Name **Session:**
Programming II
Lab Exercise 4/23/2021

Part I - Building a Word Processor

Project Overview

In this project we will create a simple word processor. Our word processor will have an area for typing text and a menu bar. Our menu bar will have File, Format, Edit, and Color menu items. We will use a RichTextBox control to hold the users' text. We will use the OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, and MainMenu controls to add functionality to our word processor.

Build the GUI

1. Create a new Windows Application and call it *Word Processor*.
2. Resize the Form to 1024 x 768
3. Add a RichTextBox control to your Form.
4. Add a MenuStrip control to your Form
5. Type &File where is says to *Type Here*.
6. Add the following menu items under File:
    - &Open
    - &Save
    - E&xit

7. Click on the Type Here to the right of your File menu and type Format.
8. Add the following menu items under Format:
    - Font
    - Caps
    - Center Justify
    - Left Justify
    - Right Justify

9. Click on the Type Here to the right of your Format menu and type Edit.
10. Add the following menu items under Edit:
    - Copy
    - Paste
    - Cut

11. Click on the Type Here to the right of your Edit menu and type Color.
12. Add the following menu items under Color:
    - Font
    - Background

13. Add the following dialog controls to your Form:
    - OpenFileDialog
    - SaveFileDialog
    - FontDialog
    - ColorDialog

The Code

The following controls are associated (if you did them in the correct order) with menu options:

MenuItem2	Open
MenuItem3	Save
MenuItem4	Close
MenuItem6	Font
MenuItem7	Caps
MenuItem8	Center Justify
MenuItem9	Left Justify
MenuItem10	Right Justify
MenuItem12	Copy
MenuItem13	Paste
MenuItem14	Cut
MenuItem16	Font
MenuItem17	Background

1. Add a click event handler for each of the above menu items by going to View Code and selecting the Class Name (i.e. MenuItem2) and the Method Click from the Dropdown boxes at the top of the code window.
2. Add the following code to each of the MenuItem event handlers.

```
//File Open
OpenFileDialog1.ShowDialog();
RichTextBox1.LoadFile(OpenFileDialog1.FileName);
this.Text = "C#.NET WP - " + OpenFileDialog1.FileName;

//File Save
SaveFileDialog1.ShowDialog();
RichTextBox1.SaveFile(SaveFileDialog1.FileName);
this.Text = "C#.NET WP - " + SaveFileDialog1.FileName;

//Exit
this.Close();

 //Font
FontDialog1.ShowDialog();
RichTextBox1.SelectionFont = FontDialog1.Font;

 //Convert to all caps
 RichTextBox1.SelectedText = RichTextBox1.SelectedText.ToUpper();
```

```
//Center Justify
RichTextBox1.SelectionAlignment = HorizontalAlignment.Center;

//Left Justify
RichTextBox1.SelectionAlignment = HorizontalAlignment.Left;

//Right Justify
RichTextBox1.SelectionAlignment = HorizontalAlignment.Right;

//Copy
RichTextBox1.Copy();

//Paste
RichTextBox1.Paste();

//Cut
RichTextBox1.Cut();

//Font Color
ColorDialog1.ShowDialog();
RichTextBox1.ForeColor = ColorDialog1.Color;

//Background Color
ColorDialog1.ShowDialog();
RichTextBox1.BackColor = ColorDialog1.Color;
```

3. Double click on the Form to get a Form1_Load event handler and add the following code to that event:

```
RichTextBox1.Text = "";
this.Text = "Mr. Messa's Word Processor";
```

4. Now test your work processor by creating a file and saving it. Also try opening another RTF file.

Part II - Word Processor Improvements

Add the following features as a menu item under Tools

1. Add a Word Counter menu item that counts the words in your RichTextBox control. Note: you may use either the wordCount or wordCount2 function.
    a. To the WordCountToolStripMenuItem_Click, add the following code:

```
string words;
        int count;
        string message;
        words = RichTextBox1.Text;
                //count = wordCount(words);
        count = wordCount2(words);
        message = "You document contains " + count + " words";
        MessageBox.Show(message);
```

    b. Add the following code to the wordCount function

```
int count;
count = 0;
for (int letter = 0; letter <= w.Length - 1; letter++)
{
        if (w[letter] == ' ')
                count++;
}
return count + 1;
```

    c. Add the following code to the wordCount2 function

```
int count;
string[] words = w.Split(' ');
count = words.Length;
return count;
```

2. Add a feature that calculates the average word length of your document. Use this feature to determine the grade level of you document based on average word length.
    a. Add the following code to the GradeLevelToolStripMenuItem_Click event handler

```
string words;
int count;
string message;
double average;
string gradeLevel;
words = RichTextBox1.Text;
//count = wordCount(words);
count = wordCount2(words);
average = (double)(words.Length - (count - 1)) / count;
gradeLevel = grade(average);
message = "Average word length: " + average.ToString("f2") +
        Environment.NewLine + "Grade Level: " + gradeLevel;
MessageBox.Show(message);
```

b. Add the following code to the grade function

```
if (avg < 3.5)
        return "Elementary";
else if (avg < 4.5)
        return "Middle School";
else if (avg < 6.5)
        return "High School";
else
        return "Adult";
```

3. Add a feature that counts the number of sentences.
   a. Add the following code to the sentenceCountToolStripMenuItem_Click event handler.

```
string message;
int count;
count = sentenceCount(RichTextBox1.Text);
message = "Sentences in the document: " + count;
MessageBox.Show(message);
```

   b. Add the following code to the sentenceCount function

```
int count = 0;
for (int i = 0; i < w.Length; i++)
{
        if (w[i] == '.' || w[i] == '?' || w[i] == '!')
                count++;
}
return count;
```

4. Add text to speech
   a. Right click on the Project in Solution Explorer and select Add Reference
   b. Select the .NET tab and add System.Speech
   c. Add the following lines to the using section of your program

```
using System.Speech;
using System.Speech.Synthesis;
```

   d. Add a Text2Speech menu item with a Speak submenu
   e. Add the following code to the speakToolStripMenuItem_Click event handler

```
SpeechSynthesizer speechSynthesizerObj;
speechSynthesizerObj = new SpeechSynthesizer();
speechSynthesizerObj.Dispose();
if (RichTextBox1.Text != "")
{
        speechSynthesizerObj = new SpeechSynthesizer();
        speechSynthesizerObj.SpeakAsync(RichTextBox1.Text);
}
```

When your word processor is completed and tested, submit a screenshot of it in its running state.