HordeShooter

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Chapter 5

Namespace Documentation

5.1 Colors Namespace Reference

5.2 FramebufferShaders Namespace Reference

5.3 SpriteEffect Namespace Reference

Classes

- class Chroma
- class Copy
- class Ghost
- class Substitution

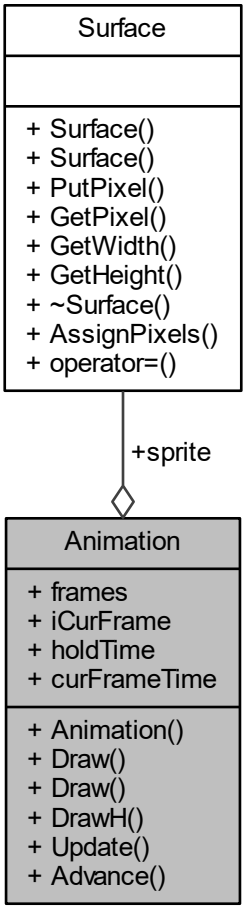
Chapter 6

Class Documentation

6.1 Animation Class Reference

```
#include <Animation.h>
```

Collaboration diagram for Animation:



Public Member Functions

- Animation (int x, int y, int width, int height, int count, const Surface &sprite, float holdTime)
- void Draw (const Vec2D &pos, Graphics &gfx) const
- void Draw (const Vec2D &pos, Graphics &gfx, const Rect &clip) const
- void DrawH (const Vec2D &pos, Graphics &gfx) const
- void Update (float dt)
- void Advance ()

Public Attributes

- const Surface & sprite
- std::vector< Rect > frames
- int iCurFrame = 0
- float holdTime
- float curFrameTime = 0.0f

6.1.1 Constructor & Destructor Documentation

6.1.1.1 Animation()

```
Animation::Animation (
            int x,
            int y,
            int width,
            int height,
            int count,
            const Surface & sprite,
            float holdTime )
```

6.1.2 Member Function Documentation

6.1.2.1 Advance()

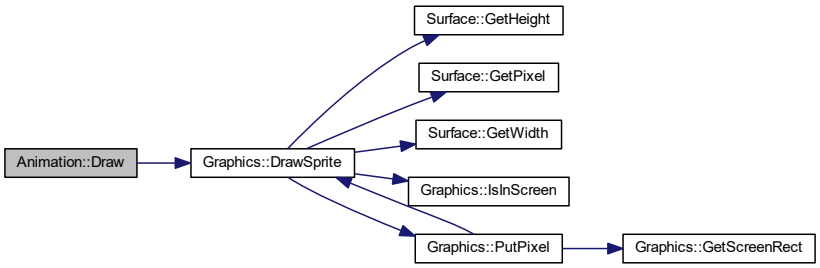
```
void Animation::Advance ( )
```

Here is the caller graph for this function:

6.1.2.2 Draw() [1/2]

```
void Animation::Draw (
            const Vec2D & pos,
            Graphics & gfx ) const
```

Here is the call graph for this function:



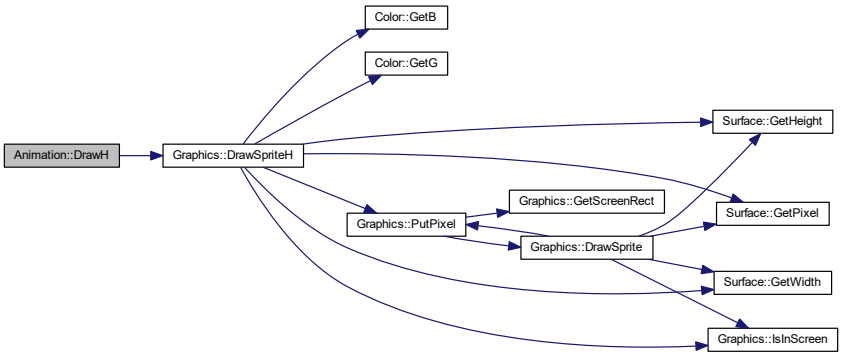
6.1.2.3 Draw() [2/2]

```
void Animation::Draw (
            const Vec2D & pos,
            Graphics & gfx,
            const Rect & clip ) const
```

6.1.2.4 DrawH()

```
void Animation::DrawH (
            const Vec2D & pos,
            Graphics & gfx ) const
```

Here is the call graph for this function:



6.1.2.5 Update()

```
void Animation::Update (
            float dt )
```

Here is the call graph for this function:

6.1.3 Member Data Documentation

6.1.3.1 curFrameTime

```
float Animation::curFrameTime = 0.0f
```

6.1.3.2 frames

```
std::vector<Rect> Animation::frames
```

6.1.3.3 holdTime

```
float Animation::holdTime
```

6.1.3.4 iCurFrame

```
int Animation::iCurFrame = 0
```

6.1.3.5 sprite

```
const Surface& Animation::sprite
```

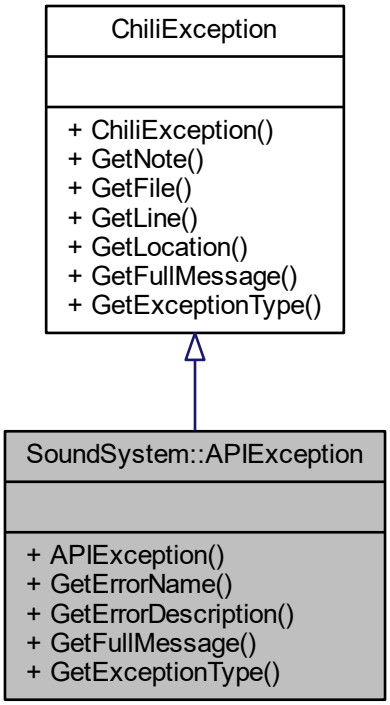
The documentation for this class was generated from the following files:

- Animation.h
- Animation.cpp

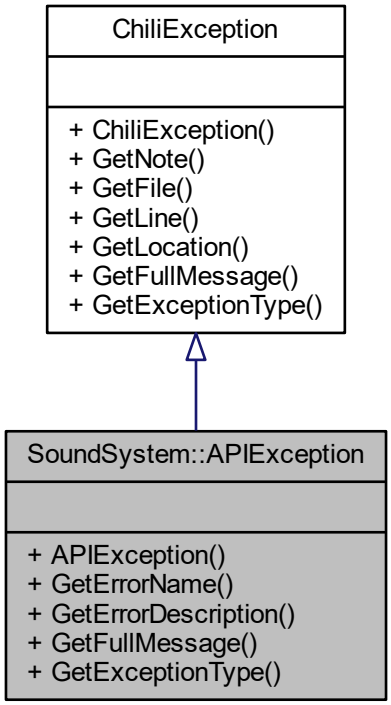
6.2 SoundSystem::APIException Class Reference

```
#include <Sound.h>
```

Inheritance diagram for SoundSystem::APIException:



Collaboration diagram for SoundSystem::APIException:



Public Member Functions

- APIException (HRESULT hr, const wchar_t ∗file, unsigned int line, const std::wstring &note)
- std::wstring GetErrorName () const
- std::wstring GetErrorDescription () const
- virtual std::wstring GetFullMessage () const override
- virtual std::wstring GetExceptionType () const override

6.2.1 Constructor & Destructor Documentation

6.2.1.1 APIException()

```
SoundSystem::APIException::APIException (
            HRESULT hr,
            const wchar_t * file,
            unsigned int line,
            const std::wstring & note )
```

6.2.2 Member Function Documentation

6.2.2.1 GetErrorDescription()

```
std::wstring SoundSystem::APIException::GetErrorDescription ( ) const
```

6.2.2.2 GetErrorName()

```
std::wstring SoundSystem::APIException::GetErrorName ( ) const
```

6.2.2.3 GetExceptionType()

```
std::wstring SoundSystem::APIException::GetExceptionType ( ) const  [override], [virtual]
```

Implements ChiliException.

6.2.2.4 GetFullMessage()

```
std::wstring SoundSystem::APIException::GetFullMessage ( ) const  [override], [virtual]
```

Implements ChiliException.

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

- Sound.h
- Sound.cpp

6.3 Board Class Reference

```
#include <Board.h>
```

Collaboration diagram for Board:

Public Member Functions

- Board (int numberOfEnemiesInFirstRound)
- void LevelUp (Player &player)
- void InitBoard ()
- void DrawBoard (Graphics &gfx)
- std::vector< Obstacle > GetObstacles ()
- std::vector< std::unique_ptr< Enemy > > & GetEnemies ()
- std::vector< Box > GetBoxes ()
- void SpawnEnemies (float dt)
- void NextRound (float dt, Graphics &gfx)
- void AddNewBox (float dt)
- void ColectBox (Player &player)
- void LoadMap (std::shared_ptr< Map > mapa)

6.3.1 Constructor & Destructor Documentation

6.3.1.1 Board()

```
Board::Board (
            int numberOfEnemiesInFirstRound )
```

6.3.2 Member Function Documentation

6.3.2.1 AddNewBox()

```
void Board::AddNewBox (
            float dt )
```

6.3.2.2 ColectBox()

```
void Board::ColectBox (
            Player & player )
```

6.3.2.3 DrawBoard()

```
void Board::DrawBoard (
            Graphics & gfx )
```

6.3.2.4 GetBoxes()

```
std::vector< Box > Board::GetBoxes ( )
```

6.3.2.5 GetEnemies()

```
std::vector< std::unique_ptr< Enemy > > & Board::GetEnemies ( )
```

Here is the call graph for this function:

6.3.2.6 GetObstacles()

```
std::vector< Obstacle > Board::GetObstacles ( )
```

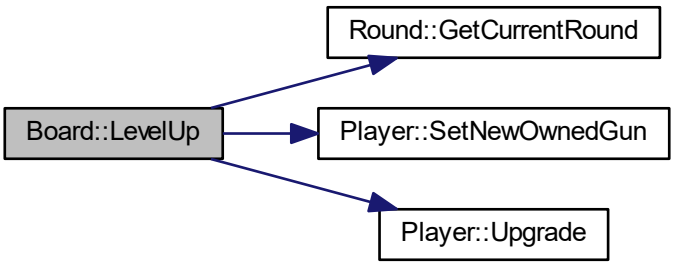
6.3.2.7 InitBoard()

```
void Board::InitBoard ( )
```

6.3.2.8 LevelUp()

```
void Board::LevelUp (
            Player & player )
```

Here is the call graph for this function:



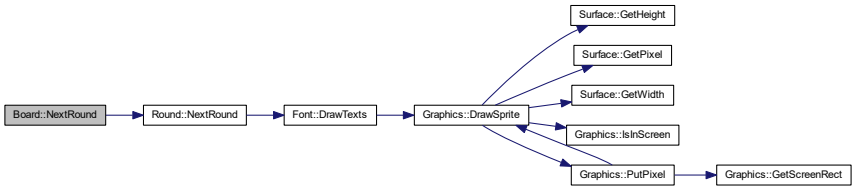
6.3.2.9 LoadMap()

```
void Board::LoadMap (
            std::shared_ptr< Map > mapa )
```

6.3.2.10 NextRound()

```
void Board::NextRound (
            float dt,
            Graphics & gfx )
```

Here is the call graph for this function:



6.3.2.11 SpawnEnemies()

```
void Board::SpawnEnemies (
            float dt )
```

Here is the call graph for this function:

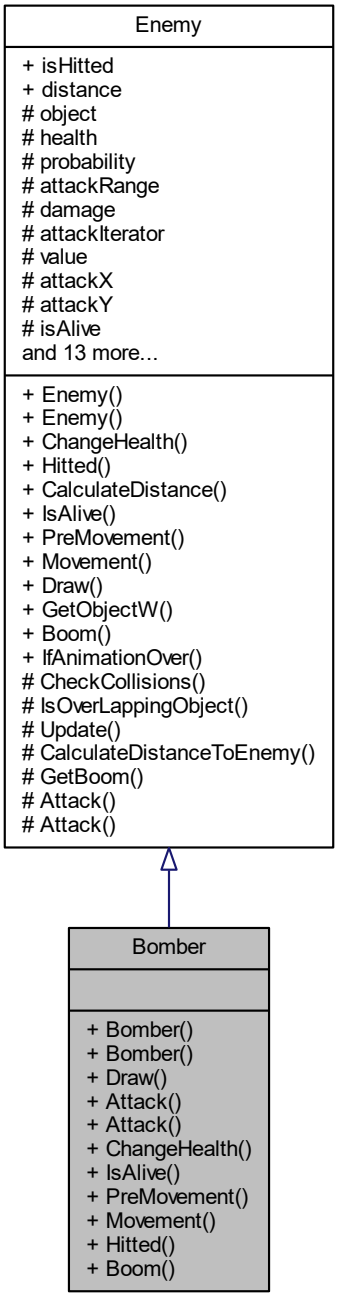
The documentation for this class was generated from the following files:

- Board.h
- Board.cpp

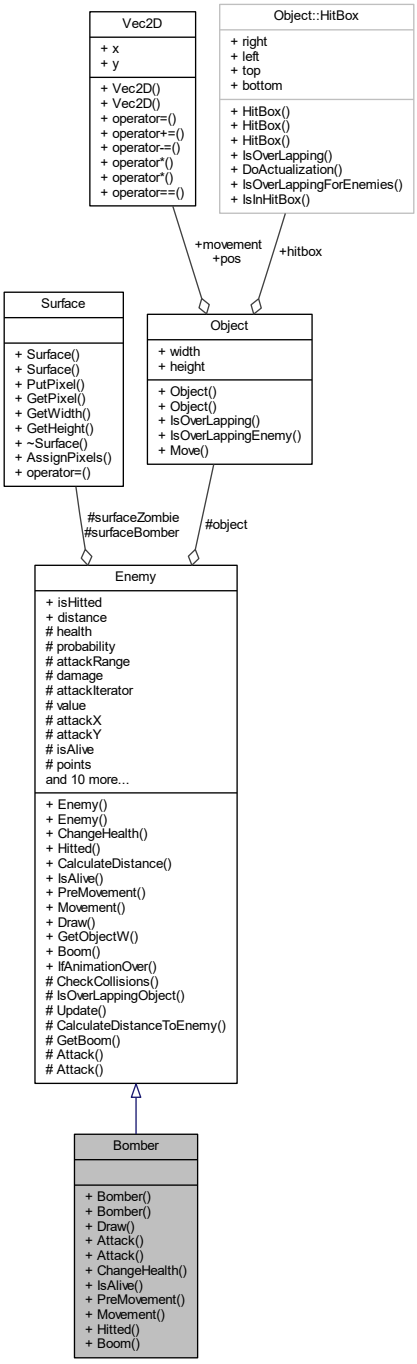
6.4 Bomber Class Reference

```
#include <Bomber.h>
```

Inheritance diagram for Bomber:



Collaboration diagram for Bomber:



Public Member Functions

- Bomber (Object object, float health, float damage, float probability, bool isAlive, int points)
- Bomber ()=delete
- void Draw (Graphics &gfx) override
- float Attack (float distance, float dt) override
- float Attack (float distance, float dt, std::vector< std::unique_ptr< Enemy >> &enemies, int &delay) override

- void ChangeHealth (float changeHP) override
- bool IsAlive () override
- int PreMovement (float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies, int &delay, float &damageToPlayer) override
- void Movement (bool aim_R, bool aim_L, bool aim_U, bool aim_D, float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies, float dirX, float dirY, float distance) override
- void Hitted (const float &dmg) override
- bool Boom (Graphics &gfx, float dt)

Additional Inherited Members

6.4.1 Constructor & Destructor Documentation

6.4.1.1 Bomber() [1/2]

```
Bomber::Bomber (
            Object object,
            float health,
            float damage,
            float probability,
            bool isAlive,
            int points )
```

6.4.1.2 Bomber() [2/2]

```
Bomber::Bomber ( ) [delete]
```

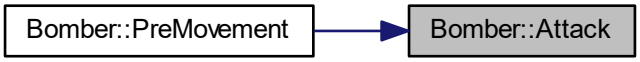
6.4.2 Member Function Documentation

6.4.2.1 Attack() [1/2]

```
float Bomber::Attack (
            float distance,
            float dt ) [override], [virtual]
```

Implements Enemy.

Here is the caller graph for this function:

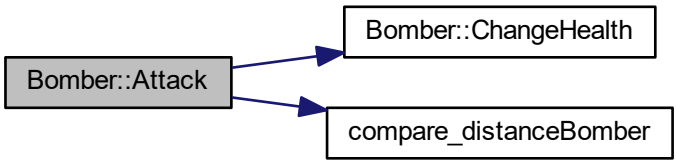


6.4.2.2 Attack() [2/2]

```
float Bomber::Attack (
            float distance,
            float dt,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            int & delay )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:

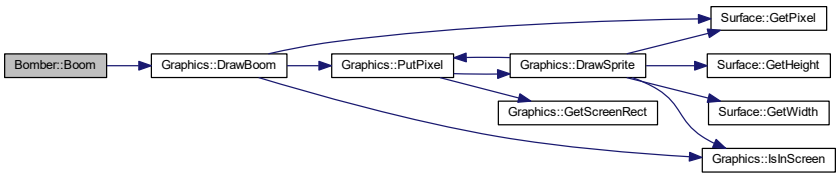


6.4.2.3 Boom()

```
bool Bomber::Boom (
            Graphics & gfx,
            float dt )  [virtual]
```

Implements Enemy.

Here is the call graph for this function:

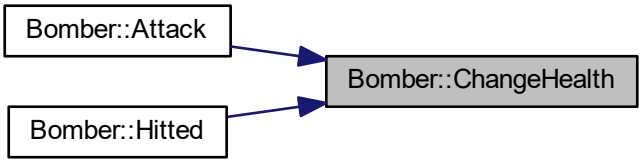


6.4.2.4 ChangeHealth()

```
void Bomber::ChangeHealth (
            float changeHP )  [override], [virtual]
```

Implements Enemy.

Here is the caller graph for this function:



6.4.2.5 Draw()

```
void Bomber::Draw (
            Graphics & gfx )  [override], [virtual]
```

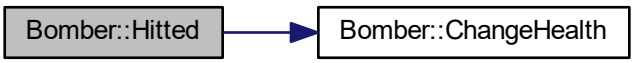
Implements Enemy.

6.4.2.6 Hitted()

```
void Bomber::Hitted (
            const float & dmg )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:



6.4.2.7 IsAlive()

```
bool Bomber::IsAlive ( ) [override], [virtual]
```

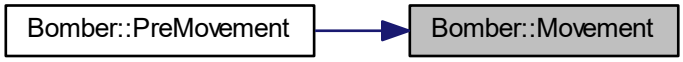
Implements Enemy.

6.4.2.8 Movement()

```
void Bomber::Movement (
            bool aim_R,
            bool aim_L,
            bool aim_U,
            bool aim_D,
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            float dirX,
            float dirY,
            float distance ) [override], [virtual]
```

Implements Enemy.

Here is the caller graph for this function:

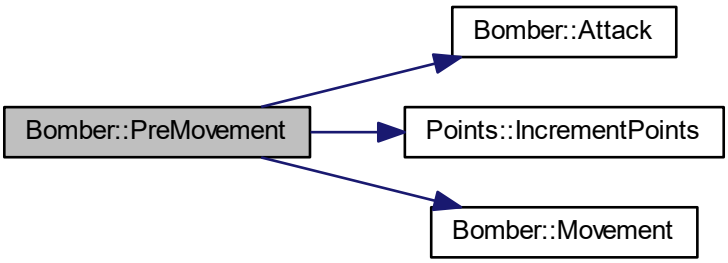


6.4.2.9 PreMovement()

```
int Bomber::PreMovement (
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            int & delay,
            float & damageToPlayer ) [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:



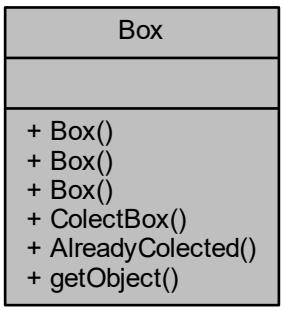
The documentation for this class was generated from the following files:

- Bomber.h
- Bomber.cpp

6.5 Box Class Reference

```
#include <Box.h>
```

Collaboration diagram for Box:



Public Member Functions

- Box ()=delete
- Box (Object &obj)
- Box (Vec2D &pos, float width, float height)
- void ColectBox (Player &player)
- bool AlreadyColected ()
- Object getObject ()

6.5.1 Constructor & Destructor Documentation

6.5.1.1 Box() [1/3]

```
Box::Box ( ) [delete]
```

6.5.1.2 Box() [2/3]

```
Box::Box (
            Object & obj )
```

6.5.1.3 Box() [3/3]

```
Box::Box (
            Vec2D & pos,
            float width,
            float height )
```

6.5.2 Member Function Documentation

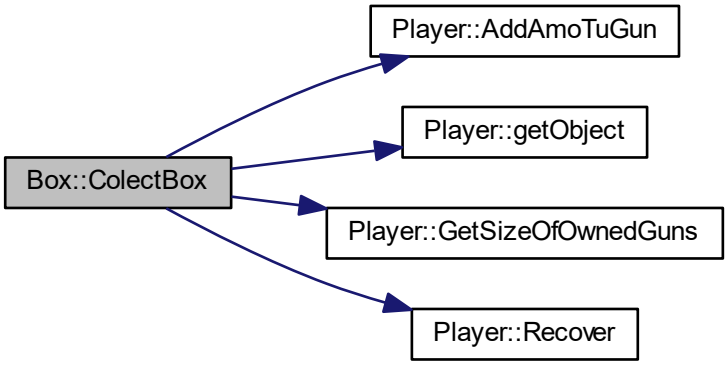
6.5.2.1 AlreadyColected()

```
bool Box::AlreadyColected ( )
```

6.5.2.2 ColectBox()

```
void Box::ColectBox (
            Player & player )
```

Here is the call graph for this function:



6.5.2.3 getObject()

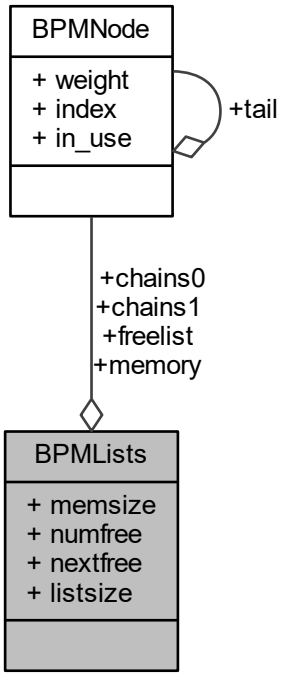
```
Object Box::getObject ( )
```

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

- Box.h
- Box.cpp

6.6 BPMLists Struct Reference

Collaboration diagram for BPMLists:



Public Attributes

- unsigned memsize
- BPMNode * memory
- unsigned numfree
- unsigned nextfree
- BPMNode ** freelist
- unsigned listsize
- BPMNode ** chains0
- BPMNode ** chains1

6.6.1 Member Data Documentation

6.6.1.1 chains0

```
BPMNode** BPMLists::chains0
```

6.6.1.2 chains1

```
BPMNode** BPMLists::chains1
```

6.6.1.3 freelist

```
BPMNode** BPMLists::freelist
```

6.6.1.4 listsize

```
unsigned BPMLists::listsize
```

6.6.1.5 memory

```
BPMNode* BPMLists::memory
```

6.6.1.6 memsize

```
unsigned BPMLists::memsize
```

6.6.1.7 nextfree

```
unsigned BPMLists::nextfree
```

6.6.1.8 numfree

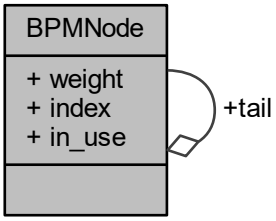
```
unsigned BPMLists::numfree
```

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

- lodepng.cpp

6.7 BPMNode Struct Reference

Collaboration diagram for BPMNode:



Public Attributes

- int weight
- unsigned index
- struct BPMNode * tail
- int in_use

6.7.1 Member Data Documentation

6.7.1.1 in_use

```
int BPMNode::in_use
```

6.7.1.2 index

```
unsigned BPMNode::index
```

6.7.1.3 tail

```
struct BPMNode* BPMNode::tail
```

6.7.1.4 weight

```
int BPMNode::weight
```

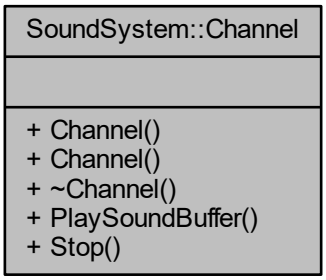
The documentation for this struct was generated from the following file:

- lodepng.cpp

6.8 SoundSystem::Channel Class Reference

```
#include <Sound.h>
```

Collaboration diagram for SoundSystem::Channel:



Public Member Functions

- Channel (SoundSystem &sys)
- Channel (const Channel &)=delete
- ~Channel ()
- void PlaySoundBuffer (class Sound &s, float freqMod, float vol)
- void Stop ()

Friends

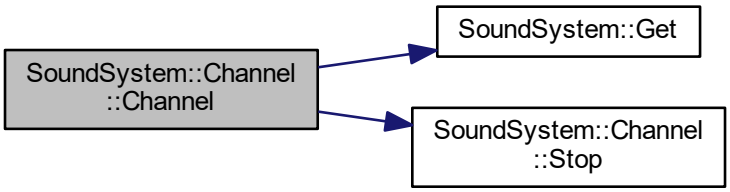
- class Sound

6.8.1 Constructor & Destructor Documentation

6.8.1.1 Channel() [1/2]

```
SoundSystem::Channel::Channel (
            SoundSystem & sys )
```

Here is the call graph for this function:



6.8.1.2 Channel() [2/2]

```
SoundSystem::Channel::Channel (
            const Channel &  )  [delete]
```

6.8.1.3 ~Channel()

```
SoundSystem::Channel::~Channel ( )
```

6.8.2 Member Function Documentation

6.8.2.1 PlaySoundBuffer()

```
void SoundSystem::Channel::PlaySoundBuffer (
            class Sound & s,
            float freqMod,
            float vol )
```

6.8.2.2 Stop()

```
void SoundSystem::Channel::Stop ( )
```

Here is the caller graph for this function:

6.8.3 Friends And Related Function Documentation

6.8.3.1 Sound

```
friend class Sound  [friend]
```

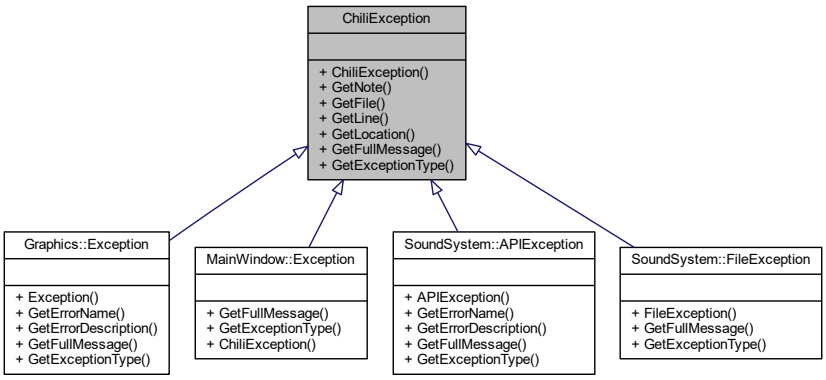
The documentation for this class was generated from the following files:

- Sound.h
- Sound.cpp

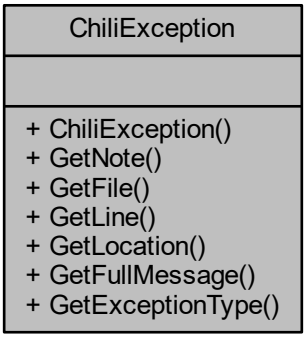
6.9 ChiliException Class Reference

```
#include <ChiliException.h>
```

Inheritance diagram for ChiliException:



Collaboration diagram for ChiliException:



Public Member Functions

- ChiliException (const wchar_t *file, unsigned int line, const std::wstring &note=L"")
- const std::wstring & GetNote () const
- const std::wstring & GetFile () const
- unsigned int GetLine () const
- std::wstring GetLocation () const
- virtual std::wstring GetFullMessage () const =0
- virtual std::wstring GetExceptionType () const =0

6.9.1 Constructor & Destructor Documentation

6.9.1.1 ChiliException()

```
ChiliException::ChiliException (
            const wchar_t * file,
            unsigned int line,
            const std::wstring & note = L"" )  [inline]
```

6.9.2 Member Function Documentation

6.9.2.1 GetExceptionType()

```
virtual std::wstring ChiliException::GetExceptionType ( ) const  [pure virtual]
```

Implemented in Graphics::Exception, SoundSystem::FileException, MainWindow::Exception, and SoundSystem::APIException.

Here is the caller graph for this function:

6.9.2.2 GetFile()

```
const std::wstring& ChiliException::GetFile ( ) const  [inline]
```

6.9.2.3 GetFullMessage()

```
virtual std::wstring ChiliException::GetFullMessage ( ) const  [pure virtual]
```

Implemented in Graphics::Exception, SoundSystem::FileException, MainWindow::Exception, and SoundSystem::APIException.

Here is the caller graph for this function:

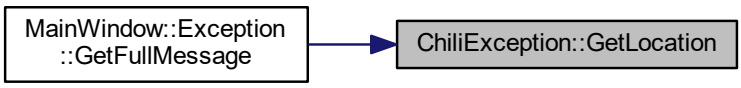
6.9.2.4 GetLine()

```
unsigned int ChiliException::GetLine ( ) const  [inline]
```

6.9.2.5 GetLocation()

```
std::wstring ChiliException::GetLocation ( ) const  [inline]
```

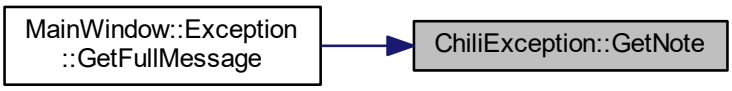
Here is the caller graph for this function:



6.9.2.6 GetNote()

```
const std::wstring& ChiliException::GetNote ( ) const  [inline]
```

Here is the caller graph for this function:



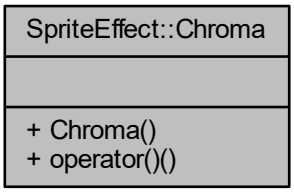
The documentation for this class was generated from the following file:

- ChiliException.h

6.10 SpriteEffect::Chroma Class Reference

```
#include <SpriteEffect.h>
```

Collaboration diagram for SpriteEffect::Chroma:



Public Member Functions

- Chroma (Color c)
- void operator() (Color cSrc, int xDest, int yDest, Graphics &gfx) const

6.10.1 Constructor & Destructor Documentation

6.10.1.1 Chroma()

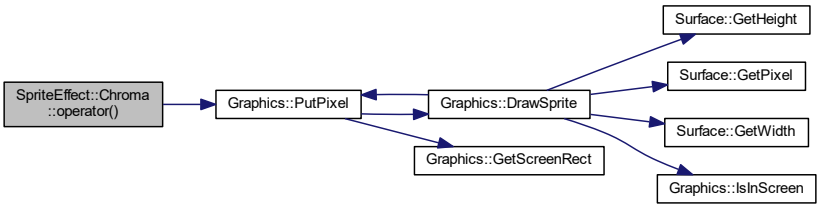
```
SpriteEffect::Chroma::Chroma (
            Color c )  [inline]
```

6.10.2 Member Function Documentation

6.10.2.1 operator()()

```
void SpriteEffect::Chroma::operator() (
            Color cSrc,
            int xDest,
            int yDest,
            Graphics & gfx ) const  [inline]
```

Here is the call graph for this function:



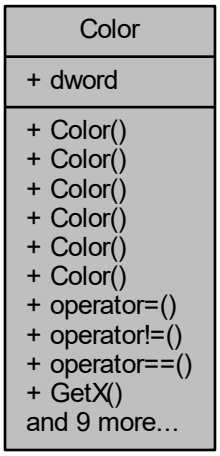
The documentation for this class was generated from the following file:

- SpriteEffect.h

6.11 Color Class Reference

```
#include <Colors.h>
```

Collaboration diagram for Color:



Public Member Functions

- constexpr Color ()
- constexpr Color (const Color &col)
- constexpr Color (unsigned int dw)
- constexpr Color (unsigned char x, unsigned char r, unsigned char g, unsigned char b)

- constexpr Color (unsigned char r, unsigned char g, unsigned char b)
- constexpr Color (Color col, unsigned char x)
- Color & operator= (Color color)
- bool operator!= (const Color &color)
- bool operator== (const Color &color)
- constexpr unsigned char GetX () const
- constexpr unsigned char GetA () const
- constexpr unsigned char GetR () const
- constexpr unsigned char GetG () const
- constexpr unsigned char GetB () const
- void SetX (unsigned char x)
- void SetA (unsigned char a)
- void SetR (unsigned char r)
- void SetG (unsigned char g)
- void SetB (unsigned char b)

Public Attributes

- unsigned int dword

6.11.1 Constructor & Destructor Documentation

6.11.1.1 Color() [1/6]

```
constexpr Color::Color ( ) [inline], [constexpr]
```

6.11.1.2 Color() [2/6]

```
constexpr Color::Color (
            const Color & col ) [inline], [constexpr]
```

6.11.1.3 Color() [3/6]

```
constexpr Color::Color (
            unsigned int dw ) [inline], [constexpr]
```

6.11.1.4 Color() [4/6]

```
constexpr Color::Color (
            unsigned char x,
            unsigned char r,
            unsigned char g,
            unsigned char b )  [inline], [constexpr]
```

6.11.1.5 Color() [5/6]

```
constexpr Color::Color (
            unsigned char r,
            unsigned char g,
            unsigned char b )  [inline], [constexpr]
```

6.11.1.6 Color() [6/6]

```
constexpr Color::Color (
            Color col,
            unsigned char x )  [inline], [constexpr]
```

6.11.2 Member Function Documentation

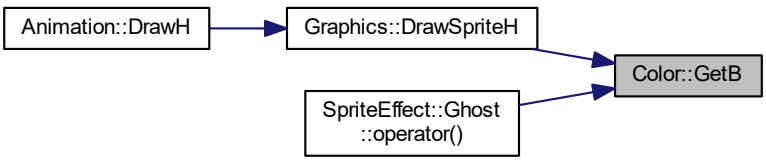
6.11.2.1 GetA()

```
constexpr unsigned char Color::GetA ( ) const  [inline], [constexpr]
```

6.11.2.2 GetB()

```
constexpr unsigned char Color::GetB ( ) const  [inline], [constexpr]
```

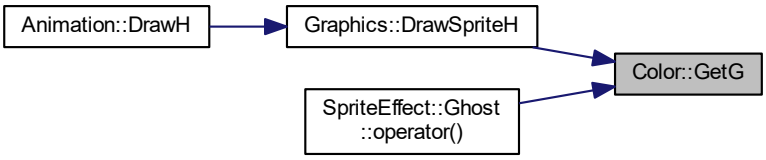
Here is the caller graph for this function:



6.11.2.3 GetG()

```
constexpr unsigned char Color::GetG ( ) const  [inline], [constexpr]
```

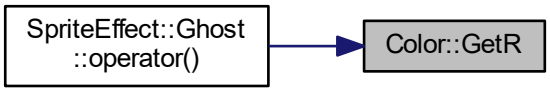
Here is the caller graph for this function:



6.11.2.4 GetR()

```
constexpr unsigned char Color::GetR ( ) const  [inline], [constexpr]
```

Here is the caller graph for this function:



6.11.2.5 GetX()

```
constexpr unsigned char Color::GetX ( ) const  [inline], [constexpr]
```

6.11.2.6 operator"!=()

```
bool Color::operator!= (
            const Color & color )  [inline]
```

6.11.2.7 operator=()

```
Color& Color::operator= (
            Color color )  [inline]
```

6.11.2.8 operator==()

```
bool Color::operator== (
            const Color & color )  [inline]
```

6.11.2.9 SetA()

```
void Color::SetA (
            unsigned char a )  [inline]
```

6.11.2.10 SetB()

```
void Color::SetB (
            unsigned char b )  [inline]
```

6.11.2.11 SetG()

```
void Color::SetG (
            unsigned char g )  [inline]
```

6.11.2.12 SetR()

```
void Color::SetR (
            unsigned char r )  [inline]
```

6.11.2.13 SetX()

```
void Color::SetX (
            unsigned char x )  [inline]
```

6.11.3 Member Data Documentation

6.11.3.1 dword

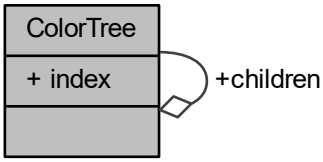
```
unsigned int Color::dword
```

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

- Colors.h

6.12 ColorTree Struct Reference

Collaboration diagram for ColorTree:



Public Attributes

- ColorTree * children [16]
- int index

6.12.1 Member Data Documentation

6.12.1.1 children

```
ColorTree* ColorTree::children[16]
```

6.12.1.2 index

```
int ColorTree::index
```

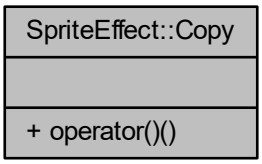
The documentation for this struct was generated from the following file:

- lodepng.cpp

6.13 SpriteEffect::Copy Class Reference

```
#include <SpriteEffect.h>
```

Collaboration diagram for SpriteEffect::Copy:



Public Member Functions

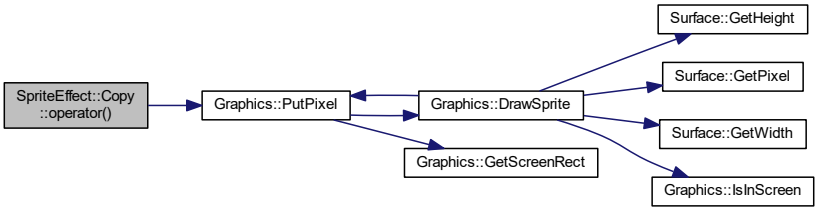
- void operator() (Color cSrc, int xDest, int yDest, Graphics &gfx) const

6.13.1 Member Function Documentation

6.13.1.1 operator()()

```
void SpriteEffect::Copy::operator() (
            Color cSrc,
            int xDest,
            int yDest,
            Graphics & gfx ) const  [inline]
```

Here is the call graph for this function:



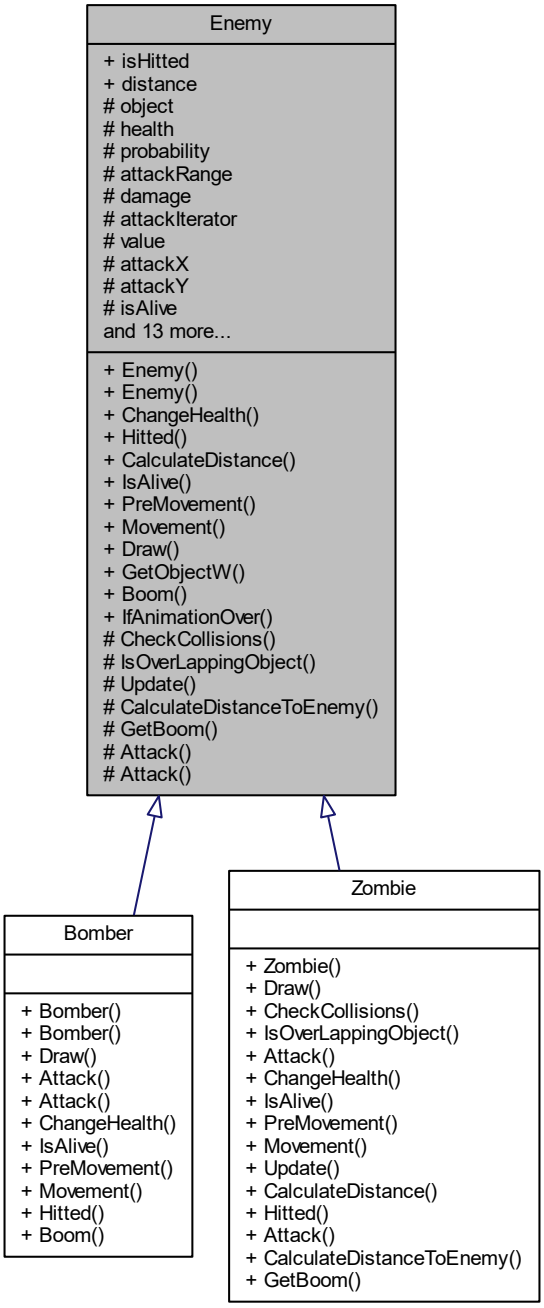
The documentation for this class was generated from the following file:

- SpriteEffect.h

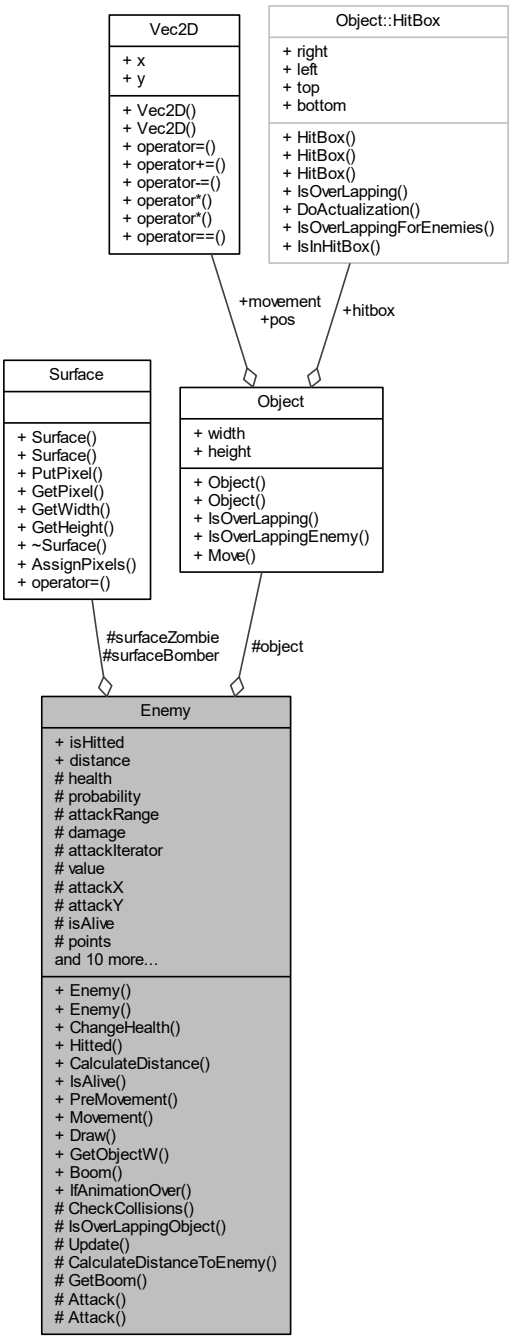
6.14 Enemy Class Reference

```
#include <Enemy.h>
```

Inheritance diagram for Enemy:



Collaboration diagram for Enemy:



Public Member Functions

- Enemy ()=delete
- Enemy (Object object, float health, float damage, float probability, bool isAlive, int points)
- virtual void ChangeHealth (float changeHP)=0
- virtual void Hitted (const float &dmg)=0
- virtual void CalculateDistance (const Vec2D &pos)=0

- virtual bool IsAlive ()=0
- virtual int PreMovement (float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std↩ ::vector< std::unique_ptr< Enemy >> &enemies, int &delay, float &damageToPlayer)=0
- virtual void Movement (bool aim_R, bool aim_L, bool aim_U, bool aim_D, float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies, float dirX, float dirY, float distance)=0
- virtual void Draw (Graphics &gfx)=0
- Object GetObjectW ()
- virtual bool Boom (Graphics &gfx, float dt)=0
- bool IfAnimationOver ()

Public Attributes

- bool isHitted = false
- float distance

Protected Member Functions

- virtual void CheckCollisions (std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies)=0
- virtual bool IsOverLappingObject (const Object other)=0
- virtual void Update (float dt)=0
- virtual float CalculateDistanceToEnemy (const Vec2D &pos)=0
- virtual Rect GetBoom ()=0
- virtual float Attack (float distance, float dt)=0
- virtual float Attack (float distance, float dt, std::vector< std::unique_ptr< Enemy >> &enemies, int &delay)=0

Protected Attributes

- Object object
- float health
- float probability
- float attackRange
- float damage
- int attackIterator = 0
- int value
- float attackX
- float attackY
- bool isAlive =true
- int points
- bool aimsRight
- bool aimsLeft
- bool aimsDown
- bool aimsUp
- bool animationOver = false
- bool blockedRight =false
- bool blockedLeft =false
- bool blockedDown =false
- bool blockedUp =false
- Surface surfaceZombie = Surface("Images\\Zombie.png", 224, 164)
- Surface surfaceBomber = Surface("Images\\Bomber.png", 228, 186)
- std::vector< Animation > animation

6.14.1 Constructor & Destructor Documentation

6.14.1.1 Enemy() [1/2]

```
Enemy::Enemy ( ) [delete]
```

6.14.1.2 Enemy() [2/2]

```
Enemy::Enemy (
            Object object,
            float health,
            float damage,
            float probability,
            bool isAlive,
            int points )
```

6.14.2 Member Function Documentation

6.14.2.1 Attack() [1/2]

```
virtual float Enemy::Attack (
            float distance,
            float dt ) [protected], [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.2 Attack() [2/2]

```
virtual float Enemy::Attack (
            float distance,
            float dt,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            int & delay ) [protected], [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.3 Boom()

```
virtual bool Enemy::Boom (
            Graphics & gfx,
            float dt )  [pure virtual]
```

Implemented in Bomber.

6.14.2.4 CalculateDistance()

```
virtual void Enemy::CalculateDistance (
            const Vec2D & pos )  [pure virtual]
```

Implemented in Zombie.

6.14.2.5 CalculateDistanceToEnemy()

```
virtual float Enemy::CalculateDistanceToEnemy (
            const Vec2D & pos )  [protected], [pure virtual]
```

Implemented in Zombie.

6.14.2.6 ChangeHealth()

```
virtual void Enemy::ChangeHealth (
            float changeHP )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.7 CheckCollisions()

```
virtual void Enemy::CheckCollisions (
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies )  [protected], [pure virtual]
```

Implemented in Zombie.

6.14.2.8 Draw()

```
virtual void Enemy::Draw (
            Graphics & gfx )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.9 GetBoom()

```
virtual Rect Enemy::GetBoom ( )  [protected], [pure virtual]
```

Implemented in Zombie.

6.14.2.10 GetObjectW()

```
Object Enemy::GetObjectW ( )
```

6.14.2.11 Hitted()

```
virtual void Enemy::Hitted (
            const float & dmg )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.12 IfAnimationOver()

```
bool Enemy::IfAnimationOver ( )
```

6.14.2.13 IsAlive()

```
virtual bool Enemy::IsAlive ( )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.14 IsOverLappingObject()

```
virtual bool Enemy::IsOverLappingObject (
            const Object other )  [protected], [pure virtual]
```

Implemented in Zombie.

6.14.2.15 Movement()

```
virtual void Enemy::Movement (
            bool aim_R,
            bool aim_L,
            bool aim_U,
            bool aim_D,
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            float dirX,
            float dirY,
            float distance )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.16 PreMovement()

```
virtual int Enemy::PreMovement (
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            int & delay,
            float & damageToPlayer )  [pure virtual]
```

Implemented in Bomber, and Zombie.

6.14.2.17 Update()

```
virtual void Enemy::Update (
            float dt )  [protected], [pure virtual]
```

Implemented in Zombie.

6.14.3 Member Data Documentation

6.14.3.1 aimsDown

```
bool Enemy::aimsDown [protected]
```

6.14.3.2 aimsLeft

```
bool Enemy::aimsLeft [protected]
```

6.14.3.3 aimsRight

```
bool Enemy::aimsRight [protected]
```

6.14.3.4 aimsUp

```
bool Enemy::aimsUp [protected]
```

6.14.3.5 animation

```
std::vector<Animation> Enemy::animation [protected]
```

6.14.3.6 animationOver

```
bool Enemy::animationOver = false [protected]
```

6.14.3.7 attackIterator

```
int Enemy::attackIterator = 0 [protected]
```

6.14.3.8 attackRange

```
float Enemy::attackRange [protected]
```

6.14.3.9 attackX

```
float Enemy::attackX  [protected]
```

6.14.3.10 attackY

```
float Enemy::attackY  [protected]
```

6.14.3.11 blockedDown

```
bool Enemy::blockedDown =false  [protected]
```

6.14.3.12 blockedLeft

```
bool Enemy::blockedLeft =false  [protected]
```

6.14.3.13 blockedRight

```
bool Enemy::blockedRight =false  [protected]
```

6.14.3.14 blockedUp

```
bool Enemy::blockedUp =false  [protected]
```

6.14.3.15 damage

```
float Enemy::damage  [protected]
```

6.14.3.16 distance

```
float Enemy::distance
```

6.14.3.17 health

```
float Enemy::health [protected]
```

6.14.3.18 isAlive

```
bool Enemy::isAlive =true [protected]
```

6.14.3.19 isHitted

```
bool Enemy::isHitted = false
```

6.14.3.20 object

```
Object Enemy::object [protected]
```

6.14.3.21 points

```
int Enemy::points [protected]
```

6.14.3.22 probability

```
float Enemy::probability [protected]
```

6.14.3.23 surfaceBomber

```
Surface Enemy::surfaceBomber = Surface("Images\\Bomber.png", 228, 186) [protected]
```

6.14.3.24 surfaceZombie

```
Surface Enemy::surfaceZombie = Surface("Images\\Zombie.png", 224, 164) [protected]
```

6.14.3.25 value

```
int Enemy::value [protected]
```

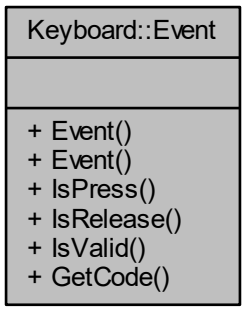
The documentation for this class was generated from the following files:

- Enemy.h
- Enemy.cpp

6.15 Keyboard::Event Class Reference

```
#include <Keyboard.h>
```

Collaboration diagram for Keyboard::Event:



Public Types

- enum Type { Press, Release, Invalid }

Public Member Functions

- Event ()
- Event (Type type, unsigned char code)
- bool IsPress () const
- bool IsRelease () const
- bool IsValid () const
- unsigned char GetCode () const

6.15.1 Member Enumeration Documentation

6.15.1.1 Type

```
enum Keyboard::Event::Type
```

Enumerator

Press	
Release	
Invalid	

6.15.2 Constructor & Destructor Documentation

6.15.2.1 Event() [1/2]

```
Keyboard::Event::Event ( ) [inline]
```

6.15.2.2 Event() [2/2]

```
Keyboard::Event::Event (
            Type type,
            unsigned char code ) [inline]
```

6.15.3 Member Function Documentation

6.15.3.1 GetCode()

```
unsigned char Keyboard::Event::GetCode ( ) const [inline]
```

6.15.3.2 IsPress()

```
bool Keyboard::Event::IsPress ( ) const [inline]
```

6.15.3.3 IsRelease()

```
bool Keyboard::Event::IsRelease ( ) const [inline]
```

6.15.3.4 IsValid()

```
bool Keyboard::Event::IsValid ( ) const  [inline]
```

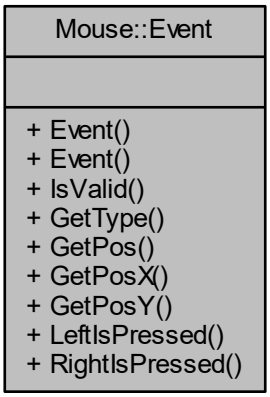
The documentation for this class was generated from the following file:

- Keyboard.h

6.16 Mouse::Event Class Reference

```
#include <Mouse.h>
```

Collaboration diagram for Mouse::Event:



Public Types

- enum Type {
  LPress, LRelease, RPress, RRelease,
  WheelUp, WheelDown, Move, Invalid }

Public Member Functions

- Event ()
- Event (Type type, const Mouse &parent)
- bool IsValid () const
- Type GetType () const
- std::pair< int, int > GetPos () const
- int GetPosX () const
- int GetPosY () const
- bool LeftIsPressed () const
- bool RightIsPressed () const

6.16.1 Member Enumeration Documentation

6.16.1.1 Type

```
enum Mouse::Event::Type
```

Enumerator

LPress	
LRelease	
RPress	
RRelease	
WheelUp	
WheelDown	
Move	
Invalid	

6.16.2 Constructor & Destructor Documentation

6.16.2.1 Event() [1/2]

```
Mouse::Event::Event ( ) [inline]
```

6.16.2.2 Event() [2/2]

```
Mouse::Event::Event (
            Type type,
            const Mouse & parent ) [inline]
```

6.16.3 Member Function Documentation

6.16.3.1 GetPos()

```
std::pair<int,int> Mouse::Event::GetPos ( ) const [inline]
```

6.16.3.2 GetPosX()

```
int Mouse::Event::GetPosX ( ) const  [inline]
```

6.16.3.3 GetPosY()

```
int Mouse::Event::GetPosY ( ) const  [inline]
```

6.16.3.4 GetType()

```
Type Mouse::Event::GetType ( ) const  [inline]
```

6.16.3.5 IsValid()

```
bool Mouse::Event::IsValid ( ) const  [inline]
```

6.16.3.6 LeftIsPressed()

```
bool Mouse::Event::LeftIsPressed ( ) const  [inline]
```

6.16.3.7 RightIsPressed()

```
bool Mouse::Event::RightIsPressed ( ) const  [inline]
```

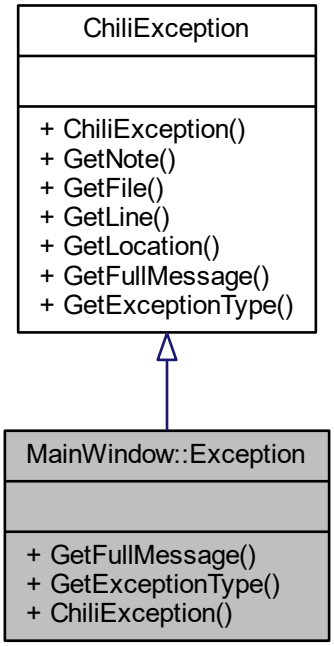
The documentation for this class was generated from the following file:

- Mouse.h

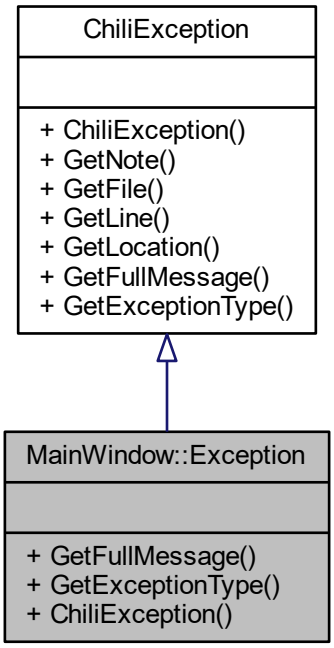
6.17 MainWindow::Exception Class Reference

```
#include <MainWindow.h>
```

Inheritance diagram for MainWindow::Exception:



Collaboration diagram for MainWindow::Exception:



Public Member Functions

- virtual std::wstring GetFullMessage () const override
- virtual std::wstring GetExceptionType () const override
- ChiliException (const wchar_t ∗file, unsigned int line, const std::wstring &note=L"")

6.17.1 Member Function Documentation

6.17.1.1 ChiliException()

```
ChiliException::ChiliException  [inline]
```

6.17.1.2 GetExceptionType()

```
virtual std::wstring MainWindow::Exception::GetExceptionType ( ) const  [inline], [override],
[virtual]
```

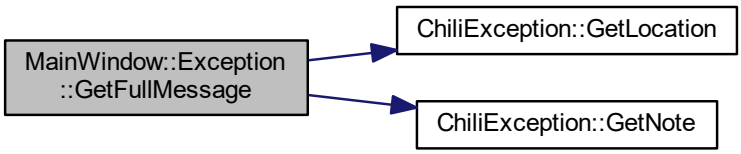
Implements ChiliException.

6.17.1.3 GetFullMessage()

```
virtual std::wstring MainWindow::Exception::GetFullMessage ( ) const  [inline], [override],
[virtual]
```

Implements ChiliException.

