

CS 150 Lab 5

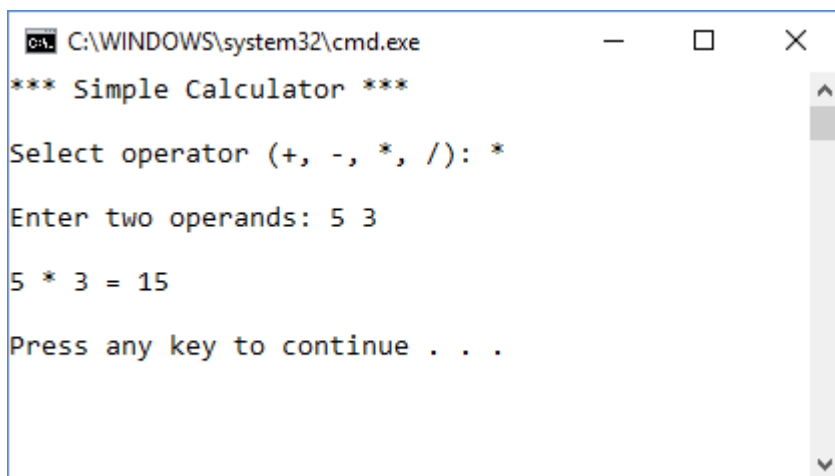
Complex Conditional Logic

The main objective of today's lab is to solve a problem that uses complex conditional logic including relational operators, logical operators, modulus, single-alternative ifs, double-alternative ifs, and multiple-alternative ifs. You are to continue using the Visual Studio debugger to help identify any logical errors that your program contains.

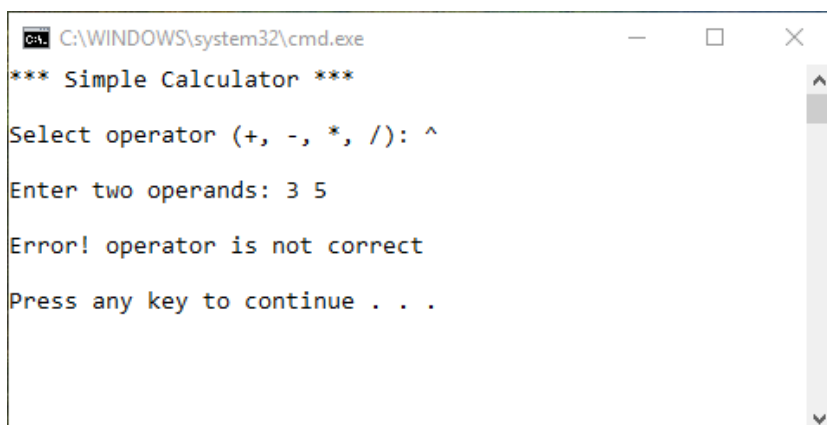
1. Be sure your output looks exactly like the specified output.
2. Submit your solutions folder with the completed project to **CS150-01 Drop** folder when you are done.
3. Use the program skeleton and add comments to your code.
4. Write small pieces of code and test as you go!!!!!!!!!!
5. **Make certain that you don't use any magic constants in your programs!**

Lab 5.1

Write a complete C++ program in a project called **05_1_Calculator** that implements a simple calculator. The operators are +, -, *, and /. Any other operator is invalid. Write the code to handle **one operator at a time**. *Test that code*, and move on to the next operator. Here is how your program is to work:



```
C:\WINDOWS\system32\cmd.exe
*** Simple Calculator ***
Select operator (+, -, *, /): *
Enter two operands: 5 3
5 * 3 = 15
Press any key to continue . . .
```



```
C:\WINDOWS\system32\cmd.exe
*** Simple Calculator ***
Select operator (+, -, *, /): ^
Enter two operands: 3 5
Error! operator is not correct
Press any key to continue . . .
```

► **STOP – Show the instructor or TA**

Lab 5.2

Add a project called **05_2_FunWithNumbers** to your **PUNetIDLabs** solution that solves the following problem.

Write a complete C++ program that allows the user the ability to enter a number in the range of some lower bound (minimum 2) to some upper bound (maximum 99, inclusive). **These are integers and are constants that are initially set to 2 and 99.** You are then to ask the user to enter a value and print out whether the value entered is even or odd and finally the sum of the digits. If the user gives you a value outside of the specified range, display "Invalid input!" and terminate the program.

Here is how your program is to work:

```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 99: 100
Invalid input!
Press any key to continue . . .
```

```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 99: 11
11 is odd
Sum of digits is 2
Press any key to continue . . .
```

```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 99: 34
34 is even
Sum of digits is 7
Press any key to continue . . .
```

Have the instructor or TA after each step: 1) even/odd and 2) sum of digits.

Once you complete the above, change the minimum value to 10 and the maximum value to 87 and show the TA that your code still works correctly.

```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 10 and 87: 90
Invalid input!
Press any key to continue . . .
```

```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 10 and 87: 28
28 is even
Sum of digits is 10
Press any key to continue . . .
```

Your programs are to compile without any errors or warnings. Once your projects are complete, place your solution PUNetIDLabs into the **CS150-01 Drop** folder on grace by this **Friday at 5PM**. Your solution is to have all previous projects completely working and correct.