






Report on Identified Refactoring Opportunities for (SC/ST) Refactoring

The tool identifies the Control-Fields and conditional constructs (Switch/If) that use these Control-Fields to simulate the (SC / ST) refactoring. It prioritizes the Control-Fields (refactoring opportunities) based on the following criteria:

1. Number of conditional constructs that switch on Control-Field
Group i represents i different conditional constructs where the Control-Field is used
 2. Average size of the conditional body
 3. Number of control values
2-3 control values 
3-6 control values 
6-n control values 
 4. Presence of conditional constructs with respect to the class of declaration (COD) of Control-Field
In COD (A)
Outside (B)
Mixed (C)
 5. Qualified for SC or ST
 6. Static Field 
 7. Have subclasses already 
-

Input Benchmark Statistics:

No. Of Classes: 1125
No. Of Primitive Fields: 1620
No. Of Control-Fields for Subclass Pattern: 46
No. Of Control-Fields for State pattern: 74
Total No. Of Control-Fields: 120

| Uses | Replace Type Code with Subclass (SC) | | Uses | Replace Type Code with State (ST) | |
|------|---|-----|------|--|-----|
| 26 | <org.apache.fop.traits.BorderProps, mode> | (C) | 39 | <org.apache.fop.render.rtf.RTFHandler, bDefer> | (A) |
| 6 | <org.apache.fop.area.BlockViewport, clip> | (B) | 10 | <org.apache.fop.layoutmgr.KnuthElement, blsAuxiliary> | (B) |
| | <org.apache.fop.fo.pagination.ConditionalPageMasterReference, pagePosition> | (C) | 9 | <org.apache.fop.layoutmgr.AbstractBaseLayoutManager, fobj> | (B) |
| 5 | <org.apache.fop.area.inline.Viewport, clip> | (B) | 6 | <org.apache.fop.area.Block, positioning> | (B) |
| 4 | <org.apache.fop.layoutmgr.inline.TextLayoutManager.AreaInfo, bHyphenated> | (B) | 5 | <org.apache.fop.fo.expr.PropertyTokenizer, currentToken> | (B) |
| | <org.apache.fop.render.rtf.rtflib.rtfdoc.RtfTableCell, hMerge> | (A) | | <org.apache.fop.fo.flow.table.GridUnit, colSpanIndex> | (C) |
| | <org.apache.fop.layoutmgr.BlockContainerLayoutManager, autoHeight> | (A) | | <org.apache.fop.layoutmgr.BlockStackingLayoutManager, bpUnit> | (C) |
| 3 | <org.apache.fop.fonts.type1.PFMFile, dfItalic> | (A) | | <org.apache.fop.area.RegionReference, regionClass> | (B) |
| | <org.apache.fop.pdf.PDFFilterList, ignoreASCIIFilters> | (A) | | <org.apache.fop.cli.CommandLineOptions, inputmode> | (A) |
| | <org.apache.fop.pdf.FlateFilter, predictor> | (A) | | <org.apache.fop.fo.flow.Leader, leaderPattern> | (C) |
| | <org.apache.fop.render.ps.PSPageDeviceDictionary, flushOnRetrieval> | (A) | 4 | <org.apache.fop.fo.pagination.RegionBlock, precedence> | (B) |
| | <org.apache.fop.area.Trait.Background, repeat> | (C) | | <org.apache.fop.layoutmgr.AbstractLayoutManager, bFinished> | (B) |
| | | | | <org.apache.fop.render.ps.PSRenderer, twoPassGeneration> | (A) |
| | | | | <org.apache.fop.fonts.trueType.TTFFFile, isCFF> | (C) |
| | | | | <org.apache.fop.layoutmgr.PageBreakingAlgorithm, footnotesPending> | (A) |
| | | | | <org.apache.fop.hyphenation.PatternParser, currElement> | (A) |

