HelloWorld

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Chapter 1

Class Index

1.1 Class List

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

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 InputsHandler Class Reference

A class which handles inputs from peripherals (i.e., keyboard and mouse).

`#include <InputsHandler.h>`

Public Member Functions

- InputsHandler (void)

  Constructor for the InputsHandler class.
- void process (sf::Event *)
- void printKeysPressed (void)

  Method to print out which keys are currently pressed.
- void reset (void)

  Method to reset InputsHandler. To be called once per frame (at end of frame!).
- ~InputsHandler (void)

  Destructor for the InputsHandler class.

Public Attributes

- std::vector< bool > key_pressed_once_vec
- std::vector< bool > key_press_vec
- std::map< sf::Keyboard::Key, std::string > key_code_map

Private Member Functions

- void __constructKeyCodeMap (void)

  Helper method to construct a map from sf::Keyboard::Key to a string representation of the corresponding key.

3.1.1 Detailed Description

A class which handles inputs from peripherals (i.e., keyboard and mouse).

3.1.2 Constructor & Destructor Documentation

3.1.2.1 InputsHandler()

```
InputsHandler::InputsHandler (
            void  )
```

Constructor for the InputsHandler class.

```
379 {
380     this->key_pressed_once_vec.resize(sf::Keyboard::KeyCount, false);
381     this->key_press_vec.resize(sf::Keyboard::KeyCount, false);
382 
383     this->__constructKeyCodeMap();
384 
385     std::cout « "InputsHandler constructed at " « this « std::endl;
386 
387     return;
388 }   /* InputsHandler() */
```

3.1.2.2 ~InputsHandler()

```
InputsHandler::~InputsHandler (
            void  )
```

Destructor for the InputsHandler class.

```
499 {
500     std::cout « "InputsHandler at " « this « " destroyed" « std::endl;
501 
502     return;
503 }   /* ~InputsHandler() */
```

3.1.3 Member Function Documentation

3.1.3.1 __constructKeyCodeMap()

```
void InputsHandler::__constructKeyCodeMap (
            void  )  [private]
```

