

Chair of Governors Training Tracker

CG4.5 - Testing

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09/01/2014

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Testing

Testing Strategy

I have split my testing strategies into three parts: navigation, functionality and validation. To test my entire program, I must be sure that these three things work as I designed them to. If a part of these critical sections of the program doesn't work then I will be able to outline them and fix them. Underneath each table I will talk about any bugs that I have encountered and what I will do to fix the bug.

Navigation

Navigation is important as it will decide as to whether or not the user will be able to access certain forms. I have decided to test the navigation buttons as so:

Test #	The Test	Expected Result	Actual Result	Action Needed
N1	Open Add Governor Form	To Open the Correct Form	It opens.	None.
N2	Open Add a Completed Course Form	To Open the Correct Form	It opens.	None.
N3	Open Remove a Category Form	To Open the Correct Form	It opens.	None.
N4	Open Edit a Course Form	To Open the Correct Form	It opens.	None.
N5	Open View Governors Form	To Open the Correct Form	It opens.	None.
N6	Open View Categories Form	To Open the Correct Form	It opens.	None.
N7	Open View Completed Courses by Course Form	To Open the Correct Form	It opens.	None.
N8	Close Remove Category Form Via Exit Button	Close the Form	Window closes.	None.
N9	Close Remove Governor Form Via Exit Button	Close the Form	Window closes	None.
N10	Close Main Window Via Exit Button	Close the Form	Window closes	None.

All of the navigation tests passed as expected so I don't have to fix any of the navigation functionality.

Functionality/Performance

Test #	The Test	Data Used	Expected Result	Actual Result	Action Needed
P1	Adding a Governor	John, Robinson, 11/11/2013, 11/11/2017	For the governor to populate the database.	The governor was added to the database.	No bugs, no action needed.
P2	Adding a Category	Testingcat1	For the category to populate the database.	The course "Testingcat1" was successfully added to the database.	Minor bugs, see below.
P3	Adding a Course	Testingcourse1, Testingcat1	For the course to populate the database.	The course "Testingcourse1" was added to the category "Testingcat1" in the database.	Minor bugs, see below.
P4	Adding a Completed Course	John Robinson, Testingcourse1, 15/11/2013	For the completed course to populate the database.	The course "Testingcourse1" was added to the database as being completed by governor "John Robinson"	Minor bugs, see below.
P5	View Completed Courses by Course	Testingcourse1	As the course was completed by governor "John Robinson", when the course "Testingcourse1" is selected, the course should show up in the table as being completed by the governor "John Robinson".	The correct governor was displayed by the correct course selected.	No bugs, no action needed.
P6	View Completed Courses by Governor	John Robinson	When the selected course "Testingcourse1" is selected, it should show "John Robinson" has having completed it.	The correct course was displayed by the correct governor selected.	No bugs, no action needed.
P7	View Governors	-	The governor records from the database should be displayed in the table correctly.	The governor records from the database are displayed in the table correctly.	No bugs, no action needed.
P8	Editing a Course	Testingcourse1 => Newcourse1	The course "Testingcourse1" should be renamed to "Newcourse1" in the database.	The course name was successfully edited.	No bugs, no action needed.
P9	Remove a Completed Course	Remove John Robinson's course	The course "Newcourse1" should be removed from governor "John Robinson" as being completed in the database.	The course was removed from the governor with no issues.	No bugs, no action needed.
P10	Removing a Category	Remove Testingcat1	When this category is removed, I expect the category "Testingcat1" to be removed from the database as well as the course linked to it "Newcourse1".	Both the category and the course were successfully removed from the database with no problems.	No bugs, no action needed.

Functionality Testing Notes:

P2:

Test number P2 displayed a small bug where there was no pop up window explaining to the user that the previous action was successful. To fix this, I would need to edit the source code and then include a condition that would check to see if operation was successful or not and display this to the user. There was also a spelling error on the "Add Category" button. This was resolved during the test runs. See the test run below for more information. The clear fields button only clears the field and not the category ID button. This can be fixed in the code by adding a line to the Clear Fields button method.

P3:

The test for adding a course was successful but three bugs were displayed. The first error was that an error and success window popped up when the course is successfully added. This was fixed by fixing the code. It was always displaying the error message after adding the course regardless of whether it failed. There was an empty ELSE statement that was meant to contain some code so I moved it into the ELSE statement. The second bug was that the category combo box was automatically populated with the first category in the table. This can be easily fixed but isn't critical so I've decided to move on with my testing and will come back to it if I have time. The final bug was that the "Clear Fields" button doesn't work at all. This can also be easily fixed but like the previous bug, it will be left for now and fixed later when I have time.

P4:

In this test, the only bugs that appeared were a label that didn't display the correct text and the "Clear Fields" button didn't work. I have since fixed the label by correcting it in my program and will correct the "Clear Fields" button when I have completed testing.

Validation

As my validation for strings are all contained in one class that I have created in my program, I will only test one instance of each string validation in my program. The remainder of my tests will consist of validation tests that are carried out in their own classes but the same test may appear in my program more than once. For example: Testing to see if a text field has been left blank. Because I am testing only the classes I have written myself, I won't be testing the external library which supplies the date chooser boxes.

Test #	The Test	Data Used	Expected Result	Actual Result	Action Needed
V1	First Name in Add Governor	See Test Data section.	For all test data to pass except erroneous.	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.
V2	Last Name in Add Governor	See Test Data section.	For all test data to pass except erroneous.	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.
V3	Course Name in Add Course	See Test Data section.	For all test data to pass except erroneous.	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.
V4	Category Name in Add Category	See Test Data section.	For all test data to pass except erroneous.	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.
V5	Test for First Name Field left Blank	See Test Data section.	For the validation to not allow a blank field.	A message is generated asking the user to fill in all the fields.	No action needed.
V6	Test for Category Name left Blank	See Test Data section.	For the validation to not allow a blank field.	A message is generated asking the user to fill in all the fields.	No action needed.
V7	Test for No Selected Item in Category Combo Box in Add Course	See Test Data section.	For the validation to not allow a blank field.	A message is generated asking the user to fill in all the fields.	No action needed.

Test Data

Below I will be explaining what test data I will be using. Each test will be split up by the test code from the tests in the testing strategy above. I will only be testing code that I have written myself.

First Name in Add Governor (V1)

Typical	Erroneous	Extreme	Result	Action Needed
Michael	James900#	Johnwillis	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.

Last Name in Add Governor (V2)

Typical	Erroneous	Extreme	Result	Action Needed
Henley	J4mes29~	St-Michaeljordanson	The typical data passed validation. The erroneous data did not pass validation. The extreme data did not pass validation.	No action needed.

Course Name in Add Course (V3)

Typical	Erroneous	Extreme	Result	Action Needed
Accounting	Acc000unting~	Accounting with maths	The typical data passes validation along with the extreme data. The erroneous data fails to pass validation.	No action needed.

Category Name in Add Category (V4)

Typical	Erroneous	Extreme	Result	Action Needed
Child Wellbeing	Ch1ldw3lb3ing``	Child care with foods	The typical data passes validation along with the extreme data. The erroneous data fails to pass validation.	No action needed.

Test for First Name Field left Blank in Add Governor (V5)

Typical	Erroneous	Result	Action Needed
Field will be filled in	Field will be left blank	An error message is generating prompting the user to fill in all fields.	No action needed.

Test for Category Name Field left Blank in Add Category (V6)

Typical	Erroneous	Result	Action Needed
Field will be filled in	Field will be left blank	An error message is generating prompting the user to fill in all fields.	No action needed.

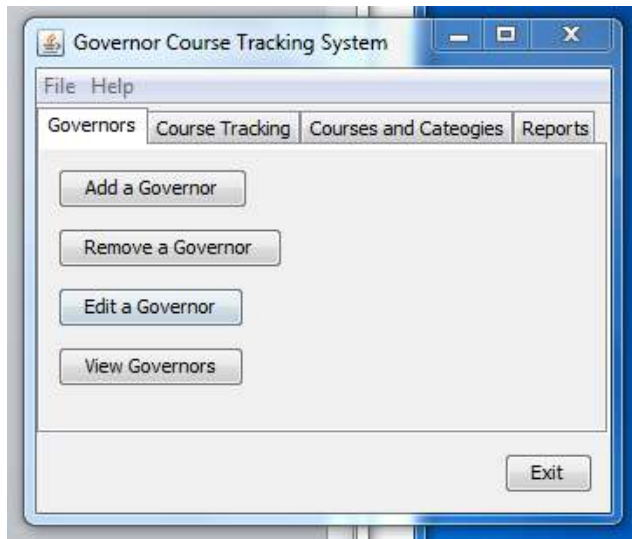
Test for no Selected Item in Category Combo Box in Add Completed Course (V7)

Typical	Erroneous	Result	Action Needed
Category will be selected	No category will be selected	An error message is generating prompting the user to fill in all fields.	No action needed.

