Task 1:

Size

1.) In the total project there are 22539 LOC in main.memoranda.java
2.) HTMLEditor.java is the single largest with 2144
3.) Measured by Physical Line of Code method

Cohesion

1.) LCOM2 is the percentage of methods that do not access a specific attribute averaged over all attributes in a class. LCOM2 = 1-sum(mA)/(m*a) where sum(mA)= sum of methods that access a variable over all variables of a class. m = number of methods in class. a = number of variables in class.
2.) CharTablePanel.java has the highest LCOM2 because it is used by every panel in the application. All characters are pulled against this class that are in a panel.

Complexity

1.) 16 is the maximum and the mean is 1.7
2.) ProjectPackager.java at 5.667
3.) In EventsManager.java I eliminated a null check on the date because it will check for null within the for loop. I reduced the complexity from 5 to 4 because it was one less branch. It already returns null if it doesn't find a value in the for loop so didn't need to return null in the beginning.

Package-level Coupling

1.) Efferent couplings- The number of classes in other packages that the classes in a package depend upon is an indicator of the package's dependence on externalities.
    Afferent couplings- The number of classes in other packages that depend upon classes within the package is an indicator of the package's responsibility.
    The difference would be efferent is the number of classes that your class is dependent on to run. Afferent is the number of classes that are dependent upon you class to run.
2.) Main.java.memoranda.util is 57
3.) Main.java.memoranda.ui is 49

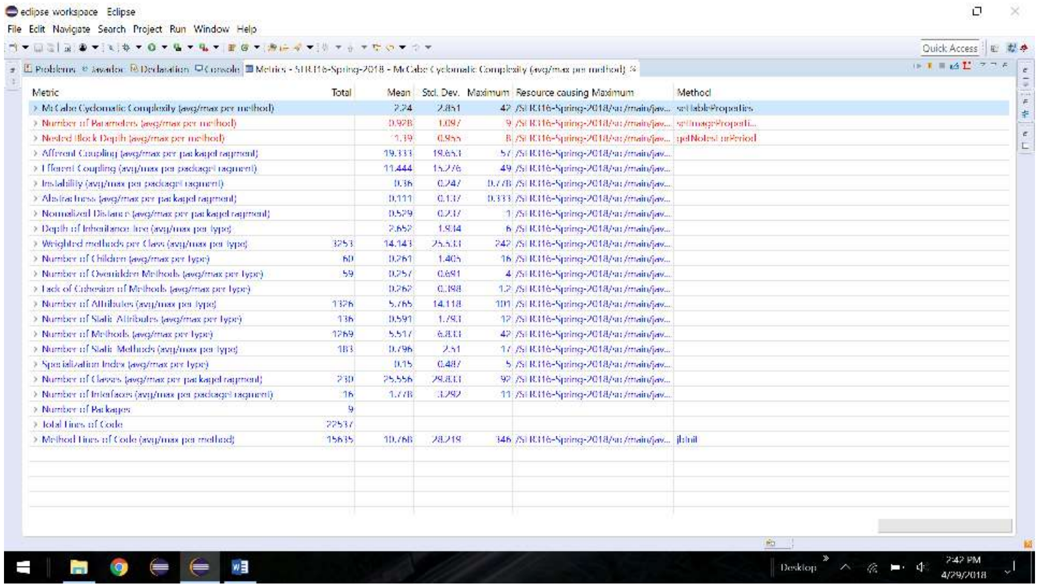
Worst Quality

1.) HTMLEditor.java would be the lowest quality class in the project in my opinion. It has the highest cyclonic complexity by far so it is very easy for it to be wrong and difficult to troubleshoot the issues. The package it is in has the highest Afferent coupling meaning the rest of the project is more dependent on this package being correct than any other package. Its methods have a high average LOC at 18.899 meaning that the methods are fairly complex and it has one of the largest methods in the project at 277 LOC.