Here is the call graph for this function:



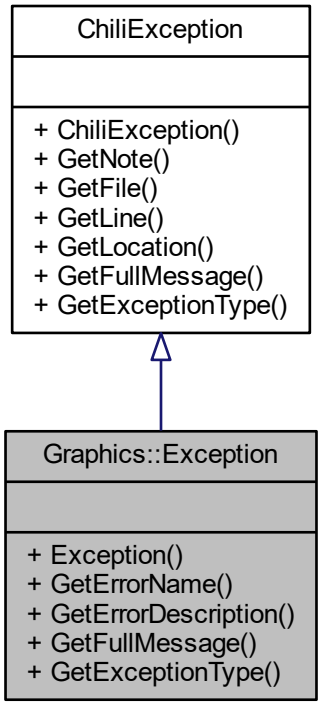
The documentation for this class was generated from the following file:

- MainWindow.h

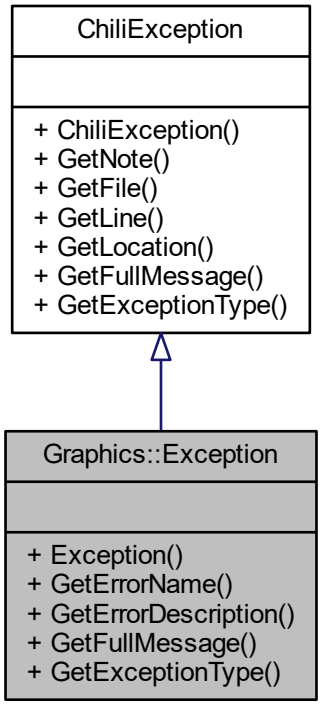
6.18 Graphics::Exception Class Reference

```
#include <Graphics.h>
```

Inheritance diagram for Graphics::Exception:



Collaboration diagram for Graphics::Exception:



Public Member Functions

- Exception (HRESULT hr, const std::wstring &note, const wchar_t *file, unsigned int line)
- std::wstring GetErrorName () const
- std::wstring GetErrorDescription () const
- virtual std::wstring GetFullMessage () const override
- virtual std::wstring GetExceptionType () const override

6.18.1 Constructor & Destructor Documentation

6.18.1.1 Exception()

```
Graphics::Exception::Exception (
            HRESULT hr,
            const std::wstring & note,
            const wchar_t * file,
            unsigned int line )
```

6.18.2 Member Function Documentation

6.18.2.1 GetErrorDescription()

```
std::wstring Graphics::Exception::GetErrorDescription ( ) const
```

6.18.2.2 GetErrorName()

```
std::wstring Graphics::Exception::GetErrorName ( ) const
```

6.18.2.3 GetExceptionType()

```
std::wstring Graphics::Exception::GetExceptionType ( ) const  [override], [virtual]
```

Implements ChiliException.

6.18.2.4 GetFullMessage()

```
std::wstring Graphics::Exception::GetFullMessage ( ) const  [override], [virtual]
```

Implements ChiliException.

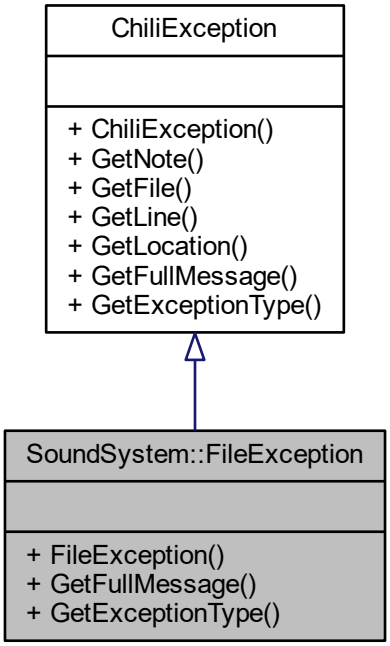
The documentation for this class was generated from the following files:

- Graphics.h
- Graphics.cpp

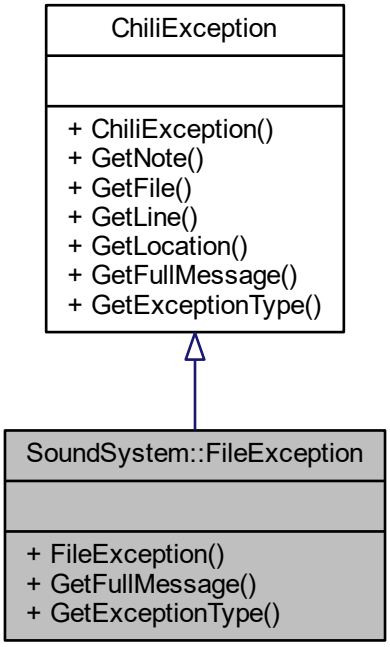
6.19 SoundSystem::FileException Class Reference

```
#include <Sound.h>
```

Inheritance diagram for SoundSystem::FileException:



Collaboration diagram for SoundSystem::FileException:



Public Member Functions

- FileException (const wchar_t *file, unsigned int line, const std::wstring &note, const std::wstring &filename)
- virtual std::wstring GetFullMessage () const override
- virtual std::wstring GetExceptionType () const override

6.19.1 Constructor & Destructor Documentation

6.19.1.1 FileException()

```
SoundSystem::FileException::FileException (
            const wchar_t * file,
            unsigned int line,
            const std::wstring & note,
            const std::wstring & filename )
```

6.19.2 Member Function Documentation

6.19.2.1 GetExceptionType()

```
std::wstring SoundSystem::FileException::GetExceptionType ( ) const  [override], [virtual]
```

Implements ChiliException.

6.19.2.2 GetFullMessage()

```
std::wstring SoundSystem::FileException::GetFullMessage ( ) const  [override], [virtual]
```

Implements ChiliException.

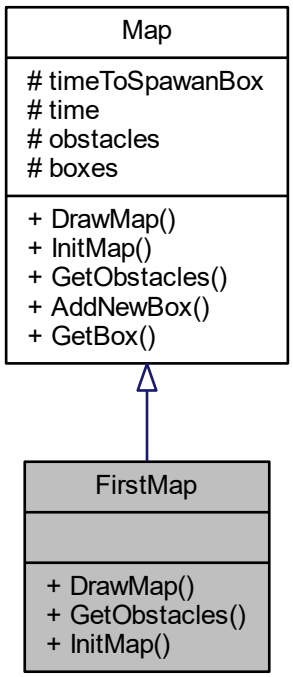
The documentation for this class was generated from the following files:

- Sound.h
- Sound.cpp

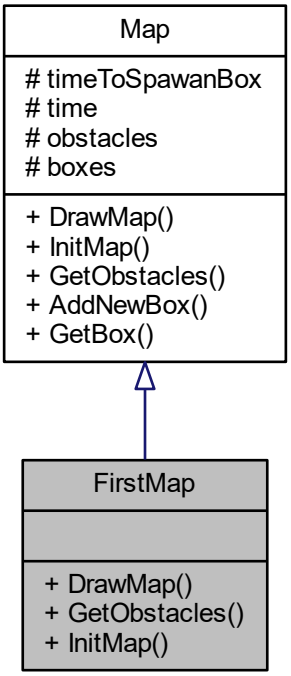
6.20 FirstMap Class Reference

```
#include <FirstMap.h>
```

Inheritance diagram for FirstMap:



Collaboration diagram for FirstMap:



Public Member Functions

- void DrawMap (Graphics &gfx) override
- std::vector< Obstacle > GetObstacles () override
- void InitMap () override

Additional Inherited Members

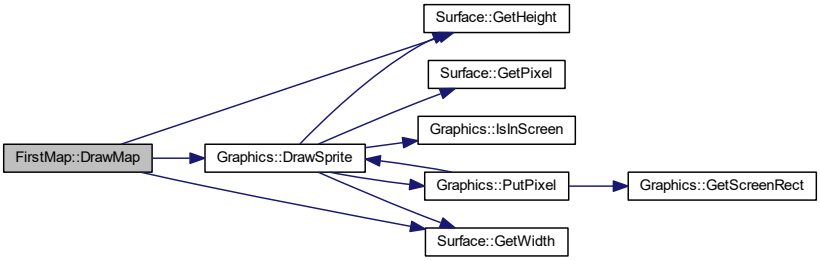
6.20.1 Member Function Documentation

6.20.1.1 DrawMap()

```
void FirstMap::DrawMap (
            Graphics & gfx )  [override], [virtual]
```

Implements Map.

Here is the call graph for this function:



6.20.1.2 GetObstacles()

```
std::vector< Obstacle > FirstMap::GetObstacles ( ) [override], [virtual]
```

Implements Map.

6.20.1.3 InitMap()

```
void FirstMap::InitMap ( ) [override], [virtual]
```

Implements Map.

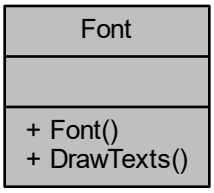
The documentation for this class was generated from the following files:

- FirstMap.h
- FirstMap.cpp

6.21 Font Class Reference

```
#include <Font.h>
```

Collaboration diagram for Font:



Public Member Functions

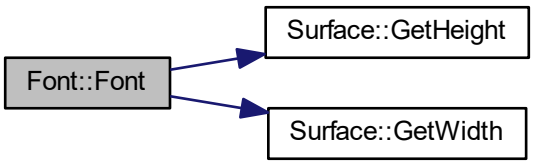
- Font (const std::string &filename, unsigned int width, unsigned int height, Color chroma=Colors::White)
- void DrawTexts (const std::string &text, const Vec2D &pos, Color color, Graphics &gfx) const

6.21.1 Constructor & Destructor Documentation

6.21.1.1 Font()

```
Font::Font (
            const std::string & filename,
            unsigned int width,
            unsigned int height,
            Color chroma = Colors::White )
```

Here is the call graph for this function:

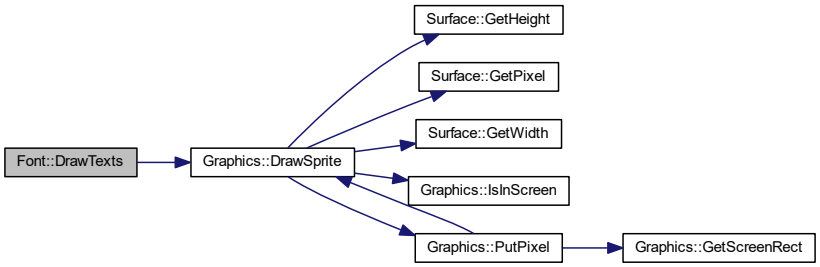


6.21.2 Member Function Documentation

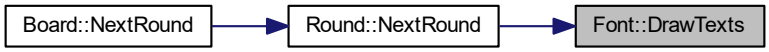
6.21.2.1 DrawTexts()

```
void Font::DrawTexts (
            const std::string & text,
            const Vec2D & pos,
            Color color,
            Graphics & gfx ) const
```

Here is the call graph for this function:



Here is the caller graph for this function:



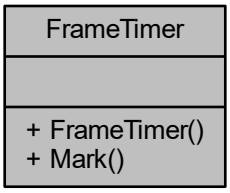
The documentation for this class was generated from the following files:

- Font.h
- Font.cpp

6.22 FrameTimer Class Reference

```
#include <FrameTimer.h>
```

Collaboration diagram for FrameTimer:



Public Member Functions

- FrameTimer ()
- float Mark ()

6.22.1 Constructor & Destructor Documentation

6.22.1.1 FrameTimer()

```
FrameTimer::FrameTimer ( )
```

6.22.2 Member Function Documentation

6.22.2.1 Mark()

```
float FrameTimer::Mark ( )
```

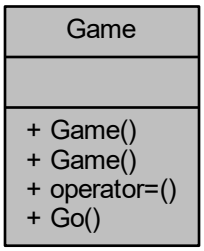
The documentation for this class was generated from the following files:

- FrameTimer.h
- FrameTimer.cpp

6.23 Game Class Reference

```
#include <Game.h>
```

Collaboration diagram for Game:



Public Member Functions

- Game (class MainWindow &wnd)
- Game (const Game &)=delete
- Game & operator= (const Game &)=delete
- void Go ()

6.23.1 Constructor & Destructor Documentation

6.23.1.1 Game() [1/2]

```
Game::Game (
            class MainWindow & wnd )
```

6.23.1.2 Game() [2/2]

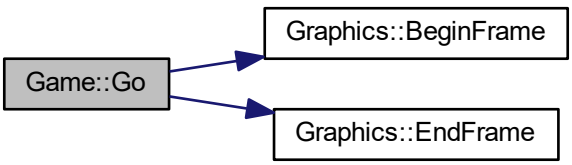
```
Game::Game (
            const Game &  )  [delete]
```

6.23.2 Member Function Documentation

6.23.2.1 Go()

```
void Game::Go ( )
```

Here is the call graph for this function:



Here is the caller graph for this function:

6.23.2.2 operator=()

```
Game& Game::operator= (
            const Game &  )  [delete]
```

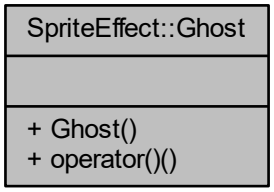
The documentation for this class was generated from the following files:

- Game.h
- Game.cpp

6.24 SpriteEffect::Ghost Class Reference

```
#include <SpriteEffect.h>
```

Collaboration diagram for SpriteEffect::Ghost:



Public Member Functions

- Ghost (Color c)
- void operator() (Color src, int xDest, int yDest, Graphics &gfx) const

6.24.1 Constructor & Destructor Documentation

6.24.1.1 Ghost()

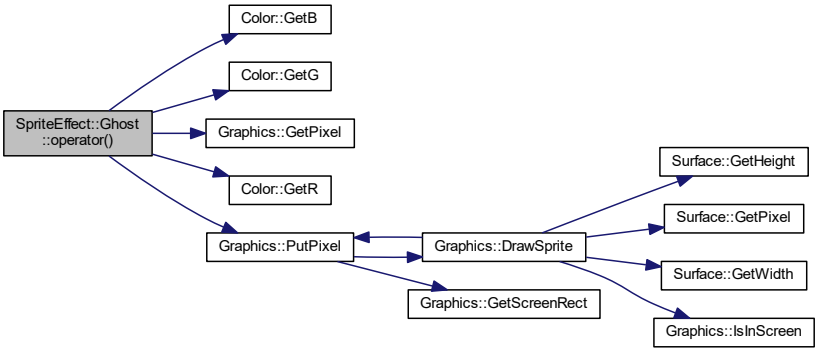
```
SpriteEffect::Ghost::Ghost (
            Color c )  [inline]
```

6.24.2 Member Function Documentation

6.24.2.1 operator()()

```
void SpriteEffect::Ghost::operator() (
            Color src,
            int xDest,
            int yDest,
            Graphics & gfx ) const  [inline]
```

Here is the call graph for this function:



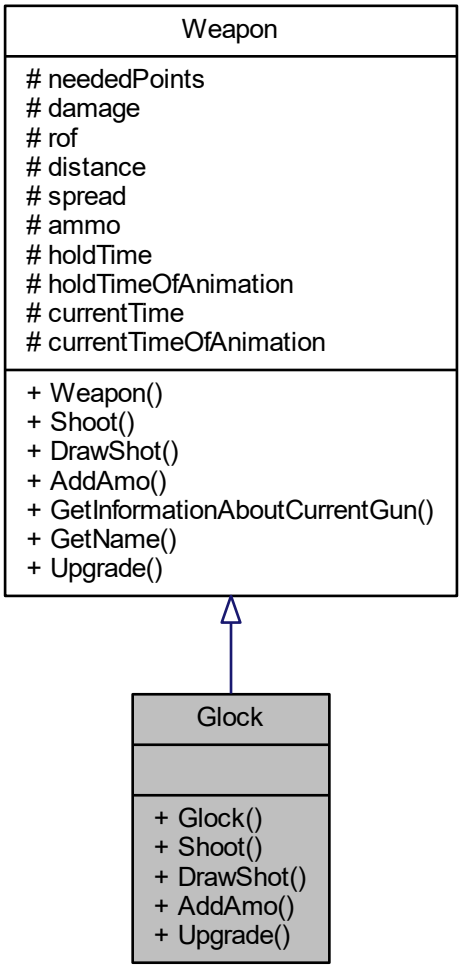
The documentation for this class was generated from the following file:

- SpriteEffect.h

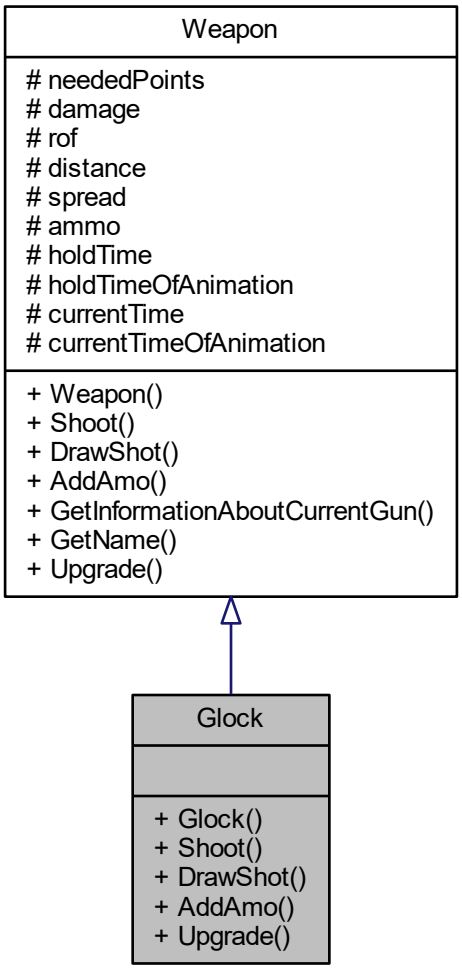
6.25 Glock Class Reference

```
#include <Glock.h>
```

Inheritance diagram for Glock:



Collaboration diagram for Glock:



Public Member Functions

- Glock (int neededPoints=20, float damage=30, float rof=1, float distance=200, float spread=1, int ammo=10000, float holdTime=0.55f, float holdTimeOfAnimation=0.2f)
- bool Shoot (bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp, std::vector< std::unique_ptr< Enemy >> &enemies, std::vector< Obstacle >obstacles, const Vec2D &pos, float dt, bool isMoving) override
- bool DrawShot (Graphics &gfx, float dt) override
- void AddAmo (int amo) override
- void Upgrade (int number) override

Additional Inherited Members

6.25.1 Constructor & Destructor Documentation

6.25.1.1 Glock()

```
Glock::Glock (
            int neededPoints = 20,
            float damage = 30,
            float rof = 1,
            float distance = 200,
            float spread = 1,
            int ammo = 10000,
            float holdTime = 0.55f,
            float holdTimeOfAnimation = 0.2f )
```

6.25.2 Member Function Documentation

6.25.2.1 AddAmo()

```
void Glock::AddAmo (
            int amo )  [override], [virtual]
```

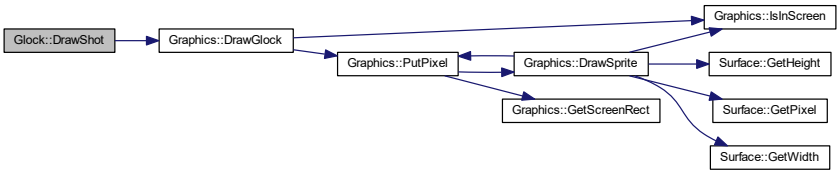
Implements Weapon.

6.25.2.2 DrawShot()

```
bool Glock::DrawShot (
            Graphics & gfx,
            float dt )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:

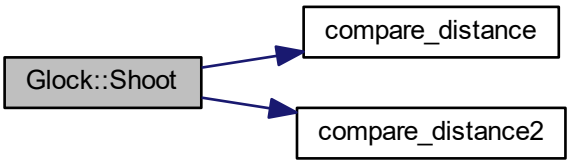


6.25.2.3 Shoot()

```
bool Glock::Shoot (
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            std::vector< Obstacle > obstacles,
            const Vec2D & pos,
            float dt,
            bool isMoving )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:



6.25.2.4 Upgrade()

```
void Glock::Upgrade (
            int number )  [override], [virtual]
```

Implements Weapon.

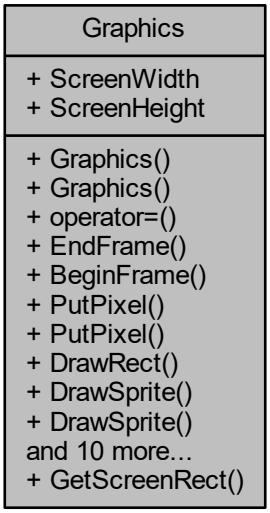
The documentation for this class was generated from the following files:

- Glock.h
- Glock.cpp

6.26 Graphics Class Reference

```
#include <Graphics.h>
```

Collaboration diagram for Graphics:



Classes

- class Exception

Public Member Functions

- Graphics (class HWNDKey &key)
- Graphics (const Graphics &)=delete
- Graphics & operator= (const Graphics &)=delete
- void EndFrame ()
- void BeginFrame ()
- void PutPixel (int x, int y, int r, int g, int b)
- void PutPixel (int x, int y, Color c)
- void DrawRect (float left, float top, float right, float bottom)
- void DrawSprite (float left, float top, float right, float bottom, const Surface &s, Color c)
- void DrawSprite (int x, int y, const Rect &src, const Surface &s)
- void DrawSpriteH (int x, int y, const Rect &src, const Surface &s)
- void DrawGlock (const std::vector< Vec2D > &vec)
- void DrawUzi (const std::vector< Vec2D > &vec)
- void DrawBoom (float left, float top, float right, float bottom, const Surface &s, Color c)
- Color GetPixel (int x, int y) const
- template<typename E >
  void DrawSprite (int x, int y, const Surface &s, E effect)

- template<typename E >
  void DrawSprite (int x, int y, const Rect &srcRect, const Surface &s, E effect)
- template<typename E >
  void DrawSprite (int x, int y, Rect srcRect, const Rect &clip, const Surface &s, E effect)
- template<typename E >
  bool IsInScreen (E x, E y)
- ~Graphics ()

Static Public Member Functions

- static Rect GetScreenRect ()

Static Public Attributes

- static constexpr int ScreenWidth = 1200
- static constexpr int ScreenHeight = 800

6.26.1 Constructor & Destructor Documentation

6.26.1.1 Graphics() [1/2]

```
Graphics::Graphics (
            class HWNDKey & key )
```

6.26.1.2 Graphics() [2/2]

```
Graphics::Graphics (
            const Graphics &  )  [delete]
```

6.26.1.3 ~Graphics()

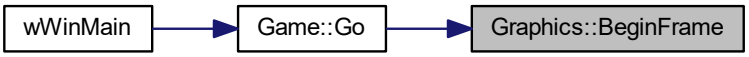
```
Graphics::~Graphics ( )
```

6.26.2 Member Function Documentation

6.26.2.1 BeginFrame()

```
void Graphics::BeginFrame ( )
```

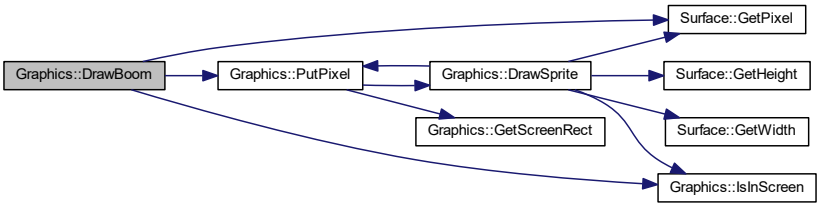
Here is the caller graph for this function:



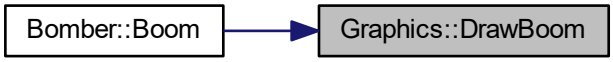
6.26.2.2 DrawBoom()

```
void Graphics::DrawBoom (
            float left,
            float top,
            float right,
            float bottom,
            const Surface & s,
            Color c )
```

Here is the call graph for this function:



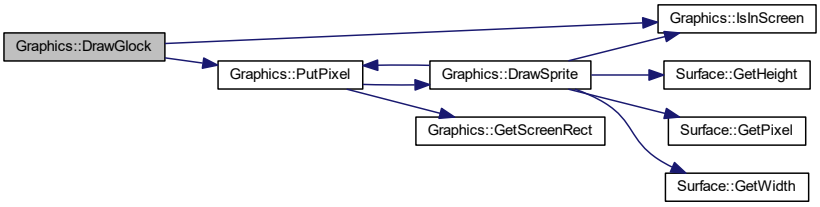
Here is the caller graph for this function:



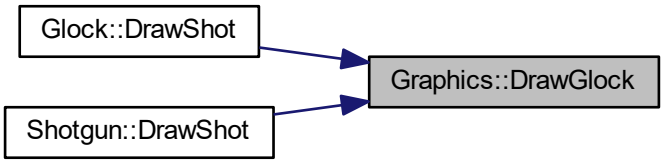
6.26.2.3 DrawGlock()

```
void Graphics::DrawGlock (
            const std::vector< Vec2D > & vec )
```

Here is the call graph for this function:



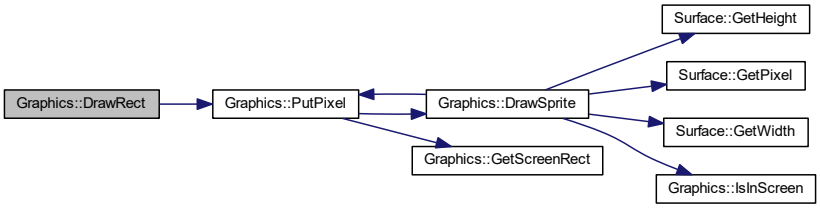
Here is the caller graph for this function:



6.26.2.4 DrawRect()

```
void Graphics::DrawRect (
            float left,
            float top,
            float right,
            float bottom )
```

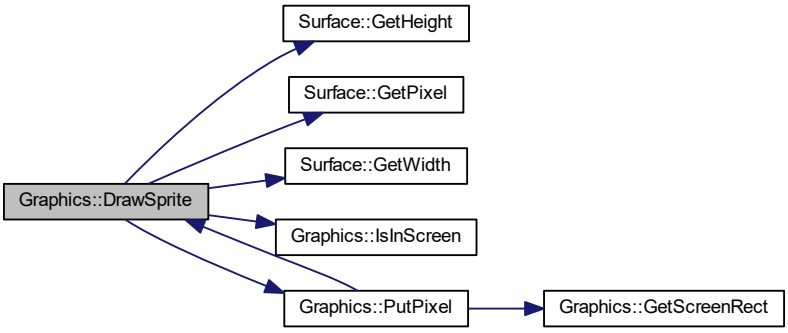
Here is the call graph for this function:



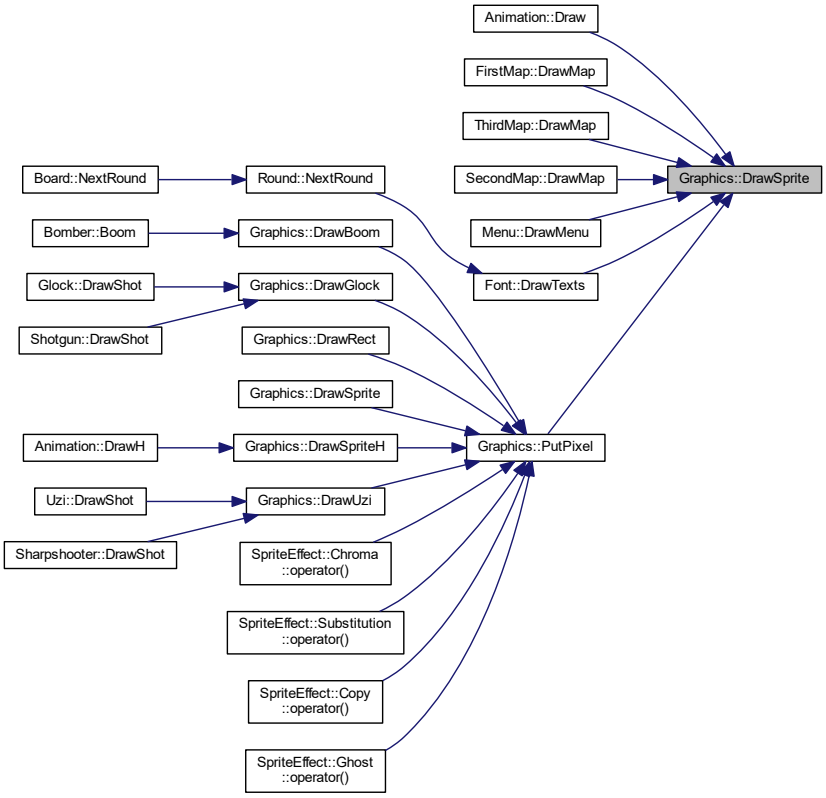
6.26.2.5 DrawSprite() [1/5]

```
void Graphics::DrawSprite (
            float left,
            float top,
            float right,
            float bottom,
            const Surface & s,
            Color c )
```

Here is the call graph for this function:



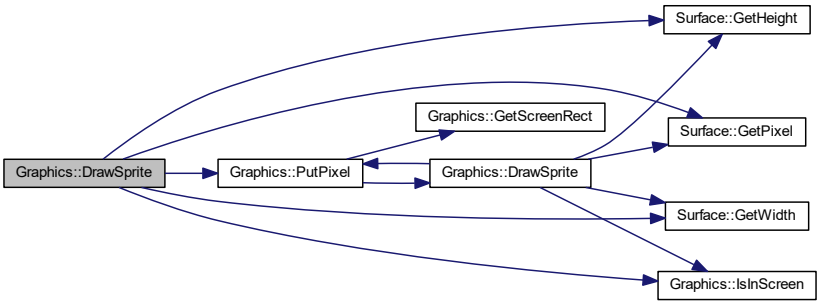
Here is the caller graph for this function:



6.26.2.6 DrawSprite() [2/5]

```
void Graphics::DrawSprite (
            int x,
            int y,
            const Rect & src,
            const Surface & s )
```

Here is the call graph for this function:



6.26.2.7 DrawSprite() [3/5]

```
template<typename E >
void Graphics::DrawSprite (
            int x,
            int y,
            const Rect & srcRect,
            const Surface & s,
            E effect )  [inline]
```

6.26.2.8 DrawSprite() [4/5]

```
template<typename E >
void Graphics::DrawSprite (
            int x,
            int y,
            const Surface & s,
            E effect )  [inline]
```

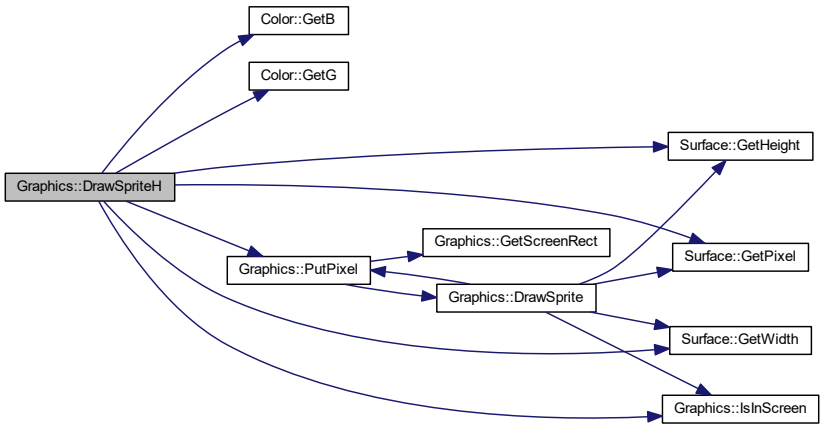
6.26.2.9 DrawSprite() [5/5]

```
template<typename E >
void Graphics::DrawSprite (
            int x,
            int y,
            Rect srcRect,
            const Rect & clip,
            const Surface & s,
            E effect )  [inline]
```

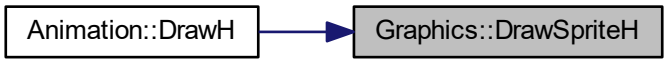
6.26.2.10 DrawSpriteH()

```
void Graphics::DrawSpriteH (
            int x,
            int y,
            const Rect & src,
            const Surface & s )
```

Here is the call graph for this function:



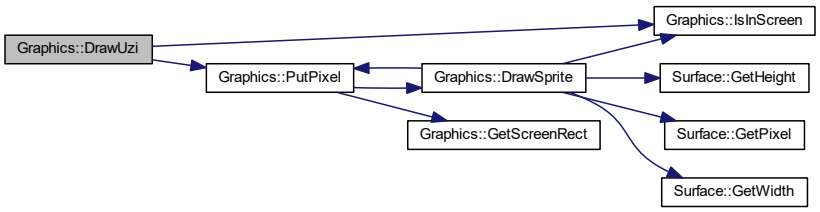
Here is the caller graph for this function:



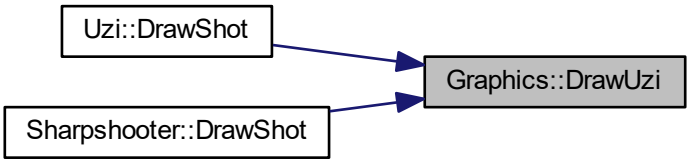
6.26.2.11 DrawUzi()

```
void Graphics::DrawUzi (
            const std::vector< Vec2D > & vec )
```

Here is the call graph for this function:



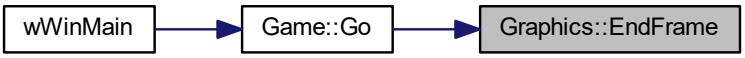
Here is the caller graph for this function:



6.26.2.12 EndFrame()

```
void Graphics::EndFrame ( )
```

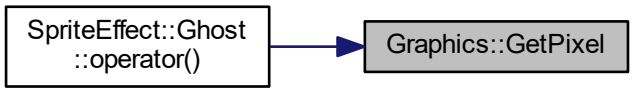
Here is the caller graph for this function:



6.26.2.13 GetPixel()

```
Color Graphics::GetPixel (
            int x,
            int y ) const
```

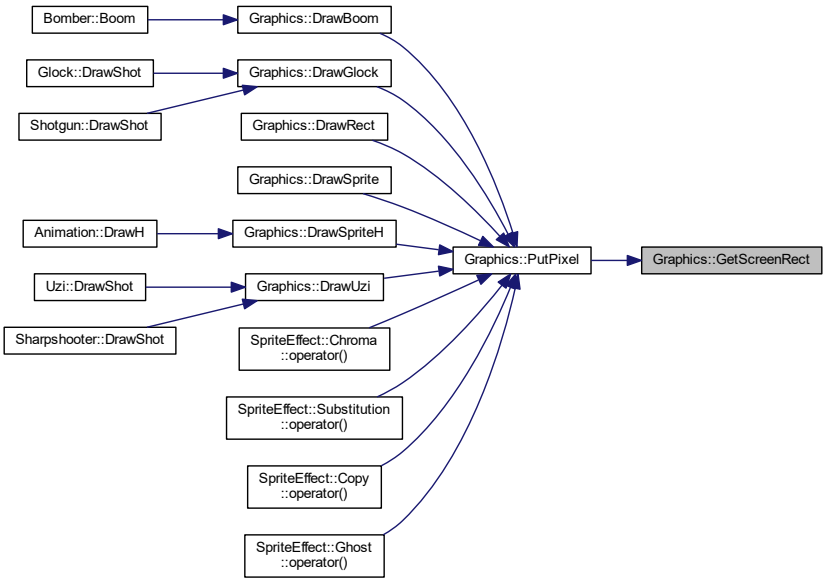
Here is the caller graph for this function:



6.26.2.14 GetScreenRect()

```
Rect Graphics::GetScreenRect ( ) [static]
```

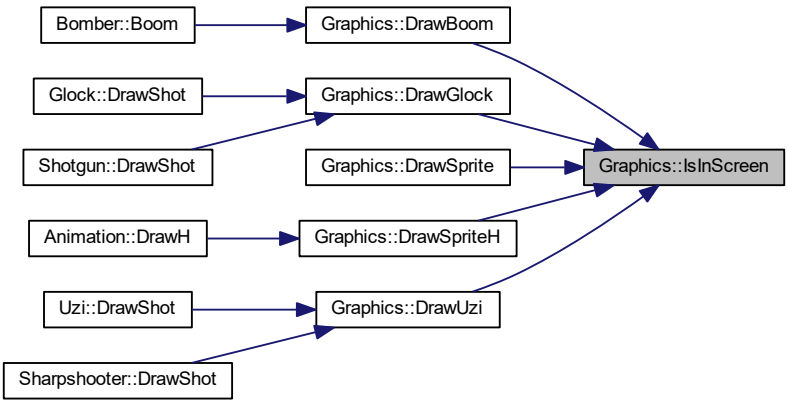
Here is the caller graph for this function:



6.26.2.15 IsInScreen()

```
template<typename E >
bool Graphics::IsInScreen (
            E x,
            E y ) [inline]
```

Here is the caller graph for this function:



6.26.2.16 operator=()

```
Graphics& Graphics::operator= (
            const Graphics &  )  [delete]
```

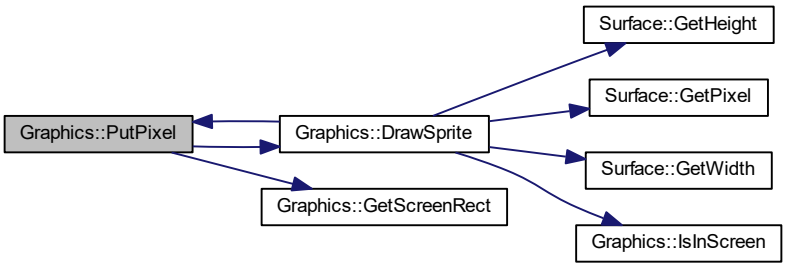
6.26.2.17 PutPixel() [1/2]

```
void Graphics::PutPixel (
            int x,
            int y,
            Color c )
```

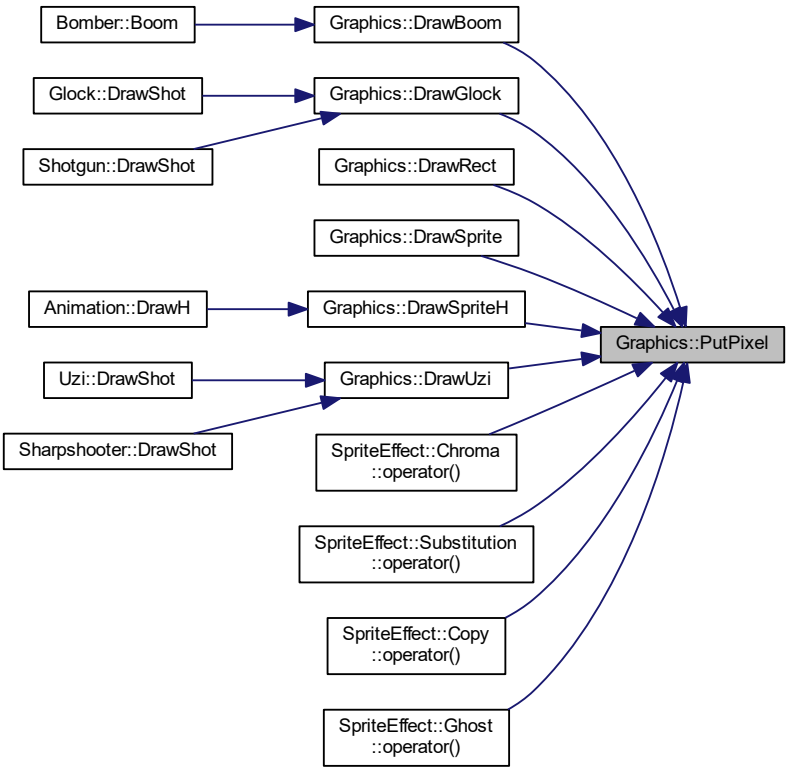
6.26.2.18 PutPixel() [2/2]

```
void Graphics::PutPixel (
            int x,
            int y,
            int r,
            int g,
            int b )  [inline]
```

Here is the call graph for this function:



Here is the caller graph for this function:



6.26.3 Member Data Documentation

6.26.3.1 ScreenHeight

```
constexpr int Graphics::ScreenHeight = 800  [static], [constexpr]
```

6.26.3.2 ScreenWidth

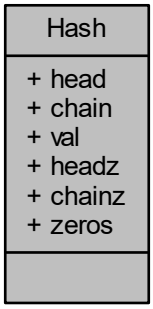
```
constexpr int Graphics::ScreenWidth = 1200  [static], [constexpr]
```

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

- Graphics.h
- Graphics.cpp

6.27 Hash Struct Reference

Collaboration diagram for Hash:



Public Attributes

- int * head
- unsigned short * chain
- int * val
- int * headz
- unsigned short * chainz
- unsigned short * zeros

6.27.1 Member Data Documentation

6.27.1.1 chain

```
unsigned short* Hash::chain
```

6.27.1.2 chainz

```
unsigned short* Hash::chainz
```

6.27.1.3 head

```
int* Hash::head
```

6.27.1.4 headz

```
int* Hash::headz
```

6.27.1.5 val

```
int* Hash::val
```

6.27.1.6 zeros

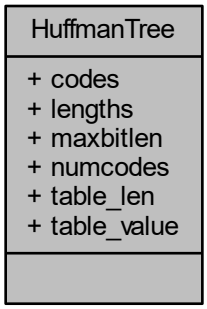
```
unsigned short* Hash::zeros
```

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

- lodepng.cpp

6.28 HuffmanTree Struct Reference

Collaboration diagram for HuffmanTree:



Public Attributes

- unsigned * codes
- unsigned * lengths
- unsigned maxbitlen
- unsigned numcodes
- unsigned char * table_len
- unsigned short * table_value

6.28.1 Member Data Documentation

6.28.1.1 codes

```
unsigned* HuffmanTree::codes
```

6.28.1.2 lengths

```
unsigned* HuffmanTree::lengths
```

6.28.1.3 maxbitlen

```
unsigned HuffmanTree::maxbitlen
```

6.28.1.4 numcodes

```
unsigned HuffmanTree::numcodes
```

6.28.1.5 table_len

```
unsigned char* HuffmanTree::table_len
```

6.28.1.6 table_value

```
unsigned short* HuffmanTree::table_value
```

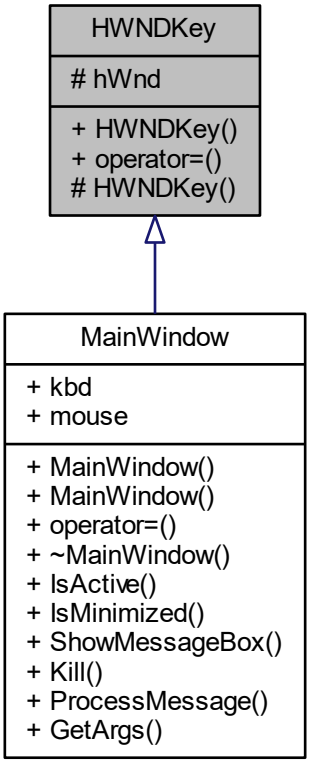
The documentation for this struct was generated from the following file:

- lodepng.cpp

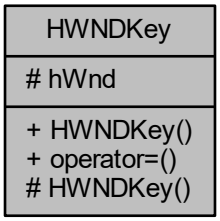
6.29 HWNDKey Class Reference

```
#include <MainWindow.h>
```

Inheritance diagram for HWNDKey:



Collaboration diagram for HWNDKey:



Public Member Functions

- HWNDKey (const HWNDKey &)=delete
- HWNDKey & operator= (HWNDKey &)=delete

Protected Member Functions

- HWNDKey ()=default

Protected Attributes

- HWND hWnd = nullptr

6.29.1 Constructor & Destructor Documentation

6.29.1.1 HWNDKey() [1/2]

```
HWNDKey::HWNDKey (
            const HWNDKey &  )  [delete]
```

6.29.1.2 HWNDKey() [2/2]

```
HWNDKey::HWNDKey ( )  [protected], [default]
```

6.29.2 Member Function Documentation

6.29.2.1 operator=()

```
HWNDKey& HWNDKey::operator= (
            HWNDKey &  )  [delete]
```

6.29.3 Member Data Documentation

6.29.3.1 hWnd

```
HWND HWNDKey::hWnd = nullptr  [protected]
```

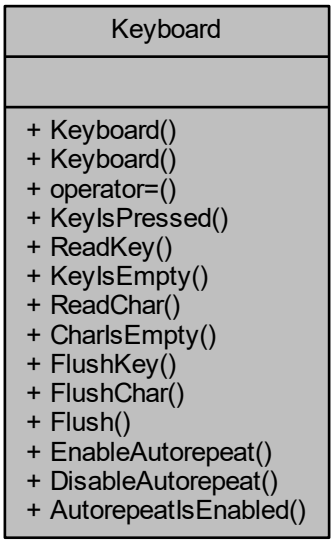
The documentation for this class was generated from the following file:

- MainWindow.h

6.30 Keyboard Class Reference

```
#include <Keyboard.h>
```

Collaboration diagram for Keyboard:



Classes

- class Event

Public Member Functions

- Keyboard ()=default
- Keyboard (const Keyboard &)=delete
- Keyboard & operator= (const Keyboard &)=delete
- bool KeyIsPressed (unsigned char keycode) const
- Event ReadKey ()
- bool KeyIsEmpty () const
- char ReadChar ()
- bool CharIsEmpty () const
- void FlushKey ()
- void FlushChar ()
- void Flush ()
- void EnableAutorepeat ()
- void DisableAutorepeat ()
- bool AutorepeatIsEnabled () const

Friends

- class MainWindow

6.30.1 Constructor & Destructor Documentation

6.30.1.1 Keyboard() [1/2]

```
Keyboard::Keyboard ( ) [default]
```

6.30.1.2 Keyboard() [2/2]

```
Keyboard::Keyboard (
            const Keyboard & ) [delete]
```

6.30.2 Member Function Documentation

6.30.2.1 AutorepeatIsEnabled()

```
bool Keyboard::AutorepeatIsEnabled ( ) const
```

6.30.2.2 CharIsEmpty()

```
bool Keyboard::CharIsEmpty ( ) const
```

6.30.2.3 DisableAutorepeat()

```
void Keyboard::DisableAutorepeat ( )
```

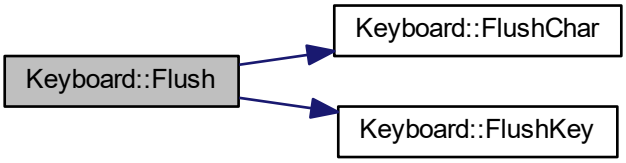
6.30.2.4 EnableAutorepeat()

```
void Keyboard::EnableAutorepeat ( )
```

6.30.2.5 Flush()

```
void Keyboard::Flush ( )
```

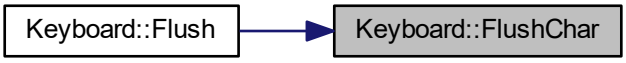
Here is the call graph for this function:



6.30.2.6 FlushChar()

```
void Keyboard::FlushChar ( )
```

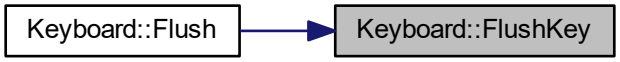
Here is the caller graph for this function:



6.30.2.7 FlushKey()

```
void Keyboard::FlushKey ( )
```

Here is the caller graph for this function:



6.30.2.8 KeyIsEmpty()

```
bool Keyboard::KeyIsEmpty ( ) const
```

6.30.2.9 KeyIsPressed()

```
bool Keyboard::KeyIsPressed (
            unsigned char keycode ) const
```

6.30.2.10 operator=()

```
Keyboard& Keyboard::operator= (
            const Keyboard &  )  [delete]
```

6.30.2.11 ReadChar()

```
char Keyboard::ReadChar ( )
```

6.30.2.12 ReadKey()

```
Keyboard::Event Keyboard::ReadKey ( )
```

6.30.3 Friends And Related Function Documentation

6.30.3.1 MainWindow

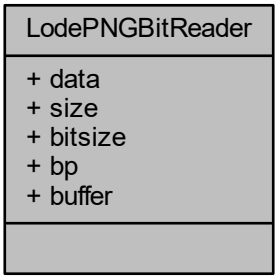
```
friend class MainWindow  [friend]
```

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

- Keyboard.h
- Keyboard.cpp

6.31 LodePNGBitReader Struct Reference

Collaboration diagram for LodePNGBitReader:



Public Attributes

- const unsigned char * data
- size_t size
- size_t bitsize
- size_t bp
- unsigned buffer

6.31.1 Member Data Documentation

6.31.1.1 bitsize

```
size_t LodePNGBitReader::bitsize
```

6.31.1.2 bp

```
size_t LodePNGBitReader::bp
```

6.31.1.3 buffer

```
unsigned LodePNGBitReader::buffer
```

6.31.1.4 data

```
const unsigned char* LodePNGBitReader::data
```

6.31.1.5 size

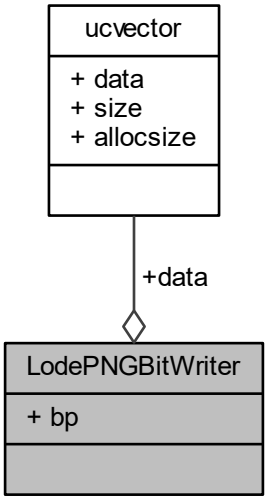
```
size_t LodePNGBitReader::size
```

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

- lodepng.cpp

6.32 LodePNGBitWriter Struct Reference

Collaboration diagram for LodePNGBitWriter:



Public Attributes

- ucvector * data
- unsigned char bp

6.32.1 Member Data Documentation

6.32.1.1 bp

```
unsigned char LodePNGBitWriter::bp
```

6.32.1.2 data

```
ucvector* LodePNGBitWriter::data
```

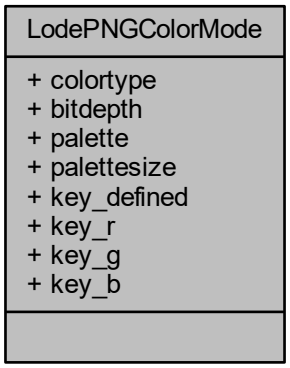
The documentation for this struct was generated from the following file:

- lodepng.cpp

6.33 LodePNGColorMode Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGColorMode:



Public Attributes

- LodePNGColorType colortype
- unsigned bitdepth
- unsigned char * palette
- size_t palettesize
- unsigned key_defined
- unsigned key_r
- unsigned key_g
- unsigned key_b

6.33.1 Member Data Documentation

6.33.1.1 bitdepth

```
unsigned LodePNGColorMode::bitdepth
```

6.33.1.2 colortype

```
LodePNGColorType LodePNGColorMode::colortype
```

6.33.1.3 key_b

```
unsigned LodePNGColorMode::key_b
```

6.33.1.4 key_defined

```
unsigned LodePNGColorMode::key_defined
```

6.33.1.5 key_g

```
unsigned LodePNGColorMode::key_g
```

6.33.1.6 key_r

```
unsigned LodePNGColorMode::key_r
```

6.33.1.7 palette

```
unsigned char* LodePNGColorMode::palette
```

6.33.1.8 palettesize

```
size_t LodePNGColorMode::palettesize
```

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

- lodepng.h

6.34 LodePNGColorStats Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGColorStats:

Public Attributes

- unsigned colored
- unsigned key
- unsigned short key_r
- unsigned short key_g
- unsigned short key_b
- unsigned alpha
- unsigned numcolors
- unsigned char palette [1024]
- unsigned bits
- size_t numpixels
- unsigned allow_palette
- unsigned allow_greyscale

6.34.1 Member Data Documentation

6.34.1.1 allow_greyscale

```
unsigned LodePNGColorStats::allow_greyscale
```

6.34.1.2 allow_palette

```
unsigned LodePNGColorStats::allow_palette
```

6.34.1.3 alpha

```
unsigned LodePNGColorStats::alpha
```

6.34.1.4 bits

```
unsigned LodePNGColorStats::bits
```

6.34.1.5 colored

```
unsigned LodePNGColorStats::colored
```

6.34.1.6 key

```
unsigned LodePNGColorStats::key
```

6.34.1.7 key_b

```
unsigned short LodePNGColorStats::key_b
```

6.34.1.8 key_g

```
unsigned short LodePNGColorStats::key_g
```

6.34.1.9 key_r

```
unsigned short LodePNGColorStats::key_r
```

6.34.1.10 numcolors

```
unsigned LodePNGColorStats::numcolors
```

6.34.1.11 numpixels

```
size_t LodePNGColorStats::numpixels
```

6.34.1.12 palette

```
unsigned char LodePNGColorStats::palette[1024]
```

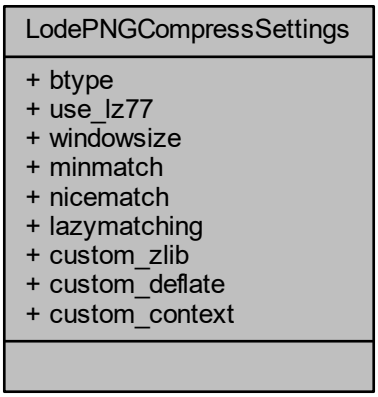
The documentation for this struct was generated from the following file:

- lodepng.h

6.35 LodePNGCompressSettings Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGCompressSettings:



Public Attributes

- unsigned btype
- unsigned use_lz77
- unsigned windowsize
- unsigned minmatch
- unsigned nicematch
- unsigned lazymatching
- unsigned(∗ custom_zlib)(unsigned char ∗∗, size_t ∗, const unsigned char ∗, size_t, const LodePNGCompressSettings ∗)
- unsigned(∗ custom_deflate)(unsigned char ∗∗, size_t ∗, const unsigned char ∗, size_t, const LodePNGCompressSettings ∗)
- const void ∗ custom_context

6.35.1 Member Data Documentation

6.35.1.1 btype

```
unsigned LodePNGCompressSettings::btype
```

6.35.1.2 custom_context

```
const void* LodePNGCompressSettings::custom_context
```

6.35.1.3 custom_deflate

```
unsigned(* LodePNGCompressSettings::custom_deflate) (unsigned char **, size_t *, const unsigned
char *, size_t, const LodePNGCompressSettings *)
```

6.35.1.4 custom_zlib

```
unsigned(* LodePNGCompressSettings::custom_zlib) (unsigned char **, size_t *, const unsigned
char *, size_t, const LodePNGCompressSettings *)
```

6.35.1.5 lazymatching

```
unsigned LodePNGCompressSettings::lazymatching
```

6.35.1.6 minmatch

```
unsigned LodePNGCompressSettings::minmatch
```

6.35.1.7 nicematch

```
unsigned LodePNGCompressSettings::nicematch
```

6.35.1.8 use_lz77

```
unsigned LodePNGCompressSettings::use_lz77
```

6.35.1.9 windowsize

```
unsigned LodePNGCompressSettings::windowsize
```

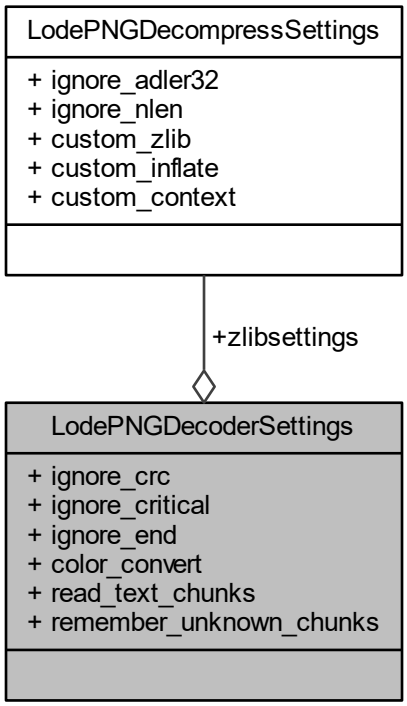
The documentation for this struct was generated from the following file:

- lodepng.h

6.36 LodePNGDecoderSettings Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGDecoderSettings:



Public Attributes

- LodePNGDecompressSettings zlibsettings
- unsigned ignore_crc
- unsigned ignore_critical
- unsigned ignore_end
- unsigned color_convert
- unsigned read_text_chunks
- unsigned remember_unknown_chunks

6.36.1 Member Data Documentation

6.36.1.1 color_convert

```
unsigned LodePNGDecoderSettings::color_convert
```

6.36.1.2 ignore_crc

```
unsigned LodePNGDecoderSettings::ignore_crc
```

6.36.1.3 ignore_critical

```
unsigned LodePNGDecoderSettings::ignore_critical
```

6.36.1.4 ignore_end

```
unsigned LodePNGDecoderSettings::ignore_end
```

6.36.1.5 read_text_chunks

```
unsigned LodePNGDecoderSettings::read_text_chunks
```

6.36.1.6 remember_unknown_chunks

```
unsigned LodePNGDecoderSettings::remember_unknown_chunks
```

6.36.1.7 zlibsettings

```
LodePNGDecompressSettings LodePNGDecoderSettings::zlibsettings
```

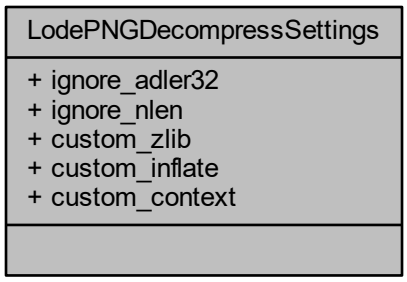
The documentation for this struct was generated from the following file:

- lodepng.h

6.37 LodePNGDecompressSettings Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGDecompressSettings:



Public Attributes

- unsigned ignore_adler32
- unsigned ignore_nlen
- unsigned(∗ custom_zlib)(unsigned char ∗∗, size_t ∗, const unsigned char ∗, size_t, const LodePNGDecompressSettings ∗)
- unsigned(∗ custom_inflate)(unsigned char ∗∗, size_t ∗, const unsigned char ∗, size_t, const LodePNGDecompressSettings ∗)
- const void ∗ custom_context

6.37.1 Member Data Documentation

6.37.1.1 custom_context

```
const void* LodePNGDecompressSettings::custom_context
```

6.37.1.2 custom_inflate

```
unsigned(* LodePNGDecompressSettings::custom_inflate) (unsigned char **, size_t *, const unsigned
char *, size_t, const LodePNGDecompressSettings *)
```

6.37.1.3 custom_zlib

```
unsigned(* LodePNGDecompressSettings::custom_zlib) (unsigned char **, size_t *, const unsigned
char *, size_t, const LodePNGDecompressSettings *)
```

6.37.1.4 ignore_adler32

```
unsigned LodePNGDecompressSettings::ignore_adler32
```