Testing Runs

For my test runs, I will be running through what the user will first do when using the program as this will test the most commonly used functions by the user. Throughout these tests I will be using the data from the previous test as the data created in the test before would be carried forward by the user in proper usage of the program. My test data will be in line with what I believe my user will be inputting.

Adding a Governor (P1)



To the right, we see the governor panel of the main window. After pressing the "Add a Governor" button, we see the form below:

The image shows a screenshot of a dialog box titled "Add a Governor". The dialog box has a title bar with standard window controls. Inside, the text "Add a Governor" is at the top. Below it are four input fields: "First Name:", "Last Name:", "Election Date:", and "End Date:". To the right of the "First Name" field is a label "Governor ID: -". Below the input fields are three buttons: "Clear Fields", "Add Governor", and "Exit".

This form allows the user to input the information to add a governor. I will be adding the governor "John", "Robinson", "11/11/2013", "11/11/2017" in accordance with my testing data. I have used this data because I believe it to pass the validation tests and allow me to continue through my testing runs.

Add a Governor

First Name: Governor ID: -

Last Name:

Election Date:

End Date:

Above is the filled out form. Next, we click the “Add Governor” button to add it to the database.

Governor Added

Governor Added Successfully.

Add a Governor

First Name: Governor ID: 8

Last Name:

We get a confirmation message explaining that adding the governor was successful. There is also now a governor ID for this governor.

GovID	Firstname	Surname	ElectionDate	EndDate
4	Cappy	Mikek	2013-07-10	2013-07-28
5	Becky	Green	2013-09-09	2013-09-29
7	Micheal	Prihradaska	2010-12-13	2014-12-12
*				

Above is the governor table before the addition of the new governor to the database.

	GovID	Firstname	Surname	ElectionDate	EndDate
▶	4	Cappy	Mikek	2013-07-10	2013-07-28
	5	Becky	Green	2013-09-09	2013-09-29
	7	Micheal	Prihradaska	2010-12-13	2014-12-12
	8	John	Robinson	2013-11-11	2017-11-11
*	NULL	NULL	NULL	NULL	NULL

This is the table in the database after adding the governor. We can see clearly that John Robinson has been entered into the database and his ID is in fact 8. This test has passed.

The user might also then press the “Clear Fields” button. I have tested this button as the user may add multiple governors at once. After pressing the button, the fields were emptied like so:

Add a Governor

First Name: Governor ID: -

Last Name:

Election Date:

End Date:

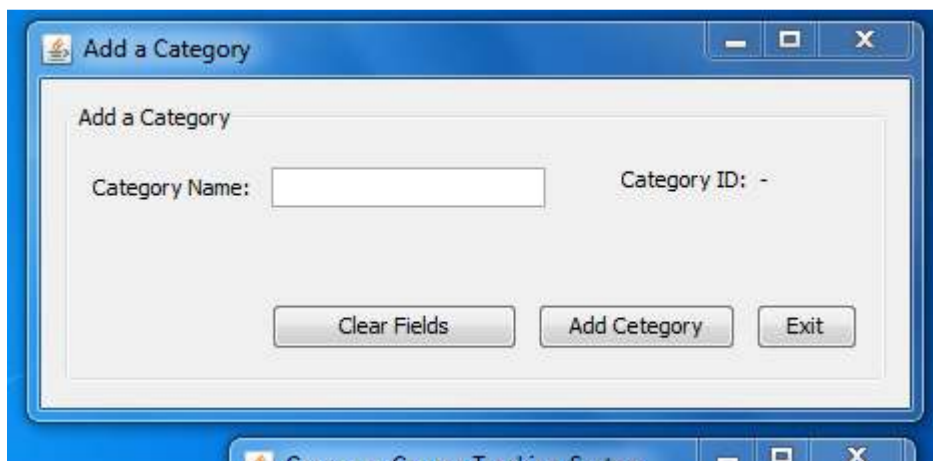
This button also works.

Adding a Category (P2)

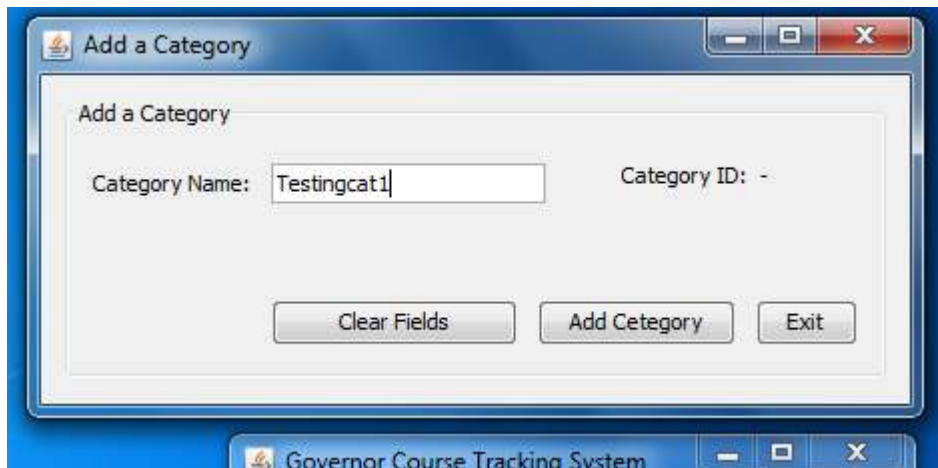
Before the user adds a course, they must add a category. This will ensure that the category combo box in the course form is populated with at least one category. The test data for this run through is "Testingcat1".



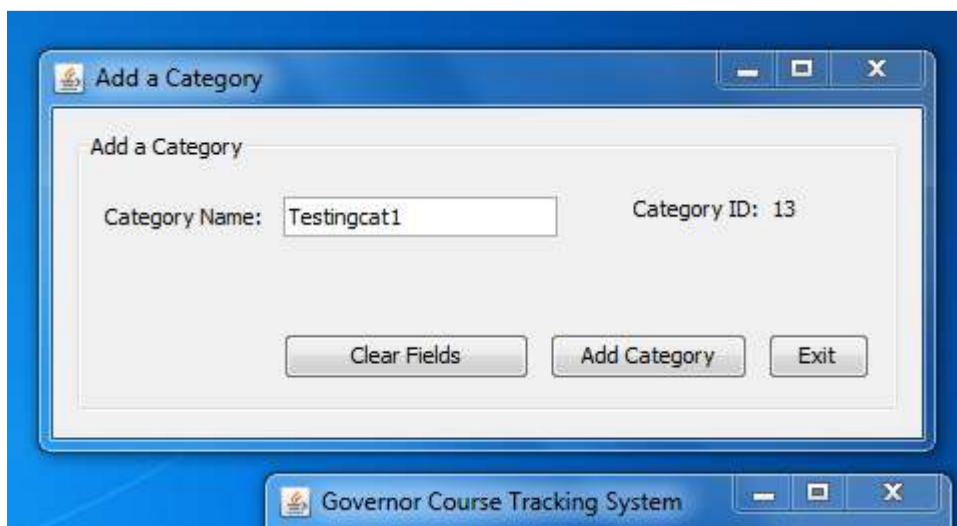
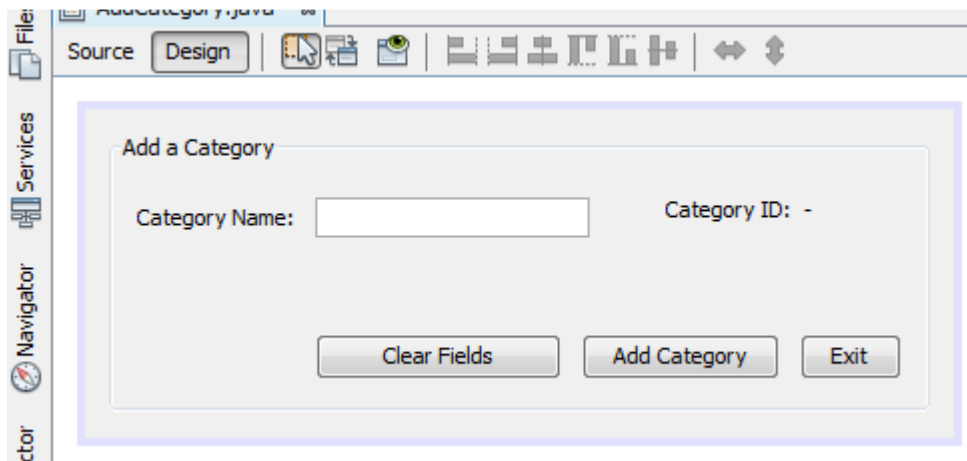
Above is an image of the "Courses and Categories" panel on the main form. To add a category, we must press the "Add a Category" button.



After pressing the button, we are taken to the Add a Category form. I will enter the test data like so:



Then I will press the “Add Cetegory” button. I have noticed here that there is a typo. This will be very easy to fix. Below I have taken a screenshot of the form in my IDE and edited the spelling mistake.



Above is the result of adding a category. After the category has been added, a unique ID is displayed. However, this time there is no confirmation screen. This would best be implemented to ensure the user has a clear understanding of the fact that they have added a category successfully.

