**CSC 1101 – Problem Solving and Programming Laboratory**

**Lab 10 – [your name]**

**25 points – Due February 22, 11pm**

**a)** Save this document with your name and the lab assignment number somewhere in the file name.

**b)** Type/paste your answers into the document.

**c)** Submit the following documents to the Canvas assignment link where you downloaded this document:

✓ This document.

✓ Your .cpp files renamed to .txt.

Submit the documents separately, not as one .zip file.

**1) [10 points]** You've been hired by *Suess Starlings* to complete a C++ console application that analyzes text from author Dr Seuss. It counts the approximate number of words and sentences in the text. The number of words is determined by counting the number of spaces. The number of sentences is determined by counting the number of periods and exclamation points. Start with file **Lab10-01. cpp** and make the following edits:

1) Add a header comment.

2) Add an application header and close.

3) Add code within the loop to test each character. Use an if statement to count the number of spaces, and periods and exclamation points. Before the loop, initialize the two counters.

4) Add code after the loop. Print the analyzed text. Then use formatted output manipulators (setw, left/right) to print the following rows:

● Length

● Number of words

● Number of sentences

And columns:

● A left-justified label

● A right-justified value

Define constants for the column widths. Pick two excerpts with at least three sentences from Dr Seuss writings and run each one. The output looks like this for the sample text:

Welcome to Suess Starlings

--------------------------

Text:

You'll be on your way up! You'll be seeing great sights! You'll join the high fliers who soar high heights.

Length: 107

Number of words: 19

Number of sentences: 3

//==========================================================

//

// Title: lab10

// Course: CSC 1101

// Lab Number: 10

// Author: rory lange

// Date: 2/18/21

// Description:

// <brief description of application including its inputs,

// processing, and outputs>

//

//==========================================================

#include <cstdlib> // For several general-purpose functions

#include <fstream> // For file handling

#include <iomanip> // For formatted output

#include <iostream> // For cin, cout, and system

#include <string> // For string data type

using namespace std; // So "std::cout" may be abbreviated to "cout"

int main() {

//header

cout << "Welcome to Suess Starlings Word counter." << endl;

cout << "----------------------------------------" << endl << endl;

//declare variables

string text = "Oh, the Places You'll Go! Congratulations! Today is your day. You're off to Great Places! You're off and away!";

int length = text.length();

int words = 0;

int sentences = 0;

const int w = 25;

const int w1 = 15;

int i = 0;

while (i <= length) {

if (text[i] == ' ')

words++;

else if (text[i] == '.' || text[i] == '!')

sentences++;

i++;

}

//output

cout << "Text: " << endl;

cout << text << endl << endl;

cout << setw(w) << left << "Length: " << setw(w1) << right << length << endl;

cout << setw(w) << left << "Words: " << setw(w1) << right << words << endl;

cout << setw(w) << left << "Sentences: " << setw(w1) << right << sentences << endl;

//close

cout << "End of Application" << endl;

