Questionnaire: Automatic Phase Detection

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1 Information

Could you please provide the following information:

- Name,

- Occupation,

- E-mail

2 Introduction

The goal of this research project is to automatically detect the phases in the execution traces of a program. These phases will be clustered and labeled. If similar phases are executed multiple times in a row that will be grouped together and presented as one phase.

The questions that will be asked in this survey are focused on seeing if the detected phases and corresponding labels are effective to describe what happened in the program.

3 Multiple Choice Questions

The following questions are all focused around the program jEdit. This program is a text editor for programmers, see Figure 1. It contains the general features that most text editors have, but also extra features that are useful for software development:

- Typing, indent;

- New file, Save, Save As, Close;

- Copy, Paste, Cut;

- Undo, Redo;

- Change Case;

- Delete Lines;

- Change Style of Text Area, Change Font Style;

- Find & Replace, Word Count;

- keyword highlighting;

In the following questions phases will be presented to you. Every phase can be described by one of the previous mentioned features OR is an *Undefined or Unknown* feature. Please identify the feature that matches the phase as close as possible.
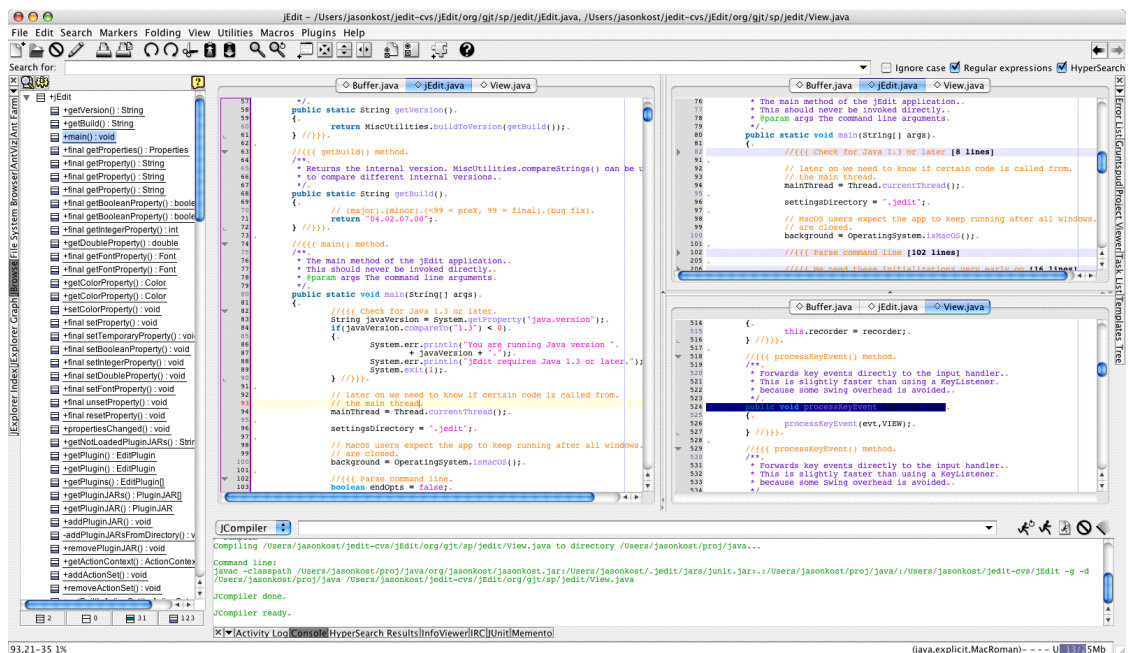
Per question there is only *one answer* allowed.

Figure 1: jEdit GUI

3.1 Question 1

Listing 1: List of phases belonging to Question 1

Key Method Signatures: getWidget , getComponent , eval , doPaintContents , getBuild , getVersion , buildToVersion , paintString , propertiesChanged , newFile , addNotify , reset , setBuffer , setMode , addBuffer , getResourceAsStream , detectEncoding , get , getFoldHandler , getLineContext , markTokens , init , commitTemporary , setSelection , toObject , addExtension , recalculateVisibleLines , visitEnd , IntegerArray , handleMessag

(A). Indent

(B). Change Case

(C). Search

(D). New File

(E). Undefined or Unknown

3.2 Question 2

Listing 2: List of phases belonging to Question 2

Key Method Signatures: handlePropertiesChanged , removeLayoutComponent , FontSelectorDialog , addOptionGroup , FontSelector , invalidateScreenLineCounts , getRoot , getActionSets , selectPane , valueChanged , setAntiAliasEnabled , GlobalOptionGroup , initKeyBindings , _save , addKeyBinding , addTextListener , addOptionPane , removeNotify , eval , addNotify , save , _init , addComponent , propertiesChanged , ok , removeToolBar , parseStyle , addToolBar , combinedOptions , addTreeModelListene