The top screenshot shows a database table with the following data:

CatID	CategoryName
1	Core
2	Achievement of Pupils
3	Quality of Teaching
4	Quality of Leadership
5	Behaviour and Safety of Pupils
NULL	NULL

The bottom screenshot shows the same table after adding a new category:

CatID	CategoryName
1	Core
2	Achievement of Pupils
3	Quality of Teaching
4	Quality of Leadership
5	Behaviour and Safety of Pupils
13	Testingcat 1
NULL	NULL

To the left is the database table before the new category is added.

Above we see that it was indeed successfully added. The category ID is not 6 because there were other categories that I removed prior to testing. They were used the development stage as a means for testing to see if a function was working while I was creating it. Namely the remove function.

This test is a pass but there two bugs one of which I was able to fix right away, the other being an addition to the program by adding a confirmation screen. This would help the consistency of the program overall.

The 'Add a Category' dialog box contains the following elements:

- Title: Add a Category
- Category Name:
- Category ID: 13
- Buttons: Clear Fields, Add Category, Exit

I again tested the “Clear Fields” button to discover that my Category ID label doesn’t reset. This can be easily fixed.

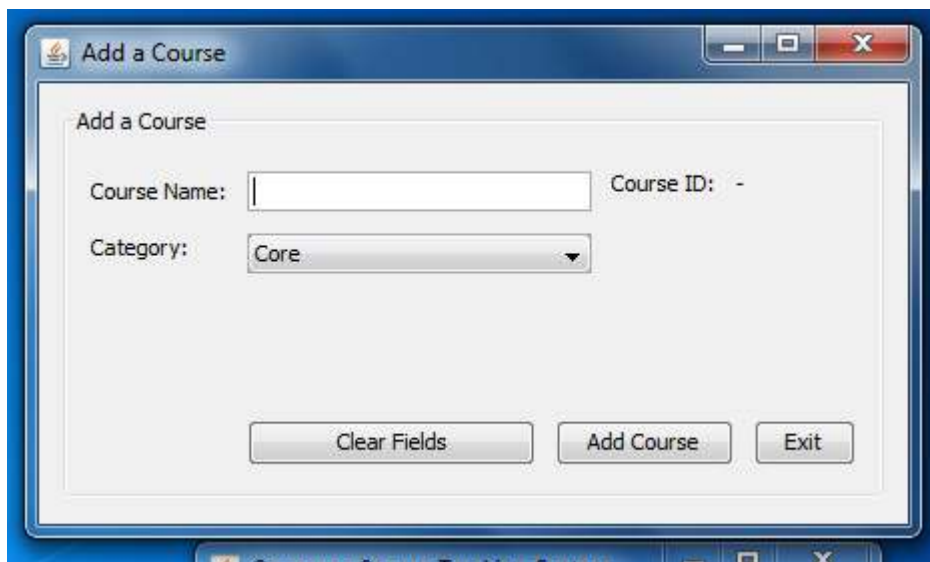
In conclusion, the test passed with 3 minor bugs.

Adding a Course (P3)

After adding a category, the next thing the user may do is add a course to the previously created category. I will be using the test data as outlined above. For adding a course this will be "Testingcourse1" and the category I will select is "Testingcat1".



Here we have an image of the "Courses and Categories" panel. We are going to add a course so we click the "Add a Course" button.



Here we have an image of the Add a Course form. The category combo box is already populated. This might cause an issue if the user forgets to select the category they want from the list. This is a bug and I will talk more about this in a bit.

Here I have filled out the form with the test data. I will click the “Add Course” button next.

Here, we have two error messages. One saying that the course was added successfully and one saying that there was an error adding the course.

CourseID	CatID	CourseName
1	1	Child Care
2	5	Finance
3	5	Risk Assessment
4	4	Leaming
NULL	NULL	NULL

On the left is the database table before adding the course.

SQL File 1* Query 1 governor category			
Filter:			Edit
	CourseID	CatID	CourseName
▶	1	1	Child Care
	2	5	Finance
	3	5	Risk Assessment
	4	4	Learning
	5	13	Testingcourse1
*	NULL	NULL	NULL

Here we can clearly see that the course was actually added to the database. This means that there's an error in the program that displays both error messages.

Add a Course

Course Name: Course ID: 5

Category:

Again I test the "Clear Fields" button but it doesn't clear any of the fields.

In conclusion, the test that I set out to complete was a pass, but there were a few bugs that would confuse the user. These bugs were: The combo box was automatically populated with a category, there was a success and fail message on adding a course and the "Clear Fields" button doesn't work. The main bug here being the error message should be fixed before giving it to the user. I have set out to fix it below:

```
else{
    //if there's an error present
}
UserMessageBox MyMessage = new UserMessageBox();
MyMessage.setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);
MyMessage.setMessage("Error Adding Course.");
MyMessage.setTitle("Error Adding Course");
MyMessage.setVisible(true);
}
```

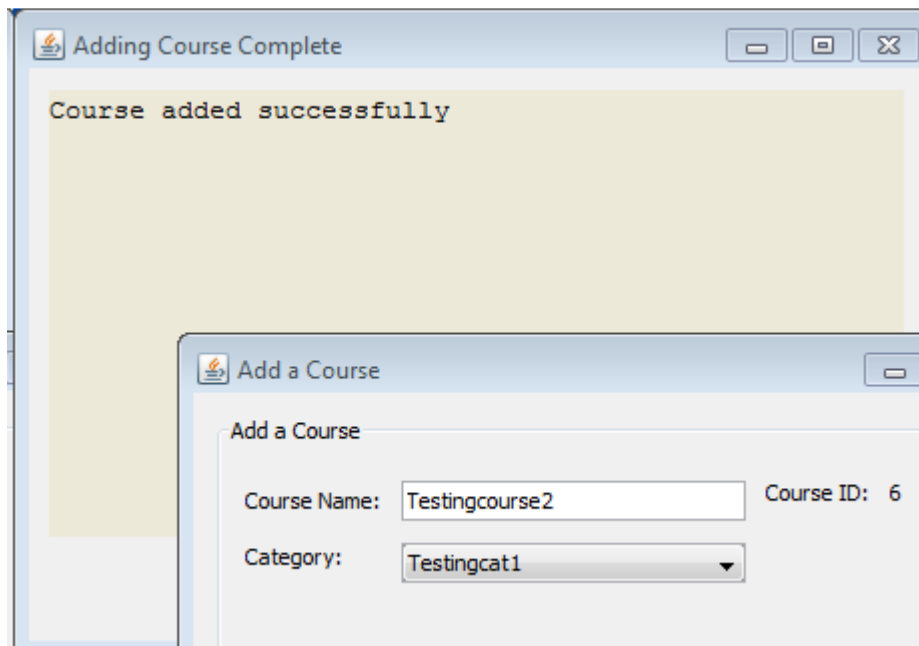
Here, we have the code where the error message is displayed. If I take the error message block of code and move it into the ELSE statement, it should fix the issue.

```

else{
    //if there's an error present
    UserMessageBox MyMessage = new UserMessageBox();
    MyMessage.setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);
    MyMessage.setMessage("Error Adding Course.");
    MyMessage.setTitle("Error Adding Course");
    MyMessage.setVisible(true);
}

```

I have moved the code into the ELSE statement.



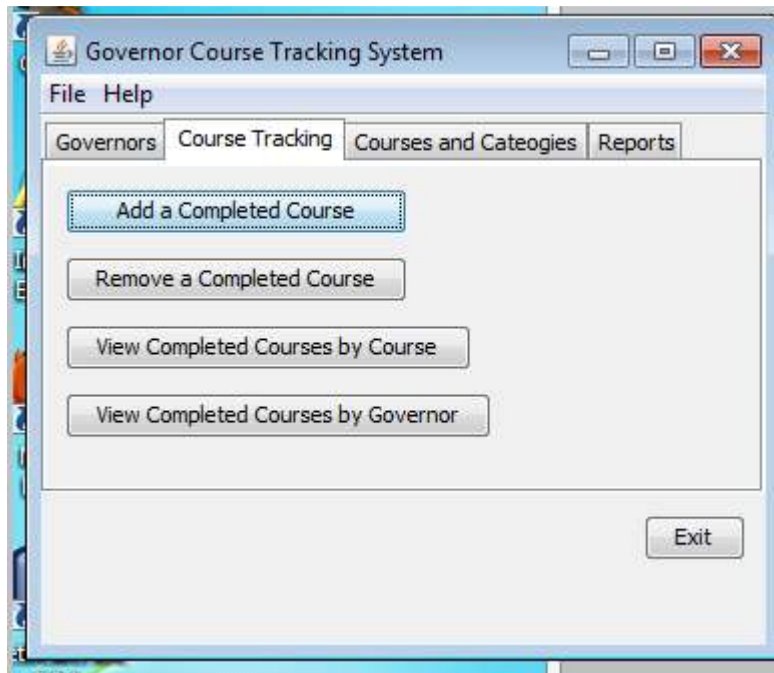
The result of this fix is that the error window no longer pops up when the adding was successful. This bug has now been fixed.