6.37.1.5 ignore_nlen

```
unsigned LodePNGDecompressSettings::ignore_nlen
```

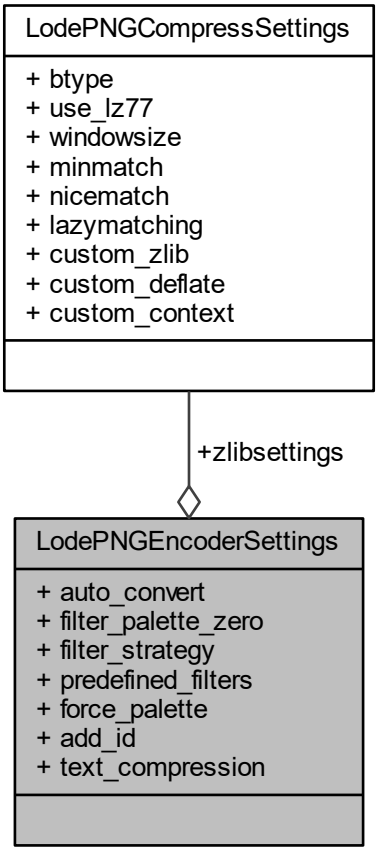
The documentation for this struct was generated from the following file:

- lodepng.h

6.38 LodePNGEncoderSettings Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGEncoderSettings:



Public Attributes

- LodePNGCompressSettings zlibsettings
- unsigned auto_convert
- unsigned filter_palette_zero
- LodePNGFilterStrategy filter_strategy
- const unsigned char * predefined_filters
- unsigned force_palette
- unsigned add_id
- unsigned text_compression

6.38.1 Member Data Documentation

6.38.1.1 add_id

```
unsigned LodePNGEncoderSettings::add_id
```

6.38.1.2 auto_convert

```
unsigned LodePNGEncoderSettings::auto_convert
```

6.38.1.3 filter_palette_zero

```
unsigned LodePNGEncoderSettings::filter_palette_zero
```

6.38.1.4 filter_strategy

```
LodePNGFilterStrategy LodePNGEncoderSettings::filter_strategy
```

6.38.1.5 force_palette

```
unsigned LodePNGEncoderSettings::force_palette
```

6.38.1.6 predefined_filters

```
const unsigned char* LodePNGEncoderSettings::predefined_filters
```

6.38.1.7 text_compression

```
unsigned LodePNGEncoderSettings::text_compression
```

6.38.1.8 zlibsettings

```
LodePNGCompressSettings LodePNGEncoderSettings::zlibsettings
```

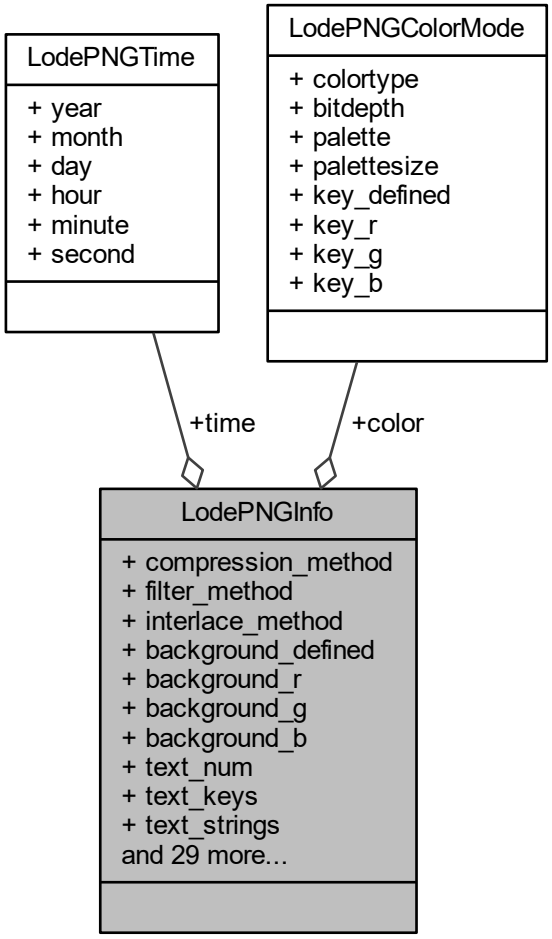
The documentation for this struct was generated from the following file:

- lodepng.h

6.39 LodePNGInfo Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGInfo:



Public Attributes

- unsigned compression_method
- unsigned filter_method
- unsigned interlace_method
- LodePNGColorMode color
- unsigned background_defined
- unsigned background_r
- unsigned background_g
- unsigned background_b
- size_t text_num
- char ** text_keys
- char ** text_strings
- size_t itext_num
- char ** itext_keys
- char ** itext_langtags
- char ** itext_transkeys
- char ** itext_strings
- unsigned time_defined
- LodePNGTime time
- unsigned phys_defined
- unsigned phys_x
- unsigned phys_y
- unsigned phys_unit
- unsigned gama_defined
- unsigned gama_gamma
- unsigned chrm_defined
- unsigned chrm_white_x
- unsigned chrm_white_y
- unsigned chrm_red_x
- unsigned chrm_red_y
- unsigned chrm_green_x
- unsigned chrm_green_y
- unsigned chrm_blue_x
- unsigned chrm_blue_y
- unsigned srgb_defined
- unsigned srgb_intent
- unsigned iccp_defined
- char * iccp_name
- unsigned char * iccp_profile
- unsigned iccp_profile_size
- unsigned char * unknown_chunks_data [3]
- size_t unknown_chunks_size [3]

6.39.1 Member Data Documentation

6.39.1.1 background_b

```
unsigned LodePNGInfo::background_b
```

6.39.1.2 background_defined

```
unsigned LodePNGInfo::background_defined
```

6.39.1.3 background_g

```
unsigned LodePNGInfo::background_g
```

6.39.1.4 background_r

```
unsigned LodePNGInfo::background_r
```

6.39.1.5 chrm_blue_x

```
unsigned LodePNGInfo::chrm_blue_x
```

6.39.1.6 chrm_blue_y

```
unsigned LodePNGInfo::chrm_blue_y
```

6.39.1.7 chrm_defined

```
unsigned LodePNGInfo::chrm_defined
```

6.39.1.8 chrm_green_x

```
unsigned LodePNGInfo::chrm_green_x
```

6.39.1.9 chrm_green_y

```
unsigned LodePNGInfo::chrm_green_y
```

6.39.1.10 chrm_red_x

```
unsigned LodePNGInfo::chrm_red_x
```

6.39.1.11 chrm_red_y

```
unsigned LodePNGInfo::chrm_red_y
```

6.39.1.12 chrm_white_x

```
unsigned LodePNGInfo::chrm_white_x
```

6.39.1.13 chrm_white_y

```
unsigned LodePNGInfo::chrm_white_y
```

6.39.1.14 color

```
LodePNGColorMode LodePNGInfo::color
```

6.39.1.15 compression_method

```
unsigned LodePNGInfo::compression_method
```

6.39.1.16 filter_method

```
unsigned LodePNGInfo::filter_method
```

6.39.1.17 gama_defined

```
unsigned LodePNGInfo::gama_defined
```

6.39.1.18 gama_gamma

```
unsigned LodePNGInfo::gama_gamma
```

6.39.1.19 iccp_defined

```
unsigned LodePNGInfo::iccp_defined
```

6.39.1.20 iccp_name

```
char* LodePNGInfo::iccp_name
```

6.39.1.21 iccp_profile

```
unsigned char* LodePNGInfo::iccp_profile
```

6.39.1.22 iccp_profile_size

```
unsigned LodePNGInfo::iccp_profile_size
```

6.39.1.23 interlace_method

```
unsigned LodePNGInfo::interlace_method
```

6.39.1.24 itext_keys

```
char** LodePNGInfo::itext_keys
```

6.39.1.25 itext_langtags

```
char** LodePNGInfo::itext_langtags
```

6.39.1.26 itext_num

```
size_t LodePNGInfo::itext_num
```

6.39.1.27 itext_strings

```
char** LodePNGInfo::itext_strings
```

6.39.1.28 itext_transkeys

```
char** LodePNGInfo::itext_transkeys
```

6.39.1.29 phys_defined

```
unsigned LodePNGInfo::phys_defined
```

6.39.1.30 phys_unit

```
unsigned LodePNGInfo::phys_unit
```

6.39.1.31 phys_x

```
unsigned LodePNGInfo::phys_x
```

6.39.1.32 phys_y

```
unsigned LodePNGInfo::phys_y
```

6.39.1.33 srgb_defined

```
unsigned LodePNGInfo::srgb_defined
```

6.39.1.34 srgb_intent

```
unsigned LodePNGInfo::srgb_intent
```

6.39.1.35 text_keys

```
char** LodePNGInfo::text_keys
```

6.39.1.36 text_num

```
size_t LodePNGInfo::text_num
```

6.39.1.37 text_strings

```
char** LodePNGInfo::text_strings
```

6.39.1.38 time

```
LodePNGTime LodePNGInfo::time
```

6.39.1.39 time_defined

```
unsigned LodePNGInfo::time_defined
```

6.39.1.40 unknown_chunks_data

```
unsigned char* LodePNGInfo::unknown_chunks_data[3]
```

6.39.1.41 unknown_chunks_size

```
size_t LodePNGInfo::unknown_chunks_size[3]
```

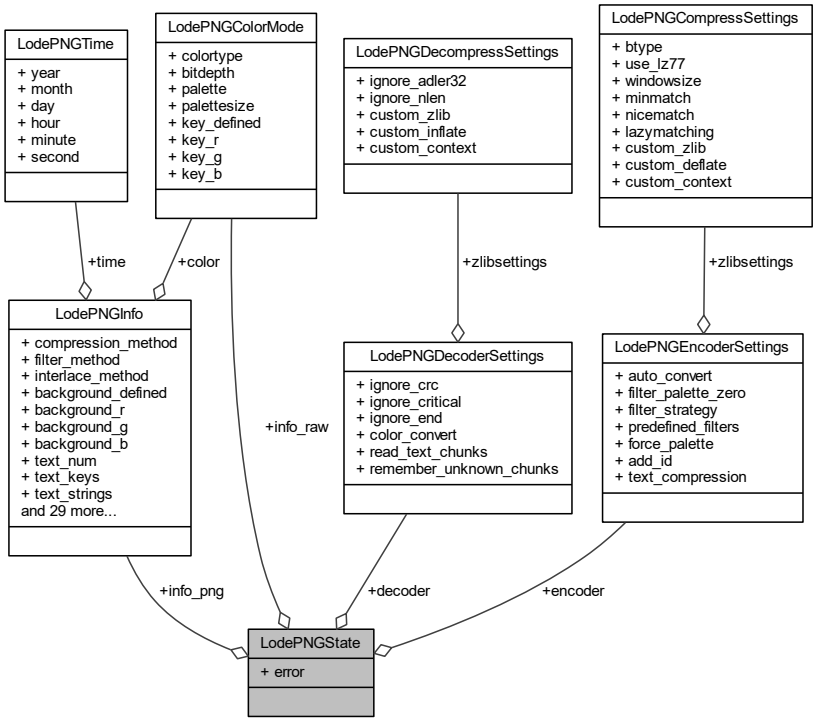
The documentation for this struct was generated from the following file:

- lodepng.h

6.40 LodePNGState Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGState:



Public Attributes

- LodePNGDecoderSettings decoder
- LodePNGEncoderSettings encoder
- LodePNGColorMode info_raw
- LodePNGInfo info_png
- unsigned error

6.40.1 Member Data Documentation

6.40.1.1 decoder

```
LodePNGDecoderSettings LodePNGState::decoder
```

6.40.1.2 encoder

```
LodePNGEncoderSettings LodePNGState::encoder
```

6.40.1.3 error

```
unsigned LodePNGState::error
```

6.40.1.4 info_png

```
LodePNGInfo LodePNGState::info_png
```

6.40.1.5 info_raw

```
LodePNGColorMode LodePNGState::info_raw
```

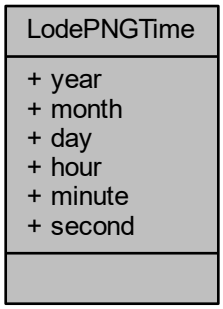
The documentation for this struct was generated from the following file:

- lodepng.h

6.41 LodePNGTime Struct Reference

```
#include <lodepng.h>
```

Collaboration diagram for LodePNGTime:



Public Attributes

- unsigned year
- unsigned month
- unsigned day
- unsigned hour
- unsigned minute
- unsigned second

6.41.1 Member Data Documentation

6.41.1.1 day

```
unsigned LodePNGTime::day
```

6.41.1.2 hour

```
unsigned LodePNGTime::hour
```

6.41.1.3 minute

```
unsigned LodePNGTime::minute
```

6.41.1.4 month

```
unsigned LodePNGTime::month
```

6.41.1.5 second

```
unsigned LodePNGTime::second
```

6.41.1.6 year

```
unsigned LodePNGTime::year
```

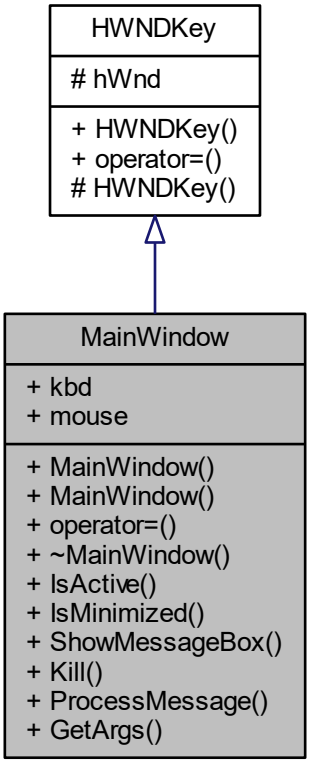
The documentation for this struct was generated from the following file:

- lodepng.h

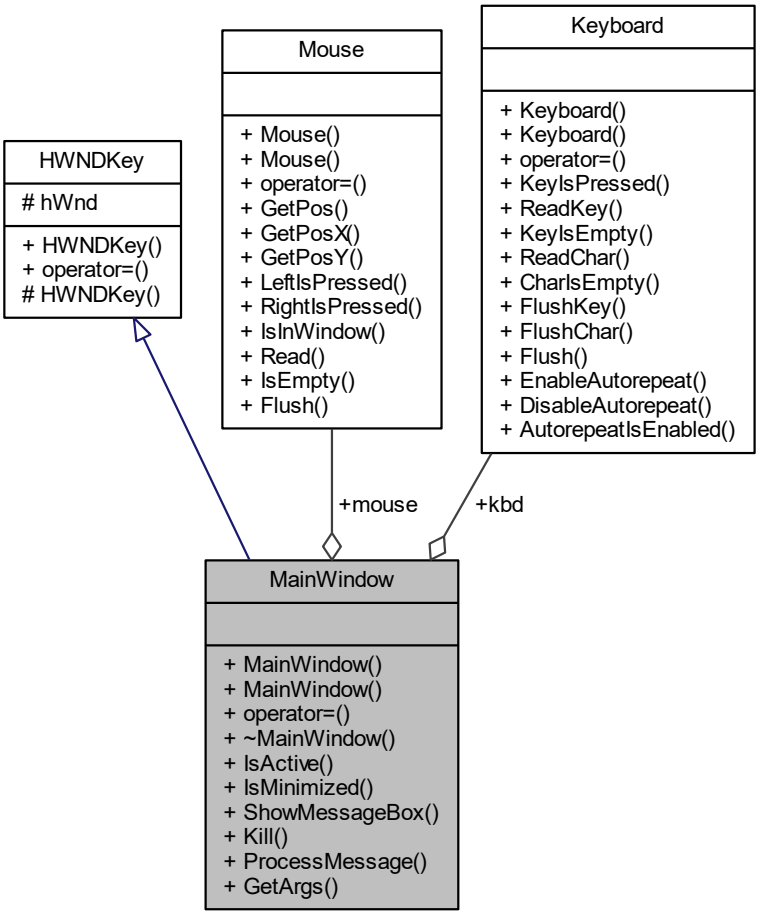
6.42 MainWindow Class Reference

```
#include <MainWindow.h>
```

Inheritance diagram for MainWindow:



Collaboration diagram for MainWindow:



Classes

- class Exception

Public Member Functions

- MainWindow (HINSTANCE hInst, wchar_t *pArgs)
- MainWindow (const MainWindow &)=delete
- MainWindow & operator= (const MainWindow &)=delete
- ~MainWindow ()
- bool IsActive () const
- bool IsMinimized () const
- void ShowMessageBox (const std::wstring &title, const std::wstring &message) const
- void Kill ()
- bool ProcessMessage ()
- const std::wstring & GetArgs () const

Public Attributes

- Keyboard kbd
- Mouse mouse

Additional Inherited Members

6.42.1 Constructor & Destructor Documentation

6.42.1.1 MainWindow() [1/2]

```
MainWindow::MainWindow (
            HINSTANCE hInst,
            wchar_t * pArgs )
```

6.42.1.2 MainWindow() [2/2]

```
MainWindow::MainWindow (
            const MainWindow &  )  [delete]
```

6.42.1.3 ~MainWindow()

```
MainWindow::~MainWindow ( )
```

6.42.2 Member Function Documentation

6.42.2.1 GetArgs()

```
const std::wstring& MainWindow::GetArgs ( ) const  [inline]
```

6.42.2.2 IsActive()

```
bool MainWindow::IsActive ( ) const
```

6.42.2.3 IsMinimized()

```
bool MainWindow::IsMinimized ( ) const
```

6.42.2.4 Kill()

```
void MainWindow::Kill ( )  [inline]
```

6.42.2.5 operator=()

```
MainWindow& MainWindow::operator= (
            const MainWindow &  )  [delete]
```

6.42.2.6 ProcessMessage()

```
bool MainWindow::ProcessMessage ( )
```

Here is the caller graph for this function:

6.42.2.7 ShowMessageBox()

```
void MainWindow::ShowMessageBox (
            const std::wstring & title,
            const std::wstring & message ) const
```

Here is the caller graph for this function:

6.42.3 Member Data Documentation

6.42.3.1 kbd

```
Keyboard MainWindow::kbd
```

6.42.3.2 mouse

```
Mouse MainWindow::mouse
```

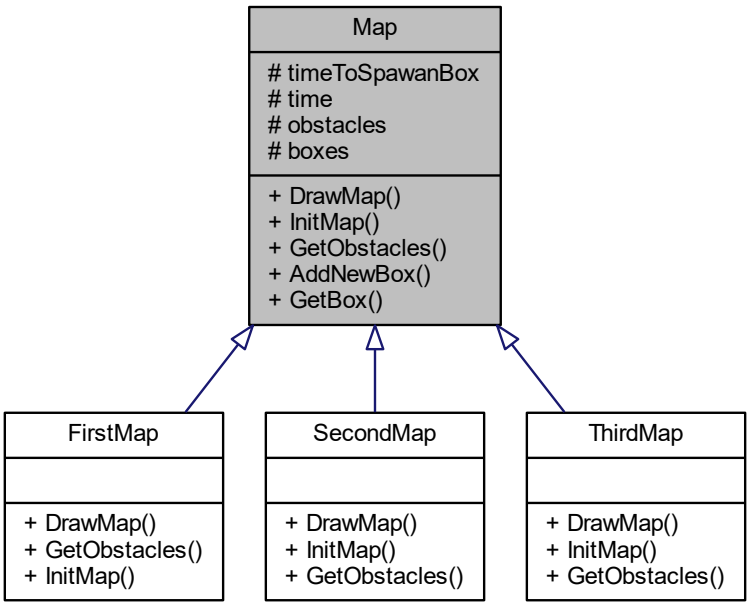
The documentation for this class was generated from the following files:

- MainWindow.h
- MainWindow.cpp

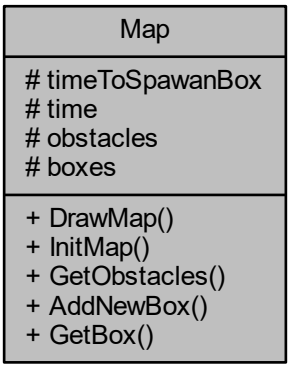
6.43 Map Class Reference

```
#include <Map.h>
```

Inheritance diagram for Map:



Collaboration diagram for Map:



Public Member Functions

- virtual void DrawMap (Graphics &gfx)=0
- virtual void InitMap ()=0
- virtual std::vector< Obstacle > GetObstacles ()=0
- void AddNewBox (float dt)
- std::vector< Box > & GetBox ()

Protected Attributes

- float timeToSpawanBox =8.0f
- float time =0
- std::vector< Obstacle > obstacles
- std::vector< Box > boxes

6.43.1 Member Function Documentation

6.43.1.1 AddNewBox()

```
void Map::AddNewBox (
            float dt )
```

6.43.1.2 DrawMap()

```
void Map::DrawMap (
            Graphics & gfx )  [pure virtual]
```

Implemented in SecondMap, ThirdMap, and FirstMap.

6.43.1.3 GetBox()

```
std::vector< Box > & Map::GetBox ( )
```

6.43.1.4 GetObstacles()

```
virtual std::vector<Obstacle> Map::GetObstacles ( )  [pure virtual]
```

Implemented in SecondMap, ThirdMap, and FirstMap.

6.43.1.5 InitMap()

```
void Map::InitMap ( )  [pure virtual]
```

Implemented in FirstMap, SecondMap, and ThirdMap.

6.43.2 Member Data Documentation

6.43.2.1 boxes

```
std::vector<Box> Map::boxes  [protected]
```

6.43.2.2 obstacles

```
std::vector<Obstacle> Map::obstacles  [protected]
```

6.43.2.3 time

```
float Map::time =0  [protected]
```

6.43.2.4 timeToSpawanBox

```
float Map::timeToSpawanBox =8.0f  [protected]
```

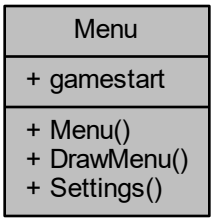
The documentation for this class was generated from the following files:

- Map.h
- Map.cpp

6.44 Menu Class Reference

```
#include <Menu.h>
```

Collaboration diagram for Menu:



Public Member Functions

- Menu ()
- void DrawMenu (Graphics &gfx)
- int Settings (const Vec2D &vec)

Public Attributes

- bool gamestart = false

6.44.1 Constructor & Destructor Documentation

6.44.1.1 Menu()

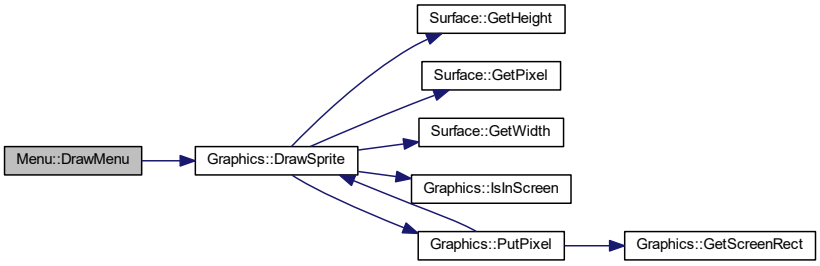
```
Menu::Menu ( )
```

6.44.2 Member Function Documentation

6.44.2.1 DrawMenu()

```
void Menu::DrawMenu (
            Graphics & gfx )
```

Here is the call graph for this function:



6.44.2.2 Settings()

```
int Menu::Settings (
            const Vec2D & vec )
```

6.44.3 Member Data Documentation

6.44.3.1 gamestart

```
bool Menu::gamestart = false
```

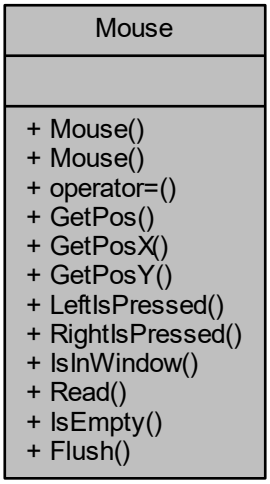
The documentation for this class was generated from the following files:

- Menu.h
- Menu.cpp

6.45 Mouse Class Reference

```
#include <Mouse.h>
```

Collaboration diagram for Mouse:



Classes

- class Event

Public Member Functions

- Mouse ()=default
- Mouse (const Mouse &)=delete
- Mouse & operator= (const Mouse &)=delete
- std::pair< int, int > GetPos () const
- int GetPosX () const
- int GetPosY () const
- bool LeftIsPressed () const
- bool RightIsPressed () const
- bool IsInWindow () const
- Mouse::Event Read ()
- bool IsEmpty () const
- void Flush ()

Friends

- class MainWindow

6.45.1 Constructor & Destructor Documentation

6.45.1.1 Mouse() [1/2]

```
Mouse::Mouse ( ) [default]
```

6.45.1.2 Mouse() [2/2]

```
Mouse::Mouse (
            const Mouse & ) [delete]
```

6.45.2 Member Function Documentation

6.45.2.1 Flush()

```
void Mouse::Flush ( )
```

6.45.2.2 GetPos()

```
std::pair< int, int > Mouse::GetPos ( ) const
```

6.45.2.3 GetPosX()

```
int Mouse::GetPosX ( ) const
```

6.45.2.4 GetPosY()

```
int Mouse::GetPosY ( ) const
```

6.45.2.5 IsEmpty()

```
bool Mouse::IsEmpty ( ) const  [inline]
```

6.45.2.6 IsInWindow()

```
bool Mouse::IsInWindow ( ) const
```

6.45.2.7 LeftIsPressed()

```
bool Mouse::LeftIsPressed ( ) const
```

6.45.2.8 operator=()

```
Mouse& Mouse::operator= (
            const Mouse &  )  [delete]
```

6.45.2.9 Read()

```
Mouse::Event Mouse::Read ( )
```

6.45.2.10 RightIsPressed()

```
bool Mouse::RightIsPressed ( ) const
```

6.45.3 Friends And Related Function Documentation

6.45.3.1 MainWindow

```
friend class MainWindow  [friend]
```

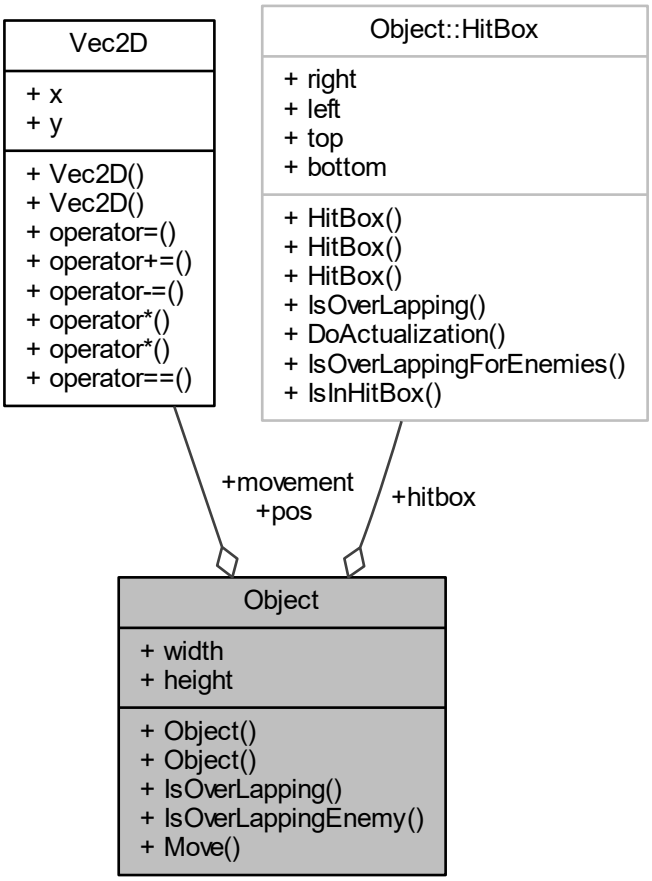
The documentation for this class was generated from the following files:

- Mouse.h
- Mouse.cpp

6.46 Object Class Reference

```
#include <Object.h>
```

Collaboration diagram for Object:



Public Member Functions

- Object (Vec2D pos, Vec2D mov, float width, float height)
- Object (const Object &obj)
- bool IsOverLapping (const Object other, bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp)
- bool IsOverLappingEnemy (const Object other)
- void Move (const Vec2D &mov)

Public Attributes

- Vec2D pos
- Vec2D movement
- HitBox hitbox
- float width
- float height

6.46.1 Constructor & Destructor Documentation

6.46.1.1 Object() [1/2]

```
Object::Object (
            Vec2D pos,
            Vec2D mov,
            float width,
            float height )
```

6.46.1.2 Object() [2/2]

```
Object::Object (
            const Object & obj )
```

6.46.2 Member Function Documentation

6.46.2.1 IsOverLapping()

```
bool Object::IsOverLapping (
            const Object other,
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp )
```

6.46.2.2 IsOverLappingEnemy()

```
bool Object::IsOverLappingEnemy (
            const Object other )
```

6.46.2.3 Move()

```
void Object::Move (
            const Vec2D & mov )
```

6.46.3 Member Data Documentation

6.46.3.1 height

```
float Object::height
```

6.46.3.2 hitbox

```
HitBox Object::hitbox
```

6.46.3.3 movement

```
Vec2D Object::movement
```

6.46.3.4 pos

```
Vec2D Object::pos
```

6.46.3.5 width

```
float Object::width
```

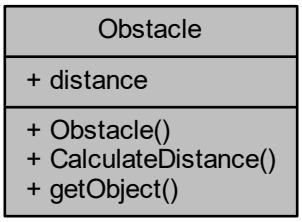
The documentation for this class was generated from the following files:

- Object.h
- Object.cpp

6.47 Obstacle Class Reference

```
#include <Obstacle.h>
```

Collaboration diagram for Obstacle:



Public Member Functions

- Obstacle (const Object &obj)
- void CalculateDistance (const Vec2D &pos)
- Object getObject ()

Public Attributes

- float distance = 0

6.47.1 Constructor & Destructor Documentation

6.47.1.1 Obstacle()

```
Obstacle::Obstacle (
            const Object & obj )  [inline]
```

6.47.2 Member Function Documentation

6.47.2.1 CalculateDistance()

```
void Obstacle::CalculateDistance (
            const Vec2D & pos )
```

6.47.2.2 getObject()

```
Object Obstacle::getObject ( )
```

6.47.3 Member Data Documentation

6.47.3.1 distance

```
float Obstacle::distance = 0
```

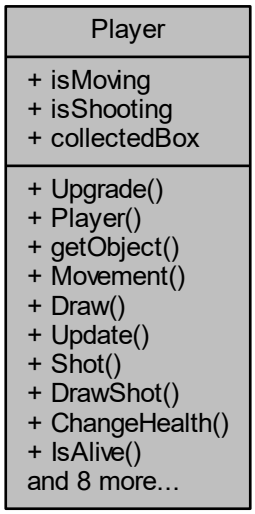
The documentation for this class was generated from the following files:

- Obstacle.h
- Obstacle.cpp

6.48 Player Class Reference

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

Collaboration diagram for Player:



Public Member Functions

- void Upgrade (size_t hash_code, int number)
- Player (Object obj, float hel, bool isAlive, std::shared_ptr< Weapon > gun)
- Object getObject ()
- void Movement (bool aim_R, bool aim_L, bool aim_U, bool aim_D, float dt, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies)
- void Draw (Graphics &gfx)
- void Update (float dt)
- void Shot (std::vector< std::unique_ptr< Enemy >> &enemies, float dt, std::vector< Obstacle >obstacles, Graphics &gfx)
- void DrawShot (Graphics &gfx, float dt)
- void ChangeHealth (float changeHP)
- bool IsAlive ()
- void SetNewOwnedGun (std::shared_ptr< Weapon > gun)
- int GetSizeOfOwnedGuns ()
- void AddAmoTuGun (std::size_t hash_code, int amo)
- void Recover (float hp)
- bool ChangeGunForNextGun ()
- bool ChangeGunForPreviousGun ()
- std::string GetInformationAboutCurrentGun ()
- std::string GetCurrentWeaponName ()

Public Attributes

- bool isMoving = false
- bool isShooting = false
- bool collectedBox = false

6.48.1 Constructor & Destructor Documentation

6.48.1.1 Player()

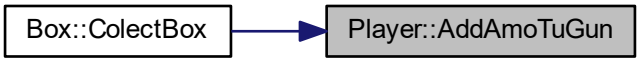
```
Player::Player (
            Object obj,
            float hel,
            bool isAlive,
            std::shared_ptr< Weapon > gun )
```

6.48.2 Member Function Documentation

6.48.2.1 AddAmoTuGun()

```
void Player::AddAmoTuGun (
            std::size_t hash_code,
            int amo )
```

Here is the caller graph for this function:



6.48.2.2 ChangeGunForNextGun()

```
bool Player::ChangeGunForNextGun ( )
```

6.48.2.3 ChangeGunForPreviousGun()

```
bool Player::ChangeGunForPreviousGun ( )
```

6.48.2.4 ChangeHealth()

```
void Player::ChangeHealth (
            float changeHP )
```

6.48.2.5 Draw()

```
void Player::Draw (
            Graphics & gfx )
```

6.48.2.6 DrawShot()

```
void Player::DrawShot (
            Graphics & gfx,
            float dt )
```

6.48.2.7 GetCurrentWeaponName()

```
std::string Player::GetCurrentWeaponName ( )
```

6.48.2.8 GetInformationAboutCurrentGun()

```
std::string Player::GetInformationAboutCurrentGun ( )
```

6.48.2.9 getObject()

```
Object Player::getObject ( )
```

Here is the caller graph for this function:

6.48.2.10 GetSizeOfOwnedGuns()

```
int Player::GetSizeOfOwnedGuns ( )
```

Here is the caller graph for this function:

6.48.2.11 IsAlive()

```
bool Player::IsAlive ( )
```

6.48.2.12 Movement()

```
void Player::Movement (
            bool aim_R,
            bool aim_L,
            bool aim_U,
            bool aim_D,
            float dt,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies )
```

Here is the call graph for this function:

6.48.2.13 Recover()

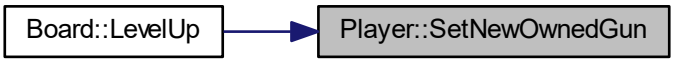
```
void Player::Recover (
            float hp )
```

Here is the caller graph for this function:

6.48.2.14 SetNewOwnedGun()

```
void Player::SetNewOwnedGun (
            std::shared_ptr< Weapon > gun )
```

Here is the caller graph for this function:



6.48.2.15 Shot()

```
void Player::Shot (
            std::vector< std::unique_ptr< Enemy >> & enemies,
            float dt,
            std::vector< Obstacle > obstacles,
            Graphics & gfx )
```

6.48.2.16 Update()

```
void Player::Update (
            float dt )
```

Here is the caller graph for this function:

6.48.2.17 Upgrade()

```
void Player::Upgrade (
            size_t hash_code,
            int number )
```

Here is the caller graph for this function:

6.48.3 Member Data Documentation

6.48.3.1 collectedBox

```
bool Player::collectedBox = false
```

6.48.3.2 isMoving

```
bool Player::isMoving = false
```

6.48.3.3 isShooting

```
bool Player::isShooting = false
```

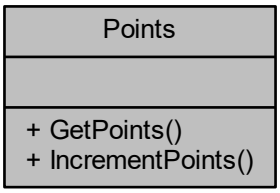
The documentation for this class was generated from the following files:

- Player.h
- Player.cpp

6.49 Points Class Reference

`#include <Points.h>`

Collaboration diagram for Points:



Static Public Member Functions

- static int GetPoints ()
- static void IncrementPoints (int addedPoints)

6.49.1 Member Function Documentation

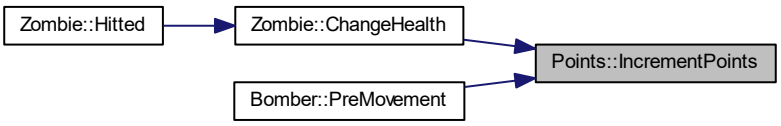
6.49.1.1 GetPoints()

```
int Points::GetPoints ( )  [static]
```

6.49.1.2 IncrementPoints()

```
void Points::IncrementPoints (
            int addedPoints )  [static]
```

Here is the caller graph for this function:



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

- Points.h
- Main.cpp
- Points.cpp

6.50 Rect Class Reference

```
#include <Rect.h>
```

Collaboration diagram for Rect:

Public Member Functions

- float GetWidth ()
- float GetHeight ()
- Rect (float left_in, float right_in, float top_in, float bottom_in)
- Rect (const Vec2D &topLeft, const Vec2D &bottomRight)
- Rect (const Vec2D &topLeft, float width, float height)

Public Attributes

- float left
- float right
- float top
- float bottom

6.50.1 Constructor & Destructor Documentation

6.50.1.1 Rect() [1/3]

```
Rect::Rect (
            float left_in,
            float right_in,
            float top_in,
            float bottom_in )
```

6.50.1.2 Rect() [2/3]

```
Rect::Rect (
            const Vec2D & topLeft,
            const Vec2D & bottomRight )  [inline]
```

6.50.1.3 Rect() [3/3]

```
Rect::Rect (
            const Vec2D & topLeft,
            float width,
            float height )  [inline]
```

6.50.2 Member Function Documentation

6.50.2.1 GetHeight()

```
float Rect::GetHeight ( )
```

6.50.2.2 GetWidth()

```
float Rect::GetWidth ( )
```

6.50.3 Member Data Documentation

6.50.3.1 bottom

```
float Rect::bottom
```

6.50.3.2 left

```
float Rect::left
```

6.50.3.3 right

```
float Rect::right
```

6.50.3.4 top

```
float Rect::top
```

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

- Rect.h
- Rect.cpp

6.51 Round Class Reference

```
#include <Round.h>
```

Collaboration diagram for Round:

Public Member Functions

- Round (int numberOfEnemiesInFirstRound)
- std::vector< std::unique_ptr< Enemy > > & GetEnemies ()
- void SpawnEnemy (float dt)
- void NextRound (int additionalEnemies, float dt, Graphics &gfx)
- int GetCurrentRound ()

6.51.1 Constructor & Destructor Documentation

6.51.1.1 Round()

```
Round::Round (
            int numberOfEnemiesInFirstRound )
```

6.51.2 Member Function Documentation

6.51.2.1 GetCurrentRound()

```
int Round::GetCurrentRound ( )
```

Here is the caller graph for this function:

6.51.2.2 GetEnemies()

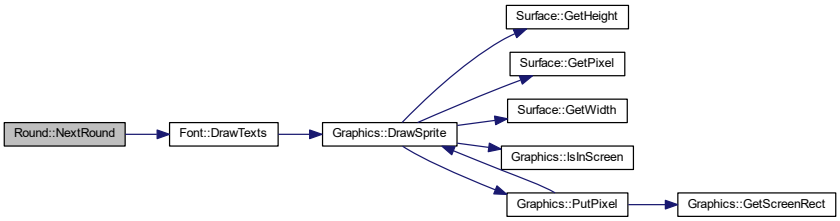
```
std::vector< std::unique_ptr< Enemy > > & Round::GetEnemies ( )
```

Here is the caller graph for this function:

6.51.2.3 NextRound()

```
void Round::NextRound (
            int additionalEnemies,
            float dt,
            Graphics & gfx )
```

Here is the call graph for this function:



Here is the caller graph for this function:

6.51.2.4 SpawnEnemy()

```
void Round::SpawnEnemy (
            float dt )
```

Here is the caller graph for this function:

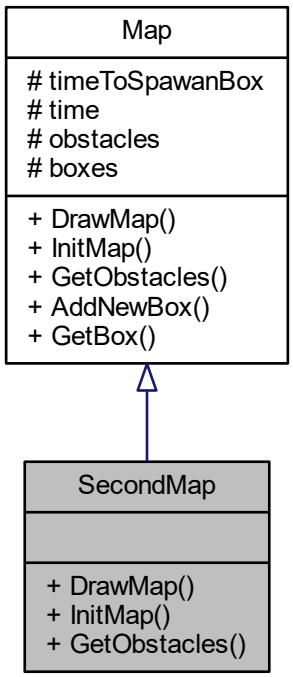
The documentation for this class was generated from the following files:

- Round.h
- Round.cpp

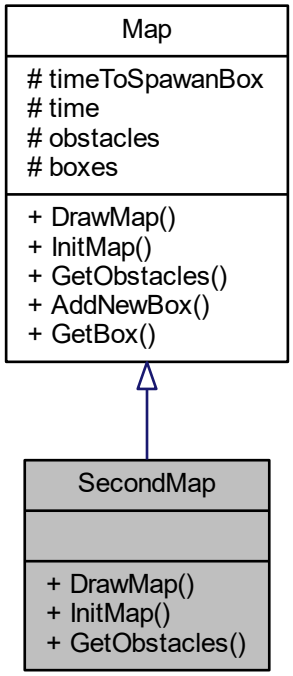
6.52 SecondMap Class Reference

```
#include <SecondMap.h>
```

Inheritance diagram for SecondMap:



Collaboration diagram for SecondMap:



Public Member Functions

- void DrawMap (Graphics &gfx) override
- void InitMap () override
- std::vector< Obstacle > GetObstacles () override

Additional Inherited Members

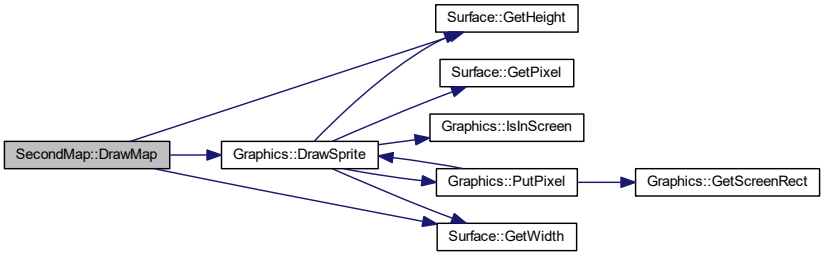
6.52.1 Member Function Documentation

6.52.1.1 DrawMap()

```
void SecondMap::DrawMap (
            Graphics & gfx )  [override], [virtual]
```

Implements Map.

Here is the call graph for this function:



6.52.1.2 GetObstacles()

```
std::vector< Obstacle > SecondMap::GetObstacles ( ) [override], [virtual]
```

Implements Map.

6.52.1.3 InitMap()

```
void SecondMap::InitMap ( ) [override], [virtual]
```

Implements Map.

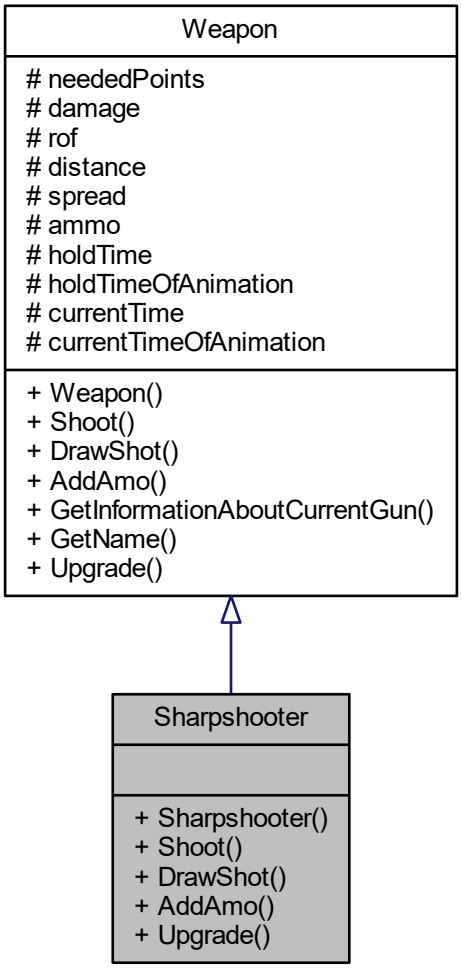
The documentation for this class was generated from the following files:

- SecondMap.h
- SecondMap.cpp

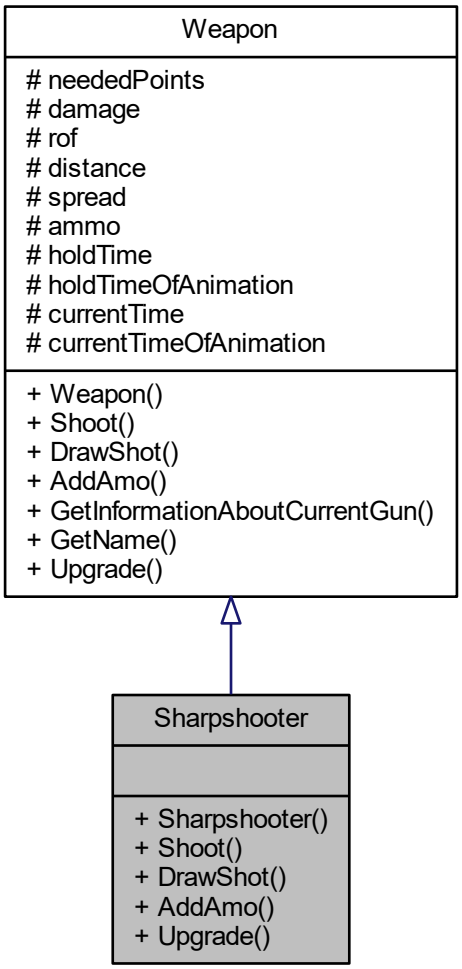
6.53 Sharpshooter Class Reference

```
#include <Sharprshooter.h>
```

Inheritance diagram for Sharpshooter:



Collaboration diagram for Sharpshooter:



Public Member Functions

- Sharpshooter (int neededPoints=50, float damage=80, float rof=3, float distance=450, float spread=1, int ammo=10, float holdTime=1.5f, float holdTimeOfAnimation=0.09f)
- bool Shoot (bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp, std::vector< std::unique_ptr< Enemy >> &enemies, std::vector< Obstacle >obstacles, const Vec2D &pos, float dt, bool isMoving) override
- bool DrawShot (Graphics &gfx, float dt) override
- void AddAmo (int amo) override
- void Upgrade (int number) override

Additional Inherited Members

6.53.1 Constructor & Destructor Documentation

6.53.1.1 Sharpshooter()

```
Sharpshooter::Sharpshooter (
            int neededPoints = 50,
            float damage = 80,
            float rof = 3,
            float distance = 450,
            float spread = 1,
            int ammo = 10,
            float holdTime = 1.5f,
            float holdTimeOfAnimation = 0.09f )  [inline]
```

6.53.2 Member Function Documentation

6.53.2.1 AddAmo()

```
void Sharpshooter::AddAmo (
            int amo )  [override], [virtual]
```

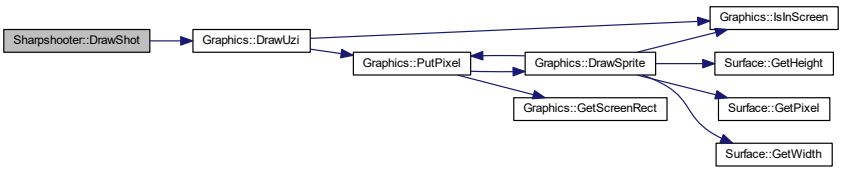
Implements Weapon.

6.53.2.2 DrawShot()

```
bool Sharpshooter::DrawShot (
            Graphics & gfx,
            float dt )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:

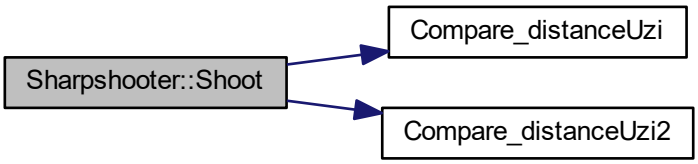


6.53.2.3 Shoot()

```
bool Sharpshooter::Shoot (
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            std::vector< Obstacle > obstacles,
            const Vec2D & pos,
            float dt,
            bool isMoving )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:



6.53.2.4 Upgrade()

```
void Sharpshooter::Upgrade (
            int number )  [override], [virtual]
```

Implements Weapon.

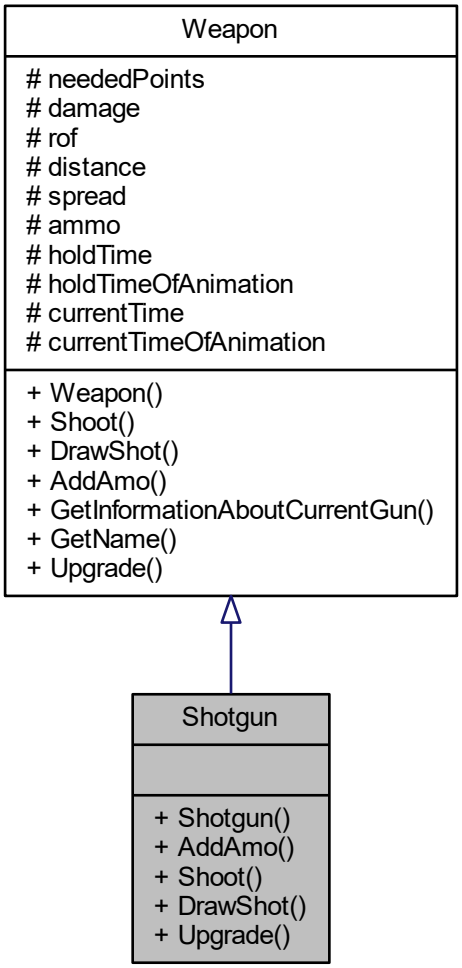
The documentation for this class was generated from the following files:

- Sharprshooter.h
- Sharprshooter.cpp

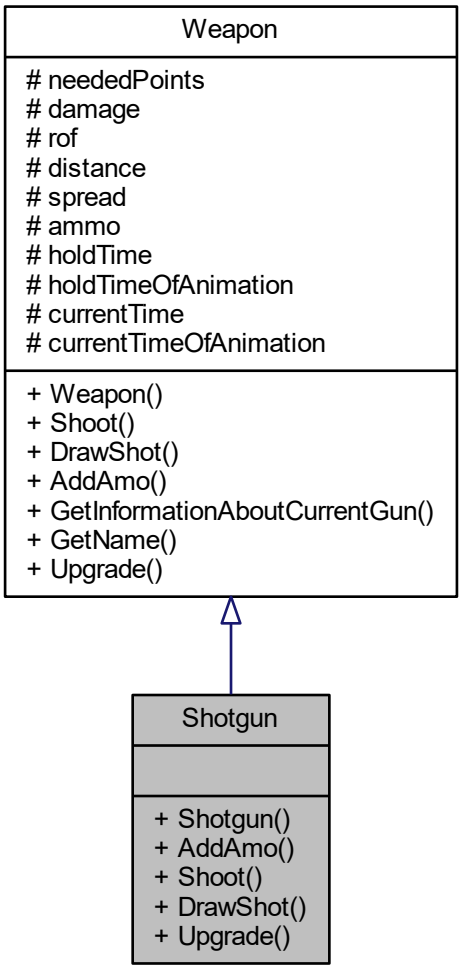
6.54 Shotgun Class Reference

```
#include <Shotgun.h>
```

Inheritance diagram for Shotgun:



Collaboration diagram for Shotgun:



Public Member Functions

- Shotgun (int neededPoints=50, float damage=20, float rof=1, float distance=250, float spread=0.25f, int ammo=10, float holdTime=0.7f, float holdTimeOfAnimation=0.09f)
- void AddAmo (int amo) override
- bool Shoot (bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp, std::vector< std::unique_ptr< Enemy >> &enemies, std::vector< Obstacle >obstacles, const Vec2D &pos, float dt, bool isMoving) override
- bool DrawShot (Graphics &gfx, float dt) override
- void Upgrade (int number) override

Additional Inherited Members

6.54.1 Constructor & Destructor Documentation

6.54.1.1 Shotgun()

```
Shotgun::Shotgun (
            int neededPoints = 50,
            float damage = 20,
            float rof = 1,
            float distance = 250,
            float spread = 0.25f,
            int ammo = 10,
            float holdTime = 0.7f,
            float holdTimeOfAnimation = 0.09f )
```

6.54.2 Member Function Documentation

6.54.2.1 AddAmo()

```
void Shotgun::AddAmo (
            int amo )  [override], [virtual]
```

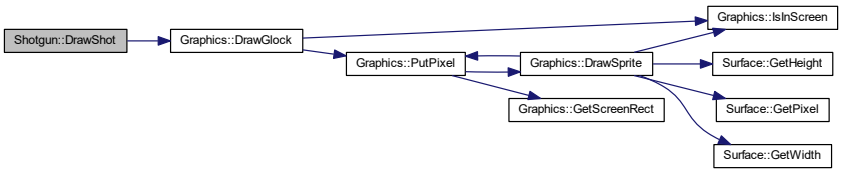
Implements Weapon.

6.54.2.2 DrawShot()

```
bool Shotgun::DrawShot (
            Graphics & gfx,
            float dt )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:

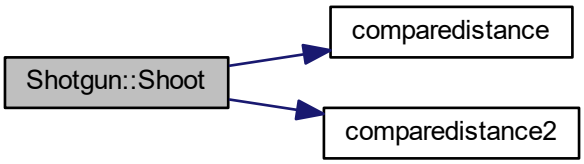


6.54.2.3 Shoot()

```
bool Shotgun::Shoot (
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            std::vector< Obstacle > obstacles,
            const Vec2D & pos,
            float dt,
            bool isMoving )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:



6.54.2.4 Upgrade()

```
void Shotgun::Upgrade (
            int number )  [override], [virtual]
```

Implements Weapon.

