INDIVIDUAL TESTING REPORT

Acme ANS

DELIVERABLE 4

DESING AND TESTING 2

2024-2025

|  |  |
| --- | --- |
| Date | Version |
| 26/05/2025 | V1.0 |

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GitHub repository:<https://github.com/miggonort1/Acme-ANS-D04>

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## Executive summary

# This report presents the results obtained from the execution of both functional and performance tests. Its purpose is to demonstrate that the established methodology has been applied correctly and to explain the conclusions drawn from the testing process.

## REVISION TABLE

|  |  |  |
| --- | --- | --- |
| Revision Number | Date | Description |
| V1.0 | 26/05/2025 | First Version |

# 

## INTRODUCTION

# This report is structured in two sections: one focused on the analysis of functional testing, and the other on performance testing.

# Throughout the testing process, it was necessary to modify the authorization logic of a method that was not properly implemented. Additionally, following the performance tests, I applied indexing improvements based on the recommendations provided in the theoretical materials.

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### ​​ FUNCTIONAL TESTING

The tests were conducted following the methodology outlined in the theory slides, aiming to achieve the highest possible coverage.

During the execution of the tester#replayer launcher, numerous phantom requests were observed. However, these did not impact the test results or the level of coverage achieved.

Full (100%) coverage was not reached, primarily because lines such as assert object != null; are never triggered by a null value. Despite this, it is considered good practice to retain these assertions, as recommended.

Moreover, certain lines of code were not fully covered due to representing scenarios that cannot occur under normal execution. These lines have been deliberately preserved, and further details about them will be provide d where relevant.

**Flight Assignment**

Pantalla de computadora con letras

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* List-Completed

The test of the list-completed functionality consisted of viewing the list of pasts flight assignments which legs have already occured. For the hacking, an attempt was made to access this list without having sufficient permissions, in this case trying to log in a non-logged in user, a correct realm but wrong user and an incorrect realm. The coverage obtained was 100%.

* List-Planned

The test of the list-planned functionality consisted of viewing the list the list of flight assignments which legs are in the future, they have not already occured. For the hacking, an attempt was made to access this list without having sufficient permissions, in this case trying to log in a non-logged in user, a correct realm but wrong user and an incorrect realm. The coverage obtained was 100%.

* **Show**

The test of the show functionality consisted of viewing the details of a flight assignment. For the hacking, we tried to access this list without having sufficient permissions, in this case trying to log in with a user of another role and make a show of a flight assignment of which you are not the crew member associated and is not published and published, as well as trying to make a show of a flight assignment with an id that does not exist. The coverage obtained was 97.7%. The lines that are not fully cover are because of assertions as object!=null which are never covered.

Texto

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Una captura de pantalla de una computadora

El contenido generado por IA puede ser incorrecto.

Or sceneries that are tested in other features where become more importance than here for example a display of a “---” instead of a validation in case there is not enough legs available. Do not worry please, in the next features that line is covered because it takes relevance.

Interfaz de usuario gráfica, Texto, Aplicación, Chat o mensaje de texto

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* **Create**

The test of the create functionality consisted in creating flight assignments with all possible variations in their attributes including not allowed values to check that the appropriate error message is triggered. For the hacking we tried to create with a non-logged user, create above an id that already exists, create under a crew member who is on vacation or on leave, create modifying read-only attributes, select attributes ids, among others. The coverage obtained was 100.0%.

* **Update**

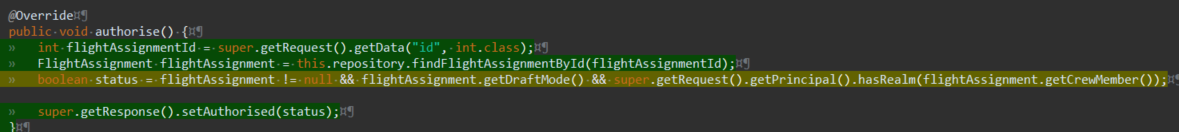
The test of the update functionality consisted in updating flight assignments with all possible variations in their attributes including not allowed values to check that the appropriate error message is triggered. For the hacking we tried to update with a non-logged user, also a non-existing flight assignment and it was also tested to try to update an published flight assignment with a user logged in as crew member, not as crew member and a crew member but who is not the owner of that flight assignment. The coverage obtained was 99.7%. The lines that are not fully cover are the same that in Show Feature (assertions as object!=null which are never covered)

Interfaz de usuario gráfica, Texto

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* **Delete**

The test of the delete functionality consisted in deleting a flight assignment. For the hacking we tried to delete a flight assignment without being logged in, also a non-existing flight assignment and we tried to delete a published flight assignment while logged in as crew member and without being owner of that flight assignment and without a correct realm. The coverage obtained was 97.1%. The lines that are not fully covered are because asserts object != null and the text showed on select because when I record those tests there were legs available so the validation “acme.validation.flightAssignment.crewMember.noAvailableLegs” not appeared.