Query 1 JoinScript course x			
Filter: [] Edit []			
	CourseID	CatID	CourseName
▶	1	1	Child Care
	2	5	Finance
	3	5	Risk Assessment
	4	4	Learning
	5	13	Testingcourse1
	6	13	Testingcourse2
*	NULL	NULL	NULL

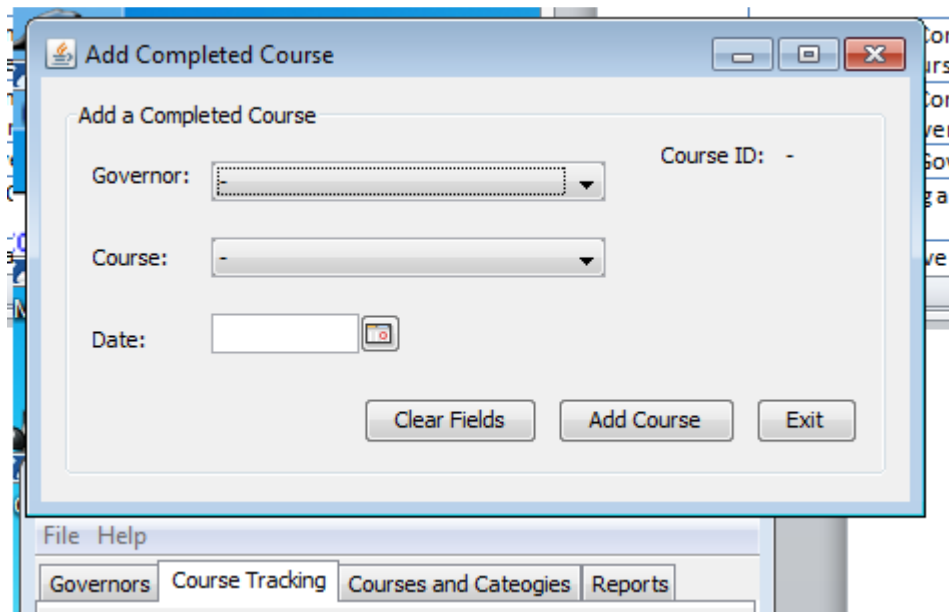
This next image just shows that adding the course to the database was successful.

Adding the Course to the Governor (P4)

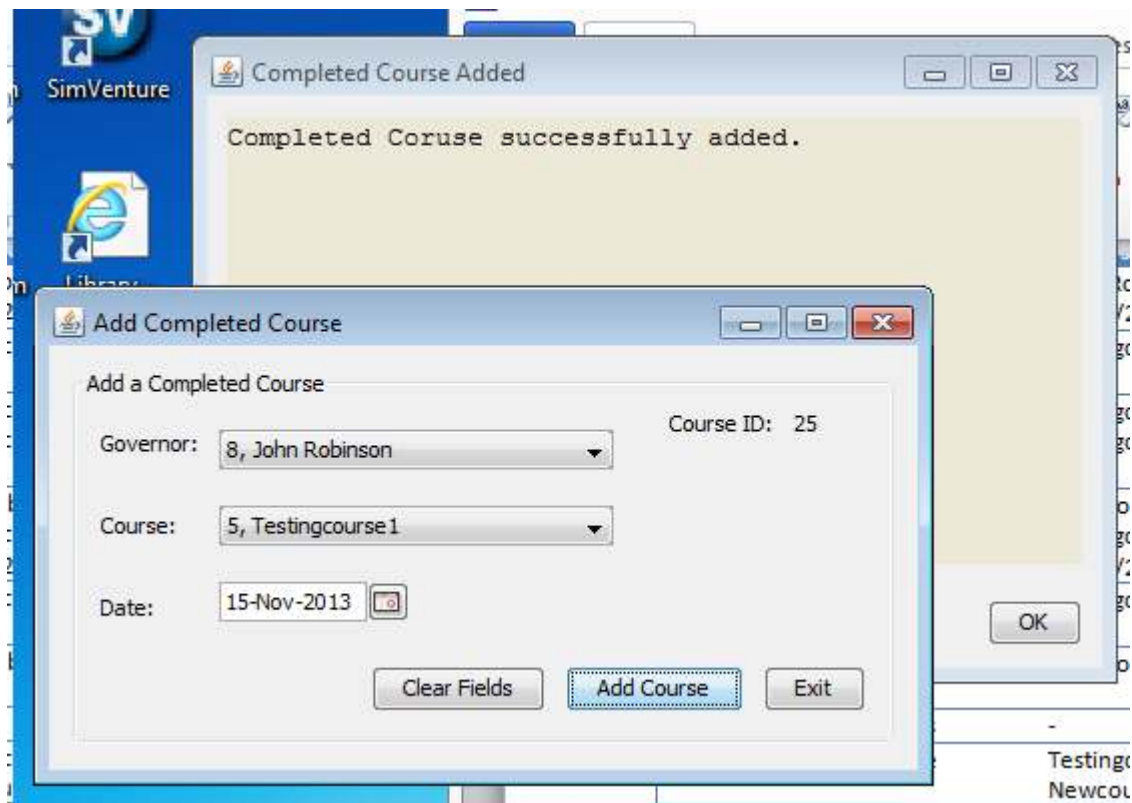
This test combines the Governor and the newly added course to be placed in the completed course table. My test data for this test is: "John Robinson", "Testingcourse1", "15/11/2013".






To add a completed course, we need to click the button "Add a Completed Course".



After pressing the button we are faced with this form. In this form we can select a governor, then a course and a date for when the course was completed.



I have entered my test data as above and pressed the “Add Course” button to add it to the database. It will show the user the completed course ID and a success message to ensure the user knows that the action was completed with no errors. I have noticed here that the “Course ID” label should read “Completed Course ID”. This can be fixed easily in my IDE. Here I also found that my “Clear Fields” button is not working once again.

SQL File 1* course coursetaken X				
Filter:				Edit:   
	TakenID	GovID	CourseID	DateTaken
	13	4	3	2013-09-20
	16	4	1	2013-09-20
▶	24	4	4	2013-10-23
*	NULL	NULL	NULL	NULL

The image above displays the database table before adding the new completed course.

Query 1 JoinScript course coursetaken x				
Filter:				
	TakenID	GovID	CourseID	DateTaken
▶	13	4	3	2013-09-20
	16	4	1	2013-09-20
	24	4	4	2013-10-23
	25	8	5	2013-11-15
*	NULL	NULL	NULL	NULL

As we can see from the database screenshot above, the completed course was indeed successfully added to the database.

Add Completed Course

Add a Completed Course

Governor: Completed Course ID:

Course:

Date:

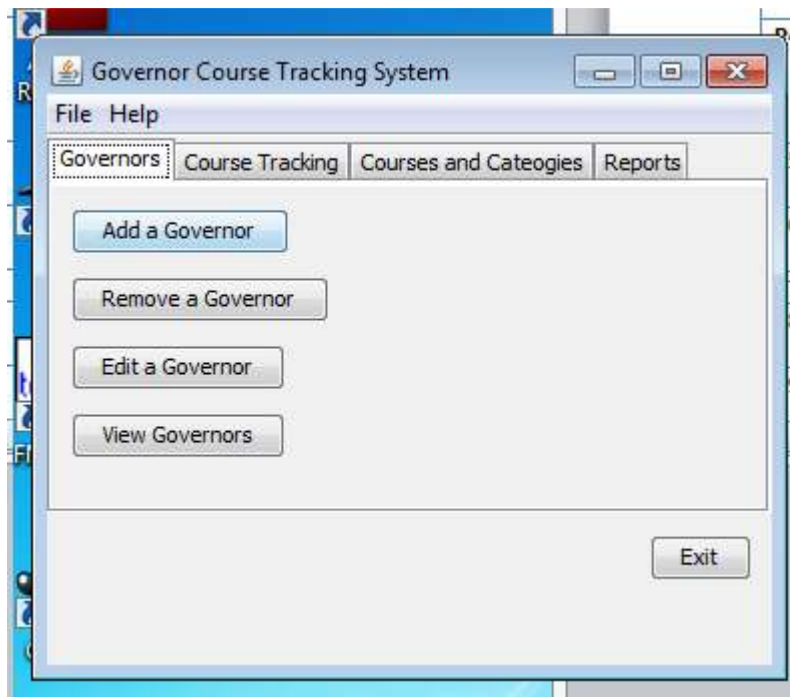
Clear Fields Add Course Exit

Above we can see that I have fixed the label.

