Being a Performance Test Engineer

TestCon

Canberk Akduygu

Java Application Developer

IBM Consultant

Test Consultant

Test Architect

now

Senior Test Automation Engineer

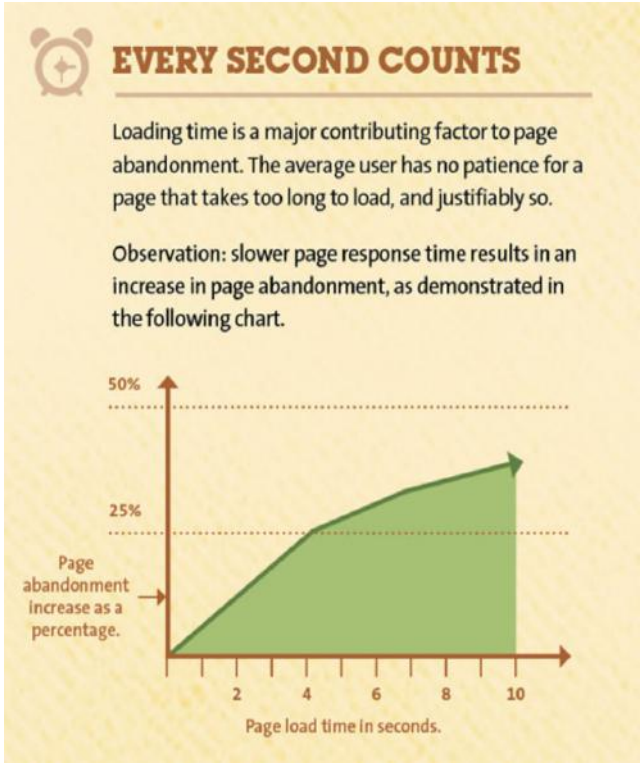
QARDIO

Why Performance Test Engineering?

Wirth’s Law

Wirth's Law is a famous quote from Niklaus Wirth, a Swiss computer scientist. In 1995, he proposed an adage that: “Software is getting slower more rapidly than hardware is getting faster.”