Task 2

Step 1

1.)



eclipse workspace   Eclipse

File Edit Navigate Search Project Run Window Help

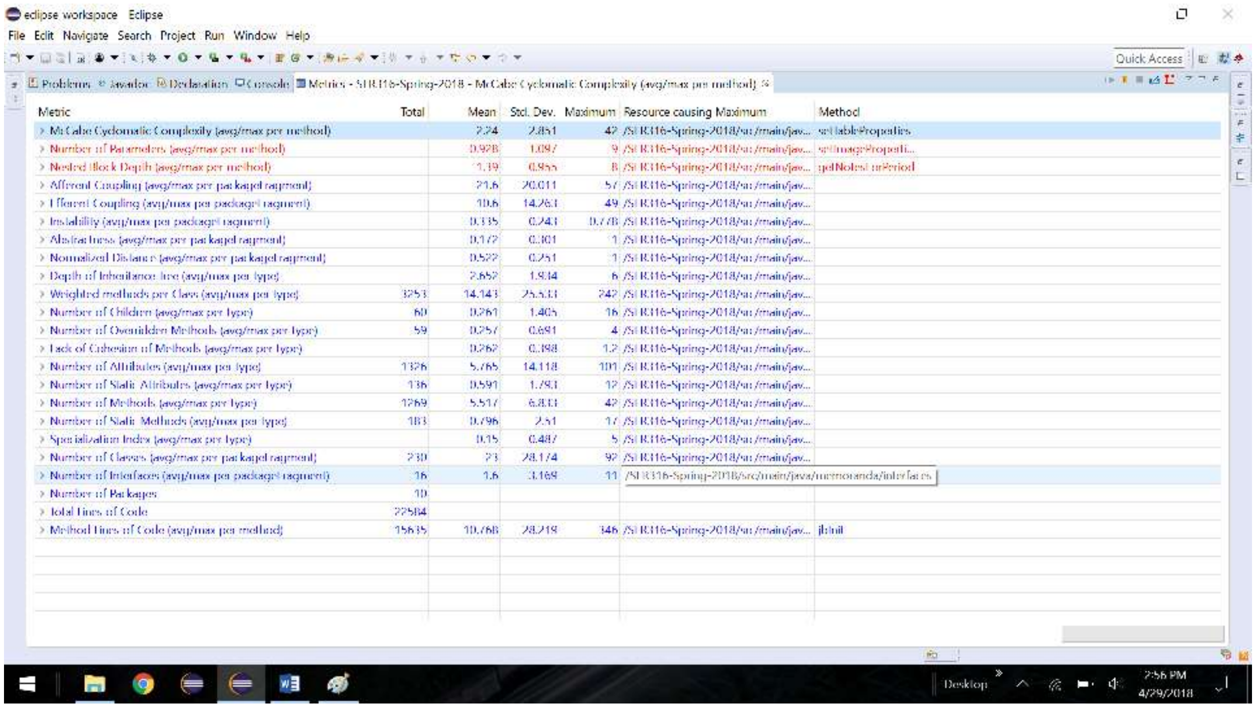
Problems Javadoc Declaration Console Metrics - SER316-Spring-2018 - McCabe Cyclomatic Complexity (avg/max per method)

