1. Here is an example from org.eclipse.compare.contentmergeviewer.TexMergeViewer between v20060605 and v20060917.

```
public class TextMergeViewer {
  private HashMap fNewAncestorRanges = new HashMap();
  private HashMap fNewLeftRanges = new HashMap();
  private HashMap fNewRightRanges = new HashMap();
  private Position getNewRange(char type, Object input) {
  switch (type) {
  - case 'A':
  + case ANCESTOR CONTRIBUTOR:
  return (Position)fNewAncestorRanges.get(input);
  - case 'L':
  + case LEFT CONTRIBUTOR:
  return (Position)fNewLeftRanges.get(input);
  - case 'R':
  + case RIGHT CONTRIBUTOR:
  return (Position)fNewRightRanges.get(input);
  }
  return null;
  }
  class Diff {
    Position fAncestorPos;
    Position fLeftPos;
    Position fRightPos;
    private Position getPosition(char type){
      switch (type) {
        - case 'A':
        + case ANCESTOR CONTRIBUTOR:
         return fAncestorPos;
        - case 'L':
        + case LEFT CONTRIBUTOR:
         return fLeftPos;
        - case 'R':
```

```
+ case RIGHT_CONTRIBUTOR:
    return fRightPos;
}
return null;
}
}
```

```
public class TextMergeViewer {
  private HashMap fNewAncestorRanges = new HashMap();
  private HashMap fNewLeftRanges = new HashMap();
  private HashMap fNewRightRanges = new HashMap();
  private Position getNewRange(char type, Object input) {
    ReturnObj returnObj = extractMethod(type,
          (Position) fNewAncestorRanges.get(input),
          (Position) fNewLeftRanges.get(input),
          (Position) fNewRightRanges.get(input));
    if (returnObj.type == RETURNTYPE.RETURN)
       return returnObj.value;
    else
       return null;
  }
  class Diff {
    Position fAncestorPos;
    Position fLeftPos;
    Position fRightPos;
    private Position getPosition(char type) {
       ReturnObj returnObj = extractMethod(type, fAncestorPos, fLeftPos, fRightPos);
       if (returnObj.type == RETURNTYPE.RETURN)
          return returnObj.value;
       else
          return null;
```

```
}
  class ReturnObj {
    public RETURNTYPE type;
    public Position value;
    public ReturnObj(RETURNTYPE type, Position value) {
       this.type = type;
       this.value = value;
    }
  }
  enum RETURNTYPE {
    RETURN, FALL
  public ReturnObj extractMethod(char type, Position fNewAncestorRanges,
       Position fNewLeftRanges, Position fNewRightRanges) {
    switch (type) {
    case ANCESTOR CONTRIBUTOR:
       returnObj = new ReturnObj(RETURNTYPE.RETURN, fNewAncestorRanges);
    case LEFT CONTRIBUTOR:
       returnObj = new ReturnObj(RETURNTYPE.RETURN, fNewLeftRanges);
    case RIGHT CONTRIBUTOR:
       returnObj = new ReturnObj(RETURNTYPE.RETURN, fNewRightRanges);
    }
    return new ReturnObj(RETURNTYPE.FALL, null);
  }
}
```

2. Here is an example from

org.eclipse.compare.contentmergeviewer.TextMergeViewer.ContributorI nfo between v20060918 and v20061016.

```
class ContributorInfo {
    private IEditorInput getDocumentKey() {...}
    private void resetDocument() {...}
    public void elementMoved(Object originalElement, Object movedElement) {
```

```
+ IEditorInput input = getDocumentKey();
+ if(input != null && input.equals(originalElement)){
+ resetDocument();
+}
}
public void elementDeleted(Object element) {
+ IEditorInput input = getDocumentKey();
+ if(input != null && input.equals(element)){
+ resetDocument();
+}
}
```

```
class ContributorInfo {
    private IEditorInput getDocumentKey() {...}
    private void resetDocument() {...}
    private void extractMethod( Object originalElement) {
        IEditorInput input = getDocumentKey();
        if(input != null && input.equals(originalElement)){
        resetDocument();
    }
    public void elementMoved(Object originalElement, Object movedElement) {
        extractMethod(originalElement);
    }
    public void elementDeleted(Object element) {
        extractMethod(element);
    }
}
```

