**Testing report**

**Acme Ans D04**

**Dibujo animado de un personaje animado

El contenido generado por IA puede ser incorrecto.**

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**C1.023**

**https://github.com/ManunGar/Acme-ANS-D04  
Seville may 25, 2025**

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# 1. Executive Summary

This document presents the outcomes of the tests conducted on the functionalities developed by student 4 for the customer assistance agent within the Acme ANS system. The functional tests were designed to verify the system’s correct behavior under various scenarios, including valid inputs, invalid and unauthorized access, ensuring that the established validations were met without detecting critical errors.

Additionally, performance tests were performed on two different devices. The recorded response times were statistically analyzed, including the calculation of 95% confidence intervals and mean comparisons using a Z-test, to assess the system’s efficiency across different environments.

The results obtained lead to the conclusion that the tested functionalities are robust, stable, and adequately fulfill the established requirements from both a functional and performance perspective.

# 2. Revision table

| **Version** | **Date** | **Description** |
| --- | --- | --- |
| 0.0 | 23/05/2025 | Initial version |
| 1.0 | 24/05/2025 | Implementing Functional Testing |
| 2.0 | 25/05/2025 | Implementing Performance Testing |

# 3. Introduction

The purpose of this report is to document and evaluate the functional and performance testing conducted on the system developed as part of the Acme ANS project, focusing specifically on the functionalities related to the AssistanceAgent role. These tests were carried out by Student 4 and involve essential operations concerning the Claim and TrackingLog entities.

Functional tests were organized based on systematic validation criteria to guarantee the system operates correctly under various usage scenarios. Concurrently, performance tests were conducted on multiple devices, with the collected data undergoing statistical analysis to draw meaningful conclusions about the application’s efficiency across different technical environments.

This report offers a thorough overview of the quality assurance process, providing valuable insights for assessment and ongoing improvement.

# 4. Functional Testing

In this section, the different test cases carried out by Student 4, corresponding to requirements 8 and 9, will be presented. The description of the test case, the result of the test case, and the effectiveness of finding bugs will be displayed.

## 4.1 Test cases for list features

|  |  |  |
| --- | --- | --- |
| Description | Result | Bugs detected |
| List Claims not resolved | All claims not resolved belonging to an assistance agent were shown | None |
| List Claims resolved | All claims resolved belonging to an assistance agent were shown | None |
| List Claims not resolved that don't belong to the authenticated assistance agent | An error appeared access not authorise | None |
| List Claims resolved that don’t belong to the authenticated assistance agent | An error appeared access not authorize | None |
| List claims not resolved with another user who is not an assistance agent | An error appeared access not authorise | None |
| List claims resolved with another user who is not an assistance agent | An error appeared access not authorise | None |
| List trackingLogs of a claim that belongs to the authenticated assistance agent | All tracking logs belonging to that claim where shown | None |
| List tracking logs of a claim that don’t belongs to the authenticated assistance agent | An error appeared access not authorise | None |
| List tracking logs of a claim with another user who is not an assistance agent | An error appeared access not authorise | None |

## 4.2 Test cases for show features

|  |  |  |
| --- | --- | --- |
| Description | Result | Bugs detected |
| Show a claim | The data related to that claim was shown | None |
| Show a claim that doesn't belong to the authenticated assistance agent | An error appeared access not authorise | None |
| Show a claim with another user who is not an assistance agent | An error appeared access not authorise | None |
| Show a tracking log | The data related to that tracking log was shown | None |
| Show a tracking log of a claim that does not belong to the authenticated assistance agent | An error appeared access not authorise | None |
| Show a tracking log of a claim with another user who is not an assistance agent | An error appeared access not authorise | None |