(A). Change Font

(B). Open File

(C). New File

(D). Close&Exit

(E). Undefined or Unknown

3.3 Question 3

Listing 3: List of phases belonging to Question 3

Key Method Signatures: eval , paintValidLine , getSelectedText , getNameSpace , toObject , get , invokeAction , invoke , getAction , visit , reset , getStructureHighlightColor , getOffsets , setVariable , isPublic , getModel , paintScreenLineRange , message , showWordCountDialog , doWordCount , getThis , NameSpace , cacheBlock , castObject , Primitive , runCachedBlock , getMethod , BshMethod , invokeMethod , Variabl

(A). WordCount

(B). Search

(C). Close&Exit

(D). User Typing

(E). Undefined or Unknown

3.4 Question 4

Listing 4: List of phases belonging to Question 4

Key Method Signatures: removeNotify , close , dispose , save , stop , closeView , setBuffer , saveBackup , setFirstPhysicalLine , setSelection , removeFromBus , reset , saveGeometry , visit , unsetProperty , charsToEscapes , writeXMLDeclaration , removePluginJAR , runInDispatchThreadAndWait , EditorExitRequested , getPluginJARs , _removeBuffer , textAreaDisposed , exit , EditorExiting , windowClosing , errorOccurred , waitForIoTasks , closeStream , closeAllBuffer

(A). WordCount

(B). Close&Exit

(C). New File

(D). Indent

(E). Undefined or Unknown

3.5 Question 5

Listing 5: List of phases belonging to Question 5

Key Method Signatures: SearchDialog , eval , add , visit , setInstantPopups , HistoryTextField , createReplaceLabelAndField , HistoryTextArea , updateEnabled , createFieldPanel , initFocusOrder , createMultiFilePanel , createRegexpEOLSpanRule , createEOLSpanRule , createSearchSettingsPanel , createButtonsPanel , showSearchDialog , createFindLabelAndField , handleMessage , setMode , getTokenMarker , getBooleanProperty , loadGeometry , KeywordMap , loadMode , doAWTRequest , addRuleSet , paintHighlight , componentRemoved , acces

(A). Close&Exit

(B). Open File

(C). Keyword Highlight

(D). Indent

(E). Undefined or Unknown

3.6 Question 6

Listing 6: List of phases belonging to Question 6

Key Method Signatures: getSelectedFiles , getExtendedAttribute , addAction , isMiddleButton , filesSelected , mouseClicked , filesActivated , eval , waiting , visitEnd , compare , FileCellRenderer , getTableCellRendererComponent , ActionSet , setDirectory , getIconForFile , createBeanShellAction , directoryLoaded , VFSDirectoryEntryTable , createMenuItem , setTemporaryProperty , VFSBrowser , VFSFileChooserDialog , setBuffer , visit , openFile , setInstantPopups , HistoryTextField , put , saveBacku

(A). Open File

(B). New File

(C). Keyword Highlight

(D). Close&Exit

(E). Undefined or Unknown

3.7 Question 7

Key Method Signatures: preContentRemoved , undo , userInput , getTransferable , findWordStart , resizeSelection , RichTextTransferable , getTransferDataFlavors , setSelectedText , preContentInserted , insert , contentInserted , contentRemoved , transactionComplete , xyToOffset , setRegister , isElectricKey , findWordEnd , xToOffset , isPrefixActive , replaceSelection , beginCompoundEdit , endCompoundEdit , getSelectionAtOffset , eval , toLowerCase , fireBeginUndo , mouseDragged , exchangeLastElement , cu

(A). Search

(B). Change Font

(C). User Typing

(D). New File

(E). Undefined or Unknown

3.8 Question 8

Key Method Signatures: getWidget , getComponent , userInput , contentInserted , preContentInserted , insert , eval , doPaintContents , getBuild , getVersion , buildToVersion , paintString , propertiesChanged , transactionComplete , newFile , isElectricKey , isPrefixActive , addNotify , reset , setBuffer , getLineContext , markTokens , recalculateVisibleLines , setMode , addBuffer , init , get , saveBackup , getResourceAsStream , detectEncodin

(A). Indent

(B). Change Font

(C). Search

(D). New File

(E). Undefined or Unknown

3.9 Question 9

Key Method Signatures: preContentRemoved , shiftIndentRight , getSelectedLines , createWhiteSpace , preContentInserted , contentInserted , contentRemoved , transactionComplete , insert , beginCompoundEdit , endCompoundEdit , eval , getIndentSize , setLineEndOffset , getCompressedReplaceFromReplaceReplace , getLeadingWhiteSpace , getLeadingWhiteSpaceWidth , getReplaceFromRemoveInsert , setDirty , get , _add , getNameSpace , toObject , reset , remove , fireTransactionComplete , doDelayedUpdate , handleTokenWithSpaces , getReadyToBreakFold , expandFol

