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Sec: A Lab Task 2

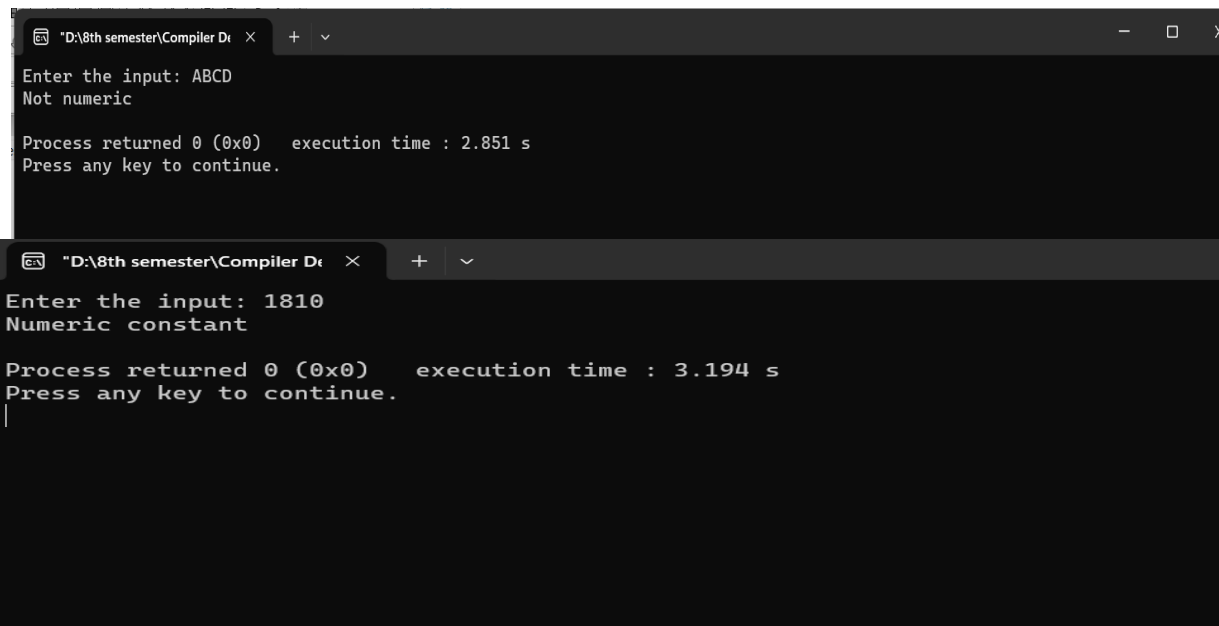
Course Name: Compiler Design

1. Write a program to determine whether the Given Input is Numeric Constant or Not.
e.g. (if 100, 991, 1810 etc are given as an input , then the program says “numeric constant”, or if we take input as “ABCD”, “A1B2”, then the program will say that this is “not numeric”).

Code:

```
Start here x Lab2Task1.cpp x
1 #include <iostream>
2 #include <string>
3 using namespace std;
4 bool isDigit(char c) {
5     return c >= '0' && c <= '9';
6 }
7
8 bool isNumericConstant(const char* input) {
9     for (int i = 0; input[i] != '\0'; ++i) {
10         if (!isDigit(input[i])) {
11             return false;
12         }
13     }
14     return true;
15 }
16
17 int main() {
18     string input;
19     cout << "Enter the input: ";
20     getline(cin, input);
21
22     if (isNumericConstant(input.c_str())) {
23         cout << "Numeric constant" << endl;
24     } else {
25         cout << "Not numeric" << endl;
26     }
27
28     return 0;
29 }
30
```

Output:



```
"D:\8th semester\Compiler D... x + v
Enter the input: ABCD
Not numeric

Process returned 0 (0x0)   execution time : 2.851 s
Press any key to continue.

"D:\8th semester\Compiler D... x + v
Enter the input: 1810
Numeric constant

Process returned 0 (0x0)   execution time : 3.194 s
Press any key to continue.
```

2. Write a program to determine whether the Given Input is Operators or Not. (Arithmetic Operators +, -, *, /, %, =)

e.g., 2+3=5

Ans:

operator1: +

operator2: =

Code:

```
Start here x Lab2Task2.cpp x
1  #include <iostream>
2  #include <string>
3  using namespace std;
4
5  int main() {
6      string input;
7
8
9      cout << "Enter the input: ";
10     getline(std::cin, input);
11
12     bool hasOperator = false;
13
14
15     for (char ch : input) {
16
17         if (ch == '+' || ch == '-' || ch == '*' || ch == '/' || ch == '%') {
18             cout << "operator: " << ch << endl;
19             hasOperator = true;
20         } else if (ch == '=') {
21             cout << "operator: " << ch << endl;
22             hasOperator = true;
23         }
24     }
25
26     if (!hasOperator) {
27         cout << "No operators found in the input." << endl;
28     }
29
30     return 0;
31 }
32
```

Output:

```
"D:\8th semester\Compiler D... x + v
Enter the input: 2+3 = 5
operator: +
operator: =

Process returned 0 (0x0)   execution time : 6.498 s
Press any key to continue.
|
```

3. Write a program to determine whether the Given Input is Comment line(s) or Not.

e.g.

//single line comment

/* multiple line

Comment */

Code:

```
Start here x *Lab2Task3.cpp x
1  #include <iostream>
2  #include <string>
3  using namespace std;
4  void isComment(string line)
5  {
6
7
8      if (line.size() >= 2 && line[0] == '/' && line[1] == '/') {
9
10         cout << "It is a single-line comment";
11         return;
12     }
13
14     if (line.size() >= 4 && line[line.size() - 2] == '*' &&
15         line[line.size() - 1] == '/' && line[0] == '/' && line[1] == '*') {
16
17         cout << "It is a multi-line comment";
18         return;
19     }
20
21     cout << "It is not a comment";
22 }
23
24 int main()
25 {
26
27     string line;
28
29     cout << "Enter a string: ";
30     getline(cin, line);
31
32
33     isComment(line);
34
35     return 0;
36 }
37
```

Output:

```
"D:\8th semester\Compiler D... x + v
Enter a string: //single line comment
It is a single-line comment
Process returned 0 (0x0)   execution time : 2.471 s
Press any key to continue.
```

```
"D:\8th semester\Compiler De  X + v
Enter a string: /* multiple line comment */
It is a multi-line comment
Process returned 0 (0x0)  execution time : 15.914 s
Press any key to continue.
|

"D:\8th semester\Compiler De  X + v
Enter a string: This is not a comment
It is not a comment
Process returned 0 (0x0)  execution time : 8.111 s
Press any key to continue.
```