# Change request log for CR-1

## 1. Concept Location

| Step # | Description | Rationale |
|---|---|---|
| **1** | First we ran the system | |
| **2** | We interacted with the system and checked if the CR given is right, using the details shown in screenshots and matching them with actual system. | To verify the change request. |
| **3** | Used the expand all functionality to expand all the folders and make all files in the project visible. | |
| **4** | Searched for keywords "**Caret/caret"** in the files. | |
| **5** | Searched for keyword status and found a folder named **statusbar**. | Since the change suggested to modify the status bar. |
| **6** | Went through all the files in the **gui/statusbar** folder found none of them relevant. | Since none of the files were relevant we decided to go back to jedit application and check for other hints. |
| | Searched for "**line, column**" using the search everywhere option in the intellij ide on topright. | We searched for this keyword because we found a tip shown as we hovered the mouse over the line number written in the statusbar in jedit. |
| **7** | Found a properties file named **jedit_en.props** in localization folder. | |
| **8** | We saw that the property **view.status.caret-tooltip** was defined with the tooltip value line, column. | |
| **9** | Searched for **view.status.caret-tooltip** using the **usage in files** option in intellij. | Since this tooltip was exactly where the additional change was supposed to be added. |
| **10** | Found a file named **StatusBar.java** in tray folder where the above tooltip was being used. | |
| **11** | It was assigned to **showCaretStatus** which we searched in the same file. | |
| **12** | Found a function named **updateCaretStatus** where property **showCaretStatus** was being used. | |
| **13** | We found multiple properties in the function which were getting displayed on the statusbar where the change was supposed to be made. | |
| **14** | We changed the '/' with '\' and ran the code again. | To see if we found the location to be changed. |
| **15** | We concluded that we needed to append to the buffer "**(#wordoffset/#totalwords)**" to show it on the statusbar. | |
| **16** | We tried to check where did the function get caret position from. | So that we could use the caret position to count word offset as well. |
| **17** | We found it came from a function called **getCaretLine()** called by object of class **JEditTextArea** | |
| **18** | We found the class **JEditTextArea** and checked for the code in it. | |
| **19** | We found a function named **doWordCount()** in the same class. | |
| **20** | Checked where the function was already being used and found that it was being called by a | We realized that we can use this already existing function to get the word count. |

| | | |
|---|---|---|
| | function named **showWordCountDialog()** which was not being called anywhere. | |
| **21** | After knowing that where the change was suppsed to be made we had found our concept location. | Changing '/' with '\' helped confirm the location as we saw the change live in JEdit statusbar. |

**Time spent (in minutes): 65**

**Classes and methods inspected:**

- public class SaveCaretInfoVisitor extends JEditVisitorAdapter
- public class StatusBar extends JPanel
  - public void updateCaretStatus()
- public class Buffer extends JEditBuffer
- public abstract class TextArea extends JPanel
  - int getLineCount()
- public class JEditTextArea extends TextArea
  - protected static void doWordCount(View view, String text)
  - public void showWordCountDialog()

## 2. Impact Analysis

| Step # | Description | Rationale |
|---|---|---|
| **1** | We used the find in files option to check where the **doWordCount()** function was being used. | To find if any changes made to that function would affect existing functionality. |
| **2** | We found that it was only being called by the **showWordCountDialog()** function which was not being used/called anywhere. | To check if there was nested call to the first function. |
| **3** | We checked where the **updateCaretStatus()** function was being called. | Since that is the function where we were supposed to add the new text to the status bar.<br>Discarded – **updateCaretStatus()** |
| **4** | We found a call in **View.Java** where the function was called to update all the information regarding the caret. | We discarded the class for impact since it was necessary to call the function and while updating the caret status, we would want to update the word offset too. |
| **5** | It was also called in **EditPane.java, CaretHandler.java** and **ScrollHandler.java** also to update the caret status. | We discarded these classes for same reason as above.<br>Discarded - **EditPane.java, CaretHandler.java, ScrollHandler.java** |
| **6** | We realized after update that we cannot just use the doWordCount() function as it is. | The line **GUIUtilities.message(view,"wordcount",args);** opens a dialog box for the word count.<br>Imapct Found - **doWordCount()** |
| **7** | The above meant that showWordCountDialog() was useless and we need to move the above line to this function for its proper use. | Impact Found - **showWordCountDialog()** |

**Time spent (in minutes): 35**

**Classes and methods inspected:**

- View.java
  - handleEditPaneUpdate(EditPaneUpdate)
  - setEditPane(EditPane)
- EditPane.java
  - handleBufferUpdate(BufferUpdate)
- CaretHandler.java