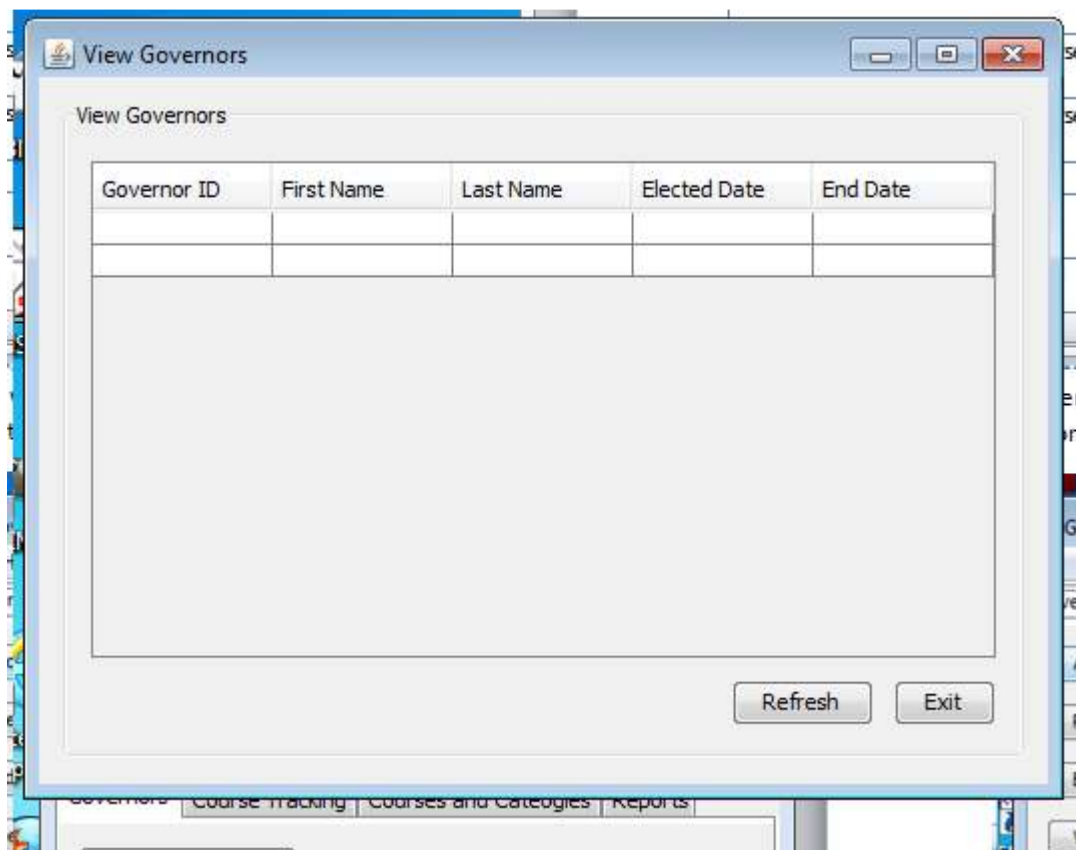
In conclusion, the main function that I set out to test works just as intended but two bugs appeared, one of which I was able to fix. The Clear Fields button bug will be fixed at the end of testing.

Viewing the Governor (P7)

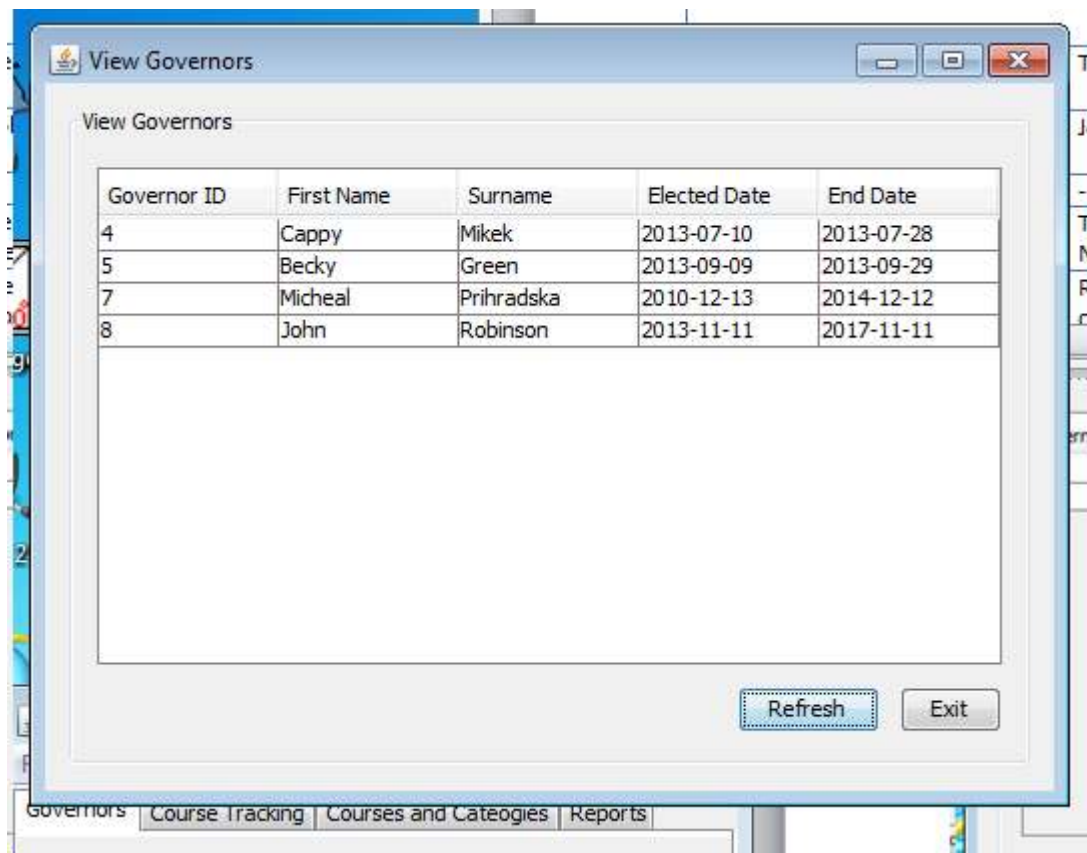
The user will want to see a list of all the governors in the system at some point so I will test this function to make sure it is working.



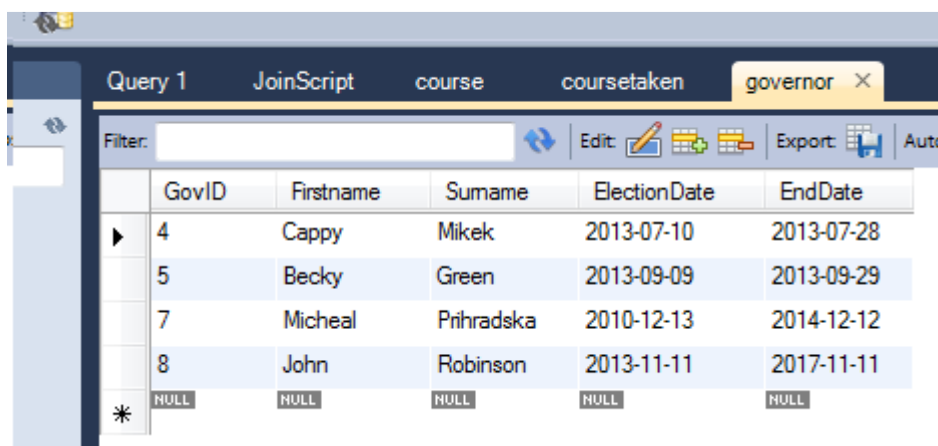
Above is a picture of the governor panel once again and we will click the "View Governors" button to open the view governors form.



We are then faced with this form. In the bottom right hand corner we see a refresh button. Once this button is pressed, it should access the database and populate this table with all the governor records for the user.



Above we see that our governor "John Robinson" is displayed in the table.

