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Roll no:

20p-0153

Section:

BSCS-9A

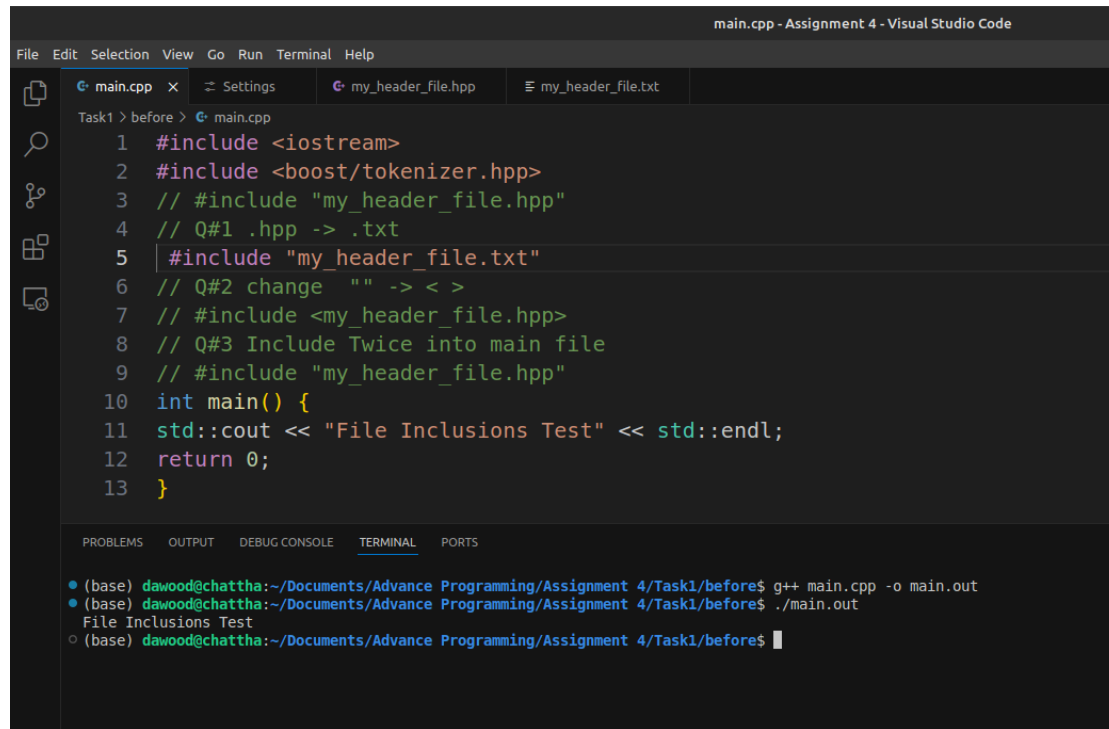
Assignment no 4:

**Build Automation
(Pre-Processors)**

Submitted to:

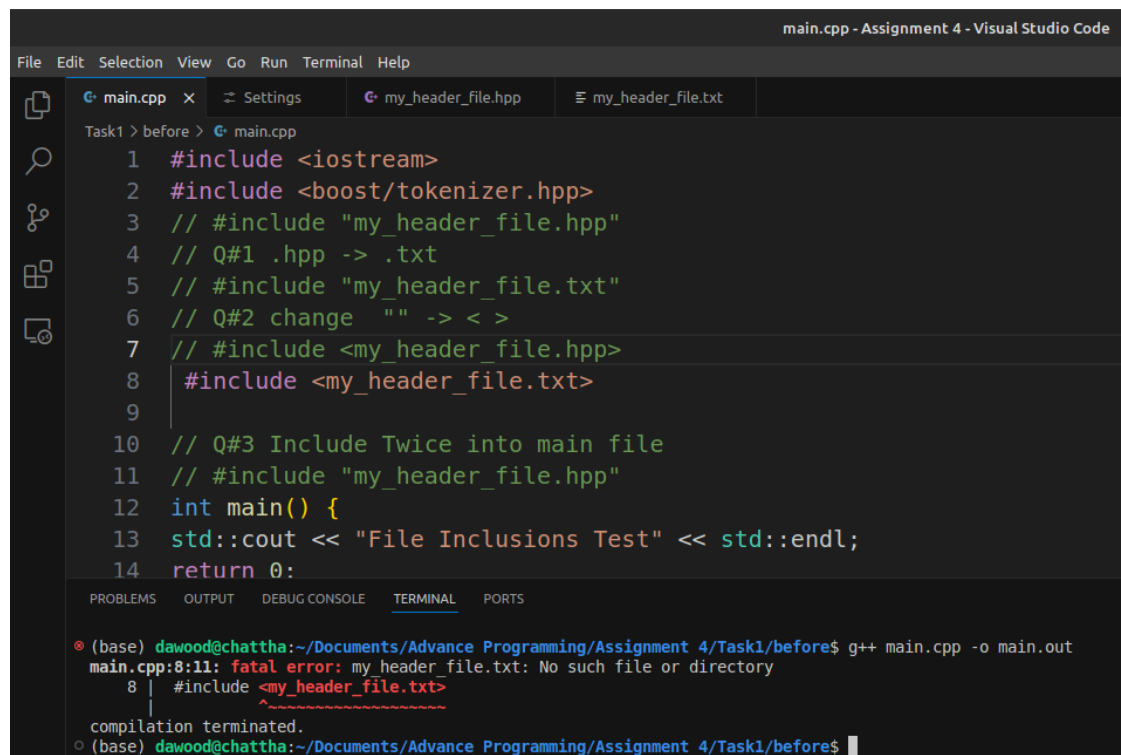
Dr. Omar Usman Khan

1. What happens if you rename the file to my_header_file.txt and include this file only?



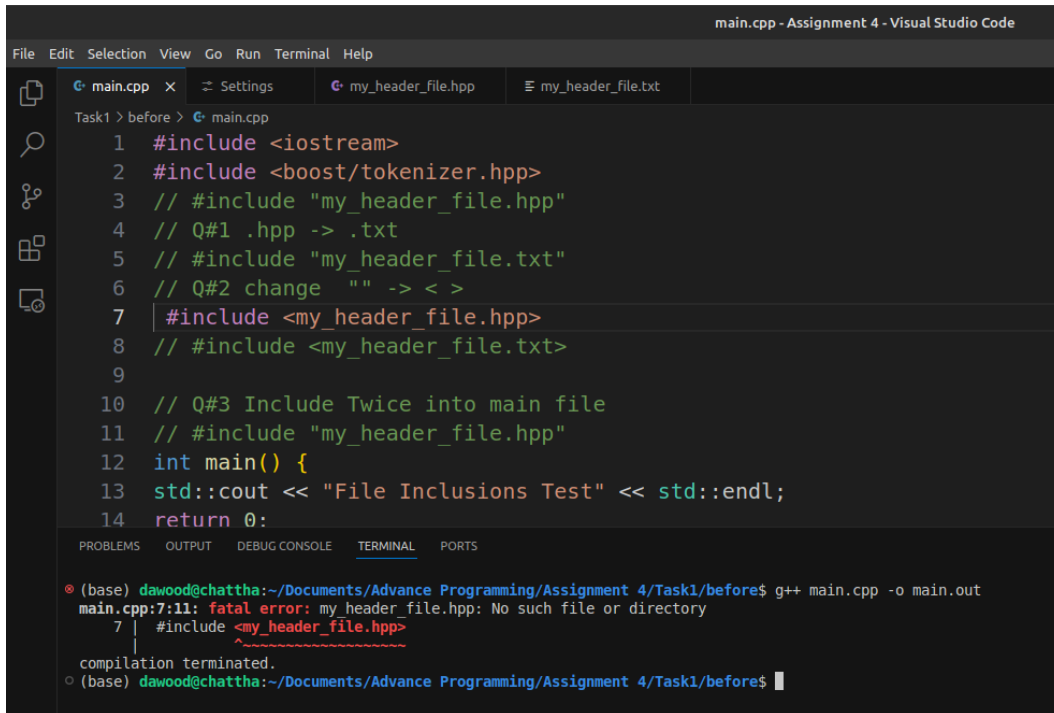
```
main.cpp - Assignment 4 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
main.cpp x Settings my_header_file.hpp my_header_file.txt
Task1 > before > main.cpp
1 #include <iostream>
2 #include <boost/tokenizer.hpp>
3 // #include "my_header_file.hpp"
4 // Q#1 .hpp -> .txt
5 #include "my_header_file.txt"
6 // Q#2 change "" -> <>
7 // #include <my_header_file.hpp>
8 // Q#3 Include Twice into main file
9 // #include "my_header_file.hpp"
10 int main() {
11     std::cout << "File Inclusions Test" << std::endl;
12     return 0;
13 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ ./main.out
File Inclusions Test
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

2. What happens if you change "" to <> just like iostream is enclosed in <>.