A little bit of metrics

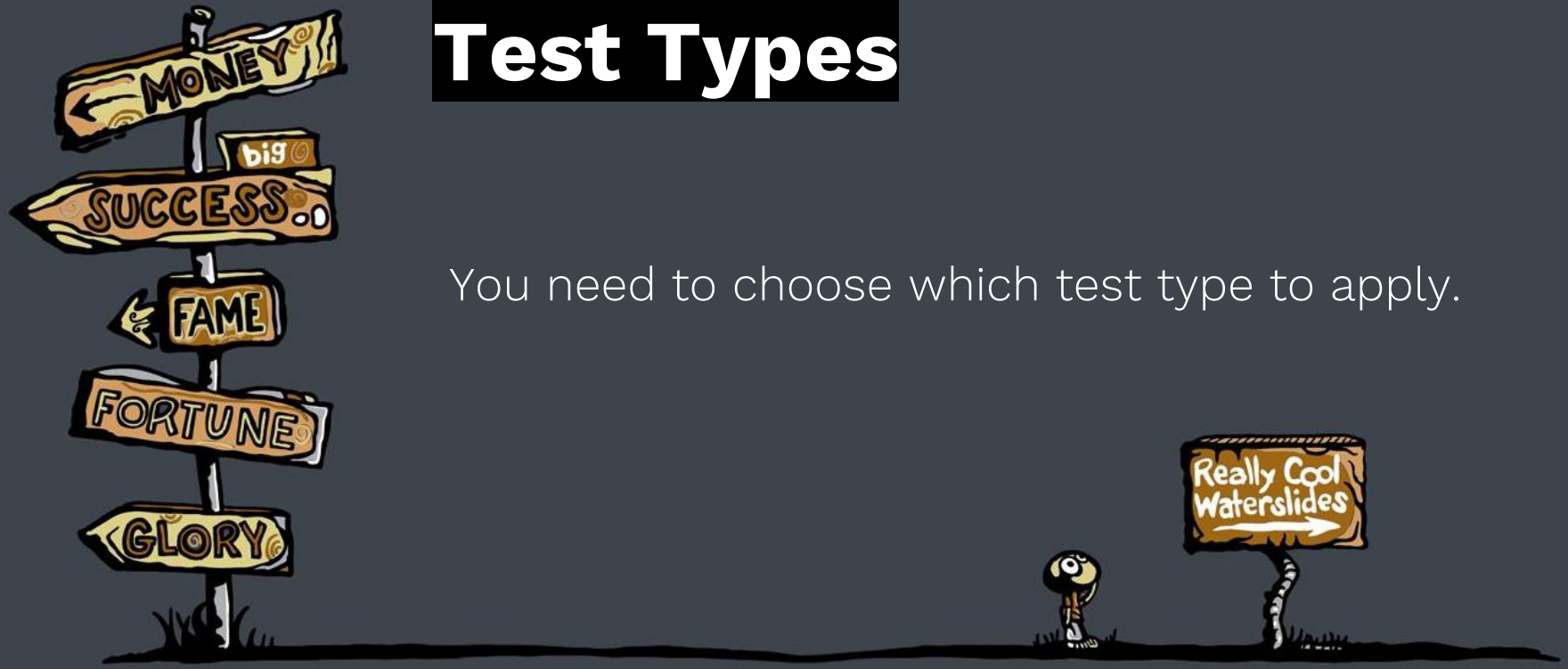


News of bad customer service reaches more than twice as many ears as praise for a good service experience.

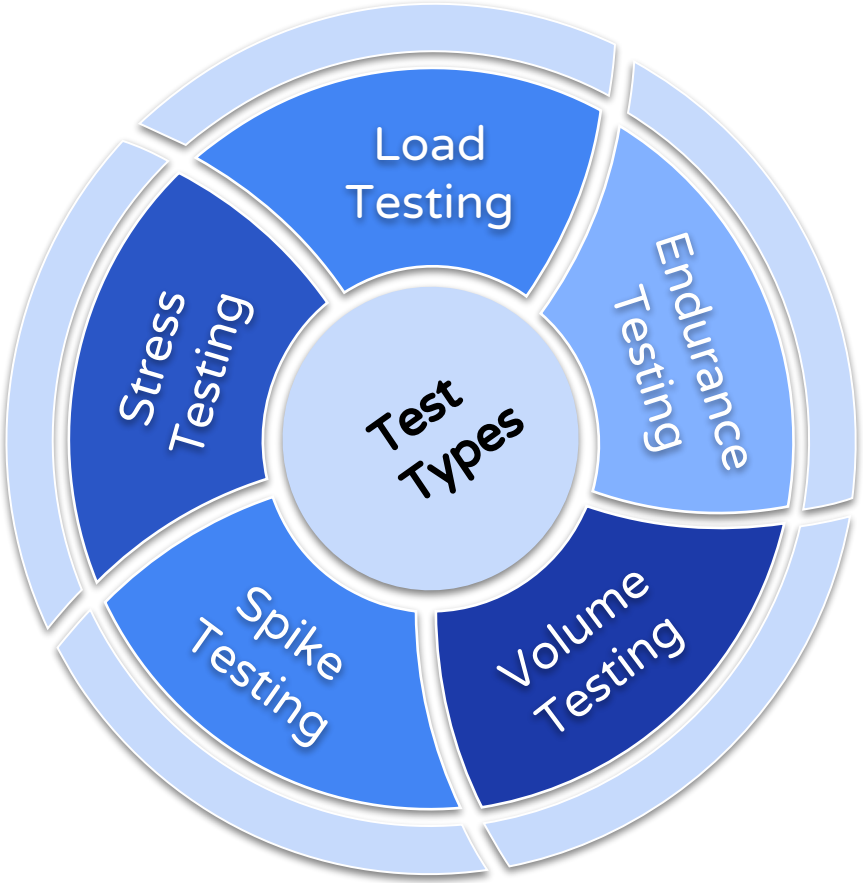
Take the time to address unhappy customers and do everything in your power to remedy the situation. It's not only worth keeping their business, but also avoiding any negative word of mouth exposure.