| Uses | Replace Type Code with Subclass (SC) | | Uses | Replace Type Code with State (ST) | |
|------|--|-----|------|---|-----|
| 2 | <org.apache.fop.fo.flow.BlockContainer, overflow> | (B) | 3 | <org.apache.fop.fo.pagination.Region, overflow> | (B) |
| | <org.apache.fop.area.BodyRegion, columnCount> | (B) | | <org.apache.fop.pdf.PDFFilter, applied> | (B) |
| | <org.apache.fop.fo.pagination.ConditionalPageMasterReference, oddOrEven> | (A) | | <org.apache.fop.fonts.trueType.TTFFile, isEmbeddable> | (B) |
| | <org.apache.fop.layoutmgr.KnuthGlue, adjustmentClass> | (B) | | <org.apache.fop.layoutmgr.BlockStackingLayoutManager, firstVisibleMarkServed> | (C) |
| | <org.apache.fop.render.rtf.rtfllib.rtfdoc.RtfList, hasTableParent> | (B) | | <org.apache.fop.text.linebreak.LineBreakStatus, hadSpace> | (A) |
| | <org.apache.fop.fo.expr.NumericProperty, dim> | (A) | | <org.apache.fop.fo.FOEventHandler, inMarker> | (B) |
| | <org.apache.fop.fo.flow.InlineContainer, blockItemFound> | (A) | | <org.apache.fop.fo.flow.table.TableBody, rowsStarted> | (A) |
| | <org.apache.fop.tools.anttasks.SerializeHyphPattern, errorDump> | (A) | | <org.apache.fop.layoutmgr.inline.InlineLayoutManager, fobj> | (A) |
| | <org.apache.fop.fo.pagination.PageNumberGenerator, formatType> | (A) | | <org.apache.fop.fo.pagination.Flow, flowName> | (B) |
| | <org.apache.fop.fo.flow.BlockContainer, blockItemFound> | (A) | | <org.apache.fop.fo.flow.table.Table, hasExplicitColumns> | (C) |
| | <org.apache.fop.fonts.Font, metric> | (A) | | <org.apache.fop.layoutmgr.PageBreakingAlgorithm, newFootnotes> | (A) |
| | <org.apache.fop.pdf.StreamCacheFactory, cacheToFile> | (A) | | <org.apache.fop.fonts.trueType.TTFFile, capHeight> | (A) |
| | <org.apache.fop.layoutmgr.inline.LeafNodeLayoutManager.AreaInfo, bHyphenated> | (B) | | <org.apache.fop.fo.XMLWhiteSpaceHandler, inWhiteSpace> | (A) |
| | <org.apache.fop.fo.flow.ListBlock, hasListItem> | (A) | | <org.apache.fop.fonts.trueType.TTFFile, xHeight> | (A) |
| | <org.apache.fop.area.Span, colCount> | (B) | | <org.apache.fop.area.inline.AbstractTextArea, textWordSpaceAdjust> | (B) |
| | <org.apache.fop.fo.flow.table.TableColumn, implicitColumn> | (A) | | <org.apache.fop.area.inline.AbstractTextArea, textLetterSpaceAdjust> | (B) |
| | <org.apache.fop.render.rtf.rtfllib.rtfdoc.RtfExternalGraphic, perCentW> | (A) | | <org.apache.fop.layoutmgr.BlockStackingLayoutManager, breakBeforeServed> | (C) |
| | <org.apache.fop.render.rtf.rtfllib.rtfdoc.RtfExternalGraphic, perCentH> | (A) | | <org.apache.fop.fo.XMLWhiteSpaceHandler, linefeedTreatment> | (C) |
| | <org.apache.fop.layoutmgr.SpaceResolver, isLast> | (A) | | | |
| | <org.apache.fop.layoutmgr.inline.LineLayoutManager.Paragraph, textAlignment> | (A) | | | |
| | <org.apache.fop.render.ps.PSRenderer, autoRotateLandscape> | (A) | | | |
| | <org.apache.fop.fo.pagination.ConditionalPageMasterReference, blankOrNotBlank> | (A) | | | |
| | <org.apache.fop.area.inline.SpaceArea, isAdjustable> | (B) | | | |
| | <org.apache.fop.layoutmgr.PageBreaker, needColumnBalancing> | (A) | | | |
| | <org.apache.fop.render.pdf.PDFSVGHandler.PDFInfo, paintAsBitmap> | (B) | | | |
| | <org.apache.fop.fo.flow.table.TableCell, blockItemFound> | (A) | | | |
| | <org.apache.fop.fo.flow.table.Table, tableBodyFound> | (A) | | | |