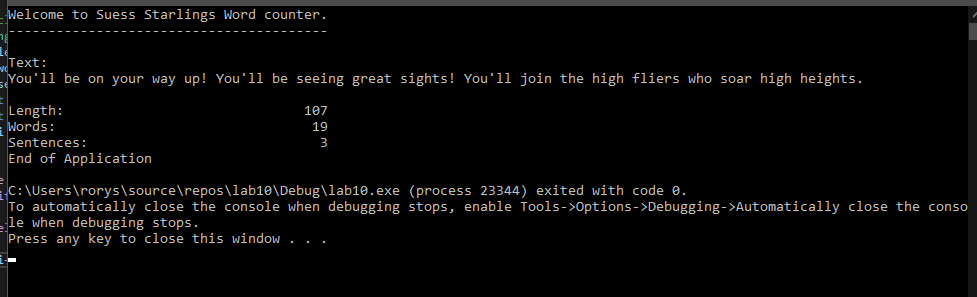
}

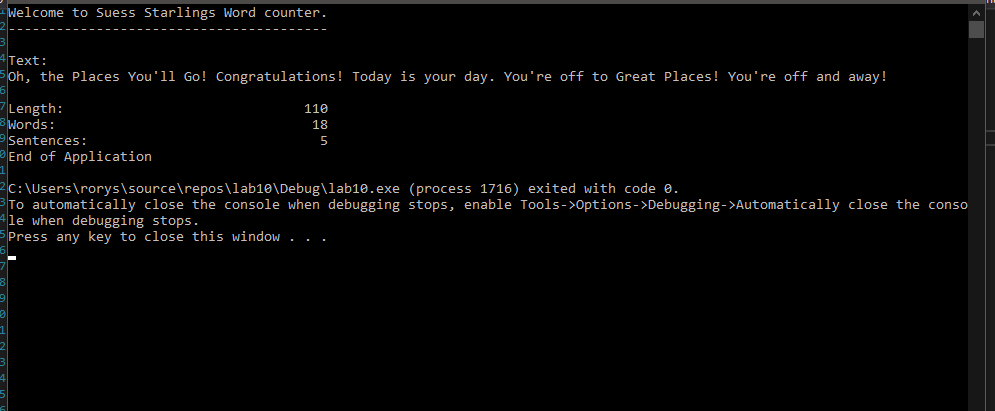
**If possible, format your code like this:**

**Font “Courier New”**

**Font size “9”**

**Bold**





**2) [15 points]** You've been hired by *Password Penguins* to complete a C++ console application that determines if a password is valid. This app is similar to the *Suess Starlings* app but has more logic. A valid password has at least eight characters and includes:

● At least two digits.

● At least three letters.

● At least one punctuation character.

Start with file **Lab10-02. cpp** and make the following edits:

1) Add a header comment.

2) Add an application header and close.

3) Add code within the loop to test each character. Use an if statement and character functions (isdigit, isalpha, ispunct) to count the number of digits, letters, and punctuation characters. Before the loop, initialize the three counters.

4) Add code after the loop. Use formatted output manipulators (setw, left/right) to print the following rows:

● Password

● Length

● Number of digits

● Number of letters

● Number of punctuations

And columns:

● A left-justified label

● A right-justified value

Then use an if statement to test if the password is valid (has the four requirements listed below). Print a valid or invalid message.

Use sample app **String and character functions** on Canvas for reference. Define constants for the minimum password length, minimum number of digits, letters, and punctuations, and column widths. The output should look like this for invalid and valid input:

Welcome to Password Penguins

----------------------------

Enter the password (no spaces): 5klf)$jaq

5

k

l

f

)

$

j

a

q

Password: 5klf)$jaq

Length: 9

Number of digits: 1

Number of letters: 6

Number of punctuations: 2

Password is INVALID!

End of Password Penguins

Welcome to Password Penguins

----------------------------

Enter the password (no spaces): jlk53&dl

j

l

k

5

3

&

d

l

Password: jlk53&dl

Length: 8

Number of digits: 2

Number of letters: 5

Number of punctuations: 1

Password is VALID!

End of Password Penguins

Do not use this sample input for the final runs pasted below.

//==========================================================

//

// Title: lab10

// Course: CSC 1101

// Lab Number: 10

// Author: rory lange

// Date: 2/18/21

// Description:

// <brief description of application including its inputs,

// processing, and outputs>

//

//==========================================================

#include <cstdlib> // For several general-purpose functions

#include <fstream> // For file handling

#include <iomanip> // For formatted output

#include <iostream> // For cin, cout, and system

#include <string> // For string data type

using namespace std; // So "std::cout" may be abbreviated to "cout"

int main() {

//header

cout << "Password Penguins Password Checker" << endl;

cout << "-----------------------------------" << endl;

//variables

string password;

int length = password.length();

int characters = 0;

int digits = 0;

int punct = 0;

int i = 0;

const int w = 25;

const int w1 = 15;

const int minLength = 7;

const int minDigits = 2;

cout << "Enter the password: ";

getline(cin, password);

cout << endl;

while (i < password.length()) {

if (isdigit(password[i]))

digits++;

else if (isalpha(password[i]))

characters++;

else if (ispunct(password[i]))

punct++;

cout << password[i] << endl;

i++;

}

cout << endl;

bool valid = (length <= minLength) && (digits <= minDigits) ? false : true;

cout << setw(w) << left << "Password: " << setw(w1) << right << password << endl;

cout << setw(w) << left << "Digits: " << setw(w1) << right << digits << endl;

cout << setw(w) << left << "Letters: " << setw(w1) << right << characters << endl;

cout << setw(w) << left << "Punctuation: " << setw(w1) << right << punct << endl << endl;

if (valid == true)

cout << "Password is Valid" << endl << endl;

else

cout << "Password is Invalid" << endl << endl;