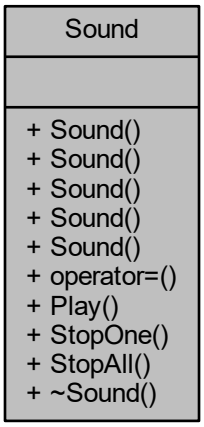
The documentation for this class was generated from the following files:

- Shotgun.h
- Shotgun.cpp

6.55 Sound Class Reference

```
#include <Sound.h>
```

Collaboration diagram for Sound:



Public Member Functions

- Sound ()
- Sound (const std::wstring &fileName, bool loopingWithAutoDetect=false)
- Sound (const std::wstring &fileName, unsigned int loopStart, unsigned int loopEnd)
- Sound (const std::wstring &fileName, float loopStart, float loopEnd)
- Sound (Sound &&donor)
- Sound & operator= (Sound &&donor)
- void Play (float freqMod=1.0f, float vol=1.0f)
- void StopOne ()
- void StopAll ()
- ~Sound ()

6.55.1 Constructor & Destructor Documentation

6.55.1.1 Sound() [1/5]

```
Sound::Sound ( )
```

6.55.1.2 Sound() [2/5]

```
Sound::Sound (
            const std::wstring & fileName,
            bool loopingWithAutoDetect = false )
```

6.55.1.3 Sound() [3/5]

```
Sound::Sound (
            const std::wstring & fileName,
            unsigned int loopStart,
            unsigned int loopEnd )
```

6.55.1.4 Sound() [4/5]

```
Sound::Sound (
            const std::wstring & fileName,
            float loopStart,
            float loopEnd )
```

6.55.1.5 Sound() [5/5]

```
Sound::Sound (
            Sound && donor )
```

6.55.1.6 ~Sound()

```
Sound::~Sound ( )
```

6.55.2 Member Function Documentation

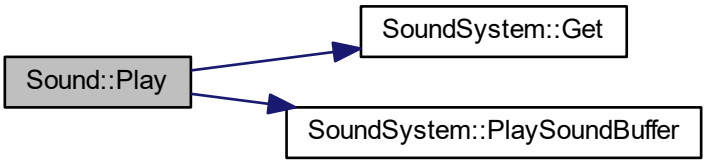
6.55.2.1 operator=()

```
Sound & Sound::operator= (
            Sound && donor )
```

6.55.2.2 Play()

```
void Sound::Play (
            float freqMod = 1.0f,
            float vol = 1.0f )
```

Here is the call graph for this function:



6.55.2.3 StopAll()

```
void Sound::StopAll ( )
```

6.55.2.4 StopOne()

```
void Sound::StopOne ( )
```

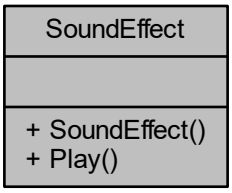
The documentation for this class was generated from the following files:

- Sound.h
- Sound.cpp

6.56 SoundEffect Class Reference

```
#include <SoundEffect.h>
```

Collaboration diagram for SoundEffect:



Public Member Functions

- SoundEffect (const std::initializer_list< std::wstring > &wavFiles, bool soft_fail=false, float freqStdDev↩ Factor=0.06f)
- template<class T >
  void Play (T &rng, float vol=1.0f)

6.56.1 Constructor & Destructor Documentation

6.56.1.1 SoundEffect()

```
SoundEffect::SoundEffect (
            const std::initializer_list< std::wstring > & wavFiles,
            bool soft_fail = false,
            float freqStdDevFactor = 0.06f )  [inline]
```

6.56.2 Member Function Documentation

6.56.2.1 Play()

```
template<class T >
void SoundEffect::Play (
            T & rng,
            float vol = 1.0f )  [inline]
```

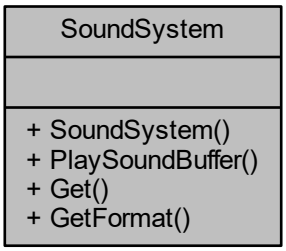
The documentation for this class was generated from the following file:

- SoundEffect.h

6.57 SoundSystem Class Reference

```
#include <Sound.h>
```

Collaboration diagram for SoundSystem:



Classes

- class APIException
- class Channel
- class FileException

Public Member Functions

- SoundSystem (const SoundSystem &)=delete
- void PlaySoundBuffer (class Sound &s, float freqMod, float vol)

Static Public Member Functions

- static SoundSystem & Get ()
- static const WAVEFORMATEX & GetFormat ()

6.57.1 Constructor & Destructor Documentation

6.57.1.1 SoundSystem()

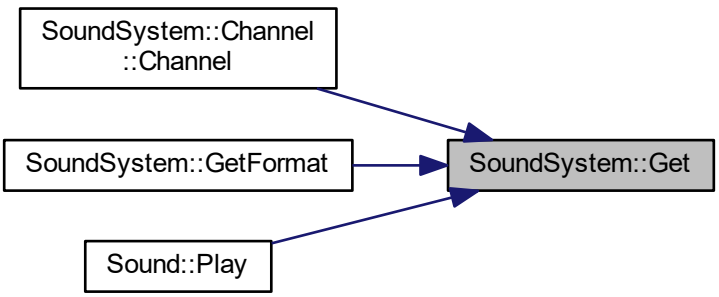
```
SoundSystem::SoundSystem (
            const SoundSystem &  )  [delete]
```

6.57.2 Member Function Documentation

6.57.2.1 Get()

```
SoundSystem & SoundSystem::Get ( )  [static]
```

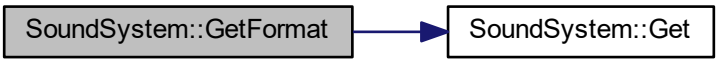
Here is the caller graph for this function:



6.57.2.2 GetFormat()

```
const WAVEFORMATEX & SoundSystem::GetFormat ( ) [static]
```

Here is the call graph for this function:



6.57.2.3 PlaySoundBuffer()

```
void SoundSystem::PlaySoundBuffer (
            class Sound & s,
            float freqMod,
            float vol )
```

Here is the caller graph for this function:

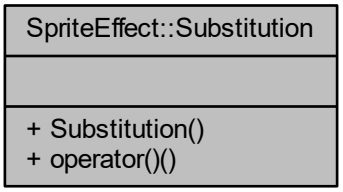
The documentation for this class was generated from the following files:

- Sound.h
- Sound.cpp

6.58 SpriteEffect::Substitution Class Reference

```
#include <SpriteEffect.h>
```

Collaboration diagram for SpriteEffect::Substitution:



Public Member Functions

- Substitution (Color c, Color s)
- void operator() (Color cSrc, int xDest, int yDest, Graphics &gfx) const

6.58.1 Constructor & Destructor Documentation

6.58.1.1 Substitution()

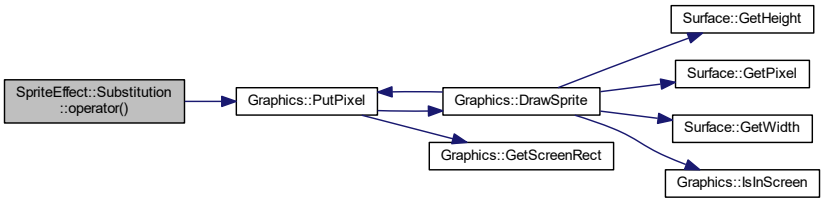
```
SpriteEffect::Substitution::Substitution (
            Color c,
            Color s )  [inline]
```

6.58.2 Member Function Documentation

6.58.2.1 operator()()

```
void SpriteEffect::Substitution::operator() (
            Color cSrc,
            int xDest,
            int yDest,
            Graphics & gfx ) const  [inline]
```

Here is the call graph for this function:



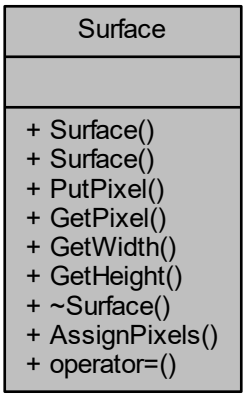
The documentation for this class was generated from the following file:

- SpriteEffect.h

6.59 Surface Class Reference

```
#include <Surface.h>
```

Collaboration diagram for Surface:



Public Member Functions

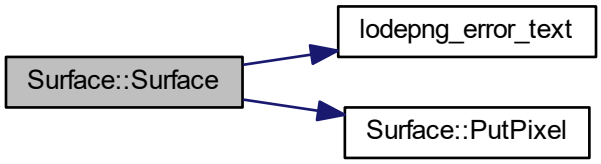
- Surface (const std::string &filename, unsigned int width, unsigned int height)
- Surface ()
- void PutPixel (int x, int y, Color c)
- Color GetPixel (int x, int y) const
- int GetWidth () const
- int GetHeight () const
- ~Surface ()
- void AssignPixels (Surface &surface, int right, int top, int left, int bottom)
- Surface & operator= (const Surface &sur)

6.59.1 Constructor & Destructor Documentation

6.59.1.1 Surface() [1/2]

```
Surface::Surface (
            const std::string & filename,
            unsigned int width,
            unsigned int height )
```

Here is the call graph for this function:



6.59.1.2 Surface() [2/2]

```
Surface::Surface ( )
```

6.59.1.3 ~Surface()

```
Surface::~Surface ( )
```

6.59.2 Member Function Documentation

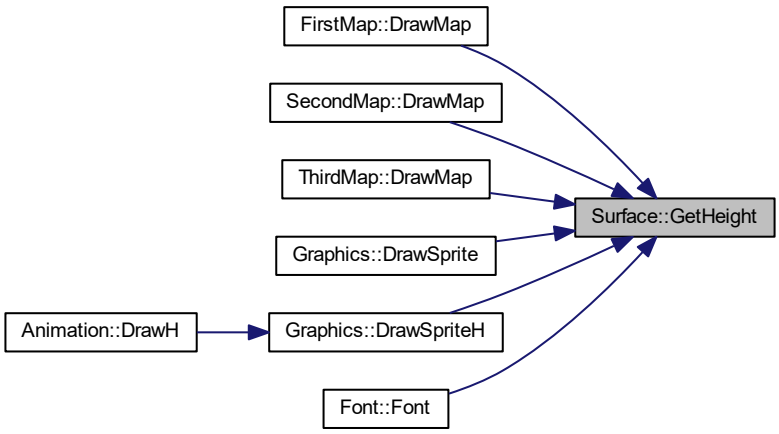
6.59.2.1 AssignPixels()

```
void Surface::AssignPixels (
            Surface & surface,
            int right,
            int top,
            int left,
            int bottom )
```

6.59.2.2 GetHeight()

```
int Surface::GetHeight ( ) const
```

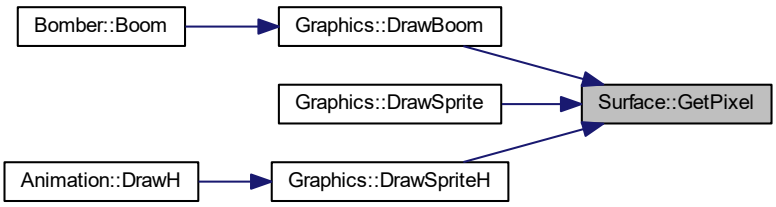
Here is the caller graph for this function:



6.59.2.3 GetPixel()

```
Color Surface::GetPixel (
            int x,
            int y ) const
```

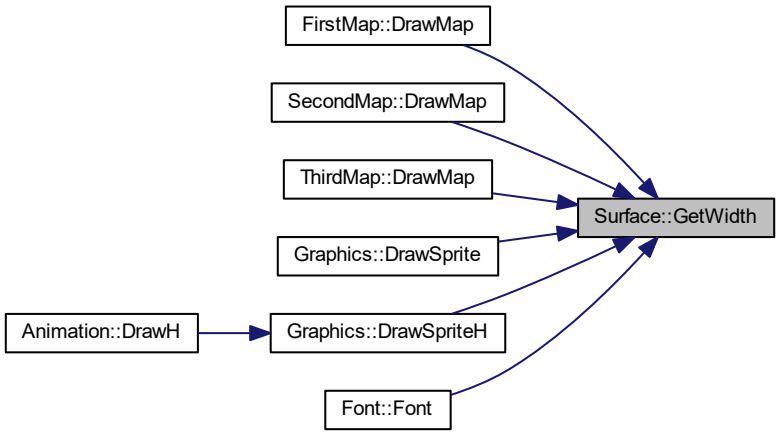
Here is the caller graph for this function:



6.59.2.4 GetWidth()

```
int Surface::GetWidth ( ) const
```

Here is the caller graph for this function:



6.59.2.5 operator=()

```
Surface& Surface::operator= (
            const Surface & sur )  [inline]
```

6.59.2.6 PutPixel()

```
void Surface::PutPixel (
            int x,
            int y,
            Color c )
```

Here is the caller graph for this function:

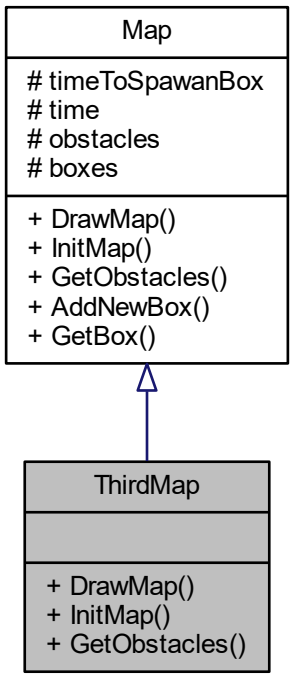
The documentation for this class was generated from the following files:

- Surface.h
- Surface.cpp

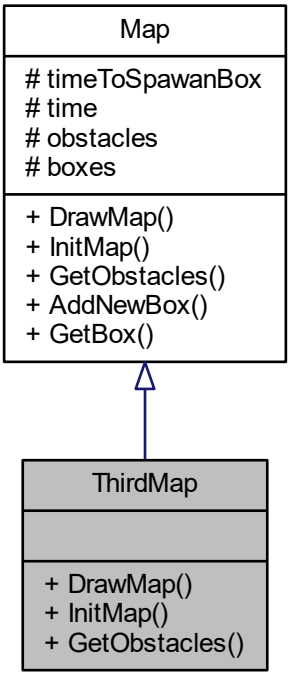
6.60 ThirdMap Class Reference

```
#include <ThirdMap.h>
```

Inheritance diagram for ThirdMap:



Collaboration diagram for ThirdMap:



Public Member Functions

- void DrawMap (Graphics &gfx) override
- void InitMap () override
- std::vector< Obstacle > GetObstacles () override

Additional Inherited Members

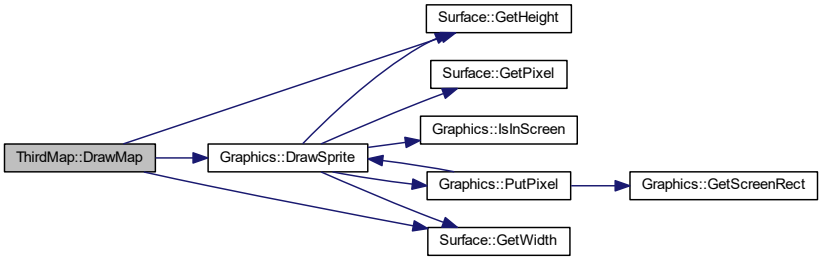
6.60.1 Member Function Documentation

6.60.1.1 DrawMap()

```
void ThirdMap::DrawMap (
            Graphics & gfx )  [override], [virtual]
```

Implements Map.

Here is the call graph for this function:



6.60.1.2 GetObstacles()

```
std::vector< Obstacle > ThirdMap::GetObstacles ( ) [override], [virtual]
```

Implements Map.

6.60.1.3 InitMap()

```
void ThirdMap::InitMap ( ) [override], [virtual]
```

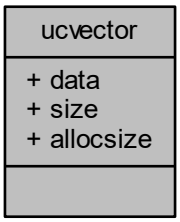
Implements Map.

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

- ThirdMap.h
- ThirdMap.cpp

6.61 ucvector Struct Reference

Collaboration diagram for ucvector:



Public Attributes

- unsigned char * data
- size_t size
- size_t allocsize

6.61.1 Member Data Documentation

6.61.1.1 allocsize

```
size_t ucvector::allocsize
```

6.61.1.2 data

```
unsigned char* ucvector::data
```

6.61.1.3 size

```
size_t ucvector::size
```

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

- lodepng.cpp

6.62 uivector Struct Reference

Collaboration diagram for uivector:

Public Attributes

- unsigned * data
- size_t size
- size_t allocsize

6.62.1 Member Data Documentation

6.62.1.1 allocsize

```
size_t uivector::allocsize
```

6.62.1.2 data

```
unsigned* uivector::data
```

6.62.1.3 size

```
size_t uivector::size
```

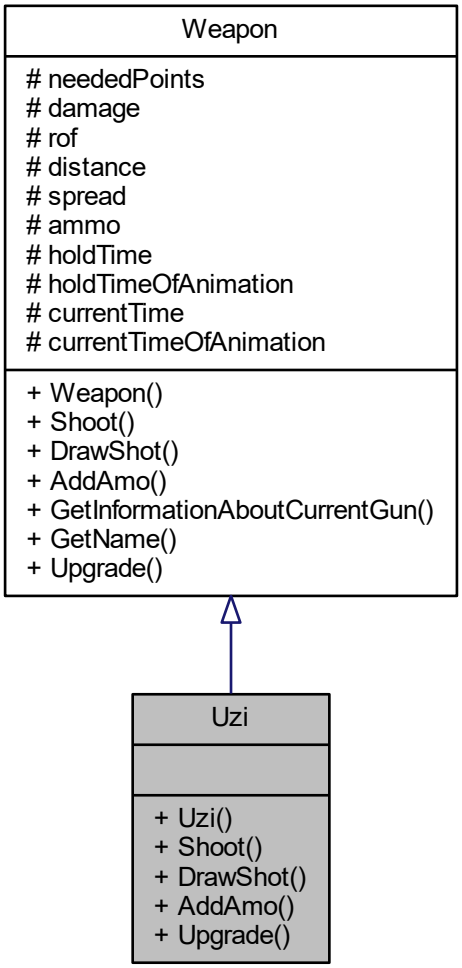
The documentation for this struct was generated from the following file:

- lodepng.cpp

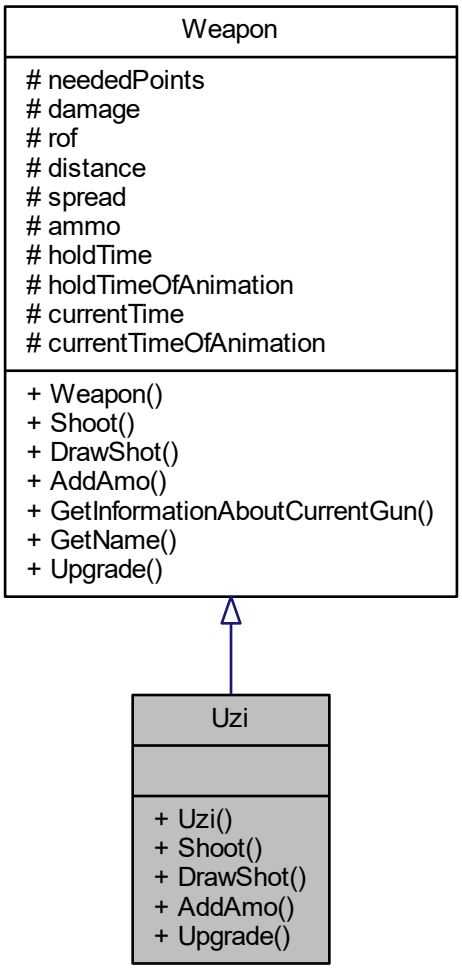
6.63 Uzi Class Reference

```
#include <Uzi.h>
```

Inheritance diagram for Uzi:



Collaboration diagram for Uzi:



Public Member Functions

- Uzi (int neededPoints=50, float damage=30, float rof=1, float distance=220, float spread=1, int ammo=30, float holdTime=0.1f, float holdTimeOfAnimation=0.09f)
- bool Shoot (bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp, std::vector< std::unique_ptr< Enemy >> &enemies, std::vector< Obstacle >obstacles, const Vec2D &pos, float dt, bool isMoving) override
- bool DrawShot (Graphics &gfx, float dt) override
- void AddAmo (int amo) override
- void Upgrade (int number) override

Additional Inherited Members

6.63.1 Constructor & Destructor Documentation

6.63.1.1 Uzi()

```
Uzi::Uzi (
            int neededPoints = 50,
            float damage = 30,
            float rof = 1,
            float distance = 220,
            float spread = 1,
            int ammo = 30,
            float holdTime = 0.1f,
            float holdTimeOfAnimation = 0.09f )  [inline]
```

6.63.2 Member Function Documentation

6.63.2.1 AddAmo()

```
void Uzi::AddAmo (
            int amo )  [override], [virtual]
```

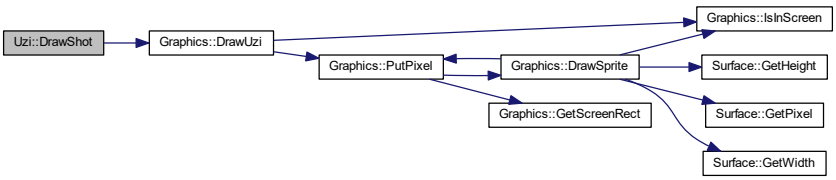
Implements Weapon.

6.63.2.2 DrawShot()

```
bool Uzi::DrawShot (
            Graphics & gfx,
            float dt )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:

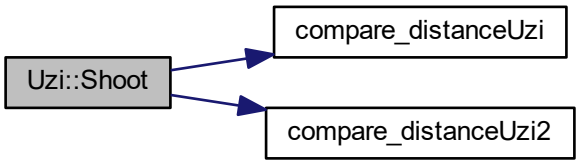


6.63.2.3 Shoot()

```
bool Uzi::Shoot (
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            std::vector< Obstacle > obstacles,
            const Vec2D & pos,
            float dt,
            bool isMoving )  [override], [virtual]
```

Implements Weapon.

Here is the call graph for this function:



6.63.2.4 Upgrade()

```
void Uzi::Upgrade (
            int number )  [override], [virtual]
```

Implements Weapon.

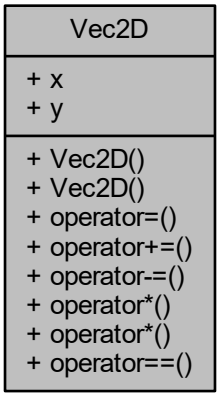
The documentation for this class was generated from the following files:

- Uzi.h
- Uzi.cpp

6.64 Vec2D Class Reference

```
#include <Vec2D.h>
```

Collaboration diagram for Vec2D:



Public Member Functions

- Vec2D (float x, float y)
- Vec2D (const Vec2D &vec)
- Vec2D & operator= (const Vec2D &vec)
- Vec2D & operator+= (const Vec2D &vec)
- Vec2D & operator-= (const Vec2D &vec)
- Vec2D & operator∗ (const float &scalar)
- Vec2D & operator∗ (const int &scalar)
- bool operator== (const Vec2D &vec)

Public Attributes

- float x
- float y

6.64.1 Constructor & Destructor Documentation

6.64.1.1 Vec2D() [1/2]

```
Vec2D::Vec2D (
            float x,
            float y )
```

6.64.1.2 Vec2D() [2/2]

```
Vec2D::Vec2D (
            const Vec2D & vec )
```

6.64.2 Member Function Documentation

6.64.2.1 operator*() [1/2]

```
Vec2D & Vec2D::operator* (
            const float & scalar )
```

6.64.2.2 operator*() [2/2]

```
Vec2D & Vec2D::operator* (
            const int & scalar )
```

6.64.2.3 operator+=()

```
Vec2D & Vec2D::operator+= (
            const Vec2D & vec )
```

6.64.2.4 operator-=()

```
Vec2D & Vec2D::operator-= (
            const Vec2D & vec )
```

6.64.2.5 operator=()

```
Vec2D & Vec2D::operator= (
            const Vec2D & vec )
```

6.64.2.6 operator==()

```
bool Vec2D::operator== (
            const Vec2D & vec )  [inline]
```

6.64.3 Member Data Documentation

6.64.3.1 x

```
float Vec2D::x
```

6.64.3.2 y

```
float Vec2D::y
```

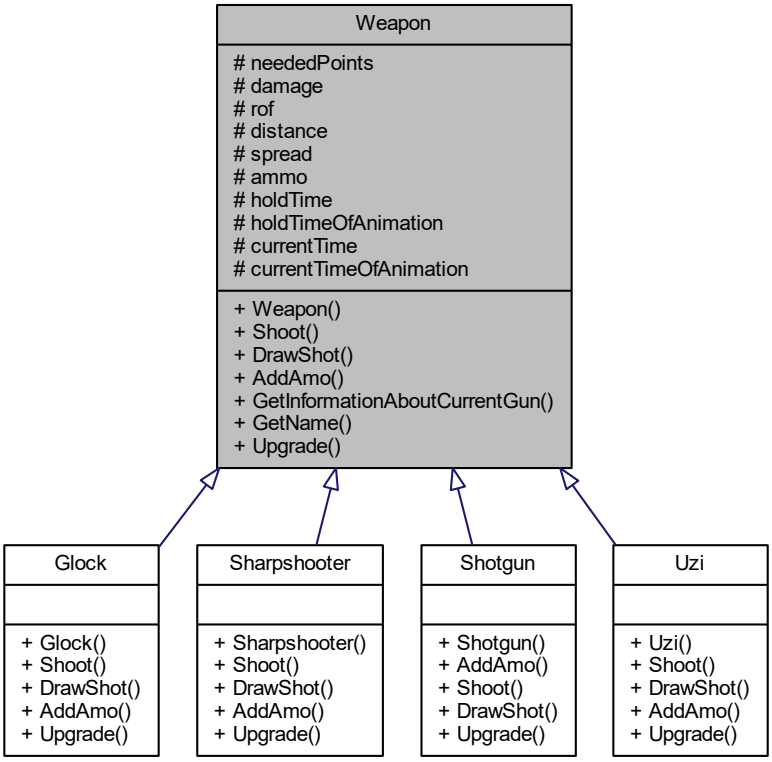
The documentation for this class was generated from the following files:

- Vec2D.h
- Vec2D.cpp

6.65 Weapon Class Reference

```
#include <Weapon.h>
```

Inheritance diagram for Weapon:



Collaboration diagram for Weapon:

Public Member Functions

- Weapon (int neededPoints, float damage, float rof, float distance, float spread, int ammo, float holdTime, float holdTimeOfAnimation)
- virtual bool Shoot (bool aimsRight, bool aimsLeft, bool aimsDown, bool aimsUp, std::vector< std::unique_↩ ptr< Enemy >> &enemies, std::vector< Obstacle >obstacles, const Vec2D &pos, float dt, bool isMoving)=0
- virtual bool DrawShot (Graphics &gfx, float dt)=0
- virtual void AddAmo (int amo)=0
- std::string GetInformationAboutCurrentGun ()
- std::string GetName ()
- virtual void Upgrade (int number)=0

Protected Attributes

- int neededPoints
- float damage
- float rof
- float distance
- float spread
- int ammo
- float holdTime
- float holdTimeOfAnimation
- float currentTime = 0
- float currentTimeOfAnimation = 0

6.65.1 Constructor & Destructor Documentation

6.65.1.1 Weapon()

```
Weapon::Weapon (
            int neededPoints,
            float damage,
            float rof,
            float distance,
            float spread,
            int ammo,
            float holdTime,
            float holdTimeOfAnimation )
```

6.65.2 Member Function Documentation

6.65.2.1 AddAmo()

```
virtual void Weapon::AddAmo (
            int amo )  [pure virtual]
```

Implemented in Sharpshooter, Uzi, Shotgun, and Glock.

6.65.2.2 DrawShot()

```
virtual bool Weapon::DrawShot (
            Graphics & gfx,
            float dt )  [pure virtual]
```

Implemented in Sharpshooter, Shotgun, Uzi, and Glock.

6.65.2.3 GetInformationAboutCurrentGun()

```
std::string Weapon::GetInformationAboutCurrentGun ( )
```

6.65.2.4 GetName()

```
std::string Weapon::GetName ( )
```

6.65.2.5 Shoot()

```
virtual bool Weapon::Shoot (
            bool aimsRight,
            bool aimsLeft,
            bool aimsDown,
            bool aimsUp,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            std::vector< Obstacle > obstacles,
            const Vec2D & pos,
            float dt,
            bool isMoving )  [pure virtual]
```

Implemented in Sharpshooter, Shotgun, Uzi, and Glock.

6.65.2.6 Upgrade()

```
virtual void Weapon::Upgrade (
            int number )  [pure virtual]
```

Implemented in Sharpshooter, Shotgun, Uzi, and Glock.

6.65.3 Member Data Documentation

6.65.3.1 ammo

```
int Weapon::ammo  [protected]
```

6.65.3.2 currentTime

```
float Weapon::currentTime = 0  [protected]
```

6.65.3.3 currentTimeOfAnimation

```
float Weapon::currentTimeOfAnimation = 0  [protected]
```

6.65.3.4 damage

```
float Weapon::damage  [protected]
```

6.65.3.5 distance

```
float Weapon::distance  [protected]
```

6.65.3.6 holdTime

```
float Weapon::holdTime  [protected]
```

6.65.3.7 holdTimeOfAnimation

```
float Weapon::holdTimeOfAnimation  [protected]
```

6.65.3.8 neededPoints

```
int Weapon::neededPoints  [protected]
```

6.65.3.9 rof

```
float Weapon::rof  [protected]
```

6.65.3.10 spread

```
float Weapon::spread  [protected]
```

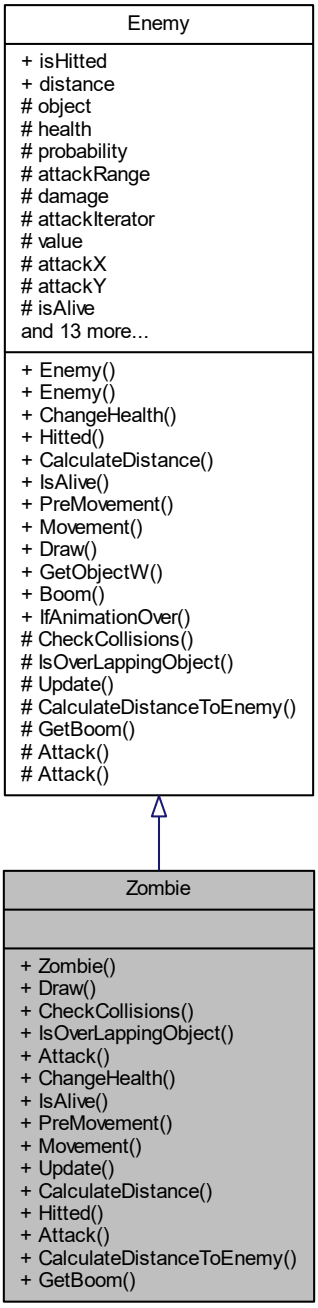
The documentation for this class was generated from the following files:

- Weapon.h
- Weapon.cpp

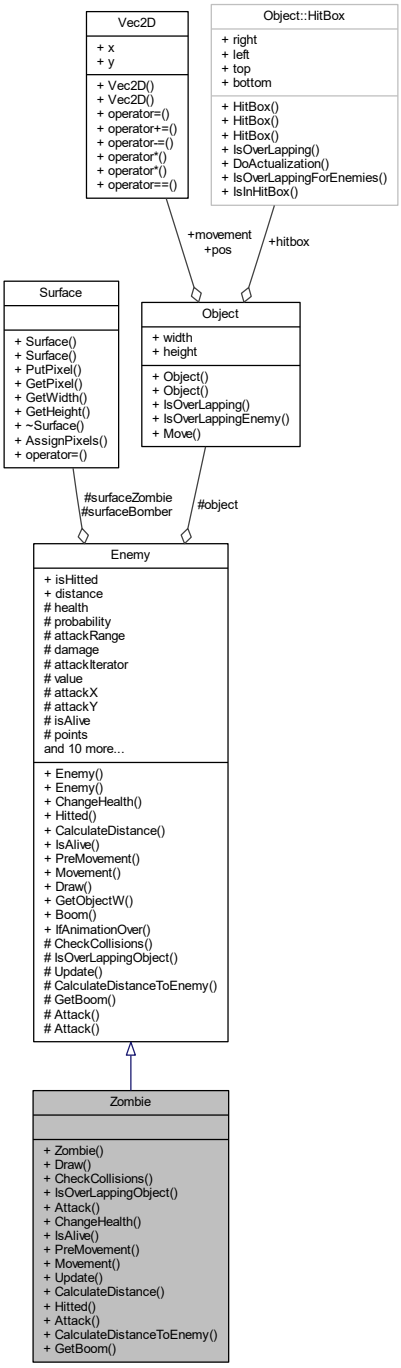
6.66 Zombie Class Reference

```
#include <Zombie.h>
```

Inheritance diagram for Zombie:



Collaboration diagram for Zombie:



Public Member Functions

- Zombie (Object object, float health, float damage, float probability, bool isAlive, int points)
- void Draw (Graphics &gfx) override
- void CheckCollisions (std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies) override
- bool IsOverLappingObject (const Object other) override

- float Attack (float distance, float dt) override
- void ChangeHealth (float changeHP) override
- bool IsAlive () override
- int PreMovement (float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies, int &delay, float &damageToPlayer) override
- void Movement (bool aim_R, bool aim_L, bool aim_U, bool aim_D, float dt, const Object &playerObject, std::vector< Obstacle > obstacles, std::vector< std::unique_ptr< Enemy >> &enemies, float dirX, float dirY, float distance) override
- void Update (float dt) override
- void CalculateDistance (const Vec2D &pos) override
- void Hitted (const float &dmg) override
- float Attack (float distance, float dt, std::vector< std::unique_ptr< Enemy >> &enemies, int &delay) override
- float CalculateDistanceToEnemy (const Vec2D &pos) override
- Rect GetBoom () override

Additional Inherited Members

6.66.1 Constructor & Destructor Documentation

6.66.1.1 Zombie()

```
Zombie::Zombie (
            Object object,
            float health,
            float damage,
            float probability,
            bool isAlive,
            int points )
```

6.66.2 Member Function Documentation

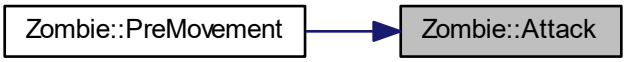
6.66.2.1 Attack() [1/2]

```
float Zombie::Attack (
            float distance,
            float dt )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:

Here is the caller graph for this function:



6.66.2.2 Attack() [2/2]

```
float Zombie::Attack (
            float distance,
            float dt,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            int & delay )  [override], [virtual]
```

Implements Enemy.

6.66.2.3 CalculateDistance()

```
void Zombie::CalculateDistance (
            const Vec2D & pos )  [override], [virtual]
```

Implements Enemy.

6.66.2.4 CalculateDistanceToEnemy()

```
float Zombie::CalculateDistanceToEnemy (
            const Vec2D & pos )  [override], [virtual]
```

Implements Enemy.

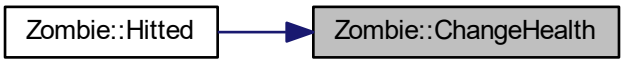
6.66.2.5 ChangeHealth()

```
void Zombie::ChangeHealth (
            float changeHP )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:

Here is the caller graph for this function:

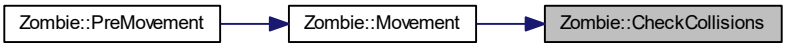


6.66.2.6 CheckCollisions()

```
void Zombie::CheckCollisions (
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies )  [override], [virtual]
```

Implements Enemy.

Here is the caller graph for this function:



6.66.2.7 Draw()

```
void Zombie::Draw (
            Graphics & gfx )  [override], [virtual]
```

Implements Enemy.

6.66.2.8 GetBoom()

```
Rect Zombie::GetBoom ( )  [override], [virtual]
```

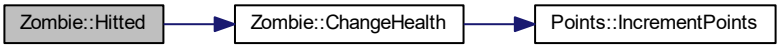
Implements Enemy.

6.66.2.9 Hitted()

```
void Zombie::Hitted (
            const float & dmg )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:



6.66.2.10 IsAlive()

```
bool Zombie::IsAlive ( )  [override], [virtual]
```

Implements Enemy.

6.66.2.11 IsOverLappingObject()

```
bool Zombie::IsOverLappingObject (
            const Object other )  [override], [virtual]
```

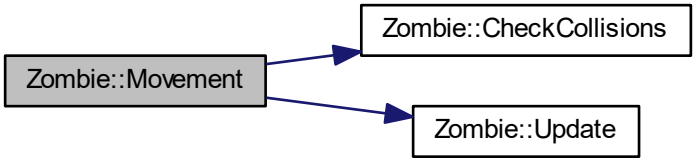
Implements Enemy.

6.66.2.12 Movement()

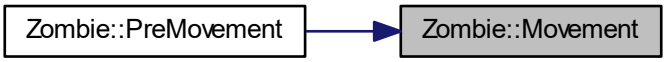
```
void Zombie::Movement (
            bool aim_R,
            bool aim_L,
            bool aim_U,
            bool aim_D,
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
            float dirX,
            float dirY,
            float distance )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:



Here is the caller graph for this function:



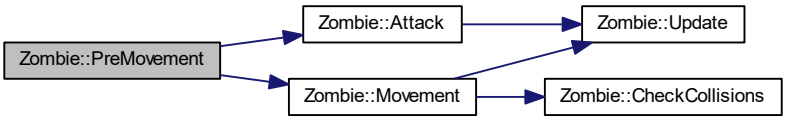
6.66.2.13 PreMovement()

```
int Zombie::PreMovement (
            float dt,
            const Object & playerObject,
            std::vector< Obstacle > obstacles,
            std::vector< std::unique_ptr< Enemy >> & enemies,
```

```
            int & delay,
            float & damageToPlayer )  [override], [virtual]
```

Implements Enemy.

Here is the call graph for this function:

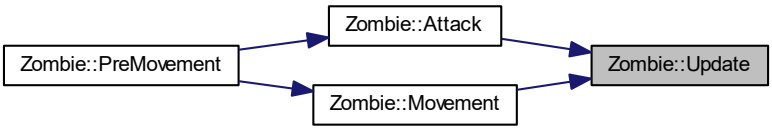


6.66.2.14 Update()

```
void Zombie::Update (
            float dt )  [override], [virtual]
```

Implements Enemy.

Here is the caller graph for this function:



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

- Zombie.h
- Zombie.cpp

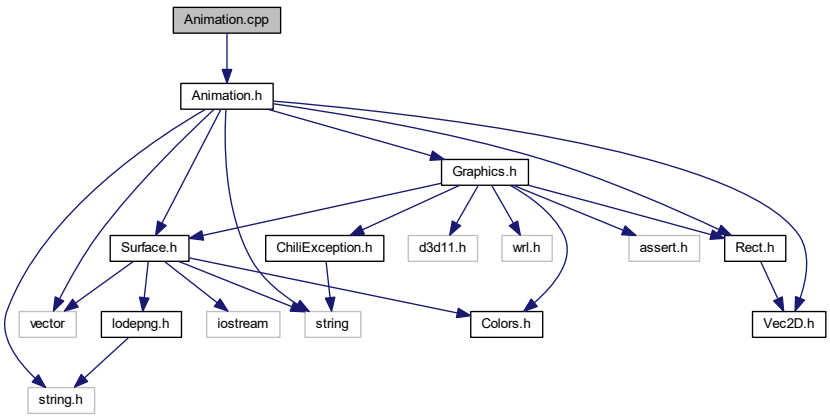
Chapter 7

File Documentation

7.1 Animation.cpp File Reference

```
#include "Animation.h"
```

Include dependency graph for Animation.cpp:

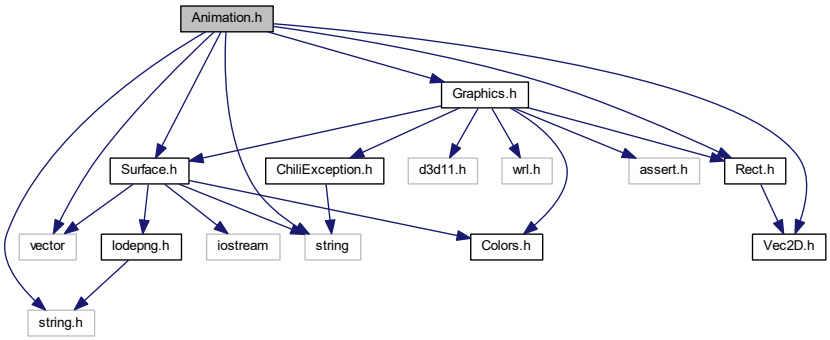


7.2 Animation.h File Reference

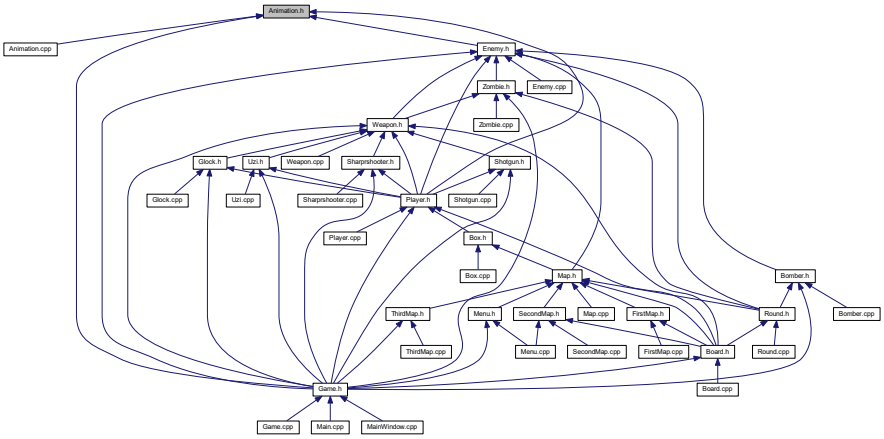
```
#include <vector>
#include <string.h>
#include <string>
#include "Surface.h"
#include "Vec2D.h"
#include "Graphics.h"
```

```
#include "Rect.h"
```

Include dependency graph for Animation.h:



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



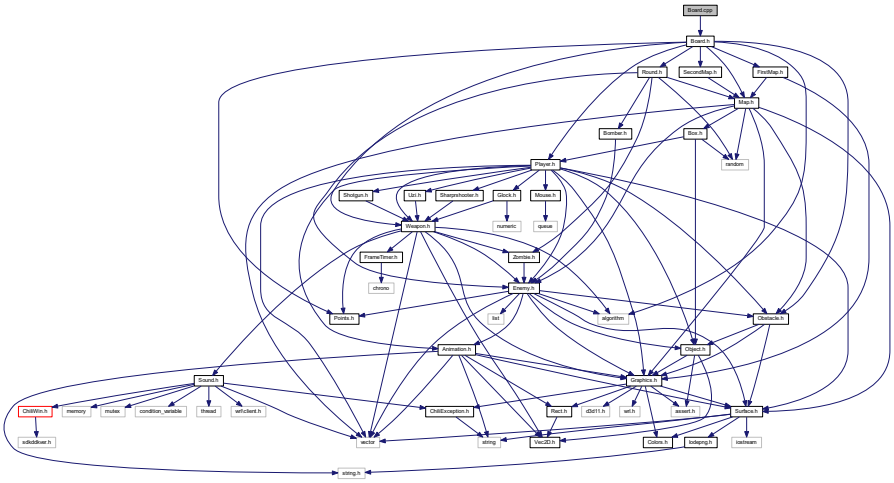
Classes

- class Animation

7.3 Board.cpp File Reference

```
#include "Board.h"
```

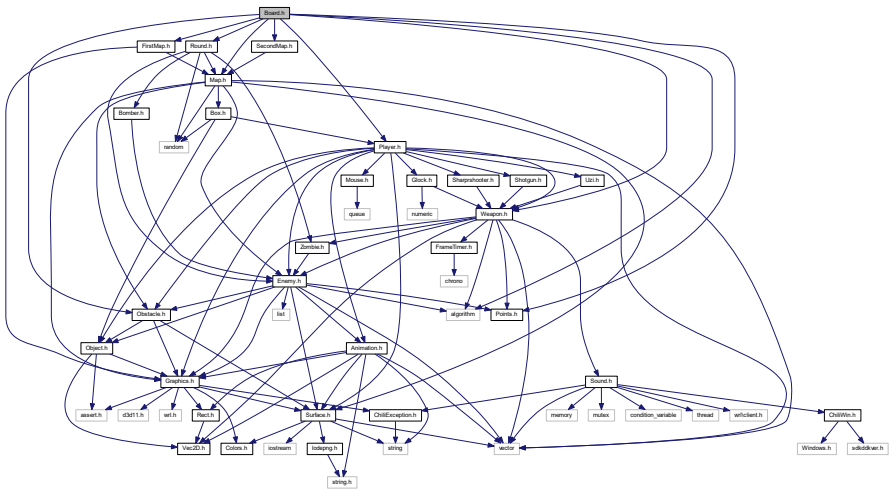
Include dependency graph for Board.cpp:



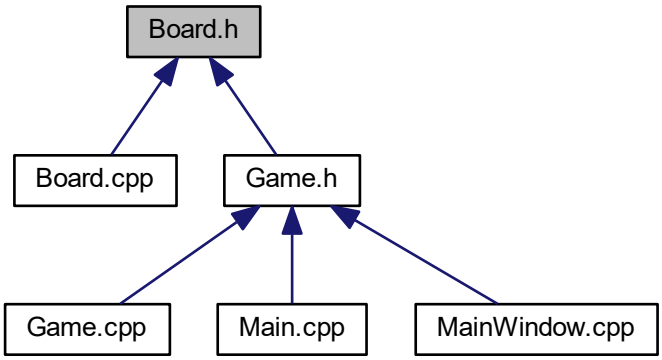
7.4 Board.h File Reference

```
#include "Points.h"
#include "Round.h"
#include "Weapon.h"
#include "Player.h"
#include "Map.h"
#include "FirstMap.h"
#include "SecondMap.h"
#include "Obstacle.h"
#include <algorithm>
```

Include dependency graph for Board.h:



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

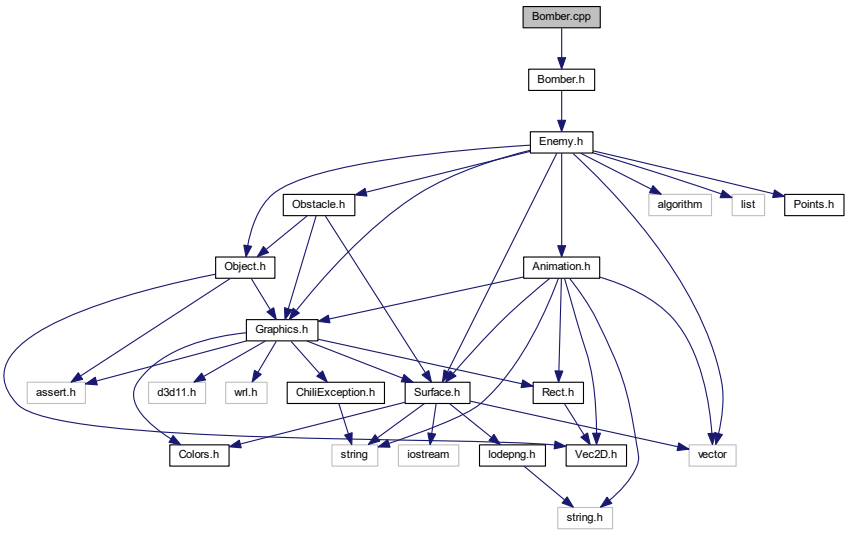


Classes

- class Board

7.5 Bomber.cpp File Reference

`#include "Bomber.h"`
Include dependency graph for Bomber.cpp:



Functions

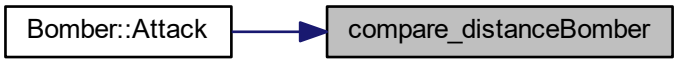
- bool compare_distanceBomber (std::unique_ptr< Enemy > &obj1, std::unique_ptr< Enemy > &obj2)

7.5.1 Function Documentation

7.5.1.1 compare_distanceBomber()

```
bool compare_distanceBomber (
            std::unique_ptr< Enemy > & obj1,
            std::unique_ptr< Enemy > & obj2 )
```

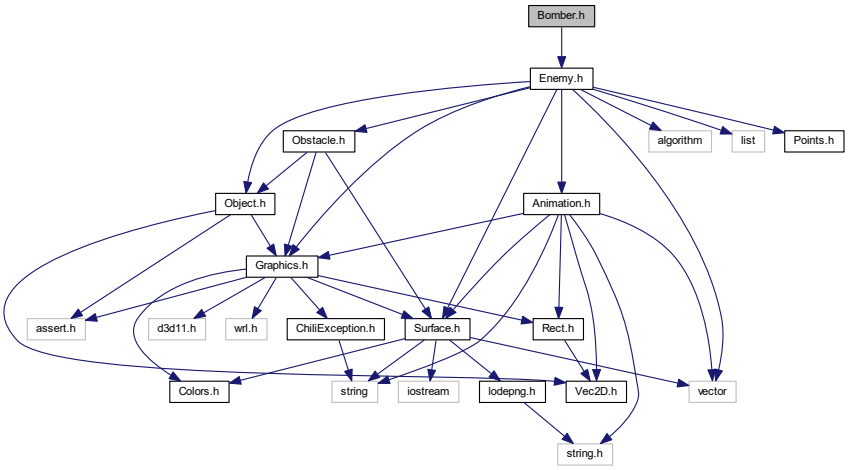
Here is the caller graph for this function:



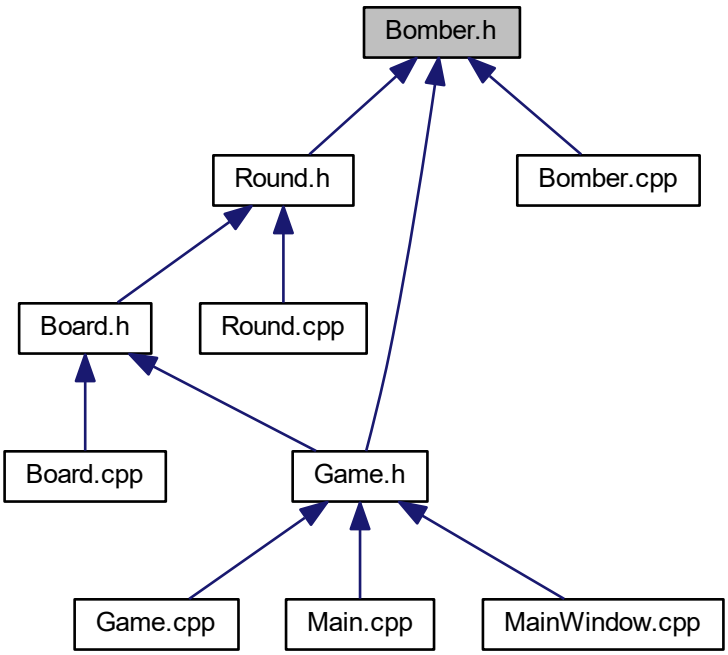
7.6 Bomber.h File Reference

```
#include "Enemy.h"
```

Include dependency graph for Bomber.h:



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



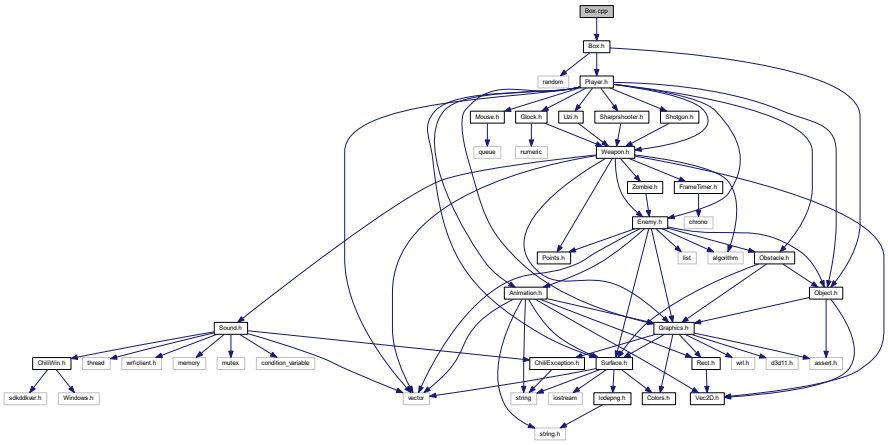
Classes

- class Bomber

7.7 Box.cpp File Reference

```
#include "Box.h"
```

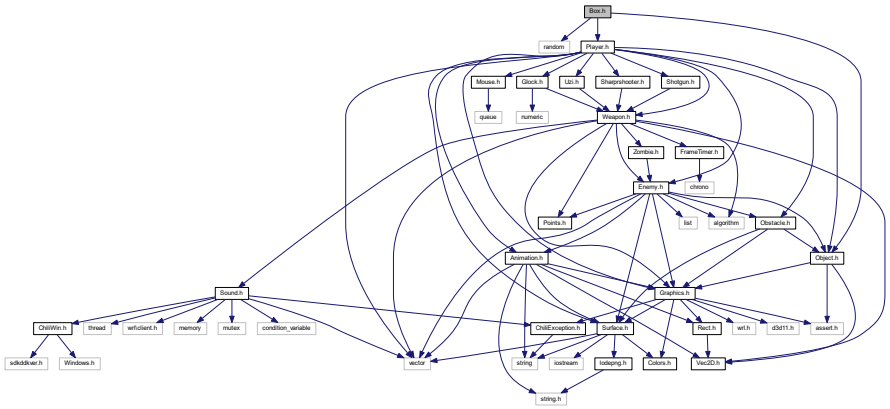
Include dependency graph for Box.cpp:



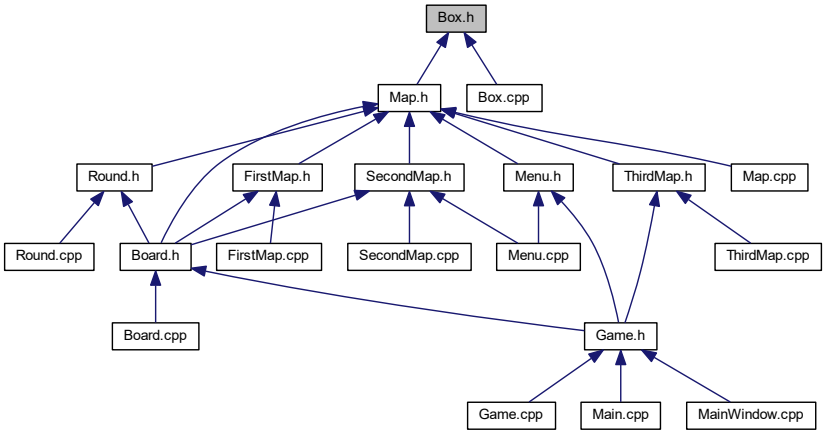
7.8 Box.h File Reference

```
#include <random>
#include "Object.h"
#include "Player.h"
```

Include dependency graph for Box.h:



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



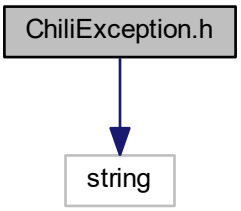
Classes

- class Box

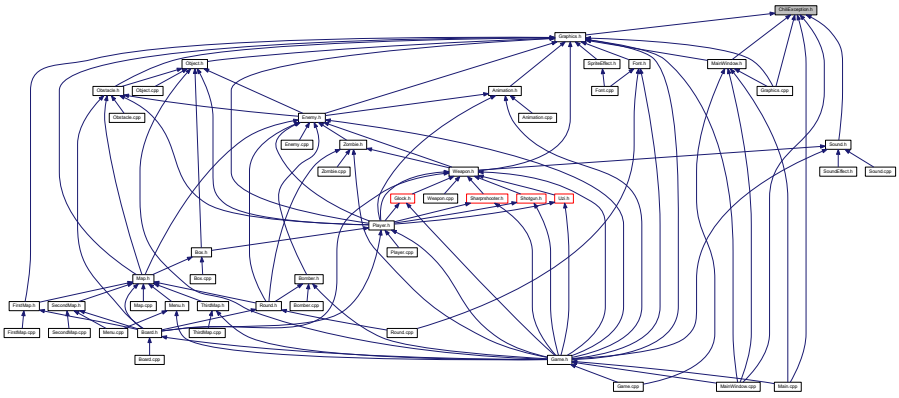
7.9 ChiliException.h File Reference

```
#include <string>
```

Include dependency graph for ChiliException.h:



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



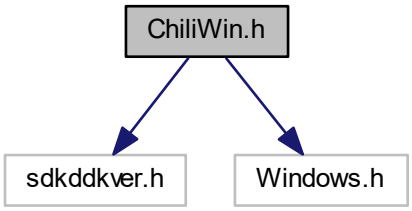
Classes

- class ChiliException

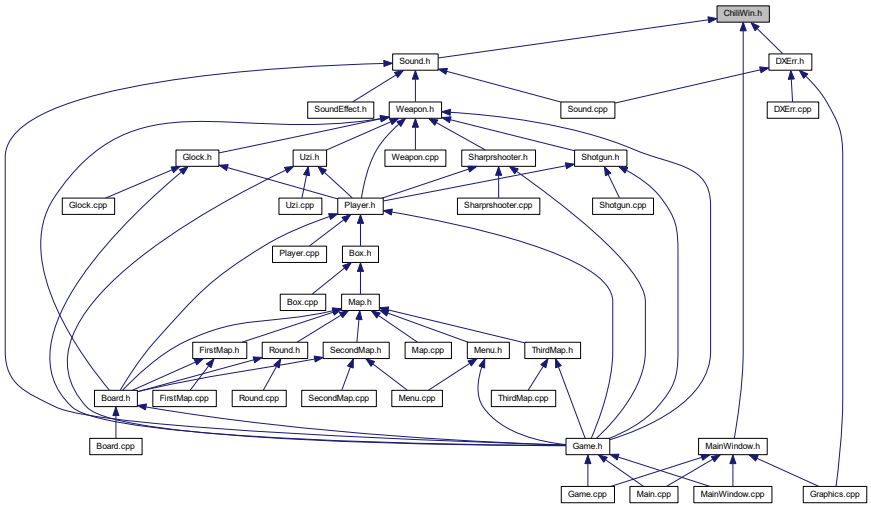
7.10 ChiliWin.h File Reference

```
#include <sdkddkver.h>
#include <Windows.h>
```

Include dependency graph for ChiliWin.h:



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



Macros

- #define WIN32_LEAN_AND_MEAN
- #define NOGDICAPMASKS
- #define NOSYSMETRICS
- #define NOMENUS
- #define NOICONS
- #define NOSYSCOMMANDS
- #define NORASTEROPS
- #define OEMRESOURCE
- #define NOATOM
- #define NOCLIPBOARD
- #define NOCOLOR
- #define NOCTLMGR
- #define NODRAWTEXT
- #define NOKERNEL

- #define NONLS
- #define NOMEMMGR
- #define NOMETAFILE
- #define NOMINMAX
- #define NOOPENFILE
- #define NOSCROLL
- #define NOSERVICE
- #define NOSOUND
- #define NOTEXTMETRIC
- #define NOWH
- #define NOCOMM
- #define NOKANJI
- #define NOHELP
- #define NOPROFILER
- #define NODEFERWINDOWPOS
- #define NOMCX
- #define NORPC
- #define NOPROXYSTUB
- #define NOIMAGE
- #define NOTAPE

7.10.1 Macro Definition Documentation

7.10.1.1 NOATOM

```
#define NOATOM
```

7.10.1.2 NOCLIPBOARD

```
#define NOCLIPBOARD
```

7.10.1.3 NOCOLOR

```
#define NOCOLOR
```

7.10.1.4 NOCOMM

```
#define NOCOMM
```

7.10.1.5 NOCTLMGR

```
#define NOCTLMGR
```

7.10.1.6 NODEFERWINDOWPOS

```
#define NODEFERWINDOWPOS
```

7.10.1.7 NODRAWTEXT

```
#define NODRAWTEXT
```

7.10.1.8 NOGDICAPMASKS

```
#define NOGDICAPMASKS
```

7.10.1.9 NOHELP

```
#define NOHELP
```

7.10.1.10 NOICONS

```
#define NOICONS
```

7.10.1.11 NOIMAGE

```
#define NOIMAGE
```

7.10.1.12 NOKANJI

```
#define NOKANJI
```

7.10.1.13 NOKERNEL

```
#define NOKERNEL
```

7.10.1.14 NOMCX

```
#define NOMCX
```

7.10.1.15 NOMEMMGR

```
#define NOMEMMGR
```

7.10.1.16 NOMENUS

```
#define NOMENUS
```

7.10.1.17 NOMETAFILE

```
#define NOMETAFILE
```

7.10.1.18 NOMINMAX

```
#define NOMINMAX
```

7.10.1.19 NONLS

```
#define NONLS
```

7.10.1.20 NOOPENFILE

```
#define NOOPENFILE
```

7.10.1.21 NOPROFILER

```
#define NOPROFILER
```

7.10.1.22 NOPROXYSTUB

```
#define NOPROXYSTUB
```

7.10.1.23 NORASTEROPS

```
#define NORASTEROPS
```

7.10.1.24 NORPC

```
#define NORPC
```

7.10.1.25 NOSCROLL

```
#define NOSCROLL
```

7.10.1.26 NOSERVICE

```
#define NOSERVICE
```

7.10.1.27 NOSOUND

```
#define NOSOUND
```

7.10.1.28 NOSYSCOMMANDS

```
#define NOSYSCOMMANDS
```

7.10.1.29 NOSYSMETRICS

```
#define NOSYSMETRICS
```

7.10.1.30 NOTAPE

```
#define NOTAPE
```

7.10.1.31 NOTEXTMETRIC

```
#define NOTEXTMETRIC
```

7.10.1.32 NOWH

```
#define NOWH
```

7.10.1.33 OEMRESOURCE

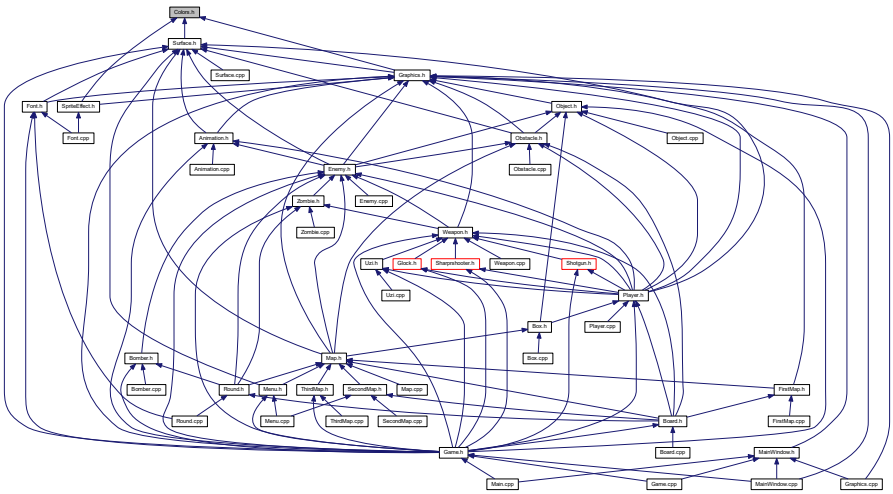
```
#define OEMRESOURCE
```

7.10.1.34 WIN32_LEAN_AND_MEAN