3. Here is an example from org.eclipse.compare.contentmergeviewer.ContentMergeViewer between v20060918 and v20061016.

```
public class ContentMergeViewer {
    public void flush(IProgressMonitor monitor) {
        - saveContent(getInput());
        + flushContent(getInput(), monitor);
    }
    class SaveAction {
        public void run() {
            - saveContent(getInput());
            + flushContent(getInput(), null);
        }
    }
    public void getInput() {...}
    void flushContent(Object input, IProgressMonitor monitor) {...}
```

```
public class ContentMergeViewer {
    public void flush(IProgressMonitor monitor) {
        extractMethod(getInput(), monitor);
    }
    class SaveAction {
        public void run() {
            extractMethod (getInput(), null);
        }
    }
    private void extractMethod (InputObj input, IProgressMonitor monitor monitor ) {
```

```
flushContent(input, monitor);
}
void flushContent(Object input, IProgressMonitor monitor) {...}
public void getInput() {...}
}
```

4. Here is an example from org.eclipse.compare.CompareEditorInput between v20061120 and v20061218.

```
public class CompareEditorInput {
  private ICompareContainer fContainer;
  public void addCompareInputChangeListener(ICompareInput input,
       ICompareInputChangeListener listener) {
  - if (fContainer == null)
  - input.addCompareInputChangeListener(listener);
  - else
     fContainer.addCompareInputChangeListener(input, listener);
  }
  public void removeCompareInputChangeListener(ICompareInput input,
       ICompareInputChangeListener listener) {
    - if (fContainer == null)
    - input.removeCompareInputChangeListener(listener);
    - else
    fContainer.removeCompareInputChangeListener(input, listener);
  }
}
```

```
public void removeCompareInputChangeListener(ICompareInput input,
        ICompareInputChangeListener listener) {
     RemoveStrategy.compareInputChangeListener(input,listener);
   }
 abstract class Strategy() {
     public abstract static void compareInputChangeListener(ICompareInput
 input,ICompareInputChangeListener listener);
 class RemoveStrategy extends Strategy {
     public void compareInputChangeListener(ICompareInput input,
 ICompareInputChangeListener listener) {
        fContainer.removeCompareInputChangeListener(input, listener);
     }
 class AddStrategy extends Strategy {
     public void compareInputChangeListener(ICompareInput input,
 ICompareInputChangeListener listener) {
        fContainer.addCompareInputChangeListener(input, listener);
     }
}
5. Here is an example from org.eclipse.compare.contentmergeviewer.
TextMergeViewer.ContributorInfo
                                              between
                                                            v20070226
                                                                               and
v20070316.
 class ContributorInfo{
   private final TextMergeViewer fViewer;
   private char fLeg;
   private IEditorInput getDocumentKey() {...}
   private IDocumentProvider getDocumentProvider() {...}
   public void elementDirtyStateChanged(Object element, boolean isDirty) {
   + if (!checkState())
   + return;
   IEditorInput input = getDocumentKey();
   if (input != null && input.equals(element)) {
     this.fViewer.updateDirtyState(input, getDocumentProvider(), fLeg);
  }
```

```
public void elementContentReplaced(Object element) {
    + if (!checkState())
    + return;
    IEditorInput input = getDocumentKey();
    if (input != null && input.equals(element)) {
        this.fViewer.updateDirtyState(input, getDocumentProvider(), fLeg);
    }
}
```

```
class ContributorInfo {
  private final TextMergeViewer fViewer;
  private char fLeg;
  private IEditorInput getDocumentKey() {...}
  private IDocumentProvider getDocumentProvider() {...}
  Label extractMethod() {
    if (!checkState())
       return Label.RETURN;
    return Label.FALL;
  }
  enum Label {
    RETURN, FALL
  public void elementDirtyStateChanged(Object element, boolean isDirty) {
 Label l = extractMethod();
 if (l==Label.RETURN)
  return;
 IEditorInput input = getDocumentKey();
 if (input != null && input.equals(element)) {
    this.fViewer.updateDirtyState(input, getDocumentProvider(), fLeg);
 } public void elementContentReplaced(Object element) {
    Label l = extractMethod();
```

```
if (l == Label.RETURN)
    return;
IEditorInput input = getDocumentKey();
if (input != null && input.equals(element)) {
    this.fViewer.updateDirtyState(input, getDocumentProvider(), fLeg);
}
}
```