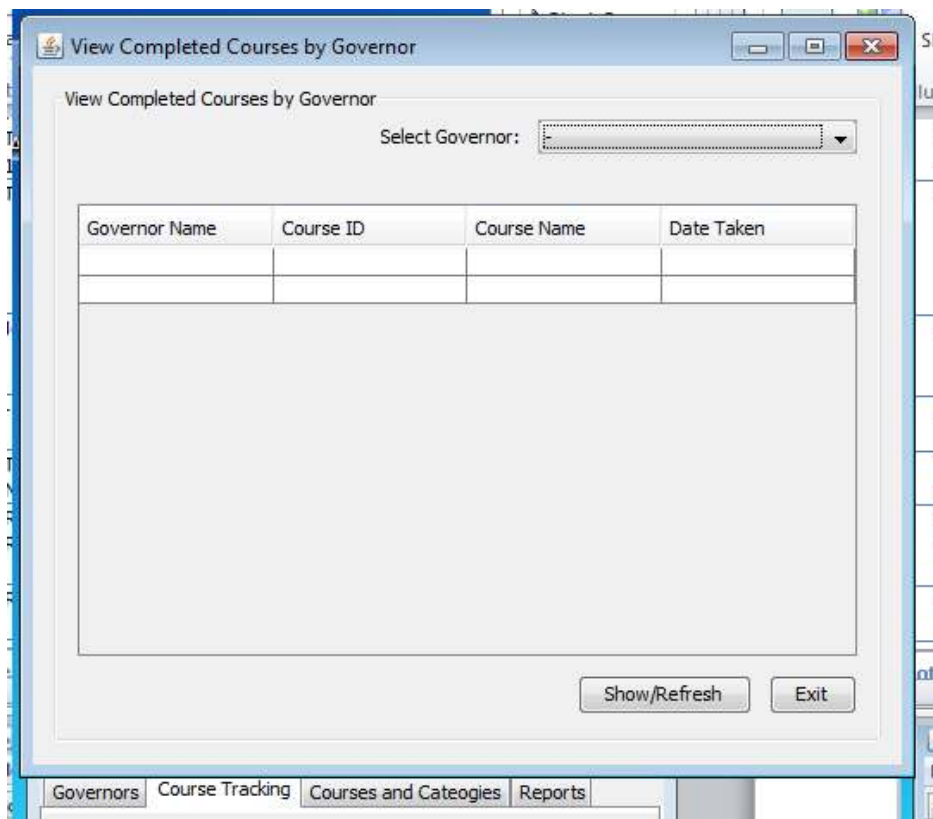
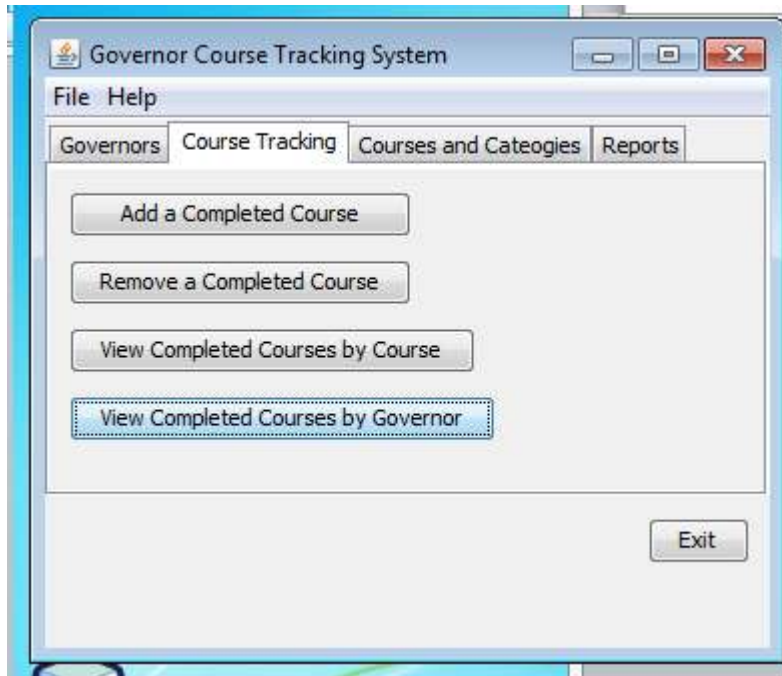


This directly matches our database as all the governor records are correct.

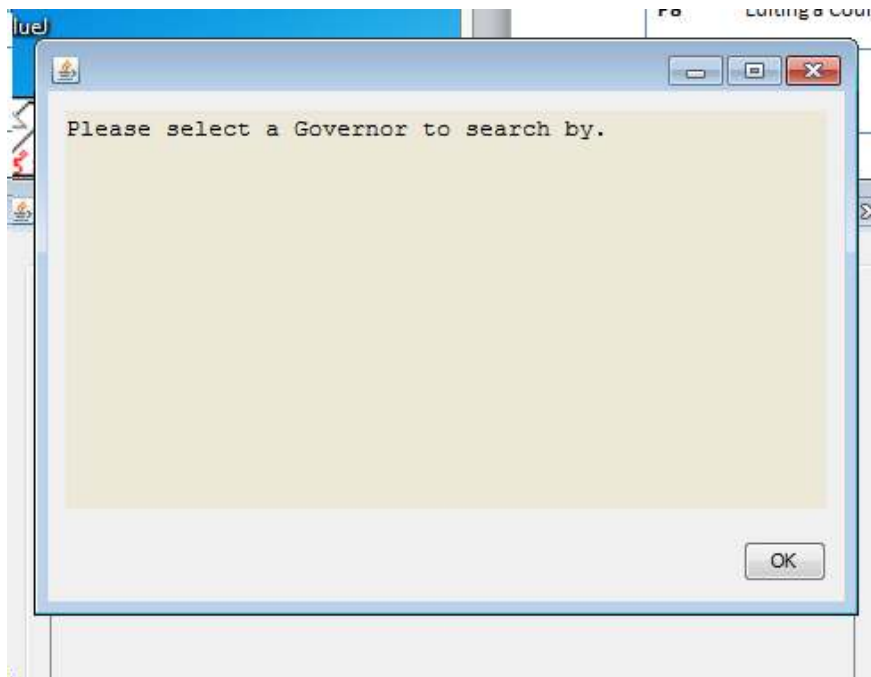
In conclusion, this test was a success.

Viewing the Courses Completed by the Governor (P6)

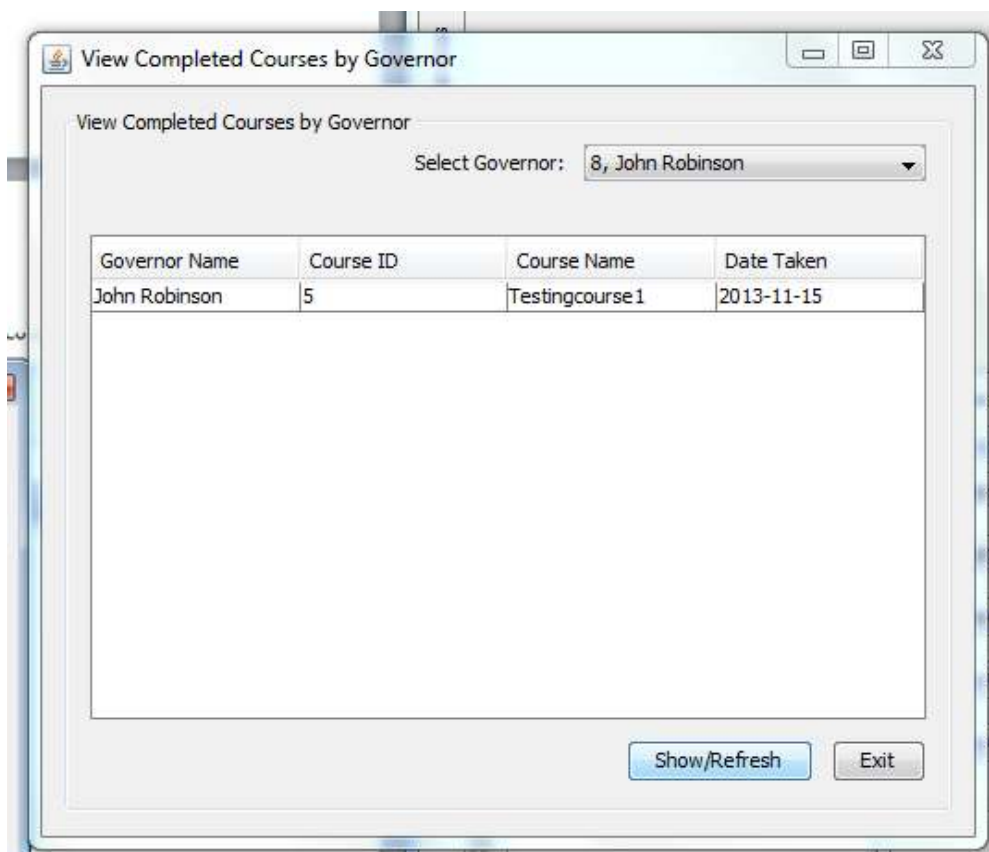
The user is likely to want to see what courses a given governor has completed. We are going to see if the governor “John Robinson” has completed the course “Testingcourse1”. To do this, we open the “View Completed Courses by Governor” form from the Course Tracking panel.



Now I can press the “Show/Refresh” button.



Above is the result of a mistake I made. When I pressed the “Show/Refresh” button I hadn’t actually selected a governor. This shows that some of my validation is working.



Above is a screenshot of the result of searching by governor. I know this is the only course they have completed because it’s the only course we’ve added to this governor throughout the test runs.

This test is a pass and shows some of my validation.

Incorrect Validation Display

There is an example of some validation in my previous test run.

Here I will put a test run of tests V1 through V4

Test V1 + V2

Because the tests V1 and V2 take place in the same form, I will conduct the test runs at the same time.

