

Table1 The original class JEditTextArea in JEidt

Original Class JEditTextArea	
Attributes	Methods
vertical	_addToSelection(Selection)
verticalBox	_finishCaretUpdate()
view	add(String, Component)
visibleLines	addCaretListener(CaretListener)
wrap	addExplicitFold()
BOTTOM	addFocusListener(FocusListener)
CENTER	addLeftOfScrollBar(Component)
ELECTRIC_SCROLL	addMarker()
LEFT	addMouseWheelListener(MouseWheelListener)
NORMAL_SCROLL	addNotify()
NO_SCROLL	addScrollListener(ScrollListener)
RIGHT	addStructureMatcher(StructureMatcher)
TOP	addToSelection(Selection)
blink	addToSelection(Selection[])
buffer	addTopComponent(Component)
bufferChanging	backspace()
caret	backspaceWord()
caretBlinks	backspaceWord(boolean)
caretEvent	blinkCaret()
caretLine	centerCaret()
caretScreenLine	collapseFold()
caretTimer	delete()
charWidth	delete(boolean)
chunkCache	deleteLine()
dndCallback	deleteParagraph()
dndEnabled	deleteToEndOfLine()
dndInProgress	deleteToStartOfLine()
electricScroll	deleteWord()
focusedComponent	deleteWord(boolean)
gutter	displayManager
hardWrap	dispose()
horizontal	doWordCount(View, String)
horizontalOffset	doWordWrap(boolean)
lineSegment	enableEvents(long)
listenerList	expandFold(boolean)
magicCaret	extendSelection(int, int)
match	extendSelection(int, int, int, int)
maxHorizontalScrollWidth	finishCaretUpdate(boolean, boolean)
maxLineLen	fireCaretEvent()
mouseHandler	fireScrollEvent(boolean)
overwrite	foldStructureChanged()

painter	formatParagraph()
physLastLine	getBorder()
popup	getBuffer()
popupEnabled	getBufferLength()
queuedCaretUpdate	getCaretLine()
queuedFireCaretEvent	getCaretPosition()
queuedScrollToElectric	getDisplayManager()
quickCopy	getDragAndDropCallback()
trace	getDropTarget()
tabSize	getElectricScroll()
multi	getFirstLine()
lastLinePartial	getFirstPhysicalLine()
structureMatchers	getFocusCycleRoot()
structureTimer	getFocusTraversalKeysEnabled()
selection	getGutter()
	getHorizontalOffset()
	getLastPhysicalLine()
	getLineCount()
	getLineEndOffset(int)
	getLineLength(int)
	getLineOfOffset(int)
	getLineStartOffset(int)
	getLineText(int)
	getLineText(int, text.Segment)
	getMagicCaretPosition()
	getMarkLine()
	getMarkPosition()
	getPainter()
	getPhysicalLineOfScreenLine(int)
	getRectParams(int, int)
	getRightClickPopup()
	getScreenLineEndOffset(int)
	getScreenLineOfOffset(int)
	getScreenLineStartOffset(int)
	getSelectedLines()
	getSelectedText()
	getSelectedText(String)
	getSelectedText(Selection)
	getSelection()
	getSelectionAtOffset(int)
	getSelectionCount()
	getSelectionEnd()
	getSelectionEnd(int)
	getSelectionEndLine()