6. Here is an example from org.eclipse.compare.EditionSelectionDialog between v20061016 and v20061030.

```
public class ResizableDialog {
  static void applyDialogFont(Control control){...}
  protected Label statusLabel;
public class EditionSelectionDialog extends ResizableDialog {
  private Splitter vsplitter;
  private CompareConfiguration getCompareConfiguration() {...}
  protected synchronized Control createDialogArea(Composite parent2) {
  Composite parent= (Composite) super.createDialogArea(parent2);
  vsplitter.setWeights(new int[] { 30, 70 });
  + IPreferenceStore store= getCompareConfiguration().getPreferenceStore();
  + if (store != null) {
  + if (store.getBoolean(ComparePreferencePage.SHOW MORE INFO)) {
  + statusLabel = new Label(parent, SWT.NONE);
  + statusLabel.setLayoutData(new GridData(
  GridData.FILL HORIZONTAL));
  +}
  +}
  applyDialogFont(parent);
 return parent;
 }
}
public class CompareDialog extends ResizableDialog {
  private Control c;
  private CompareEditorInput fCompareEditorInput;
  protected Control createDialogArea(Composite parent2) {
```

We extract common code edits with *extractMethod* refactoring and put the common method in the parent class of both classes. Please specify whether you prefer to apply this code edits with common code extraction refactoring.

```
public class ResizableDialog {
    static void applyDialogFont(Control control){...}
    protected Label statusLabel;
    private StatusLabel extractMethod (IPreferenceStore store) {
        if (store != null) {
            if (store.getBoolean(ComparePreferencePage.SHOW MORE INFO)) {
                Label statusLabel = new Label(parent, SWT.NONE);
                statusLabel.setLayoutData(new GridData(GridData.FILL HORIZONTAL));
            }
            return statusLabel;
        }
    }
    public class EditionSelectionDialog extends ResizableDialog {
        private Splitter vsplitter;
    }
}
```

```
private CompareConfiguration getCompareConfiguration() {...}
  protected synchronized Control createDialogArea(Composite parent2) {
     Composite parent = (Composite) super.createDialogArea(parent2);
     vsplitter.setWeights(new int[] { 30, 70 });
     statusLabel = extractMethod(getCompareConfiguration().getPreferenceStore());
     applyDialogFont(parent);
     return parent;
 }
}
public class CompareDialog extends ResizableDialog {
  private Control c;
  private CompareEditorInput fCompareEditorInput;
  protected Control createDialogArea(Composite parent2) {
  Composite parent= (Composite) super.createDialogArea(parent2);
  c.setLayoutData(new GridData(GridData.FILL BOTH));
  statusLabel =
extractMethod(fCompareEditorInput.getCompareConfiguration().getPreferenceStore());
  applyDialogFont(parent);
 return parent;
 }
}
```

7. Here is an example from org.eclipse.compare.internal.patch.Patcher-CompareEditorInput between v20061016 and v20061030.

