SpaceGame

1.0.0

Generated by Doxygen 1.8.11

Contents

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

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

Chapter 3

Class Documentation

3.1 Cell Class Reference

Public Member Functions

- Cell ()

  A constructor.
- Cell (int x, int y)

  An alternate constructor.
- ~Cell ()

  A destructor.
- int getX ()

  Gets the Cell's X value.
- int getY ()

  Gets the Cell's Y value.
- int getOxygenLevel ()

  Gets the Cell's oxygenLevel.
- int setX (int newX)

  Sets the Cells X value.
- int setY (int newY)

  Sets the Cells Y value.
- int setOxygenLevel (int newOxygenLevel)

  Sets the Cell's oxygenLevel.

Public Attributes

- bool isRoom = false

  Whether the cell is part of a roomm.
- bool isDoor = false

  Whether the cell is a door.
- bool isGoal = false

  Represents the goal for the player.
- int oxygenLevel = 100

  The oxygenLevel of the cell.

3.1.1 Constructor & Destructor Documentation

3.1.1.1 Cell::Cell (int *x*, int *y*)

An alternate constructor.

This constructor requires an X and Y for the Cell

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

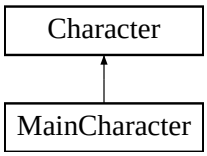
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Cell.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Cell.cpp

3.2 Character Class Reference

The abstract character class.

`#include <Character.h>`

Inheritance diagram for Character:



Public Member Functions

- Character ()
  A constructor.
- ~Character ()
  A destructor.
- int getX ()
  Gets the characters X value.
- int getY ()
  Gets the characters Y value.
- int getSize ()
  Gets the characters size.
- int getSpeed ()
  Gets the characters speed.
- int setX (int newX)
  Sets the characters X value.
- int setY (int newY)
  Sets the characters Y value.
- int setSpeed (int newSpeed)
  Sets the characters current speed.
- bool isCellARoom (int x, int y)
  Checks whether a cell is a room.

- bool isCellADoor (int x, int y)

  Checks whether a cell is a door.
- bool canWanderInRoom (int x, int y)

  Checks whether a cell is a room but not a door.
- int getOxygenLevel (int x, int y)

  Gets the oxygen level of a given room.
- bool reachedGoal (int x, int y)

  Checks whether the player has won.
- void moveCharacter (const Uint8 *keyboardState)

  Changes the character's X and Y value depending on the player's input.
- void wanderAroundRoom ()

  Makes the character move in a random direction to look like they're wandering.

Public Attributes

- std::shared_ptr< Level > currentRoom

  Shared pointer to the Level loaded in SpaceGame.
- std::shared_ptr< CharacterState > state

  An shared pointer to the character's state.
- double health = 100

  A double for the character's health.
- bool isAlive = true

  Boolean for whether character is alive.
- bool **hasWon** = false
- int direction = 1

  Integer for the random direction.
- double timer = 0

  Integer to store time spent in a state.
- int suffocatingSpeed = 1

  Integers for the different movement speeds.
- int **wanderSpeed** = 2
- int **walkSpeed** = 3
- int **runSpeed** = 3
- int lowOxygenThershold = 40

  The three oxygen levels that are used to change alter Character's state.
- int **acceptableOxygenLevel** = 50
- int **dangeroursOxygenLevel** = 20
- int windowWidth = 800

  Window size decided by SpaceGame window size.
- int **windowHeight** = 800

3.2.1 Detailed Description

The abstract character class.

This class is the base for the main character and the NPC. It contains all the functions needed to make the character move and react to different states.

3.2.2 Member Data Documentation

3.2.2.1 int Character::direction = 1

Integer for the random direction.

