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Submission Date:	8th November, 2023	Department:	CSE		

LAB 3

Write C++ code to identify relational operators and label them from a given expression.

<	<	Less than
<=	≤	Less than or equal to
==	=	Equal to
>=	≥	Greater than or equal to
>	>	Greater than
!=	≠	Not equal to

Input: x == 5

Output: == Equal to

Input: y >= n

Output: >= Greater than or equal to

Input: x > 5

Output: > Greater than

Your code should scan each string one character at a time.

Submit a PDF report with code and screen shot of your console output.

Mention your Name & Section

CODE:

```
#include <iostream>

#include <string>

using namespace std;

int main() {

    string expression;

    cout << "Enter an expression: ";

    getline(std::cin, expression);


    int i = 0;

    int length = expression.length();

    while (i < length) {

        if (expression[i] == '=') {

            if (i + 1 < length && expression[i + 1] == '=') {

                cout << "== Equal to" << endl;

                i += 2;

            } else {

                cout << "= Assignment" << endl;

                i++;

            }

        }

    }

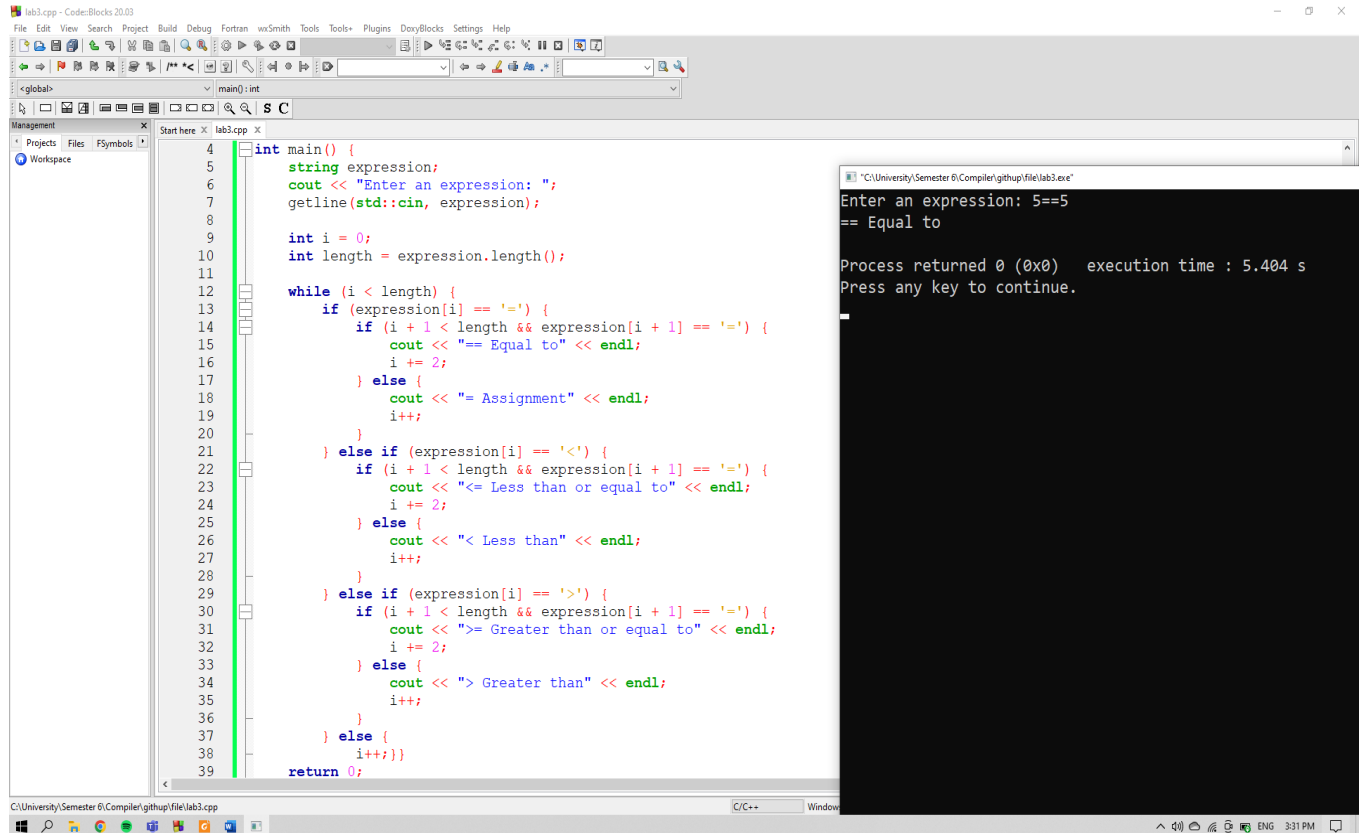
}
```

```

} else if (expression[i] == '<') {
    if (i + 1 < length && expression[i + 1] == '=') {
        cout << "<= Less than or equal to" << endl;
        i += 2;
    } else {
        cout << "< Less than" << endl;
        i++;
    }
} else if (expression[i] == '>') {
    if (i + 1 < length && expression[i + 1] == '=') {
        cout << ">= Greater than or equal to" << endl;
        i += 2;
    } else {
        cout << "> Greater than" << endl;
        i++;
    }
} else {
    i++;}}
return 0;
}