```
main.cpp - Assignment 4 - Visual Studio Code
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main.cpp x Settings my_header_file.hpp my_header_file.txt
Task1 > before > main.cpp
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4 // Q#1 .hpp -> .txt
5 // #include "my_header_file.txt"
6 // Q#2 change "" -> <>
7 // #include <my_header_file.hpp>
8 #include <my_header_file.txt>
9
10 // Q#3 Include Twice into main file
11 // #include "my_header_file.hpp"
12 int main() {
13     std::cout << "File Inclusions Test" << std::endl;
14     return 0;
15 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
main.cpp:8:11: fatal error: my_header_file.txt: No such file or directory
8 | #include <my_header_file.txt>
  | ^~~~~~
compilation terminated.
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

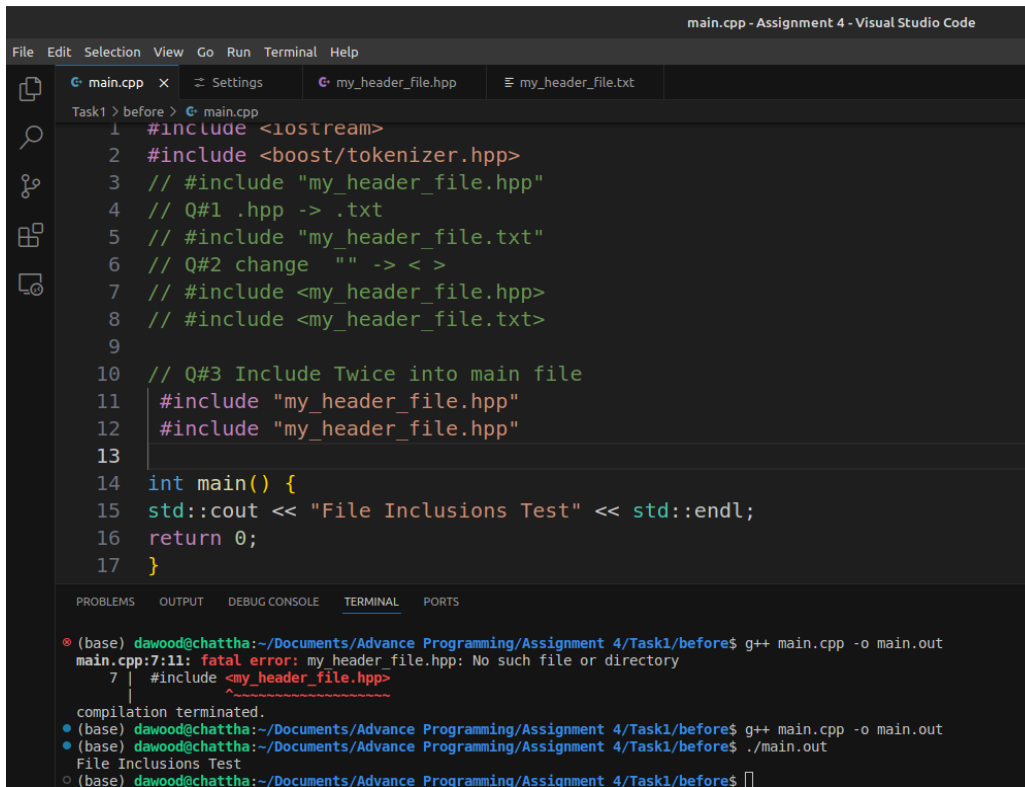
#Practice



```
main.cpp - Assignment 4 - Visual Studio Code
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main.cpp x Settings my_header_file.hpp my_header_file.txt
Task1 > before > main.cpp
1 #include <iostream>
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7 #include <my_header_file.hpp>
8 // #include <my_header_file.txt>
9
10 // Q#3 Include Twice into main file
