**Programming Challenges using loops: File and character processing – (WEEK#9)**

**Programming Challenge#1:** Write a program that will open and read character-by-character the contents in file history.d1. Use appropriate validation for file processing.

How many nonblank characters are there in file [history.dl](ReadFile/history.d1)? Add the necessary statements including a counter to your program that keeps track of the number of nonblank characters in the file. Print this number to the screen. Do not include ‘\n’ in your nonblank count.

**Programming Challenge#2:** Write a functional design and a program to analyze a sample of text in a file.

Count the instances of the following categories of symbols:

• Uppercase letters

• Lowercase letters

• Digits

• End-of-sentence markers (periods, explanation points, and question marks)

• Intrasentence markers (commas, semicolons, and colons)

• Blanks

• All other symbols

Use a switch statement in your processing.

After collecting these statistics, use them to approximate the following statistics:

• Average word length

• Average sentence length

Design and implement a test plan for the program.

A sample program showing file read operations …

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// EchoLine program

// This program reads and echoes the characters from one line

// of an input file

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#include <iostream>

#include <fstream> // For file I/O

using namespace std;

int main()

{

char inChar; // An input character

ifstream inFile; // Data file

inFile.open("text.dat"); // Attempt to open input file

if (!inFile) // Was it opened?

{

cout << "Can't open the input file."; // No--print message

return 1; // Terminate program

}

inFile.get(inChar); // Get first character

while (inChar != '\n')

{

cout << inChar; // Echo it

inFile.get(inChar); // Get next character

}

cout << endl;

return 0;

}

/\*datafile contents ...

Now is the time for all good men to come to the aid of their party.

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You may also find the CharCounts.cpp below helpful.

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// CharCounts program

// This program counts the number of letters, periods, question

// marks, and exclamation marks found in the first 100 input

// characters

// Assumption: Input consists of at least 100 characters

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#include <iostream>

#include <cctype> // For isalpha()

using namespace std;

int main()

{

char inChar; // Current input character

int loopCount; // Loop control variable

int letterCount = 0; // Number of letters

int periodCount = 0; // Number of periods

int questCount = 0; // Number of question marks

int exclamCount = 0; // Number of exclamation marks

cout << "Enter your text:" << endl;

for (loopCount = 1; loopCount <= 100; loopCount++)

{

cin.get(inChar);

if (isalpha(inChar))

letterCount++;

else

switch (inChar)

{

case '.' : periodCount++;

break;

case '?' : questCount++;

break;

case '!' : exclamCount++;

break;

default : ; // Unnecessary, but OK

}

}

cout << endl;

cout << "Input contained" << endl

<< letterCount << " letters" << endl

<< periodCount << " periods" << endl

<< questCount << " question marks" << endl

<< exclamCount << " exclamation marks" << endl;

return 0;

}

/word\_char\_processing.cpp

#include<iostream>

#include<cctype>

using namespace std;

int main()

{

string word;

char letter;

cout<<"Type a single word, press enter key: ";

cin>>word;

cout<<word<<endl;

cout<<word.length()<<endl;

cout<<word[0]<<endl;

letter=word[0];

cout<<letter<<endl;

letter=tolower(letter);

cout<<letter<<endl;

for(int count=0; count<word.length();count++)

{

letter=toupper(word[count]);

cout<<letter;

}

cout<<endl;

for(int count=0; count<word.length();count++)

{

letter=toupper(word[count]);

switch(letter)

{

case 'A':cout<<"apple ";

break;

case 'n': cout<<"novel ";

break;

case 't': cout<<"trial ";

break;

}

}

return 0;

}