    - caretUpdate(caretEvent)
- ScrollHandler.java
    - scrolledVertically(TextArea)
- public class JEditTextArea extends TextArea
    - protected static void doWordCount(View view, String text)
    - public void showWordCountDialog()
- StatusBar.java
    - updateCaretStatus()

## 3. Prefactoring (optional)

**No prefactoring was done in the code.**

**Time spent (in minutes): 0**

## 4. Actualization

| Step # | Description | Rationale |
|---|---|---|
| **1** | We created a new github branch from master. | To add changes on a new branch. |
| **2** | We first changed the call of **GUIUtilities.message(view,"wordcount",args);** from **doWordCount()** to **showWordCountDialog()**. | Since **showWordCountDialog()** should actually be responsible for showing the word count dialog box. We decided not to remove the dialog function even though it was not being used since later there might be a need. |
| **3** | We then changed the return type of **doWordCount()** to Object []. | Since **showWordCountDialog()** needed lines chars and words from the function. So we will return an object containing above values. |
| **4** | Created a new function called **getWordCount(int caretPosition)** which takes in the caretPoistion as an argument and returns the total number of words upto the caret. | We will use this function to count total words in the buffer and number of words upto the caret position. |
| **5** | Now we declared 2 integers in **StatusBar.java totalWords** and **wordOffset** | |
| **6** | We used the **getWordCount()** function to get the above 2 parameters. | |
| **7** | We then added the needed "**(#wordoffset/#totalwords)**" to the buffer. | |
| **8** | We rebulilt the code and ran JEdit. | To check if the changes actually worked. |
| **9** | Typed multiple words in JEdit and tried moving the caret to different words. | To check if the statusbar showed the required parameters. |
| **10** | We committed the changes to github. | Since our changes worked and in case if we need to revert the change. |

**Time spent (in minutes): 15**

**Inspected Classes:**

- JEditTextArea.java
- StatusBar.java

**Classes changed:**

- JEditTextArea.java

    - protected static void doWordCount(View view, String text)
    - public void showWordCountDialog()
    - public void getWordCount()
- StatusBar.java
    - updateCaretStatus()

## 5. Postfactoring (optional)

**No postfactoring was done in the code.**

A Boolean can be added in properties file which will help to switch on and off the display of newly added content on status bar just like for the other properties. However, this would require more efforts since it needs to be added for all the localizations supported by JEdit and can be done.

**Time spent (in minutes): 5**

## 6. Validation

| Step # | Description | Rationale |
|---|---|---|
| **1** | Functional Test:<br>Tried adding lots of words and check the status bar for multiple caret positions.<br>Input – 0,3,5,28,100 words in JEdit<br>Expected Output – Correct number of total words and words offset for the caret to be displayed. | For all number of words both the parameters were displayed correctly.<br>Test Passed. |
| **2** | Functional Test:<br>Tried different scenarios by opening existing files modifying them by adding/deleting words to check the status bar. | For all the cases both the parameters were displayed correctly.<br>Test Passed. |
| **2** | Functional Test:<br>Checked if other functionalities on the status bar were affected. Checked If line, col number was shown correctly for the caret. | The line and column number were displayed correctly according to the caret position as before.<br>Test Passed. |
| **3** | Functional Test:<br>Checked if char offset and total chars in editor are displayed correctly as before. | Both the parameters were displayed correctly according to the caret position as before.<br>Test Passed. |

**Time spent (in minutes): 10**

## 7. Summary of the change request

| Phase | Time (minutes) | No. of classes inspected | No. of classes changed | No. of methods inspected | No. of methods changes |
|---|---|---|---|---|---|
| Concept location | 65 | 5 | 0 | 4 | 0 |
| Impact Analysis | 35 | 6 | 0 | 8 | 0 |
| Prefactoring | 0 | 0 | 0 | 0 | 0 |
| Actualization | 15 | 2 | 2 | 4 | 4 |
| Postfactoring | 5 | 0 | 0 | 0 | 0 |
| Verification | 10 | 1 | 0 | 2 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | 130 | 10 | 1 | 10 | 4 |

## 8. Conclusions

The actual change became a bit easy due to the already present function to count words, however it took us a bit time to find the concept location. We used the intellij features for finding files with various names and for navigating through the source code using the find usage and find in files functionality of the IDE. We performed functional tests by adding and removing multiple words and updating the caret positions and also checked if other functionalities worked as before on the status bar that were related to caret update. This required testing before and after the change as well to compare.

We did not perform refactoring of any type but found that a Boolean can be added in properties file which will help to switch on and off the display of newly added content on status bar. However, we did not change it since that would require some more efforts, time because of the localization present in JEdit and we would have to do it for all possible localizations and that can be done by creating a new change request.