Direction is used to decide the diretion the character will move in when in the wandering state

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

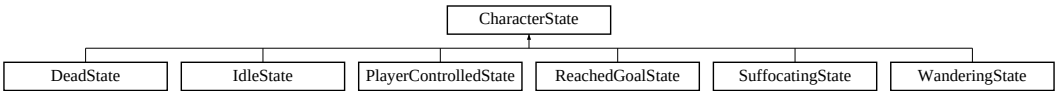
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Character.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Character.cpp

3.3 CharacterState Class Reference

The character state class. Used to store the character's current state.

`#include <CharacterState.h>`

Inheritance diagram for CharacterState:



Public Member Functions

- CharacterState ()
  A constructor.
- ~CharacterState ()
  A destructor.
- virtual void update (Character &character, const Uint8 *keyboardState)
  The update function that checks and updates the character state.

Public Attributes

- double timer = 0
  Used to time how long the character has been in a state.
- int END_IDLE_TIME = 4
  Maxmimum time that the character should be in the Idle state.

3.3.1 Detailed Description

The character state class. Used to store the character's current state.

This class is the class all the other states inherit from. It is used in the Character to store the current state

3.3.2 Member Function Documentation

3.3.2.1 void CharacterState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented in IdleState, PlayerControlledState, DeadState, ReachedGoalState, SuffocatingState, and WanderingState.

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

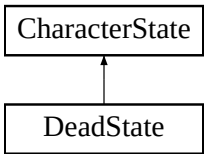
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/CharacterState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/CharacterState.cpp

3.4 DeadState Class Reference

The DeadState is for when the character's health had reached 0.

`#include <DeadState.h>`

Inheritance diagram for DeadState:



Public Member Functions

- DeadState ()

  A constructor.
- ~DeadState ()

  A deconstructor.
- void update (Character &character, const Uint8 *keyboardState)

  The update function that checks and updates the character state.

Additional Inherited Members

3.4.1 Detailed Description

The DeadState is for when the character's health had reached 0.

This class is inherits from the CharacterState class. When the character enters the dead state they can't leave it.

3.4.2 Member Function Documentation

3.4.2.1 void DeadState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented from CharacterState.

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

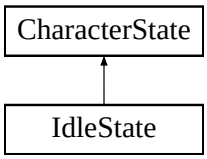
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/DeadState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/DeadState.cpp

3.5 IdleState Class Reference

The IdleState is for when there is no danger and the character is not controlling the player.

`#include <IdleState.h>`

Inheritance diagram for IdleState:



Public Member Functions

- IdleState ()

  A constructor.
- ~IdleState ()

  A destructor.
- void update (Character &character, const Uint8 *keyboardState)

  The update function that checks and updates the character state.

Public Attributes

- double **timer** = 0
- double FRAME_RATE = 60

  Used to add to the timer.

3.5.1 Detailed Description

The IdleState is for when there is no danger and the character is not controlling the player.

This class is inherits from the CharacterState class. The character does not do anything in the IdleState it just checks for when it should update to another state

3.5.2 Member Function Documentation

3.5.2.1 void IdleState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

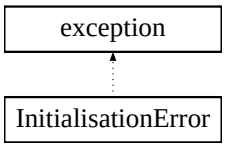
Reimplemented from CharacterState.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/IdleState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/IdleState.cpp

3.6 InitialisationError Class Reference

Inheritance diagram for InitialisationError:



Public Member Functions

- **InitialisationError** (const std::string &msg)
- const char * **what** ()

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/InitialisationError.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/InitialisationError.cpp

3.7 Level Class Reference

This class generates the base of the level.

`#include <Level.h>`

Public Member Functions

- Level ()
  A constructor.
- ~Level ()
  A deconstructor.
- int getCellSize ()
  Return the cellSize.
- void makeGrid (int Window_Width, int Window_Height)
  Fills grid with vectors of shared pointers to cells.

Public Attributes

- std::vector< std::vector< std::shared_ptr< Cell > > > grid
  The base grid that contains the cells.

Protected Attributes

- int cellSize = 50
  The size that the cell will be rendered at.

3.7.1 Detailed Description

This class generates the base of the level.