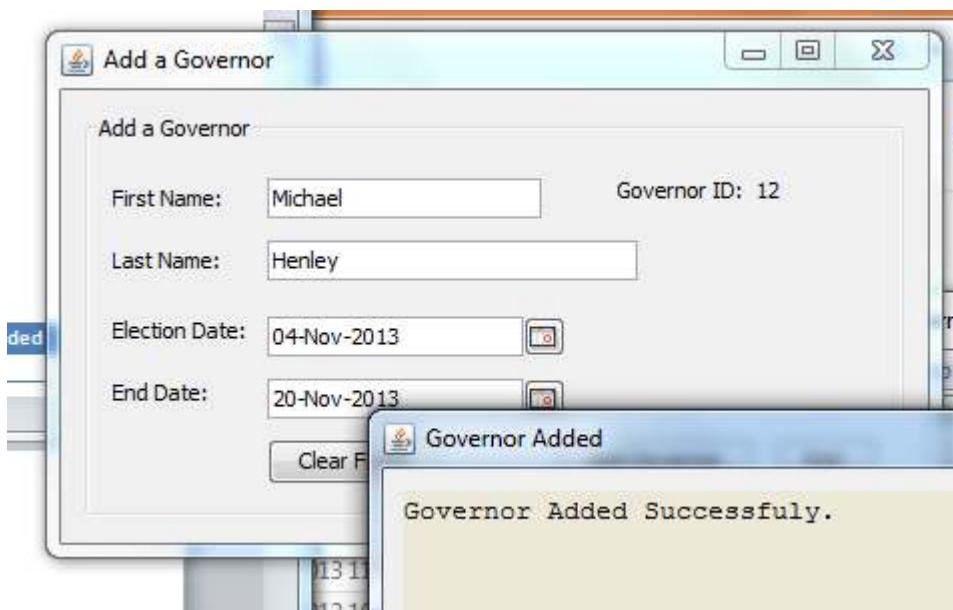
Typical Data

I will show typical data first.



The screenshot shows a Windows-style dialog box titled "Add a Governor". Inside the dialog, there are four text input fields: "First Name" containing "Michael", "Last Name" containing "Henley", "Election Date" containing "04-Nov-2013", and "End Date" containing "20-Nov-2013". To the right of the "First Name" field is a label "Governor ID: -". At the bottom of the dialog, there are three buttons: "Clear Fields", "Add Governor", and "Exit".

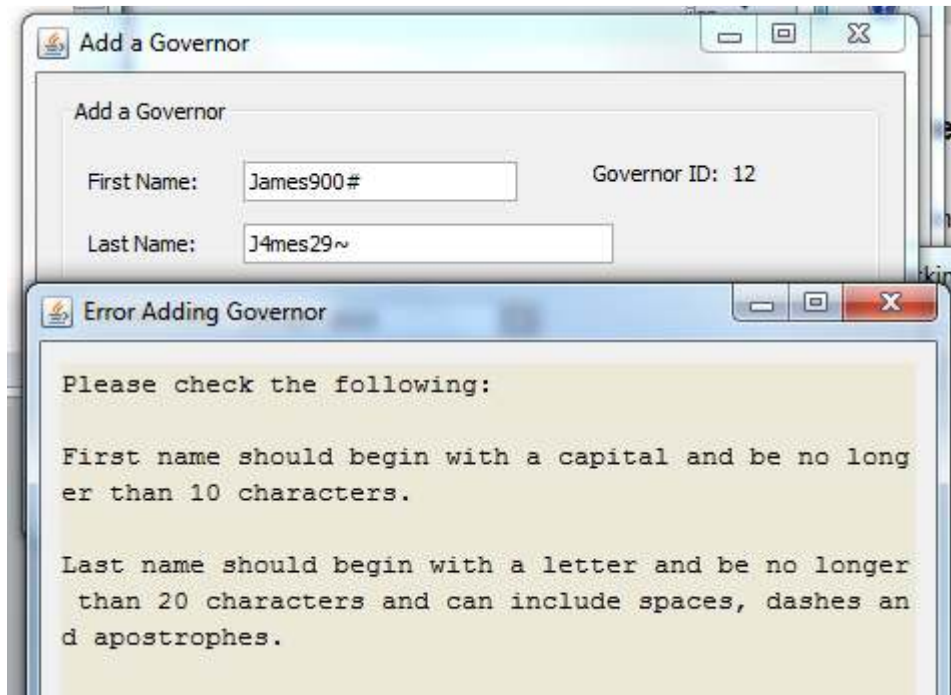
Above I have entered the typical data for the tests V1 and V2.



This screenshot shows the same "Add a Governor" dialog box, but with the "Governor ID" now set to "12". A smaller dialog box titled "Governor Added" is overlaid on top of the main dialog, displaying the message "Governor Added Successfully." in a monospaced font.

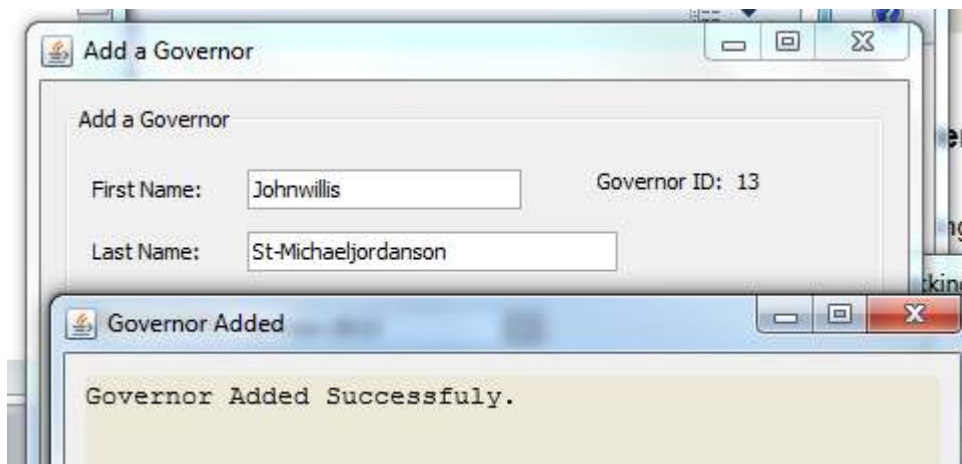
Here we see that the governor was added successfully and thus passed validation.

Erroneous Data



I have entered the erroneous data and it failed to pass validation and display an appropriate message to the user. The governor was not added to the database due to failing to pass validation.

Extreme

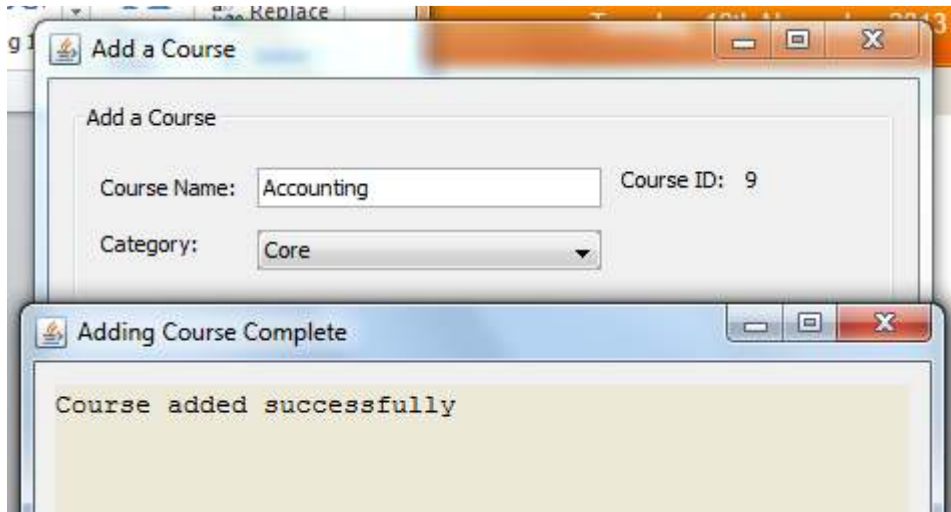


Here I have entered extreme data that should hit the bounds of what the validation rules should pass. This test passed. The governor was added to the database due to passing the validation.

Test V3

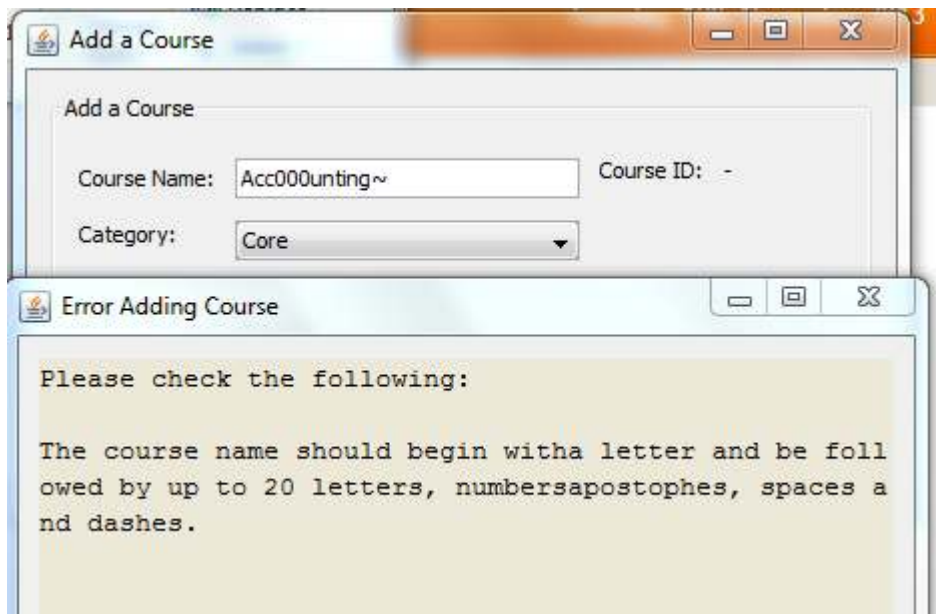
This test is similar to the previous test but tests the course name validation rule.