	<code>getSelectionStart()</code> <code>getSelectionStart(int)</code> <code>getSelectionStartAndEnd(int, int, Selection)</code> <code>getSelectionStartLine()</code> <code>getStructureMatch()</code> <code>getText()</code> <code>getText(int, int)</code> <code>getText(int, int, text.Segment)</code> <code>getToolkit()</code> <code>getTransferHandler()</code> <code>getView()</code> <code>getVisibleLines()</code> <code>getWidth()</code> <code>goToBufferEnd(boolean)</code> <code>goToBufferStart(boolean)</code> <code>goToEndOfLine(boolean)</code> <code>goToEndOfWhiteSpace(boolean)</code> <code>goToFirstVisibleLine(boolean)</code> <code>goToLastVisibleLine(boolean)</code> <code>goToMarker(char, boolean)</code> <code>goToMatchingBracket()</code> <code>goToNextBracket(boolean)</code> <code>goToNextCharacter(boolean)</code> <code>goToNextFold(boolean)</code> <code>goToNextLine(boolean)</code> <code>goToNextMarker(boolean)</code> <code>goToNextPage(boolean)</code> <code>goToNextParagraph(boolean)</code> <code>goToNextWord(boolean)</code> <code>goToNextWord(boolean, boolean)</code> <code>goToParentFold()</code> <code>goToPrevBracket(boolean)</code> <code>goToPrevCharacter(boolean)</code> <code>goToPrevFold(boolean)</code> <code>goToPrevLine(boolean)</code> <code>goToPrevMarker(boolean)</code> <code>goToPrevPage(boolean)</code> <code>goToPrevParagraph(boolean)</code> <code>goToPrevWord(boolean)</code> <code>goToPrevWord(boolean, boolean)</code> <code>goToStartOfLine(boolean)</code> <code>goToStartOfWhiteSpace(boolean)</code> <code>handlePopupTrigger(MouseEvent)</code> <code>hasFocus()</code>
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	indentSelectedLines() insertEnterAndIndent() insertTab() insertTabAndIndent() insideSelection(int, int) invalidateLine(int) invalidateLineRange(int, int) invalidateScreenLineRange(int, int) invalidateSelectedLines() invertSelection() isCaretBlinkEnabled() isCaretVisible() isDragEnabled() isDragInProgress() isEditable() isMultipleSelectionEnabled() isOverwriteEnabled() isQuickCopyEnabled() isRectangularSelectionEnabled() isRightClickPopupEnabled() isSelectionRectangular() isShowing() isStructureHighlightVisible() joinLines() lineComment() lineInStructureScope(int) moveCaretPosition(int) moveCaretPosition(int, boolean) moveCaretPosition(int, int) narrowToFold() narrowToSelection() offsetToXY(int) offsetToXY(int, int, Point) processKeyEvent(KeyEvent) propertiesChanged() rangeComment() recalculateLastPhysicalLine() recalculateVisibleLines() rectangularSelectionMode remove(Component) removeCaretListener(CaretListener) removeFromSelection(int) removeFromSelection(Selection) removeLeftOfScrollBar(Component)
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	<div>removeNotify() removeScrollListener(ScrollListener) removeStructureMatcher(StructureMatcher) removeTopComponent(Component) removeTrailingWhiteSpace() repaint() requestFocus() resizeSelection(int, int, int, boolean) returnValue revalidate() screenLastLine scrollBarsInitialized scrollDownLine() scrollDownPage() scrollTo(int, boolean) scrollTo(int, int, boolean) scrollToCaret(boolean) scrollUpLine() scrollUpPage() select(int, int) select(int, int, boolean) selectAll() selectBlock() selectFold() selectFold(int) selectLine() selectNone() selectParagraph() selectToMatchingBracket() selectToMatchingBracket(int, boolean) selectWord() setBorder(border.Border) setBuffer(Buffer) setCaretBlinkEnabled(boolean) setCaretPosition(int) setCaretPosition(int, boolean) setDragAndDropCallback(reflect.Method) setDragEnabled(boolean) setDragInProgress(boolean) setElectricScroll(int) setFirstLine(int) setFirstPhysicalLine(int) setFirstPhysicalLine(int, int) setHorizontalOffset(int)</div>
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	setLayout(LayoutManager) setMagicCaretPosition(int) setMultipleSelectionEnabled(boolean) setOverwriteEnabled(boolean) setQuickCopyEnabled(boolean) setRectangularSelectionEnabled(boolean) setRightClickPopup(JPopupMenu) setRightClickPopupEnabled(boolean) setSelectedText(String) setSelectedText(String, boolean) setSelectedText(Selection, String) setSelection(Selection) setSelection(Selection[]) setSelectionEnd(int) setSelectionStart(int) setText(String) setTransferHandler(TransferHandler) shiftIndentLeft() shiftIndentRight() shiftTallCaretLeft(Selection\$Rect) showGoToLineDialog() showSelectLineRangeDialog() showStructureStatusMessage(boolean) showWordCountDialog() smartEnd(boolean) smartHome(boolean) spacesToTabs() startDragAndDrop(InputEvent, boolean) swapMarkerAndCaret(char) tabsToSpaces() tallCaretDelete(Selection\$Rect, boolean) toLowerCase() toUpperCase() toggleMultipleSelectionEnabled() toggleOverwriteEnabled() toggleRectangularSelectionEnabled() updateBracketHighlightWithDelay() updateMaxHorizontalScrollWidth() updateScrollBars() updateStructureHighlight() userInput(char) xToScreenLineOffset(int, int, boolean) xyToOffset(int, int) xyToOffset(int, int, boolean)
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Table2 The new classes extracted by developers

