Performance report

Workgroup number: E8.01
Repository: https://github.com/Icaro212/Acme-Toolkits
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Executive summary

The following document contains the two analyses carried out by the workgroup, regarding the 95% confidence interval for the average wall time taken by the requests to the system, as well as an hypothesis contrast that makes it clear what the most efficient computer is at the 95% confidence level, given that each analysis has been performed on a different computer.

Revision table

Revision number	Date	Description
v1	2022/05/23	Final version

Introduction

The contents of the paper focus on the performance of the system developed by the workgroup by means of an analysis regarding the 95% confidence interval for the average wall time taken by the requests to the system.

Some graphs regarding those requests are shown, as well as some description of them, and a comparison in the end.

Contents

Firstly, two figures are displayed. They are composed of a list of time averages, regarding the time taken to execute groups of requests, on the left, and all that data displayed as a graph, on the right. We have used, as recommended, 2 computers: First, we have computer A, where we can see (figure 1) that times are a bit high because of its lack of computing power. Below we have computer B (figure 2), where we can see that times are a bit lower, just because that computer is a bit faster given that its specifications are better than the former.

Promedio /administrator/system-configuration/show	829,8983051
Promedio /administrator/system-configuration/update	735,2727273
Promedio /anonymous/user-account/create	1222
Promedio /any/item/list	1245,8
Promedio /any/item/show	1311,6
Promedio /any/toolkit/list	885,2
Promedio /any/toolkit/show	778,6
Promedio /authenticated/announcement/list-recent	766
Promedio /authenticated/announcement/show	1029,333333
Promedio /authenticated/system-configuration/show	1019,5
Promedio /inventor/patronage/list	971,5833333
Promedio /inventor/patronage/list-proposed	960,0833333
Promedio /inventor/patronage/show	1183
Promedio /master/sign-in	719,5063291
Promedio /master/welcome	693,8568421
Promedio http://www.example.com	583
Promedio general	752,6666667

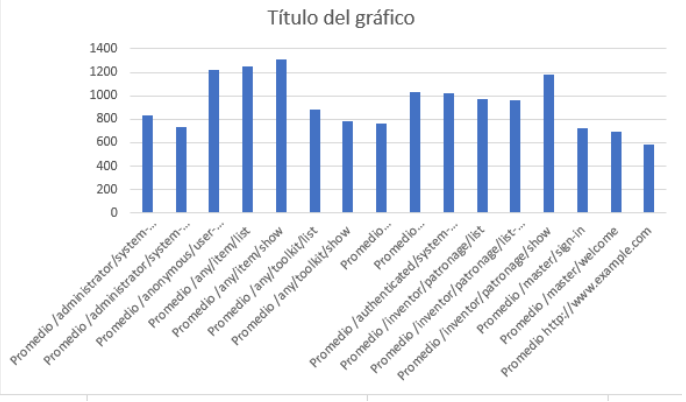

Figure 1. Computer A

simple-path	time
Promedio /administrator/system-configuration/show	570,6779661
Promedio /administrator/system-configuration/update	587,1363636
Promedio /anonymous/user-account/create	637,9166667
Promedio /any/item/list	709,3
Promedio /any/item/show	702
Promedio /any/toolkit/list	629,8
Promedio /any/toolkit/show	691,4
Promedio /authenticated/announcement/list-recent	557,2857143
Promedio /authenticated/announcement/show	595,6666667
Promedio /authenticated/system-configuration/show	457,5
Promedio /inventor/patronage/list	1111,75
Promedio /inventor/patronage/list-proposed	852,9166667
Promedio /inventor/patronage/show	635,6666667
Promedio /master/sign-in	598,5443038
Promedio /master/welcome	436,6168421
Promedio http://www.example.com	575
Promedio general	506,4187328

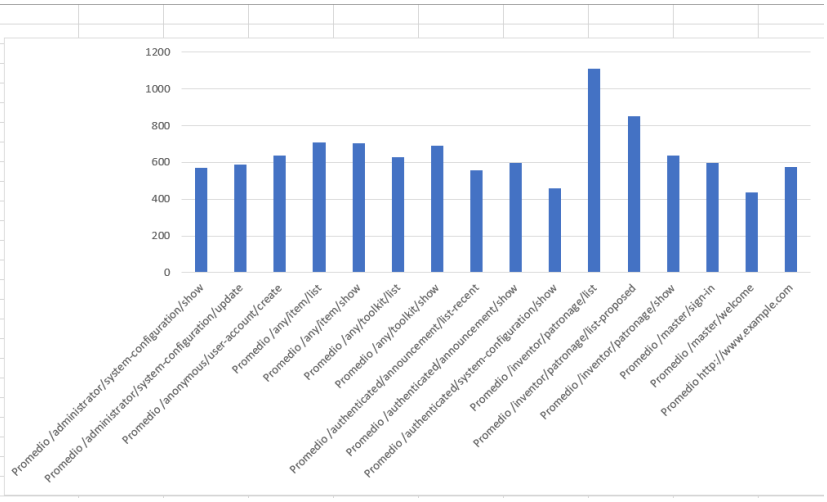

Figure 2. Computer B

In figure 3, we can see below all statistics regarding the data analysis. We have followed the methodologies and we have arrived at those confidence Intervals. As we saw before, computer A has better specifications, so its times are lower. Because of that, we can compare that the Confidence Interval in computer A is much bigger than the one in computer B.

time		
Media	752,6666667	
Error típico	17,75823962	
Mediana	619,5	
Moda	563	
Desviación estándar	478,4848837	
Varianza de la muestra	228947,7839	
Curtosis	224,3270954	
Coeficiente de asimetría	12,23956079	
Rango	9912	
Mínimo	377	
Máximo	10289	
Suma	546436	
Cuenta	726	
Nivel de confianza(95,0%)	34,86371226	
Confidence interval:	717,802954	787,530379

Figure 3. Computer A

time		
Media	506,4187328	
Error típico	9,807580939	
Mediana	576	
Moda	583	
Desviación estándar	264,259258	
Varianza de la muestra	69832,95546	
Curtosis	163,037654	
Coeficiente de asimetría	9,604913041	
Rango	5115	
Mínimo	269	
Máximo	5384	
Suma	367660	
Cuenta	726	
Nivel de confianza(95,0%)	19,25464952	
Confidence Interval	487,1640833	525,673382

Figure 4. Computer B

Because of this information seen, we can confirm that computer B is a much more efficient computer at the 95% Confidence level.

Test-Z

Prueba z para medias de dos muestras		
	Before	*After*
Media	752,6666667	506,4187
Varianza (conocida)	228947,7839	69832,96
Observaciones	726	726
Diferencia hipotética de las medias	0	
z	12,13848838	
P(Z<=z) una cola	0	
Valor crítico de z (una cola)	1,644853627	
Valor crítico de z (dos colas)	0	
Valor crítico de z (dos colas)	1,959963985	

Given that Alpha has a value of 0.05 (1-0.95), and our one-tail p-value is 0 (it fulfills that 0<=0.0<=0.05), we can compare the mean of the wall times.
Furthermore, the mean of wall time after refactoring has a value of 506,4187328, which is smaller than the mean before.

Conclusions

In conclusion, we can deduce that computer B is much more efficient than computer A, and we have managed to improve the performance of the testing after refactoring.

Bibliography

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