Helper method to construct a map from sf::Keyboard::Key to a string representation of the corresponding key.

```
35 {
36     //  1. unknown keys
37     this->key_code_map.insert(
38         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Unknown, "Unknown")
39     );
40 
41 
42     //  2. alpha keys
43     this->key_code_map.insert(
44         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::A, "A")
45     );
46     this->key_code_map.insert(
47         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::B, "B")
48     );
49     this->key_code_map.insert(
50         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::C, "C")
```

```
51      );
52      this->key_code_map.insert(
53          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::D, "D")
54      );
55      this->key_code_map.insert(
56          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::E, "E")
57      );
58      this->key_code_map.insert(
59          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F, "F")
60      );
61      this->key_code_map.insert(
62          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::G, "G")
63      );
64      this->key_code_map.insert(
65          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::H, "H")
66      );
67      this->key_code_map.insert(
68          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::I, "I")
69      );
70      this->key_code_map.insert(
71          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::J, "J")
72      );
73      this->key_code_map.insert(
74          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::K, "K")
75      );
76      this->key_code_map.insert(
77          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::L, "L")
78      );
79      this->key_code_map.insert(
80          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::M, "M")
81      );
82      this->key_code_map.insert(
83          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::N, "N")
84      );
85      this->key_code_map.insert(
86          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::O, "O")
87      );
88      this->key_code_map.insert(
89          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::P, "P")
90      );
91      this->key_code_map.insert(
92          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Q, "Q")
93      );
94      this->key_code_map.insert(
95          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::R, "R")
96      );
97      this->key_code_map.insert(
98          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::S, "S")
99      );
100      this->key_code_map.insert(
101          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::T, "T")
102      );
103      this->key_code_map.insert(
104          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::U, "U")
105      );
106      this->key_code_map.insert(
107          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::V, "V")
108      );
109      this->key_code_map.insert(
110          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::W, "W")
111      );
112      this->key_code_map.insert(
113          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::X, "X")
114      );
115      this->key_code_map.insert(
116          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Y, "Y")
117      );
118      this->key_code_map.insert(
119          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Z, "Z")
120      );
121
122
123      //  3. numeric keys
124      this->key_code_map.insert(
125          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num0, "0")
126      );
127      this->key_code_map.insert(
128          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num1, "1")
129      );
130      this->key_code_map.insert(
131          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num2, "2")
132      );
133      this->key_code_map.insert(
134          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num3, "3")
135      );
136      this->key_code_map.insert(
137          std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num4, "4")
```

```
138     );
139     this->key_code_map.insert(
140         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num5, "5")
141     );
142     this->key_code_map.insert(
143         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num6, "6")
144     );
145     this->key_code_map.insert(
146         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num7, "7")
147     );
148     this->key_code_map.insert(
149         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num8, "8")
150     );
151     this->key_code_map.insert(
152         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Num9, "9")
153     );
154     this->key_code_map.insert(
155         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad0, "0")
156     );
157     this->key_code_map.insert(
158         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad1, "1")
159     );
160     this->key_code_map.insert(
161         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad2, "2")
162     );
163     this->key_code_map.insert(
164         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad3, "3")
165     );
166     this->key_code_map.insert(
167         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad4, "4")
168     );
169     this->key_code_map.insert(
170         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad5, "5")
171     );
172     this->key_code_map.insert(
173         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad6, "6")
174     );
175     this->key_code_map.insert(
176         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad7, "7")
177     );
178     this->key_code_map.insert(
179         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad8, "8")
180     );
181     this->key_code_map.insert(
182         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Numpad9, "9")
183     );
184
185
186     //  4. direction keys
187     this->key_code_map.insert(
188         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Left, "Left")
189     );
190     this->key_code_map.insert(
191         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Right, "Right")
192     );
193     this->key_code_map.insert(
194         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Up, "Up")
195     );
196     this->key_code_map.insert(
197         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Down, "Down")
198     );
199
200
201     //  5. function keys
202     this->key_code_map.insert(
203         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F1, "F1")
204     );
205     this->key_code_map.insert(
206         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F2, "F2")
207     );
208     this->key_code_map.insert(
209         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F3, "F3")
210     );
211     this->key_code_map.insert(
212         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F4, "F4")
213     );
214     this->key_code_map.insert(
215         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F5, "F5")
216     );
217     this->key_code_map.insert(
218         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F6, "F6")
219     );
220     this->key_code_map.insert(
221         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F7, "F7")
222     );
223     this->key_code_map.insert(
224         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F8, "F8")
```

```
225     );
226     this->key_code_map.insert(
227         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F9, "F9")
228     );
229     this->key_code_map.insert(
230         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F10, "F10")
231     );
232     this->key_code_map.insert(
233         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F11, "F11")
234     );
235     this->key_code_map.insert(
236         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F12, "F12")
237     );
238     this->key_code_map.insert(
239         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F13, "F13")
240     );
241     this->key_code_map.insert(
242         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F14, "F14")
243     );
244     this->key_code_map.insert(
245         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::F15, "F15")
246     );
247
248
249     //  6. other keys
250     this->key_code_map.insert(
251         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Escape, "Escape")
252     );
253     this->key_code_map.insert(
254         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::LControl, "LCtrl")
255     );
256     this->key_code_map.insert(
257         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::LShift, "LShift")
258     );
259     this->key_code_map.insert(
260         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::LAlt, "LAlt")
261     );
262     this->key_code_map.insert(
263         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::LSystem, "LSystem")
264     );
265     this->key_code_map.insert(
266         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::RControl, "RCtrl")
267     );
268     this->key_code_map.insert(
269         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::RShift, "RShift")
270     );
271     this->key_code_map.insert(
272         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::RAlt, "RAlt")
273     );
274     this->key_code_map.insert(
275         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::RSystem, "RSystem")
276     );
277     this->key_code_map.insert(
278         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Menu, "Menu")
279     );
280     this->key_code_map.insert(
281         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::LBracket, "LBracket")
282     );
283     this->key_code_map.insert(
284         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::RBracket, "RBracket")
285     );
286     this->key_code_map.insert(
287         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Semicolon, "Semicolon")
288     );
289     this->key_code_map.insert(
290         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Comma, "Comma")
291     );
292     this->key_code_map.insert(
293         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Period, "Period")
294     );
295     this->key_code_map.insert(
296         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Quote, "Quote")
297     );
298     this->key_code_map.insert(
299         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Slash, "Slash")
300     );
301     this->key_code_map.insert(
302         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Backslash, "Backslash")
303     );
304     this->key_code_map.insert(
305         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Tilde, "Tilde")
306     );
307     this->key_code_map.insert(
308         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Equal, "Equal")
309     );
310     this->key_code_map.insert(
311         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Hyphen, "Hyphen")
```

```
312     );
313     this->key_code_map.insert(
314         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Space, "Space")
315     );
316     this->key_code_map.insert(
317         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Enter, "Enter")
318     );
319     this->key_code_map.insert(
320         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Backspace, "Backspace")
321     );
322     this->key_code_map.insert(
323         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Tab, "Tab")
324     );
325     this->key_code_map.insert(
326         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::PageUp, "PageUp")
327     );
328     this->key_code_map.insert(
329         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::PageDown, "PageDown")
330     );
331     this->key_code_map.insert(
332         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::End, "End")
333     );
334     this->key_code_map.insert(
335         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Home, "Home")
336     );
337     this->key_code_map.insert(
338         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Insert, "Insert")
339     );
340     this->key_code_map.insert(
341         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Delete, "Delete")
342     );
343     this->key_code_map.insert(
344         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Add, "Add")
345     );
346     this->key_code_map.insert(
347         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Subtract, "Subtract")
348     );
349     this->key_code_map.insert(
350         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Multiply, "Multiply")
351     );
352     this->key_code_map.insert(
353         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Divide, "Divide")
354     );
355     this->key_code_map.insert(
356         std::pair<sf::Keyboard::Key, std::string>(sf::Keyboard::Pause, "Pause")
357     );
358
359     return;
360 }   /* __constructKeyCodeMap() */
```

