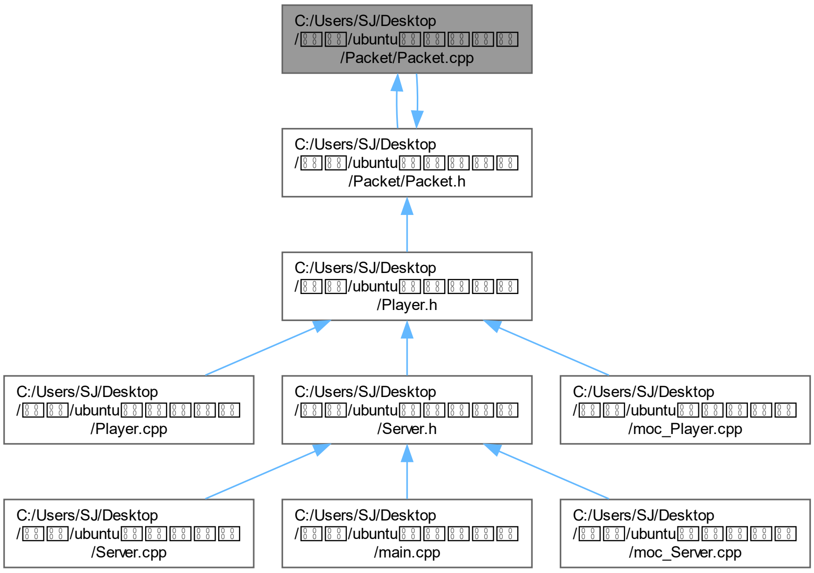
5.8 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Packet/Packet.cpp 文件参考

```
#include "Packet.h"
#include <QList>
#include <QDebug>
```

Packet.cpp 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:



宏定义

- #define dout qDebug()<<”[”<<__LINE__<<”,”<<__FUNCTION__<<”,”<<__FILE__<<”]”
- #define dendl Qt::endl

5.8.1 宏定义说明

5.8.1.1 dendl

```
#define dendl Qt::endl
```

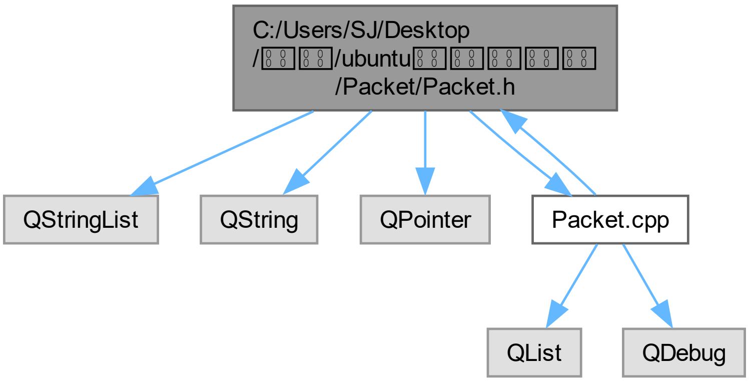
5.8.1.2 dout

```
#define dout qDebug()<<"["<<__LINE__<<","<<__FUNCTION__<<","<<__FILE__<<"]"
```

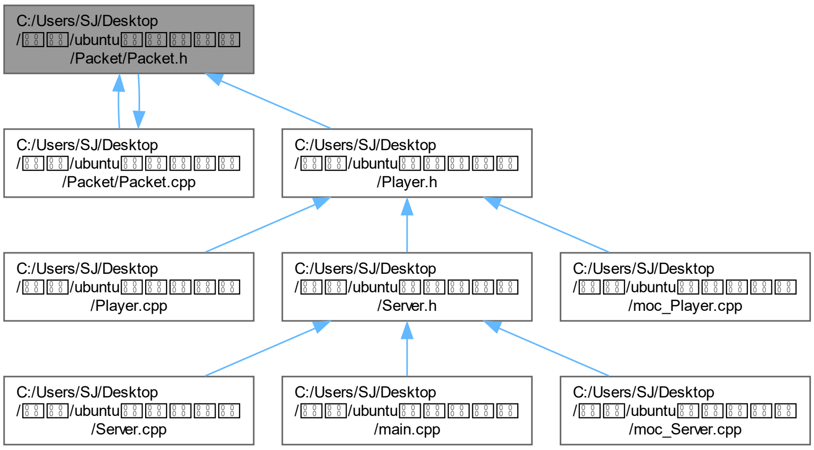
5.9 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Packet/Packet.h 文件参考

```
#include <QStringList>
#include <QString>
#include <QPointer>
#include "Packet.cpp"
```

