CS 150 Lab 6
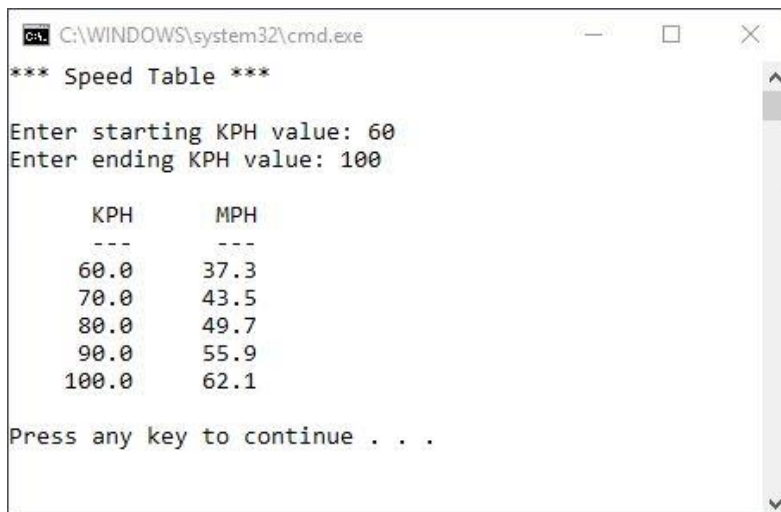# while Loops

The main objective of today's lab is to solve a problem that uses while loops and if statements. You are to continue using the Visual Studio debugger to help identify any 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 **CS 150-01 Drop** folder when you are done.
3. Write small pieces of code and test as you go!
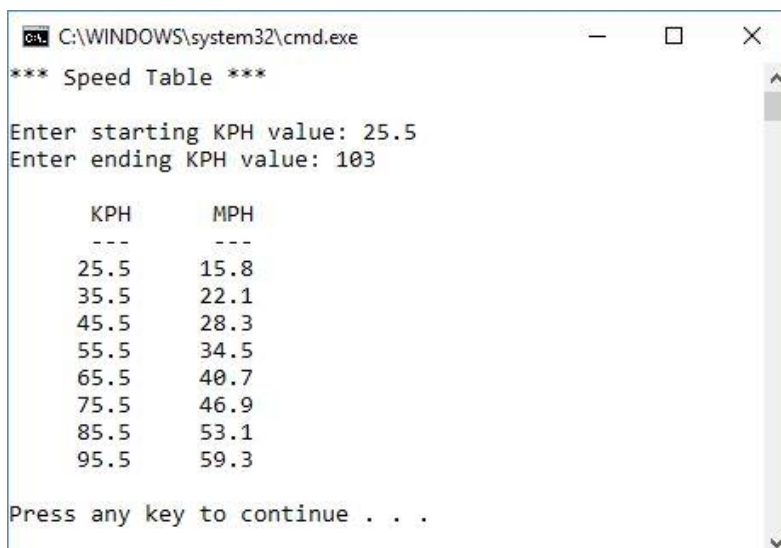4. Show the instructor or TA your solution to each problem once it is completed.