11 // #include "my_header_file.hpp"
12 int main() {
13     std::cout << "File Inclusions Test" << std::endl;
14     return 0;
15 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
main.cpp:7:11: fatal error: my_header_file.hpp: No such file or directory
7 | #include <my_header_file.hpp>
  | ^~~~~~
compilation terminated.
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

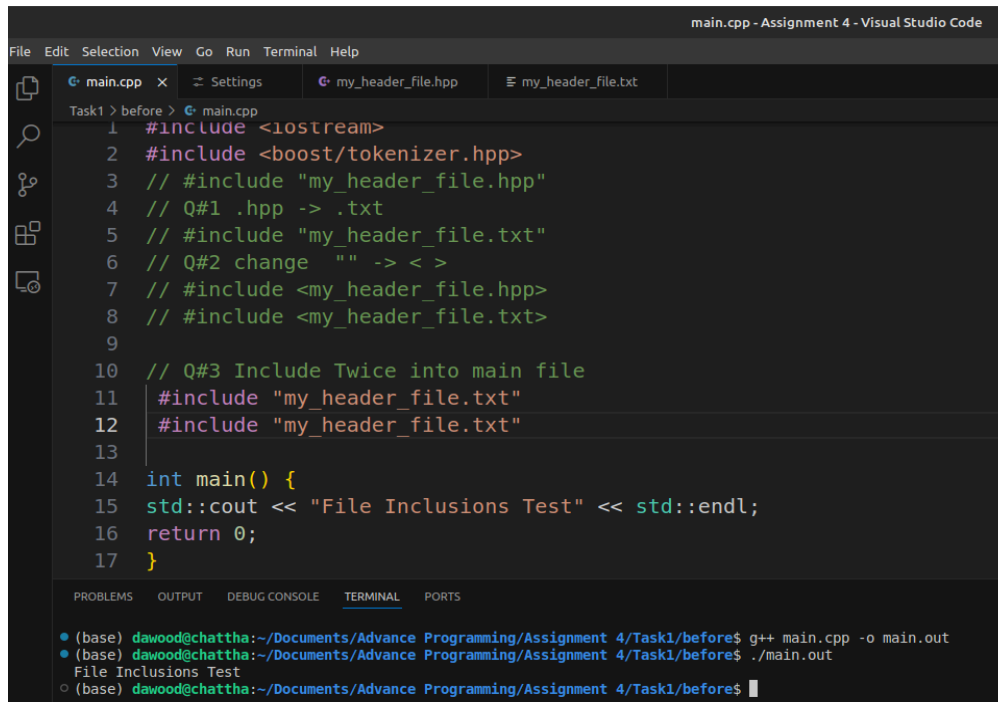
3. What happens if you do `#include "my_header_file.hpp"` twice in your code?



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7 // #include <my_header_file.hpp>
8 // #include <my_header_file.txt>
9
10 // Q#3 Include Twice into main file
11 #include "my_header_file.hpp"
12 #include "my_header_file.hpp"
13
14 int main() {
15     std::cout << "File Inclusions Test" << std::endl;
16     return 0;
17 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
main.cpp:7:11: fatal error: my_header_file.hpp: No such file or directory
7 | #include <my_header_file.hpp>
  | ^~~~~~
compilation terminated.
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ ./main.out
File Inclusions Test
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

Practice

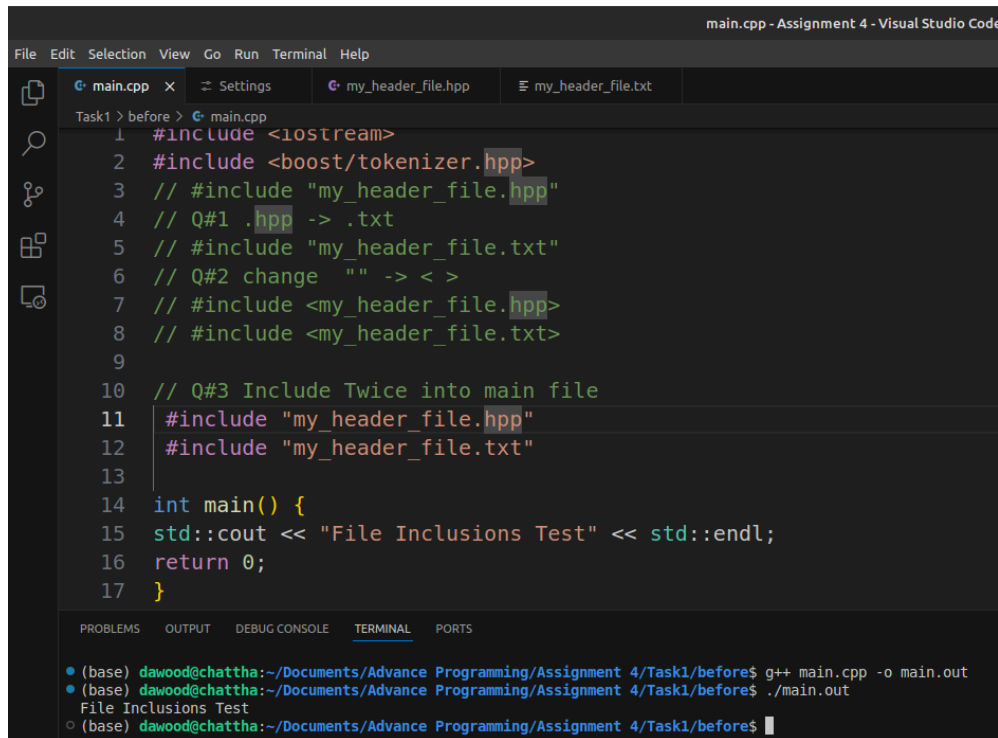


