Reference Manual

Generated by Doxygen 1.8.13

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1 Test List 1

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59

1 Test List

Index

Member TEST CASE ("Question Inheritence Test")

The set text(), set answer(), and check answer() member functions of the base with:

Question: Who was the inventor of C++?

Answer (user-coded):Bjarne Stroustrup

The set_text(), set_answer(), and check_answer() member functions of the base with an incorrect string:

Question: Who was the inventor of C++?

Answer (user-coded): Jack Daniels

The set text(), set answer(), and check answer() member functions of the derived NumericQuestion class with:

Question: Solve this math problem: 36 + 64 = ?

Answer (user-coded): 100

The set_text(), set_answer(), and check_answer() member functions of the derived NumericQuestion class with a value that is within 0.01 error of the answer:

Question: Solve this math problem: 36 + 64 = ?

Answer (user-coded): 99.999

The set_text(), set_answer(), and check_answer() member functions of the derived NumericQuestion class with an incorrect value: Question: Solve this math problem: 36 + 64 = ?

Answer (user-coded): 12

The set_text(), set_answer(), and check_answer() member functions of the derived FillnQuestion class with: Question: The inventor of C++ was ______.

Answer (user-coded):Bjarne Stroustrup

The set_text(), set_answer(), and check_answer() member functions of the derived FillnQuestion class with: Question: The inventor of C++ was ______.

Answer (user-coded):Bjarne Stroustrup

2 Hierarchical Index

2.1 Class Hierarchy

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

Question	22
FillnQuestion	3
NumericQuestion	12

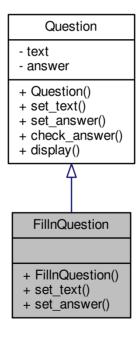
3 Class Index

3.1 Class List

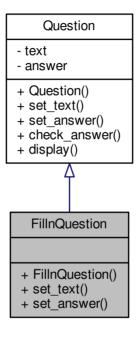
Here are the classes, structs, unions and interfaces with brief descriptions:

4 File Index	3
FillnQuestion	3
NumericQuestion	12
Question	22
4 File Index	
4.1 File List	
Here is a list of all files with brief descriptions:	
FillnQuestion.h	35
lab10a.cpp	40
NumericQuestion.h	52
question.h	55
5 Class Documentation	
5.1 FillnQuestion Class Reference	
<pre>#include <fillnquestion.h></fillnquestion.h></pre>	

Inheritance diagram for FillnQuestion:



Collaboration diagram for FillnQuestion:



Public Member Functions

- FillnQuestion ()
- void set_text (std::string question_text)
- void set_answer (std::string correct_response)

- 4				_		
5.1.	1	Deta	iled	Des	criptio	n

Definition at line 10 of file FillnQuestion.h.

5.1.2 Constructor & Destructor Documentation

5.1.2.1 FillnQuestion()

```
FillnQuestion::FillnQuestion ( )
```

Constructs a question with empty text and answer.

Definition at line 29 of file FillnQuestion.h.

30 {

31

32 }

5.1.3 Member Function Documentation

5.1.3.1 set_answer()

Parameters

response to check

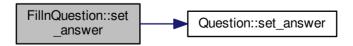
Returns

true if the response was correct, false otherwise

Definition at line 64 of file FillnQuestion.h.

```
65 {
66     Question::set_answer(correct_response);
67 }
```

Here is the call graph for this function:



Here is the caller graph for this function:

```
FillnQuestion::set __answer TEST_CASE
```

5.1.3.2 set_text()

Parameters

```
question_text | the text of this question
```

Definition at line 33 of file FillnQuestion.h.

```
34 {
35     int count = 0;
36     int count2 = 0;
37     std::string question_buffer;
38     bool under_score = false;
```

```
for(unsigned int i = 0; i < question text.size(); i++)</pre>
39
40
           if (question text[i] == ' ')
41
42
43
               if(under score == true)
44
45
                    count2 = i;
                    under score = false;
46
47
48
               else
49
50
                    under score = true;
51
52
53
           if (under score == true)
54
55
               count++;
56
               question buffer += " ";
57
58
59
       std::string blank question = question text.substr(0, count2 - count)
60
       + question_buffer
       + question_text.substr(count2, question_text.size() - count2);
61
62
       Question::set_text(blank_question);
63 }
```