3.1.3.2 printKeysPressed()

```
void InputsHandler::printKeysPressed (
             void  )
```

Method to print out which keys are currently pressed.

```
448 {
449     std::string print_str = "";
450
451     for (size_t i = 0; i < this->key_press_vec.size(); i++) {
452         if (this->key_press_vec[i]) {
453             print_str += this->key_code_map[sf::Keyboard::Key(i)];
454             print_str += ", ";
455         }
456     }
457
458     if (not print_str.empty()) {
459         std::cout « "Keys pressed: " « print_str « std::endl;
460     }
461
462     return;
463 }   /* printKeysPressed() */
```

3.1.3.3 process()

```
void InputsHandler::process (
            sf::Event * event_ptr )
```

```
405 {
406     //  1. update state of key press vectors
407     switch (event_ptr->type) {
408         case (sf::Event::KeyPressed): {
409             if (not this->key_press_vec[event_ptr->key.code]) {
410                 this->key_pressed_once_vec[event_ptr->key.code] = true;
411             }
412
413             this->key_press_vec[event_ptr->key.code] = true;
414
415             break;
416         }
417
418         case (sf::Event::KeyReleased): {
419             this->key_pressed_once_vec[event_ptr->key.code] = false;
420             this->key_press_vec[event_ptr->key.code] = false;
421
422             break;
423         }
424
425         default: {
426             //  do nothing!
427
428             break;
429         }
430     }
431
432     return;
433 }   /* process() */
```

3.1.3.4 reset()

```
void InputsHandler::reset (
            void  )
```

Method to reset InputsHandler. To be called once per frame (at end of frame!).

```
478 {
479     for (size_t i = 0; i < this->key_press_vec.size(); i++) {
480         this->key_pressed_once_vec[i] = false;
481     }
482
483     return;
484 }   /* reset() */
```

3.1.4 Member Data Documentation

3.1.4.1 key_code_map

```
std::map<sf::Keyboard::Key, std::string> InputsHandler::key_code_map
```

3.1.4.2 key_press_vec

```
std::vector<bool> InputsHandler::key_press_vec
```

3.1.4.3 key_pressed_once_vec

```
std::vector<bool> InputsHandler::key_pressed_once_vec
```

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

- header/ESC_core/InputsHandler.h
- source/ESC_core/InputsHandler.cpp

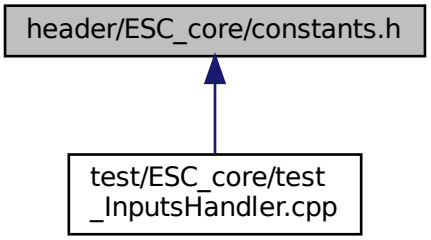
Chapter 4

File Documentation

4.1 header/ESC_core/constants.h File Reference

Header file for various constants.

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



Variables

- const int FRAMES_PER_SECOND = 60
- const double SECONDS_PER_FRAME = 1.0 / 60

4.1.1 Detailed Description

Header file for various constants.

4.1.2 Variable Documentation

4.1.2.1 FRAMES_PER_SECOND

```
const int FRAMES_PER_SECOND = 60
```

4.1.2.2 SECONDS_PER_FRAME

```
const double SECONDS_PER_FRAME = 1.0 / 60
```

4.2 header/ESC_core/doxygen_cite.h File Reference

Header file which simply cites the doxygen tool.

4.2.1 Detailed Description

Header file which simply cites the doxygen tool.