```

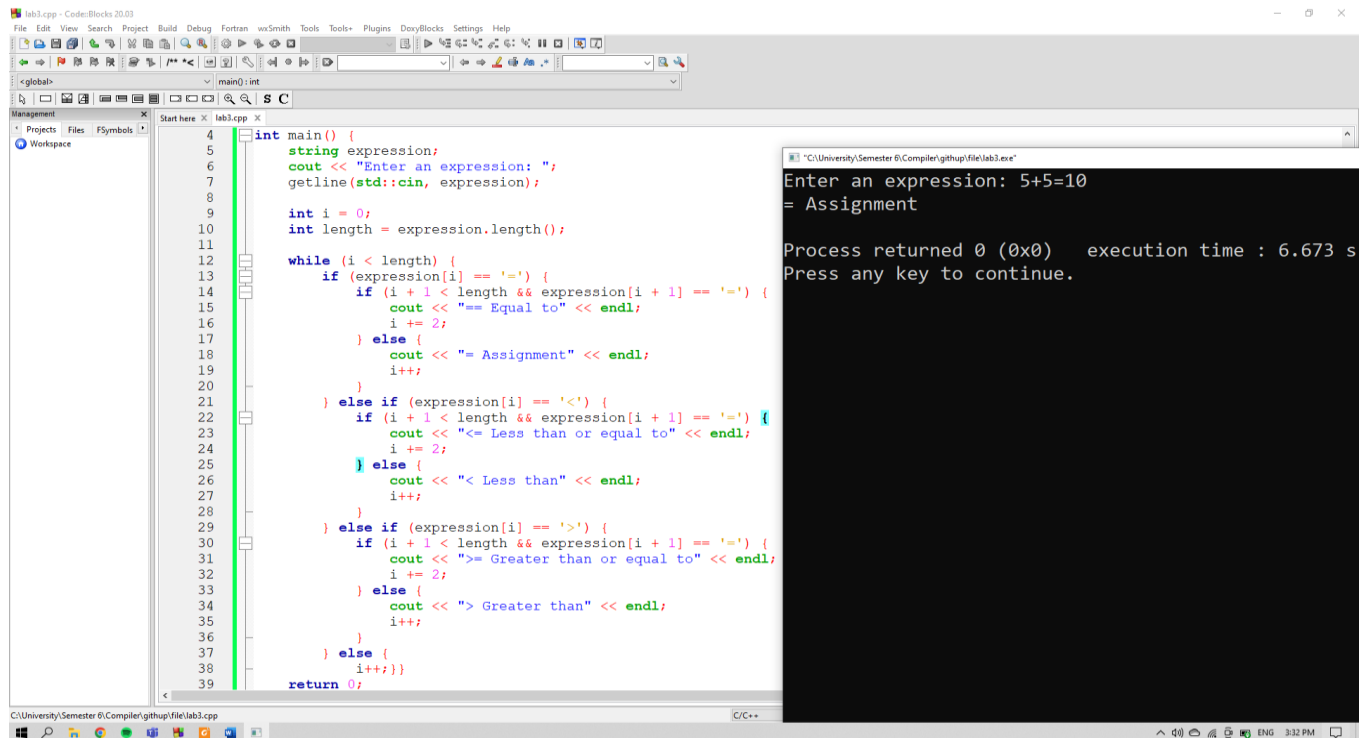
OUTPUT:



```
lab3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoryBlocks Settings Help
<global>
main() : int
Management
Projects Files FSymbols
Workspace
4 int main() {
5     string expression;
6     cout << "Enter an expression: ";
7     getline(std::cin, expression);
8
9     int i = 0;
10    int length = expression.length();
11
12    while (i < length) {
13        if (expression[i] == '=') {
14            if (i + 1 < length && expression[i + 1] == '=') {
15                cout << "== Equal to" << endl;
16                i += 2;
17            } else {
18                cout << "= Assignment" << endl;
19                i++;
20            }
21        } else if (expression[i] == '<') {
22            if (i + 1 < length && expression[i + 1] == '=') {
23                cout << "<= Less than or equal to" << endl;
24                i += 2;
25            } else {
26                cout << "< Less than" << endl;
27                i++;
28            }
29        } else if (expression[i] == '>') {
30            if (i + 1 < length && expression[i + 1] == '=') {
31                cout << ">= Greater than or equal to" << endl;
32                i += 2;
33            } else {
34                cout << "> Greater than" << endl;
35                i++;
36            }
37        } else {
38            i++;
39        }
40    }
41    return 0;
42 }
```

```
"C:\University\Semester 8\Compiler\github\file\lab3.exe"
Enter an expression: 5==5
== Equal to

Process returned 0 (0x0)   execution time : 5.404 s
Press any key to continue.
```



```
lab3.cpp - Code::Blocks 20.03
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<global>
main() : int
Management
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4 int main() {
5     string expression;
6     cout << "Enter an expression: ";
7     getline(std::cin, expression);
8
9     int i = 0;
10    int length = expression.length();
11
12    while (i < length) {
13        if (expression[i] == '=') {
14            if (i + 1 < length && expression[i + 1] == '=') {
15                cout << "== Equal to" << endl;
16                i += 2;
17            } else {
18                cout << "= Assignment" << endl;
19                i++;