Here is the call graph for this function:



Here is the caller graph for this function:



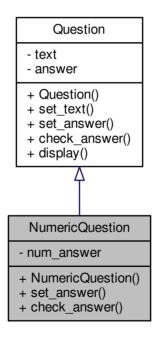
The documentation for this class was generated from the following file:

• FillnQuestion.h

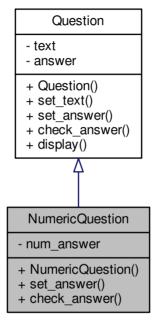
5.2 NumericQuestion Class Reference

#include <NumericQuestion.h>

Inheritance diagram for NumericQuestion:



Collaboration diagram for NumericQuestion:



Public Member Functions

- NumericQuestion ()
- void set_answer (double correct_response)
- bool check_answer (double response) const

Private Attributes

• double num answer

5.2.1 Detailed Description

Definition at line 8 of file NumericQuestion.h.

5.2.2 Constructor & Destructor Documentation

5.2.2.1 NumericQuestion()

```
NumericQuestion::NumericQuestion ( )
```

Constructs a NumericQuestion with empty text and answer.

Definition at line 27 of file NumericQuestion.h.

28 { 29 }

5.2.3 Member Function Documentation

```
5.2.3.1 check_answer()
```

Parameters

```
response the type double response to check
```

Returns

true if the response was correct, false otherwise

Definition at line 35 of file NumericQuestion.h.

```
36 {
37
       double max_error = 0.01;
       double response error = abs(response - num answer);
38
39
       if (response_error <= max_error)</pre>
40
41
            std::cout << "Correct!" << std::endl;</pre>
42
            if (response != num_answer)
43
44
                std::cout << "Your answer was within the allowed error (0.01)" << std
45
                std::cout << "Actual Answer: " << num_answer << std::endl;</pre>
46
```

Here is the caller graph for this function:



5.2.3.2 set_answer()

Parameters

correct_response the double type answer for this question

Definition at line 30 of file NumericQuestion.h.

```
31 {
32    num_answer = correct_response;
33 }
```

Here is the caller graph for this function:



22 CONTENTS 5.2.4 Member Data Documentation



5.2.4.1 num_answer

double NumericQuestion::num_answer [private]

Definition at line 25 of file NumericQuestion.h.

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

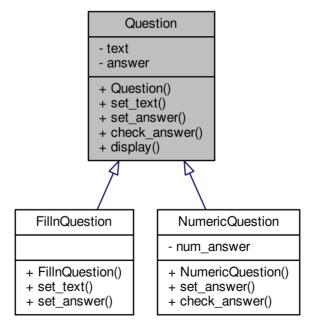
· NumericQuestion.h

5.3 Question Class Reference

#include <question.h>

5.3 Question Class Reference 23

Inheritance diagram for Question:



Collaboration diagram for Question:

Question

- text
- answer
- + Question()
- + set_text()
- + set_answer() + check_answer() + display()

5.3 Question Class Reference 25

Public Member Functions

- Question ()
- void set_text (std::string question_text)
- void set_answer (std::string correct_response)
- bool check_answer (std::string response) const
- void display () const

Private Attributes

std::string text

• std::string answer

5.3.1 Detailed Description

Definition at line 7 of file question.h.

5.3.2 Constructor & Destructor Documentation

5.3.2.1 Question()

```
Question::Question ( )
```

Constructs a question with empty text and answer.

Definition at line 35 of file question.h.

