Contestant Number:

 Time:

 Rank:

VISUAL BASIC/C# PROGRAMMING

(330)

REGIONAL – 2015

**Production Portion:**

Program 1: File Statistics (500 points)

 ***TOTAL POINTS (500 points)***

**Failure to adhere to any of the following rules will result in disqualification:**

1. **Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.**
2. **No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.**
3. **Electronic devices will be monitored according to ACT standards.**

No more than ten (10) minutes orientation

No more than 90 minutes testing time

No more than ten (10) minutes wrap-up

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*Workplace Skills Assessment Program* competition.

# General Instructions

XYZ, Inc. receives and processes submissions for composition contests and essay-based applications from across the nation. The first step in evaluating a submission is to verify that the submission meets the minimum requirements. For example, the maximum number of words allowed for a particular submission may be 500. This initial verification is currently a manual process and is proving to be overly time-consuming. XYZ, Inc. has contracted you to develop a program that will provide statistics about an ASCII text file that contains English composition to help streamline the verification process.

XYZ, Inc. has provided the following requirements:

1. The program must display the total number of ASCII characters in a file.
2. The program must display the total number of words contained in the file. A word is defined as any number of characters bounded by one or more spaces, the newline character, or the beginning or end of a string.
3. The program must display the total number of sentences contained in the file. A sentence is one or more words that end with a period, exclamation mark, or question mark.
4. The number of vowels contained in the file. A vowel can be any of the following: A, E, I, O, U, a, e, i, o, u.

You will have 90 minutes to complete your work.

Your name and/or school name should NOT appear on any work you submit for grading.

Copy your entire solution/project to the flash drive provided. You must submit your entire solution/project so that the graders may open your project to review the source code. You must ensure that the files required to run your program are present and will execute on the flash drive provided. Note that the flash drive letter may not be the same when the program is graded as it was when you created the program. It is recommended that you use relative paths rather than absolute paths to ensure that the program will run regardless of the flash drive letter. The graders **will** **not** compile or alter your source code to correct for this. Submissions that do not contain source code **will** **not** begraded.

**Assumptions to make when taking this assessment:**

* The input file(s) will contain only ASCII characters.
* The count of characters is any ASCII character, regardless if it is visible on the screen or in the file.
* A test input file will be available and will be named, “Student Data 330.txt”.

**Technical Specifications:**

1. **Solution and Project**
	1. Create a Visual Basic Windows Form Application named VB\_330\_ContestantNumber, where ContestantNumber is your BPA assigned contestant number. When naming your project, replace dashes (-) with the underscore (\_). For example, if your BPA contestant number is 01-2345-6789, then your project name would be VB\_330\_01\_2345\_6789.
2. **User Interface**
	1. The user interface to be constructed is shown in Figure 1. Your application must be visually identical to the prototype shown in Figure 1.
	2. The Main Form
		1. The form is to be a Single Document Interface
		2. The name of the main form should be frmMain
		3. The Form’s caption must be set to “Submission Statistics: Contestant #ABC”, where ABC is your BPA assigned contestant number (including dashes)
		4. The StartPosition of the form must be set to CenterScreen
	3. User interface elements and default (design-time) property settings
		1. Exit Button
			1. The name of this button must be cmdExit
			2. The text property for this button must be set to “E&xit”
		2. Clear Button
			1. The name of this button must be cmdClear
			2. The text property for this button must be set to “Clear”
			3. The Enabled property for this button must be set to False
		3. Process Button
			1. The name of this button must be “cmdProcess”
			2. The text property for this button must be set to “Process’
			3. The Enabled property for this button must be set to False
		4. Choose File Button
			1. The name of this button must be “cmdChooseFile”
			2. The text property for this button must be set to “Choose File”
		5. File Name Textbox
			1. The name of this textbox must be “txtFileName”
			2. The ReadOnly property for this textbox must be set to True
		6. Group Boxes
			1. A group box called, “grpFileContents” must be created and must contain the textboxes and associated labels for: Characters, words, sentences, and vowels
			2. A group box called, “grpActions” must be created and must contain the buttons for: process, clear, and exit
		7. File Contents Textbox
			1. The name of this textbox must be “txtFileContents”
			2. The ReadOnly property for this textbox must be set to True
			3. The Multiline property for this textbox must be set to True
			4. The Scroolbars property for this textbox must be set to Vertical
		8. Character Count Textbox
			1. The name of this textbox must be “txtCharacterCount”
			2. The ReadOnly property for this textbox must be set to True
		9. Word Count Textbox
			1. The name of this textbox must be “txtWordCount”
			2. The ReadOnly property for this textbox must be set to True
		10. Sentence Count Textbox
			1. The name of this textbox must be “txtSentenceCount”
			2. The ReadOnly property for this textbox must be set to True
		11. Vowel Count Textbox
			1. The name of this textbox must be “txtVowelCount”
			2. The ReadOnly property for this textbox must be set to True
		12. Labels must be created as shown in Figure 1
			1. All labels must be prefixed with “lbl”. For example, lblCharacters is the label name for the label with the text “Characters” in Figure 1
3. **Tasks (see Table 1 below)**
	1. Close the Application Button Click
		1. Closes the form. Upon closing, the application must confirm that the form is to be closed and allow the user to cancel the close by responding with “No” to the question, “Do you wish to exit this application?” If the user responds with a “Yes”, then the application is closed.
		2. The dialog box used to solicit the response must contain the message, “Do you wish to exit this application?” with a caption of “Exit?”
		3. The dialog box used to solicit the response must contain two buttons: Yes and No.
	2. Clear the Form Button Click
		1. Clears all output fields by setting them to the value vbNullString
		2. Fields to set to vbNullString: txtFileName, txtCharacterCount, txtWordCount, txtSentenceCount, and txtVowelCount.
		3. Disable the clear button
		4. Disable the process button
	3. Process a File Button Click
		1. Opens the file contained in txtFileName for input
		2. Read the contents of the file into the txtFileContents control for on-screen display
		3. Count the characters in the file and display the count in txtCharacterCount
		4. Count the words in the file and display the count in txtWordCount
		5. Count the sentences in the file and display the count in txtSentenceCount
		6. Count the vowels in the file and display the count in txtVowelCount
		7. Enable the clear button
		8. Enable the process button
	4. Choose a File Button Click
		1. Uses the Open File Dialog object to browse for a file to read
		2. The Open File Dialog object’s filter property must be set to "Text files (\*.txt)|\*.txt" or “\*.txt|\*.txt”