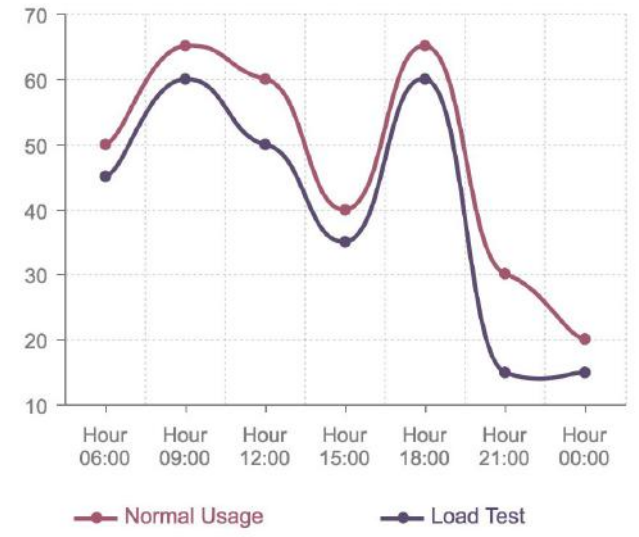
Damage taken!

Rule 1: Performance Test Types

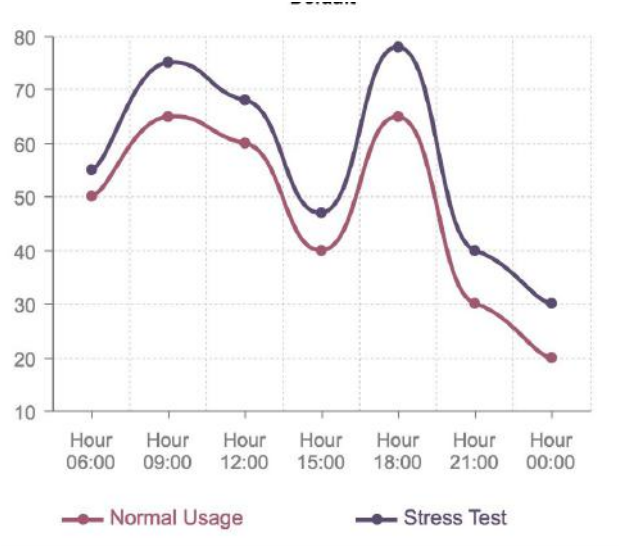


You need to choose which test type to apply.

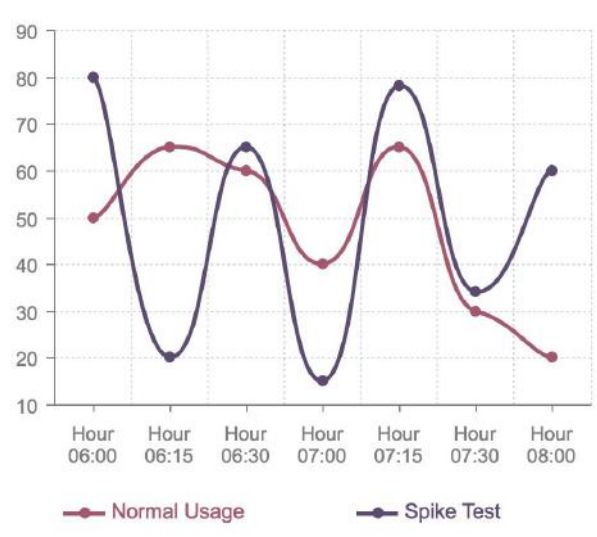

Load Testing
Endurance Testing
Volume Testing
Spike Testing
Stress Testing
Test Types