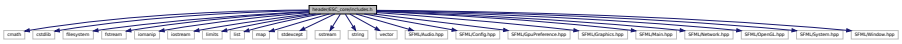
Ref: van Heesch. [2023]

4.3 header/ESC_core/includes.h File Reference

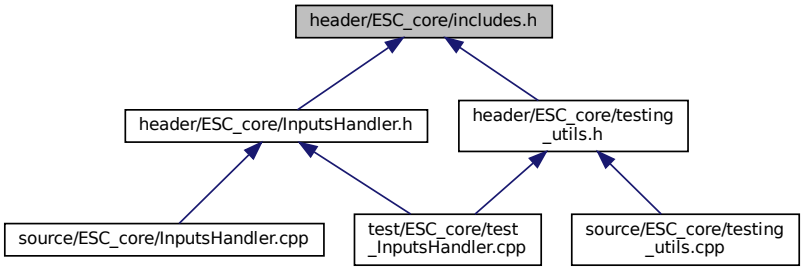
Header file for various includes.

```
#include <cmath>
#include <cstdlib>
#include <filesystem>
#include <fstream>
#include <iomanip>
#include <iostream>
#include <limits>
#include <list>
#include <map>
#include <stdexcept>
#include <sstream>
#include <string>
#include <vector>
#include <SFML/Audio.hpp>
#include <SFML/Config.hpp>
#include <SFML/GpuPreference.hpp>
#include <SFML/Graphics.hpp>
#include <SFML/Main.hpp>
#include <SFML/Network.hpp>
#include <SFML/OpenGL.hpp>
#include <SFML/System.hpp>
```

```
#include <SFML/Window.hpp>
```
Include dependency graph for includes.h:



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



4.3.1 Detailed Description

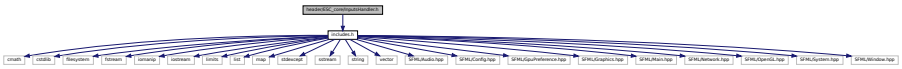
Header file for various includes.

Ref: Gomila [2023]

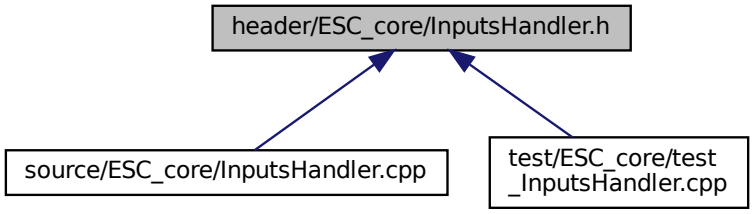
4.4 header/ESC_core/InputsHandler.h File Reference

Header file for the InputsHandler class.

```
#include "includes.h"
```
Include dependency graph for InputsHandler.h:



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



Classes

- class InputsHandler

  A class which handles inputs from peripherals (i.e., keyboard and mouse).

4.4.1 Detailed Description

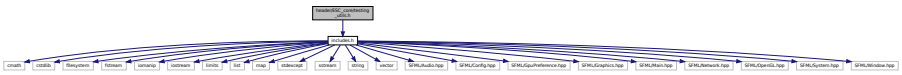
Header file for the InputsHandler class.

4.5 header/ESC_core/testing_utils.h File Reference

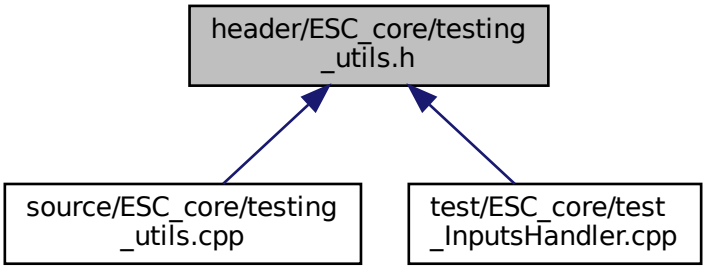
Header file for various testing utilities.

```
#include "includes.h"
```

Include dependency graph for testing_utils.h:



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



Macros

- #define FLOAT_TOLERANCE 1e-6

  A tolerance for application to floating point equality tests.

Functions

- void printGreen (std::string)

  A function that sends green text to std::cout.
- void printGold (std::string)

  A function that sends gold text to std::cout.
- void printRed (std::string)

  A function that sends red text to std::cout.
- void testFloatEquals (double, double, std::string, int)

  Tests for the equality of two floating point numbers x and y (to within FLOAT_TOLERANCE).
- void testGreaterThan (double, double, std::string, int)

  Tests if x > y.
- void testGreaterThanOrEqualTo (double, double, std::string, int)

  Tests if x >= y.
- void testLessThan (double, double, std::string, int)

  Tests if x < y.
- void testLessThanOrEqualTo (double, double, std::string, int)

  Tests if x <= y.
- void testTruth (bool, std::string, int)

  Tests if the given statement is true.
- void expectedErrorNotDetected (std::string, int)

  A utility function to print out a meaningful error message whenever an expected error fails to be thrown/caught/detected.

4.5.1 Detailed Description

Header file for various testing utilities.

This is a library of utility functions used throughout the various test suites.

4.5.2 Macro Definition Documentation

4.5.2.1 FLOAT_TOLERANCE

```
#define FLOAT_TOLERANCE 1e-6
```

A tolerance for application to floating point equality tests.