Metric	Total	Mean	Std. Dev.	Maximum	Resource causing Maximum	Method
McCabe Cyclomatic Complexity (avg/max per method)		2.24	2.851	42	/SER316-Spring-2018/src/main/jav...	setTableProperties
Number of Parameters (avg/max per method)		0.928	1.097	9	/SER316-Spring-2018/src/main/jav...	setImageProperti...
Nested Block Depth (avg/max per method)		1.19	0.955	8	/SER316-Spring-2018/src/main/jav...	getNoteForPeriod
Afferent Coupling (avg/max per packageFragment)		19.333	19.653	57	/SER316-Spring-2018/src/main/jav...	
Efferent Coupling (avg/max per packageFragment)		11.444	15.276	49	/SER316-Spring-2018/src/main/jav...	
Instability (avg/max per packageFragment)		0.36	0.247	0.778	/SER316-Spring-2018/src/main/jav...	
Abstractness (avg/max per packageFragment)		0.111	0.137	0.333	/SER316-Spring-2018/src/main/jav...	
Normalized Distance (avg/max per packageFragment)		0.529	0.237	1	/SER316-Spring-2018/src/main/jav...	
Depth of Inheritance Tree (avg/max per type)		2.652	1.934	6	/SER316-Spring-2018/src/main/jav...	
Weighted methods per Class (avg/max per type)	3253	14.143	25.533	242	/SER316-Spring-2018/src/main/jav...	
Number of Children (avg/max per type)	60	0.261	1.405	16	/SER316-Spring-2018/src/main/jav...	
Number of Overridden Methods (avg/max per type)	59	0.257	0.691	4	/SER316-Spring-2018/src/main/jav...	
Lack of Cohesion of Methods (avg/max per type)		0.262	0.398	1.2	/SER316-Spring-2018/src/main/jav...	
Number of Attributes (avg/max per type)	1326	5.765	14.118	101	/SER316-Spring-2018/src/main/jav...	
Number of Static Attributes (avg/max per type)	136	0.591	1.783	12	/SER316-Spring-2018/src/main/jav...	
Number of Methods (avg/max per type)	1269	5.517	6.833	42	/SER316-Spring-2018/src/main/jav...	
Number of Static Methods (avg/max per type)	183	0.796	2.51	17	/SER316-Spring-2018/src/main/jav...	
Specialization Index (avg/max per type)		0.15	0.487	5	/SER316-Spring-2018/src/main/jav...	
Number of Classes (avg/max per packageFragment)	230	25.556	29.833	92	/SER316-Spring-2018/src/main/jav...	
Number of Interfaces (avg/max per packageFragment)	16	1.778	3.292	11	/SER316-Spring-2018/src/main/jav...	
Number of Packages	9					
Total Lines of Code	22537					
Method Lines of Code (avg/max per method)	15635	10.768	28.219	346	/SER316-Spring-2018/src/main/jav...	jbInit

Desktop 7:42 PM 4/29/2018

After

7.)



eclipse workspace   Eclipse

File Edit Navigate Search Project Run Window Help

Problems Javadoc Declaration Console Metrics - SER316-Spring-2018 - McCabe Cyclomatic Complexity (avg/max per method)