36 { 37 }

5.3.3 Member Function Documentation

Parameters

```
response the response to check
```

Returns

true if the response was correct, false otherwise

Definition at line 48 of file question.h.

```
49 {
50
       if (response == answer)
51
52
            std::cout << "Correct!" << std::endl;</pre>
53
            return true;
54
55
       else
56
57
            std::cout << "Incorrect" << std::endl;</pre>
            std::cout << "Correct Answer: " << answer << std::endl;</pre>
58
59
            return false;
60
61 }
```

Here is the caller graph for this function:



```
5.3.3.2 display()
```

```
void Question::display ( ) const
```

Displays this question.

Definition at line 63 of file question.h.

```
64 {
65     std::cout << text << std::endl;
66 }
```

Here is the caller graph for this function:



5.3.3.3 set_answer()

Parameters

correct_response	the answer for this question
------------------	------------------------------

Definition at line 43 of file question.h.

```
44 {
45     answer = correct_response;
46 }
```

Here is the caller graph for this function:



5.3.3.4 set_text()

```
void Question::set_text (
          std::string question_text )
```

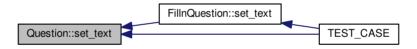
Parameters

question_text	the text of this question
quoonon_toxt	the text of the queetion

Definition at line 38 of file question.h.

```
39 {
40      text = question_text;
41 }
```

Here is the caller graph for this function:



5.3.4 Member Data Documentation

5.3.4.1 answer

```
std::string Question::answer [private]
```

Definition at line 33 of file question.h.

5.3.4.2 text

```
std::string Question::text [private]
```

Definition at line 32 of file question.h.

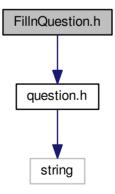
The documentation for this class was generated from the following file:

· question.h

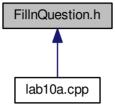
6 File Documentation

6.1 FillnQuestion.h File Reference

#include "question.h"
Include dependency graph for FillnQuestion.h:



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



Classes

class FillnQuestion

Macros

• #define FILLINQUESTION_H

^	4 -	4	D-4-	امماله	I Da	scri		
h	1 1	1	Deta	งแคก	1 1)6	SCri	Intin	ın

Such a question is constructed with a string that contains the answer, surrounded by _ _, for example, "The inventor of C++ was _Bjarne Stroustrup_". The question should be displayed as The inventor of C++ was _______.

6.1.2 Macro Definition Documentation

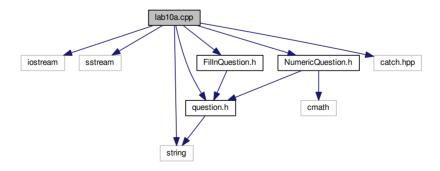
6.1.2.1 FILLINQUESTION_H

#define FILLINQUESTION_H

Definition at line 2 of file FillnQuestion.h.

6.2 lab10a.cpp File Reference

```
#include <iostream>
#include <sstream>
#include <string>
#include "question.h"
#include "NumericQuestion.h"
#include "FillnQuestion.h"
#include "catch.hpp"
Include dependency graph for lab10a.cpp:
```



Functions

• TEST_CASE ("Question Inheritence Test")

6.2.1 Function Documentation

```
6.2.1.1 TEST CASE()
TEST CASE (
             "Ouestion Inheritence Test" )
```

Test the base Question class, and 2 derived classes (Numeric and Fill in type)

Test The set text(), set answer(), and check answer() member functions of the base with:

Question: Who was the inventor of C++? Answer (user-coded):Bjarne Stroustrup

Returns

the question and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

Who was the inventor of C++? Your answer: Bjarne Stroustrup

Correct!

```
lab10a.cpp:45: passed: ss.str() == "Who was the inventor of C++?\n" "Your answer: Bjarne Stroustrup\n" "Correct!\n" "1\n"
Your answer: Bjarne Stroustrup
Correct!
1
"Who was the inventor of C++?
Your answer: Bjarne Stroustrup
Correct!
Passed 1 test case with 1 assertion.
```

Test The set_text(), set_answer(), and check_answer() member functions of the base with an incorrect string:

Question: Who was the inventor of C++?
Answer (user-coded): Jack Daniels

Returns

the question and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

Who was the inventor of C++?