4.5.3 Function Documentation

4.5.3.1 expectedErrorNotDetected()

```
void expectedErrorNotDetected (
            std::string file,
            int line )
```

A utility function to print out a meaningful error message whenever an expected error fails to be thrown/caught/detected.

Parameters

file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
430 {
431     std::string error_str = "\n ERROR  failed to throw expected error prior to line ";
432     error_str += std::to_string(line);
433     error_str += " of ";
434     error_str += file;
435 
436     #ifdef _WIN32
437         std::cout « error_str « std::endl;
438     #endif
439 
440     throw std::runtime_error(error_str);
441     return;
442 }   /* expectedErrorNotDetected() */
```

4.5.3.2 printGold()

```
void printGold (
              std::string input_str )
```

A function that sends gold text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
82 {
83     std::cout « "\x1B[33m" « input_str « "\033[0m";
84     return;
85 }   /* printGold() */
```

4.5.3.3 printGreen()

```
void printGreen (
              std::string input_str )
```

A function that sends green text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
62 {
63     std::cout « "\x1B[32m" « input_str « "\033[0m";
64     return;
65 }   /* printGreen() */
```

4.5.3.4 printRed()

```
void printRed (
```

```
            std::string input_str )
```

A function that sends red text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
102 {
103     std::cout « "\x1B[31m" « input_str « "\033[0m";
104     return;
105 }   /* printRed() */
```

4.5.3.5 testFloatEquals()

```
void testFloatEquals (
            double x,
            double y,
            std::string file,
            int line )
```

Tests for the equality of two floating point numbers *x* and *y* (to within FLOAT_TOLERANCE).

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
136 {
137     if (fabs(x - y) <= FLOAT_TOLERANCE) {
138         return;
139     }
140
141     std::string error_str = "ERROR: testFloatEquals():\t in ";
142     error_str += file;
143     error_str += "\tline ";
144     error_str += std::to_string(line);
145     error_str += ":\t\n";
146     error_str += std::to_string(x);
147     error_str += " and ";
148     error_str += std::to_string(y);
149     error_str += " are not equal to within +/- ";
150     error_str += std::to_string(FLOAT_TOLERANCE);
151     error_str += "\n";
152
153     #ifdef _WIN32
154         std::cout « error_str « std::endl;
155     #endif
156
157     throw std::runtime_error(error_str);
158     return;
159 }   /* testFloatEquals() */
```

4.5.3.6 testGreaterThan()

```
void testGreaterThan (
            double x,
```

```
            double y,
            std::string file,
            int line )
```

Tests if x $>$ y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
189 {
190     if (x > y) {
191         return;
192     }
193
194     std::string error_str = "ERROR: testGreaterThan():\t in ";
195     error_str += file;
196     error_str += "\tline ";
197     error_str += std::to_string(line);
198     error_str += ":\t\n";
199     error_str += std::to_string(x);
200     error_str += " is not greater than ";
201     error_str += std::to_string(y);
202     error_str += "\n";
203
204     #ifdef _WIN32
205         std::cout « error_str « std::endl;
206     #endif
207
208     throw std::runtime_error(error_str);
209     return;
210 }   /* testGreaterThan() */
```

4.5.3.7 testGreaterThanOrEqualTo()

```
void testGreaterThanOrEqualTo (
            double x,
            double y,
            std::string file,
            int line )
```

Tests if x $>=$ y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
240 {
241     if (x >= y) {
242         return;
243     }
244
245     std::string error_str = "ERROR: testGreaterThanOrEqualTo():\t in ";
246     error_str += file;
247     error_str += "\tline ";
248     error_str += std::to_string(line);
249     error_str += ":\t\n";
```

```
250     error_str += std::to_string(x);
251     error_str += " is not greater than or equal to ";
252     error_str += std::to_string(y);
253     error_str += "\n";
254 
255     #ifdef _WIN32
256         std::cout << error_str << std::endl;
257     #endif
258 
259     throw std::runtime_error(error_str);
260     return;
261 }   /* testGreaterThanOrEqualTo() */
```

4.5.3.8 testLessThan()

```
void testLessThan (
            double x,
            double y,
            std::string file,
            int line )
```

Tests if x < y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
291 {
292     if (x < y) {
293         return;
294     }
295 
296     std::string error_str = "ERROR: testLessThan():\t in ";
297     error_str += file;
298     error_str += "\tline ";
299     error_str += std::to_string(line);
300     error_str += ":\t\n";
301     error_str += std::to_string(x);
302     error_str += " is not less than ";
303     error_str += std::to_string(y);
304     error_str += "\n";
305 
306     #ifdef _WIN32
307         std::cout << error_str << std::endl;
308     #endif
309 
310     throw std::runtime_error(error_str);
311     return;
312 }   /* testLessThan() */
```