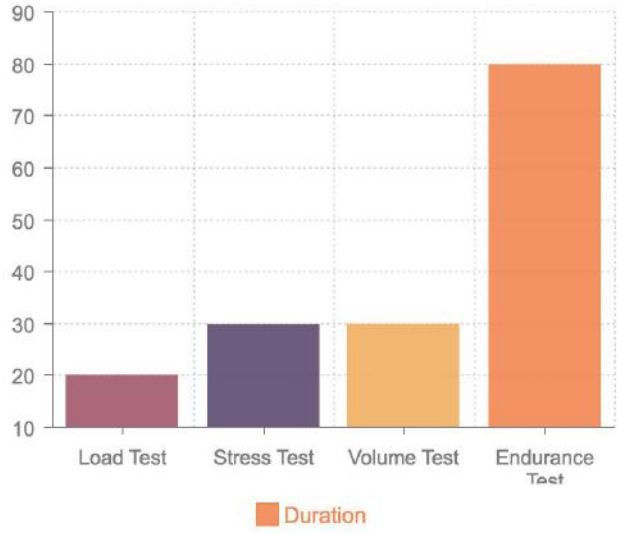
Load Test

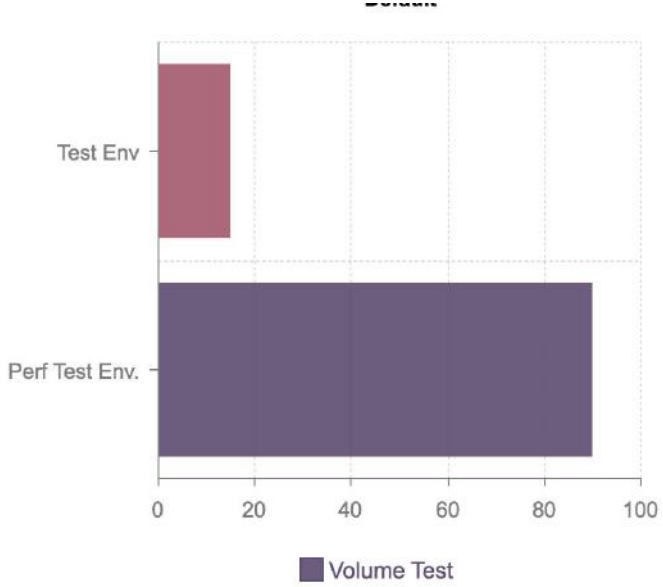


Stress Test



Spike Test


90
80
70
60
50
40
30
20
10
Load Test
Stress Test
Volume Test
Endurance Test
Duration


Test Env
Perf Test Env.
0
20
40
60
80
100
Volume Test

Where or When to apply them!

Rule 2: Criterias / KPI’s

The common challenge in a performance testing is inefficient non-functional requirements. KPIs are hard to analyze.

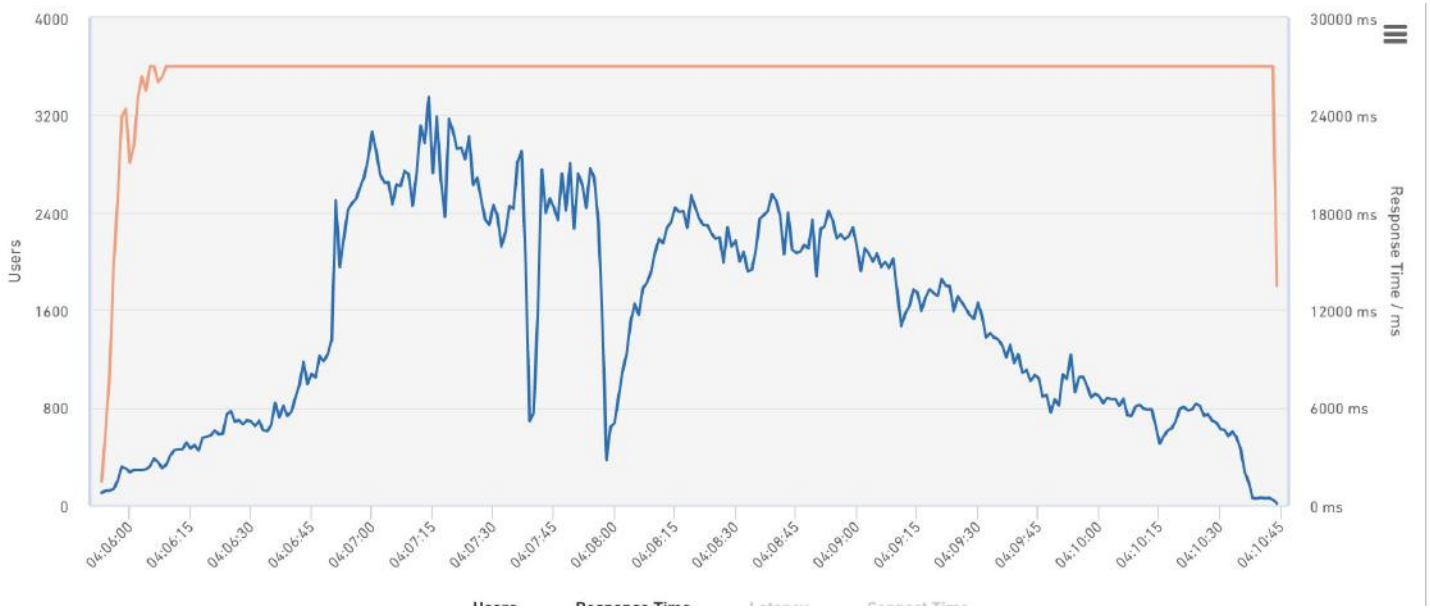
We had

per second during Black Friday.
We need to test with 40.000 user for next year

Whoa! That’s a big number, aren’t you proud?