//ending

cout << "End of calculations for password penguins" << endl;

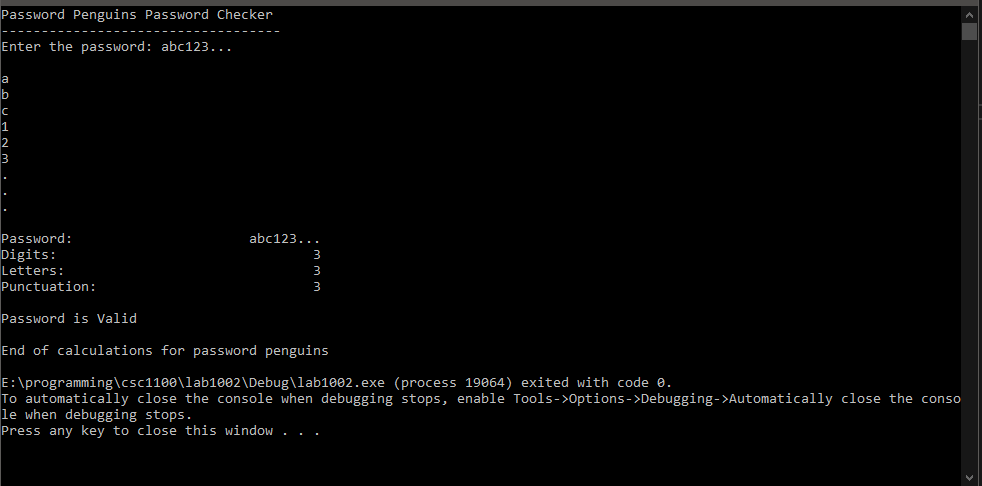
}

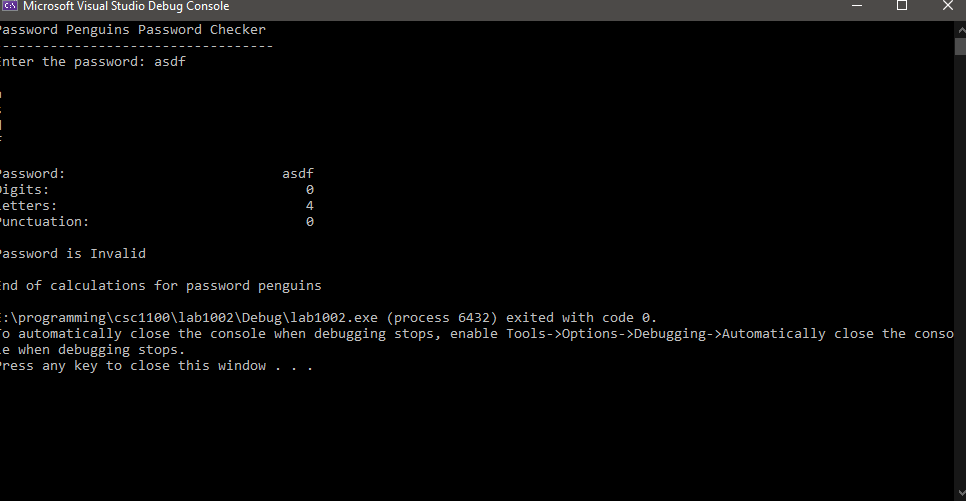
**If possible, format your code like this:**

**Font “Courier New”**

**Font size “9”**

**Bold**





**\* Copying-and-pasting C++ code to a Word document**

**macOS**

1) From within the C++ program, press **command-A** and press **command-C**.

2) From within the Word document, press **command-V**.

**Windows**

1) From within the C++ program, press **CTRL-A** and press **CTRL-C**.

2) From within the Word document, press **CTRL-V**.

**\*\* Copying-and-pasting C++ console application output to a Word document**

**macOS**

1) From the C++ console, press **shift-command-4-space**.

2) From within the Word document, **command-V**.

**Windows**

1) From the C++ console, press **ALT-PrintScreen**.

2) From within the Word document, press **CTRL-V**.