Packet.h 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:


C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Packet/Packet.h
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Packet/Packet.cpp
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Player.h
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Player.cpp
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Server.h
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /moc_Player.cpp
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /Server.cpp
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /main.cpp
C:/Users/SJ/Desktop /□□□/ubuntu□□□□□□□□ /moc_Server.cpp

类

- class Packet< T >

  用于socket协议的信息封装和解包，可以绑定信息–回调函数,Packet.cpp和Packet.h都得放在头文件中(-I Packet.cpp Packet.h) 如果要绑定私有行为，应该将Packet<T>声明为友元 T为parent对应的类名,installClassFunctionEvent 会在触发时调用parent的成员函数 所有要绑定的函数都应该以void为返回值,QStringList为参数

5.10 Packet.h

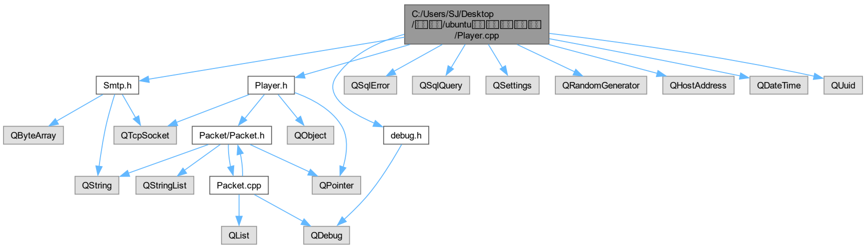
浏览该文件的文档.

```
// Packet.h -- 模板类的声明
#pragma once
#include <QStringList>
#include <QString>
#include<QPointer>
template<typename T>
class Packet
{
    struct FunctionEvent
    {
    public:
        QString funcName;
        qint32 parameterNum;
        void (T::*callBack)(QStringList);
        FunctionEvent(QString funcName, qint32 parameterNum, void (T::*callBack)(QStringList))
            :funcName(funcName),parameterNum(parameterNum),callBack(callBack){};
    };
public:
    Packet(T* parent);
    virtual void pushMessage(QString newMes);//压入信息, 可能会触发callBack
    virtual QString formatMes(QStringList newMesList);//<将消息封装
    virtual QString formatMes(QString newMes);//<重载
    virtual void installClassFunctionEvent(QString funcName, qint32 parameterNum, void
 (T::*callBack)(QStringList));
private:
    virtual void distributerEvent();
    virtual inline QStringList splitMes(QString mes);
private:
    static const QString separator;
    QStringList recvList;
    QString recvBuff;
    T* parent;
    //warning:这里使用普通指针我也不知道会出什么问题不
    QList<FunctionEvent*> funcEvents;
};

#include "Packet.cpp" // 包含模板类的实现
```

5.11 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Player.cpp 文件参考

```
#include "Player.h"
#include "debug.h"
#include <QSqlError>
#include <QSqlQuery>
#include <QSettings>
#include "Smtp.h"
#include <QRandomGenerator>
#include <QHostAddress>
#include <QDateTime>
#include <QUuid>
```

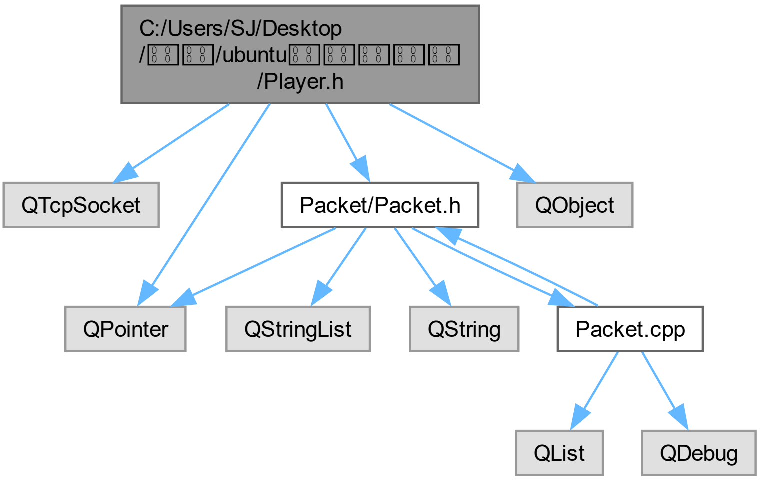
Player.cpp 的引用(Include)关系图:



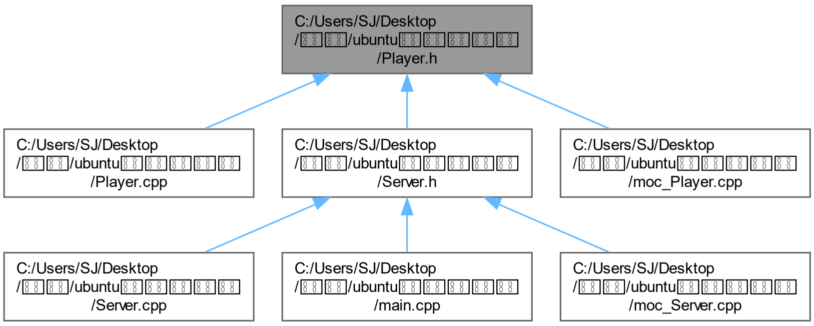
5.12 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Player.h 文件参考

```
#include <QTcpSocket>
#include <QPointer>
#include "Packet/Packet.h"
#include <QObject>
```

Player.h 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:



类

- class Player

  The Player class 玩家对象
- struct Player::GameMode

5.13 Player.h

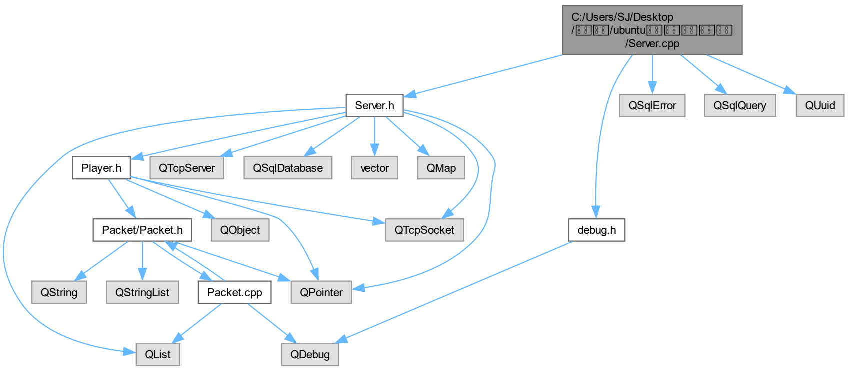
浏览该文件的文档.

```
#ifndef __PLAYER_H__
#define __PLAYER_H__
#include<QTcpSocket>
#include<QPointer>
#include"Packet/Packet.h"
#include<QObject>
class Player : public QObject
{
    Q_OBJECT
public:
    struct GameMode
    {
        QString mod;
        qint32 rowNum;
        qint32 colNum;
        qint32 bombNum;
        GameMode(QString mod,qint32 rowNum,qint32 colNum,qint32 bombNum)
            :mod(mod),rowNum(rowNum),colNum(colNum),bombNum(bombNum){};
    };
public:
    Player();
    Player(QTcpSocket* socket );
    ~Player();
    const QString &getEmail() const;

    void setAntiPlayer(Player *newAntiPlayer,bool isHeadStart=false);
    void sendMesBySocket(QStringList List);
    virtual void updateIntegral(QString matchID,QString integral);
    void setLastGameMatchID(const QString &newLastGameMatchID);
    virtual void insertPlayHistory(GameMode gameMod,QString player1,QString player2,QString player1Integral,QString player2Integral);
public slots:
    void dealConnected();
    void dealRecv();
    void dealDisconnected();
private:
    QPointer<QTcpSocket>socket;
    QString email;
    QString password;
    QString captchaStr;//验证码
    bool isLogin = false;//记录是否登录成功
    virtual bool emailIsLegal(QString em);
    virtual bool passwordIsLegal(QString ps);
    virtual bool emailIsExist(QString em);
    virtual void addPlayerInDB();
    virtual void createHistoryTable();
private:
    Player* antiPlayer=nullptr;
    GameMode lastGameMod;
    QString lastGameMatchID;
protected:
    virtual void login(QStringList list);
    virtual void signUp(QStringList list);
    virtual void captcha(QStringList list);
    virtual void match(QStringList list);
    virtual void NetInitState(QStringList list);
    virtual void updateIntegral(QStringList list);
    virtual void gameOver(QStringList list);
    virtual void upLoadHistory(QStringList list );
    virtual void exitMatch(QStringList list);//todo
    virtual void downLoadHistoryFile(QStringList list);
private:
    friend class Packet<Player>;
    Packet<Player> packet;
    void init();
signals:
    void signalMatchNewGame(GameMode gm);
};
#endif // __PLAYER_H__
```