Sitio web

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* **Publish**

The test of the update functionality consisted in publishing a flight assignment testing all possible variations in their attributes (as in sample-data.xlsx). For the hacking we tried to publish a flight assignment that was already published, also a non-existing flight assignment and we tried to publish an unpublished flight assignment while logged in as crew member without being owner of that flight assignment and logged in as another incorrect realm and also tried with a crew member on vacation or on leave. I also tried to modify select attributes and read only attributes. The coverage obtained was 99.8%. The lines that are not fully covered are because asserts object != null.

Interfaz de usuario gráfica, Texto

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As we can see here that text on selected are correctly displayed and tested in case the user wants to publish a flight assignment without selecting a proper leg.Texto

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**Activity Log**

**Texto

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* **List**

The test of the list functionality consisted of viewing the list of activity logs of a flight assignment considering that the leg associated of that flight assignment has already occurred. For the hacking, an attempt was made to access this list without having sufficient permissions, also we also tried to access the activity logs of an unpublished flight assignment from a user logged in as a crew member but who is not the owner of that flight assignment and try to access the activity logs of a non-existing flight assignment and also logged in with another incorrect realm. The coverage obtained was 100.0%.

* **Show**

The test of the show functionality consisted of viewing the details of an activity log. For the hacking, we tried to access this form without having sufficient permissions, in this case trying to log in with a user of another role and make a show of a activity log of which you are not the crew member, as well as trying to make a show of a activity log with an id that does not exist. The coverage obtained was 100.0%.

* **Create**

The test of the create functionality consisted in creating activity logs with all possible variations in their attributes including not allowed values to check that the appropriate error message is triggered. For the hacking we tried to create with a non-logged user, with a crew member that not owns that flight assignment, with a flight assignment which leg has not occurred yet, with a crew members on vacation or on leave, and with another role member. The coverage obtained was 100.0%.

* **Update**

The test of the update functionality consisted in updating activity logs with all possible variations in their attributes including not allowed values to check that the appropriate error message is triggered. For the hacking we tried to update with a non-logged user, also a non-existing activity log and it was also tested to try to update a published activity log with a user logged in as crew member but who is not the owner of that activity log and logged in with another role member. The coverage obtained was 100.0%.

* **Delete**

The test of the update functionality consisted in deleting an activity log. For the hacking we tried to delete an activity log with a non-existing activity log, with another crew member who is not the owner of that activity log, with another incorrect realm and we tried to delete a published activity log while logged in as crew member that owns that and without being owner of that activity log. The coverage obtained was 97.0%. The lines that where not fully covered it’s because there were not flight assignments in the past that were not published because every completed flight assignment that were planned if it has already occurred it is moved to completed not draft mode. (Impossible scenarie)

Texto

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* **Publish**

The test of the publish functionality consisted in publishing an activity log. For the hacking we tried to publish an activity log that was already published, also a non-existing an activity log and we tried to publish an unpublished an activity log while logged in as crew member without being owner of that an activity log. Also tried tu modify select attributes and read only attributes. The coverage obtained was 98.8% because of the same reasons as I explained before, impossible sceneries.

Texto

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And also this line, because when you want to publish the validation of “after leg” has already been proved while creating so there’s never a case in which it would be “before leg” but we need to kept it to make appear showAction button. (Impossible scenarie)

Imagen que contiene interior, sostener, oscuro, computadora

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### PERFORMANCE TESTING

All the excels generated are in D04 folder. During the performance analysis, the performance before and after the indexes were implemented was analyzed.

* Analysing performance

Average of the times obtained before the implementation of indexes:

Imagen que contiene Aplicación

El contenido generado por IA puede ser incorrecto.As can be seen, the grand average is 25.3 milliseconds before the implementation of indexes. It can also be seen that the methods with the highest average milliseconds are /crew-member/flight-assignment/list-planned and /crew-member/flight-assignment/show.

Average of the times obtained **after** the implementation of indexes:

Gráfico, Gráfico en cascada

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As can be seen, the grand average is 21.10 milliseconds after the implementation of indexes. After index addition, the methods with the highest average milliseconds are /crew-member/flight-assignment/list-planned and /crew-member/flight-assignment/publish.

Comparison of the analyses obtained before and after the implementation of the indexes:

Tabla

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This are the basic statistics of my performance data. To compute the confidence intervals I performed a Z-Test.

**Z-test analysis:**

**Tabla

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After the z-test the p-value (Valor critico de z (dos colas) the 8th row ) is in the interval [0.00, alpha), where alpha = 0.05. Therefore, my changes have obtained a relevant improvement. We can see that the average after the changes is smaller, so that means that I’ve managed to improve performance.

I’ve have also run my test suite on my partner’s computer (Javier Rodríguez) to check in which computer my tests go better.

Tabla

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As we can see, my computer executes tests faster than my partner’s computer although the difference is not too much.

* Profiling software

**Interfaz de usuario gráfica, Texto, Aplicación

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The method that takes more time to complete is the “unbind” method in the flight assignment create service. Realize that the self-time is zero milliseconds. That means that it’s not my method that is consuming too much time, but the methods that it invokes.

* Profiling hardwareInterfaz de usuario gráfica

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This was the result obtained after profiling hardware.

The memory of this computer is being moderately used, but it is not a clear bottleneck, the CPU and the network are little used, so they are far from a bottleneck as well as the other components.

## CONCLUSIONS

# Everything went as expected.

## BIBLIOGRAPHY

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