4.5.3.9 testLessThanOrEqualTo()

```
void testLessThanOrEqualTo (
            double x,
            double y,
            std::string file,
            int line )
```

Tests if x <= y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
342 {
343     if (x <= y) {
344         return;
345     }
346
347     std::string error_str = "ERROR: testLessThanOrEqualTo():\t in ";
348     error_str += file;
349     error_str += "\tline ";
350     error_str += std::to_string(line);
351     error_str += ":\t\n";
352     error_str += std::to_string(x);
353     error_str += " is not less than or equal to ";
354     error_str += std::to_string(y);
355     error_str += "\n";
356
357     #ifdef _WIN32
358         std::cout « error_str « std::endl;
359     #endif
360
361     throw std::runtime_error(error_str);
362     return;
363 }   /* testLessThanOrEqualTo() */
```

4.5.3.10 testTruth()

```
void testTruth (
              bool statement,
              std::string file,
              int line )
```

Tests if the given statement is true.

Parameters

statement	The statement whose truth is to be tested ("1 == 0", for example).
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

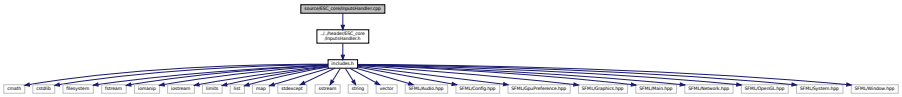
```
390 {
391     if (statement) {
392         return;
393     }
394
395     std::string error_str = "ERROR: testTruth():\t in ";
396     error_str += file;
397     error_str += "\tline ";
398     error_str += std::to_string(line);
399     error_str += ":\t\n";
400     error_str += "Given statement is not true";
401
402     #ifdef _WIN32
403         std::cout « error_str « std::endl;
404     #endif
405
406     throw std::runtime_error(error_str);
407     return;
408 }   /* testTruth() */
```

4.6 source/ESC_core/InputsHandler.cpp File Reference

Implementation file for the InputsHandler class.

```
#include "../../header/ESC_core/InputsHandler.h"
```

Include dependency graph for InputsHandler.cpp:



4.6.1 Detailed Description

Implementation file for the InputsHandler class.

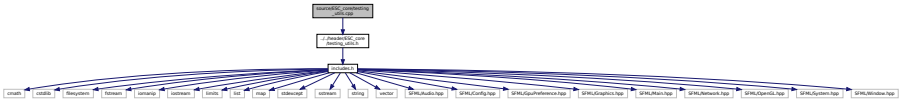
A class which handles inputs from peripherals (i.e., keyboard and mouse).

4.7 source/ESC_core/testing_utils.cpp File Reference

Implementation file for various testing utilities.

```
#include "../../header/ESC_core/testing_utils.h"
```

Include dependency graph for testing_utils.cpp:



Functions

- void printGreen (std::string input_str)

  A function that sends green text to std::cout.
- void printGold (std::string input_str)

  A function that sends gold text to std::cout.
- void printRed (std::string input_str)

  A function that sends red text to std::cout.
- void testFloatEquals (double x, double y, std::string file, int line)

  Tests for the equality of two floating point numbers x and y (to within FLOAT_TOLERANCE).
- void testGreaterThan (double x, double y, std::string file, int line)

  Tests if x > y.
- void testGreaterThanOrEqualTo (double x, double y, std::string file, int line)

  Tests if x >= y.
- void testLessThan (double x, double y, std::string file, int line)

  Tests if x < y.
- void testLessThanOrEqualTo (double x, double y, std::string file, int line)

  Tests if x <= y.
- void testTruth (bool statement, std::string file, int line)

  Tests if the given statement is true.
- void expectedErrorNotDetected (std::string file, int line)

  A utility function to print out a meaningful error message whenever an expected error fails to be thrown/caught/detected.

4.7.1 Detailed Description

Implementation file for various testing utilities.

This is a library of utility functions used throughout the various test suites.

4.7.2 Function Documentation

4.7.2.1 expectedErrorNotDetected()

```
void expectedErrorNotDetected (
            std::string file,
            int line )
```

A utility function to print out a meaningful error message whenever an expected error fails to be thrown/caught/detected.

Parameters

file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
430 {
431     std::string error_str = "\n ERROR  failed to throw expected error prior to line ";
432     error_str += std::to_string(line);
433     error_str += " of ";
434     error_str += file;
435 
436     #ifdef _WIN32
437         std::cout << error_str << std::endl;
438     #endif
439 
440     throw std::runtime_error(error_str);
441     return;
442 }   /* expectedErrorNotDetected() */
```

4.7.2.2 printGold()

```
void printGold (
            std::string input_str )
```

A function that sends gold text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
82 {
83     std::cout << "\x1B[33m" << input_str << "\033[0m";
84     return;
85 }   /* printGold() */
```

4.7.2.3 printGreen()

```
void printGreen (
            std::string input_str )
```

A function that sends green text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
62 {
63     std::cout « "\x1B[32m" « input_str « "\033[0m";
64     return;
65 }   /* printGreen() */
```

4.7.2.4 printRed()

```
void printRed (
            std::string input_str )
```

A function that sends red text to std::cout.

