

Homework 5 - Average Numbers While Loop

Goal

In this project, you write a while loop to read in numbers from a file until the end-of-file, and you add them up as you go. You also count the numbers so you can then print the average of the numbers.

Learning Objectives

- How to write an EOF while loop
- How to do counting in a loop
- How to do summation in a loop
- How to calculate averages repeatedly in a loop

Program Features

1. Prompt & read a file name and open the file.
2. Do a priming read and make a while loop to
 - a. read in the numbers,
 - b. sum them up, and
 - c. count how many there are.
 - d. Also print "With 10 numbers, the average is 32.20." every 10 numbers. In other words, every 10 numbers that you read in you print the average. See the example.
3. ALSO... after the loop, calculate the average and print it.

I you do not know what this is, then you need to review the lecture.

Use fixed and setprecision(2) for the average but not the count of numbers.

Read in double numbers to average;

Usually you use ints when counting.

Your loop should look something like this:

```
// read a number
while ( your-ifstream-variable )
{
    // sum number
    // count
    // if (count % 10) == 0
    //     then cout "With xxx numbers, the average is yyyy."
    // read a number
}

cout final average output
```

Example I/O

Enter a file name: **nums.dat**

```
With 10 numbers, the average is 32.23.  
With 20 numbers, the average is 36.14.  
With 30 numbers, the average is 44.66.  
With 40 numbers, the average is 39.34.  
With 50 numbers, the average is 40.22.  
There are 54 numbers in the file with an average of 43.25.
```

Enter a file name: **nums2.dat**

```
With 10 numbers, the average is 32.23.  
There are 19 numbers in the file with an average of 33.20.
```

Enter a file name: **nums3.dat**

```
There are 4 numbers in the file with an average of 23.25.
```

Testing

Test your program with several different input files:

- no numbers
- 1 number
- 1 negative number
- input file does not exist
- odd number of numbers in the file
- only ints in file
- very large sum of numbers

Submit your program to Web-CAT