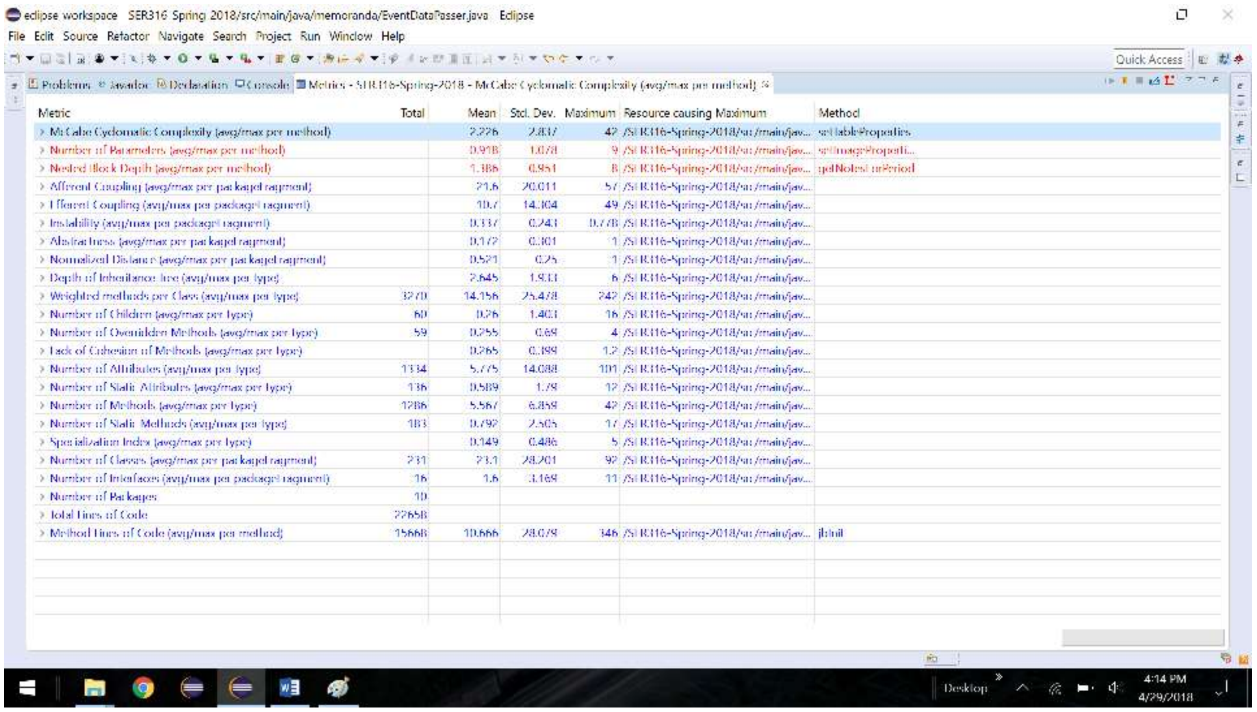
Metric	Total	Mean	Std. Dev.	Maximum	Resource causing Maximum	Method
McCabe Cyclomatic Complexity (avg/max per method)		2.24	2.851	42	/SER316-Spring-2018/src/main/jav...	setTableProperties
Number of Parameters (avg/max per method)		0.928	1.097	9	/SER316-Spring-2018/src/main/jav...	setImageProperti...
Nested Block Depth (avg/max per method)		1.19	0.955	8	/SER316-Spring-2018/src/main/jav...	getNoteForPeriod
Afferent Coupling (avg/max per packageFragment)		21.6	20.011	57	/SER316-Spring-2018/src/main/jav...	
Efferent Coupling (avg/max per packageFragment)		10.6	14.263	49	/SER316-Spring-2018/src/main/jav...	
Instability (avg/max per packageFragment)		0.335	0.243	0.778	/SER316-Spring-2018/src/main/jav...	
Abstractness (avg/max per packageFragment)		0.172	0.301	1	/SER316-Spring-2018/src/main/jav...	
Normalized Distance (avg/max per packageFragment)		0.522	0.251	1	/SER316-Spring-2018/src/main/jav...	
Depth of Inheritance Tree (avg/max per type)		2.652	1.934	6	/SER316-Spring-2018/src/main/jav...	
Weighted methods per Class (avg/max per type)	3253	14.143	25.533	242	/SER316-Spring-2018/src/main/jav...	
Number of Children (avg/max per type)	60	0.261	1.405	16	/SER316-Spring-2018/src/main/jav...	
Number of Overridden Methods (avg/max per type)	59	0.257	0.691	4	/SER316-Spring-2018/src/main/jav...	
Lack of Cohesion of Methods (avg/max per type)		0.262	0.398	1.2	/SER316-Spring-2018/src/main/jav...	
Number of Attributes (avg/max per type)	1326	5.765	14.118	101	/SER316-Spring-2018/src/main/jav...	
Number of Static Attributes (avg/max per type)	136	0.591	1.783	12	/SER316-Spring-2018/src/main/jav...	
Number of Methods (avg/max per type)	1269	5.517	6.833	42	/SER316-Spring-2018/src/main/jav...	
Number of Static Methods (avg/max per type)	183	0.796	2.51	17	/SER316-Spring-2018/src/main/jav...	
Specialization Index (avg/max per type)		0.15	0.487	5	/SER316-Spring-2018/src/main/jav...	
Number of Classes (avg/max per packageFragment)	230	23	28.174	92	/SER316-Spring-2018/src/main/jav...	
Number of Interfaces (avg/max per packageFragment)	16	1.6	3.169	11	/SER316-Spring-2018/src/main/java/memoranda/interfaces	
Number of Packages	10					
Total Lines of Code	22584					
Method Lines of Code (avg/max per method)	15635	10.768	28.219	346	/SER316-Spring-2018/src/main/jav...	jbInit

Desktop 2:56 PM 4/29/2018

8.) Efferent on the project got better. Efferent got better because it is a measure of averages and since we split up the amount of dependencies between different packages it makes the overall look better.