This class creates a vector of vector of shared pointers to cells

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

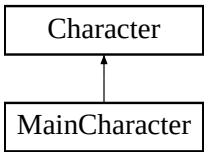
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Level.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Level.cpp

3.8 MainCharacter Class Reference

The MainCharacter that will be controlled by the user.

`#include <MainCharacter.h>`

Inheritance diagram for MainCharacter:



Public Member Functions

- MainCharacter ()
  A constructor.
- ~MainCharacter ()
  A destructor.

Additional Inherited Members

3.8.1 Detailed Description

The MainCharacter that will be controlled by the user.

This class is for the games main character that the user will control. It inherites from the character class.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/MainCharacter.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/MainCharacter.cpp

3.9 Map Class Reference

The Class that handlles the creation of rooms.

`#include <Map.h>`

Public Member Functions

- Map ()
  A Constructor.
- ~Map ()
  A Deconstructor.
- int random (int smallestValue, int largestValue)
  Generates a random integer.
- void LoadMap (std::string filename, Level room)
  Loads in a map from a txt file.
- void generateMap (Level level)
  Randomly generates a map and modifies the level.

3.9.1 Detailed Description

The Class that handlles the creation of rooms.

This class modifies the level class to make patterns out of the cells and turn them into rooms using all of it's various functions.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Map.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Map.cpp

3.10 Oxygen Class Reference

`#include <Oxygen.h>`

Public Member Functions

- Oxygen ()
  A constructor.
- ~Oxygen ()
  A destructor.
- void update (int cellSize, Level grid)
  Update method updates the oxygen level each frame.
- void addOxygen (int mouseX, int mouseY, int cellSize, Level grid)
  Adds oxygen based on where the mouse was clicked.
- void removeOxygen (int mouseX, int mouseY, int cellSize, Level grid)
  Removes oxygen based on where the mouse was clicked.
- int getOxygenReserves ()
  Getter for getting the oxygen reserve level.
- int setOxygenReserves (int newOxygenReserveLevel)
  Setter for setting the oxygen reserve level.

Public Attributes

- int cellX
  Initialising cellX and cellY for cell loop.
- int **cellY**

3.10.1 Detailed Description

This class manages how the oxygen spreads through the room cells and how much oxygen is able to be placed.

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

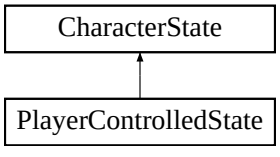
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Oxygen.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Oxygen.cpp

3.11 PlayerControlledState Class Reference

The PlayerControlledState is for when the user is pressing WASD to move the character.

`#include <PlayerControlledState.h>`

Inheritance diagram for PlayerControlledState:



Public Member Functions

- PlayerControlledState ()
  A constructor.
- ~PlayerControlledState ()
  A destructor.
- void update (Character &character, const Uint8 *keyboardState)
  The update function that checks and updates the character state.

Additional Inherited Members

3.11.1 Detailed Description

The PlayerControlledState is for when the user is pressing WASD to move the character.

This class checks for keyboard input and updates the character's X and Y depending on what key was pressed

3.11.2 Member Function Documentation

3.11.2.1 void PlayerControlledState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented from CharacterState.

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

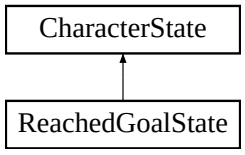
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/PlayerControlledState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/PlayerControlledState.cpp

3.12 ReachedGoalState Class Reference

The character enters this class once they have reached the end goal.

`#include <ReachedGoalState.h>`

Inheritance diagram for ReachedGoalState:



Public Member Functions

- ReachedGoalState ()
  A constructor.
- ~ReachedGoalState ()
  A destructor.
- void update (Character &character, const Uint8 *keyboardState)
  The update function that checks and updates the character state.

Additional Inherited Members

3.12.1 Detailed Description

The character enters this class once they have reached the end goal.