```
#define WIN32_LEAN_AND_MEAN
```

7.11 Colors.h File Reference

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



Classes

- class Color

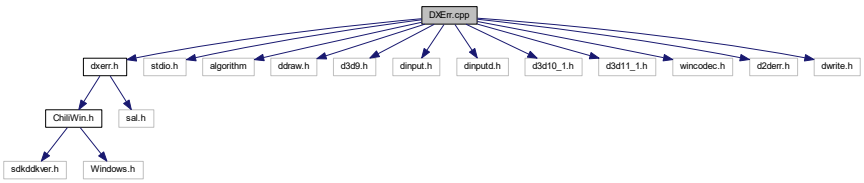
Namespaces

- Colors

7.12 DXErr.cpp File Reference

```
#include "dxerr.h"
#include <stdio.h>
#include <algorithm>
#include <ddraw.h>
#include <d3d9.h>
#include <dinput.h>
#include <dinputd.h>
#include <d3d10_1.h>
#include <d3d11_1.h>
#include <wincodec.h>
#include <d2derr.h>
#include <dwrite.h>
```

Include dependency graph for DXErr.cpp:



Macros

- #define DIRECTINPUT_VERSION 0x800
- #define XAUDIO2_E_INVALID_CALL 0x88960001
- #define XAUDIO2_E_XMA_DECODER_ERROR 0x88960002
- #define XAUDIO2_E_XAPO_CREATION_FAILED 0x88960003
- #define XAUDIO2_E_DEVICE_INVALIDATED 0x88960004
- #define XAPO_E_FORMAT_UNSUPPORTED MAKE_HRESULT(SEVERITY_ERROR, 0x897, 0x01)
- #define DXUTERR_NODIRECT3D MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0901)
- #define DXUTERR_NOCOMPATIBLEDEVICES MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0902)
- #define DXUTERR_MEDIANOTFOUND MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0903)
- #define DXUTERR_NONZEROREFCOUNT MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0904)
- #define DXUTERR_CREATINGDEVICE MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0905)
- #define DXUTERR_RESETTINGDEVICE MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0906)
- #define DXUTERR_CREATINGDEVICEOBJECTS MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0907)

- #define DXUTERR_RESETTINGDEVICEOBJECTS MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0908)
- #define DXUTERR_INCORRECTVERSION MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0909)
- #define DXUTERR_DEVICEREMOVED MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x090A)
- #define BUFFER_SIZE 3000
- #define CHK_ERR(hrchk, strOut)
- #define CHK_ERRA(hrchk)
- #define HRESULT_FROM_WIN32b(x) ((HRESULT)(x) <= 0 ? ((HRESULT)(x)) : ((HRESULT) (((x) & 0x0000FFFF) | (FACILITY_WIN32 << 16) | 0x80000000)))
- #define CHK_ERR_WIN32A(hrchk)
- #define CHK_ERR_WIN32_ONLY(hrchk, strOut)
- #define CHK_ERRA(hrchk)
- #define CHK_ERR(hrchk, strOut)

Functions

- const WCHAR *WINAPI DXGetErrorStringW (_In_ HRESULT hr)
- void WINAPI DXGetErrorDescriptionW (_In_ HRESULT hr, _Out_cap_(count) WCHAR *desc, _In_ size_t count)
- HRESULT WINAPI DXTraceW (_In_z_ const WCHAR *strFile, _In_ DWORD dwLine, _In_ HRESULT hr, _In_opt_ const WCHAR *strMsg, _In_ bool bPopMsgBox)

7.12.1 Macro Definition Documentation

7.12.1.1 BUFFER_SIZE

```
#define BUFFER_SIZE 3000
```

7.12.1.2 CHK_ERR [1/2]

```
#define CHK_ERR(
            hrchk,
            strOut )
```

Value:

```
case hrchk: \
    return L##strOut;
```

7.12.1.3 CHK_ERR [2/2]

```
#define CHK_ERR(
            hrchk,
            strOut )
```

Value:

```
        case hrchk: \
             wcscpy_s( desc, count, L##strOut ); break;
```

7.12.1.4 CHK_ERR_WIN32_ONLY

```
#define CHK_ERR_WIN32_ONLY(
            hrchk,
            strOut )
```

Value:

```
        case HRESULT_FROM_WIN32b(hrchk): \
             return L##strOut;
```

7.12.1.5 CHK_ERR_WIN32A

```
#define CHK_ERR_WIN32A(
            hrchk )
```

Value:

```
        case HRESULT_FROM_WIN32b(hrchk): \
        case hrchk: \
             return L#hrchk;
```

7.12.1.6 CHK_ERRA [1/2]

```
#define CHK_ERRA(
            hrchk )
```

Value:

```
        case hrchk: \
             return L#hrchk;
```

7.12.1.7 CHK_ERRA [2/2]

```
#define CHK_ERRA(
            hrchk )
```

Value:

```
        case hrchk: \
             wcscpy_s( desc, count, L#hrchk ); break;
```

7.12.1.8 DIRECTINPUT_VERSION

```
#define DIRECTINPUT_VERSION 0x800
```

7.12.1.9 DXUTERR_CREATINGDEVICE

```
#define DXUTERR_CREATINGDEVICE MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0905)
```

7.12.1.10 DXUTERR_CREATINGDEVICEOBJECTS

```
#define DXUTERR_CREATINGDEVICEOBJECTS MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0907)
```

7.12.1.11 DXUTERR_DEVICEREMOVED

```
#define DXUTERR_DEVICEREMOVED MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x090A)
```

7.12.1.12 DXUTERR_INCORRECTVERSION

```
#define DXUTERR_INCORRECTVERSION MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0909)
```

7.12.1.13 DXUTERR_MEDIANOTFOUND

```
#define DXUTERR_MEDIANOTFOUND MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0903)
```

7.12.1.14 DXUTERR_NOCOMPATIBLEDEVICES

```
#define DXUTERR_NOCOMPATIBLEDEVICES MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0902)
```

7.12.1.15 DXUTERR_NODIRECT3D

```
#define DXUTERR_NODIRECT3D MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0901)
```

7.12.1.16 DXUTERR_NONZEROREFCOUNT

```
#define DXUTERR_NONZEROREFCOUNT MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0904)
```

7.12.1.17 DXUTERR_RESETTINGDEVICE

```
#define DXUTERR_RESETTINGDEVICE MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0906)
```

7.12.1.18 DXUTERR_RESETTINGDEVICEOBJECTS

```
#define DXUTERR_RESETTINGDEVICEOBJECTS MAKE_HRESULT(SEVERITY_ERROR, FACILITY_ITF, 0x0908)
```

7.12.1.19 HRESULT_FROM_WIN32b

```
#define HRESULT_FROM_WIN32b(
              x ) ((HRESULT)(x) <= 0 ?  ((HRESULT)(x)) :  ((HRESULT) (((x) & 0x0000FFFF) | (F↩
ACILITY_WIN32 << 16) | 0x80000000)))
```

7.12.1.20 XAPO_E_FORMAT_UNSUPPORTED

```
#define XAPO_E_FORMAT_UNSUPPORTED MAKE_HRESULT(SEVERITY_ERROR, 0x897, 0x01)
```

7.12.1.21 XAUDIO2_E_DEVICE_INVALIDATED

```
#define XAUDIO2_E_DEVICE_INVALIDATED 0x88960004
```

7.12.1.22 XAUDIO2_E_INVALID_CALL

```
#define XAUDIO2_E_INVALID_CALL 0x88960001
```

7.12.1.23 XAUDIO2_E_XAPO_CREATION_FAILED

```
#define XAUDIO2_E_XAPO_CREATION_FAILED 0x88960003
```

7.12.1.24 XAUDIO2_E_XMA_DECODER_ERROR

```
#define XAUDIO2_E_XMA_DECODER_ERROR 0x88960002
```

7.12.2 Function Documentation

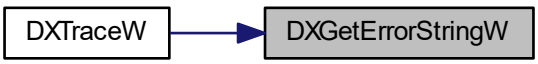
7.12.2.1 DXGetErrorDescriptionW()

```
void WINAPI DXGetErrorDescriptionW (
            _In_ HRESULT hr,
            _Out_cap_(count) WCHAR * desc,
            _In_ size_t count )
```

7.12.2.2 DXGetErrorStringW()

```
const WCHAR* WINAPI DXGetErrorStringW (
            _In_ HRESULT hr )
```

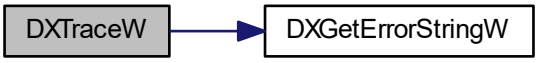
Here is the caller graph for this function:



7.12.2.3 DXTraceW()

```
HRESULT WINAPI DXTraceW (
            _In_z_ const WCHAR * strFile,
            _In_ DWORD dwLine,
            _In_ HRESULT hr,
            _In_opt_ const WCHAR * strMsg,
            _In_ bool bPopMsgBox )
```

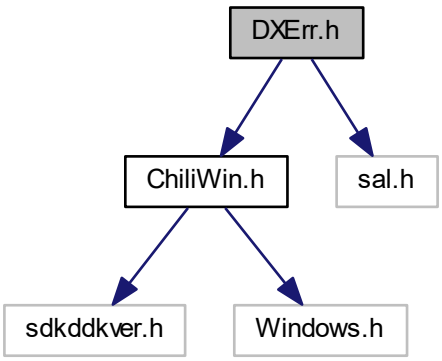
Here is the call graph for this function:



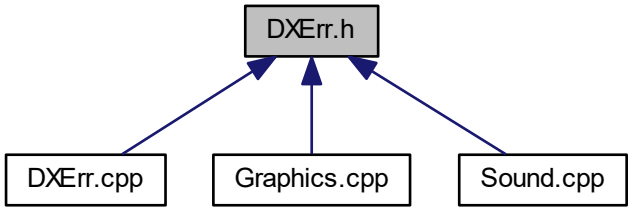
7.13 DXErr.h File Reference

```
#include "ChiliWin.h"
#include <sal.h>
```

Include dependency graph for DXErr.h:



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



Macros

- #define DXGetErrorString DXGetErrorStringW
- #define DXGetErrorDescription DXGetErrorDescriptionW
- #define DXTrace DXTraceW
- #define DXTRACE_MSG(str) (0L)
- #define DXTRACE_ERR(str, hr) (hr)
- #define DXTRACE_ERR_MSGBOX(str, hr) (hr)

Functions

- const WCHAR *WINAPI DXGetErrorStringW (_In_ HRESULT hr)
- void WINAPI DXGetErrorDescriptionW (_In_ HRESULT hr, _Out_cap_(count) WCHAR *desc, _In_ size_t count)
- HRESULT WINAPI DXTraceW (_In_z_ const WCHAR *strFile, _In_ DWORD dwLine, _In_ HRESULT hr, _In_opt_ const WCHAR *strMsg, _In_ bool bPopMsgBox)

7.13.1 Macro Definition Documentation

7.13.1.1 DXGetErrorDescription

```
#define DXGetErrorDescription DXGetErrorDescriptionW
```

7.13.1.2 DXGetErrorString

```
#define DXGetErrorString DXGetErrorStringW
```

7.13.1.3 DXTrace

```
#define DXTrace DXTraceW
```

7.13.1.4 DXTRACE_ERR

```
#define DXTRACE_ERR(
              str,
              hr ) (hr)
```

7.13.1.5 DXTRACE_ERR_MSGBOX

```
#define DXTRACE_ERR_MSGBOX(
              str,
              hr ) (hr)
```

7.13.1.6 DXTRACE_MSG

```
#define DXTRACE_MSG(
              str ) (0L)
```

7.13.2 Function Documentation

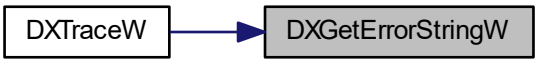
7.13.2.1 DXGetErrorDescriptionW()

```
void WINAPI DXGetErrorDescriptionW (
            _In_ HRESULT hr,
            _Out_cap_(count) WCHAR * desc,
            _In_ size_t count )
```

7.13.2.2 DXGetErrorStringW()

```
const WCHAR* WINAPI DXGetErrorStringW (
            _In_ HRESULT hr )
```

Here is the caller graph for this function:



7.13.2.3 DXTraceW()

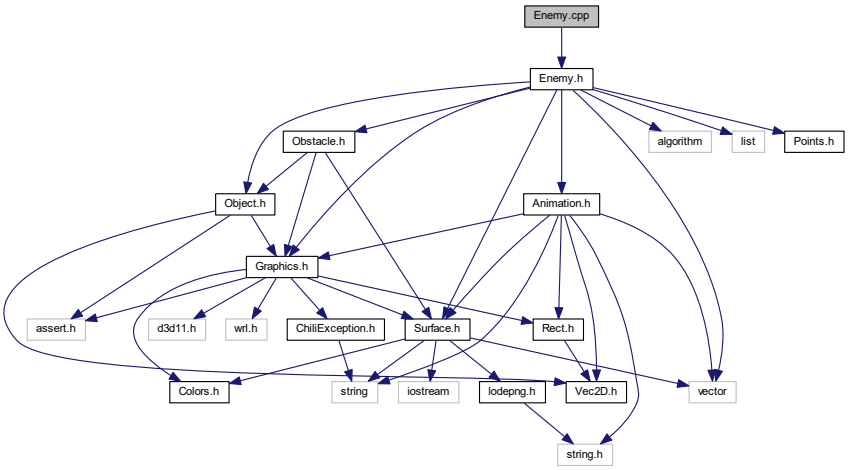
```
HRESULT WINAPI DXTraceW (
            _In_z_ const WCHAR * strFile,
            _In_ DWORD dwLine,
            _In_ HRESULT hr,
            _In_opt_ const WCHAR * strMsg,
            _In_ bool bPopMsgBox )
```

Here is the call graph for this function:

7.14 Enemy.cpp File Reference

```
#include "Enemy.h"
```

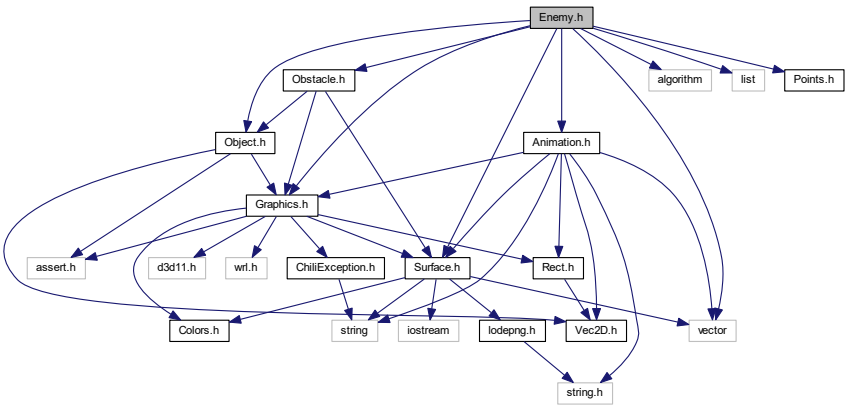
Include dependency graph for Enemy.cpp:



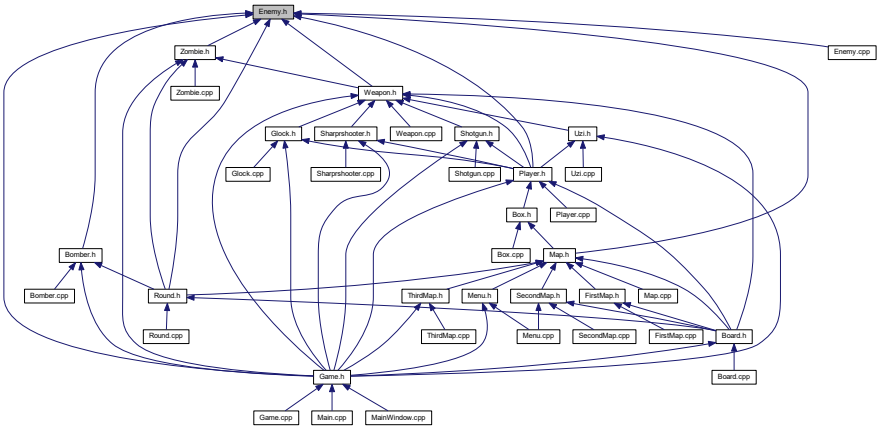
7.15 Enemy.h File Reference

```
#include "Object.h"
#include "Obstacle.h"
#include "Graphics.h"
#include <algorithm>
#include <list>
#include <vector>
#include "Surface.h"
#include "Animation.h"
#include "Points.h"
```

Include dependency graph for Enemy.h:



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



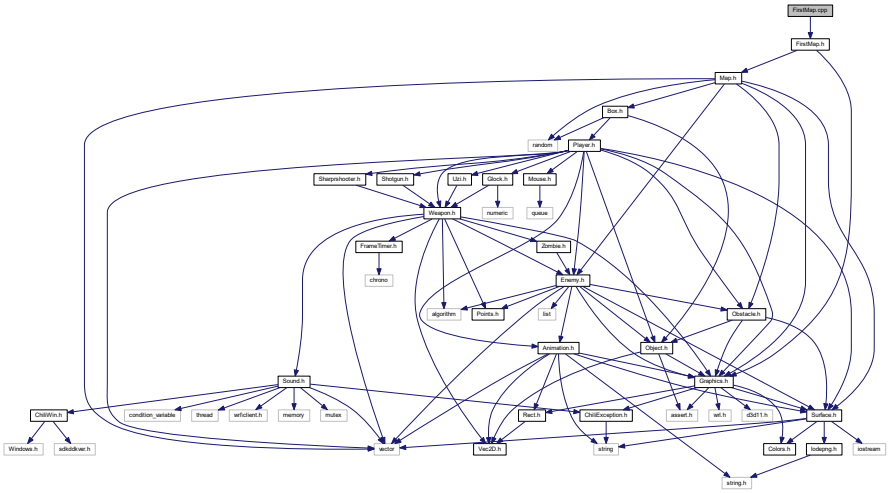
Classes

- class Enemy

7.16 FirstMap.cpp File Reference

```
#include "FirstMap.h"
```

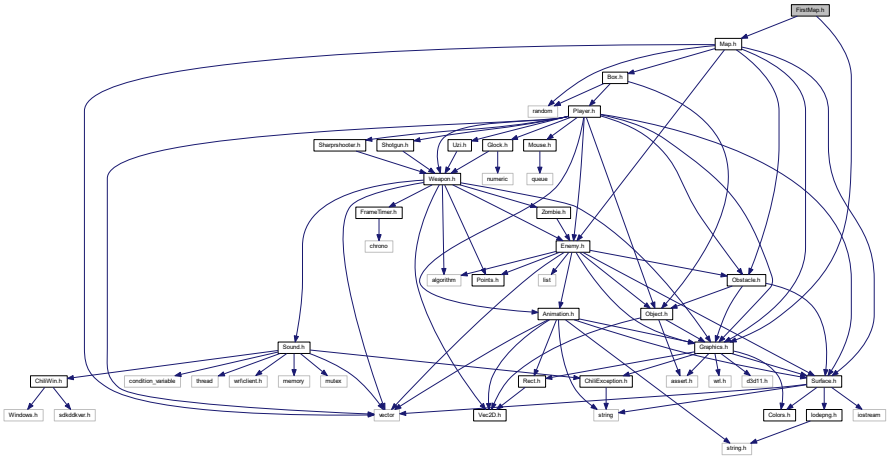
Include dependency graph for FirstMap.cpp:



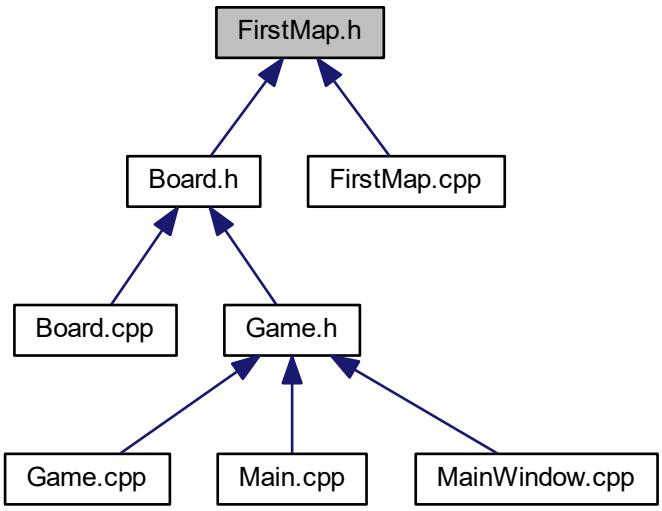
7.17 FirstMap.h File Reference

```
#include "Map.h"
#include "Graphics.h"
```

Include dependency graph for FirstMap.h:



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



Classes

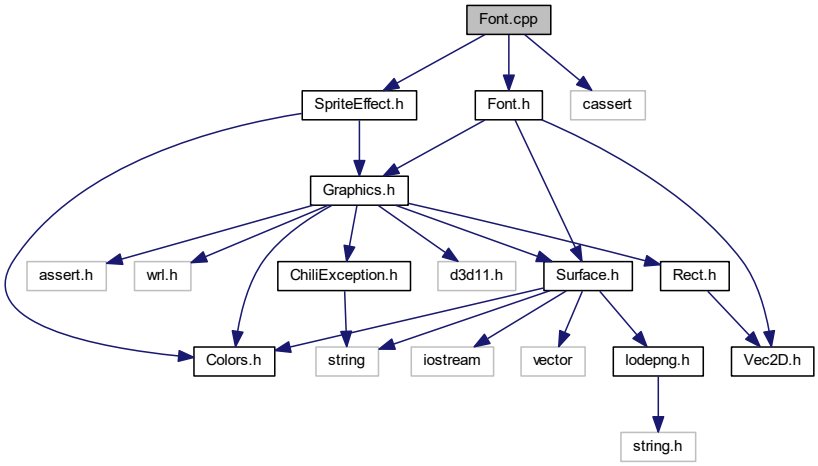
- class FirstMap

7.18 Font.cpp File Reference

```
#include "Font.h"
#include <cassert>
```

```
#include "SpriteEffect.h"
```

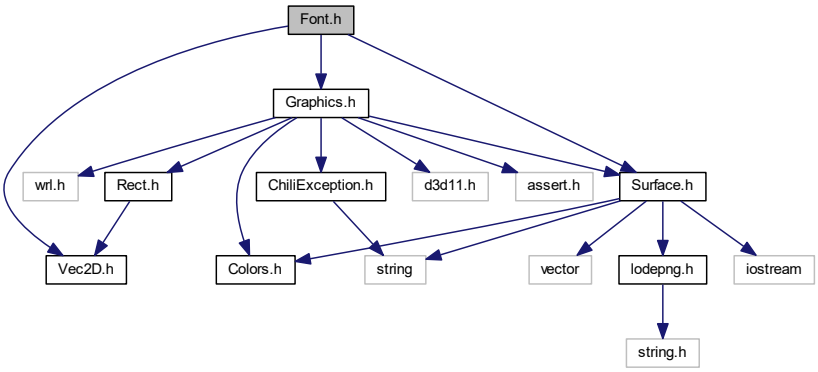
Include dependency graph for Font.cpp:



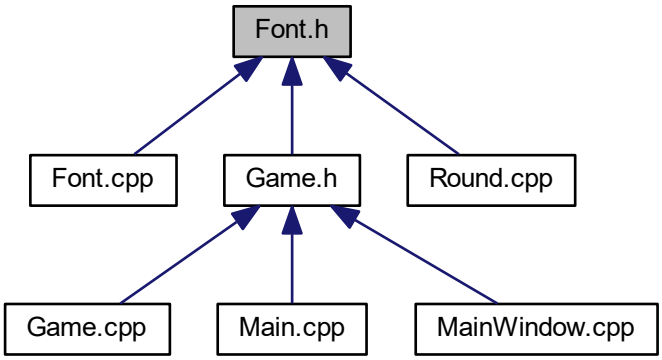
7.19 Font.h File Reference

```
#include "Graphics.h"
#include "Surface.h"
#include "Vec2D.h"
```

Include dependency graph for Font.h:



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

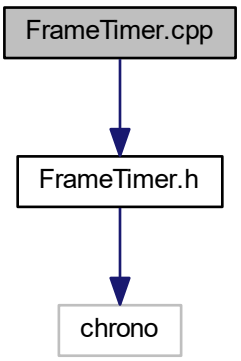


Classes

- class Font

7.20 FrameTimer.cpp File Reference

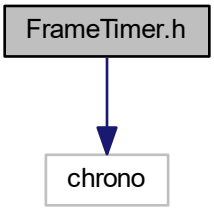
`#include "FrameTimer.h"`
Include dependency graph for FrameTimer.cpp:



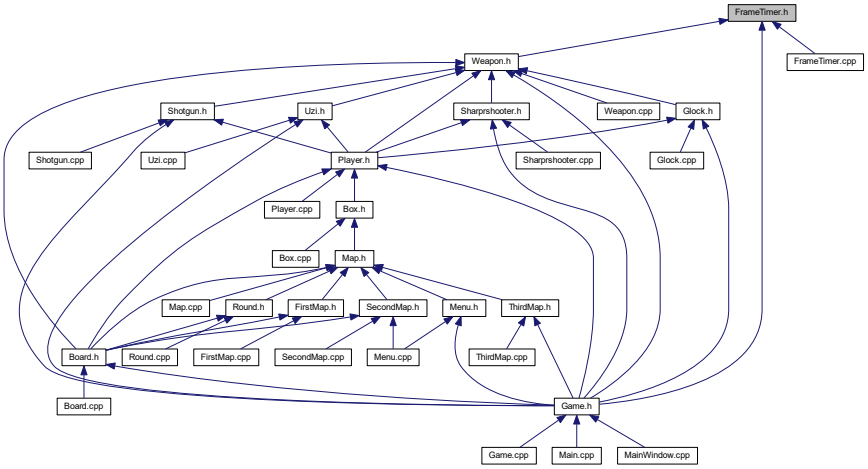
7.21 FrameTimer.h File Reference

```
#include <chrono>
```

Include dependency graph for FrameTimer.h:



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



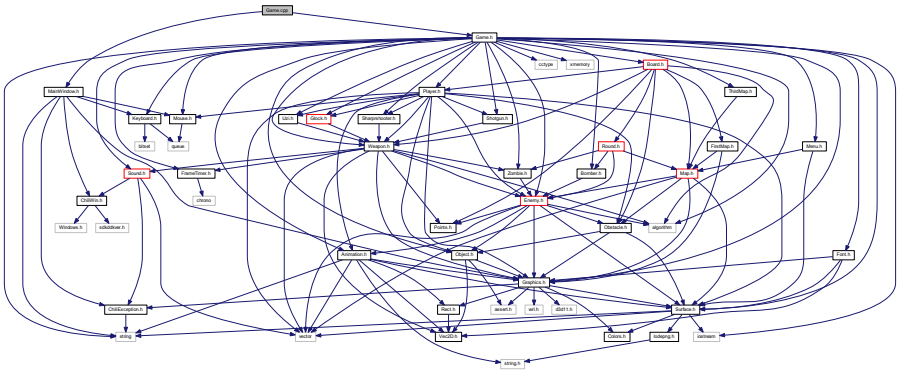
Classes

- class FrameTimer

7.22 Game.cpp File Reference

```
#include "MainWindow.h"
#include "Game.h"
```

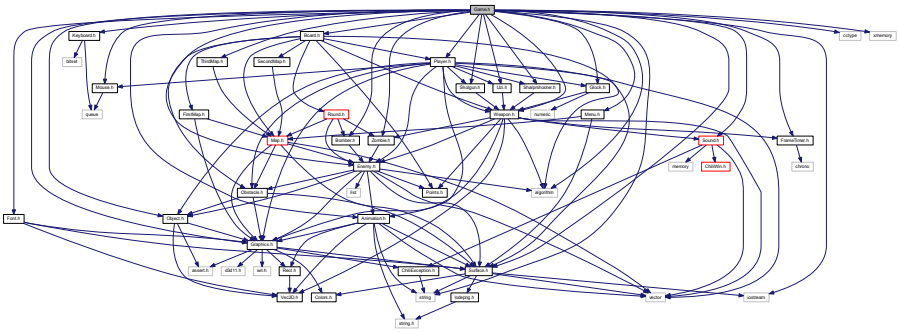
Include dependency graph for Game.cpp:



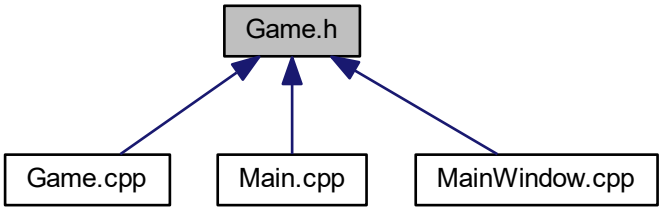
7.23 Game.h File Reference

```
#include "Keyboard.h"
#include "Mouse.h"
#include "Graphics.h"
#include "Object.h"
#include "Player.h"
#include "Surface.h"
#include "Animation.h"
#include "FrameTimer.h"
#include "Board.h"
#include "Enemy.h"
#include "Zombie.h"
#include "Bomber.h"
#include "Weapon.h"
#include "Glock.h"
#include <algorithm>
#include <string>
#include <iostream>
#include <cctype>
#include <xmemory>
#include "Uzi.h"
#include "Font.h"
#include "Sound.h"
#include "Shotgun.h"
#include "Sharprshooter.h"
#include "Menu.h"
#include "ThirdMap.h"
```

Include dependency graph for Game.h:



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



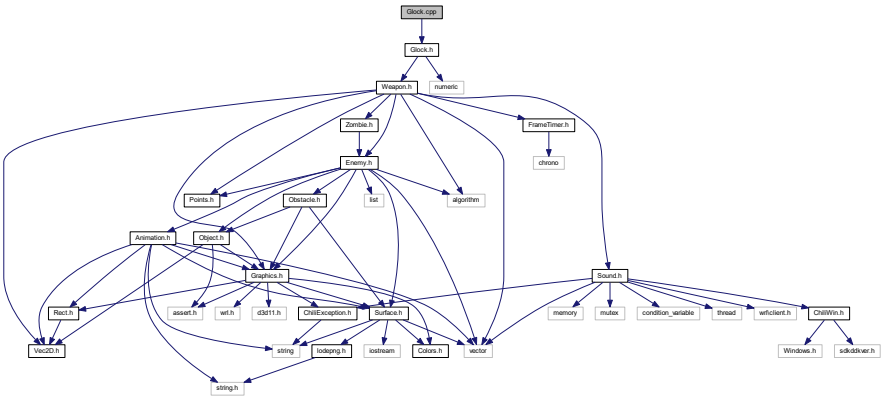
Classes

- class Game

7.24 Glock.cpp File Reference

```
#include "Glock.h"
```

Include dependency graph for Glock.cpp:



Functions

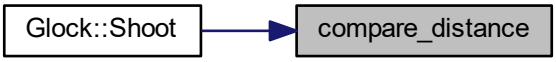
- bool compare_distance (std::unique_ptr< Enemy > &obj1, std::unique_ptr< Enemy > &obj2)
- bool compare_distance2 (Obstacle obj1, Obstacle obj2)

7.24.1 Function Documentation

7.24.1.1 compare_distance()

```
bool compare_distance (
            std::unique_ptr< Enemy > & obj1,
            std::unique_ptr< Enemy > & obj2 )
```

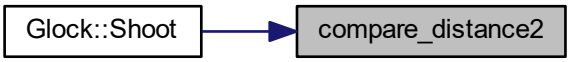
Here is the caller graph for this function:



7.24.1.2 compare_distance2()

```
bool compare_distance2 (
            Obstacle obj1,
            Obstacle obj2 )
```

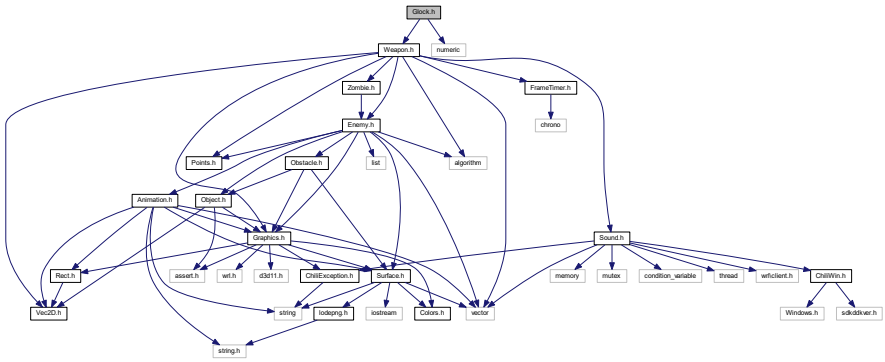
Here is the caller graph for this function:



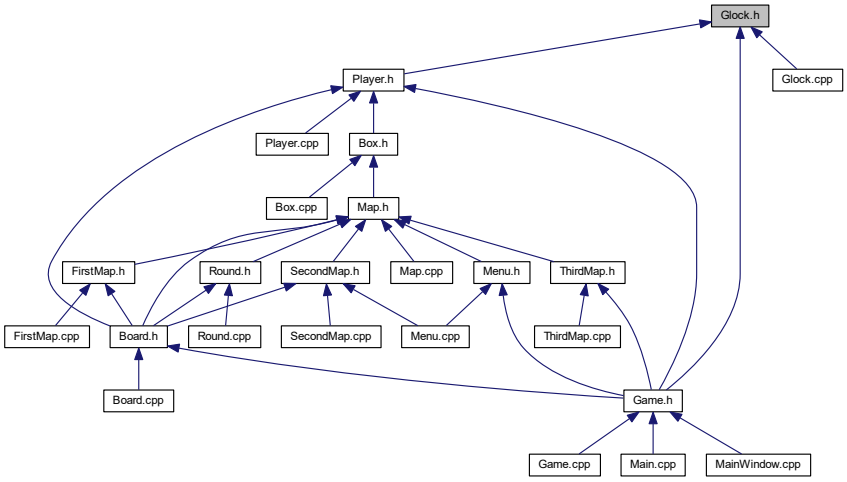
7.25 Glock.h File Reference

```
#include "Weapon.h"
#include <numeric>
```

Include dependency graph for Glock.h:



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



Classes

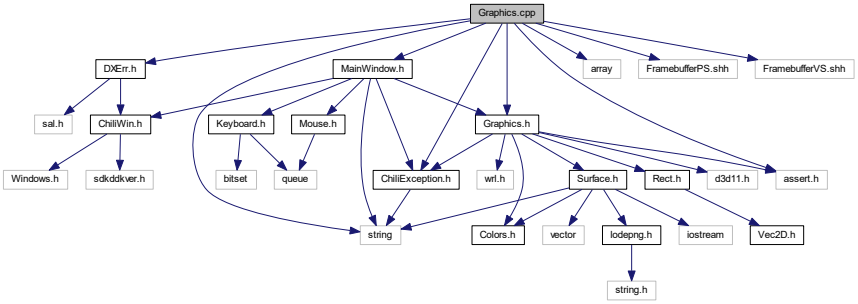
- class Glock

7.26 Graphics.cpp File Reference

```
#include "MainWindow.h"
#include "Graphics.h"
#include "DXErr.h"
#include "ChiliException.h"
```

```
#include <assert.h>
#include <string>
#include <array>
#include "FramebufferPS.shh"
#include "FramebufferVS.shh"
```

Include dependency graph for Graphics.cpp:



Namespaces

- FramebufferShaders

Macros

- #define CHILI_GFX_EXCEPTION(hr, note) Graphics::Exception(hr,note,_CRT_WIDE(__FILE__),__LINE↩ __)

7.26.1 Macro Definition Documentation

7.26.1.1 CHILI_GFX_EXCEPTION

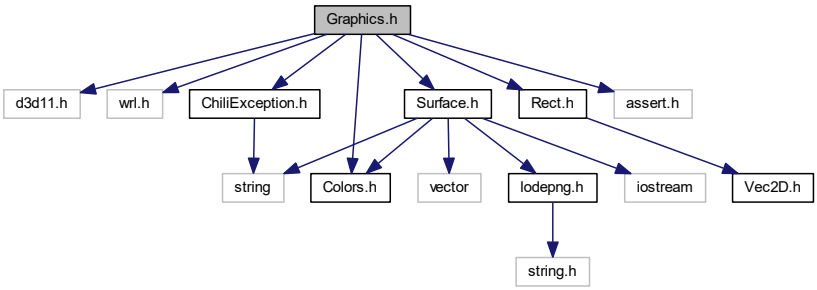
```
#define CHILI_GFX_EXCEPTION(
            hr,
            note ) Graphics::Exception( hr,note,_CRT_WIDE(__FILE__),__LINE__ )
```

7.27 Graphics.h File Reference

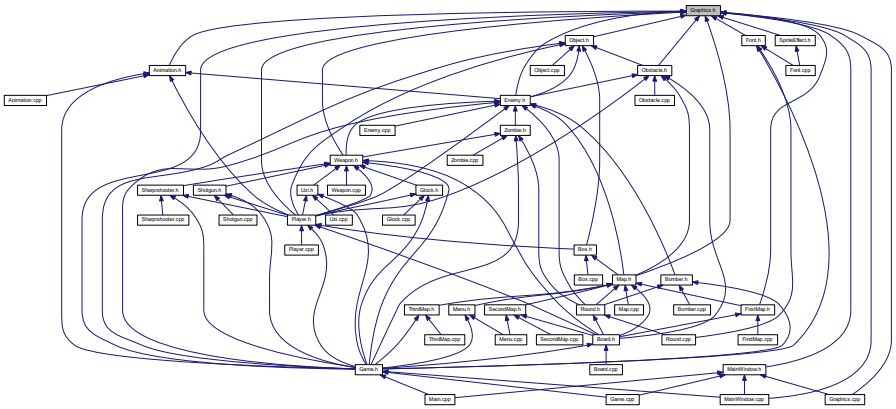
```
#include <d3d11.h>
#include <wrl.h>
#include "ChiliException.h"
#include "Colors.h"
#include "Surface.h"
#include "Rect.h"
```

```
#include <assert.h>
```

Include dependency graph for Graphics.h:



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



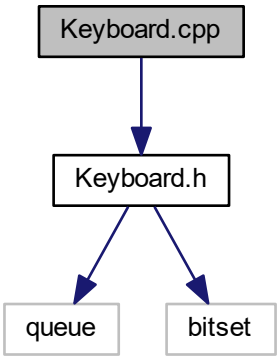
Classes

- class Graphics
- class Graphics::Exception

7.28 Keyboard.cpp File Reference

```
#include "Keyboard.h"
```

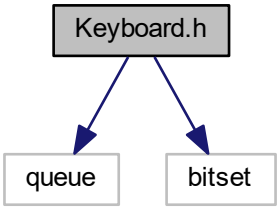
Include dependency graph for Keyboard.cpp:



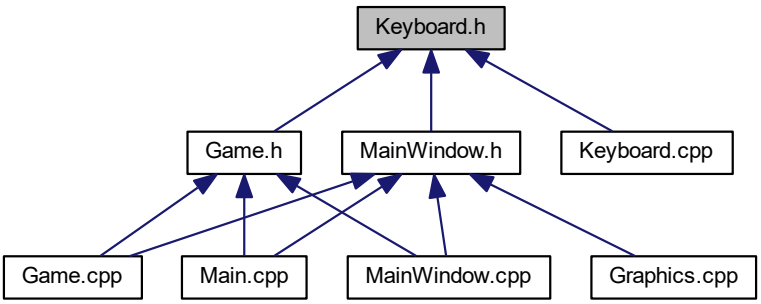
7.29 Keyboard.h File Reference

```
#include <queue>
#include <bitset>
```

Include dependency graph for Keyboard.h:



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



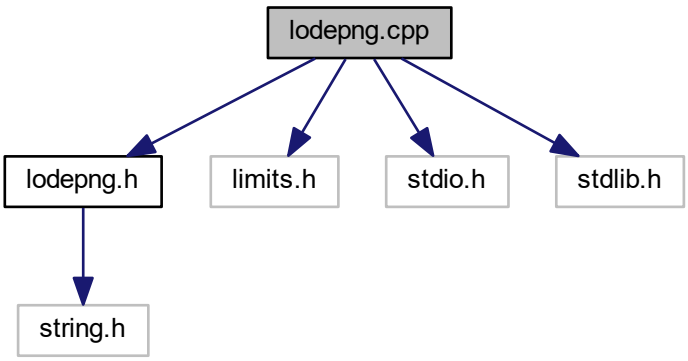
Classes

- class Keyboard
- class Keyboard::Event

7.30 lodepng.cpp File Reference

```
#include "lodepng.h"
#include <limits.h>
#include <stdio.h>
#include <stdlib.h>
```

Include dependency graph for lodepng.cpp:



Classes

- struct uivector
- struct ucvector
- struct LodePNGBitWriter
- struct LodePNGBitReader
- struct HuffmanTree
- struct BPMNode
- struct BPMLists
- struct Hash
- struct ColorTree

Macros

- #define LODEPNG_INLINE /∗ not available ∗/
- #define LODEPNG_RESTRICT /∗ not available ∗/
- #define LODEPNG_MAX(a, b) (((a) > (b)) ? (a) : (b))
- #define LODEPNG_MIN(a, b) (((a) < (b)) ? (a) : (b))
- #define LODEPNG_ABS(x) ((x) < 0 ? -(x) : (x))
- #define CERROR_BREAK(errorvar, code)
- #define ERROR_BREAK(code) CERROR_BREAK(error, code)
- #define CERROR_RETURN_ERROR(errorvar, code)
- #define CERROR_TRY_RETURN(call)
- #define CERROR_RETURN(errorvar, code)
- #define WRITEBIT(writer, bit)
- #define FIRST_LENGTH_CODE_INDEX 257
- #define LAST_LENGTH_CODE_INDEX 285
- #define NUM_DEFLATE_CODE_SYMBOLS 288
- #define NUM_DISTANCE_SYMBOLS 32
- #define NUM_CODE_LENGTH_CODES 19
- #define FIRSTBITS 9u
- #define INVALIDSYMBOL 65535u
- #define DEFAULT_WINDOWSIZE 2048

Typedefs

- typedef struct uivector uivector
- typedef struct ucvector ucvector
- typedef struct HuffmanTree HuffmanTree
- typedef struct BPMNode BPMNode
- typedef struct BPMLists BPMLists
- typedef struct Hash Hash
- typedef struct ColorTree ColorTree

Functions

- unsigned lodepng_load_file (unsigned char **out, size_t *outsize, const char *filename)
- unsigned lodepng_save_file (const unsigned char *buffer, size_t buffersize, const char *filename)
- unsigned lode_png_test_bitreader (const unsigned char *data, size_t size, size_t numsteps, const size_t *steps, unsigned *result)
- unsigned lodepng_huffman_code_lengths (unsigned *lengths, const unsigned *frequencies, size_t numcodes, unsigned maxbitlen)
- unsigned lodepng_inflate (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGDecompressSettings *settings)
- unsigned lodepng_deflate (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGCompressSettings *settings)
- unsigned lodepng_zlib_decompress (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGDecompressSettings *settings)
- unsigned lodepng_zlib_compress (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGCompressSettings *settings)
- void lodepng_compress_settings_init (LodePNGCompressSettings *settings)
- void lodepng_decompress_settings_init (LodePNGDecompressSettings *settings)
- unsigned lodepng_crc32 (const unsigned char *data, size_t length)
- unsigned lodepng_chunk_length (const unsigned char *chunk)
- void lodepng_chunk_type (char type[5], const unsigned char *chunk)
- unsigned char lodepng_chunk_type_equals (const unsigned char *chunk, const char *type)
- unsigned char lodepng_chunk_ancillary (const unsigned char *chunk)
- unsigned char lodepng_chunk_private (const unsigned char *chunk)
- unsigned char lodepng_chunk_safetocopy (const unsigned char *chunk)
- unsigned char * lodepng_chunk_data (unsigned char *chunk)
- const unsigned char * lodepng_chunk_data_const (const unsigned char *chunk)
- unsigned lodepng_chunk_check_crc (const unsigned char *chunk)
- void lodepng_chunk_generate_crc (unsigned char *chunk)
- unsigned char * lodepng_chunk_next (unsigned char *chunk, unsigned char *end)
- const unsigned char * lodepng_chunk_next_const (const unsigned char *chunk, const unsigned char *end)
- unsigned char * lodepng_chunk_find (unsigned char *chunk, unsigned char *end, const char type[5])
- const unsigned char * lodepng_chunk_find_const (const unsigned char *chunk, const unsigned char *end, const char type[5])
- unsigned lodepng_chunk_append (unsigned char **out, size_t *outsize, const unsigned char *chunk)
- unsigned lodepng_chunk_create (unsigned char **out, size_t *outsize, unsigned length, const char *type, const unsigned char *data)
- void lodepng_color_mode_init (LodePNGColorMode *info)
- void lodepng_color_mode_cleanup (LodePNGColorMode *info)
- unsigned lodepng_color_mode_copy (LodePNGColorMode *dest, const LodePNGColorMode *source)
- LodePNGColorMode lodepng_color_mode_make (LodePNGColorType colortype, unsigned bitdepth)
- void lodepng_palette_clear (LodePNGColorMode *info)
- unsigned lodepng_palette_add (LodePNGColorMode *info, unsigned char r, unsigned char g, unsigned char b, unsigned char a)
- unsigned lodepng_get_bpp (const LodePNGColorMode *info)
- unsigned lodepng_get_channels (const LodePNGColorMode *info)
- unsigned lodepng_is_greyscale_type (const LodePNGColorMode *info)
- unsigned lodepng_is_alpha_type (const LodePNGColorMode *info)
- unsigned lodepng_is_palette_type (const LodePNGColorMode *info)
- unsigned lodepng_has_palette_alpha (const LodePNGColorMode *info)
- unsigned lodepng_can_have_alpha (const LodePNGColorMode *info)
- size_t lodepng_get_raw_size (unsigned w, unsigned h, const LodePNGColorMode *color)
- unsigned lodepng_add_text (LodePNGInfo *info, const char *key, const char *str)
- void lodepng_clear_text (LodePNGInfo *info)
- void lodepng_clear_itext (LodePNGInfo *info)

- unsigned lodepng_add_itext (LodePNGInfo *info, const char *key, const char *langtag, const char *transkey, const char *str)
- unsigned lodepng_set_icc (LodePNGInfo *info, const char *name, const unsigned char *profile, unsigned profile_size)
- void lodepng_clear_icc (LodePNGInfo *info)
- void lodepng_info_init (LodePNGInfo *info)
- void lodepng_info_cleanup (LodePNGInfo *info)
- unsigned lodepng_info_copy (LodePNGInfo *dest, const LodePNGInfo *source)
- unsigned lodepng_convert (unsigned char *out, const unsigned char *in, const LodePNGColorMode *mode_out, const LodePNGColorMode *mode_in, unsigned w, unsigned h)
- unsigned lodepng_convert_rgb (unsigned *r_out, unsigned *g_out, unsigned *b_out, unsigned r_in, unsigned g_in, unsigned b_in, const LodePNGColorMode *mode_out, const LodePNGColorMode *mode_in)
- void lodepng_color_stats_init (LodePNGColorStats *stats)
- unsigned lodepng_compute_color_stats (LodePNGColorStats *stats, const unsigned char *in, unsigned w, unsigned h, const LodePNGColorMode *mode_in)
- unsigned lodepng_inspect (unsigned *w, unsigned *h, LodePNGState *state, const unsigned char *in, size↩_t insize)
- unsigned lodepng_inspect_chunk (LodePNGState *state, size_t pos, const unsigned char *in, size_t insize)
- unsigned lodepng_decode (unsigned char **out, unsigned *w, unsigned *h, LodePNGState *state, const unsigned char *in, size_t insize)
- unsigned lodepng_decode_memory (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_decode32 (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize)
- unsigned lodepng_decode24 (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize)
- unsigned lodepng_decode_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_decode32_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename)
- unsigned lodepng_decode24_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename)
- void lodepng_decoder_settings_init (LodePNGDecoderSettings *settings)
- void lodepng_state_init (LodePNGState *state)
- void lodepng_state_cleanup (LodePNGState *state)
- void lodepng_state_copy (LodePNGState *dest, const LodePNGState *source)
- unsigned lodepng_encode (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h, LodePNGState *state)
- unsigned lodepng_encode_memory (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_encode32 (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode24 (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode_file (const char *filename, const unsigned char *image, unsigned w, unsigned h, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_encode32_file (const char *filename, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode24_file (const char *filename, const unsigned char *image, unsigned w, unsigned h)
- void lodepng_encoder_settings_init (LodePNGEncoderSettings *settings)
- const char * lodepng_error_text (unsigned code)

Variables

- const char * LODEPNG_VERSION_STRING = "20200306"
- const LodePNGCompressSettings lodepng_default_compress_settings = { 2, 1, DEFAULT_WINDOWSIZE, 3, 128, 1, 0, 0, 0 }
- const LodePNGDecompressSettings lodepng_default_decompress_settings = { 0, 0, 0, 0, 0 }

7.30.1 Macro Definition Documentation

7.30.1.1 CERROR_BREAK

```
#define CERROR_BREAK(
            errorvar,
            code )
```

Value:

```
  {\
  errorvar = code;\
  break;\
}
```

7.30.1.2 CERROR_RETURN

```
#define CERROR_RETURN(
            errorvar,
            code )
```

Value:

```
  {\
  errorvar = code;\
  return;\
}
```

7.30.1.3 CERROR_RETURN_ERROR

```
#define CERROR_RETURN_ERROR(
            errorvar,
            code )
```

Value:

```
  {\
  errorvar = code;\
  return code;\
}
```

7.30.1.4 CERROR_TRY_RETURN

```
#define CERROR_TRY_RETURN(
            call )
```

Value:

```
  {\
  unsigned error = call;\
  if(error) return error;\
}
```

7.30.1.5 DEFAULT_WINDOWSIZE

```
#define DEFAULT_WINDOWSIZE 2048
```

7.30.1.6 ERROR_BREAK

```
#define ERROR_BREAK(
            code ) CERROR_BREAK(error, code)
```

7.30.1.7 FIRST_LENGTH_CODE_INDEX

```
#define FIRST_LENGTH_CODE_INDEX 257
```

7.30.1.8 FIRSTBITS

```
#define FIRSTBITS 9u
```

7.30.1.9 INVALIDSYMBOL

```
#define INVALIDSYMBOL 65535u
```

7.30.1.10 LAST_LENGTH_CODE_INDEX

```
#define LAST_LENGTH_CODE_INDEX 285
```

7.30.1.11 LODEPNG_ABS

```
#define LODEPNG_ABS(
            x ) ((x) < 0 ? -(x) : (x))
```

7.30.1.12 LODEPNG_INLINE

```
#define LODEPNG_INLINE /* not available */
```

7.30.1.13 LODEPNG_MAX

```
#define LODEPNG_MAX(
            a,
            b ) (((a) > (b)) ?  (a) :  (b))
```

7.30.1.14 LODEPNG_MIN

```
#define LODEPNG_MIN(
            a,
            b ) (((a) < (b)) ?  (a) :  (b))
```

7.30.1.15 LODEPNG_RESTRICT

```
#define LODEPNG_RESTRICT /* not available */
```

7.30.1.16 NUM_CODE_LENGTH_CODES

```
#define NUM_CODE_LENGTH_CODES 19
```

7.30.1.17 NUM_DEFLATE_CODE_SYMBOLS

```
#define NUM_DEFLATE_CODE_SYMBOLS 288
```

7.30.1.18 NUM_DISTANCE_SYMBOLS

```
#define NUM_DISTANCE_SYMBOLS 32
```

7.30.1.19 WRITEBIT

```
#define WRITEBIT(
            writer,
            bit )
```

Value:

```
  {\
  /* append new byte */\
  if(((writer->bp) & 7u) == 0) {\
    if(!ucvector_resize(writer->data, writer->data->size + 1)) return;\
    writer->data->data[writer->data->size - 1] = 0;\
  }\
  (writer->data->data[writer->data->size - 1]) |= (bit « ((writer->bp) & 7u));\
  ++writer->bp;\
}
```

7.30.2 Typedef Documentation

7.30.2.1 BPMLists

```
typedef struct BPMLists BPMLists
```

7.30.2.2 BPMNode

```
typedef struct BPMNode BPMNode
```

7.30.2.3 ColorTree

```
typedef struct ColorTree ColorTree
```

7.30.2.4 Hash

```
typedef struct Hash Hash
```

7.30.2.5 HuffmanTree

```
typedef struct HuffmanTree HuffmanTree
```

7.30.2.6 ucvector

```
typedef struct ucvector ucvector
```

7.30.2.7 uivector

```
typedef struct uivector uivector
```

7.30.3 Function Documentation

7.30.3.1 lode_png_test_bitreader()

```
unsigned lode_png_test_bitreader (
            const unsigned char * data,
            size_t size,
            size_t numsteps,
            const size_t * steps,
            unsigned * result )
```

7.30.3.2 lodepng_add_itext()

```
unsigned lodepng_add_itext (
            LodePNGInfo * info,
            const char * key,
            const char * langtag,
            const char * transkey,
            const char * str )
```

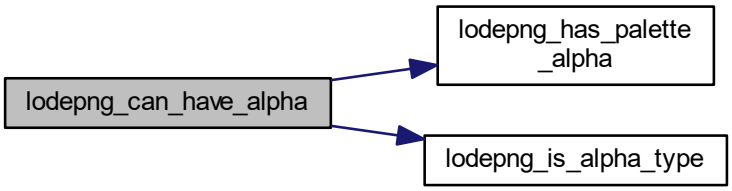
7.30.3.3 lodepng_add_text()

```
unsigned lodepng_add_text (
            LodePNGInfo * info,
            const char * key,
            const char * str )
```

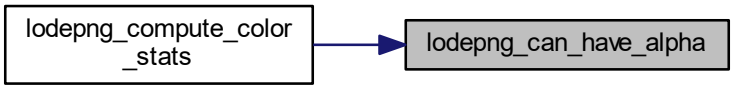
7.30.3.4 lodepng_can_have_alpha()

```
unsigned lodepng_can_have_alpha (
            const LodePNGColorMode * info )
```

Here is the call graph for this function:



Here is the caller graph for this function:



7.30.3.5 lodepng_chunk_ancillary()

```
unsigned char lodepng_chunk_ancillary (
            const unsigned char * chunk )
```

7.30.3.6 lodepng_chunk_append()

```
unsigned lodepng_chunk_append (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * chunk )
```

7.30.3.7 lodepng_chunk_check_crc()

```
unsigned lodepng_chunk_check_crc (
            const unsigned char * chunk )
```

Here is the call graph for this function:

7.30.3.8 lodepng_chunk_create()

```
unsigned lodepng_chunk_create (
            unsigned char ** out,
            size_t * outsize,
            unsigned length,
            const char * type,
            const unsigned char * data )
```

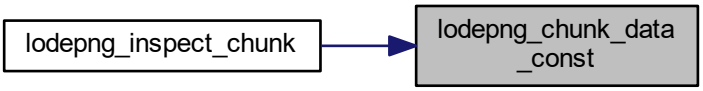
7.30.3.9 lodepng_chunk_data()

```
unsigned char* lodepng_chunk_data (
            unsigned char * chunk )
```

7.30.3.10 lodepng_chunk_data_const()

```
const unsigned char* lodepng_chunk_data_const (
            const unsigned char * chunk )
```

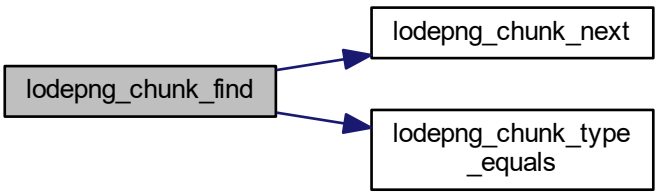
Here is the caller graph for this function:



7.30.3.11 lodepng_chunk_find()

