Performance report

Workgroup number: E8.01
Repository: https://github.com/Pabnunmor/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	2022/04/23	Initial version
v2	2022/04/25	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.

simple-path	time
Promedio /administrator/system-configuration/show	1084
Promedio /anonymous/user-account/create	604,0833333
Promedio /any/chirp/list-recent	825
Promedio /any/chirp/show	564,5
Promedio /any/item/list-all	774,2
Promedio /any/item/show	561,6
Promedio /authenticated/system-configuration/show	561
Promedio /inventor/patronage/list	752,1666667
Promedio /inventor/patronage/show	735
Promedio /master/sign-in	619,1785714
Promedio /master/welcome	591,4327485
Promedio /patron/patronage/list	833,8333333
Promedio /patron/patronage/show	743,3333333
Promedio http://www.example.com	561
Promedio general	618,1388889

Figure 1. Computer A

simple-path	time
Promedio /administrator/system-config	1046
Promedio /anonymous/user-account/cr	572,75
Promedio /any/chirp/list-recent	799
Promedio /any/chirp/show	581,5
Promedio /any/item/list-all	636,6
Promedio /any/item/show	537
Promedio /authenticated/system-confi	555
Promedio /inventor/patronage/list	621,6666667
Promedio /inventor/patronage/show	711,8333333
Promedio /master/sign-in	593,0357143
Promedio /master/welcome	439,3625731
Promedio /patron/patronage/list	983,6666667
Promedio /patron/patronage/show	818,8333333
Promedio http://www.example.com	526
Promedio general	508,6547619

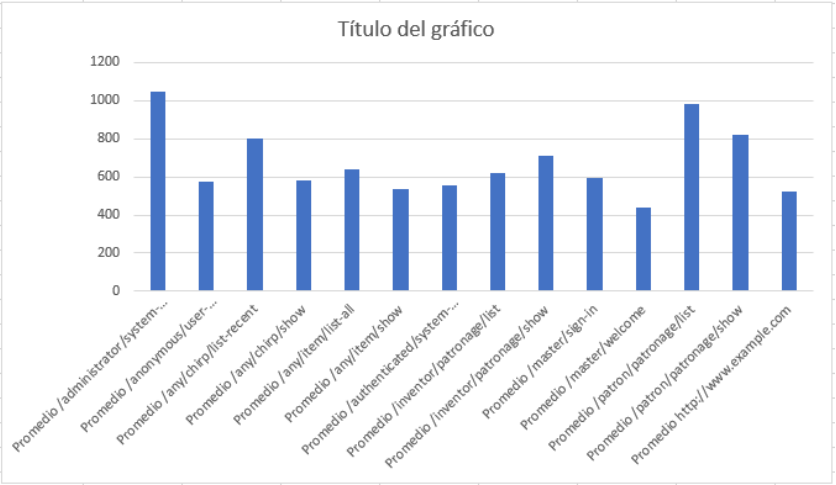

Figure 2. Computer B

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	618,1388889	
Error típico	20,29401456	
Mediana	564	
Moda	563	
Desviación estándar	322,1574937	
Varianza de la muestra	103785,4508	
Curtosis	131,270899	
Coeficiente de asimetría	10,45145824	
Rango	4436	
Mínimo	496	
Máximo	4932	
Suma	155771	
Cuenta	252	
Nivel de confianza(95,0%)	39,96825452	
Intervalo de confianza	578,1706344	658,1071434

Figure 3. Computer A

Media	508,654762	
Error típico	25,5031934	
Mediana	528,5	
Moda	534	
Desviación estándar	404,850644	
Varianza de la muestra	163904,044	
Curtosis	122,336411	
Coeficiente de asimetría	9,70310877	
Rango	5605	
Mínimo	246	
Máximo	5851	
Suma	128181	
Cuenta	252	
Nivel de confianza(95,0%)	50,227525	
Confidence interval	458,427237	558.882.287

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	618,1389	508,6548
Varianza (conocida)	103785,5	163904
Observaciones	252	252
Diferencia hipotética de las medias	0	
z	3,3592	
P(Z<=z) una cola	0,000391	
Valor crítico de z (una cola)	1,644854	
Valor crítico de z (dos colas)	0,000782	
Valor crítico de z (dos colas)	1,959964	

Given that Alpha has a value of 0.05 (1-0.95), and our one-tail p-value is 0.000391 (it fulfills that 0<=0.000391<=0.05), we can compare the mean of the wall times.
Furthermore, the mean of wall time after refactoring has value 508,654762, 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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