```
public class PatcherCompareEditorInput extends CompareEditorInput {
    protected CompareConfiguration config;
    public CompareConfiguration getCompareConfiguration() {...}

private void initLabels() {
    CompareConfiguration cc = getCompareConfiguration(); cc.setLeftEditable(false);
    cc.setRightEditable(false);
    - String leftLabel = PatchMessages.PatcherCompareEditorInput LocalCopy;
    - cc.setLeftLabel(leftLabel);
    - String rightLabel = PatchMessages.PatcherCompareEditorInput AfterPatch; -
cc.setRightLabel(rightLabel);
    + if (config != null){
```

```
+ cc.setLeftLabel(config.getLeftLabel(config));
  + cc.setLeftImage(config.getLeftImage(config));
  + cc.setRightLabel(config.getRightLabel(config));
+cc.setRightImage(config.getRightImage(config));
  +}else{
  + String leftLabel = PatchMessages.PatcherCompareEditorInput LocalCopy;
  + cc.setLeftLabel(leftLabel);
  + String rightLabel = PatchMessages.PatcherCompareEditorInput AfterPatch;
  + cc.setRightLabel(rightLabel);
  +}
  }
}
public class HunkMergePageInput extends PatcherCompareEditorInput {
  private void initLabels() {CompareConfiguration cc =
getCompareConfiguration();cc.setCalculateDiffs(false);
     cc.setLeftEditable(true);
     cc.setRightEditable(false); cc.setProperty(CompareEditor.CONFIRM SAVE
PROPERTY, new Boolean(false));
     - String leftLabel = PatchMessages.PatchMessages.HunkMergePageInput
WorkspaceCopy;
    - cc.setLeftLabel(leftLabel);
    - String rightLabel = PatchMessages.PatchMessages.HunkMergePageInput
     OrphanedHunk;
    - cc.setRightLabel(rightLabel);
    + if (config != null){
    + cc.setLeftLabel(config.getLeftLabel(config));
    + cc.setLeftImage(config.getLeftImage(config));
     + cc.setRightLabel(config.getRightLabel(config)); +
cc.setRightImage(config.getRightImage(config));
     +}else{
     + String leftLabel = PatchMessages.HunkMergePageInput WorkspaceCopy; +
cc.setLeftLabel(leftLabel);
     + String rightLabel = PatchMessages.HunkMergePageInput OrphanedHunk; +
cc.setRightLabel(rightLabel);
     +}}
}
```

```
public class PatcherCompareEditorInput extends CompareEditorInput {
  protected CompareConfiguration config;
  protected CompareConfiguration cc;
  public CompareConfiguration getCompareConfiguration() {...}
  private void initLabels() {
  cc = getCompareConfiguration();
  cc.setLeftEditable(false);
  cc.setRightEditable(false);
  extractMethod(config, PatchMessages.PatcherCompareEditorInput
LocalCopy, PatchMessages. PatcherCompareEditorInput AfterPatch);
  protected void extractMethod(Config config, String leftLabel, String rightLabel) {
    if (config != null) {
       cc.setLeftLabel(config.getLeftLabel(config));
       cc.setLeftImage(config.getLeftImage(config));
       cc.setRightLabel(config.getRightLabel(config));
       cc.setRightImage(config.getRightImage(config));
    } else {
       cc.setLeftLabel(leftLabel);
       cc.setRightLabel(rightLabel);
    }
  }
public class HunkMergePageInput extends PatcherCompareEditorInput {
  private void initLabels() {
     cc = getCompareConfiguration();
     cc.setCalculateDiffs(false);
     cc.setLeftEditable(true);
     cc.setRightEditable(false);
     cc.setProperty(CompareEditor.CONFIRM_SAVE_PROPERTY,new Boolean(false));
     extractMethod (config, PatchMessages.HunkMergePageInput
WorkspaceCopy,PatchMessages.HunkMergePageInput OrphanedHunk)
    }
}
```