Class Extracted by the Developers - 1	
Attributes	Methods
selection	getSelectionStart() getSelectionStart(int) getSelectionStartLine() setSelectionStart(int) getSelectionEnd() getSelectionEnd(int) getSelectionEndLine() setSelectionEnd(int) getSelectionCount() setSelection(Selection[]) setSelection(Selection) addToSelection(Selection[]) addToSelection(Selection) getSelectionStartAndEnd(int, int) extendSelection(int , int) extendSelection(int, int, int, int)
Class Extracted by the Developers - 2	
Attributes	Methods
NO_SCROLL mouseHandler scrollBarsInitialized wrap	getFoldPainterName() getFocusTraversalKeysEnabled() getFocusCycleRoot()
Class Extracted by the Developers - 3	
Attributes	Methods
NORMAL_SCROLL ELECTRIC_SCROLL view lineSegment chunkCache displayManager bufferChanging maxHorizontalScrollWidth hardWrap tabSize charWidth maxLineLen lastLinePartial caretTimer structureTimer focusedComponent gutter	dispose() getPainter() getGutter() getDisplayManager() isCaretBlinkEnabled() setCaretBlinkEnabled(boolean) getElectricScroll() setElectricScroll(int) isQuickCopyEnabled() setQuickCopyEnabled(boolean) getBuffer() setBuffer(Buffer) isEditable() isDragInProgress() setDragInProgress(boolean) isDragEnabled() setDragEnabled(boolean)

painter	getFirstLine()
popup	setFirstLine(int)
popupEnabled	getFirstPhysicalLine()
listenerList	setFirstPhysicalLine(int)
caretEvent	setFirstPhysicalLine(int, int)
caretBlinks	getLastPhysicalLine()
blink	getVisibleLines()
physLastLine	getHorizontalOffset()
screenLastLine	setHorizontalOffset(int)
visibleLines	scrollUpLine()
electricScroll	scrollUpPage()
horizontalOffset	scrollDownLine()
quickCopy	scrollDownPage()
verticalBox	scrollToCaret(boolean)
vertical	scrollTo(int, boolean)
horizontal	scrollTo(int, int, boolean)
buffer	addScrollListener(ScrollListener)
caret	removeScrollListener(ScrollListener)
caretLine	getPhysicalLineOfScreenLine(int)
caretScreenLine	getScreenLineOfOffset(int)
structureMatchers	getScreenLineStartOffset(int)
match	getScreenLineEndOffset(int)
magicCaret	xyToOffset(int , int)
multi	xyToOffset(int , int , boolean)
overwrite	xToScreenLineOffset(int, int, boolean)
rectangularSelectionMode	offsetToXY(int)
dndEnabled	offsetToXY(int, int, Point)
dndInProgress	invalidateScreenLineRange(int, int)
queuedCaretUpdate	invalidateLine(int)
queuedFireCaretEvent	invalidateLineRange(int, int)
	getBufferLength()
	getLineCount()
	getLineOfOffset(int)
	getLineStartOffset(int)
	getLineEndOffset(int)
	getLineLength(int)
	getText()
	getText(int, int)
	getText(int, int, Segment)
	getLineText(int)
	getLineText(int, Segment)
	setText(String)
	selectAll()
	selectLine()