|  |  |  |
| --- | --- | --- |
| **Task** | **Object** | **Event** |
| Close the Application | Exit Button | Click |
| Clear the Form | Clear Button | Click |
| Process a File | Process Button | Click |
| Choose a File | Choose File Button | Click |

Table 1 - Task-Object-Event Chart

**Development Standards**

* Standard name prefixes must be utilized for forms, controls, and variables.
* All subroutines, functions, and methods must be documented with comments explaining the purpose of the method, the input parameters (if any), and the output (if any).
* The user interface must be similar to Figure 1.

**User Interface Design**



Figure 1

Your application will be graded on the following criteria:

**Solution and Project**

The project is present on the flash drive \_\_\_\_ 10 pts

The project is named according to the naming conventions \_\_\_\_ 10 pts

**User Interface - Property Checks**

The user interface design resembles Figure 1 \_\_\_\_ 20 pts

The name of the form is, “frmMain” \_\_\_\_ 5 pts

The form’s caption displays “Submission Statistics: Contestant #ABC”,

where#ABC is the contestant’s properly formatted BPA ID \_\_\_\_ 5 pts

The user interface’s Start Position is set to “CenterScreen” \_\_\_\_ 5 pts

The user interface contains a button named, “cmdExit” \_\_\_\_ 5 pts

The user interface contains a button captioned, “E&xit” \_\_\_\_ 5 pts

The user interface contains a button named, “cmdClear” \_\_\_\_ 5 pts

The user interface contains a button captioned, “Clear” \_\_\_\_ 5 pts

The enabled property for this button must be set to False \_\_\_\_ 5 pts

The user interface contains a button named, “cmdProcess” \_\_\_\_ 5 pts

The user interface contains a button captioned, “Process” \_\_\_\_ 5 pts

The enabled property for this button must be set to False \_\_\_\_ 5 pts

The user interface contains a button named, “cmdChooseFile” \_\_\_\_ 5 pts

The user interface contains a button captioned, “Choose File” \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtFileName” \_\_\_\_ 5 pts

The “txtFileName” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtFileContents” \_\_\_\_ 5 pts

The “txtFileContents” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The “txtFileContents” textbox’s Multiline property is set to True \_\_\_\_ 5 pts

The “txtFileContents” textbox’s Scrollbars property is set to Vertical \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtCharacterCount” \_\_\_\_ 5 pts

The “txtCharacterCount” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtWordCount” \_\_\_\_ 5 pts

The “txtWordCount” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtSentenceCount” \_\_\_\_ 5 pts

The “txtSentenceCount” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The user interface contains a textbox called, “txtVowelCount” \_\_\_\_ 5 pts

The “txtVowelCount” textbox’s ReadOnly property is set to True \_\_\_\_ 5 pts

The following labels are present: “File Name”, “Characters”,

“Words”, “Sentences”, and Vowels” (2 point each) \_\_\_\_ 10 pts

**Runtime Checks**

Code copied to USB drive and program runs from the USB drive \_\_\_\_ 10 pts

If the program does not execute, then the remaining items in this section receive a score of zero

When pressed, the cmdClear button clears the contents of the

txtCharacterCount, txtWordCount, txtSentenceCount, txtVowelCount,

and txtFileContents textboxes (2 point each) \_\_\_\_ 10 pts

When pressed, the cmdProcess button processes the selected file

and populates the txtCharacterCount, txtWordCount, txtSentenceCount,

txtVowelCount, and txtFileContens textboxes (20 points each) \_\_\_\_ 100 pts

After the cmdProcess button is pressed, the cmdClear button is

Enabled \_\_\_\_ 10 pts

When pressed, the cmdClear button clears both the txtEnglish and the

txtMorseCode textboxes (5 points each) \_\_\_\_ 10 pts

When pressed, the cmdChooseFile button displays an OpenFileDialog

Screen and allows the user to select a file from the list \_\_\_\_ 20 pts

The open file dialog filter is set to "Text files (\*.txt)|\*.txt" or “\*.txt|\*.txt” \_\_\_\_ 15 pts

When pressed, the cmdExit button attempts to close the form \_\_\_\_ 10 pts

When the user attempts to close the application, a confirmation dialog

is presented that confirms that the user wishes to exit the

application \_\_\_\_ 20 pts

**Source Code Review**

Code is commented at the top, for each function, and as needed \_\_\_\_ 15 pts

Code uses a consistent variable naming convention \_\_\_\_ 15 pts

Code is present to open the input file \_\_\_\_ 20 pts

Code is present to read from the input file \_\_\_\_ 10 pts

Error handling is used to catch and handle errors when opening the file \_\_\_\_ 40 pts

The input file is closed \_\_\_\_ 10 pts

 **Total Points: 500 pts**