8. Here is an example from org.eclipse.compare.contentmergeviewer. ContentMergeViewer between v20070416 and v20070430.

```
public class ContentMergeViewer {
  protected CompareHandlerService fHandlerService;
  private ICompareInputChangeListener fCompareInputChangeListener;
  public Object getInput(){...}
  protected CompareConfiguration getCompareConfiguration() {...}
  protected void handleDispose(DisposeEvent event) {
  - Utilities.deregisterActions(fHandlerService, fActivations);
  - fHandlerService= null;
  + if (fHandlerService != null)
  + fHandlerService.dispose();
  Object input= getInput();
  if (input instanceof ICompareInput) {
  ICompareContainer container = getCompareConfiguration().getContainer();
  container.removeCompareInputChangeListener((ICompareInput)input,
  fCompareInputChangeListener);
  }
  if (input != null) {
  ICompareInputLabelProvider lp = getCompareConfiguration().getLabelProvider();
  if (lp != null) lp.removeListener(labelChangeListener);
  }
  }
public class TextMergeViewer extends ContentMergeViewer {
  static final boolean DEBUG = false;
  private void removeFromDocumentManager(char leg, Object oldInput) {...}
  protected void handleDispose(DisposeEvent event) {
```

```
- Utilities.deregisterActions(fHandlerService, fActivations);
- fHandlerService= null;
+ if (fHandlerService!= null)
+ fHandlerService.dispose();
Object input= getInput();
removeFromDocumentManager(ANCESTOR_CONTRIBUTOR, input);
removeFromDocumentManager(LEFT_CONTRIBUTOR, input);
removeFromDocumentManager(RIGHT_CONTRIBUTOR, input);
if (DEBUG)
DocumentManager.dump();
}
```

```
public class ContentMergeViewer {
  protected CompareHandlerService;
  private ICompareInputChangeListener fCompareInputChangeListener;
  public Object getInput(){...}
  protected CompareConfiguration getCompareConfiguration() {...}
  protected void handleDispose(DisposeEvent event) {
    extractMethod(fHandlerService);
    Object input = getInput();
    if (input instanceof ICompareInput) {
       ICompareContainer container = getCompareConfiguration().getContainer();
       container.removeCompareInputChangeListener((ICompareInput)
input,fCompareInputChangeListener);
    }
    if (input != null) {
       ICompareInputLabelProvider lp =
getCompareConfiguration().getLabelProvider();
      if (lp != null)
         lp.removeListener(labelChangeListener);
    }
  }
```

```
protected void extractMethod(FileHandleService fHandlerService) {
      if (fHandlerService != null)
      fHandlerService.dispose();
     }
 }
 public class TextMergeViewer extends ContentMergeViewer {
   static final boolean DEBUG = false;
   private void removeFromDocumentManager(char leg, Object oldInput) {...}
   protected void handleDispose(DisposeEvent event) {
      extractMethod(fHandlerService);
     Object input = getInput();
     removeFromDocumentManager(ANCESTOR_CONTRIBUTOR, input);
     removeFromDocumentManager(LEFT_CONTRIBUTOR, input);
     removeFromDocumentManager(RIGHT_CONTRIBUTOR, input);
     if (DEBUG)
        DocumentManager.dump();
  }
 }
9. Here is an example from
 public class CompareEditorInput {
   private ICompareContainer fContainer;
   private boolean fContainerProvided;
   private Splitter fComposite;
   public IActionBars getActionBars() {
   - if (fContainer == null) {
   + IActionBars actionBars = fContainer.getActionBars();
   + if (actionBars == null && !fContainerProvided) {
    return Utilities.findActionBars(fComposite);
   }
   - return fContainer.getActionBars();
   + return actionBars;
 }
}
   public IServiceLocator getServiceLocator() {
   - if (fContainer == null) {
```

```
+ IServiceLocator serviceLocator = fContainer.getServiceLocator();
+ if (serviceLocator == null && !fContainerProvided) {
    return Utilities.findSite(fComposite);
    }
- return fContainer.getServiceLocator();
+ return serviceLocator;