Your answer: Jack Daniels

Incorrect!

Correct Answer: Bjarne Stroustrup

0

```
labl0a.cpp:75: passed: ss.str() == "Who was the inventor of C++?\n" "Your answer: Jack Daniels\n" "Incorrect\n" "Correct
Your answer: Jack Daniels
Incorrect
Correct Answer: Bjarne Stroustrup
0
""
==
"Who was the inventor of C++?
Your answer: Jack Daniels
Incorrect
Correct Answer: Bjarne Stroustrup
```

Test The set_text(), set_answer(), and check_answer() member functions of the derived NumericQuestion class with:

Question: Solve this math problem: 36 + 64 = ?

Passed 1 test case with 1 assertion.

Answer (user-coded): 100

Returns

the question, both a string indicating correct/incorrect and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

Solve this math problem:

36 + 64 = ?

Your answer: 100

Correct!

•

```
lab10a.cpp:73: passed: ss.str() == "Solve this math problem: \n36 + 64 = ?\n" "Your answer: 100\n" "Correct!\n" "1\n" for
36 + 64 = ?
Your answer: 100
Correct!
1
""
==
"Solve this math problem:
36 + 64 = ?
Your answer: 100
Correct!
1
""
```

Test The set_text(), set_answer(), and check_answer() member functions of the derived NumericQuestion class with a value that is within 0.01 error of the answer:

Question: Solve this math problem: 36 + 64 = ?

Passed 1 test case with 1 assertion.

Answer (user-coded): 99.999

Returns

the question, both a string indicating correct/incorrect and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

Solve this math problem:

36 + 64 = ?

Your answer: 99.999

```
Correct!
Your answer was within the allowed error (0.01)
Actual Answer: 100

1

labl0a.cpp:105: passed: ss.str() == "Solve this math problem: \n36 + 64 = ?\n" "Your answer: 99.999\n" "Correct!\n" "Your 36 + 64 = ?
Your answer: 99.999
Correct!
Your answer: was within the allowed error (0.01)
Actual Answer: 100
1
"
"
==

"Solve this math problem:
36 + 64 = ?
Your answer: 99.999
Correct!
Your answer was within the allowed error (0.01)
Actual Answer: 100
1
Actual Answer: 100
1
Rectal Answer: 100
1
"
"
```

Test The set_text(), set_answer(), and check_answer() member functions of the derived NumericQuestion class with an incorrect value:

Question: Solve this math problem: 36 + 64 = ?

Passed 1 test case with 1 assertion.

Answer (user-coded): 12

Returns

the question, both a string indicating correct/incorrect and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

Solve this math problem:

36 + 64 = ?

Your answer: 12

Incorrect

Correct Answer: 100

0

```
labl0a.cpp:135: passed: ss.str() == "Solve this math problem: \n36 + 64 = ?\n" "Your answer: 12\n" "Incorrect.\n" "Correct 36 + 64 = ?
Your answer: 12
Incorrect.
Correct Answer: 100
0
"
==

"Solve this math problem:
36 + 64 = ?
Your answer: 12
Incorrect.
Correct Answer: 100
0
"
Passed 1 test case with 1 assertion.

Test The set_text(), set_answer(), and check_answer() member functions of the derived FillnQuestion class with:
Question: The inventor of C++ was______.
Answer (user-coded):Bjarne Stroustrup
```

Returns

```
the question and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

The inventor of C++ is_____.

Your answer: Bjarne Stroustrup

Correct!

1

labl0a.cpp:198: passed: ss.str() == "The inventor of C++ was _____.\n" "Your answer: Bjarne Stroustrup\n" "Your answer: Bjarne Stroustrup

Correct!

"The inventor of C++ was _____.

Your answer: Bjarne Stroustrup

Your answer: Bjarne Stroustrup
```

```
Correct!
1
"
Passed 1 test case with 1 assertion.
```