20            }
21        } else if (expression[i] == '<') {
22            if (i + 1 < length && expression[i + 1] == '=') {
23                cout << "<= Less than or equal to" << endl;
24                i += 2;
25            } else {
26                cout << "< Less than" << endl;
27                i++;
28            }
29        } else if (expression[i] == '>') {
30            if (i + 1 < length && expression[i + 1] == '=') {
31                cout << ">= Greater than or equal to" << endl;
32                i += 2;
33            } else {
34                cout << "> Greater than" << endl;
35                i++;
36            }
37        } else {
38            i++;
39        }
40    }
41    return 0;
42 }
```

```
"C:\University\Semester 8\Compiler\github\file\lab3.exe"
Enter an expression: 5+5=10
= Assignment

Process returned 0 (0x0)   execution time : 6.673 s
Press any key to continue.
```

```
lab3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoryBlocks Settings Help
<global> main() : int
Management
lab3.cpp
4 int main() {
5     string expression;
6     cout << "Enter an expression: ";
7     getline(std::cin, expression);
8
9     int i = 0;
10    int length = expression.length();
11
12    while (i < length) {
13        if (expression[i] == '=') {
14            if (i + 1 < length && expression[i + 1] == '=') {
15                cout << "== Equal to" << endl;
16                i += 2;
17            } else {
18                cout << "= Assignment" << endl;
19                i++;
20            }
21        } else if (expression[i] == '<') {
22            if (i + 1 < length && expression[i + 1] == '=') {
23                cout << "<= Less than or equal to" << endl;
24                i += 2;
25            } else {
26                cout << "< Less than" << endl;
27                i++;
28            }
29        } else if (expression[i] == '>') {
30            if (i + 1 < length && expression[i + 1] == '=') {
31                cout << ">= Greater than or equal to" << endl;
32                i += 2;
33            } else {
34                cout << "> Greater than" << endl;
35                i++;
36            }
37        } else {
38            i++;
39        }
40    }
41    return 0;
42 }
```