Typical



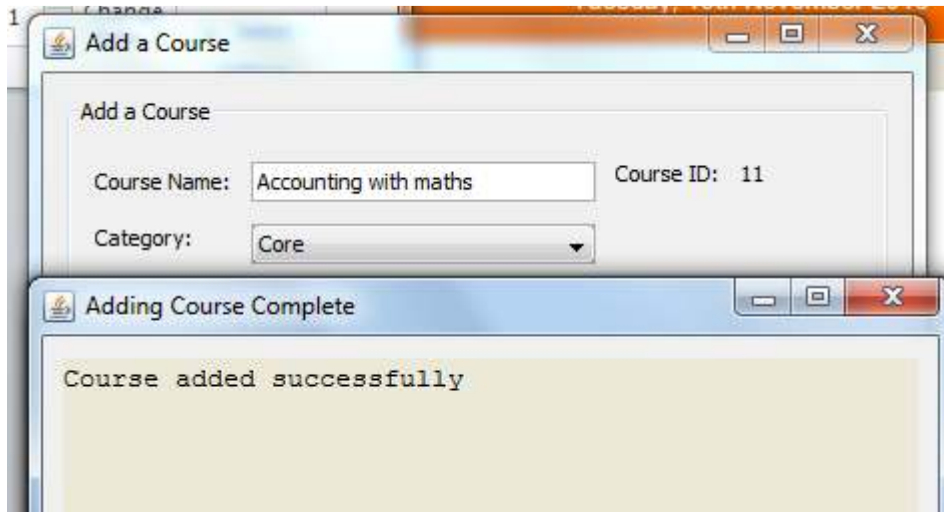
When typical data is entered, it passes validation and is added to the database successfully.

Erroneous



Above I have entered the erroneous data and attempted to add it to the database. This is the error message I get when erroneous data is input. This error message shows the user what the issue is so they can fix the issue.

Extreme

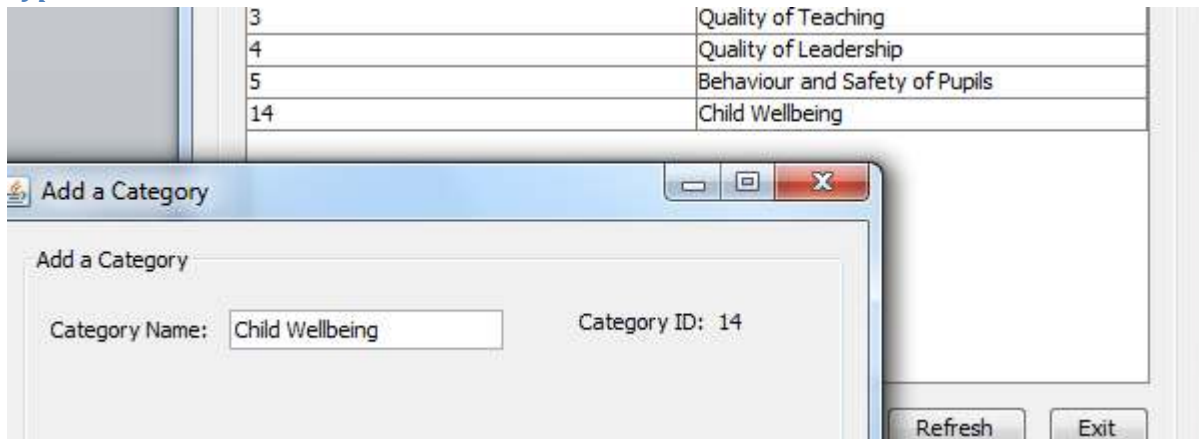


Here we see that the extreme boundary data is accepted by the validation and the new course is added to the database.

Test V4

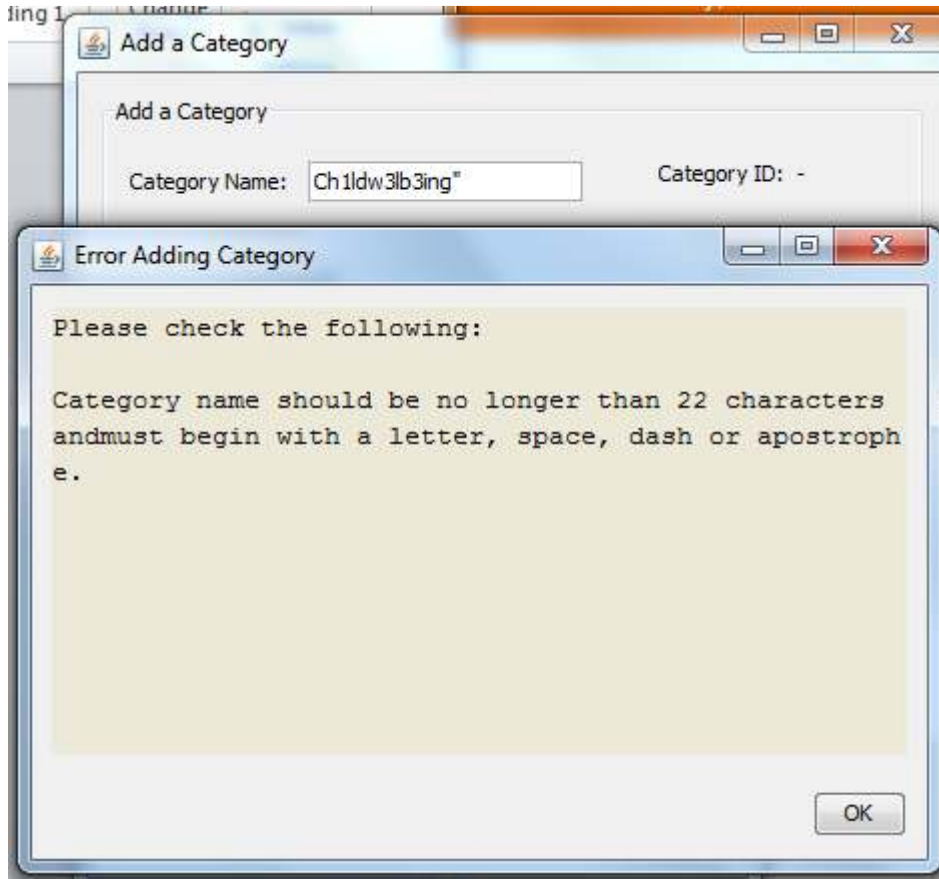
The final test that I will test run will be the adding a category. This is the final method in my validation class.

Typical



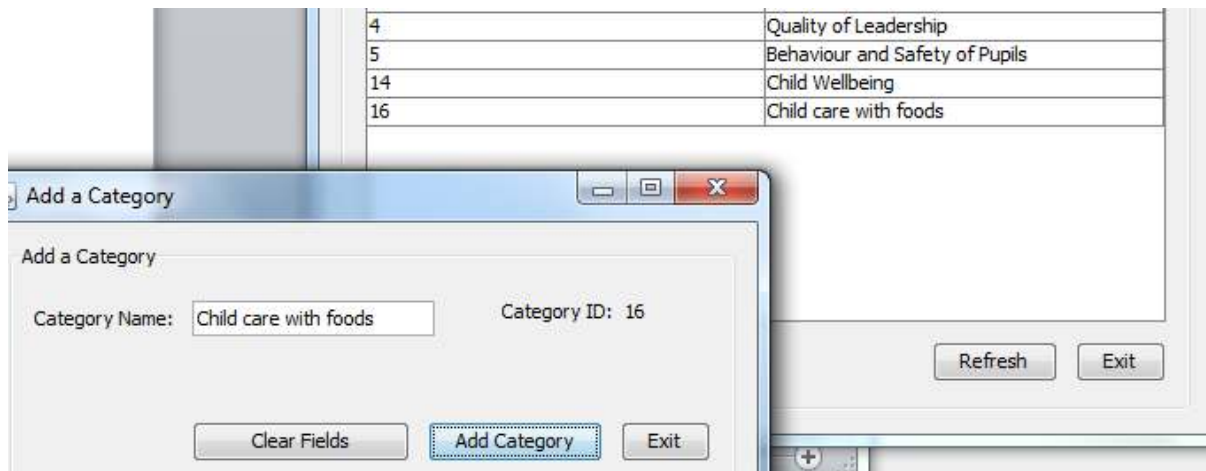
When testing my typical data, encountered the same bug as in test P2 where no confirmation message pops up. I have checked the database to ensure it was added. As you can see above, it was added successfully and passed validation.

Erroneous



The erroneous data did not pass the validation test and was not added to the database.

Extreme



Again, the extreme data passed validation but no confirmation message popped up. I checked the database and thus it was successfully added.