Lab 6.1

The conversion of kilometers per hour (KPH) to miles per hour (MPH) is given by the formula mph = kph * 0.6214. Write a C++ program in a project **06_1_Speed** that that produces a table of conversions based on the input from the user, as in the example below. The speeds are to be shown in increments of 10 kph and will stop after reaching the ending value.

```
C:\WINDOWS\system32\cmd.exe                     —    □    ×
*** Speed Table ***

Enter starting KPH value: 60
Enter ending KPH value: 100

    KPH         MPH
    ---         ---
    60.0        37.3
    70.0        43.5
    80.0        49.7
    90.0        55.9
   100.0        62.1

Press any key to continue . . .
```

```
C:\WINDOWS\system32\cmd.exe                     —    □    ×
*** Speed Table ***

Enter starting KPH value: 25.5
Enter ending KPH value: 103

    KPH         MPH
    ---         ---
    25.5        15.8
    35.5        22.1
    45.5        28.3
    55.5        34.5
    65.5        40.7
    75.5        46.9
    85.5        53.1
    95.5        59.3

Press any key to continue . . .
```
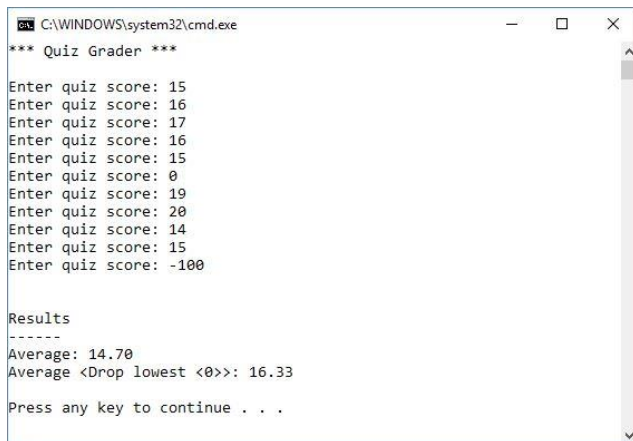
Lab 6.2

Write a C++ program in a project **06_2_Scores** to allow the user the ability to enter an unknown number of quiz scores. Scores entered will be integers in the range of 0 to 100 inclusive. After the user enters a _negative_ quiz score, display to the user:

- average quiz score
- average quiz score after dropping the lowest score (**optional!**)

```
C:\WINDOWS\system32\cmd.exe                    —   □   ×
*** Quiz Grader ***

Enter quiz score: 15
Enter quiz score: 16
Enter quiz score: 17
Enter quiz score: 16
Enter quiz score: 15
Enter quiz score: 0
Enter quiz score: 19
Enter quiz score: 20
Enter quiz score: 14
Enter quiz score: 15
Enter quiz score: -100


Results
------
Average: 14.70
Average <Drop lowest <0>>: 16.33

Press any key to continue . . .
```
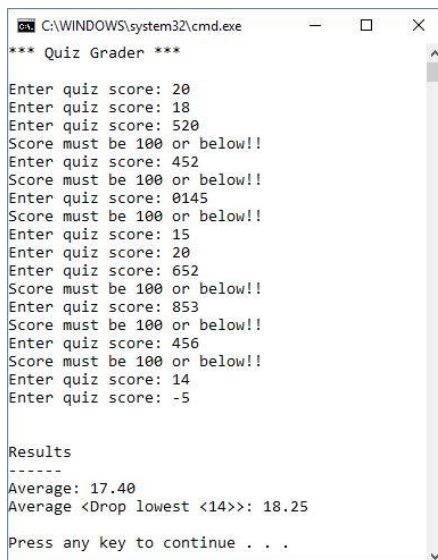
Challenge
Edit Lab 6.2 to check for invalid scores that are over 100. If the user enters a score that is greater than 100 then keep asking them to enter a score until they enter a valid score.

```
C:\WINDOWS\system32\cmd.exe         —   □   ×
*** Quiz Grader ***

Enter quiz score: 20
Enter quiz score: 18
Enter quiz score: 520
Score must be 100 or below!!
Enter quiz score: 452
Score must be 100 or below!!
Enter quiz score: 0145
Score must be 100 or below!!
Enter quiz score: 15
Enter quiz score: 20
Enter quiz score: 652
Score must be 100 or below!!
Enter quiz score: 853
Score must be 100 or below!!
Enter quiz score: 456
Score must be 100 or below!!
Enter quiz score: 14
Enter quiz score: -5


Results
------
Average: 17.40
Average <Drop lowest <14>>: 18.25

Press any key to continue . . .
```

1. Your programs are to compile without any errors or warnings.
2. Do not use any magic constants in your program. Define your constants before defining the rest of your program's variables.

Once your projects are complete, place your solution PUNetIDLabs into the
CS 150-01 Drop folder on grace. Your solution is to have all previous projects completely working and correct.