	selectParagraph() selectWord() selectToMatchingBracket(int, boolean) selectToMatchingBracket() selectBlock() lineInStructureScope(int) selectNone() getSelectedText(Selection) getSelectedText(String) getSelectedText() setSelectedText(Selection, String) setSelectedText(String) setSelectedText(String, boolean) addStructureMatcher(StructureMatcher) removeStructureMatcher(StructureMatcher) getStructureMatch() blinkCaret() centerCaret() setCaretPosition(int) setCaretPosition(int, boolean) moveCaretPosition(int) moveCaretPosition(int, boolean) moveCaretPosition(int, int) getCaretPosition() getCaretLine() getMagicCaretPosition() setMagicCaretPosition(int) addCaretListener(CaretListener) removeCaretListener(CaretListener) goToNextBracket(boolean) goToNextCharacter(boolean) goToNextLine(boolean) goToNextPage(boolean) goToNextParagraph(boolean) goToNextWord(boolean) goToNextWord(boolean) goToPrevBracket(boolean) goToPrevCharacter(boolean) goToPrevLine(boolean) goToPrevPage(boolean) goToPrevParagraph(boolean) goToPrevWord(boolean) goToPrevWord(boolean, boolean) goToStartOfLine(boolean)
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	<code>goToEndOfLine(boolean)</code> <code>goToStartOfWhiteSpace(boolean)</code> <code>goToEndOfWhiteSpace(boolean)</code> <code>goToFirstVisibleLine(boolean)</code> <code>goToLastVisibleLine(boolean)</code> <code>goToMatchingBracket()</code> <code>isOverwriteEnabled()</code> <code>toggleOverwriteEnabled()</code> <code>backspace()</code> <code>backspaceWord()</code> <code>backspaceWord(boolean)</code> <code>delete()</code> <code>deleteToEndOfLine()</code> <code>deleteLine()</code> <code>deleteToStartOfLine()</code> <code>deleteWord()</code> <code>deleteWord(boolean)</code> <code>isMultipleSelectionEnabled()</code> <code>toggleMultipleSelectionEnabled()</code> <code>isRectangularSelectionEnabled()</code> <code>goToParentFold()</code> <code>goToNextFold(boolean)</code> <code>goToPrevFold(boolean)</code> <code>collapseFold()</code> <code>expandFold(boolean fully)</code> <code>selectFold()</code> <code>selectFold(int line)</code> <code>narrowToFold()</code> <code>narrowToSelection()</code> <code>lineComment()</code> <code>rangeComment()</code> <code>spacesToTabs()</code> <code>tabsToSpaces()</code> <code>toUpperCase()</code> <code>toLowerCase()</code> <code>removeTrailingWhiteSpace()</code> <code>insertEnterAndIndent()</code> <code>insertTabAndIndent()</code> <code>indentSelectedLines()</code> <code>shiftIndentLeft()</code> <code>shiftIndentRight()</code> <code>addLeftOfScrollBar(Component)</code> <code>removeLeftOfScrollBar(Component)</code> <code>addNotify()</code>
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	<div>removeNotify() addTopComponent(Component) removeTopComponent(Component) getMarkPosition() getMarkLine() isCaretVisible() isStructureHighlightVisible() updateMaxHorizontalScrollWidth() recalculateVisibleLines() foldStructureChanged() _finishCaretUpdate() invalidateSelectedLines() fireCaretEvent() fireScrollEvent(boolean vertical) insertTab() doWordWrap(boolean spaceInserted) updateBracketHighlightWithDelay() updateStructureHighlight() showStructureStatusMessage(boolean) recalculateLastPhysicalLine() getRectParams(int, int) delete() tallCaretDelete(Selection.Rect, boolean) shiftTallCaretLeft(Selection.Rect) isRightClickPopupEnabled() setRightClickPopupEnabled(booleanEnabled) getRightClickPopup() setRightClickPopup(JPopupMenu) getSelectionAtOffset(int) removeFromSelection(Selection) resizeSelection(int, int, int, boolean) invertSelection() insideSelection(int, int) smartHome(boolean) smartEnd(boolean) goToBufferEnd(boolean) goToBufferStart(boolean) showGoToLineDialog() userInput(char ch) addExplicitFold() formatParagraph() doWordCount(View, String text) showWordCountDialog() select(int, int end)</div>
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	select(int, int end, boolean) handlePopupTrigger(MouseEvent)
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Table3 The new classes extracted by our approach

Class Extracted our approach - 1	
Attributes	Methods
caretBlinks screenLastLine scrollBarsInitialized electricScroll lastLinePartial lineSegment chunkCache displayManager caret buffer caretLine visibleLines popupEnabled verticalBox dndEnabled popup	scrollUpLine() scrollDownLine() isCaretVisible() isCaretBlinkEnabled() scrollDownPage() scrollUpPage() setMagicCaretPosition(int) extendSelection(int, int) moveCaretPosition(int) updateMaxHorizontalScrollWidth() handlePopupTrigger(MouseEvent) recalculateLastPhysicalLine() setFirstLine(int) getFirstPhysicalLine() getFirstLine() foldStructureChanged() getPhysicalLineOfScreenLine(int) setCaretPosition(int) isStructureHighlightVisible() getDisplayManager() toggleMultipleSelectionEnabled() narrowToSelection() blinkCaret() lineInStructureScope(int) selectFold() invalidateSelectedLines() selectToMatchingBracket() updateStructureHighlight() getCaretLine() getMarkPosition() getCaretPosition() getMarkLine() goToPrevBracket(boolean) goToLastVisibleLine(boolean) goToNextParagraph(boolean) goToFirstVisibleLine(boolean) getMagicCaretPosition() goToEndOfLine(boolean) goToEndOfWhiteSpace(boolean)