Task 3

1.) Eliminated duplicate code in the createProject method of the ProjectManager.java class. there were two methods to create a project one with an ID and one without so I eliminated the one without and checked for empty ID.
2.) I added a class to pass data between the eventspanel and the event creation to eliminate the need for 8 parameters in the creation method and eliminate Primitive Obsession. I combined the relative info into one object to be able to maintain how it is handled


eclipse workspace SER316 Spring 2018/src/main/java/memoranda/EventDataPasser.java Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help
Quick Access
Problems Javadoc Declaration Console Metrics - SER316-Spring-2018 - McCabe Cyclomatic Complexity (avg/max per method)
Desktop
4:14 PM
4/29/2018

Metric	Total	Mean	Std. Dev.	Maximum	Resource causing Maximum	Method
McCabe Cyclomatic Complexity (avg/max per method)		2.226	2.837	42	/SER316-Spring-2018/src/main/jav...	setTableProperties
Number of Parameters (avg/max per method)		0.918	1.078	9	/SER316-Spring-2018/src/main/jav...	setImageProperti...
Nested Block Depth (avg/max per method)		1.386	0.951	8	/SER316-Spring-2018/src/main/jav...	getNotesForPeriod
Afferent Coupling (avg/max per packageFragment)		21.6	20.011	57	/SER316-Spring-2018/src/main/jav...	
Efferent Coupling (avg/max per packageFragment)		10.7	14.104	49	/SER316-Spring-2018/src/main/jav...	
Instability (avg/max per packageFragment)		0.337	0.243	0.778	/SER316-Spring-2018/src/main/jav...	
Abstractness (avg/max per packageFragment)		0.172	0.301	1	/SER316-Spring-2018/src/main/jav...	
Normalized Distance (avg/max per packageFragment)		0.521	0.25	1	/SER316-Spring-2018/src/main/jav...	
Depth of Inheritance Tree (avg/max per type)		2.645	1.933	6	/SER316-Spring-2018/src/main/jav...	
Weighted methods per Class (avg/max per type)	3270	14.156	25.478	242	/SER316-Spring-2018/src/main/jav...	
Number of Children (avg/max per type)	60	0.26	1.403	16	/SER316-Spring-2018/src/main/jav...	
Number of Overridden Methods (avg/max per type)	59	0.255	0.69	4	/SER316-Spring-2018/src/main/jav...	
Lack of Cohesion of Methods (avg/max per type)		0.265	0.399	1.2	/SER316-Spring-2018/src/main/jav...	
Number of Attributes (avg/max per type)	1334	5.775	14.088	101	/SER316-Spring-2018/src/main/jav...	
Number of Static Attributes (avg/max per type)	136	0.589	1.79	12	/SER316-Spring-2018/src/main/jav...	
Number of Methods (avg/max per type)	1286	5.567	6.859	42	/SER316-Spring-2018/src/main/jav...	
Number of Static Methods (avg/max per type)	183	0.792	2.505	17	/SER316-Spring-2018/src/main/jav...	
Specialization Index (avg/max per type)		0.149	0.486	5	/SER316-Spring-2018/src/main/jav...	
Number of Classes (avg/max per packageFragment)	231	23.1	28.201	92	/SER316-Spring-2018/src/main/jav...	
Number of Interfaces (avg/max per packageFragment)	16	1.6	3.169	11	/SER316-Spring-2018/src/main/jav...	
Number of Packages	10					
Total Lines of Code	22658					
Method Lines of Code (avg/max per method)	15668	10.666	28.079	346	/SER316-Spring-2018/src/main/jav...	jbInit

3.)
4.) The average number of parameters went from 3.928 to 3.918.
The depth of inheritance went down from 2.652 to 2.645
LCOM went from 3.262 to 3.265
Average number of parameters went down due to the fact that I created an intermediate object to handle the parameters for event creation and eliminated the long method parameter.