```
main.cpp - Assignment 4 - Visual Studio Code
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main.cpp x Settings my_header_file.hpp my_header_file.txt
Task1 > before > main.cpp
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4 // Q#1 .hpp -> .txt
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6 // Q#2 change "" -> < >
7 // #include <my_header_file.hpp>
8 // #include <my_header_file.txt>
9
10 // Q#3 Include Twice into main file
11 #include "my_header_file.txt"
12 #include "my_header_file.txt"
13
14 int main() {
15     std::cout << "File Inclusions Test" << std::endl;
16     return 0;
17 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
• (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
• (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ ./main.out
File Inclusions Test
○ (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

Practice



```
main.cpp - Assignment 4 - Visual Studio Code
File Edit Selection View Go Run Terminal Help

main.cpp x Settings my_header_file.hpp my_header_file.txt
Task1 > before > main.cpp
1 #include <iostream>
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4 // Q#1 .hpp -> .txt
5 // #include "my_header_file.txt"
6 // Q#2 change "" -> < >
7 // #include <my_header_file.hpp>
8 // #include <my_header_file.txt>
9
10 // Q#3 Include Twice into main file
11 #include "my_header_file.hpp"
12 #include "my_header_file.txt"
13
14 int main() {
15     std::cout << "File Inclusions Test" << std::endl;
16     return 0;
17 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
• (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ g++ main.cpp -o main.out
• (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$ ./main.out
File Inclusions Test
○ (base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/before$
```

The screenshot shows the Visual Studio Code editor with a file named `main.cpp` open. The code contains a single `#include` for `my_header_file.hpp`. The terminal shows the command `g++ main.cpp -o main.out` and the output of the program, which prints "MyClass Object is Added" and "File Inclusions Test".

```
1 #include <iostream>
2 #include <boost/tokenizer.hpp>
3 #include "my_header_file.hpp"
4 int main() {
5     MyClass obj;
6     std::cout << "MyClass Object is Added" << std::endl;
7     std::cout << "File Inclusions Test" << std::endl;
8     return 0;
9 }
```

```
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/Modified$ g++ main.cpp -o main.out
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/Modified$ ./main.out
MyClass Object is Added
File Inclusions Test
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/Modified$
```