```
unsigned char* lodepng_chunk_find (
            unsigned char * chunk,
            unsigned char * end,
            const char type[5] )
```

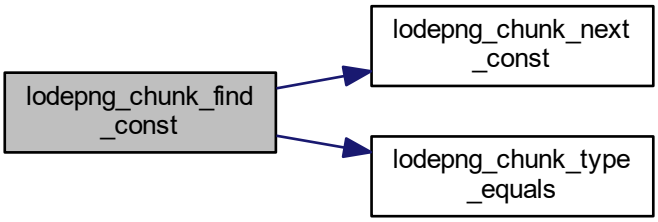
Here is the call graph for this function:



7.30.3.12 lodepng_chunk_find_const()

```
const unsigned char* lodepng_chunk_find_const (
            const unsigned char * chunk,
            const unsigned char * end,
            const char type[5] )
```

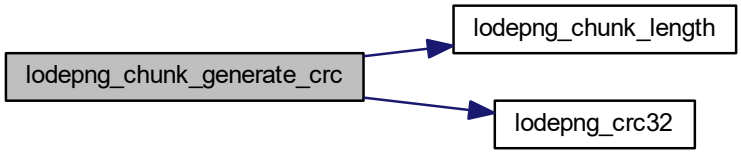
Here is the call graph for this function:



7.30.3.13 lodepng_chunk_generate_crc()

```
void lodepng_chunk_generate_crc (
            unsigned char * chunk )
```

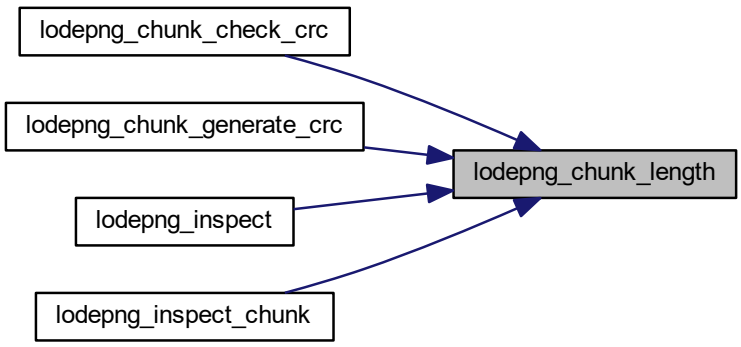
Here is the call graph for this function:



7.30.3.14 lodepng_chunk_length()

```
unsigned lodepng_chunk_length (
            const unsigned char * chunk )
```

Here is the caller graph for this function:



7.30.3.15 lodepng_chunk_next()

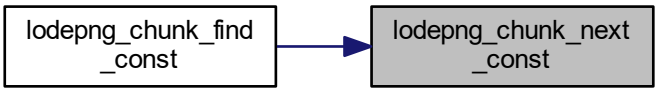
```
unsigned char* lodepng_chunk_next (
            unsigned char * chunk,
            unsigned char * end )
```

Here is the caller graph for this function:

7.30.3.16 lodepng_chunk_next_const()

```
const unsigned char* lodepng_chunk_next_const (
            const unsigned char * chunk,
            const unsigned char * end )
```

Here is the caller graph for this function:



7.30.3.17 lodepng_chunk_private()

```
unsigned char lodepng_chunk_private (
            const unsigned char * chunk )
```

7.30.3.18 lodepng_chunk_safetocopy()

```
unsigned char lodepng_chunk_safetocopy (
            const unsigned char * chunk )
```

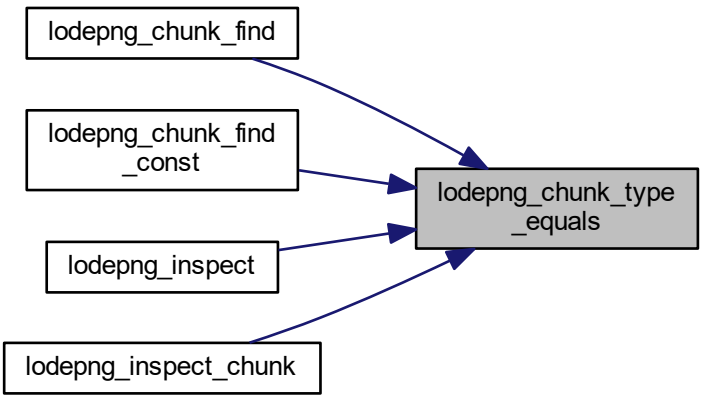
7.30.3.19 lodepng_chunk_type()

```
void lodepng_chunk_type (
            char type[5],
            const unsigned char * chunk )
```

7.30.3.20 lodepng_chunk_type_equals()

```
unsigned char lodepng_chunk_type_equals (
            const unsigned char * chunk,
            const char * type )
```

Here is the caller graph for this function:



7.30.3.21 lodepng_clear_icc()

```
void lodepng_clear_icc (
            LodePNGInfo * info )
```

Here is the caller graph for this function:

7.30.3.22 lodepng_clear_itext()

```
void lodepng_clear_itext (
            LodePNGInfo * info )
```

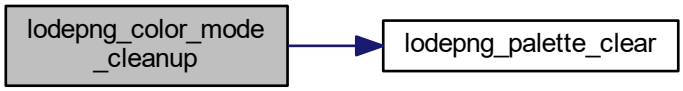
7.30.3.23 lodepng_clear_text()

```
void lodepng_clear_text (
            LodePNGInfo * info )
```

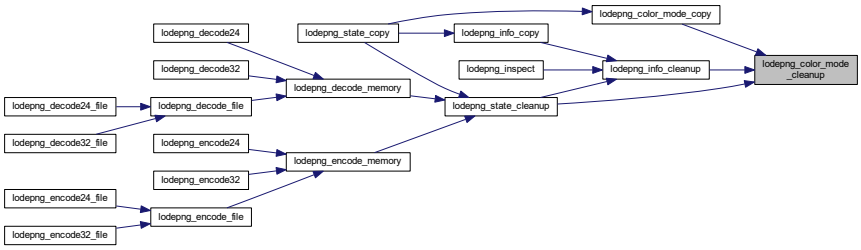
7.30.3.24 lodepng_color_mode_cleanup()

```
void lodepng_color_mode_cleanup (
            LodePNGColorMode * info )
```

Here is the call graph for this function:



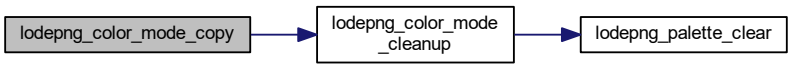
Here is the caller graph for this function:



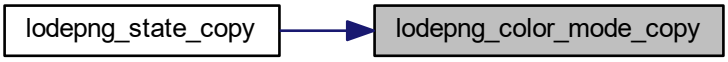
7.30.3.25 lodepng_color_mode_copy()

```
unsigned lodepng_color_mode_copy (
            LodePNGColorMode * dest,
            const LodePNGColorMode * source )
```

Here is the call graph for this function:



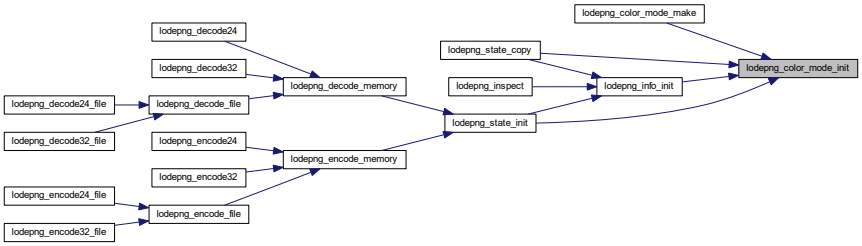
Here is the caller graph for this function:



7.30.3.26 lodepng_color_mode_init()

```
void lodepng_color_mode_init (
            LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.30.3.27 lodepng_color_mode_make()

```
LodePNGColorMode lodepng_color_mode_make (
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:

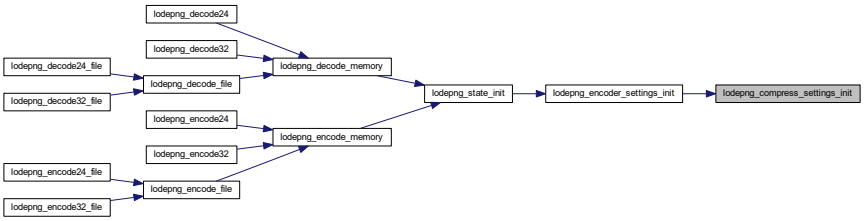
7.30.3.28 lodepng_color_stats_init()

```
void lodepng_color_stats_init (
            LodePNGColorStats * stats )
```

7.30.3.29 lodepng_compress_settings_init()

```
void lodepng_compress_settings_init (
            LodePNGCompressSettings * settings )
```

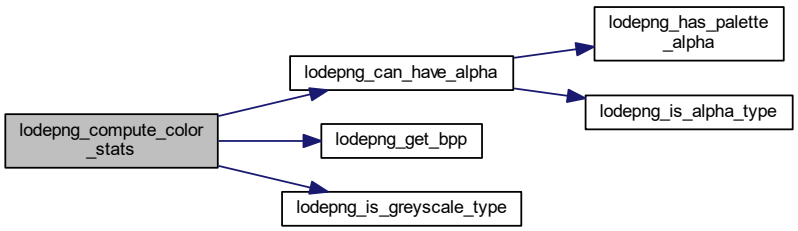
Here is the caller graph for this function:



7.30.3.30 lodepng_compute_color_stats()

```
unsigned lodepng_compute_color_stats (
            LodePNGColorStats * stats,
            const unsigned char * in,
            unsigned w,
            unsigned h,
            const LodePNGColorMode * mode_in )
```

Here is the call graph for this function:



7.30.3.31 lodepng_convert()

```
unsigned lodepng_convert (
            unsigned char * out,
            const unsigned char * in,
            const LodePNGColorMode * mode_out,
            const LodePNGColorMode * mode_in,
            unsigned w,
            unsigned h )
```

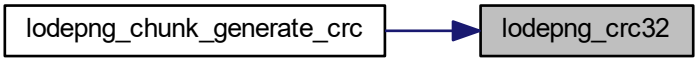
7.30.3.32 lodepng_convert_rgb()

```
unsigned lodepng_convert_rgb (
            unsigned * r_out,
            unsigned * g_out,
            unsigned * b_out,
            unsigned r_in,
            unsigned g_in,
            unsigned b_in,
            const LodePNGColorMode * mode_out,
            const LodePNGColorMode * mode_in )
```

7.30.3.33 lodepng_crc32()

```
unsigned lodepng_crc32 (
            const unsigned char * data,
            size_t length )
```

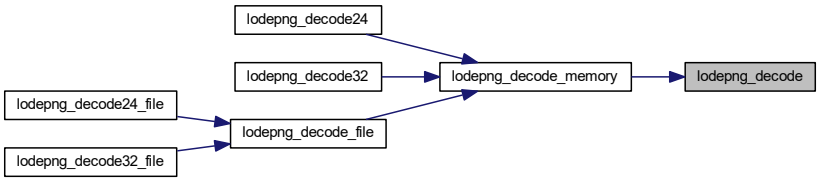
Here is the caller graph for this function:



7.30.3.34 lodepng_decode()

```
unsigned lodepng_decode (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            LodePNGState * state,
            const unsigned char * in,
            size_t insize )
```

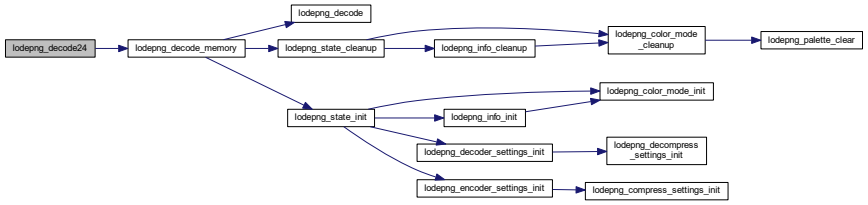
Here is the caller graph for this function:



7.30.3.35 lodepng_decode24()

```
unsigned lodepng_decode24 (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const unsigned char * in,
            size_t insize )
```

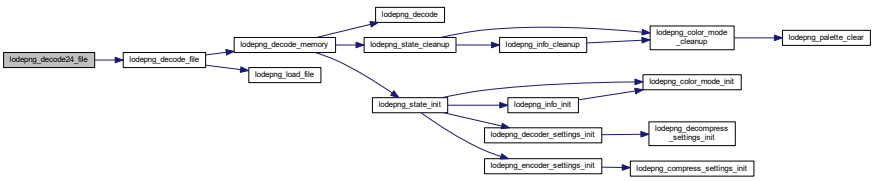
Here is the call graph for this function:



7.30.3.36 lodepng_decode24_file()

```
unsigned lodepng_decode24_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename )
```

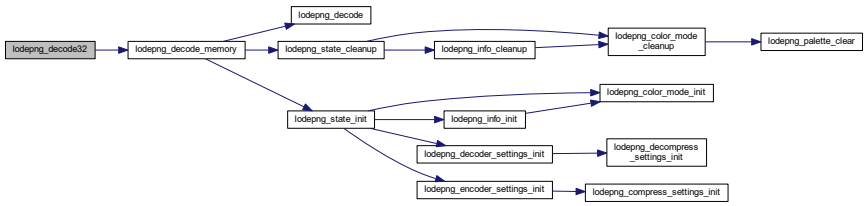
Here is the call graph for this function:



7.30.3.37 lodepng_decode32()

```
unsigned lodepng_decode32 (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const unsigned char * in,
            size_t insize )
```

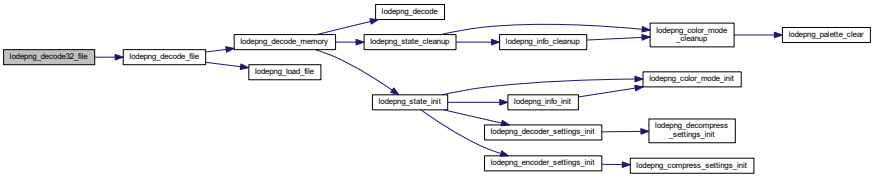
Here is the call graph for this function:



7.30.3.38 lodepng_decode32_file()

```
unsigned lodepng_decode32_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename )
```

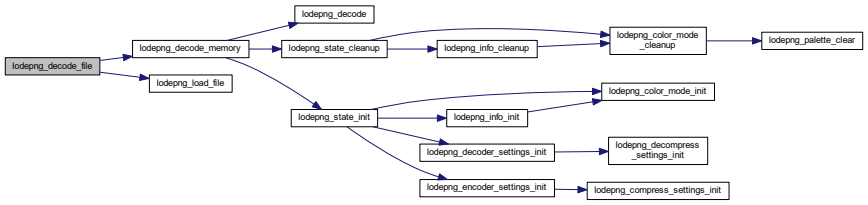
Here is the call graph for this function:



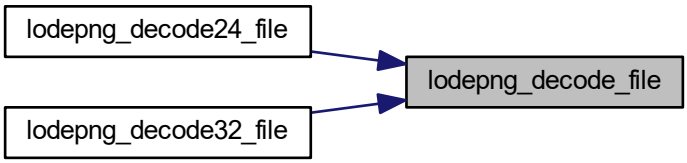
7.30.3.39 lodepng_decode_file()

```
unsigned lodepng_decode_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



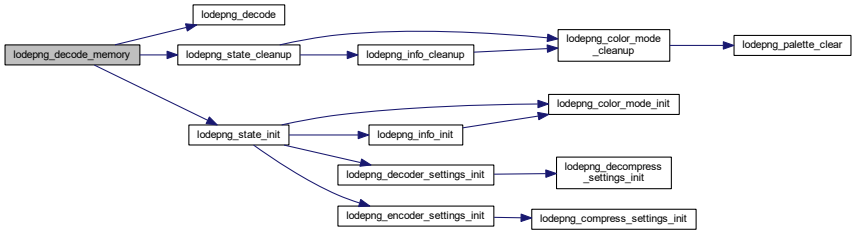
Here is the caller graph for this function:



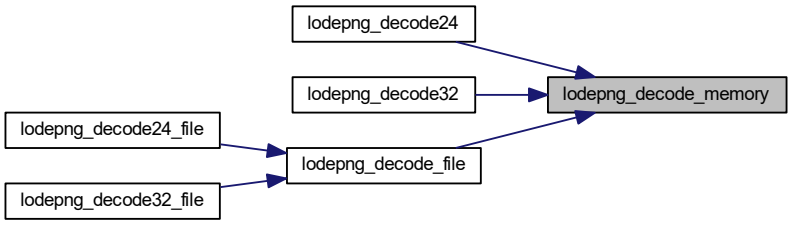
7.30.3.40 lodepng_decode_memory()

```
unsigned lodepng_decode_memory (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const unsigned char * in,
            size_t insize,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



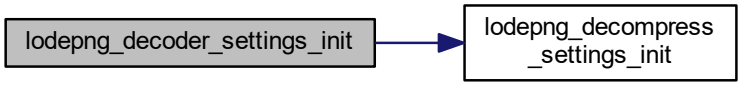
Here is the caller graph for this function:



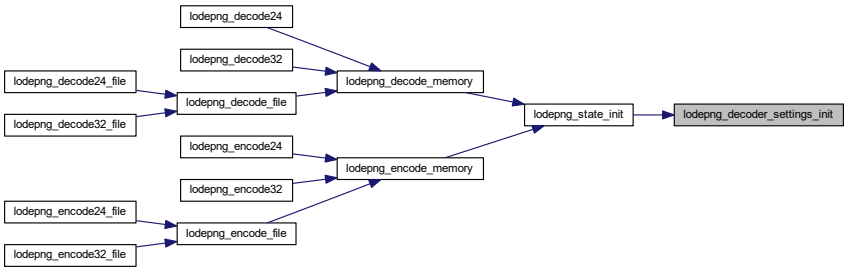
7.30.3.41 lodepng_decoder_settings_init()

```
void lodepng_decoder_settings_init (
            LodePNGDecoderSettings * settings )
```

Here is the call graph for this function:



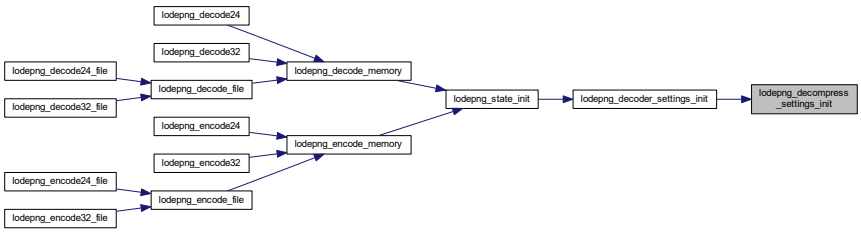
Here is the caller graph for this function:



7.30.3.42 lodepng_decompress_settings_init()

```
void lodepng_decompress_settings_init (
            LodePNGDecompressSettings * settings )
```

Here is the caller graph for this function:



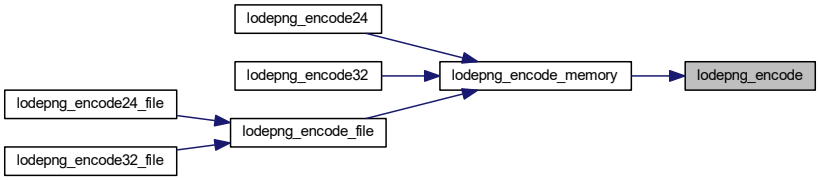
7.30.3.43 lodepng_deflate()

```
unsigned lodepng_deflate (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGCompressSettings * settings )
```

7.30.3.44 lodepng_encode()

```
unsigned lodepng_encode (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGState * state )
```

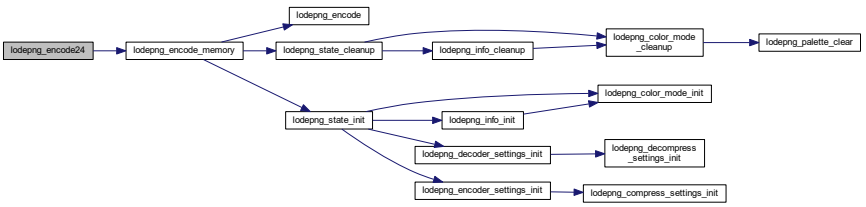
Here is the caller graph for this function:



7.30.3.45 lodepng_encode24()

```
unsigned lodepng_encode24 (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

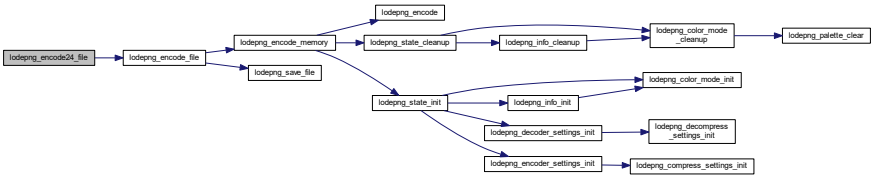
Here is the call graph for this function:



7.30.3.46 lodepng_encode24_file()

```
unsigned lodepng_encode24_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

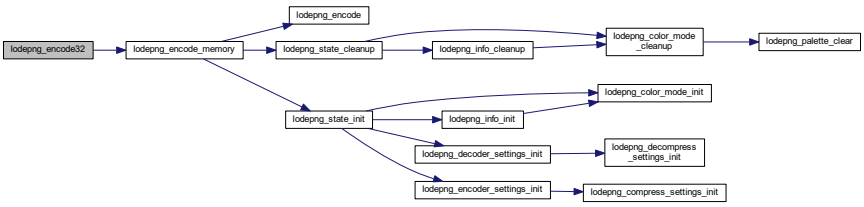
Here is the call graph for this function:



7.30.3.47 lodepng_encode32()

```
unsigned lodepng_encode32 (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

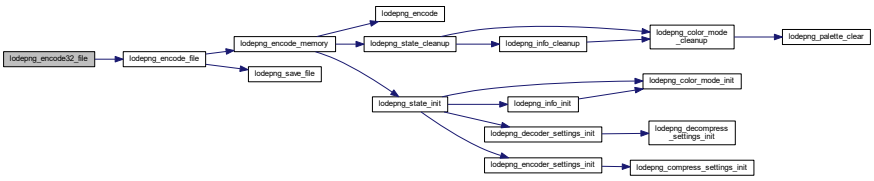
Here is the call graph for this function:



7.30.3.48 lodepng_encode32_file()

```
unsigned lodepng_encode32_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

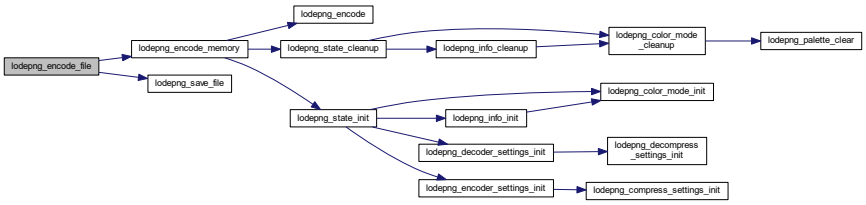
Here is the call graph for this function:



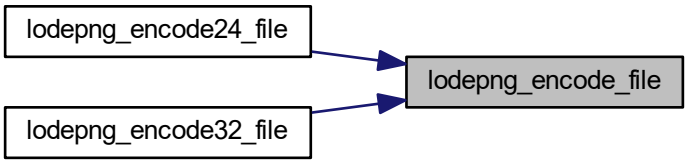
7.30.3.49 lodepng_encode_file()

```
unsigned lodepng_encode_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



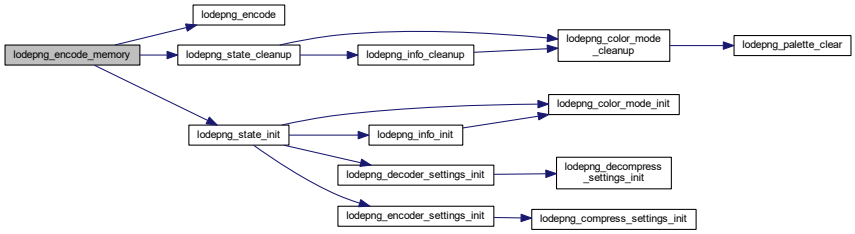
Here is the caller graph for this function:



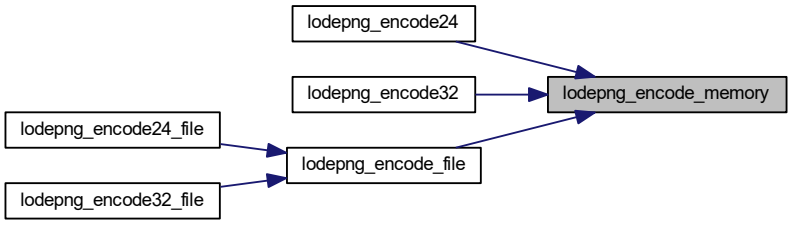
7.30.3.50 lodepng_encode_memory()

```
unsigned lodepng_encode_memory (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



Here is the caller graph for this function:

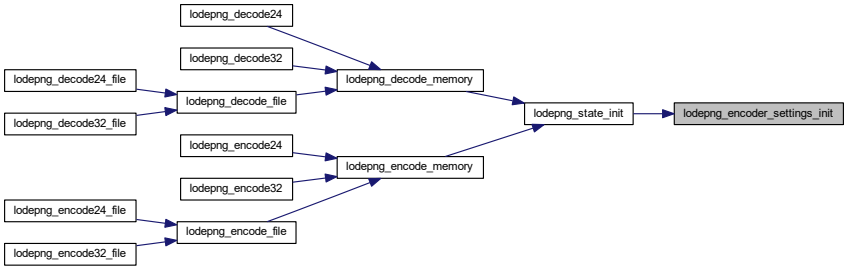


7.30.3.51 lodepng_encoder_settings_init()

```
void lodepng_encoder_settings_init (
            LodePNGEncoderSettings * settings )
```

Here is the call graph for this function:

Here is the caller graph for this function:



7.30.3.52 lodepng_error_text()

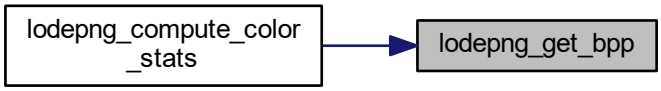
```
const char* lodepng_error_text (
            unsigned code )
```

Here is the caller graph for this function:

7.30.3.53 lodepng_get_bpp()

```
unsigned lodepng_get_bpp (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.30.3.54 lodepng_get_channels()

```
unsigned lodepng_get_channels (
            const LodePNGColorMode * info )
```

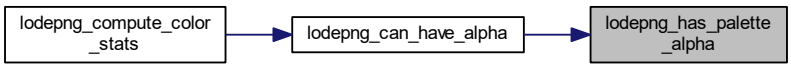
7.30.3.55 lodepng_get_raw_size()

```
size_t lodepng_get_raw_size (
            unsigned w,
            unsigned h,
            const LodePNGColorMode * color )
```

7.30.3.56 lodepng_has_palette_alpha()

```
unsigned lodepng_has_palette_alpha (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.30.3.57 lodepng_huffman_code_lengths()

```
unsigned lodepng_huffman_code_lengths (
            unsigned * lengths,
            const unsigned * frequencies,
            size_t numcodes,
            unsigned maxbitlen )
```

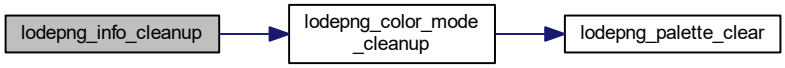
7.30.3.58 lodepng_inflate()

```
unsigned lodepng_inflate (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGDecompressSettings * settings )
```

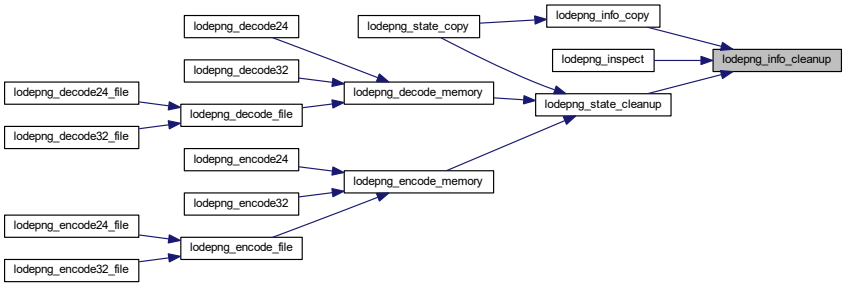
7.30.3.59 lodepng_info_cleanup()

```
void lodepng_info_cleanup (
            LodePNGInfo * info )
```

Here is the call graph for this function:



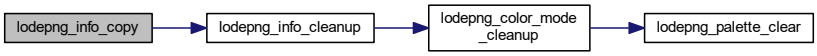
Here is the caller graph for this function:



7.30.3.60 lodepng_info_copy()

```
unsigned lodepng_info_copy (
            LodePNGInfo * dest,
            const LodePNGInfo * source )
```

Here is the call graph for this function:

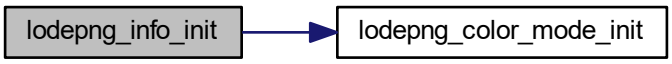


Here is the caller graph for this function:

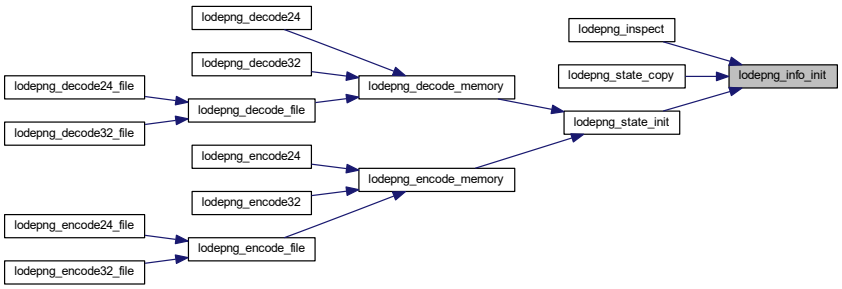
7.30.3.61 lodepng_info_init()

```
void lodepng_info_init (
            LodePNGInfo * info )
```

Here is the call graph for this function:



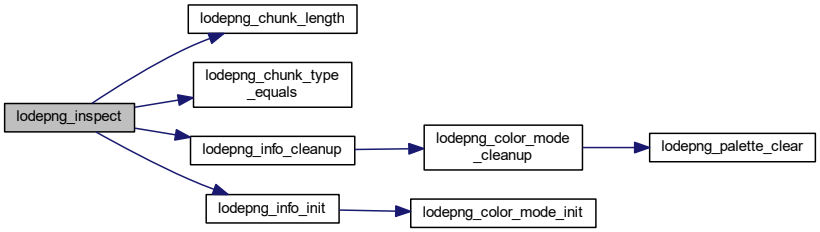
Here is the caller graph for this function:



7.30.3.62 lodepng_inspect()

```
unsigned lodepng_inspect (
            unsigned * w,
            unsigned * h,
            LodePNGState * state,
            const unsigned char * in,
            size_t insize )
```

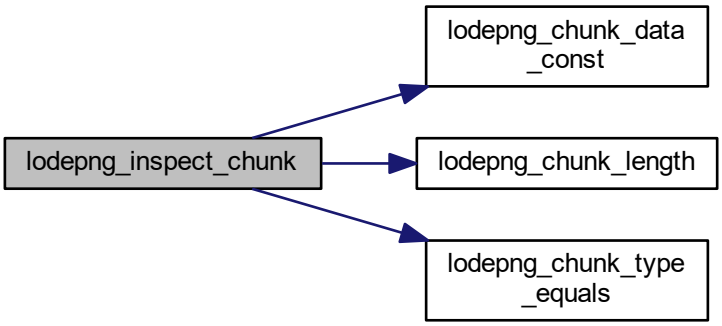
Here is the call graph for this function:



7.30.3.63 lodepng_inspect_chunk()

```
unsigned lodepng_inspect_chunk (
            LodePNGState * state,
            size_t pos,
            const unsigned char * in,
            size_t insize )
```

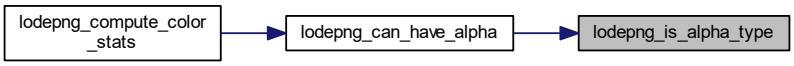
Here is the call graph for this function:



7.30.3.64 lodepng_is_alpha_type()

```
unsigned lodepng_is_alpha_type (
            const LodePNGColorMode * info )
```

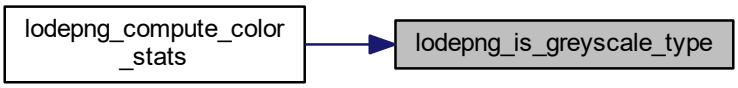
Here is the caller graph for this function:



7.30.3.65 lodepng_is_greyscale_type()

```
unsigned lodepng_is_greyscale_type (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



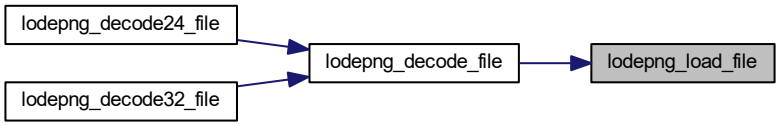
7.30.3.66 lodepng_is_palette_type()

```
unsigned lodepng_is_palette_type (
            const LodePNGColorMode * info )
```

7.30.3.67 lodepng_load_file()

```
unsigned lodepng_load_file (
            unsigned char ** out,
            size_t * outsize,
            const char * filename )
```

Here is the caller graph for this function:



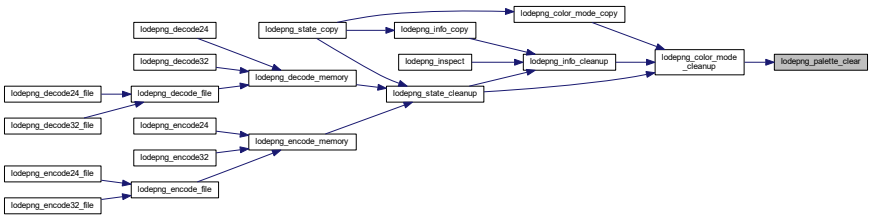
7.30.3.68 lodepng_palette_add()

```
unsigned lodepng_palette_add (
            LodePNGColorMode * info,
            unsigned char r,
            unsigned char g,
            unsigned char b,
            unsigned char a )
```

7.30.3.69 lodepng_palette_clear()

```
void lodepng_palette_clear (
            LodePNGColorMode * info )
```

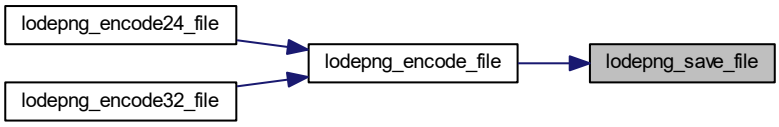
Here is the caller graph for this function:



7.30.3.70 lodepng_save_file()

```
unsigned lodepng_save_file (
            const unsigned char * buffer,
            size_t buffersize,
            const char * filename )
```

Here is the caller graph for this function:



7.30.3.71 lodepng_set_icc()

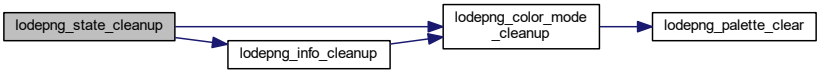
```
unsigned lodepng_set_icc (
            LodePNGInfo * info,
            const char * name,
            const unsigned char * profile,
            unsigned profile_size )
```

Here is the call graph for this function:

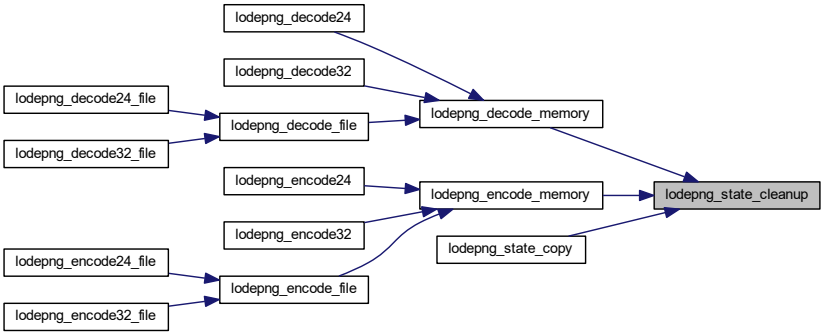
7.30.3.72 lodepng_state_cleanup()

```
void lodepng_state_cleanup (
            LodePNGState * state )
```

Here is the call graph for this function:



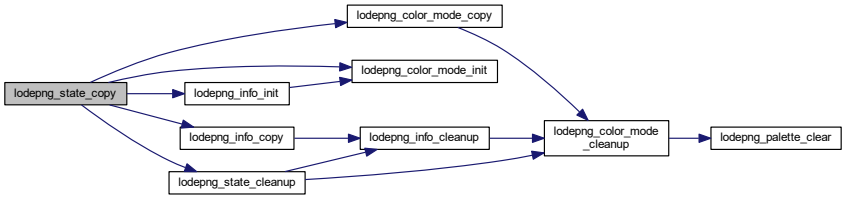
Here is the caller graph for this function:



7.30.3.73 lodepng_state_copy()

```
void lodepng_state_copy (
            LodePNGState * dest,
            const LodePNGState * source )
```

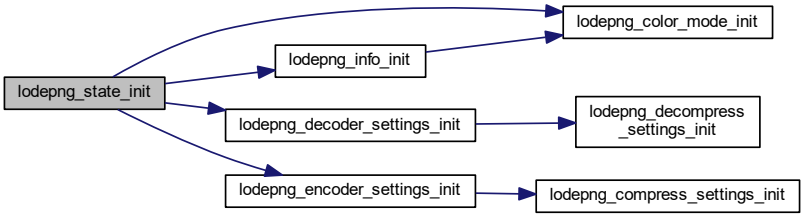
Here is the call graph for this function:



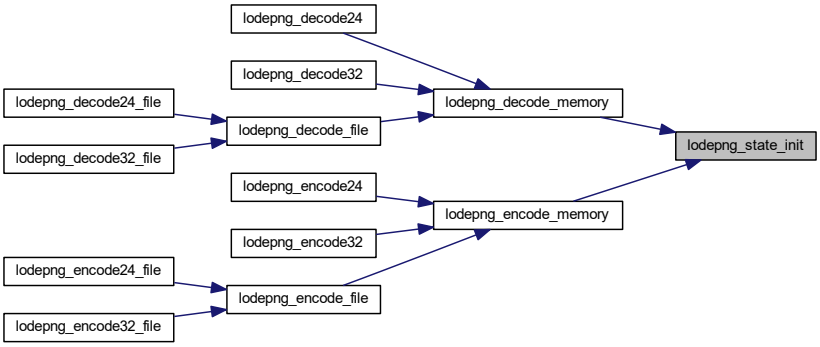
7.30.3.74 lodepng_state_init()

```
void lodepng_state_init (
            LodePNGState * state )
```

Here is the call graph for this function:



Here is the caller graph for this function:



7.30.3.75 lodepng_zlib_compress()

```
unsigned lodepng_zlib_compress (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGCompressSettings * settings )
```

7.30.3.76 lodepng_zlib_decompress()

```
unsigned lodepng_zlib_decompress (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGDecompressSettings * settings )
```

7.30.4 Variable Documentation

7.30.4.1 lodepng_default_compress_settings

```
const LodePNGCompressSettings lodepng_default_compress_settings = { 2, 1, DEFAULT_WINDOWSIZE,
3, 128, 1, 0, 0, 0 }
```

7.30.4.2 lodepng_default_decompress_settings

```
const LodePNGDecompressSettings lodepng_default_decompress_settings = { 0, 0, 0, 0, 0 }
```

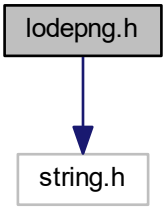
7.30.4.3 LODEPNG_VERSION_STRING

```
const char* LODEPNG_VERSION_STRING = "20200306"
```

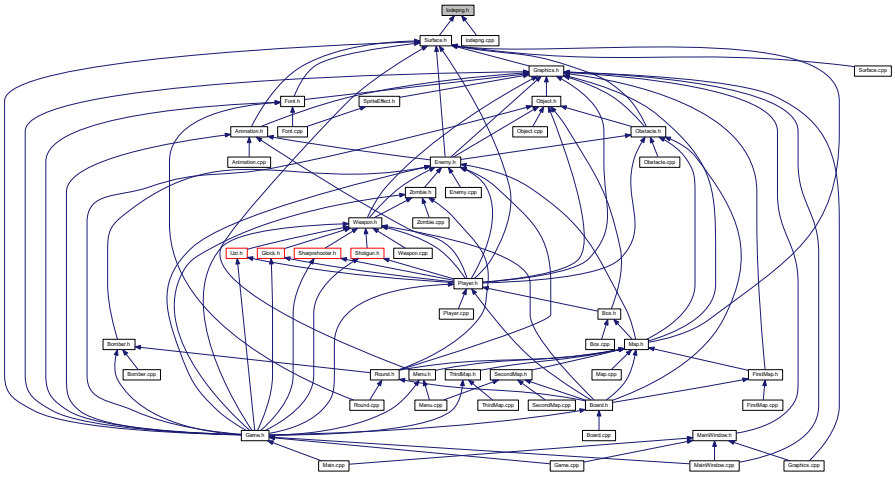
7.31 lodepng.h File Reference

`#include <string.h>`

Include dependency graph for lodepng.h:



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



Classes

- struct LodePNGDecompressSettings
- struct LodePNGCompressSettings
- struct LodePNGColorMode
- struct LodePNGTime
- struct LodePNGInfo
- struct LodePNGDecoderSettings
- struct LodePNGColorStats
- struct LodePNGEncoderSettings
- struct LodePNGState

Macros

- #define LODEPNG_COMPILE_ZLIB
- #define LODEPNG_COMPILE_PNG
- #define LODEPNG_COMPILE_DECODER
- #define LODEPNG_COMPILE_ENCODER
- #define LODEPNG_COMPILE_DISK
- #define LODEPNG_COMPILE_ANCILLARY_CHUNKS
- #define LODEPNG_COMPILE_ERROR_TEXT
- #define LODEPNG_COMPILE_ALLOCATORS

Typedefs

- typedef enum LodePNGColorType LodePNGColorType
- typedef struct LodePNGDecompressSettings LodePNGDecompressSettings
- typedef struct LodePNGCompressSettings LodePNGCompressSettings
- typedef struct LodePNGColorMode LodePNGColorMode
- typedef struct LodePNGTime LodePNGTime
- typedef struct LodePNGInfo LodePNGInfo
- typedef struct LodePNGDecoderSettings LodePNGDecoderSettings
- typedef enum LodePNGFilterStrategy LodePNGFilterStrategy
- typedef struct LodePNGColorStats LodePNGColorStats
- typedef struct LodePNGEncoderSettings LodePNGEncoderSettings
- typedef struct LodePNGState LodePNGState

Enumerations

- enum LodePNGColorType {
  LCT_GREY = 0, LCT_RGB = 2, LCT_PALETTE = 3, LCT_GREY_ALPHA = 4,
  LCT_RGBA = 6, LCT_MAX_OCTET_VALUE = 255 }
- enum LodePNGFilterStrategy {
  LFS_ZERO = 0, LFS_ONE = 1, LFS_TWO = 2, LFS_THREE = 3,
  LFS_FOUR = 4, LFS_MINSUM, LFS_ENTROPY, LFS_BRUTE_FORCE,
  LFS_PREDEFINED }

Functions

- unsigned lodepng_decode_memory (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_decode32 (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize)
- unsigned lodepng_decode24 (unsigned char **out, unsigned *w, unsigned *h, const unsigned char *in, size_t insize)
- unsigned lodepng_decode_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_decode32_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename)
- unsigned lodepng_decode24_file (unsigned char **out, unsigned *w, unsigned *h, const char *filename)
- unsigned lodepng_encode_memory (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_encode32 (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode24 (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode_file (const char *filename, const unsigned char *image, unsigned w, unsigned h, LodePNGColorType colortype, unsigned bitdepth)
- unsigned lodepng_encode32_file (const char *filename, const unsigned char *image, unsigned w, unsigned h)
- unsigned lodepng_encode24_file (const char *filename, const unsigned char *image, unsigned w, unsigned h)
- const char * lodepng_error_text (unsigned code)
- void lodepng_decompress_settings_init (LodePNGDecompressSettings *settings)
- void lodepng_compress_settings_init (LodePNGCompressSettings *settings)
- void lodepng_color_mode_init (LodePNGColorMode *info)
- void lodepng_color_mode_cleanup (LodePNGColorMode *info)
- unsigned lodepng_color_mode_copy (LodePNGColorMode *dest, const LodePNGColorMode *source)
- LodePNGColorMode lodepng_color_mode_make (LodePNGColorType colortype, unsigned bitdepth)
- void lodepng_palette_clear (LodePNGColorMode *info)
- unsigned lodepng_palette_add (LodePNGColorMode *info, unsigned char r, unsigned char g, unsigned char b, unsigned char a)
- unsigned lodepng_get_bpp (const LodePNGColorMode *info)
- unsigned lodepng_get_channels (const LodePNGColorMode *info)
- unsigned lodepng_is_greyscale_type (const LodePNGColorMode *info)
- unsigned lodepng_is_alpha_type (const LodePNGColorMode *info)
- unsigned lodepng_is_palette_type (const LodePNGColorMode *info)
- unsigned lodepng_has_palette_alpha (const LodePNGColorMode *info)
- unsigned lodepng_can_have_alpha (const LodePNGColorMode *info)
- size_t lodepng_get_raw_size (unsigned w, unsigned h, const LodePNGColorMode *color)
- void lodepng_info_init (LodePNGInfo *info)
- void lodepng_info_cleanup (LodePNGInfo *info)
- unsigned lodepng_info_copy (LodePNGInfo *dest, const LodePNGInfo *source)

- unsigned lodepng_add_text (LodePNGInfo *info, const char *key, const char *str)
- void lodepng_clear_text (LodePNGInfo *info)
- unsigned lodepng_add_itext (LodePNGInfo *info, const char *key, const char *langtag, const char *transkey, const char *str)
- void lodepng_clear_itext (LodePNGInfo *info)
- unsigned lodepng_set_icc (LodePNGInfo *info, const char *name, const unsigned char *profile, unsigned profile_size)
- void lodepng_clear_icc (LodePNGInfo *info)
- unsigned lodepng_convert (unsigned char *out, const unsigned char *in, const LodePNGColorMode *mode_out, const LodePNGColorMode *mode_in, unsigned w, unsigned h)
- void lodepng_decoder_settings_init (LodePNGDecoderSettings *settings)
- void lodepng_color_stats_init (LodePNGColorStats *stats)
- unsigned lodepng_compute_color_stats (LodePNGColorStats *stats, const unsigned char *image, unsigned w, unsigned h, const LodePNGColorMode *mode_in)
- void lodepng_encoder_settings_init (LodePNGEncoderSettings *settings)
- void lodepng_state_init (LodePNGState *state)
- void lodepng_state_cleanup (LodePNGState *state)
- void lodepng_state_copy (LodePNGState *dest, const LodePNGState *source)
- unsigned lodepng_decode (unsigned char **out, unsigned *w, unsigned *h, LodePNGState *state, const unsigned char *in, size_t insize)
- unsigned lodepng_inspect (unsigned *w, unsigned *h, LodePNGState *state, const unsigned char *in, size↩_t insize)
- unsigned lodepng_inspect_chunk (LodePNGState *state, size_t pos, const unsigned char *in, size_t insize)
- unsigned lodepng_encode (unsigned char **out, size_t *outsize, const unsigned char *image, unsigned w, unsigned h, LodePNGState *state)
- unsigned lodepng_chunk_length (const unsigned char *chunk)
- void lodepng_chunk_type (char type[5], const unsigned char *chunk)
- unsigned char lodepng_chunk_type_equals (const unsigned char *chunk, const char *type)
- unsigned char lodepng_chunk_ancillary (const unsigned char *chunk)
- unsigned char lodepng_chunk_private (const unsigned char *chunk)
- unsigned char lodepng_chunk_safetocopy (const unsigned char *chunk)
- unsigned char * lodepng_chunk_data (unsigned char *chunk)
- const unsigned char * lodepng_chunk_data_const (const unsigned char *chunk)
- unsigned lodepng_chunk_check_crc (const unsigned char *chunk)
- void lodepng_chunk_generate_crc (unsigned char *chunk)
- unsigned char * lodepng_chunk_next (unsigned char *chunk, unsigned char *end)
- const unsigned char * lodepng_chunk_next_const (const unsigned char *chunk, const unsigned char *end)
- unsigned char * lodepng_chunk_find (unsigned char *chunk, unsigned char *end, const char type[5])
- const unsigned char * lodepng_chunk_find_const (const unsigned char *chunk, const unsigned char *end, const char type[5])
- unsigned lodepng_chunk_append (unsigned char **out, size_t *outsize, const unsigned char *chunk)
- unsigned lodepng_chunk_create (unsigned char **out, size_t *outsize, unsigned length, const char *type, const unsigned char *data)
- unsigned lodepng_crc32 (const unsigned char *buf, size_t len)
- unsigned lodepng_inflate (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGDecompressSettings *settings)
- unsigned lodepng_zlib_decompress (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGDecompressSettings *settings)
- unsigned lodepng_zlib_compress (unsigned char **out, size_t *outsize, const unsigned char *in, size_↩t insize, const LodePNGCompressSettings *settings)
- unsigned lodepng_huffman_code_lengths (unsigned *lengths, const unsigned *frequencies, size_t numcodes, unsigned maxbitlen)
- unsigned lodepng_deflate (unsigned char **out, size_t *outsize, const unsigned char *in, size_t insize, const LodePNGCompressSettings *settings)
- unsigned lodepng_load_file (unsigned char **out, size_t *outsize, const char *filename)
- unsigned lodepng_save_file (const unsigned char *buffer, size_t buffersize, const char *filename)

Variables

- const char * LODEPNG_VERSION_STRING
- const LodePNGDecompressSettings lodepng_default_decompress_settings
- const LodePNGCompressSettings lodepng_default_compress_settings

7.31.1 Macro Definition Documentation

7.31.1.1 LODEPNG_COMPILE_ALLOCATORS

```
#define LODEPNG_COMPILE_ALLOCATORS
```

7.31.1.2 LODEPNG_COMPILE_ANCILLARY_CHUNKS

```
#define LODEPNG_COMPILE_ANCILLARY_CHUNKS
```

7.31.1.3 LODEPNG_COMPILE_DECODER

```
#define LODEPNG_COMPILE_DECODER
```

7.31.1.4 LODEPNG_COMPILE_DISK

```
#define LODEPNG_COMPILE_DISK
```

7.31.1.5 LODEPNG_COMPILE_ENCODER

```
#define LODEPNG_COMPILE_ENCODER
```

7.31.1.6 LODEPNG_COMPILE_ERROR_TEXT

```
#define LODEPNG_COMPILE_ERROR_TEXT
```

7.31.1.7 LODEPNG_COMPILE_PNG

```
#define LODEPNG_COMPILE_PNG
```

7.31.1.8 LODEPNG_COMPILE_ZLIB

```
#define LODEPNG_COMPILE_ZLIB
```

7.31.2 Typedef Documentation

7.31.2.1 LodePNGColorMode

```
typedef struct LodePNGColorMode LodePNGColorMode
```

7.31.2.2 LodePNGColorStats

```
typedef struct LodePNGColorStats LodePNGColorStats
```

7.31.2.3 LodePNGColorType

```
typedef enum LodePNGColorType LodePNGColorType
```

7.31.2.4 LodePNGCompressSettings

```
typedef struct LodePNGCompressSettings LodePNGCompressSettings
```

7.31.2.5 LodePNGDecoderSettings

```
typedef struct LodePNGDecoderSettings LodePNGDecoderSettings
```

7.31.2.6 LodePNGDecompressSettings

```
typedef struct LodePNGDecompressSettings LodePNGDecompressSettings
```

7.31.2.7 LodePNGEncoderSettings

```
typedef struct LodePNGEncoderSettings LodePNGEncoderSettings
```

7.31.2.8 LodePNGFilterStrategy

```
typedef enum LodePNGFilterStrategy LodePNGFilterStrategy
```

7.31.2.9 LodePNGInfo

```
typedef struct LodePNGInfo LodePNGInfo
```

7.31.2.10 LodePNGState

```
typedef struct LodePNGState LodePNGState
```

7.31.2.11 LodePNGTime

```
typedef struct LodePNGTime LodePNGTime
```

7.31.3 Enumeration Type Documentation

7.31.3.1 LodePNGColorType

```
enum LodePNGColorType
```

Enumerator

LCT_GREY	
LCT_RGB	
LCT_PALETTE	
LCT_GREY_ALPHA	
LCT_RGBA	
LCT_MAX_OCTET_VALUE	

7.31.3.2 LodePNGFilterStrategy

```
enum LodePNGFilterStrategy
```

Enumerator

LFS_ZERO	
LFS_ONE	
LFS_TWO	
LFS_THREE	
LFS_FOUR	
LFS_MINSUM	
LFS_ENTROPY	
LFS_BRUTE_FORCE	
LFS_PREDEFINED	

7.31.4 Function Documentation

7.31.4.1 lodepng_add_itext()

```
unsigned lodepng_add_itext (
            LodePNGInfo * info,
            const char * key,
            const char * langtag,
            const char * transkey,
            const char * str )
```

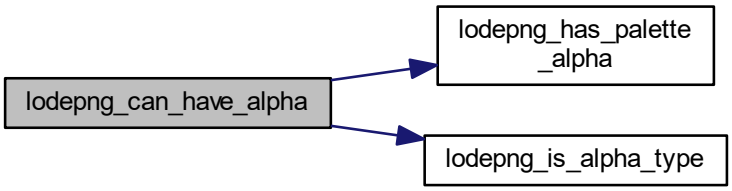
7.31.4.2 lodepng_add_text()

```
unsigned lodepng_add_text (
            LodePNGInfo * info,
            const char * key,
            const char * str )
```

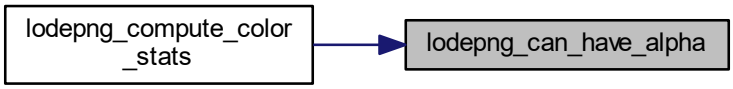
7.31.4.3 lodepng_can_have_alpha()

```
unsigned lodepng_can_have_alpha (
            const LodePNGColorMode * info )
```

Here is the call graph for this function:



Here is the caller graph for this function:



7.31.4.4 lodepng_chunk_ancillary()

```
unsigned char lodepng_chunk_ancillary (
            const unsigned char * chunk )
```

7.31.4.5 lodepng_chunk_append()

```
unsigned lodepng_chunk_append (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * chunk )
```

7.31.4.6 lodepng_chunk_check_crc()

```
unsigned lodepng_chunk_check_crc (
            const unsigned char * chunk )
```

Here is the call graph for this function:

7.31.4.7 lodepng_chunk_create()

```
unsigned lodepng_chunk_create (
            unsigned char ** out,
            size_t * outsize,
            unsigned length,
            const char * type,
            const unsigned char * data )
```

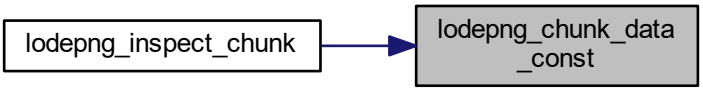
7.31.4.8 lodepng_chunk_data()

```
unsigned char* lodepng_chunk_data (
            unsigned char * chunk )
```

7.31.4.9 lodepng_chunk_data_const()

```
const unsigned char* lodepng_chunk_data_const (
            const unsigned char * chunk )
```

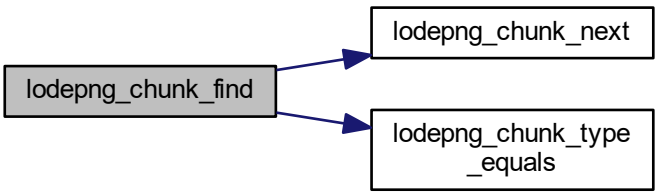
Here is the caller graph for this function:



7.31.4.10 lodepng_chunk_find()

```
unsigned char* lodepng_chunk_find (
            unsigned char * chunk,
            unsigned char * end,
            const char type[5] )
```

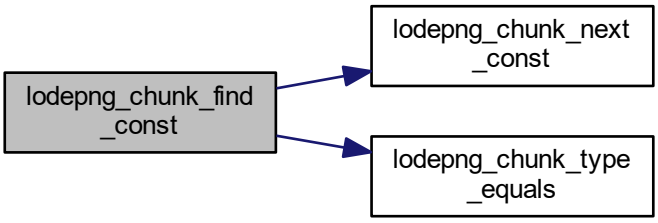
Here is the call graph for this function:



7.31.4.11 lodepng_chunk_find_const()

```
const unsigned char* lodepng_chunk_find_const (
            const unsigned char * chunk,
            const unsigned char * end,
            const char type[5] )
```

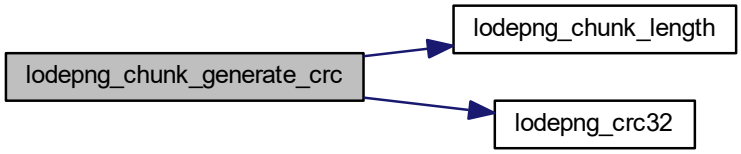
Here is the call graph for this function:



7.31.4.12 lodepng_chunk_generate_crc()

```
void lodepng_chunk_generate_crc (
            unsigned char * chunk )
```