Parameters

input_str	The text of the string to be sent to std::cout.

```
102 {
103     std::cout « "\x1B[31m" « input_str « "\033[0m";
104     return;
105 }   /* printRed() */
```

4.7.2.5 testFloatEquals()

```
void testFloatEquals (
            double x,
            double y,
            std::string file,
            int line )
```

Tests for the equality of two floating point numbers *x* and *y* (to within FLOAT_TOLERANCE).

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
136 {
137     if (fabs(x - y) <= FLOAT_TOLERANCE) {
138         return;
```

```
139     }
140
141     std::string error_str = "ERROR: testFloatEquals():\t in ";
142     error_str += file;
143     error_str += "\tline ";
144     error_str += std::to_string(line);
145     error_str += ":\t\n";
146     error_str += std::to_string(x);
147     error_str += " and ";
148     error_str += std::to_string(y);
149     error_str += " are not equal to within +/- ";
150     error_str += std::to_string(FLOAT_TOLERANCE);
151     error_str += "\n";
152
153     #ifdef _WIN32
154         std::cout << error_str << std::endl;
155     #endif
156
157     throw std::runtime_error(error_str);
158     return;
159 }   /* testFloatEquals() */
```

4.7.2.6 testGreaterThan()

```
void testGreaterThan (
             double x,
             double y,
             std::string file,
             int line )
```

Tests if x > y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
189 {
190     if (x > y) {
191         return;
192     }
193
194     std::string error_str = "ERROR: testGreaterThan():\t in ";
195     error_str += file;
196     error_str += "\tline ";
197     error_str += std::to_string(line);
198     error_str += ":\t\n";
199     error_str += std::to_string(x);
200     error_str += " is not greater than ";
201     error_str += std::to_string(y);
202     error_str += "\n";
203
204     #ifdef _WIN32
205         std::cout << error_str << std::endl;
206     #endif
207
208     throw std::runtime_error(error_str);
209     return;
210 }   /* testGreaterThan() */
```

4.7.2.7 testGreaterThanOrEqualTo()

```
void testGreaterThanOrEqualTo (
             double x,
```

```
            double y,
            std::string file,
            int line )
```

Tests if x >= y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
240 {
241     if (x >= y) {
242         return;
243     }
244
245     std::string error_str = "ERROR: testGreaterThanOrEqualTo():\t in ";
246     error_str += file;
247     error_str += "\tline ";
248     error_str += std::to_string(line);
249     error_str += ":\t\n";
250     error_str += std::to_string(x);
251     error_str += " is not greater than or equal to ";
252     error_str += std::to_string(y);
253     error_str += "\n";
254
255     #ifdef _WIN32
256         std::cout << error_str << std::endl;
257     #endif
258
259     throw std::runtime_error(error_str);
260     return;
261 }   /* testGreaterThanOrEqualTo() */
```

4.7.2.8 testLessThan()

```
void testLessThan (
            double x,
            double y,
            std::string file,
            int line )
```

Tests if x < y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
291 {
292     if (x < y) {
293         return;
294     }
295
296     std::string error_str = "ERROR: testLessThan():\t in ";
297     error_str += file;
298     error_str += "\tline ";
299     error_str += std::to_string(line);
300     error_str += ":\t\n";
```

```
301     error_str += std::to_string(x);
302     error_str += " is not less than ";
303     error_str += std::to_string(y);
304     error_str += "\n";
305 
306     #ifdef _WIN32
307         std::cout « error_str « std::endl;
308     #endif
309 
310     throw std::runtime_error(error_str);
311     return;
312 }   /* testLessThan() */
```

4.7.2.9 testLessThanOrEqualTo()

```
void testLessThanOrEqualTo (
             double x,
             double y,
             std::string file,
             int line )
```

Tests if x <= y.