5.14 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Server.cpp 文件参考

```
#include "Server.h"
#include "debug.h"
#include <QSqlError>
#include <QSqlQuery>
#include <QUuid>
```

Server.cpp 的引用(Include)关系图:

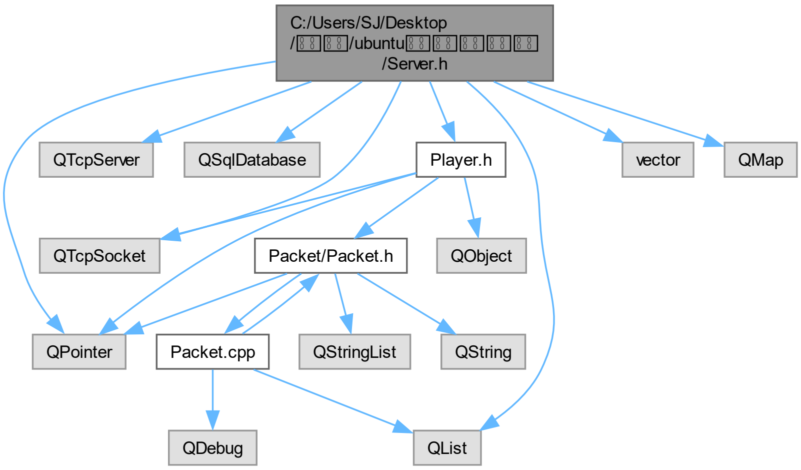


5.15 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Server.h 文件参考

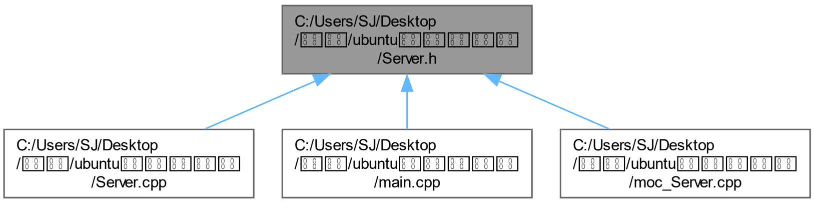
```
#include <QTcpSocket>
#include <QTcpServer>
#include <QSqlDatabase>
#include <QPointer>
#include "Player.h"
#include <vector>
```

```
#include <QMap>
#include <QList>
```

Server.h 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:



类

- class Server

  The Server class 服务器类,管理多个客户端

5.16 Server.h

浏览该文件的文档.