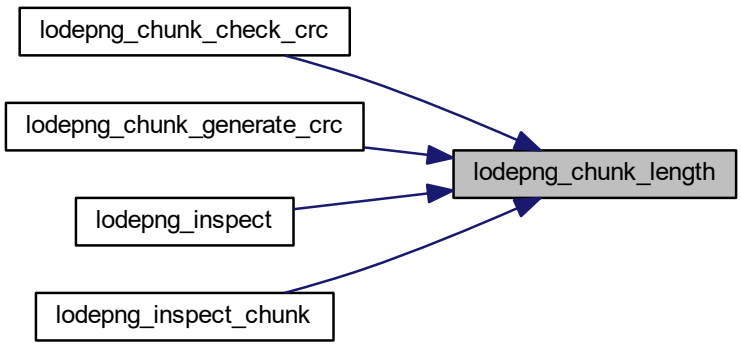
Here is the call graph for this function:



7.31.4.13 lodepng_chunk_length()

```
unsigned lodepng_chunk_length (
            const unsigned char * chunk )
```

Here is the caller graph for this function:



7.31.4.14 lodepng_chunk_next()

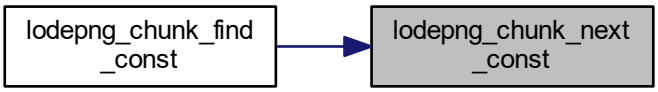
```
unsigned char* lodepng_chunk_next (
            unsigned char * chunk,
            unsigned char * end )
```

Here is the caller graph for this function:

7.31.4.15 lodepng_chunk_next_const()

```
const unsigned char* lodepng_chunk_next_const (
            const unsigned char * chunk,
            const unsigned char * end )
```

Here is the caller graph for this function:



7.31.4.16 lodepng_chunk_private()

```
unsigned char lodepng_chunk_private (
            const unsigned char * chunk )
```

7.31.4.17 lodepng_chunk_safetocopy()

```
unsigned char lodepng_chunk_safetocopy (
            const unsigned char * chunk )
```

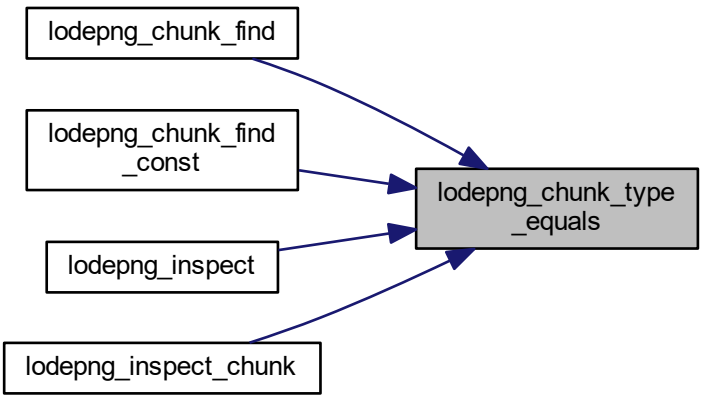
7.31.4.18 lodepng_chunk_type()

```
void lodepng_chunk_type (
            char type[5],
            const unsigned char * chunk )
```

7.31.4.19 lodepng_chunk_type_equals()

```
unsigned char lodepng_chunk_type_equals (
            const unsigned char * chunk,
            const char * type )
```

Here is the caller graph for this function:



7.31.4.20 lodepng_clear_icc()

```
void lodepng_clear_icc (
            LodePNGInfo * info )
```

Here is the caller graph for this function:

7.31.4.21 lodepng_clear_itext()

```
void lodepng_clear_itext (
            LodePNGInfo * info )
```

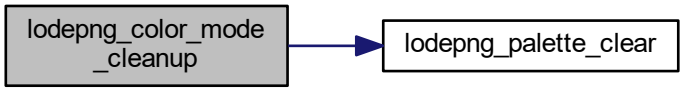
7.31.4.22 lodepng_clear_text()

```
void lodepng_clear_text (
            LodePNGInfo * info )
```

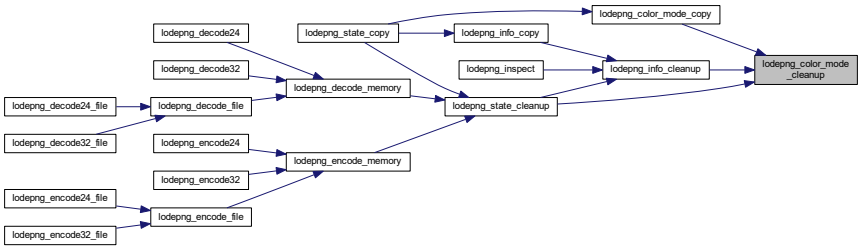
7.31.4.23 lodepng_color_mode_cleanup()

```
void lodepng_color_mode_cleanup (
            LodePNGColorMode * info )
```

Here is the call graph for this function:



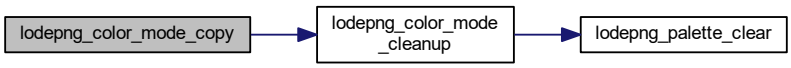
Here is the caller graph for this function:



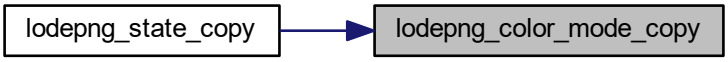
7.31.4.24 lodepng_color_mode_copy()

```
unsigned lodepng_color_mode_copy (
            LodePNGColorMode * dest,
            const LodePNGColorMode * source )
```

Here is the call graph for this function:



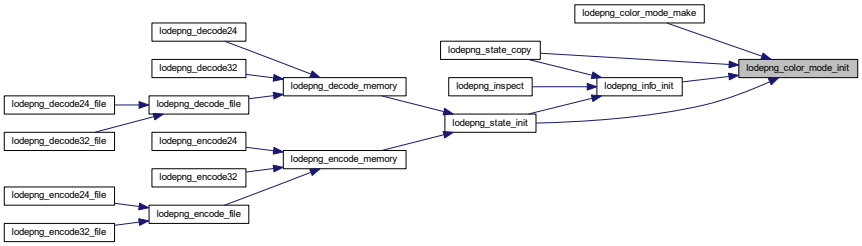
Here is the caller graph for this function:



7.31.4.25 lodepng_color_mode_init()

```
void lodepng_color_mode_init (
            LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.31.4.26 lodepng_color_mode_make()

```
LodePNGColorMode lodepng_color_mode_make (
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:

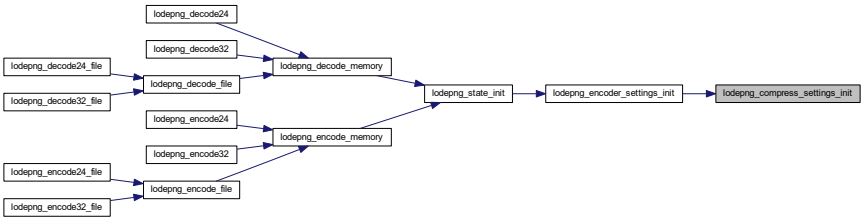
7.31.4.27 lodepng_color_stats_init()

```
void lodepng_color_stats_init (
            LodePNGColorStats * stats )
```

7.31.4.28 lodepng_compress_settings_init()

```
void lodepng_compress_settings_init (
            LodePNGCompressSettings * settings )
```

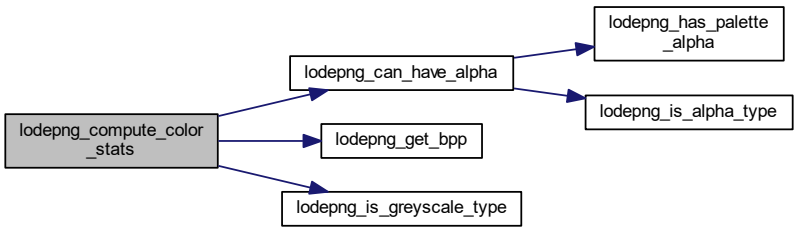
Here is the caller graph for this function:



7.31.4.29 lodepng_compute_color_stats()

```
unsigned lodepng_compute_color_stats (
            LodePNGColorStats * stats,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            const LodePNGColorMode * mode_in )
```

Here is the call graph for this function:



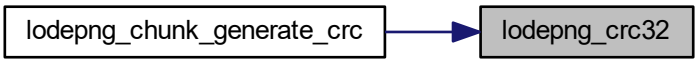
7.31.4.30 lodepng_convert()

```
unsigned lodepng_convert (
            unsigned char * out,
            const unsigned char * in,
            const LodePNGColorMode * mode_out,
            const LodePNGColorMode * mode_in,
            unsigned w,
            unsigned h )
```

7.31.4.31 lodepng_crc32()

```
unsigned lodepng_crc32 (
            const unsigned char * buf,
            size_t len )
```

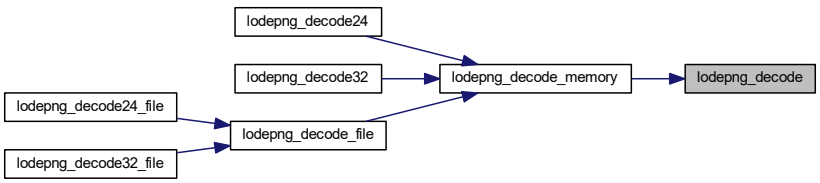
Here is the caller graph for this function:



7.31.4.32 lodepng_decode()

```
unsigned lodepng_decode (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            LodePNGState * state,
            const unsigned char * in,
            size_t insize )
```

Here is the caller graph for this function:

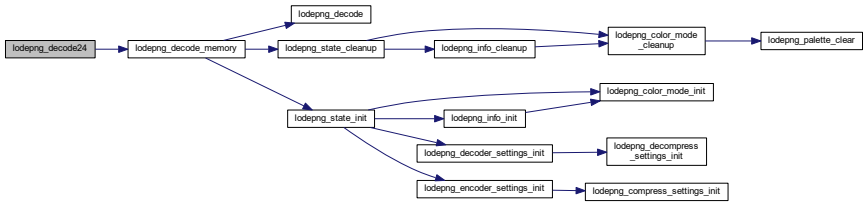


7.31.4.33 lodepng_decode24()

```
unsigned lodepng_decode24 (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
```

```
            const unsigned char * in,
            size_t insize )
```

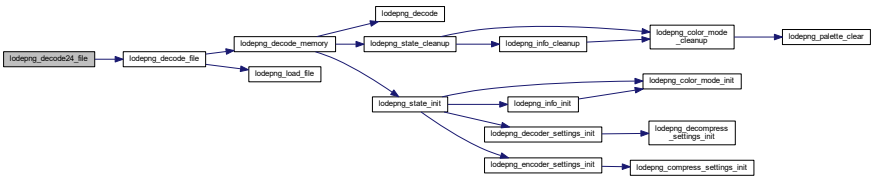
Here is the call graph for this function:



7.31.4.34 lodepng_decode24_file()

```
unsigned lodepng_decode24_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename )
```

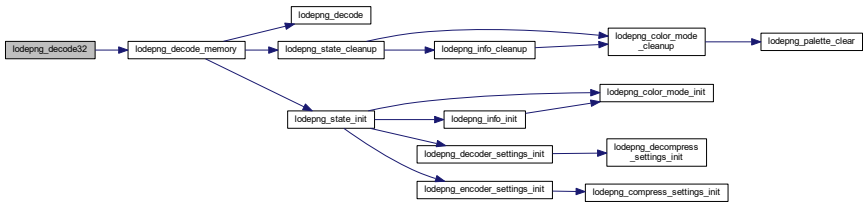
Here is the call graph for this function:



7.31.4.35 lodepng_decode32()

```
unsigned lodepng_decode32 (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const unsigned char * in,
            size_t insize )
```

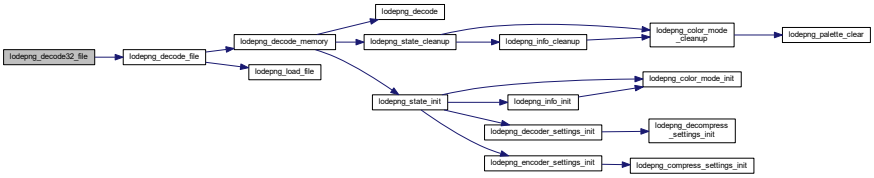
Here is the call graph for this function:



7.31.4.36 lodepng_decode32_file()

```
unsigned lodepng_decode32_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename )
```

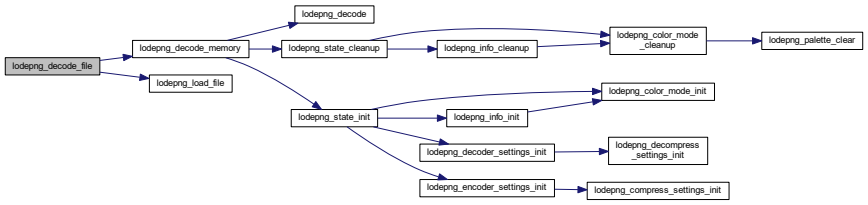
Here is the call graph for this function:



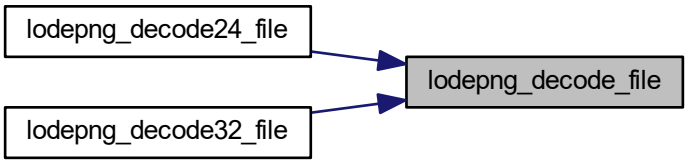
7.31.4.37 lodepng_decode_file()

```
unsigned lodepng_decode_file (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const char * filename,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



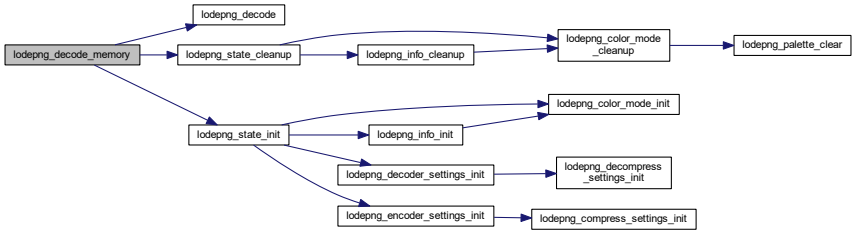
Here is the caller graph for this function:



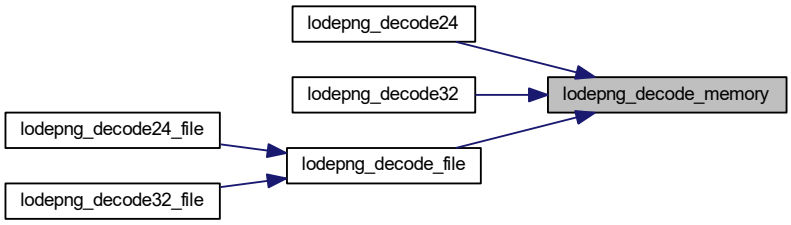
7.31.4.38 lodepng_decode_memory()

```
unsigned lodepng_decode_memory (
            unsigned char ** out,
            unsigned * w,
            unsigned * h,
            const unsigned char * in,
            size_t insize,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



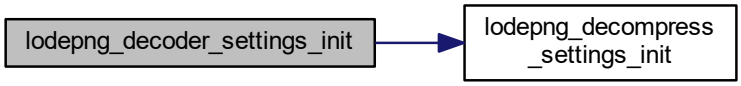
Here is the caller graph for this function:



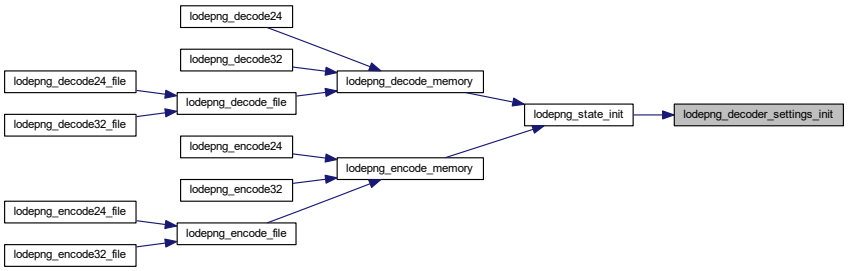
7.31.4.39 lodepng_decoder_settings_init()

```
void lodepng_decoder_settings_init (
            LodePNGDecoderSettings * settings )
```

Here is the call graph for this function:



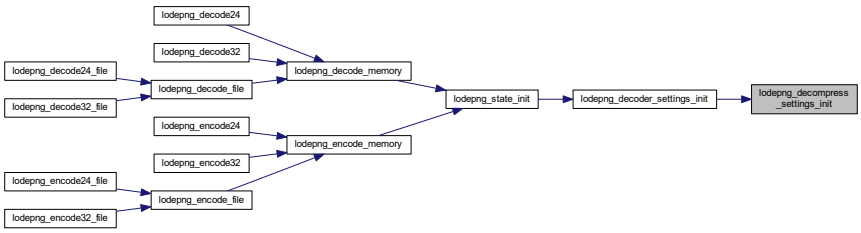
Here is the caller graph for this function:



7.31.4.40 lodepng_decompress_settings_init()

```
void lodepng_decompress_settings_init (
            LodePNGDecompressSettings * settings )
```

Here is the caller graph for this function:



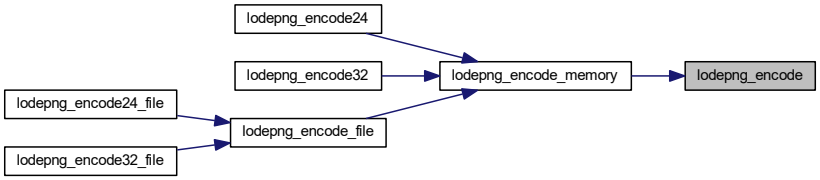
7.31.4.41 lodepng_deflate()

```
unsigned lodepng_deflate (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGCompressSettings * settings )
```

7.31.4.42 lodepng_encode()

```
unsigned lodepng_encode (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGState * state )
```

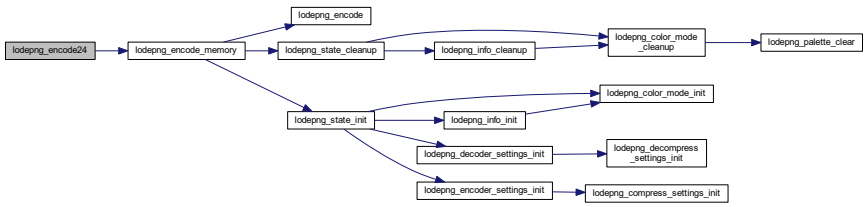
Here is the caller graph for this function:



7.31.4.43 lodepng_encode24()

```
unsigned lodepng_encode24 (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

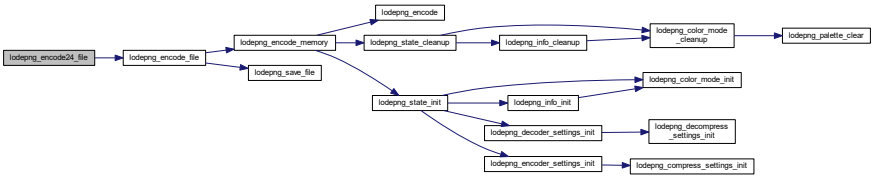
Here is the call graph for this function:



7.31.4.44 lodepng_encode24_file()

```
unsigned lodepng_encode24_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

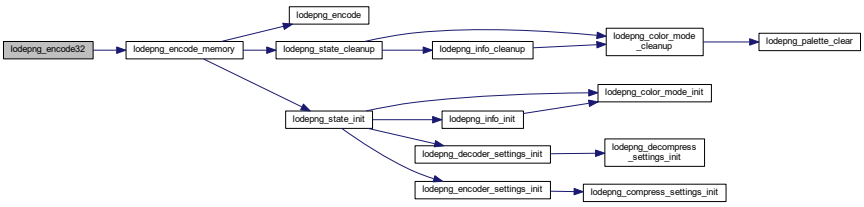
Here is the call graph for this function:



7.31.4.45 lodepng_encode32()

```
unsigned lodepng_encode32 (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

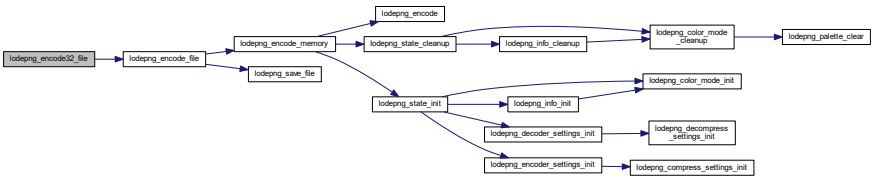
Here is the call graph for this function:



7.31.4.46 lodepng_encode32_file()

```
unsigned lodepng_encode32_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h )
```

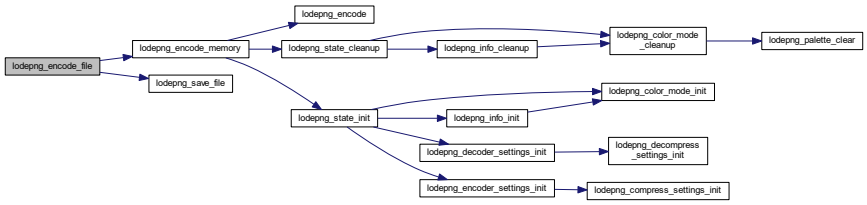
Here is the call graph for this function:



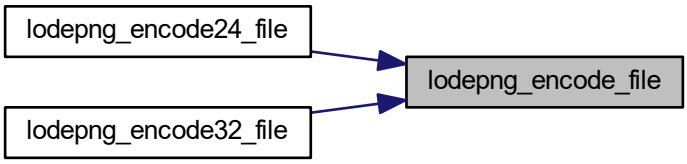
7.31.4.47 lodepng_encode_file()

```
unsigned lodepng_encode_file (
            const char * filename,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



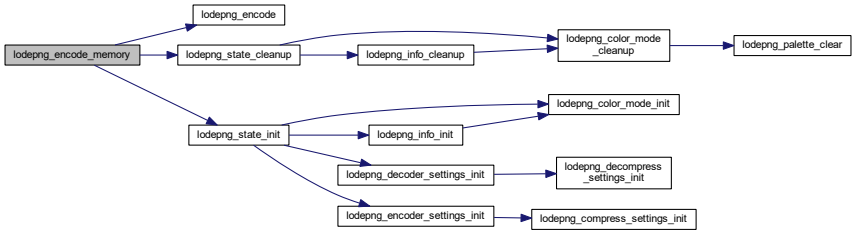
Here is the caller graph for this function:



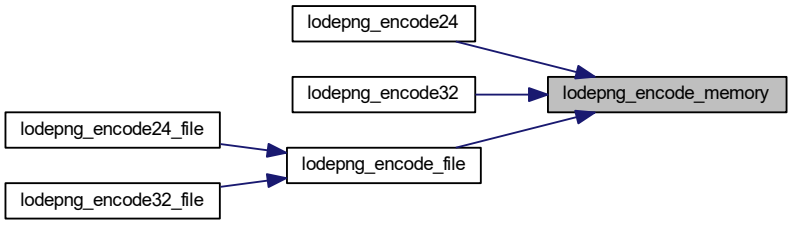
7.31.4.48 lodepng_encode_memory()

```
unsigned lodepng_encode_memory (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * image,
            unsigned w,
            unsigned h,
            LodePNGColorType colortype,
            unsigned bitdepth )
```

Here is the call graph for this function:



Here is the caller graph for this function:

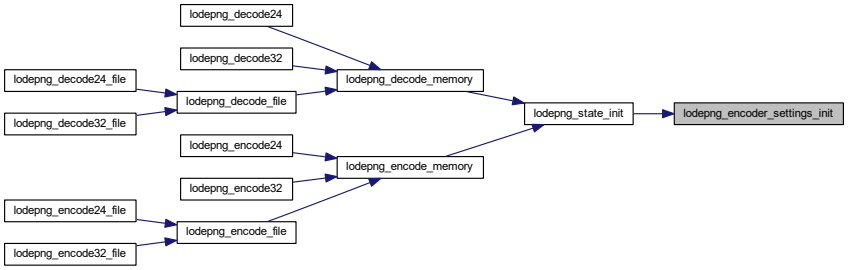


7.31.4.49 lodepng_encoder_settings_init()

```
void lodepng_encoder_settings_init (
            LodePNGEncoderSettings * settings )
```

Here is the call graph for this function:

Here is the caller graph for this function:



7.31.4.50 lodepng_error_text()

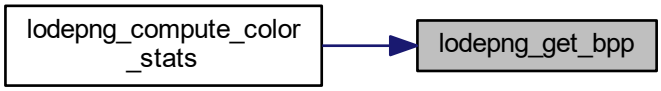
```
const char* lodepng_error_text (
            unsigned code )
```

Here is the caller graph for this function:

7.31.4.51 lodepng_get_bpp()

```
unsigned lodepng_get_bpp (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.31.4.52 lodepng_get_channels()

```
unsigned lodepng_get_channels (
            const LodePNGColorMode * info )
```

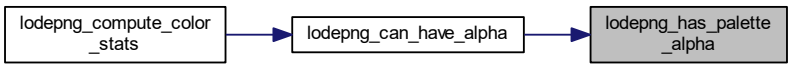
7.31.4.53 lodepng_get_raw_size()

```
size_t lodepng_get_raw_size (
            unsigned w,
            unsigned h,
            const LodePNGColorMode * color )
```

7.31.4.54 lodepng_has_palette_alpha()

```
unsigned lodepng_has_palette_alpha (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



7.31.4.55 lodepng_huffman_code_lengths()

```
unsigned lodepng_huffman_code_lengths (
            unsigned * lengths,
            const unsigned * frequencies,
            size_t numcodes,
            unsigned maxbitlen )
```

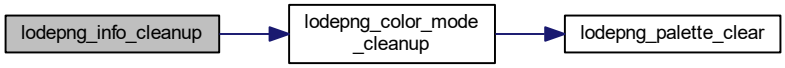
7.31.4.56 lodepng_inflate()

```
unsigned lodepng_inflate (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGDecompressSettings * settings )
```

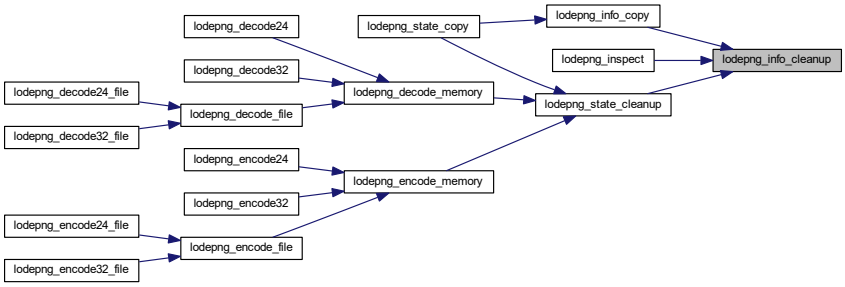
7.31.4.57 lodepng_info_cleanup()

```
void lodepng_info_cleanup (
            LodePNGInfo * info )
```

Here is the call graph for this function:



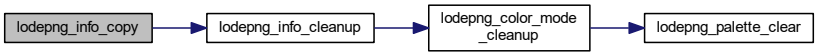
Here is the caller graph for this function:



7.31.4.58 lodepng_info_copy()

```
unsigned lodepng_info_copy (
            LodePNGInfo * dest,
            const LodePNGInfo * source )
```

Here is the call graph for this function:

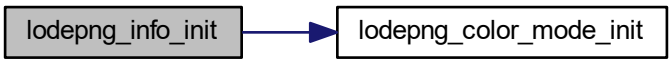


Here is the caller graph for this function:

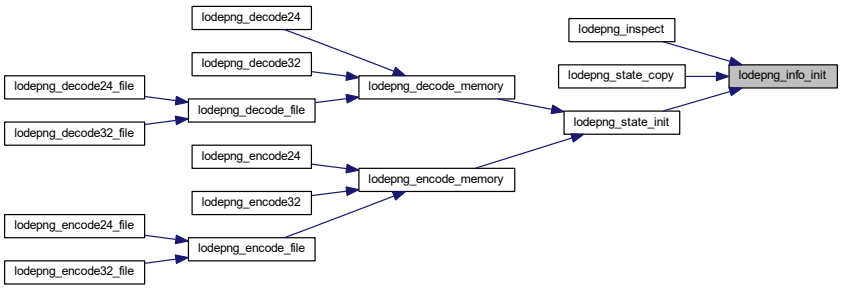
7.31.4.59 lodepng_info_init()

```
void lodepng_info_init (
            LodePNGInfo * info )
```

Here is the call graph for this function:



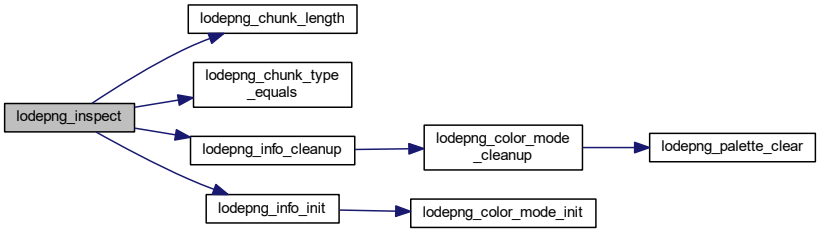
Here is the caller graph for this function:



7.31.4.60 lodepng_inspect()

```
unsigned lodepng_inspect (
            unsigned * w,
            unsigned * h,
            LodePNGState * state,
            const unsigned char * in,
            size_t insize )
```

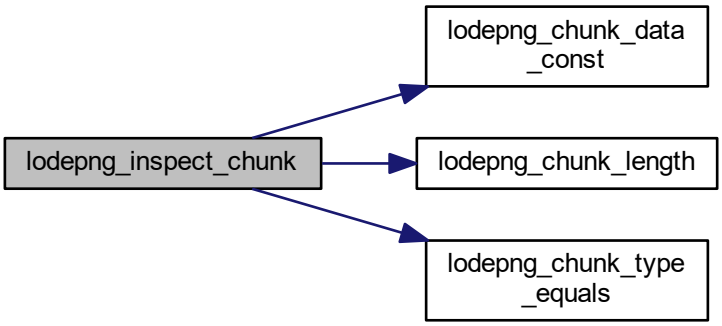
Here is the call graph for this function:



7.31.4.61 lodepng_inspect_chunk()

```
unsigned lodepng_inspect_chunk (
            LodePNGState * state,
            size_t pos,
            const unsigned char * in,
            size_t insize )
```

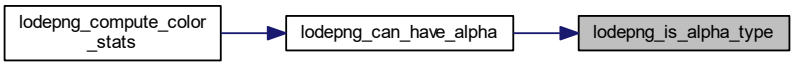
Here is the call graph for this function:



7.31.4.62 lodepng_is_alpha_type()

```
unsigned lodepng_is_alpha_type (
            const LodePNGColorMode * info )
```

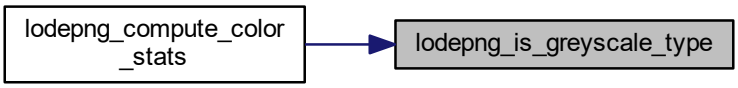
Here is the caller graph for this function:



7.31.4.63 lodepng_is_greyscale_type()

```
unsigned lodepng_is_greyscale_type (
            const LodePNGColorMode * info )
```

Here is the caller graph for this function:



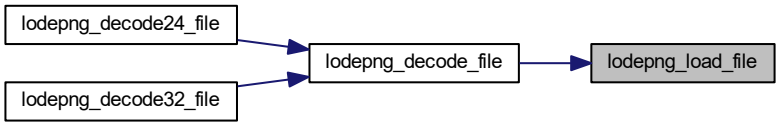
7.31.4.64 lodepng_is_palette_type()

```
unsigned lodepng_is_palette_type (
            const LodePNGColorMode * info )
```

7.31.4.65 lodepng_load_file()

```
unsigned lodepng_load_file (
            unsigned char ** out,
            size_t * outsize,
            const char * filename )
```

Here is the caller graph for this function:



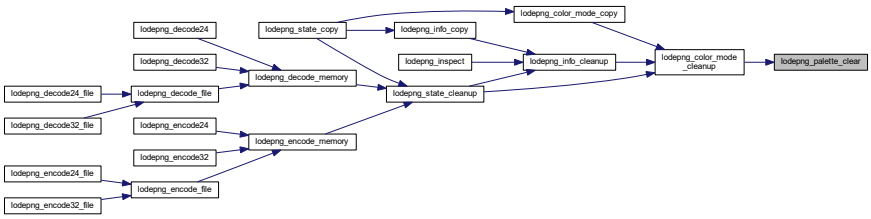
7.31.4.66 lodepng_palette_add()

```
unsigned lodepng_palette_add (
            LodePNGColorMode * info,
            unsigned char r,
            unsigned char g,
            unsigned char b,
            unsigned char a )
```

7.31.4.67 lodepng_palette_clear()

```
void lodepng_palette_clear (
            LodePNGColorMode * info )
```

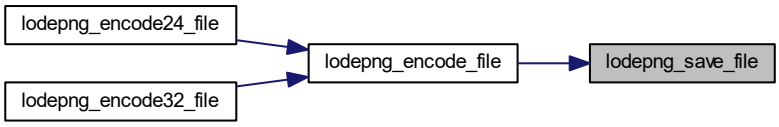
Here is the caller graph for this function:



7.31.4.68 lodepng_save_file()

```
unsigned lodepng_save_file (
            const unsigned char * buffer,
            size_t buffersize,
            const char * filename )
```

Here is the caller graph for this function:



7.31.4.69 lodepng_set_icc()

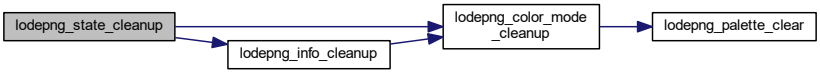
```
unsigned lodepng_set_icc (
            LodePNGInfo * info,
            const char * name,
            const unsigned char * profile,
            unsigned profile_size )
```

Here is the call graph for this function:

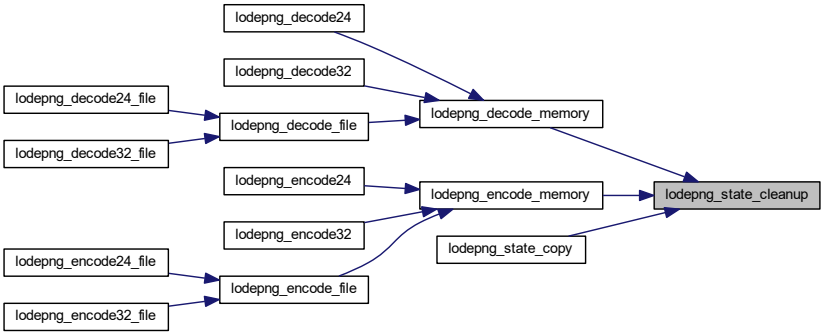
7.31.4.70 lodepng_state_cleanup()

```
void lodepng_state_cleanup (
            LodePNGState * state )
```

Here is the call graph for this function:



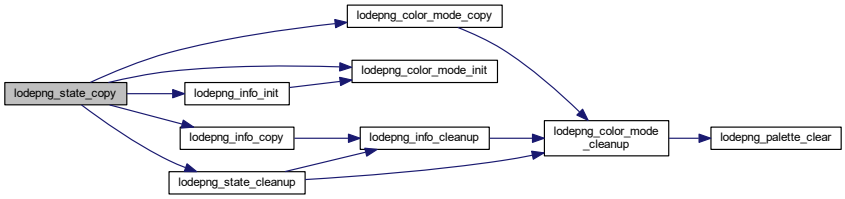
Here is the caller graph for this function:



7.31.4.71 lodepng_state_copy()

```
void lodepng_state_copy (
            LodePNGState * dest,
            const LodePNGState * source )
```

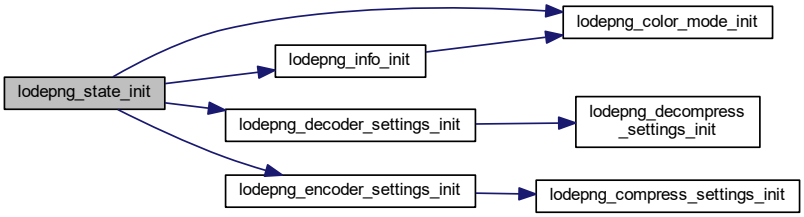
Here is the call graph for this function:



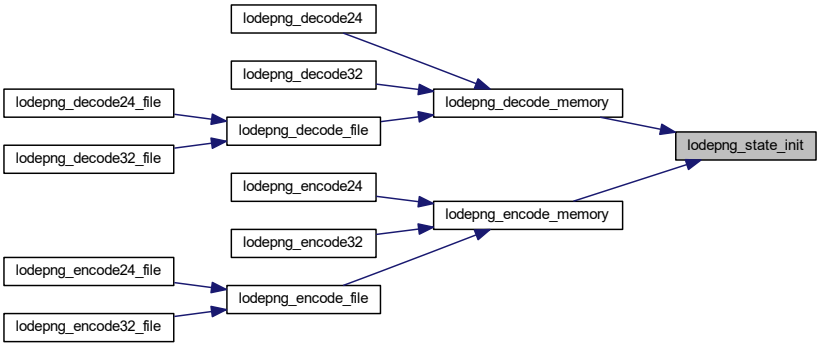
7.31.4.72 lodepng_state_init()

```
void lodepng_state_init (
            LodePNGState * state )
```

Here is the call graph for this function:



Here is the caller graph for this function:



7.31.4.73 lodepng_zlib_compress()

```
unsigned lodepng_zlib_compress (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGCompressSettings * settings )
```

7.31.4.74 lodepng_zlib_decompress()

```
unsigned lodepng_zlib_decompress (
            unsigned char ** out,
            size_t * outsize,
            const unsigned char * in,
            size_t insize,
            const LodePNGDecompressSettings * settings )
```

7.31.5 Variable Documentation

7.31.5.1 lodepng_default_compress_settings

```
const LodePNGCompressSettings lodepng_default_compress_settings
```

7.31.5.2 lodepng_default_decompress_settings

```
const LodePNGDecompressSettings lodepng_default_decompress_settings
```

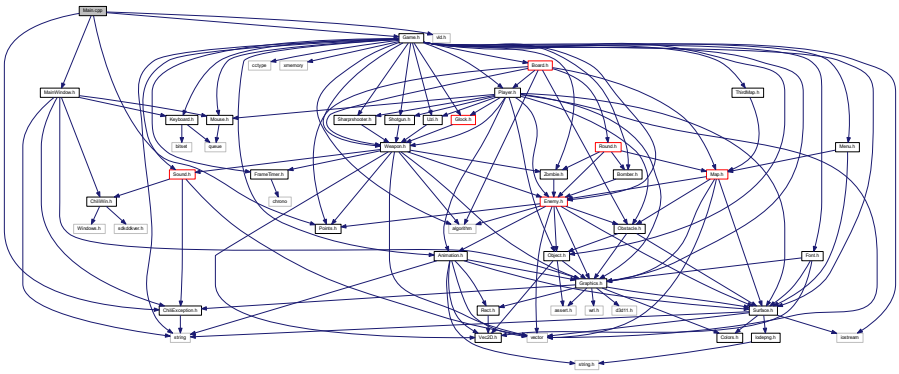
7.31.5.3 LODEPNG_VERSION_STRING

```
const char* LODEPNG_VERSION_STRING
```

7.32 Main.cpp File Reference

```
#include "MainWindow.h"
#include "Game.h"
#include "ChiliException.h"
#include "Points.h"
#include <vld.h>
```

Include dependency graph for Main.cpp:



Functions

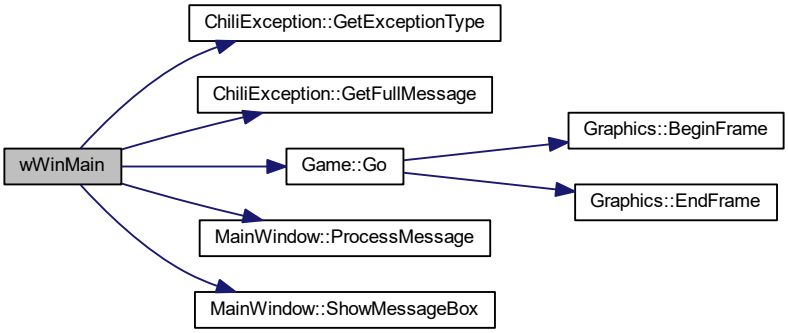
- int WINAPI wWinMain (HINSTANCE hInst, HINSTANCE, LPWSTR pArgs, INT)

7.32.1 Function Documentation

7.32.1.1 wWinMain()

```
int WINAPI wWinMain (
            HINSTANCE hInst,
            HINSTANCE ,
            LPWSTR pArgs,
            INT  )
```

Here is the call graph for this function:

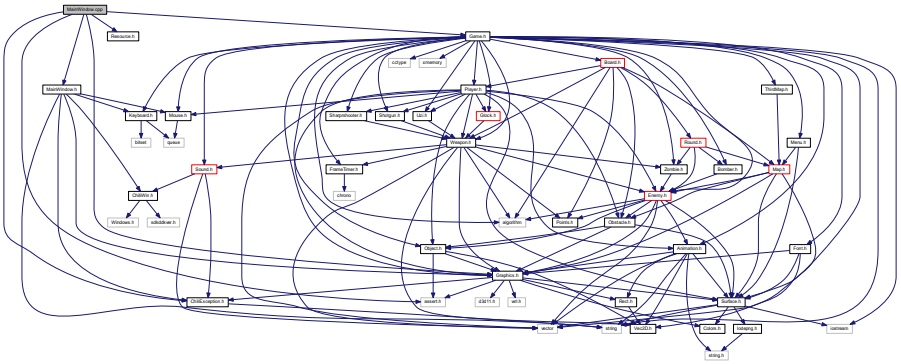


7.33 MainWindow.cpp File Reference

```
#include "MainWindow.h"
#include "Resource.h"
#include "Graphics.h"
#include "ChiliException.h"
#include "Game.h"
```

```
#include <assert.h>
```

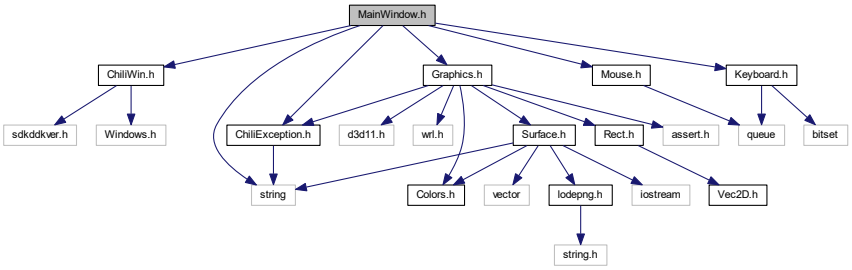
Include dependency graph for MainWindow.cpp:



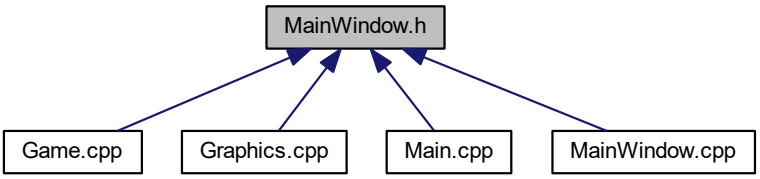
7.34 MainWindow.h File Reference

```
#include "ChiliWin.h"
#include "Graphics.h"
#include "Keyboard.h"
#include "Mouse.h"
#include "ChiliException.h"
#include <string>
```

Include dependency graph for MainWindow.h:



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



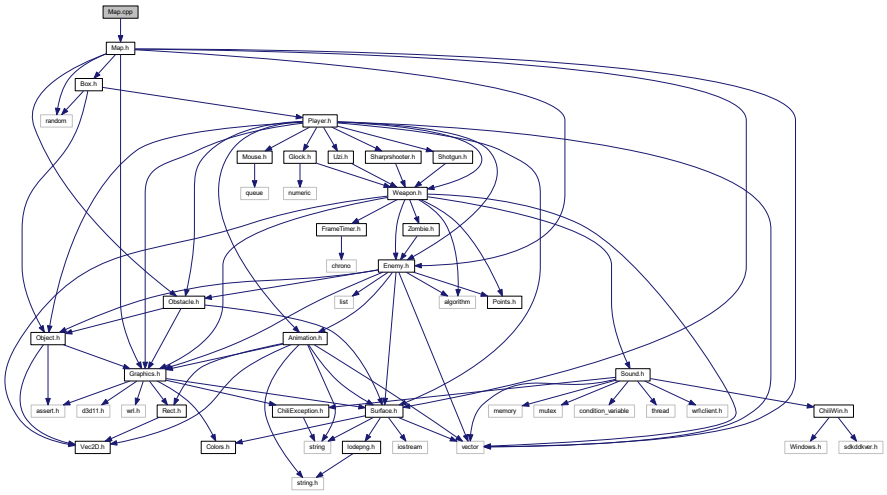
Classes

- class HWNDKey
- class MainWindow
- class MainWindow::Exception

7.35 Map.cpp File Reference

```
#include "Map.h"
```

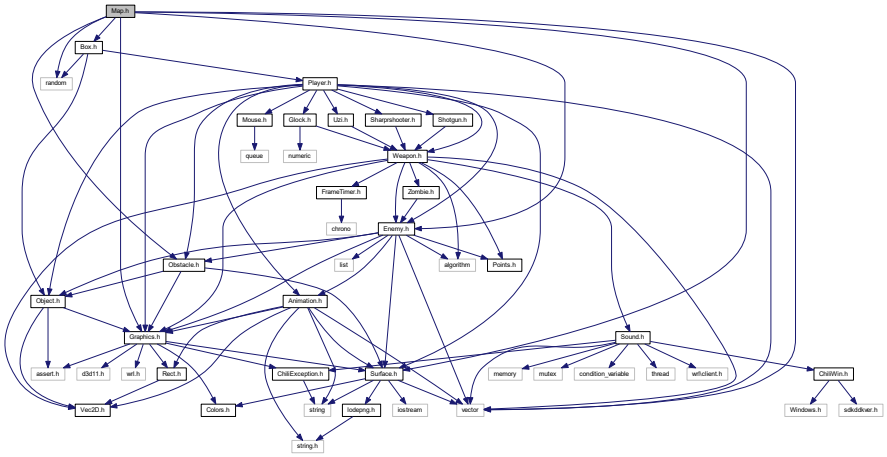
Include dependency graph for Map.cpp:



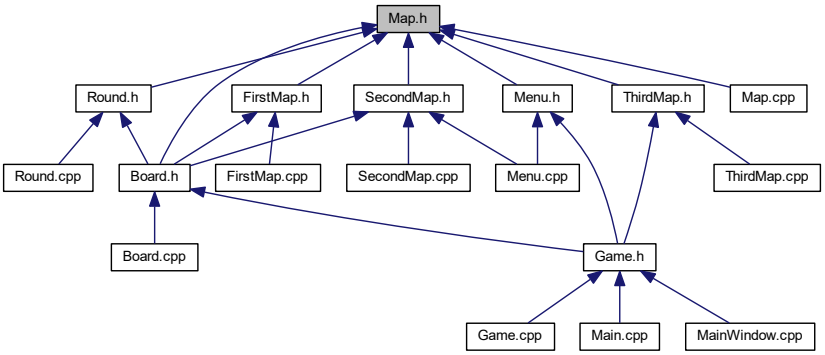
7.36 Map.h File Reference

```
#include <random>
#include "Obstacle.h"
#include "Enemy.h"
#include "vector"
#include "Surface.h"
#include "Graphics.h"
#include "Box.h"
```

Include dependency graph for Map.h:



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



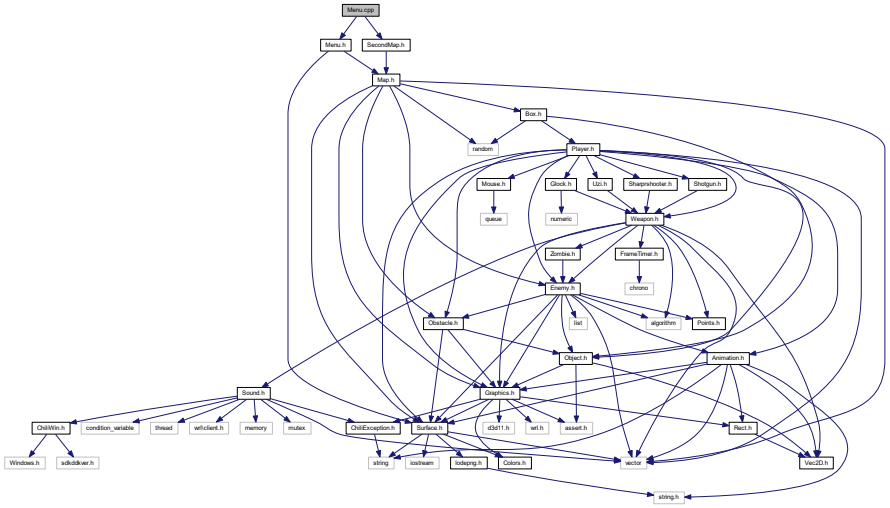
Classes

- class Map

7.37 Menu.cpp File Reference

```
#include "Menu.h"
#include "SecondMap.h"
```

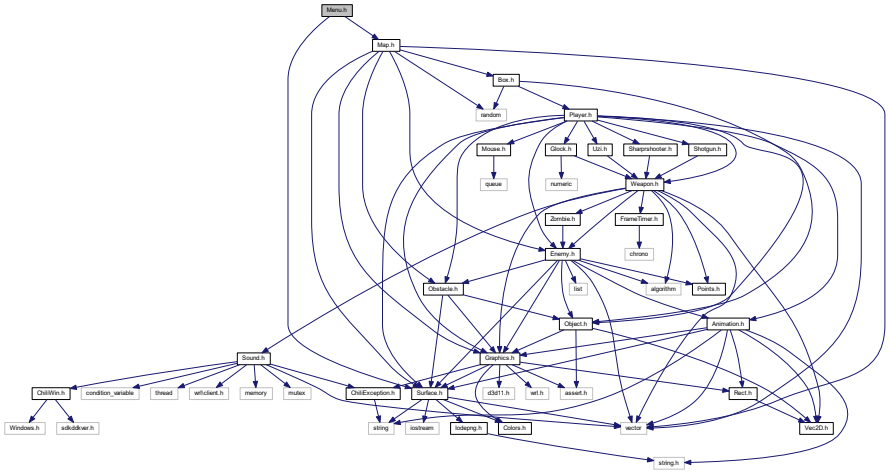
Include dependency graph for Menu.cpp:



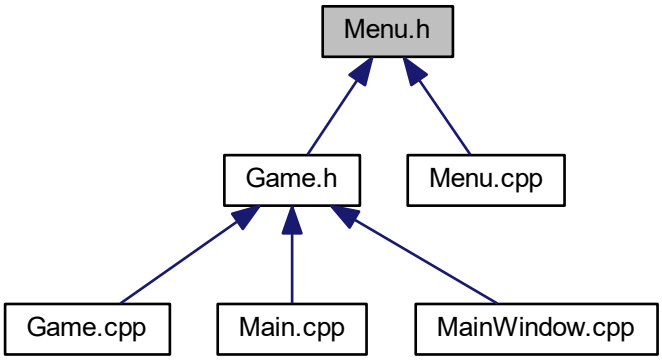
7.38 Menu.h File Reference

```
#include "Surface.h"
#include "Map.h"
```

Include dependency graph for Menu.h:



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

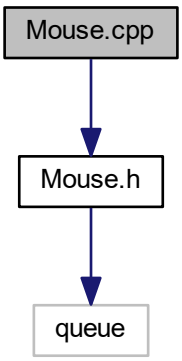


Classes

- class Menu

7.39 Mouse.cpp File Reference

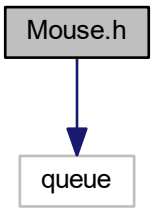
`#include "Mouse.h"`
Include dependency graph for Mouse.cpp:



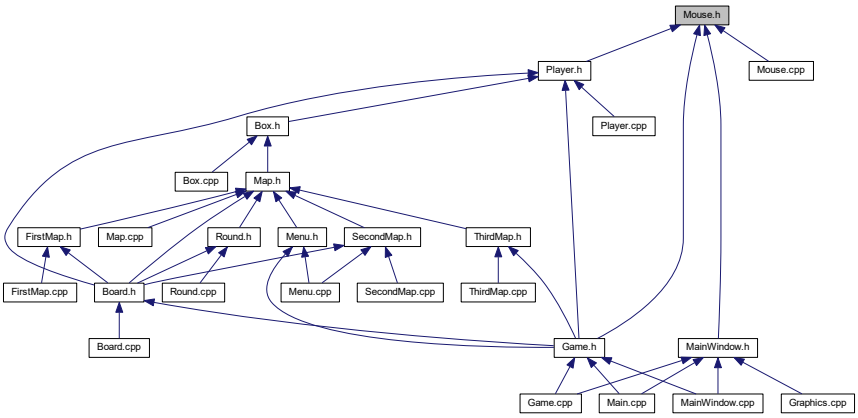
7.40 Mouse.h File Reference

```
#include <queue>
```

Include dependency graph for Mouse.h:



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



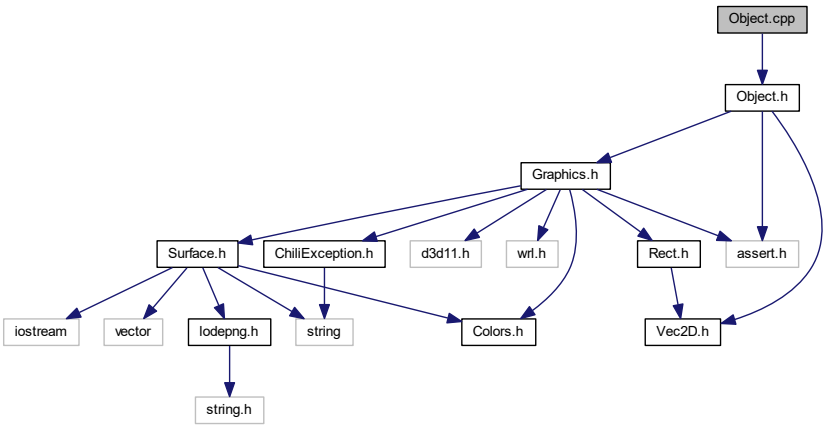
Classes

- class Mouse
- class Mouse::Event

7.41 Object.cpp File Reference

```
#include "Object.h"
```

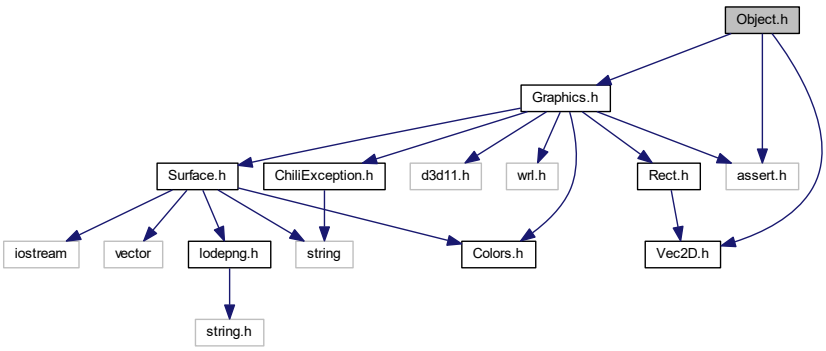
Include dependency graph for Object.cpp:



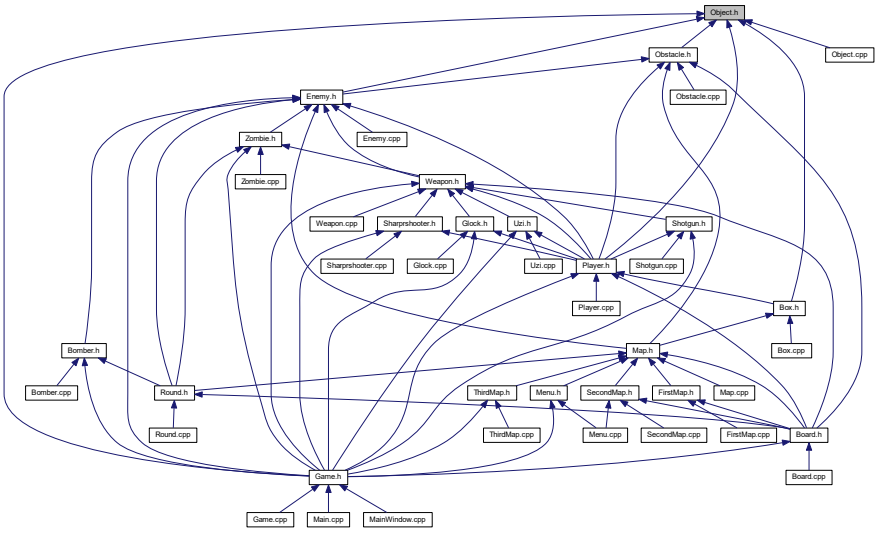
7.42 Object.h File Reference

```
#include "Vec2D.h"
#include "Graphics.h"
#include <assert.h>
```

Include dependency graph for Object.h:



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



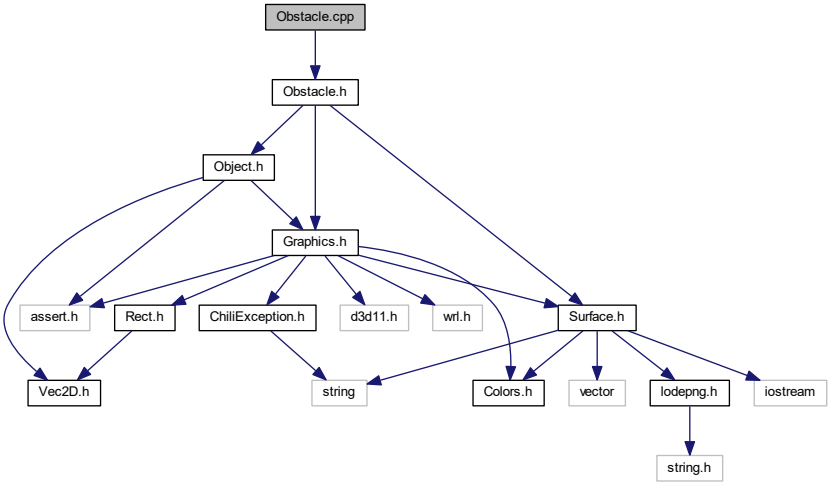
Classes

- class Object

7.43 Obstacle.cpp File Reference

`#include "Obstacle.h"`

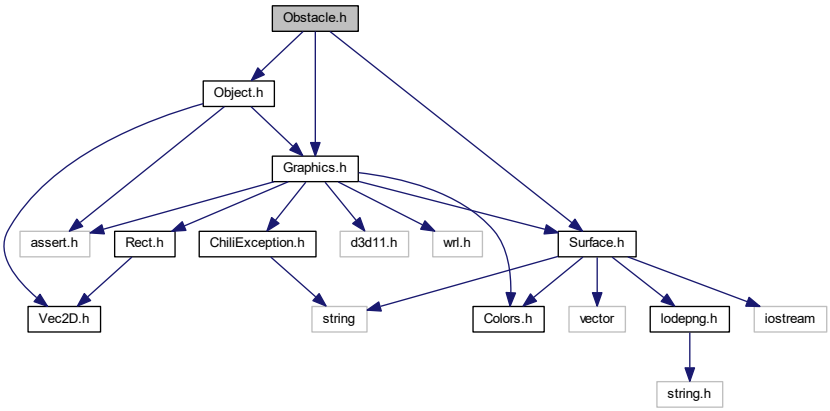
Include dependency graph for Obstacle.cpp:



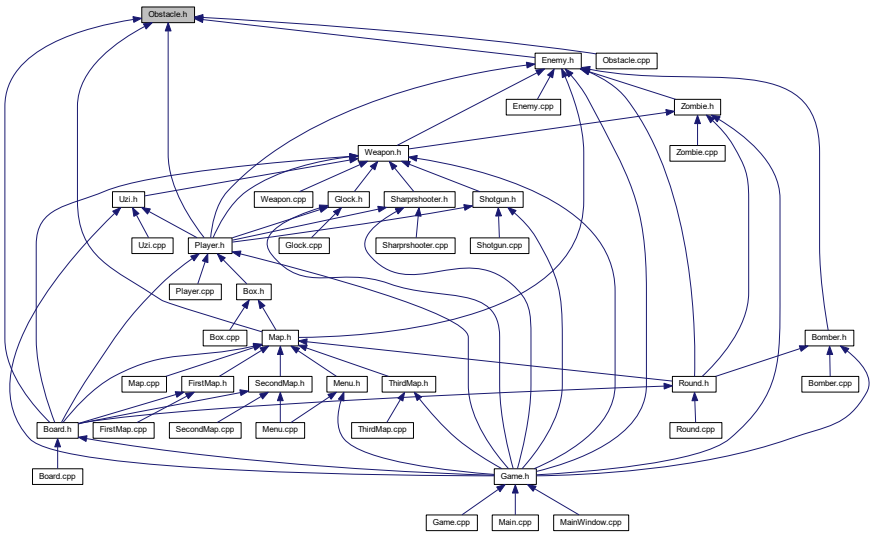
7.44 Obstacle.h File Reference

```
#include "Object.h"
#include "Surface.h"
#include "Graphics.h"
```

Include dependency graph for Obstacle.h:



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



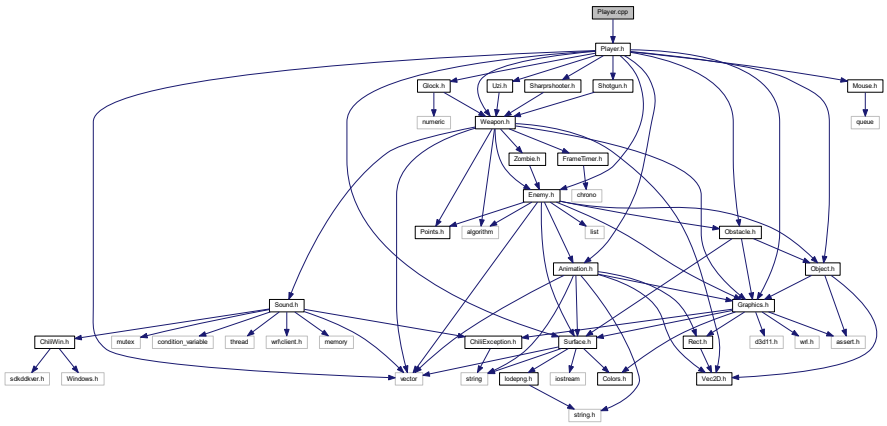
Classes

- class Obstacle

7.45 Player.cpp File Reference

```
#include "Player.h"
```

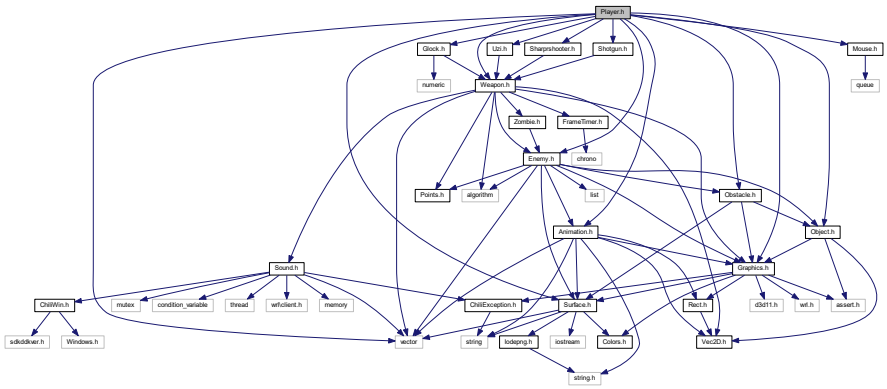
Include dependency graph for Player.cpp:



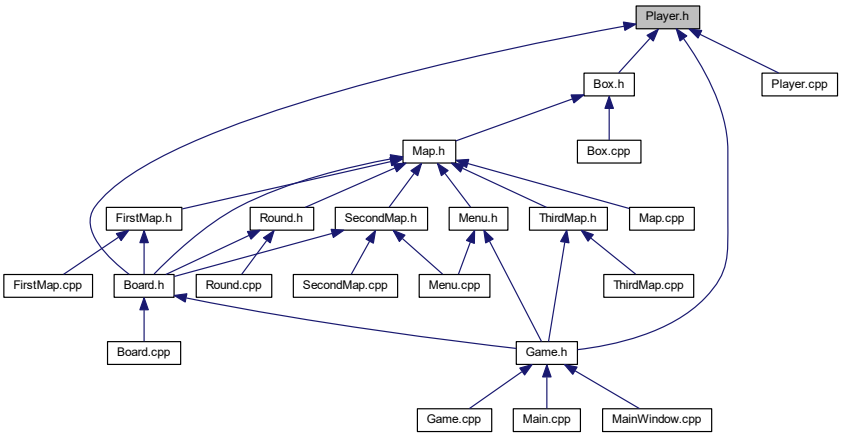
7.46 Player.h File Reference

```
#include "Enemy.h"
#include "Object.h"
#include "Graphics.h"
#include "Mouse.h"
#include <vector>
#include "Surface.h"
#include "Animation.h"
#include "Weapon.h"
#include "Obstacle.h"
#include "Uzi.h"
#include "Glock.h"
#include "Sharprshooter.h"
#include "Shotgun.h"
```

Include dependency graph for Player.h:



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



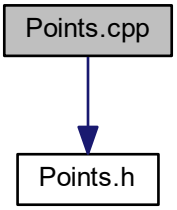
Classes

- class Player

7.47 Points.cpp File Reference

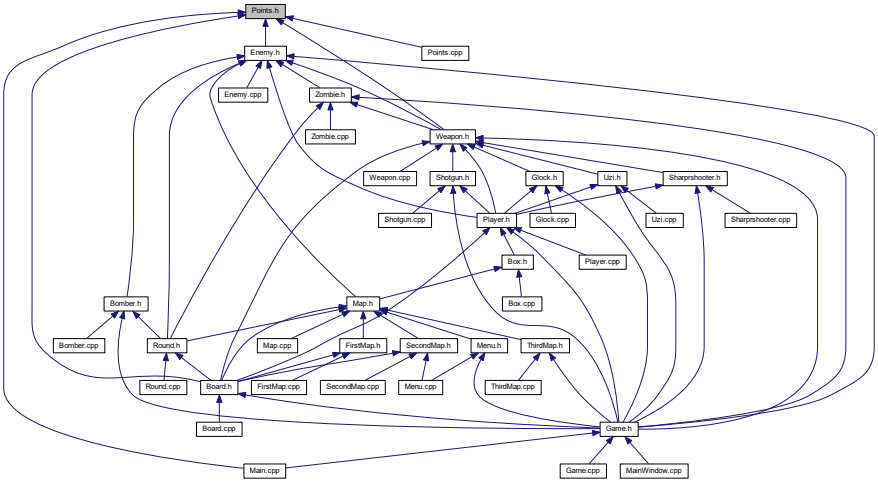
`#include "Points.h"`

Include dependency graph for Points.cpp:



7.48 Points.h File Reference

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

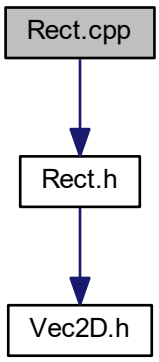


Classes

- class Points

7.49 Rect.cpp File Reference

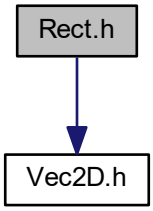
`#include "Rect.h"`
Include dependency graph for Rect.cpp:



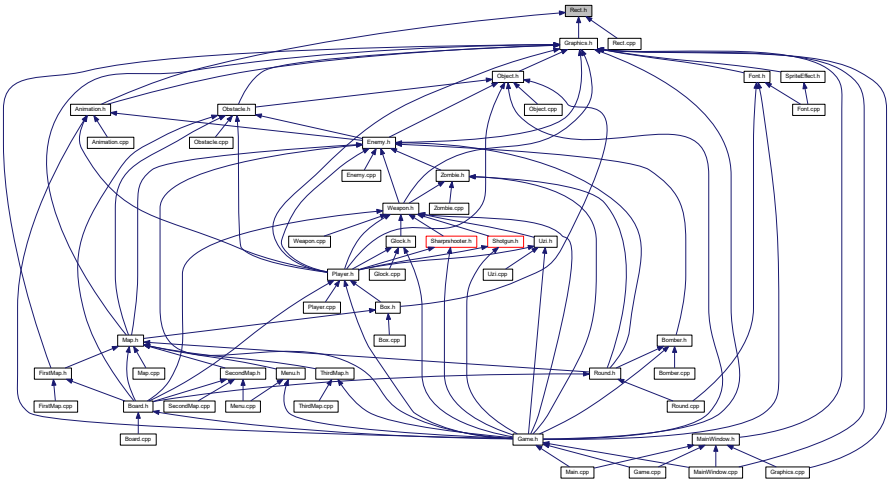
7.50 Rect.h File Reference

```
#include "Vec2D.h"
```

Include dependency graph for Rect.h:



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

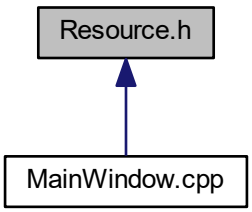


Classes

- class Rect

7.51 Resource.h File Reference

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



Macros

- #define IDI_APPICON 108

7.51.1 Macro Definition Documentation

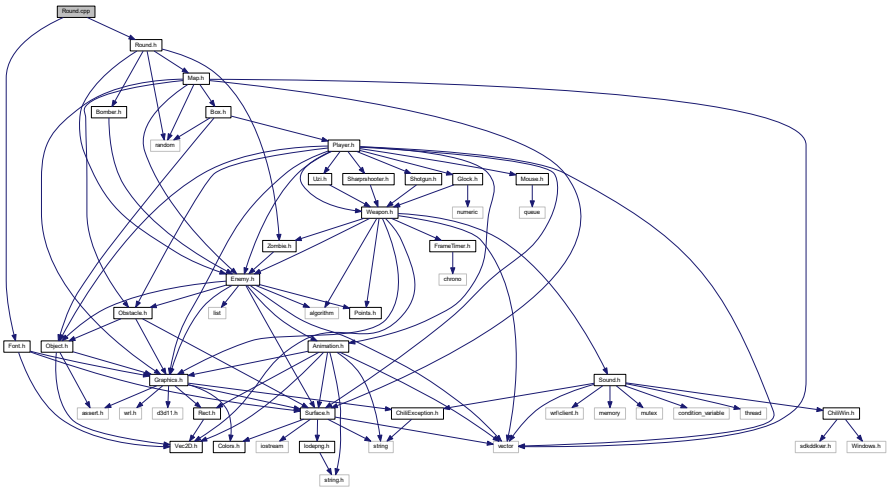
7.51.1.1 IDI_APPICON

```
#define IDI_APPICON 108
```

7.52 Round.cpp File Reference

```
#include "Round.h"
#include "Font.h"
```

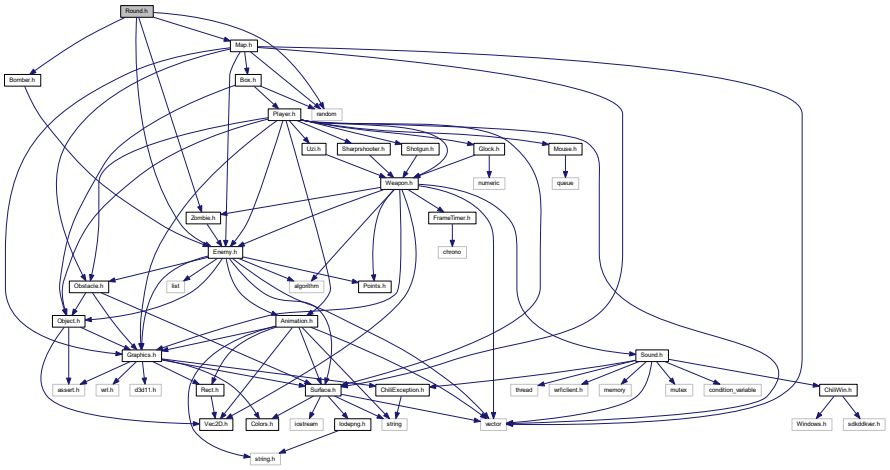
Include dependency graph for Round.cpp:



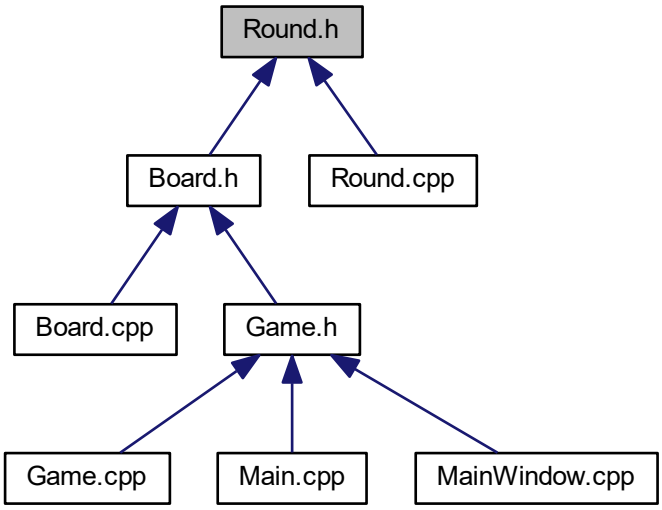
7.53 Round.h File Reference

```
#include "Enemy.h"
#include "Zombie.h"
#include "Bomber.h"
#include "Map.h"
#include <random>
```

Include dependency graph for Round.h:



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



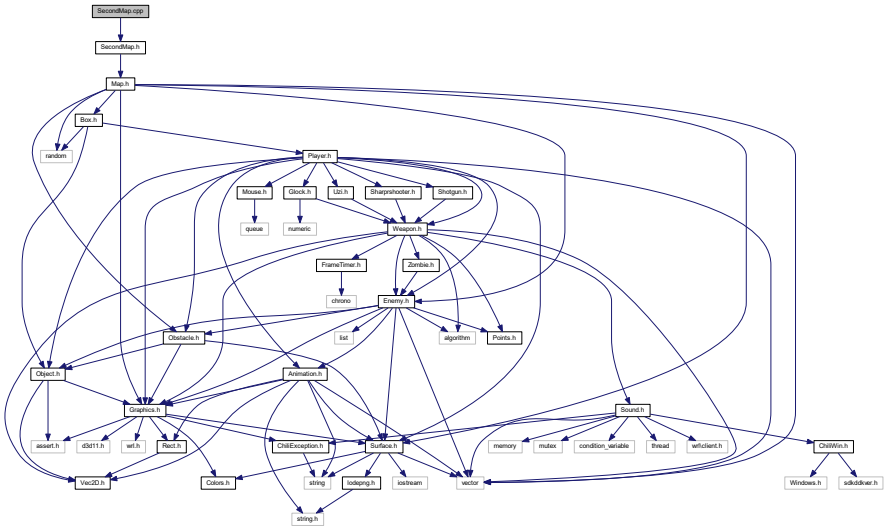
Classes

- class Round

7.54 SecondMap.cpp File Reference

`#include "SecondMap.h"`

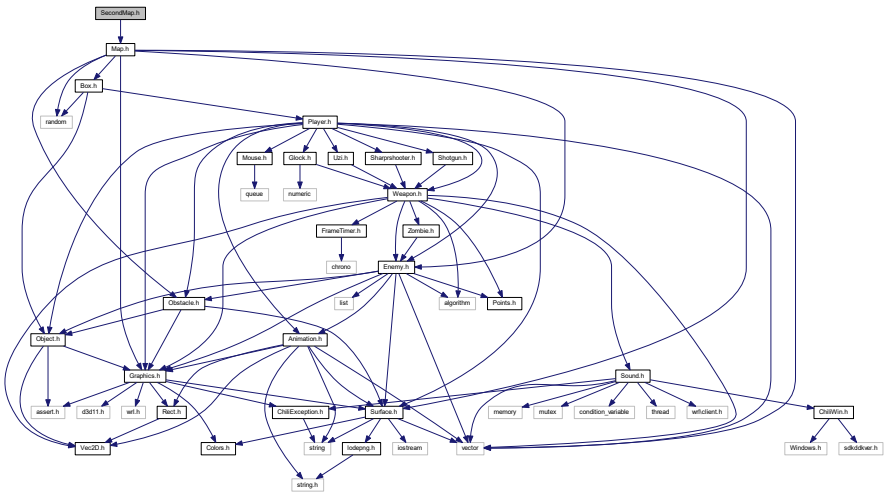
Include dependency graph for SecondMap.cpp:



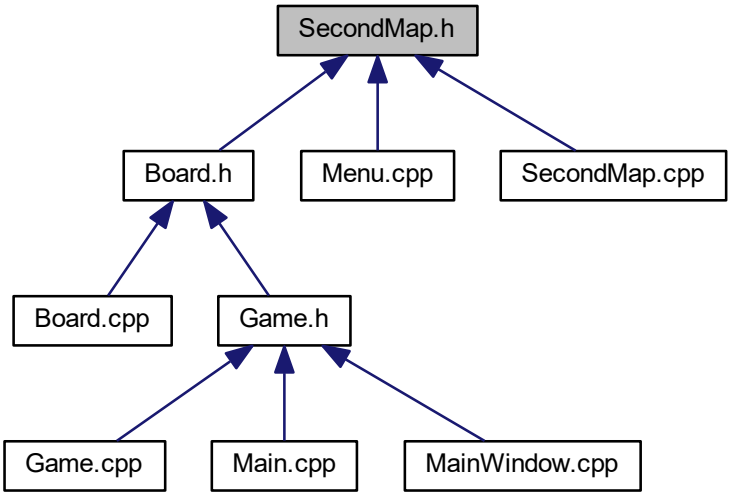
7.55 SecondMap.h File Reference

`#include "Map.h"`

Include dependency graph for SecondMap.h:



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



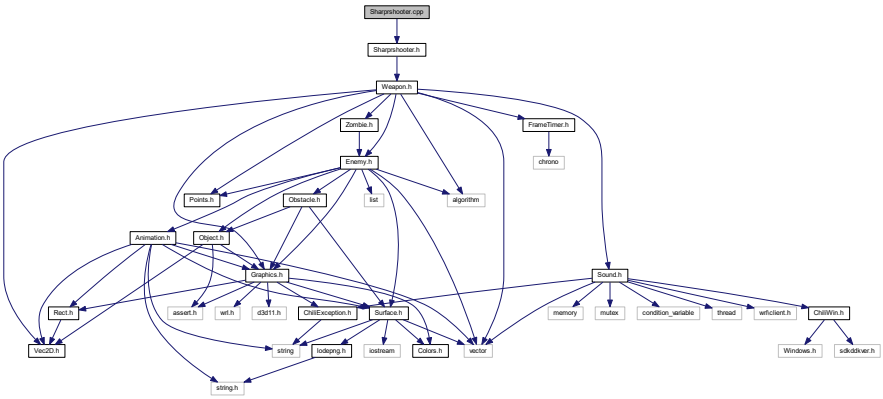
Classes

- class SecondMap

7.56 Sharprshooter.cpp File Reference

```
#include "Sharprshooter.h"
```

Include dependency graph for Sharprshooter.cpp:



Functions

- bool Compare_distanceUzi (std::unique_ptr< Enemy > &obj1, std::unique_ptr< Enemy > &obj2)
- bool Compare_distanceUzi2 (Obstacle obj1, Obstacle obj2)

7.56.1 Function Documentation

7.56.1.1 Compare_distanceUzi()

```
bool Compare_distanceUzi (
            std::unique_ptr< Enemy > & obj1,
            std::unique_ptr< Enemy > & obj2 )
```

Here is the caller graph for this function:

7.56.1.2 Compare_distanceUzi2()

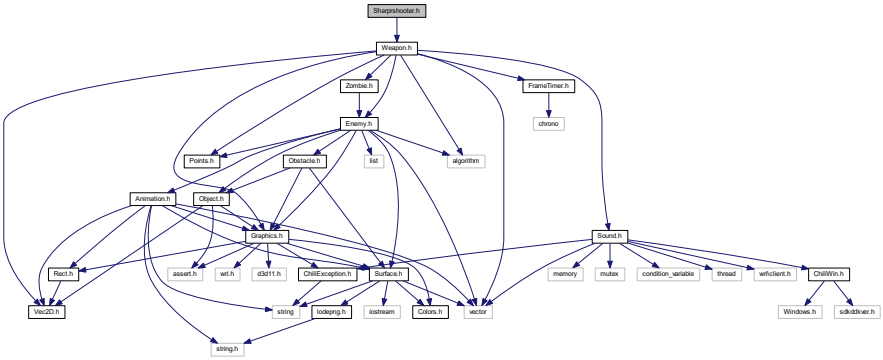
```
bool Compare_distanceUzi2 (
            Obstacle obj1,
            Obstacle obj2 )
```

Here is the caller graph for this function:

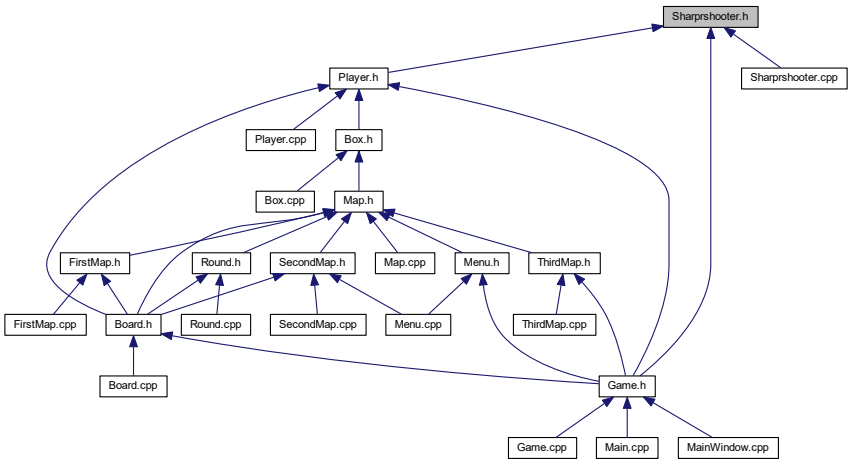
7.57 Sharprshooter.h File Reference

```
#include "Weapon.h"
```

Include dependency graph for Sharprshooter.h:



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



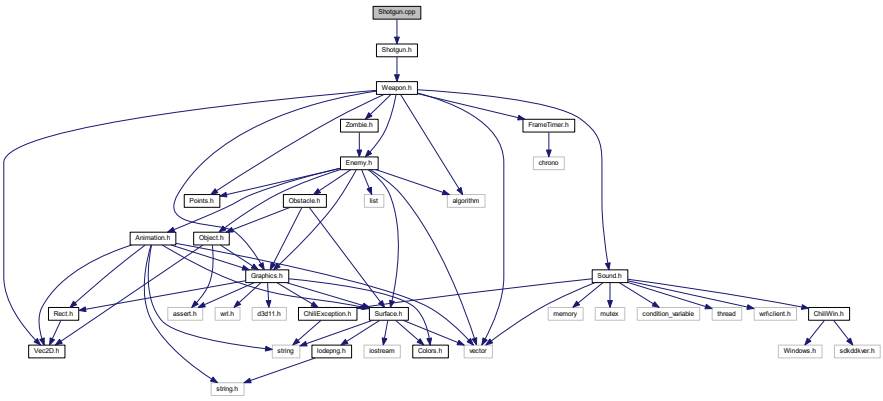
Classes

- class Sharpshooter

7.58 Shotgun.cpp File Reference

```
#include "Shotgun.h"
```

Include dependency graph for Shotgun.cpp:



Functions

- bool comparedistance (std::unique_ptr< Enemy > &obj1, std::unique_ptr< Enemy > &obj2)
- bool comparedistance2 (Obstacle obj1, Obstacle obj2)

7.58.1 Function Documentation

7.58.1.1 comparedistance()

```
bool comparedistance (
            std::unique_ptr< Enemy > & obj1,
            std::unique_ptr< Enemy > & obj2 )
```

Here is the caller graph for this function:

7.58.1.2 comparedistance2()

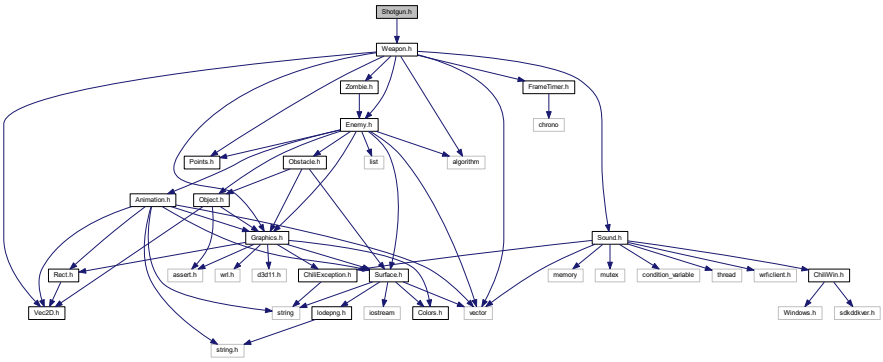
```
bool comparedistance2 (
            Obstacle obj1,
            Obstacle obj2 )
```

Here is the caller graph for this function:

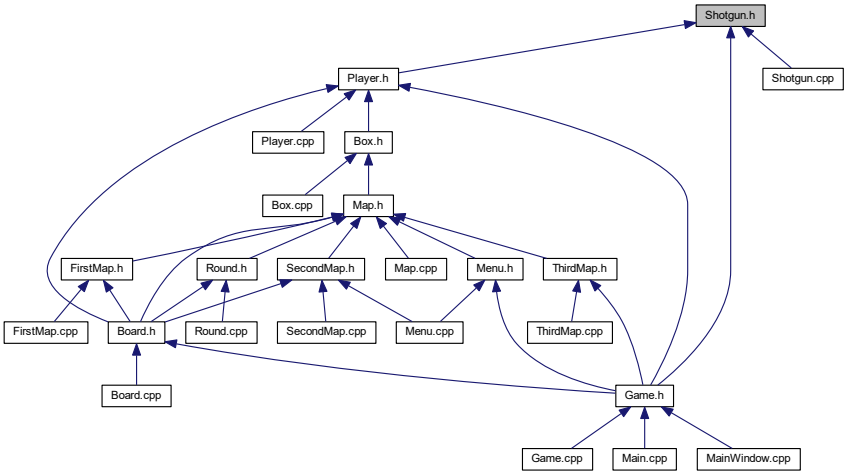
7.59 Shotgun.h File Reference

```
#include "Weapon.h"
```

Include dependency graph for Shotgun.h:



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



Classes

- class Shotgun

7.60 Sound.cpp File Reference

```
#include "Sound.h"
#include <assert.h>
#include <algorithm>
#include <fstream>
#include <array>
#include <functional>
#include "XAudio\XAudio2.h"
#include "DXErr.h"
```

Include dependency graph for Sound.cpp:

Macros

- #define CHILI_SOUND_API_EXCEPTION(hr, note) SoundSystem::APIException(hr,_CRT_WIDE(__FILE↩ __),__LINE__,note)
- #define CHILI_SOUND_FILE_EXCEPTION(filename, note) SoundSystem::FileException(_CRT_WIDE(_↩ _FILE__),__LINE__,note,filename)

7.60.1 Macro Definition Documentation

7.60.1.1 CHILI_SOUND_API_EXCEPTION

```
#define CHILI_SOUND_API_EXCEPTION(
            hr,
            note ) SoundSystem::APIException( hr,_CRT_WIDE(__FILE__),__LINE__,note )
```

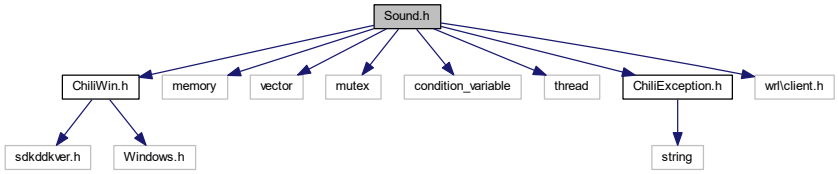
7.60.1.2 CHILI_SOUND_FILE_EXCEPTION

```
#define CHILI_SOUND_FILE_EXCEPTION(
            filename,
            note ) SoundSystem::FileException( _CRT_WIDE(__FILE__),__LINE__,note,filename )
```

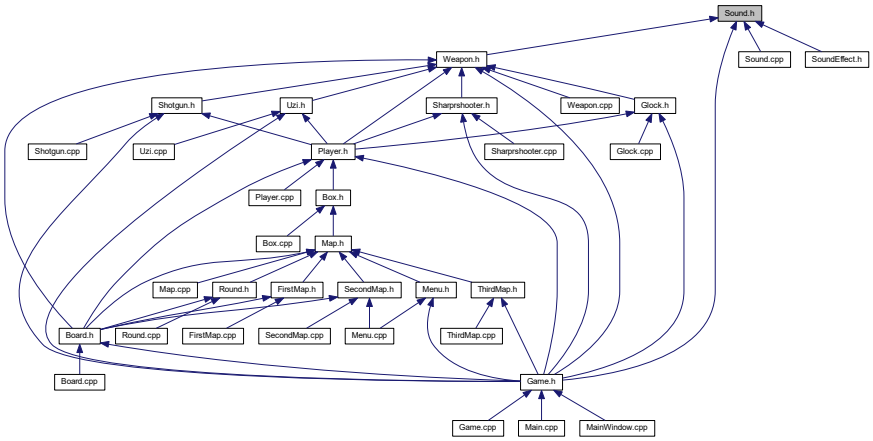
7.61 Sound.h File Reference

```
#include "ChiliWin.h"
#include <memory>
#include <vector>
#include <mutex>
#include <condition_variable>
#include <thread>
#include "ChiliException.h"
#include <wrl\client.h>
```

Include dependency graph for Sound.h:



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



Classes

- class SoundSystem
- class SoundSystem::APIException
- class SoundSystem::FileException
- class SoundSystem::Channel
- class Sound

Typedefs

- typedef tWAVEFORMATEX WAVEFORMATEX

7.61.1 Typedef Documentation

7.61.1.1 WAVEFORMATEX

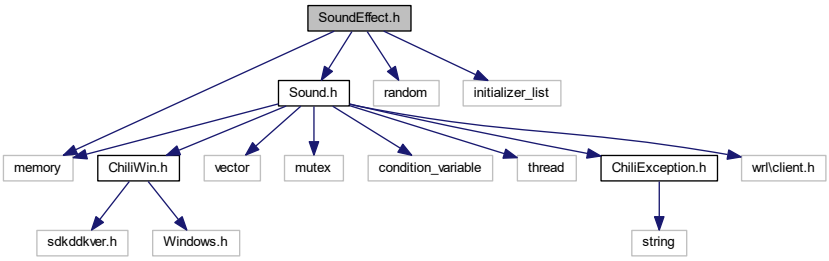
```
typedef tWAVEFORMATEX WAVEFORMATEX
```

7.62 SoundEffect.h File Reference

```
#include "Sound.h"
#include <random>
#include <initializer_list>
```

```
#include <memory>
```

Include dependency graph for SoundEffect.h:



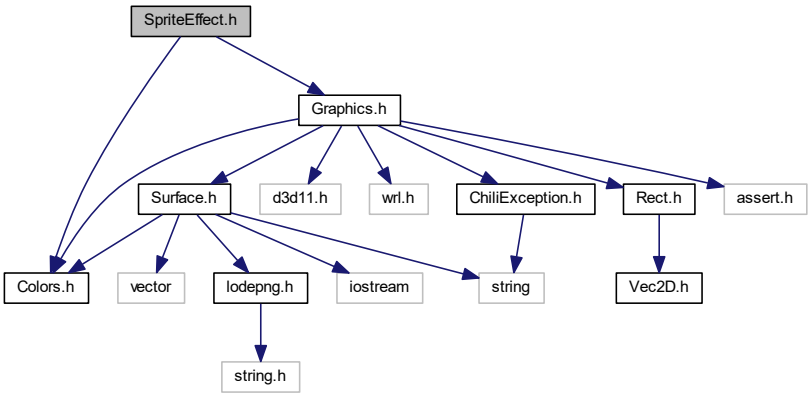
Classes

- class SoundEffect

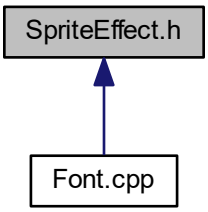
7.63 SpriteEffect.h File Reference

```
#include "Colors.h"
#include "Graphics.h"
```

Include dependency graph for SpriteEffect.h:



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



Classes

- class SpriteEffect::Chroma
- class SpriteEffect::Substitution
- class SpriteEffect::Copy
- class SpriteEffect::Ghost

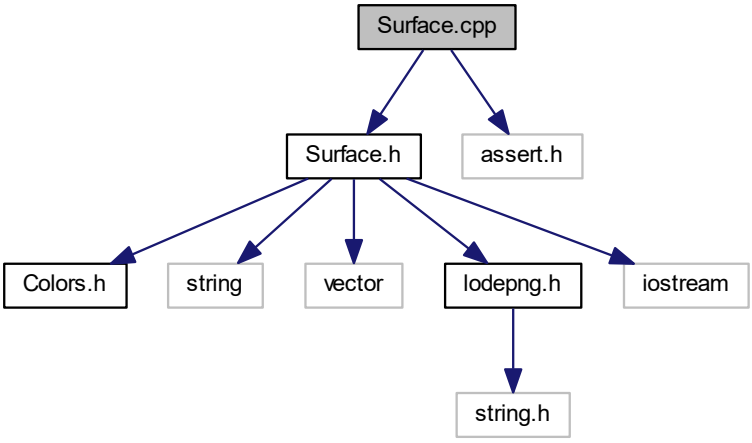
Namespaces

- SpriteEffect

7.64 Surface.cpp File Reference

```
#include "Surface.h"
#include <assert.h>
```

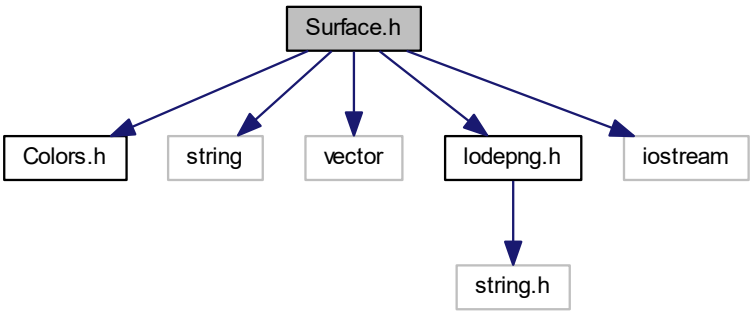
Include dependency graph for Surface.cpp:



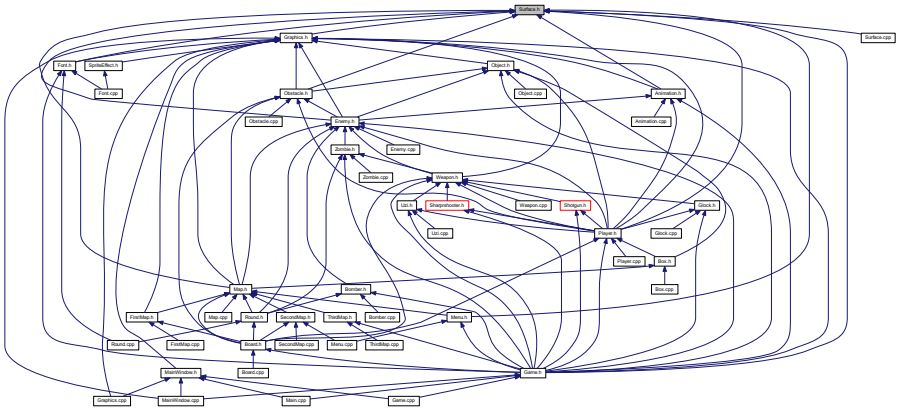
7.65 Surface.h File Reference

```
#include "Colors.h"
#include <string>
#include <vector>
#include "lodepng.h"
#include <iostream>
```

Include dependency graph for Surface.h:



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



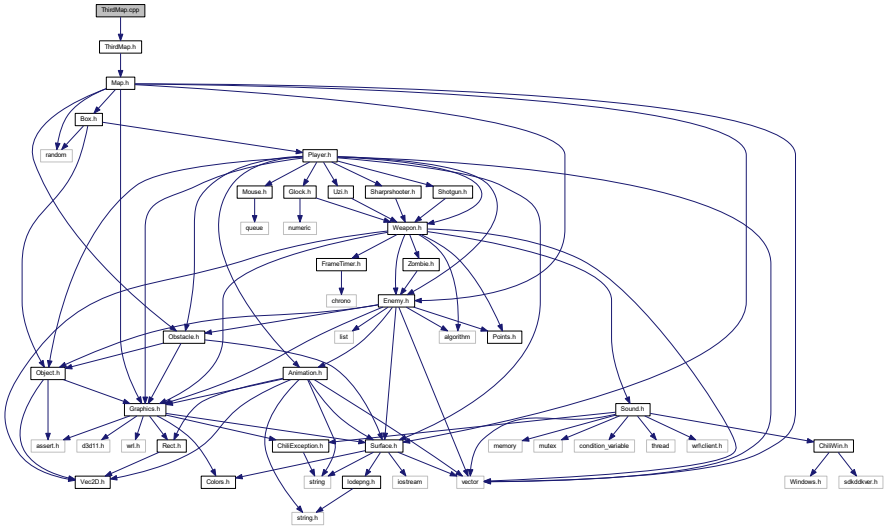
Classes

- class Surface

7.66 ThirdMap.cpp File Reference

```
#include "ThirdMap.h"
```

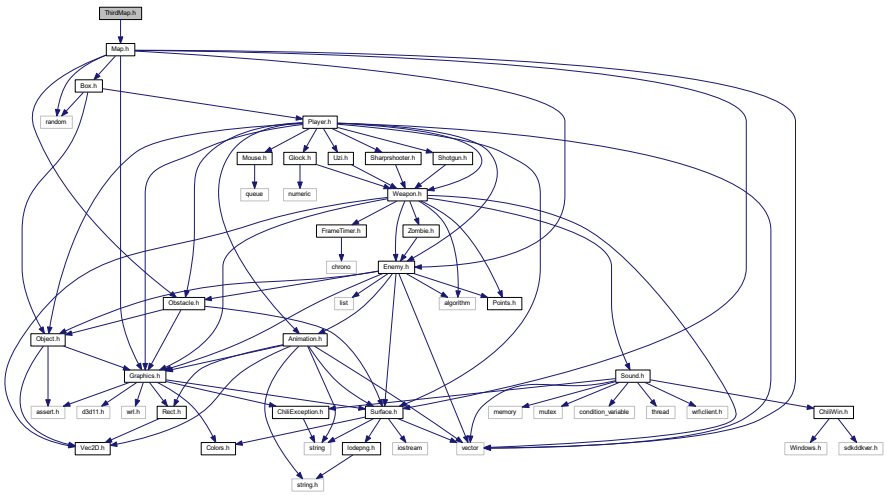
Include dependency graph for ThirdMap.cpp:



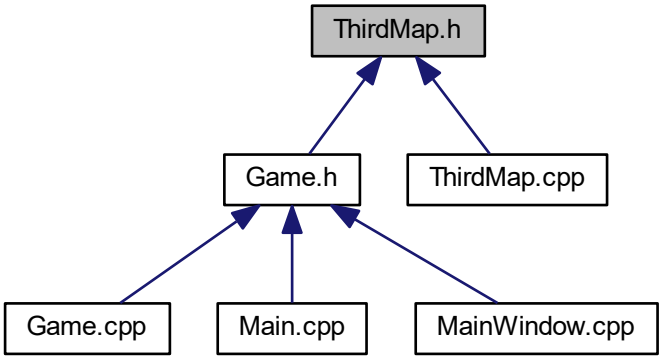
7.67 ThirdMap.h File Reference

```
#include "Map.h"
```

Include dependency graph for ThirdMap.h:



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



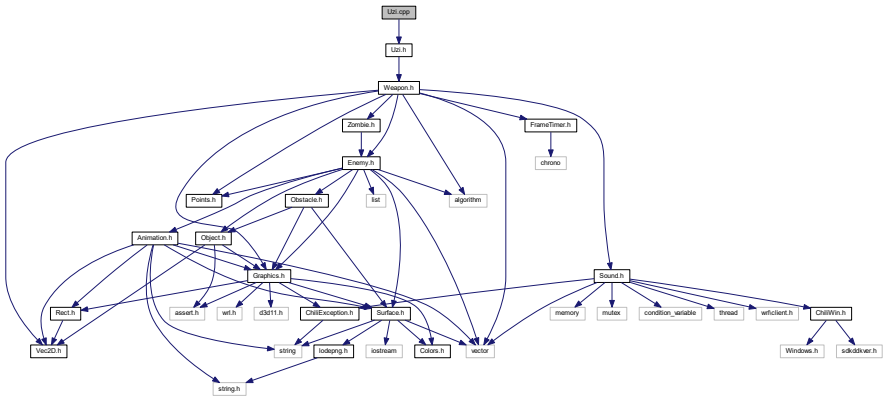
Classes

- class ThirdMap

7.68 Uzi.cpp File Reference

```
#include "Uzi.h"
```

Include dependency graph for Uzi.cpp:



Functions

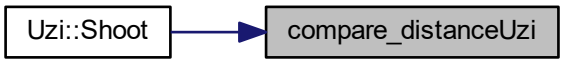
- bool compare_distanceUzi (std::unique_ptr< Enemy > &obj1, std::unique_ptr< Enemy > &obj2)
- bool compare_distanceUzi2 (Obstacle obj1, Obstacle obj2)

7.68.1 Function Documentation

7.68.1.1 compare_distanceUzi()

```
bool compare_distanceUzi (
            std::unique_ptr< Enemy > & obj1,
            std::unique_ptr< Enemy > & obj2 )
```

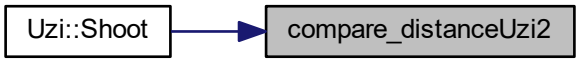
Here is the caller graph for this function:



7.68.1.2 compare_distanceUzi2()

```
bool compare_distanceUzi2 (
            Obstacle obj1,
            Obstacle obj2 )
```

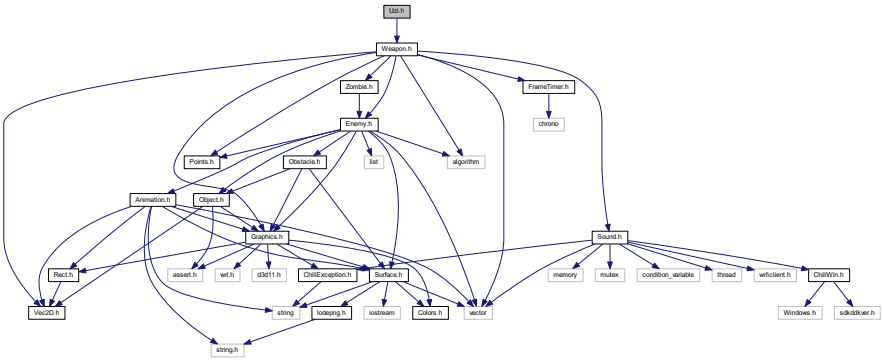
Here is the caller graph for this function:



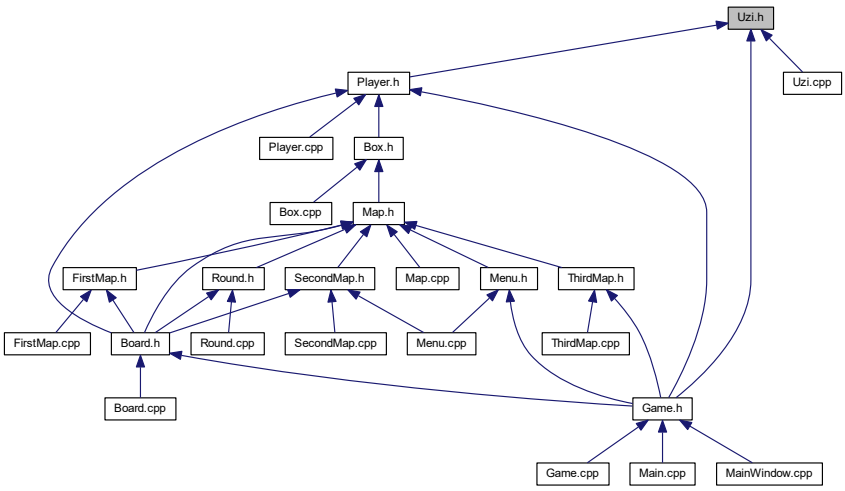
7.69 Uzi.h File Reference

```
#include "Weapon.h"
```

Include dependency graph for Uzi.h:



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



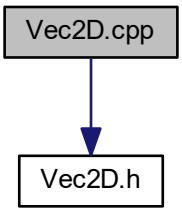
Classes

- class Uzi

7.70 Vec2D.cpp File Reference

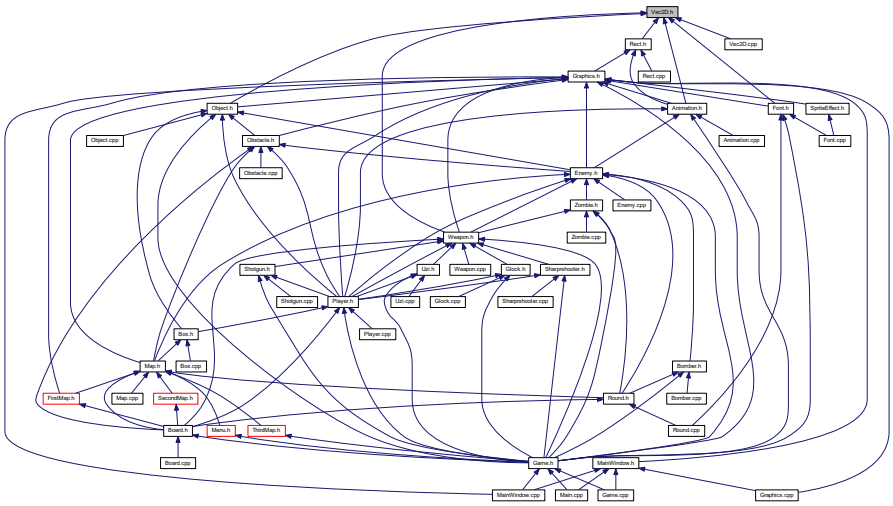
```
#include "Vec2D.h"
```

Include dependency graph for Vec2D.cpp:



7.71 Vec2D.h File Reference

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



Classes

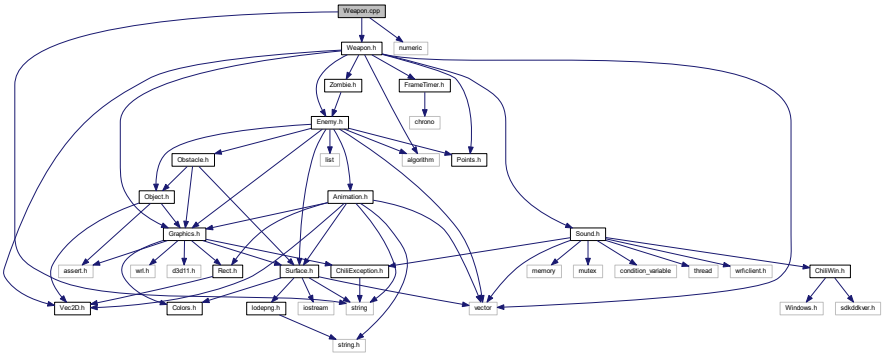
- class Vec2D

7.72 Weapon.cpp File Reference

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

```
#include <numeric>
```

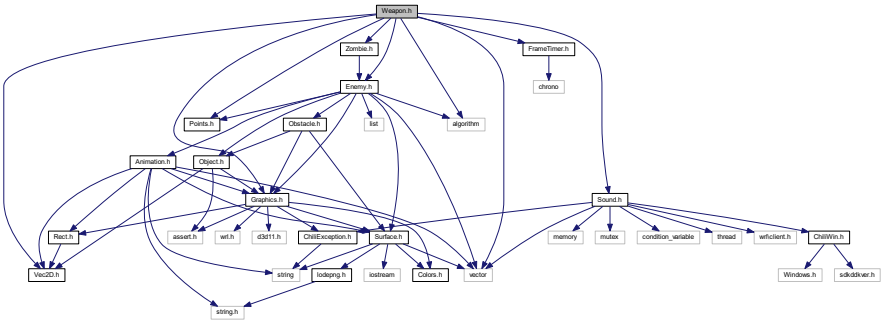
Include dependency graph for Weapon.cpp:



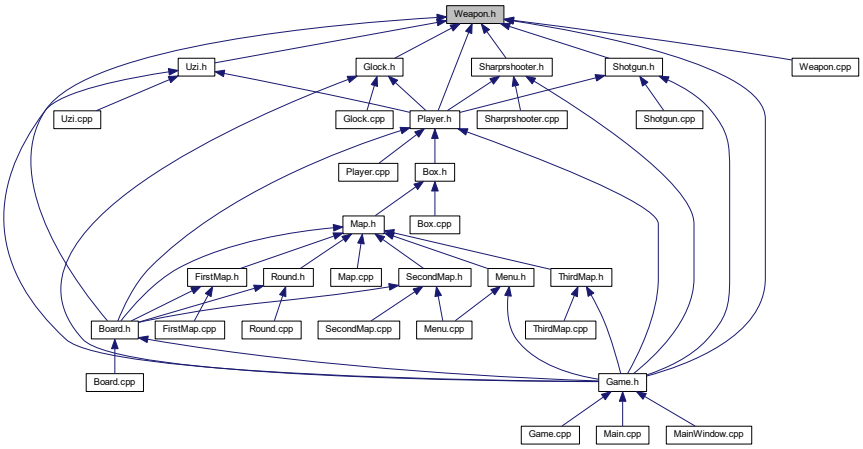
7.73 Weapon.h File Reference

```
#include "Points.h"
#include "Enemy.h"
#include "Zombie.h"
#include "Vec2D.h"
#include "Graphics.h"
#include <algorithm>
#include <vector>
#include "FrameTimer.h"
#include "Sound.h"
```

Include dependency graph for Weapon.h:



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



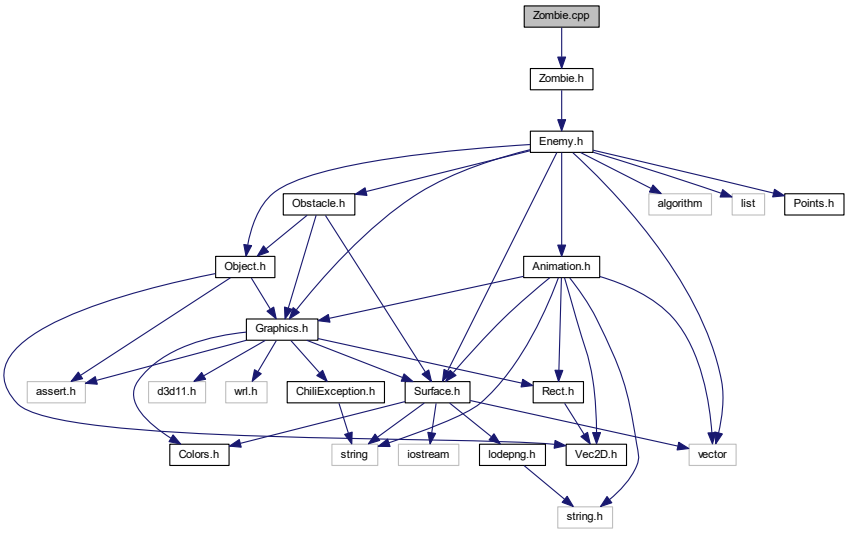
Classes

- class Weapon

7.74 Zombie.cpp File Reference

`#include "Zombie.h"`

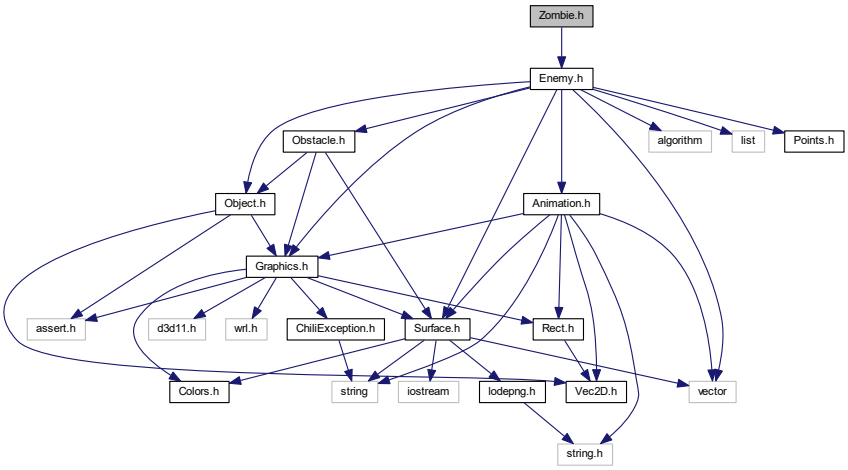
Include dependency graph for Zombie.cpp:



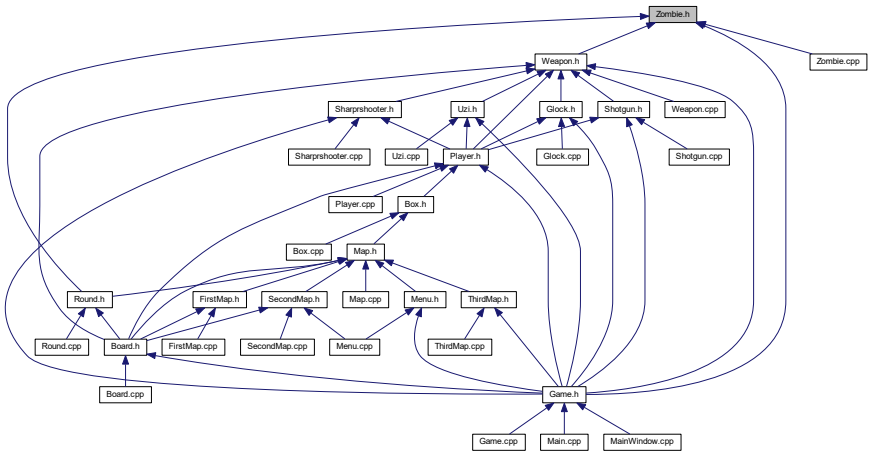
7.75 Zombie.h File Reference

`#include "Enemy.h"`

Include dependency graph for Zombie.h:



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



Classes

- class Zombie

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