Change request log

Team
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Change Request
#3: The Merge module throws an exception when attempting to merge page ranges that intersect. Fix this by allowing intersection of ranges.

Concept Location

Step #	Description	Rationale
1	Built and ran the system	
2	Attempted to replicate the problem described in the change request	This helps identify the error thrown,and a rough idea of where to locate the concept
3	Searched error log to find location of exception	This will help locate the class throwing the exception
4	Found exception thrown by class from a dependency	
5	Searched for all modules involving "Merge"	Looking at code in merge modules will help to identify where and how page ranges are passed from GUI to backend
6	Inspected MergeModule class	Hoped to find some sort of parameter checking here, found nothing
7	Inspected MergeOptionsPane	Same as above
8	Inspected MergeParametersBuilder	Same as above
9	Inspected MergeSelectionPane	Based on name, this class should be responsible for passing user supplied values to backend code. Assumption was correct
10	Found method that retrieves page range values and calls .toPageRangeSet()	
11	Searched project for method .toPageRangeSet	This method is responsible for generating a page range set
12	Found method in a class called ConversionUtils	Can change the logic in this method to check for intersections and modify the values to remove extraneous intersections to prevent the error being thrown

Time spent (in minutes): 135

Impact Analysis

Step #	Description	Rationale
1	Made a list of methods called by ConversionUtils.toPageRangeSet()	To track the classes that could be impacted by the change.
2	Decided no impact to other classes	All methods of this class are static, and only modify the values passed to them

Time spent (in minutes): 10

Actualization

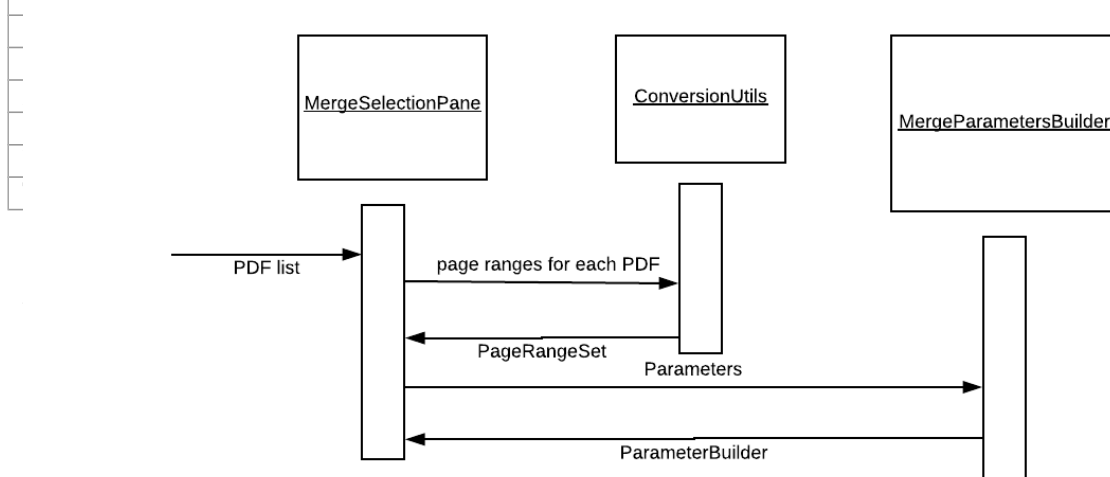| Step #	Description	Rationale
1	*Modified the logic in ConversionUtils.toPageRangeSet() to check for intersections and remove them. This involved creating a private method to check the set produced by toPageRangeSet()*	*Page intersections are a result of user error, so this is essentially a data cleaning task*
2	*Create a test to check if new logic is correct*	*To test and ensure the new logic not only handles intersections correctly, but also to ensure that previously correct ranges are not affected*
3	*Push changes to git, rebuild*	