Test The set_text(), set_answer(), and check_answer() member functions of the derived FillnQuestion class with:

Question: The inventor of C++ was ______

Answer (user-coded):Bjarne Stroustrup

Returns

```
the question and a boolean value if the answer was correct or not (1 = true and 0 = false)

This test will return:

The inventor of C++ is_____.

Your answer: Bjarne Stroustrup

Correct!
```

```
lab10a.cpp:226: passed: ss.str() == "The inventor of C++ was _______.\n" "Your answer: Morgan Freeman\n" "Inc Your answer: Morgan Freeman\n" "Inc Your answer: Morgan Freeman\n" "Inc Correct Answer: Bjarne Stroustrup

"""

"The inventor of C++ was ______.

Your answer: Morgan Freeman
Incorrect
Correct Answer: Bjarne Stroustrup

"""

Passed 1 test case with 1 assertion.
```

Definition at line 11 of file lab10a.cpp.

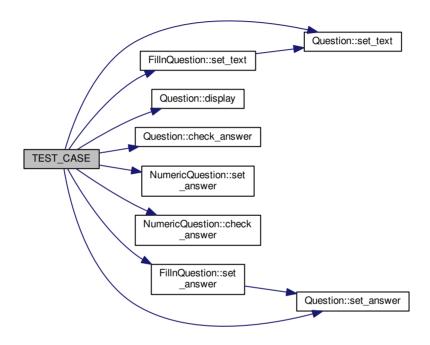
```
12 {
16
       std::string response;
17
       std::streambuf *b = std::cout.rdbuf();
18
       std::stringstream ss;
19
       std::streambuf *sb = ss.rdbuf();
20
       std::cout.rdbuf(sb);
21
       SECTION("Ouestion Base Class Test")
2.2
35
           Ouestion q1;
36
           q1.set text("Who was the inventor of C++?");
37
           g1.set answer("Bjarne Stroustrup");
38
           q1.display();
39
           //~ getline(std::cin, response);
40
           response = "Bjarne Stroustrup";
41
           std::cout << "Your answer: " << response << std::endl;</pre>
42
           std::cout << q1.check_answer(response) << std::endl;</pre>
43
           CHECK(ss.str() == "Who was the inventor of C++?\n"
44
                                           "Your answer: Bjarne Stroustrup\n"
45
                                           "Correct!\n"
46
                                           "1\n");
47
48
       SECTION("Ouestion Base Class Test (Incorrect)")
49
63
           Question q1;
64
           q1.set text("Who was the inventor of C++?");
65
           g1.set answer("Bjarne Stroustrup");
66
           q1.display();
67
           //~ getline(std::cin, response);
68
           response = "Jack Daniels";
69
           std::cout << "Your answer: " << response << std::endl;</pre>
70
           std::cout << q1.check answer(response) << std::endl;</pre>
```

```
CHECK(ss.str() == "Who was the inventor of C++?\n"
71
72
                                           "Your answer: Jack Daniels\n"
7.3
                                           "Incorrect\n"
74
                                           "Correct Answer: Bjarne Stroustrup\n"
75
                                           "0\n");
76
77
       SECTION("Numeric Ouestion Derived Class Test (Correct Answer)")
78
93
           NumericOuestion NO1;
94
           NQ1.set text("Solve this math problem: \n36 + 64 = ?");
95
           NQ1.set answer(100.0);
96
           NO1.display();
97
           //~ getline(std::cin, response);
98
           //~ double num_response = std::stod(response,nullptr);
99
           double num response = 100.0;
100
            std::cout << "Your answer: " << num_response << std::endl;</pre>
101
            std::cout << NO1.check answer(num response) << std::endl;</pre>
102
            CHECK(ss.str() == "Solve this math problem: \n36 + 64 = ?\n"
103
            "Your answer: 100\n"
                  "Correct!\n"
104
105
                  "1\n");
106
107
        SECTION("Numeric Question Derived Class Test (Within 0.01)")
108
125
            NumericQuestion NQ1;
126
            NQ1.set text("Solve this math problem: \n36 + 64 = ?");
127
            NQ1.set_answer(100.0);
128
            NQ1.display();
129
            //~ getline(std::cin, response);
130
            //~ double num_response = std::stod(response, nullptr);