3600 VU	437.61 HITS/S	3.72 %	9723.05 MS	70899.17 B
MAX USERS	AVG. THROUGHPUT	ERRORS	AVG. RESPONSE TIME	AVG. BANDWIDTH

RESPONSE TIME



Be social!

Developers

Numbers on specific data like “page views”, “order count” etc...

Infrastructure T.

Application or Database server,Network information.

Product Owner

Numbers that we should expect during the test.

What feature must be used mostly during the test.

Marketing

Can get you the user behavior.
Not all users behave the same!
Be careful about it.

3.350 Transaction

That’s still a good user number

220 Purchase

310 Cart Add / Remove

2.100 Browsing

Find right KPI’s

Apdex (Application Performance Index) is an open standard developed by an alliance of companies that defines a standardized method to report, benchmark, and track application performance.

Apdex tracks three response counts:

- Satisfied: The response time is less than or equal to T.
- Tolerating: The response time is greater than T and less than or equal to 4T. In this example, 4 x 1.2 = 4.8 seconds as the maximum tolerable response time.
- Frustrated: The response time is greater than 4T.

$$\text{Apdex}_T = \frac{\text{Satisfied count} + \frac{\text{Tolerating count}}{2}}{\text{Total samples}}$$

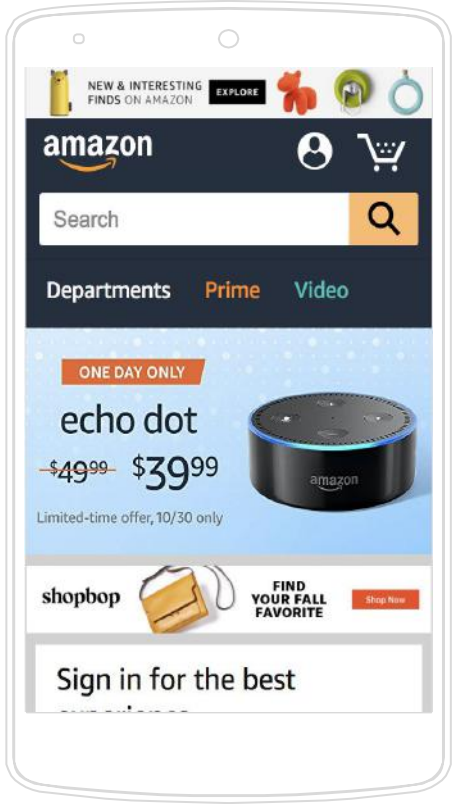
Rule 2: Define Customer Base

Every customer has its own unique behavior. Get to know your users

Geolocations

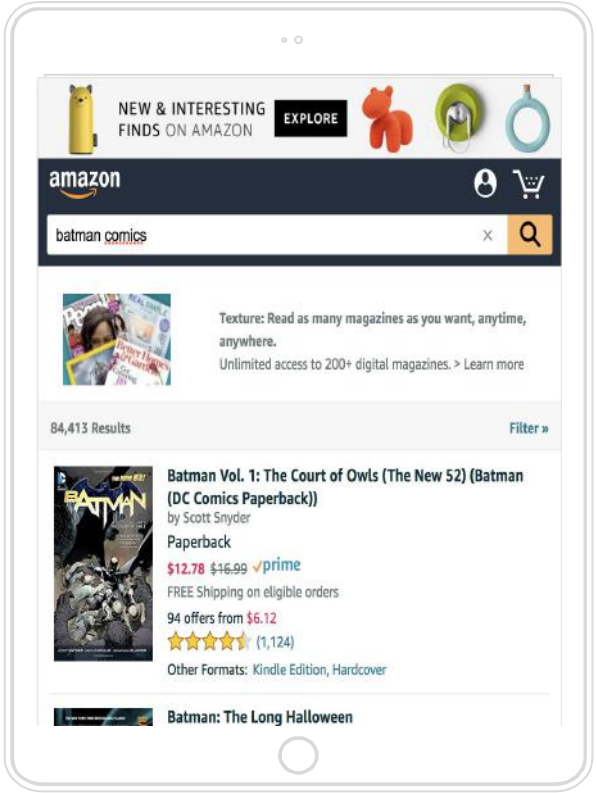
Mobile Customers

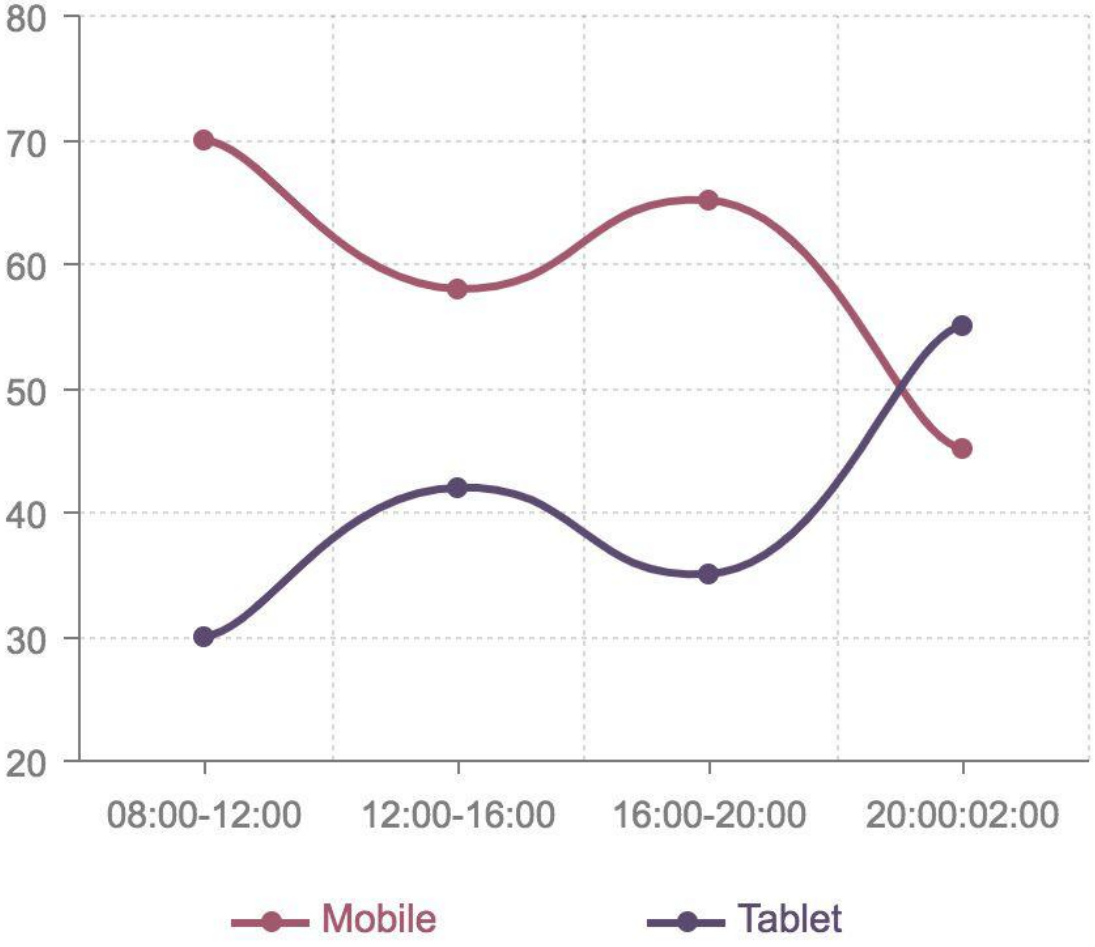
- Uses generally network connections because they ARE ON the MOVE
- Used mostly anytime :)
- %70 Apps or %30 mobile web is used
- Push message is a use case generally.