Time spent (in minutes): 75

Validation

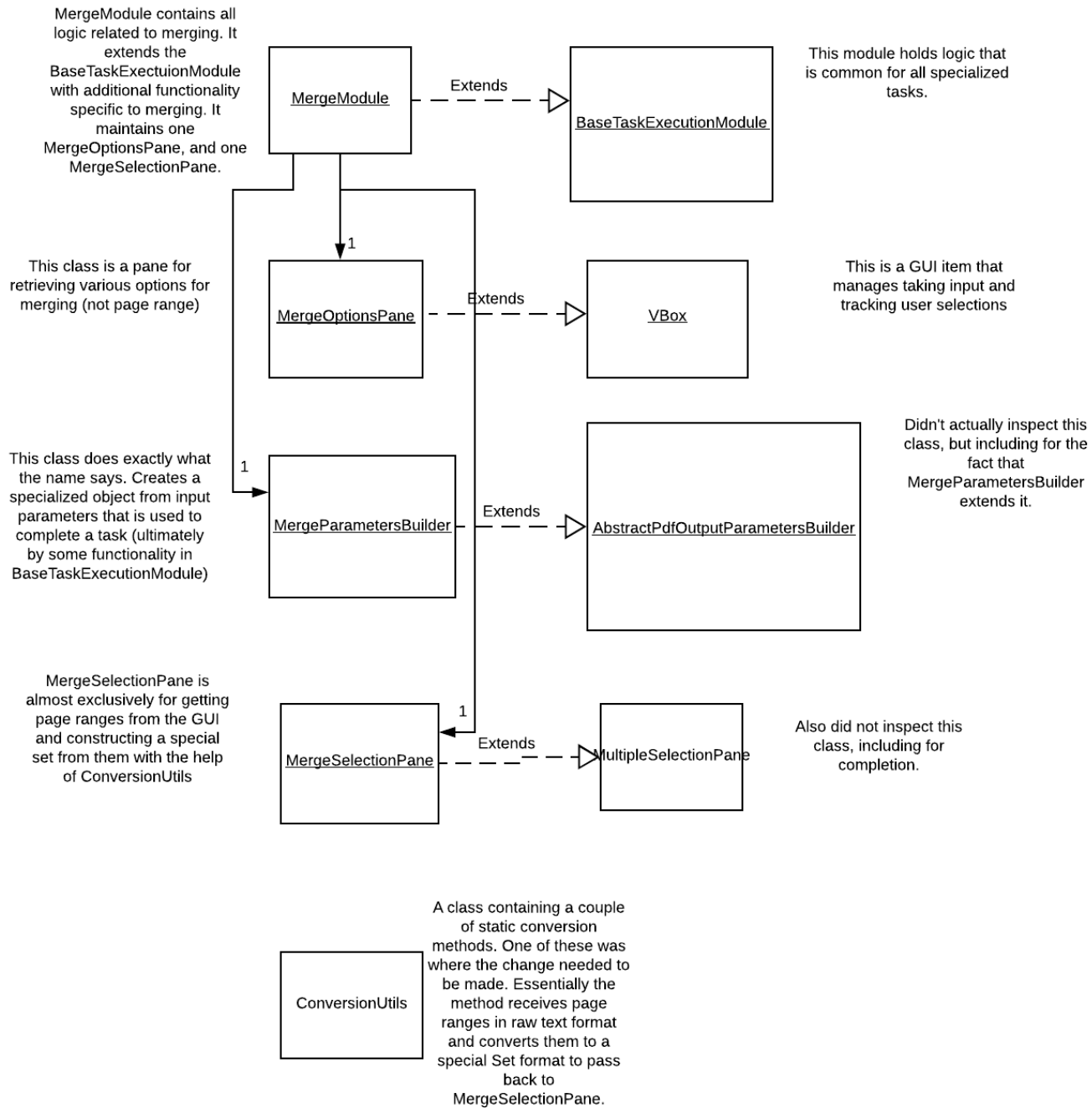| Step #	Description	Rationale
1	*Test case defined:* *Inputs: One document with page ranges 1-4, 3-6, 4 defined.* *Expected output: A new document with pages 1-6 from original*	*Test case for one document with intersecting ranges.* *The test passed.*
2	*Test case defined: Two documents, with page selection 1-2, 4-5, 1-4 defined for doc1, and page selection 1-3,2 defined for doc2* *Expected output: A new document with pages 1-5 from doc1, followed by pages 1-3 from doc2*	*Case for two documents with intersecting ranges on both.* *The test passed.*
3		
4	*...*	

Time spent (in minutes): 140 (spent most of this rebuilding the project from the wrong directory and trying to figure out why my changes weren't being reflected in the new build…)

Timing
Summarize the time spent on each phase.

Phase Name	Time (in minutes)
Concept	135

MergeModule contains all
logic related to merging. It
extends the
BaseTaskExectuionModule
with additional functionality
specific to merging. It
maintains one
MergeOptionsPane, and one
MergeSelectionPane.

MergeModule — — Extends — —▷ BaseTaskExecutionModule

This module holds logic that
is common for all specialized
tasks.

This class is a pane for
retrieving various options for
merging (not page range)

1

MergeOptionsPane — — Extends — —▷ VBox

This is a GUI item that
manages taking input and
tracking user selections

This class does exactly what
the name says. Creates a
specialized object from input
parameters that is used to
complete a task (ultimately
by some functionality in
BaseTaskExecutionModule)

1

MergeParametersBuilder — — Extends — —▷ AbstractPdfOutputParametersBuilder

Didn't actually inspect this
class, but including for the
fact that
MergeParametersBuilder
extends it.

MergeSelectionPane is
almost exclusively for getting
page ranges from the GUI
and constructing a special
set from them with the help
of ConversionUtils

1

MergeSelectionPane — — Extends — —▷ MultipleSelectionPane

Also did not inspect this
class, including for
completion.

A class containing a couple
of static conversion
methods. One of these was
where the change needed to
be made. Essentially the
method receives page
ranges in raw text format
and converts them to a
special Set format to pass
back to
MergeSelectionPane.

ConversionUtils

Conclusions

of time, since many locations I thought would contain the concept in fact had references and objects from other dependencies. Particularly, MergeModule and MergeParametersBuilder contained many objects from an entirely separate module that wasn't in the source for this project. This led me to search for the location where input is taken from the user. The longest chunk of time was spent on validation, due to a combination of lack of experience with maven, as well as not realizing that once I made my changes, I had to switch directories back to the project root to rebuild the project (I was still in the sub-directory for executing the built project). This simple mistake cost me a lot of time in trying to validate my changes. Once That was figured out, the remainder of validation was quite simple.

Classes and methods changed:
- *org/pdfsam/support/params/ConversionUtils.java/toPageRangeSet()*
- *added method removeIntersections() to same class*