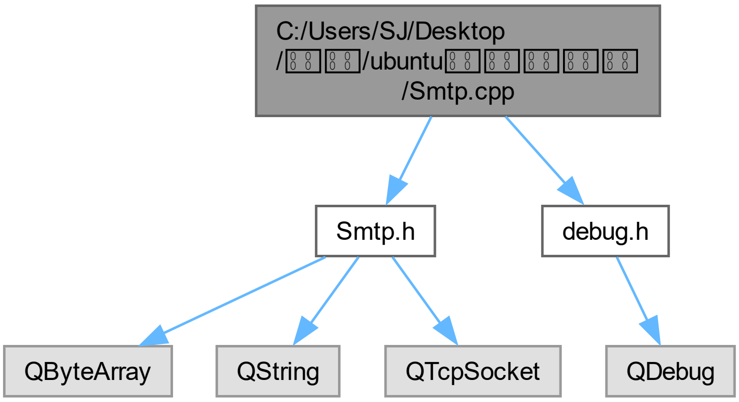
```
#ifndef __SERVER_H__
#define __SERVER_H__

#include<QTcpSocket>
#include<QTcpServer>
#include <QSqlDatabase>
#include<QPointer>
#include"Player.h"
#include<vector>
#include<QMap>
```

```
#include<QList>
class Server:public QObject
{
    Q_OBJECT
public:
    Server(QObject* parent = nullptr);
    ~Server();
private:
    virtual void connectLocalMainDataBase();
protected slots:
    virtual void dealNewConnection();
    virtual void dealMatchNewGame(Player::GameMode gm);
private:
    QPointer<QTcpServer> server;
//    std::vector<QPointer<Player>>players;
    QSqlDatabase database;
    const qint32 PORT = 2001;
    //note : 太长且复杂了
//  QMap<std::vector<QString>,QList<Player*>> matchMapList;
     QMap<QString,QMap<qint32,QMap<qint32,QMap<qint32,QList<Player*>>>>>matchMapList;
};
#endif // __SERVER_H__
```

5.17 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Smtp.cpp 文件参考

```
#include "Smtp.h"
#include "debug.h"
```

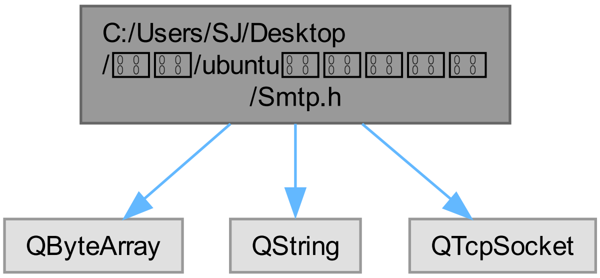
Smtp.cpp 的引用(Include)关系图:



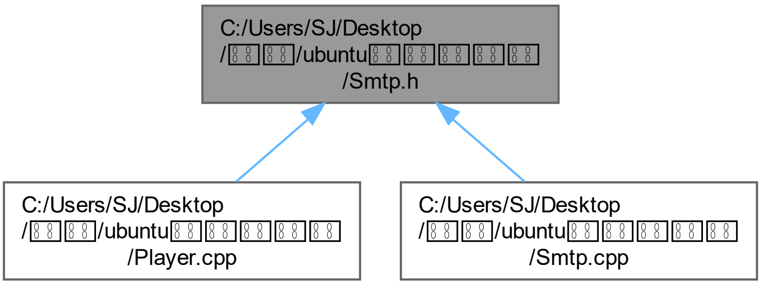
5.18 C:/Users/SJ/Desktop/扫雷/ubuntu服务端源码/Smtp.h 文件参考

```
#include <QByteArray>
#include <QString>
#include <QTcpSocket>
```

Smtp.h 的引用(Include)关系图:



此图展示该文件直接或间接的被哪些文件引用了:



类

- class Smtp

  The Smtp class 实现简单的通过网易163邮箱发送plain text的功能 代码借鉴自csdn

5.19 Smtp.h

浏览该文件的文档.

```
#ifndef __SMTP_H__
#define __SMTP_H__

#include<QByteArray>
#include<QString>
#include<QTcpSocket>
class Smtp
{
public:
    Smtp(QByteArray username,QByteArray password);
    ~Smtp();
    void send(QByteArray recvaddr,QString subject,QString content);
private:
    QTcpSocket * clientsocket;
    QByteArray username;//发送方邮箱
    QByteArray password;//授权码
    QByteArray mailfrom = "mail from:<";
    QByteArray rcptto = "rcpt to:<";
    QByteArray prefrom = "from:";
    QByteArray preto = "to:";
    QByteArray presubject ="subject:";
    QByteArray recvaddr;//接收方邮箱
    QString subject;//邮件标题
    QString content; //发送内容
    QByteArray recvdata;//接收到的数据
};

#endif // __SMTP_H__
```

Index