	<div>goToStartOfLine(boolean) goToPrevParagraph(boolean) goToPrevCharacter(boolean) goToNextPage(boolean) goToPrevPage(boolean) expandFold(boolean) _finishCaretUpdate() getRectParams(int, int) rangeComment() recalculateVisibleLines() goToNextCharacter(boolean) setBuffer(Buffer) invalidateScreenLineRange(int, int) invalidateLine(int) doWordWrap(boolean) goToStartOfWhiteSpace(boolean) collapseFold() goToPrevLine(boolean) goToNextLine(boolean) goToPrevFold(boolean) goToNextFold(boolean) deleteLine() addNotify() setCaretBlinkEnabled(boolean) goToParentFold() insertTabAndIndent() deleteToStartOfLine() deleteToEndOfLine() goToNextBracket(boolean) narrowToFold() goToMatchingBracket() insertTab() invalidateLineRange(int, int) scrollToCaret(boolean) showStructureStatusMessage(boolean) getScreenLineOfOffset(int) getScreenLineStartOffset(int) getScreenLineEndOffset(int) lineComment() insertEnterAndIndent() selectWord() getBuffer() getLineOfOffset(int) getBufferLength()</div>
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	getLineCount() getLineEndOffset(int) getLineStartOffset(int) getLineLength(int) scrollTo(int, boolean) shiftTallCaretLeft(Selection\$Rect) tallCaretDelete(Selection\$Rect, boolean) offsetToXY(int) shiftIndentLeft() getLineText(int) shiftIndentRight() isEditable() removeTrailingWhiteSpace() getText() setText(java.lang.String) spacesToTabs() tabsToSpaces() toLowerCase() toUpperCase() xToScreenLineOffset(int, int, boolean) xyToOffset(int, int) centerCaret() getVisibleLines() addLeftOfScrollBar(Component) removeLeftOfScrollBar(Component) isDragEnabled() setDragEnabled(boolean) getElectricScroll() setElectricScroll(int) getRightClickPopup() setRightClickPopup(JPopupMenu) isRightClickPopupEnabled() setRightClickPopupEnabled(boolean)
Class Extracted our approach - 2	
Attributes	Methods
match horizontalOffset physLastLine painter overwrite multi dndInProgress quickCopy selection	addTopComponent(java.awt.Component) backspace() backspaceWord() backspaceWord() delete(boolean) delete() deleteWord() deleteWord(boolean) dispose()

view	getStructureMatch() isMultipleSelectionEnabled() isOverwriteEnabled() getPainter() getLastPhysicalLine() isRectangularSelectionEnabled() rectangularSelectionMode removeTopComponent(Component) select(int, int) select(int, int, boolean) isDragInProgress() setDragInProgress(boolean) setFirstPhysicalLine(int) getHorizontalOffset() setHorizontalOffset(int) isQuickCopyEnabled() setQuickCopyEnabled(boolean) getSelectionCount() doWordCount(View, String) getSelectedText() setSelectedText(String) addStructureMatcher(StructureMatcher) removeStructureMatcher(StructureMatcher) structureMatchers toggleOverwriteEnabled() showGoToLineDialog() smartEnd(boolean) smartHome(boolean) goToBufferStart(boolean) goToBufferEnd(boolean) userInput(char) addExplicitFold() formatParagraph() showWordCountDialog() getSelectionEndLine() getSelectionStartLine() getSelectionEnd() getSelectionStart() getSelectionStart (int line) getSelectionEnd(int line) getSelectionStartAndEnd(int, int, Selection) setSelectionEnd(int) setSelectionStart(int) getFoldPainterName()
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	setSelection(Selection) setSelection(Selection[]) addToSelection(Selection) addToSelection(Selection[]) getSelectionAtOffset(int) removeFromSelection(int) resizeSelection(int, int, int, boolean) invertSelection() insideSelection(int, int) indentSelectedLines() selectLine() selectParagraph() selectNone() selectAll() selectBlock()
Class Extracted our approach - 3	
Attributes	Methods
maxHorizontalScrollWidth gutter charWidth maxLineLen bufferChanging magicCaret horizontal focusedComponent mouseHandler caretEvent caretScreenLine blink caretTimer ELECTRIC_SCROLL NORMAL_SCROLL NO_SCROLL structureTimer queuedCaretUpdate queuedFireCaretEvent vertical hardWrap tabSize wrap listenerList	removeNotify() getGutter() fireCaretEvent() removeCaretListener(CaretListener) fireScrollEvent(boolean) addCaretListener(CaretListener) addScrollListener(ScrollListener) removeScrollListener(ScrollListener) updateBracketHighlightWithDelay()