## 4.2 Test cases for create features

|  |  |  |
| --- | --- | --- |
| Description | Result | Bugs detected |
| Create a claim with all fields empty | The system prevented the creation of the claim with non-blocking errors | None |
| Create a claim with a leg that shouldn't be accessible to the assistance agent | An error appeared access not authorise | None |
| Create a claim with an invalid passenger email | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Create a claim with a valid passenger email | The system allowed the creation of the claim | None |
| Create a claim with an invalid description | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Create a claim with a valid description | The system allowed the creation of the claim | None |
| Create a claim with a changed claim Type class value | An error appeared access not authorize | None |
| Create a claim without modifying the claim type class value(value withing the values listed) | The system allowed the creation of the claim | None |
| Create a claim by modifying the status (read-only value) | The system allowed the creation of the claim, it’s a transient value | None |
| Create a claim without modifying the status (read-only value) | The system allowed the creation of the claim | None |
| Create a tracking log with all fields empty | The system prevented the creation of the tracking log with non-blocking errors | None |
| Create a tracking log with an invalid step | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with a valid step | The system allowed the creation of the tracking log | None |
| Create a tracking log with an invalid percentage resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with a valid resolution percentage | The system allowed the creation of the tracking log | None |
| Create a tracking log with a changed AcceptedIndicator class value(status) | An error appeared access not authorize | None |
| Create a tracking log without modifying the AcceptedIndicator class value(value within the list used) | The system allowed the creation of the tracking log in the cases it should | None |
| Create a tracking log with an invalid resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with a valid resolution | The system allowed the creation of the tracking log in the cases it should | None |
| Create a tracking log with resolution percentage != 100.0 and status != PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage = 100.0 and status = PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage != 100.0 and status = PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Create a tracking log with resolution percentage = 100.0 and status != PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Create a tracking log with resolution percentage != 100.0 and something written in resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage = 100.0 and resolution empty | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage != 100.0 and resolution empty | The system allowed the creation of the tracking log | None |
| Create a tracking log with resolution percentage = 100.0 and something written in resolution | The system allowed the creation of the tracking log | None |
| Create a tracking log with resolution percentage != 100.0 and checkbox = true | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage = 100.0 and checkbox = true | The system allowed the creation of the tracking log in the cases it should | None |
|  | From this field to the end, we will have 1 tracking logs created for the same claim we are creating the new tracking log, tl1 |  |
| Create a tracking log with resolution percentage lower than tl1 | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with the resolution percentage higher than tl1 | The system allowed the creation of the tracking log | None |
| Create a tracking log with resolution percentage = 100.0 and the checkbox = true, when tl1.resolutionpercentage != 100.0 | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage = 100.0 and the checkbox = true, when tl1.resolutionpercentage = 100.0 and tl1 is not published | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Create a tracking log with resolution percentage = 100.0 and the checkbox = true, when tl1.resolutionpercentage = 100.0 and tl1 is published | The system allowed the creation of the tracking log | None |