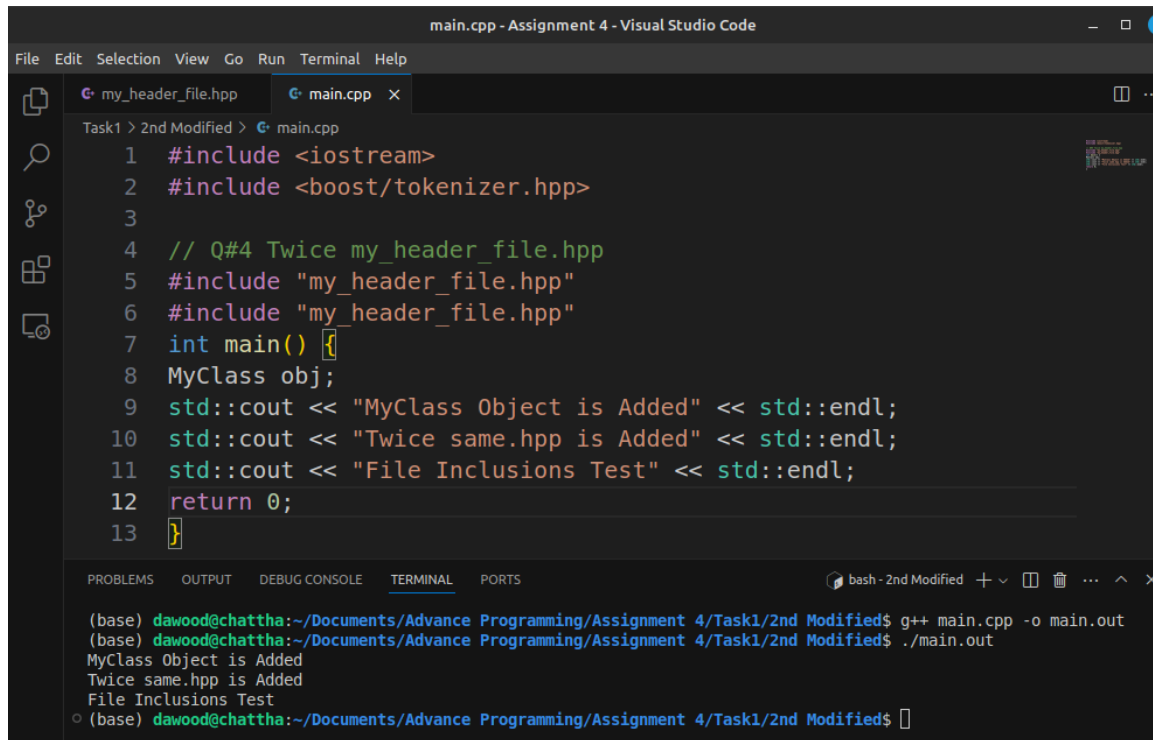
4. What happens if you do `#include "my_header_file.hpp"` twice in your code?

The screenshot shows the Visual Studio Code editor with a file named `main.cpp` open. The code contains two `#include` statements for `my_header_file.hpp`. The terminal shows the command `g++ main.cpp -o main.out` and the output of the program, which prints "MyClass Object is Added", "Twice same.hpp is Added", and "File Inclusions Test".

```
1 #include <iostream>
2 #include <boost/tokenizer.hpp>
3
4 // Q#4 Twice my_header_file.hpp
5 #include "my_header_file.hpp"
6 #include "my_header_file.hpp"
7 int main() {
8     MyClass obj;
9     std::cout << "MyClass Object is Added" << std::endl;
10    std::cout << "Twice same.hpp is Added" << std::endl;
11    std::cout << "File Inclusions Test" << std::endl;
12    return 0;
13 }
```