This class triggers the You Won screen and doesn't let the character move. Once the character has entered this state it can't leave it.

3.12.2 Member Function Documentation

3.12.2.1 void ReachedGoalState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented from CharacterState.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/ReachedGoalState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/ReachedGoalState.cpp

3.13 SpaceGame Class Reference

The main class.

`#include <SpaceGame.h>`

Public Member Functions

- SpaceGame ()
  A constructor.
- ~SpaceGame ()
  A deconstructor.
- void **run** ()

Public Attributes

- int mouse_X

  Coordinates of the mouse.
- int **mouse_Y**

Static Public Attributes

- static const int WINDOW_WIDTH = 800

  The window width.
- static const int WINDOW_HEIGHT = 800

  The window height.

3.13.1 Detailed Description

The main class.

This is the main class where the game is laoded and run.

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

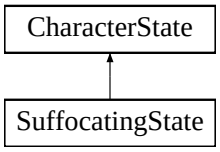
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/SpaceGame.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/SpaceGame.cpp

3.14 SuffocatingState Class Reference

The suffocating class is for when the character is on a cell with a low oxygen level.

`#include <SuffocatingState.h>`

Inheritance diagram for SuffocatingState:



Public Member Functions

- SuffocatingState ()

  A constructor.
- ~SuffocatingState ()

  A destructor.
- void update (Character &character, const Uint8 *keyboardState)

  The update function that checks and updates the character state.
- void decreaseHealth (Character &character)

  Decreases the character's health.

Additional Inherited Members

3.14.1 Detailed Description

The suffocating class is for when the character is on a cell with a low oxygen level.

This class alters the characters speed and health depending on the oxygen level of the cell it's currently on

3.14.2 Member Function Documentation

3.14.2.1 void SuffocatingState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented from CharacterState.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/SuffocatingState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/SuffocatingState.cpp

3.15 Texture Class Reference

Loads and renders images in the window.

`#include <Texture.h>`

Public Member Functions

- Texture (const std::string &fileName)

  A constructor.
- ~Texture ()

  A destructor.
- SDL_Texture * getTexture ()

  Loads the texture.
- void render (SDL_Renderer *renderer, int x, int y, int width, int height)

  Renders the image in the window.
- void alterTransparency (int transparencyLevel)

  Alters the alpha value of the image to make it appear transparent in the window.

3.15.1 Detailed Description

Loads and renders images in the window.

This class is used for all the images in the game. It loads textures from a given file location and can alter the image transparency if the image is a PNG.

3.15.2 Constructor & Destructor Documentation

3.15.2.1 Texture::Texture (const std::string & *fileName*)

A constructor.

Requires a file path to load the image from

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

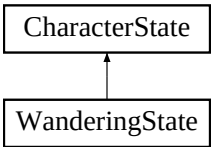
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Texture.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/Texture.cpp

3.16 WanderingState Class Reference

WanderingState makes the character move around the room randomly.

`#include <WanderingState.h>`

Inheritance diagram for WanderingState:



Public Member Functions

- WanderingState ()
  A constructor.
- ~WanderingState ()
  A destructor.
- void update (Character &character, const Uint8 *keyboardState)
  The update function that checks and updates the character state.

Additional Inherited Members

3.16.1 Detailed Description

WanderingState makes the character move around the room randomly.

If there is no danger or player input the character will be moved around the room in a random direction

3.16.2 Member Function Documentation

3.16.2.1 void WanderingState::update (Character & *character,* const Uint8 * *keyboardState*) [virtual]

The update function that checks and updates the character state.

Runs on every frame of the game to check the level and update the character state. It takes in the character which needs it's state updating and keyboardState to check whether the user has pressed the keyboard since the last update

Reimplemented from CharacterState.

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

- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/WanderingState.h
- C:/Users/Warwick/Documents/GitHub/Desktop_game/our code/SDL_project/WanderingState.cpp

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