***Credit Name: CSE 2130- File Structure and Exception Handling***

***Assignment: countVowels***

***How has your program changed from planning to coding to now? Please Explain***

```
public static void main(String[] args)
{
    File textFile;
    FileReader in;
    BufferedReader readFile;
    String fileName;
    String lineInFile, lowercaseText, letter;
    int vowelSum = 0;

    Scanner input = new Scanner(System.in);
```

***I declared several variables:***

1. ***The textFile is to link the relevantFile to the code***
2. ***A fileReader and BufferedReader to read through the lines of the file.***
3. ***A fileName so that the user can count vowels on whichever file they desire.***
4. ***String variables to : keep string values for each line of the file as it is read, convert text to lowercase to avoid type-casing, and a specific letter to compare.***
5. ***A counter for the number of vowels.***

```
/* prompt the user for the name of the file */
System.out.println("Enter the File Name: ");
fileName = input.nextLine();

input.close();

/* count the vowels in the file */
try {
          //new File object required
          textFile = new File(fileName);

          if(!textFile.exists())
          {
              System.out.println("File Creation was Unsuccessful.");
              return;
          }
```

***We prompt the user for the fileName and then we try to create a file object linked to the given file, if it exists.***

```
//new File reader object required
in = new FileReader(textFile);
//new BufferedReader object required
readFile = new BufferedReader(in);

//read the lines from the file
    //as lines are read convert them to lower case
    //iterate through the lower case text
    //using the String class
            //check if each character traverse through is a vowel
            //update total vowels
while((lineInFile = readFile.readLine()) != null)
{
    lowercaseText = lineInFile.toLowerCase();

    for(int i = 0; i < lowercaseText.length(); i++ )
    {
        letter = String.valueOf(lowercaseText.charAt(i));
        if("aeiou".contains(letter))
        {
            vowelSum += 1;
        }
    }

}
```

***If we were successful in creating the file, we then add the buffered reader object to read through the file.***

***We have a while loop while the current lineInFile is not a blank line. While this is true, we convert the text in the specific line to lower case. Then we have a for loop which runs fo the length of the line of text and the letter is the i'th character in the loop converted to a string. We need the letter variable to be a string so we can compare it in the following way. If the vowels, 'aeiou' has this character within it, it must be a vowel, and so in this case and only this case we add 1 to our vowel sum.***

```
                //user wants to know the number of vowels inside a file name
                System.out.println("The total number of vowels are: " + vowelSum);

                //close BufferedReader object
                readFile.close();
                //close FileReader object
                in.close();

            }

        catch (FileNotFoundException e)
        {
            System.out.println("File could not be found.");
        }
        catch (IOException e)
        {
            System.err.println("IO exception: " + e.getMessage());
        }
    }
}
```

***We lastly print the total number of vowels after we iterated through all lines and characters in the text. We close our file reading objects and catch any possible exceptions.***