(A). Open File

(B). Indent

(C). Keyword Highlight

(D). Change Font

(E). Undefined or Unknown

3.10   Question 10

Key Method Signatures: SearchDialog , eval , add , visit , setInstantPopups , HistoryTextField , createReplaceLabelAndField , HistoryTextArea , updateEnabled , createFieldPanel , initFocusOrder , createMultiFilePanel , createRegexpEOLSpanRule , createEOLSpanRule , createSearchSettingsPanel , createButtonsPanel , showSearchDialog , createFindLabelAndField , handleMessage , setMode , getTokenMarker , getBooleanProperty , loadGeometry , KeywordMap , loadMode , doAWTRequest , addRuleSet , paintHighlight , componentRemoved , acces

(A). Keyword Highlight

(B). Close&Exit

(C). Undo

(D). Change Font

(E). Undefined or Unknown

3.11   Question 11

Key Method Signatures: getWidget , getComponent , userInput , contentInserted , preContentInserted , insert , eval , doPaintContents , getBuild , getVersion , buildToVersion , paintString , propertiesChanged , transactionComplete , newFile , isElectricKey , isPrefixActive , addNotify , reset , setBuffer , getLineContext , markTokens , recalculateVisibleLines , setMode , addBuffer , init , get , saveBackup , getResourceAsStream , detectEncodin

(A). New File

(B). Close&Exit

(C). Undo

(D). Search

(E). Undefined or Unknown

3.12   Question 12

Key Method Signatures: removeNotify , close , save , stop , closeView , dispose , saveBackup , removeFromBus , saveGeometry , visit , charsToEscapes , writeXMLDeclaration , removePluginJAR , hasBeenExitCancelled , runInDispatchThreadAndWait , EditorExitRequested , getPluginJARs , removeViewFromList , confirmToCloseDirty , uninit , getOpenBuffers , _removeBuffer , deactivatePlugin , stopServer , textAreaDisposed , exit , EditorExiting , windowClosing , errorOccurred , waitForIoTask

(A). Close&Exit

(B). Keyword Highlight

(C). Indent

(D). New File

(E). Undefined or Unknown

3.13 Question 13

Listing 13: List of phases belonging to Question 13

Key Method Signatures: SearchDialog , eval , HistoryTextField , setInstantPopups , createReplaceLabelAndField , HistoryTextArea , updateEnabled , createFieldPanel , initFocusOrder , createSearchSettingsPanel , createButtonsPanel , showSearchDialog , createFindLabelAndField , createMultiFilePanel , loadGeometry , componentRemoved , componentAdded , VariableGridLayout , getSearchDialog , getSelectedText , getToolTipText , getNameSpace , toObject , getModel , get , setVisible , invokeAction , invoke , getAction , getResourceAsStrea

(A). Change Case

(B). Keyword Highlight

(C). Indent

(D). Search

(E). Undefined or Unknown

3.14 Question 14

Listing 14: List of phases belonging to Question 14

Key Method Signatures: removeNotify , close , save , stop , closeView , dispose , setBuffer , saveBackup , setFirstPhysicalLine , setSelection , removeFromBus , reset , saveGeometry , visit , unsetProperty , charsToEscapes , writeXMLDeclaration , getToolTipText , removePluginJAR , runInDispatchThreadAndWait , EditorExitRequested , getPluginJARs , _removeBuffer , textAreaDisposed , exit , EditorExiting , windowClosing , errorOccurred , waitForIoTasks , closeStrea

(A). Search

(B). Close&Exit

(C). Indent

(D). WordCount

(E). Undefined or Unknown

3.15 Question 15

Listing 15: List of phases belonging to Question 15

Key Method Signatures: preContentRemoved , undo , userInput , getTransferable , findWordStart , resizeSelection , RichTextTransferable , getTransferDataFlavors , setSelectedText , preContentInserted , insert , contentInserted , contentRemoved , transactionComplete , xyToOffset , setRegister , isElectricKey , findWordEnd , xToOffset , isPrefixActive , replaceSelection , beginCompoundEdit , endCompoundEdit , getSelectionAtOffset , eval , toLowerCase , fireBeginUndo , mouseDragged , exchangeLastElement , cu

(A). New File

(B). Change Font

(C). Search

(D). User Typing

(E). Undefined or Unknown

4   Subjective Questions

Based on the results the results previously shown.

1. [**Question 1.**] Do you think the given description of phases are accurate?

   - ○ Unacceptable
   - ○ Poor
   - ○ Moderate
   - ○ Good
   - ○ Excellent

2. [**Question 2.**] Do you think the given phases are reasonable functionality units of the software behavior?

   - ○ Unacceptable
   - ○ Poor
   - ○ Moderate
   - ○ Good
   - ○ Excellent

3. [**Question 3.**] After you go through the questions of the second part, do you think this technique can map high-level functionality of program to the actual source code methods?

   - ○ Unacceptable
   - ○ Poor
   - ○ Moderate
   - ○ Good
   - ○ Excellent

4. [**Question 4.**] If we can ideally map the high-level functionality to source code, do you think this technique could be helpful for the developers to understand the software behaviors?

   - ○ Not valuable
   - ○ Limited value
   - ○ Somewhat
   - ○ Good
   - ○ Excellent