Enter an expression: 5<=7
<= Less than or equal to
Process returned 0 (0x0) execution time
Press any key to continue.

```
lab3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoryBlocks Settings Help
<global> main() : int
Management
lab3.cpp
4 int main() {
5     string expression;
6     cout << "Enter an expression: ";
7     getline(std::cin, expression);
8
9     int i = 0;
10    int length = expression.length();
11
12    while (i < length) {
13        if (expression[i] == '=') {
14            if (i + 1 < length && expression[i + 1] == '=') {
15                cout << "== Equal to" << endl;
16                i += 2;
17            } else {
18                cout << "= Assignment" << endl;
19                i++;
20            }
21        } else if (expression[i] == '<') {
22            if (i + 1 < length && expression[i + 1] == '=') {
23                cout << "<= Less than or equal to" << endl;
24                i += 2;
25            } else {
26                cout << "< Less than" << endl;
27                i++;
28            }
29        } else if (expression[i] == '>') {
30            if (i + 1 < length && expression[i + 1] == '=') {
31                cout << ">= Greater than or equal to" << endl;
32                i += 2;
33            } else {
34                cout << "> Greater than" << endl;
35                i++;
36            }
37        } else {
38            i++;
39        }
40    }
41    return 0;
42 }
```

Enter an expression: 5<7
< Less than
Process returned 0 (0x0) execution time
Press any key to continue.

```
lab3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
<global>
Management
  Projects Files FSymbols
  Workspace
Start here X lab3.cpp X
4 int main() {
5     string expression;
6     cout << "Enter an expression: ";
7     getline(std::cin, expression);
8
9
10    int i = 0;
11    int length = expression.length();
12
13    while (i < length) {
14        if (expression[i] == '=' ) {
15            if (i + 1 < length && expression[i + 1] == '=') {
16                cout << "= Equal to" << endl;
17                i += 2;
18            } else {
19                cout << "= Assignment" << endl;
20                i++;
21            }
22        } else if (expression[i] == '<') {
23            if (i + 1 < length && expression[i + 1] == '=') {
24                cout << "<= Less than or equal to" << endl;
25                i += 2;
26            } else {
27                cout << "< Less than" << endl;
28                i++;
29            }
30        } else if (expression[i] == '>') {
31            if (i + 1 < length && expression[i + 1] == '=') {
32                cout << ">= Greater than or equal to" << endl;
33                i += 2;
34            } else {
35                cout << "> Greater than" << endl;
36                i++;
37            }
38        } else {
39            i++;
40        }
41    }
42    return 0;
43 }
```

Enter an expression: 5>=3
>= Greater than or equal to
Process returned 0 (0x0) execution time
Press any key to continue.

```
lab3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
<global>
Management
  Projects Files FSymbols
  Workspace
Start here X lab3.cpp X
7     getline(std::cin, expression);
8
9     int i = 0;
10    int length = expression.length();
11
12    while (i < length) {
13        if (expression[i] == '=' ) {
14            if (i + 1 < length && expression[i + 1] == '=') {
15                cout << "= Equal to" << endl;
16                i += 2;
17            } else {
18                cout << "= Assignment" << endl;
19                i++;
20            }
21        } else if (expression[i] == '<') {
22            if (i + 1 < length && expression[i + 1] == '=') {
23                cout << "<= Less than or equal to" << endl;
24                i += 2;
25            } else {
26                cout << "< Less than" << endl;
27                i++;
28            }
29        } else if (expression[i] == '>') {
30            if (i + 1 < length && expression[i + 1] == '=') {
31                cout << ">= Greater than or equal to" << endl;
32                i += 2;
33            } else {
34                cout << "> Greater than" << endl;
35                i++;
36            }
37        } else {
38            i++;
39        }
40    }
41    return 0;
42 }
```

Enter an expression: 5>2
> Greater than
Process returned 0 (0x0) execution time
Press any key to continue.