    }
}
```

```
public class CompareEditorInput {
  private ICompareContainer fContainer;
  private boolean fContainerProvided;
  private Splitter fComposite;
  public IActionBars getActionBars() {
     ReturnObj obj = extractMethod(fContainer.getServiceLocator(),
Utilities.findSite(fComposite));
    if (obj.type==RETURNTYPE.RETURN)
       return (IActionBars) obj.value;
    return null;
  }
  public IServiceLocator getServiceLocator() {
     ReturnObj obj =
extractMethod(fContainer.getServiceLocator(),Utilities.findSite(fComposite));
    if (obj.type==RETURNTYPE.RETURN)
          return (IServiceLocator) obj.value;
       return null;
  }
  class ReturnObj {
    public RETURNTYPE type;
    public Object value;
    public ReturnObj (RETURNTYPE type, Object value) {
       this.type = type;
```

```
this.value = value;
     }
   }
   enum RETURNTYPE {
      RETURN, FALL;
   private ReturnObj extractMethod (Object object,Object findObj) {
        if (object == null && !fContainerProvided) {
         return new ReturnObj(RETURNTYPE.RETURN, findObj);
        }
        return new ReturnObj(RETURNTYPE.RETURN, object);
   }
}
10. Here is an example from
 public class MergeSourceViewer {
 private HashMap fActions= new HashMap();
 public void textChanged(TextEvent event) {
  Iterator e= fActions.values().iterator();
  while (e.hasNext()) {
   - MergeViewerAction action = (MergeViewerAction)e.next();
   - if (action.isContentDependent())
   - action.update();
   + Object next = e.next();
   + if (next instanceof MergeViewerAction) {
    + MergeViewerAction action = (MergeViewerAction) next;
    + if (action.isContentDependent())
     + action.update();
    }
  }
 public void selectionChanged(SelectionChangedEvent event) {
  Iterator e= fActions.values().iterator();
  while (e.hasNext()) {
   - MergeViewerAction action = (MergeViewerAction)e.next();
   - if (action.isContentDependent())
```

```
public class MergeSourceViewer {
private HashMap fActions= new HashMap();
public void textChanged(TextEvent event) {
 Iterator e= fActions.values().iterator();
 while (e.hasNext()) {
 extractMethod(action.isContentDependent());
 }
}
public void selectionChanged(SelectionChangedEvent event) {
 Iterator e= fActions.values().iterator();
 while (e.hasNext()) {
 extractMethod(action.isSelectionDependent());
 }
}
private void extractMethod (boolean flag) {
   Object next = e.next();
   if (next instanceof MergeViewerAction) {
   MergeViewerAction action = (MergeViewerAction) next;
    if (flag)
     action.update();
   }
```

```
}
}
```

11.

class DefaultCommentMapper {

```
Comment[] getLeadingComments(ASTNode node) {
     if (this.leadingComments != null) {
          int[] range = (int[])
this.leadingComments.get(node);
     if (this.leadingPtr >= 0) {
          int[] range = null;
          for (int i=0; range==null && i<=this.leadingPtr; i++)</pre>
{
          if (this.leadingNodes[i] == node)
               range=this.leadingIndexes[i];
+
     }
     if (range != null) {
          int length = range[1]-range[0]+1;
          Comment[] leadComments = new Comment[length];
          System.arraycopy(this.comments, range[0],
leadComments, 0, length);
          return leadComments;
          return null;
     }
Comment[] getTrailingComments(ASTNode node) {
     if (this.trailingComments != null) {
          int[] range = (int[]) this.trailingComments.get(node);
     if (this.trailingPtr >= 0) {
+
     int[] range = null;
     for (int i=0; range==null && i<=this.trailingPtr; i++) {</pre>
          if (this.trailingNodes[i] == node)
               range=this.trailingIndexes[i];
     }
```

```
if (range != null) {
    int length = range[1]-range[0]+1;
    Comment[] trailComments = new Comment[length];
    System.arraycopy(this.comments, range[0],
trailComments, 0,length);
    return trailComments;
    }
}
return null;
}
```