131
            double num response = 99.999;
```

```
132
            std::cout << "Your answer: " << num response << std::endl;</pre>
133
            std::cout << NO1.check answer(num response) << std::endl;</pre>
            CHECK(ss.str() == "Solve this math problem: \n36 + 64 = ?\n"
134
                   "Your answer: 99.999\n"
135
136
                   "Correct!\n"
137
                   "Your answer was within the allowed error (0.01) n"
138
                   "Actual Answer: 100\n"
139
                   "1\n");
140
141
        SECTION("Numeric Question Derived Class Test (Incorrect)")
142
        {
157
            NumericOuestion NO1;
158
            NQ1.set text("Solve this math problem: \n36 + 64 = ?");
159
            NO1.set answer(100.0);
160
            NQ1.display();
161
162
            //~ getline(std::cin, response);
163
            //~ double num response = std::stod(response,nullptr);
164
            double num response = 12;
165
            std::cout << "Your answer: " << num_response << std::endl;</pre>
166
            std::cout << NQ1.check answer(num response) << std::endl;</pre>
167
            CHECK(ss.str() == "Solve this math problem: \n36 + 64 = ?\n"
168
                  "Your answer: 12\n"
                   "Incorrect.\n"
169
170
                   "Correct Answer: 100\n"
171
                   "0\n");
172
173
        SECTION("Fill in Question Derived Class Test")
174
187
            FillnOuestion FnO1;
188
            FnQ1.set_text("The inventor of C++ was _Bjarne Stroustrup_.");
```

```
189
            FnQ1.set answer("Bjarne Stroustrup");
190
            FnO1.display();
191
            //~ getline(std::cin, response);
192
            response = "Bjarne Stroustrup";
193
            std::cout << "Your answer: " << response << std::endl;</pre>
194
            std::cout << FnQ1.check answer(response) << std::endl;</pre>
195
            CHECK(ss.str() == "The inventor of C++ was
                                            "Your answer: Biarne Stroustrup\n"
196
197
                                            "Correct!\n"
198
                                            "1 \ n");
199
200
        SECTION("Fill in Ouestion Derived Class Test (Incorrect)")
201
214
            FillnOuestion FnO1;
215
            FnQ1.set_text("The inventor of C++ was _Bjarne Stroustrup_.");
216
            FnQ1.set answer("Bjarne Stroustrup");
217
            FnO1.display();
218
            //~ getline(std::cin, response);
219
            response = "Morgan Freeman";
220
            std::cout << "Your answer: " << response << std::endl;</pre>
221
            std::cout << FnQ1.check answer(response) << std::endl;</pre>
222
            CHECK(ss.str() == "The inventor of C++ was _____
223
                                            "Your answer: Morgan Freeman\n"
224
                                            "Incorrect\n"
225
                                            "Correct Answer: Bjarne Stroustrup\n"
226
                                            "0\n");
227
228 }
```

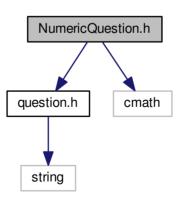
Here is the call graph for this function:



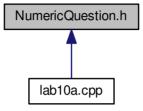
6.3 NumericQuestion.h File Reference

#include "question.h"
#include <cmath>

Include dependency graph for NumericQuestion.h:



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

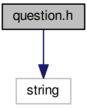


Classes

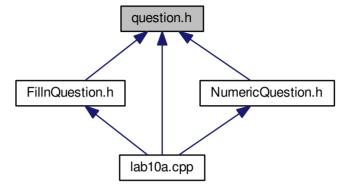
class NumericQuestion

6.4 question.h File Reference

#include <string>
Include dependency graph for question.h:



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



Classes

class Question

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