| Uses | Replace Type Code with Subclass (SC) | | Uses | Replace Type Code with State (ST) | |
|------|---|-----|------|--|-----|
| | <org.apache.fop.render.afp.modca.MapCodedFont.FontDefinition, scale> | (B) | 2 | <org.apache.fop.fo.properties.PropertyMaker, propId> | (B) |
| | <org.apache.fop.fo.flow.table.PrimaryGridUnit, isSeparateBorderModel> | (A) | | <org.apache.fop.fo.flow.MultiProperties, hasWrapper> | (A) |
| | <org.apache.fop.fo.flow.table.TableCell, displayAlign> | (B) | | <org.apache.fop.fo.pagination.SimplePageMaster, hasRegionBody> | (A) |
| | <org.apache.fop.area.LineArea.LineAdjustingInfo, lineAlignment> | (B) | | <org.apache.fop.fonts.CustomFont, capHeight> | (B) |
| | <org.apache.fop.render.afp.modca.AFPDataStream, rotation> | (A) | | <org.apache.fop.fo.pagination.Flow, blockItemFound> | (A) |
| | <org.apache.fop.fo.expr.RelativeNumericProperty, operation> | (A) | | <org.apache.fop.fo.properties.PropertyMaker, setByShorthand> | (B) |
| | <org.apache.fop.fo.flow.Leader, ruleStyle> | (B) | | <org.apache.fop.area.AbstractOffDocumentItem, whenToProcess> | (B) |
| | | | | <org.apache.fop.fo.pagination.SinglePageMasterReference, state> | (A) |
| | | | | <org.apache.fop.hyphenation.TernaryTree.Iterator, cur> | (A) |
| | | | | <org.apache.fop.fo.flow.table.GridUnit, rowSpanIndex> | (B) |
| | | | | <org.apache.fop.layoutmgr.PageBreaker, firstPart> | (A) |
| | | | | <org.apache.fop.render.rtf.rtfllib.rtfdoc.WhitespaceCollapser, lastEndSpace> | (A) |
| | | | | <org.apache.fop.layoutmgr.inline.AlignmentContext, baselineShiftValue> | (A) |
| | | | | <org.apache.fop.layoutmgr.inline.TextLayoutManager, lineEndBAP> | (A) |
| | | | | <org.apache.fop.fo.InlineCharIterator, startBoundary> | (A) |
| | | | | <org.apache.fop.area.LineArea.LineAdjustingInfo, bAddedToAreaTree> | (B) |
| | | | | <org.apache.fop.fo.flow.table.TableAndCaption, tableFound> | (A) |
| | | | | <org.apache.fop.fonts.LazyFont, realFont> | (C) |
| | | | | <org.apache.fop.layoutmgr.LayoutContext, ipdAdjust> | (B) |
| | | | | <org.apache.fop.svg.PDFTextUtil, inTextObject> | (A) |
| | | | | <org.apache.fop.fo.flow.table.TableBody, lastCellEndsRow> | (A) |
| | | | | <org.apache.fop.pdf.PDFFilterList, disableAllFilters> | (C) |
| | | | | <org.apache.fop.fo.properties.PropertyMaker, inherited> | (A) |
| | | | | <org.apache.fop.render.pdf.PDFRenderer, inTextMode> | (A) |
| | | | | <org.apache.fop.render.rtf.rtfllib.rtfdoc.RtfParagraphKeepTogether, status> | (A) |
| | | | | <org.apache.fop.render.ps.PSRenderer, inTextMode> | (A) |
| | | | | <org.apache.fop.fo.flow.AbstractListItemPart, blockItemFound> | (A) |

| Uses | Replace Type Code with State (ST) |
|------|--|
| | <org.apache.fop.layoutmgr.PageBreakingAlgorithm, autoHeight> (A) |
| | <org.apache.fop.layoutmgr.table.TableStepper, delayingNextRow> (A) |
| | <org.apache.fop.render.pcl.PCLRenderer, disabledPjL> (A) |
| | <org.apache.fop.fo.FObj.FObjIterator, currentIndex> (A) |
| | <org.apache.fop.fonts.CustomFont, ascender> (B) |
| | <org.apache.fop.fonts.CustomFont, descender> (B) |
| | <org.apache.fop.fonts.FontCache, changed> (C) |
| | <org.apache.fop.layoutmgr.inline.LineLayoutManager, textAlignment> (A) |
| | <org.apache.fop.layoutmgr.table.TableStepper, rowFinished> (A) |
| | <org.apache.fop.pdf.PDFDeviceColorSpace, currentColorSpace> (A) |
| | <org.apache.fop.layoutmgr.KnuthPenalty, breakClass> (C) |
| | <org.apache.fop.render.afp.AFPRenderer.ViewPortPos, rot> (A) |
| | <org.apache.fop.render.afp.modca.AbstractPageObject, rotation> (A) |

[Back To Top](#)