Parameters

x	The first of two numbers to test.
y	The second of two numbers to test.
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

```
342 {
343     if (x <= y) {
344         return;
345     }
346 
347     std::string error_str = "ERROR: testLessThanOrEqualTo():\t in ";
348     error_str += file;
349     error_str += "\tline ";
350     error_str += std::to_string(line);
351     error_str += ":\t\n";
352     error_str += std::to_string(x);
353     error_str += " is not less than or equal to ";
354     error_str += std::to_string(y);
355     error_str += "\n";
356 
357     #ifdef _WIN32
358         std::cout « error_str « std::endl;
359     #endif
360 
361     throw std::runtime_error(error_str);
362     return;
363 }   /* testLessThanOrEqualTo() */
```

4.7.2.10 testTruth()

```
void testTruth (
             bool statement,
             std::string file,
             int line )
```

Tests if the given statement is true.

Parameters

statement	The statement whose truth is to be tested ("1 == 0", for example).
file	The file in which the test is applied (you should be able to just pass in "__FILE__").
line	The line of the file in which the test is applied (you should be able to just pass in "__LINE__").

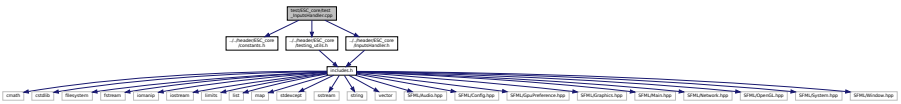
```
390 {
391     if (statement) {
392         return;
393     }
394
395     std::string error_str = "ERROR: testTruth():\t in ";
396     error_str += file;
397     error_str += "\tline ";
398     error_str += std::to_string(line);
399     error_str += ":\t\n";
400     error_str += "Given statement is not true";
401
402     #ifdef _WIN32
403         std::cout « error_str « std::endl;
404     #endif
405
406     throw std::runtime_error(error_str);
407     return;
408 }   /* testTruth() */
```

4.8 test/ESC_core/test_InputsHandler.cpp File Reference

Suite of tests for the InputsHandler class.

```
#include "../../header/ESC_core/constants.h"
#include "../../header/ESC_core/testing_utils.h"
#include "../../header/ESC_core/InputsHandler.h"
```

Include dependency graph for test_InputsHandler.cpp:



Functions

- int main (int argc, char ∗∗argv)

4.8.1 Detailed Description

Suite of tests for the InputsHandler class.

A suite of tests for the InputsHandler class.

4.8.2 Function Documentation

4.8.2.1 main()

```
int main (
              int argc,
              char ** argv )
36 {
37     #ifdef _WIN32
38         activateVirtualTerminal();
39     #endif  /* _WIN32 */
40
41     printGold("\tTesting InputsHandler");
42     std::cout « std::flush;
43
44     srand(time(NULL));
45     int n_dots = 8;
46
47
48     try {
49         InputsHandler inputs_handler;
50
51         testFloatEquals(
52             int(sf::Keyboard::KeyCount),
53             101,
54             __FILE__,
55             __LINE__
56         );
57
58         testFloatEquals(
59             inputs_handler.key_press_vec.size(),
60             int(sf::Keyboard::KeyCount),
61             __FILE__,
62             __LINE__
63         );
64
65         testFloatEquals(
66             inputs_handler.key_pressed_once_vec.size(),
67             int(sf::Keyboard::KeyCount),
68             __FILE__,
69             __LINE__
70         );
71
72         sf::Clock clock;
73         sf::Event event;
74         sf::RenderWindow window(sf::VideoMode(800, 600), "Testing InputsHandler");
75
76         unsigned long long int frame = 0;
77         double time_since_run_s = 0;
78
79         while (window.isOpen()) {
80             time_since_run_s = clock.getElapsedTime().asSeconds();
81
82             if (
83                 time_since_run_s >= (frame + 1) * SECONDS_PER_FRAME
84             ) {
85                 while (window.pollEvent(event))
86                 {
87                     inputs_handler.process(&event);
88
89                     if (event.type == sf::Event::Closed) {
90                         window.close();
91                     }
92                 }
93
94                 window.clear();
95                 window.display();
96
97                 //inputs_handler.printKeysPressed();
98                 if (inputs_handler.key_pressed_once_vec[sf::Keyboard::Enter]) {
99                     std::cout « "Enter" « std::endl;
100                 }
101
102                 std::cout « frame « " : " « time_since_run_s « "\r" « std::flush;
103
104                 inputs_handler.reset();
105                 frame++;
106             }
107         }
108     }
109
110
111     catch (...) {
112         //...
113
114         printGold(" ");
115         for (int i = 0; i < n_dots; i++) {
```

```
116             printGold(".");
117         }
118         printGold(" ");
119         printRed("FAIL");
120         std::cout « std::endl;
121         throw;
122     }
123 
124 
125     //...
126 
127     printGold(" ");
128     for (int i = 0; i < n_dots; i++) {
129         printGold(".");
130     }
131     printGold(" ");
132     printGreen("PASS");
133     std::cout « std::endl;
134 
135     return 0;
136 }   /* main() */
```

Bibliography

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