4.3 Test cases for update features

|  |  |  |
| --- | --- | --- |
| Description | Result | Bugs detected |
| Update a claim with all fields empty | The system prevented the creation of the claim with non-blocking errors | None |
| Update a claim with a leg that shouldn't be accessible to the assistance agent | An error appeared access not authorise | None |
| Update a claim with an invalid passenger email | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Update a claim with a valid passenger email | The system allowed the creation of the claim | None |
| Update a claim with an invalid description | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Update a claim with a valid description | The system allowed the creation of the claim | None |
| Update a claim with a changed claim Type class value | An error appeared access not authorize | None |
| Update a claim without modifying the claim type class value(value withing the values listed) | The system allowed the creation of the claim | None |
| Update a claim by modifying the status (read-only value) | The system allowed the creation of the claim, it’s a transient value | None |
| Update a claim without modifying the status (read-only value) | The system allowed the creation of the claim | None |
| Update a tracking log with all fields empty | The system prevented the creation of the tracking log with non-blocking errors | None |
| Update a tracking log with an invalid step | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with a valid step | The system allowed the creation of the tracking log | None |
| Update a tracking log with an invalid percentage resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with a valid resolution percentage | The system allowed the creation of the tracking log | None |
| Update a tracking log with a changed AcceptedIndicator class value(status) | An error appeared access not authorised | None |
| Update a tracking log without modifying the AcceptedIndicator class value(value within the list used) | The system allowed the creation of the tracking log in the cases it should | None |
| Update a tracking log with an invalid resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with a valid resolution | The system allowed the creation of the tracking log in the cases it should | None |
| Update a tracking log with resolution percentage != 100.0 and status != PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with resolution percentage = 100.0 and status = PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with resolution percentage != 100.0 and status = PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Update a tracking log with resolution percentage = 100.0 and status != PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Update a tracking log with resolution percentage != 100.0 and something written in resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with resolution percentage = 100.0 and resolution empty | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with resolution percentage != 100.0 and resolution empty | The system allowed the creation of the tracking log | None |
| Update a tracking log with resolution percentage = 100.0 and something written in resolution | The system allowed the creation of the tracking log | None |
| Update a tracking log with resolution percentage != 100.0 and checkbox = true | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update a tracking log with resolution percentage = 100.0 and checkbox = true | The system allowed the creation of the tracking log in the cases it should | None |
| Update a tracking log that is published | An error appeared access is not authorize | None |
| Update a tracking log that doesn’t belong to the authenticated assistance agent | An error appeared access Is not authorize | None |
| Update a tracking log that doesn’t exist | An error appeared access is not authorize | None |
|  | From this field to the end, we will have 2 tracking logs created for the same tl1 and tl2, we will be updating tl2 |  |
| Update tl2 with resolution percentage lower than tl1  (tl2 had higher percentage than tl1) | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update tl2 with resolution percentage higher than tl1  (tl2 had lower percentage than tl1) | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Update tl2 with the resolution percentage higher than tl1  (tl2 had higher percentage than tl1) | The system allowed the creation of the tracking log | None |
| Update tl2 with the resolution percentage lower than tl1  (tl2 had lower percentage than tl1) | The system allowed the creation of the tracking log | None |

## 4.4 Test cases for publish features

|  |  |  |
| --- | --- | --- |
| Description | Result | Bugs detected |
| Publish a claim with all fields empty | The system prevented the creation of the claim with non-blocking errors | None |
| Publish a claim with a leg that shouldn't be accessible to the assistance agent | An error appeared access not authorise | None |
| Publish a claim with an invalid passenger email | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Publish a claim with a valid passenger email | The system allowed the creation of the claim | None |
| Publish a claim with an invalid description | The system prevented the creation of the claim with a non-blocking error in the code format | None |
| Publish a claim with a valid description | The system allowed the creation of the claim | None |
| Publish a claim with a changed claim Type class value | An error appeared access not authorize | None |
| Publish a claim without modifying the claim type class value(value withing the values listed) | The system allowed the creation of the claim | None |
| Publish a claim by modifying the status (read-only value) | The system allowed the creation of the claim, it’s a transient value | None |
| Publish a claim without modifying the status (read-only value) | The system allowed the creation of the claim | None |
| Publish a tracking log with all fields empty | The system prevented the creation of the tracking log with non-blocking errors | None |
| Publish a tracking log with an invalid step | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with a valid step | The system allowed the creation of the tracking log | None |
| Publish a tracking log with an invalid percentage resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with a valid resolution percentage | The system allowed the creation of the tracking log | None |
| Publish a tracking log with a changed AcceptedIndicator class value(status) | An error appeared access not authorised | None |
| Publish a tracking log without modifying the AcceptedIndicator class value(value within the list used) | The system allowed the creation of the tracking log in the cases it should | None |
| Publish a tracking log with an invalid resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with a valid resolution | The system allowed the creation of the tracking log in the cases it should | None |
| Publish a tracking log with resolution percentage != 100.0 and status != PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with resolution percentage = 100.0 and status = PENDING | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with resolution percentage != 100.0 and status = PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Publish a tracking log with resolution percentage = 100.0 and status != PENDING | The system allowed the creation of the tracking log in the cases it should | None |
| Publish a tracking log with resolution percentage != 100.0 and something written in resolution | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with resolution percentage = 100.0 and resolution empty | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with resolution percentage != 100.0 and resolution empty | The system allowed the creation of the tracking log | None |
| Publish a tracking log with resolution percentage = 100.0 and something written in resolution | The system allowed the creation of the tracking log | None |
| Publish a tracking log with resolution percentage != 100.0 and checkbox = true | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish a tracking log with resolution percentage = 100.0 and checkbox = true | The system allowed the creation of the tracking log in the cases it should | None |
| Publish a tracking log that is published | An error appeared access is not authorize | None |
| publish a tracking log that doesn’t belong to the authenticated assistance agent | An error appeared access Is not authorize | None |
| publish a tracking log that doesn’t exist | An error appeared access is not authorize | None |
| Publish a tracking log of a claim which is not published yet | An error appeared access is not authorize | None |
|  | From this field to the end, we will have 2 tracking logs created for the same tl1 and tl2, we will be updating tl2 |  |
| Publish tl2 with resolution percentage lower than tl1  (tl2 had higher percentage than tl1) | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish tl2 with resolution percentage higher than tl1  (tl2 had lower percentage than tl1) | The system prevented the creation of the tracking log with a non-blocking error in the code format | None |
| Publish tl2 with the resolution percentage higher than tl1  (tl2 had higher percentage than tl1) | The system allowed the creation of the tracking log | None |
| Publish tl2 with the resolution percentage lower than tl1  (tl2 had lower percentage than tl1) | The system allowed the creation of the tracking log | None |