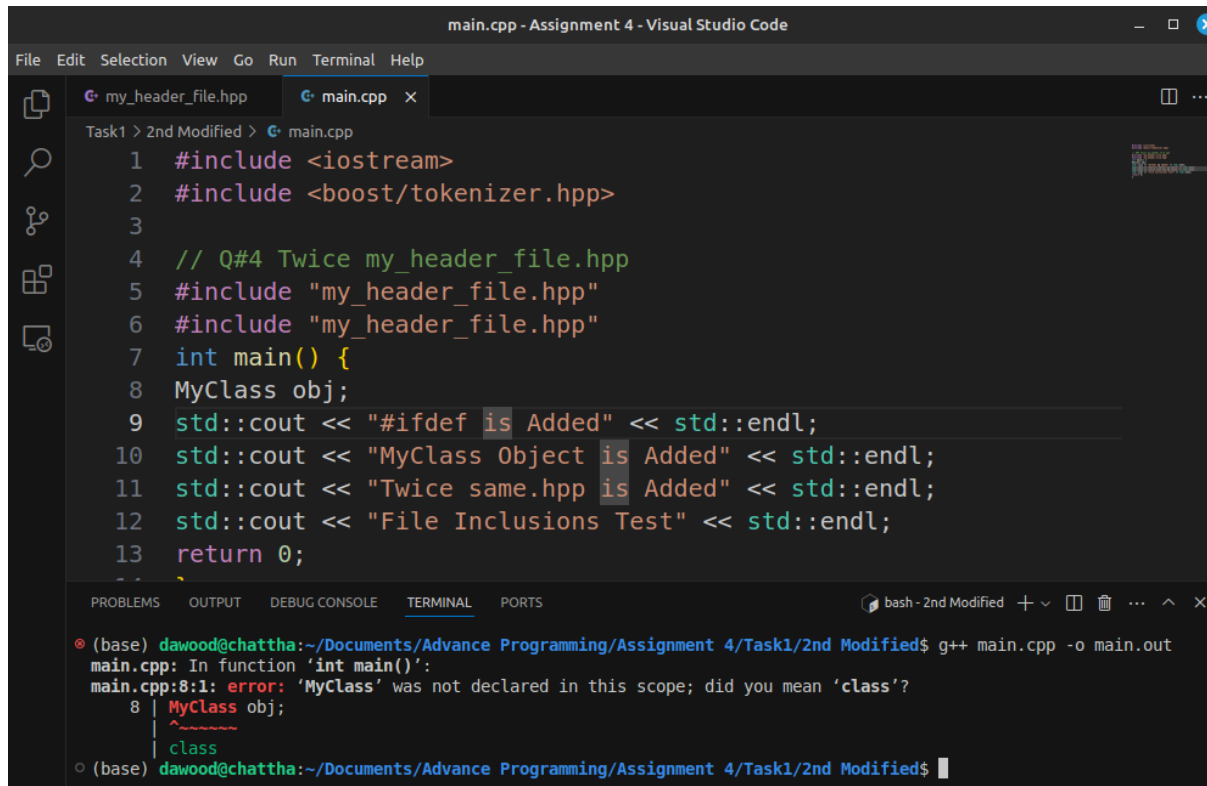
```
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$ g++ main.cpp -o main.out
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$ ./main.out
MyClass Object is Added
Twice same.hpp is Added
File Inclusions Test
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$
```

5. What happens if you do `#include "my_header_file.hpp"` twice in your code?



```
main.cpp - Assignment 4 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
Task1 > 2nd Modified > main.cpp
1 #include <iostream>
2 #include <boost/tokenizer.hpp>
3
4 // Q#4 Twice my_header_file.hpp
5 #include "my_header_file.hpp"
6 #include "my_header_file.hpp"
7 int main() {
8     MyClass obj;
9     std::cout << "MyClass Object is Added" << std::endl;
10    std::cout << "Twice same.hpp is Added" << std::endl;
11    std::cout << "File Inclusions Test" << std::endl;
12    return 0;
13 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$ g++ main.cpp -o main.out
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$ ./main.out
MyClass Object is Added
Twice same.hpp is Added
File Inclusions Test
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$
```

6. What happens if you rename `#ifndef` to `#ifdef`?



```
main.cpp - Assignment 4 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
Task1 > 2nd Modified > main.cpp
1 #include <iostream>
2 #include <boost/tokenizer.hpp>
3
4 // Q#4 Twice my_header_file.hpp
5 #include "my_header_file.hpp"
6 #include "my_header_file.hpp"
7 int main() {
8     MyClass obj;
9     std::cout << "#ifdef is Added" << std::endl;
10    std::cout << "MyClass Object is Added" << std::endl;
11    std::cout << "Twice same.hpp is Added" << std::endl;
12    std::cout << "File Inclusions Test" << std::endl;
13    return 0;
14 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$ g++ main.cpp -o main.out
main.cpp: In function 'int main()':
main.cpp:8:1: error: 'MyClass' was not declared in this scope; did you mean 'class'?
8 | MyClass obj;
  | ^~~~~~
  | class
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task1/2nd Modified$
```