# 5. Performance Testing

Performance tests have been conducted on two different devices. The results on both devices will then be displayed, as well as the final comparison between the two.

## 5.1 First device performance tests

Regarding the first device, the following results were obtained:

averageaverage

|  |  |  |
| --- | --- | --- |
| **Promedio /** |  | 2,49824505 |
| **Promedio /anonymous/system/sign-in** |  | 3,99318727 |
| **Promedio /any/system/welcome** |  | 1,30203197 |
| **Promedio /assistance-agent/claim/create** |  | 28,8679579 |
| **Promedio /assistance-agent/claim/delete** |  | 18,9559 |
| **Promedio /assistance-agent/claim/listNotResolved** | | 14,03153 |
| **Promedio /assistance-agent/claim/listResolved** | | 9,94677 |
| **Promedio /assistance-agent/claim/publish** |  | 22,4715308 |
| **Promedio /assistance-agent/claim/show** |  | 8,19257692 |
| **Promedio /assistance-agent/claim/update** |  | 16,7378889 |
| **Promedio /assistance-agent/tracking-log/create** | | 21,1377412 |
| **Promedio /assistance-agent/tracking-log/delete** | | 14,8202667 |
| **Promedio /assistance-agent/tracking-log/listclaim** | | 6,187708 |
| **Promedio /assistance-agent/tracking-log/publish** | | 15,3602667 |
| **Promedio /assistance-agent/tracking-log/show** | | 5,14208889 |
| **Promedio /assistance-agent/tracking-log/update** | | 24,5379556 |
| **Promedio /authenticated/system/sign-out** |  | 2,35480357 |
|  |  |  |
| **Promedio general** |  | 7,04226381 |

Where its descriptive statistics are as follows:

|  |  |
| --- | --- |
| *first device* | |
|  |  |
| Media | 8,08801314 |
| Error típico | 0,4404419 |
| Mediana | 5,15815 |
| Moda | 6,2619 |
| Desviación estándar | 9,72967951 |
| Varianza de la muestra | 94,6666633 |
| Curtosis | 14,8303917 |
| Coeficiente de asimetría | 2,91898173 |
| Rango | 92,7711 |
| Mínimo | 0,6578 |
| Máximo | 93,4289 |
| Suma | 3946,95041 |
| Cuenta | 488 |
| Nivel de confianza(95,0%) | 0,86540098 |

And therefore, its confidence interval is defined as:

|  |  |  |
| --- | --- | --- |
| Interval(ms) | 7,22261216 | 8,95341413 |
| interval(s) | 0,00722261 | 0,00895341 |

## 5.2 Second device performance testing

For the second device, the following results were obtained:

|  |  |  |
| --- | --- | --- |
| **Promedio /** |  | 1,89185385 |
| **Promedio /anonymous/system/sign-in** |  | 3,29120364 |
| **Promedio /any/system/welcome** |  | 1,19663934 |
| **Promedio /assistance-agent/claim/create** |  | 19,4474158 |
| **Promedio /assistance-agent/claim/delete** |  | 13,54215 |
| **Promedio /assistance-agent/claim/listNotResolved** | | 14,114314 |
| **Promedio /assistance-agent/claim/listResolved** | | 8,99936 |
| **Promedio /assistance-agent/claim/publish** |  | 19,7870615 |
| **Promedio /assistance-agent/claim/show** |  | 7,44787949 |
| **Promedio /assistance-agent/claim/update** |  | 17,7595111 |
| **Promedio /assistance-agent/tracking-log/create** | | 15,2249235 |
| **Promedio /assistance-agent/tracking-log/delete** | | 12,4420667 |
| **Promedio /assistance-agent/tracking-log/listclaim** | | 6,521504 |
| **Promedio /assistance-agent/tracking-log/publish** | | 13,8528333 |
| **Promedio /assistance-agent/tracking-log/show** | | 4,92546667 |
| **Promedio /assistance-agent/tracking-log/update** | | 14,3038778 |
| **Promedio /authenticated/system/sign-out** |  | 2,00153571 |
|  |  |  |
| **Promedio general** |  | 5,94821337 |

Where its descriptive statistic is as follows:

|  |  |
| --- | --- |
| *second device* | |
|  |  |
| Media | 6,85960412 |
| Error típico | 0,33187252 |
| Mediana | 4,68285 |
| Moda | 1,153 |
| Desviación estándar | 7,33130355 |
| Varianza de la muestra | 53,7480117 |
| Curtosis | 6,93518747 |
| Coeficiente de asimetría | 2,02933431 |
| Rango | 60,5709 |
| Mínimo | 0,619 |
| Máximo | 61,1899 |
| Suma | 3347,48681 |
| Cuenta | 488 |
| Nivel de confianza(95,0%) | 0,65207876 |

And therefore, its confidence interval is defined as:

|  |  |  |
| --- | --- | --- |
| Interval(ms) | 6,20752536 | 7,51168287 |
| interval(s) | 0,00620753 | 0,00751168 |

## 5.3 Comparison between the two devices

Using the z-test to compare the results obtained on both devices, the following is obtained:

|  |  |  |
| --- | --- | --- |
| Prueba z para medias de dos muestras |  |  |
|  |  |  |
|  | *time device 2* | *time device 1* |
| Media | 6,078835077 | 7,209483097 |
| Varianza (conocida) | 1700859355 | 1346244308 |
| Observaciones | 579 | 579 |
| Diferencia hipotética de las medias | 0 |  |
| z | -0,000492859 |  |
| P(Z<=z) una cola | 0,499803378 |  |
| Valor crítico de z (una cola) | 1,644853627 |  |
| Valor crítico de z (dos colas) | 0,999606755 |  |
| Valor crítico de z (dos colas) | 1,959963985 |  |

A Z-test was conducted to compare the average response times between Device 1 and Device 2, based on 579 observations for each. The results showed that although Device 1 had a slightly higher mean response time (7.21) compared to Device 2 (6.08), the calculated z-value was -0.0005, with a p-value of 0.4998. These values are far from the critical z-values for both one-tailed (±1.6449) and two-tailed (±1.96) tests, indicating no statistically significant difference between the two means. Therefore, we fail to reject the null hypothesis and conclude that the performance difference between the devices is not significant, suggesting that both devices operate with similar efficiency in the tested conditions.

# 6. Conclusion

This report thoroughly evaluates the functionalities assigned to the assistance agent role within the system through both functional and performance testing. The functional tests confirmed that the system handles valid, invalid, and unauthorized scenarios appropriately, with no critical errors detected. All the intended validations performed as expected, thereby maintaining the integrity of the system’s behavior.

Performance testing didn’t revealed notable differences between the devices tested. Statistical analysis, including Z-tests.

In summary, the results indicate a high level of reliability and stability in the functionalities assessed. This validation process plays a crucial role in guaranteeing the software’s quality prior to its final release.

# 7. Bibliography

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