Tablet Customers

- Tend to use wifi connection because they are NOT ON the MOVE
- They are used generally after work hours according to stats.
- %55 Apps or %45 mobile web is used

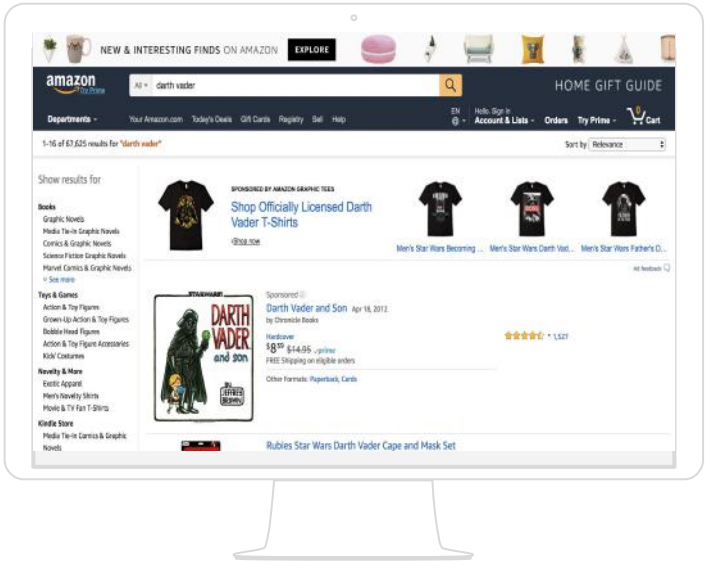



80
70
60
50
40
30
20
08:00-12:00
12:00-16:00
16:00-20:00
20:00:02:00
Mobile
Tablet

What happens in mobile when it comes to mimic it

So you need to simulate many more request for just one click with different bandwidth types.

- 2G, 2.5G/GPRS, 2.75G, 2.9G/Edge
- 3G, 3.5G
- HSUPA, HSPDA or HSPA+
- 3GPP LTE (Long Term Evolution) also described as 4G



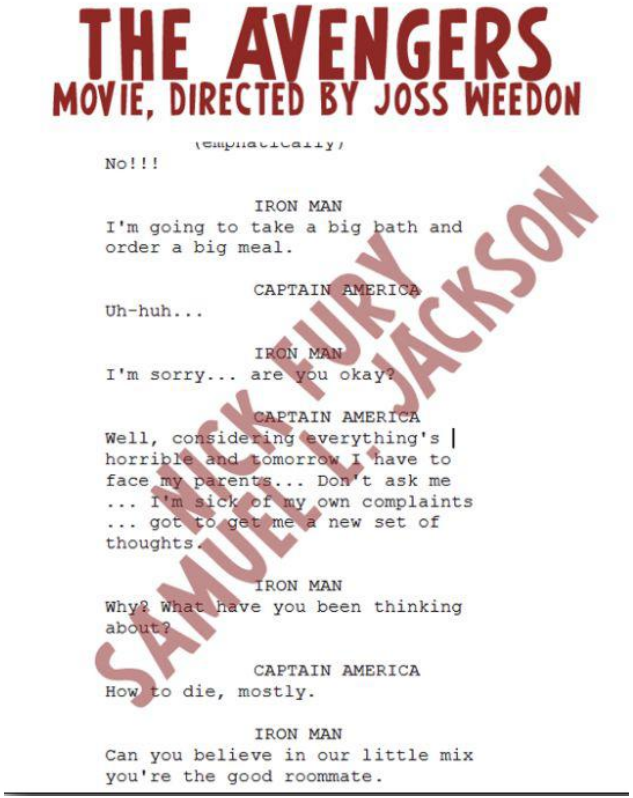
Desktop Customers

It can be used any time but with good network connection

- Wireless
- Wi-Fi and WiMax

Rule 4: Right Scenarios

What scenarios should be implemented?



Scenario Types

- Contractually obligated usage scenarios
- Most common usage scenario(s)
- Business-critical usage scenario(s)
- Performance-intensive usage scenario(s)
- Usage scenarios of technical concern
- Error Scenarios

Scenario Realism

Realistic Workload
1000 user don’t login at the same time!!!!
But do sometimes!!!

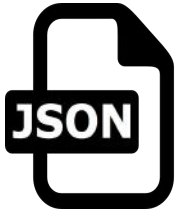
Realistic Thinktime
A user don’t click every link after a page load.
He/she mainly reads something before any click

Realistic Test Data
Not every user browse the same pages, create realistic approach

Rule 5: Request & Responses

You never know what knocks on your door.

Request / Responses



PARSING RESPONSES

JSON PATH

Way of Parsing JSon documents.

jsonpath.com/

http://json.parser.online.fr/

XPath

Way of Parsing XML documents.

http://www.xpathtester.com/xpath

RegEx

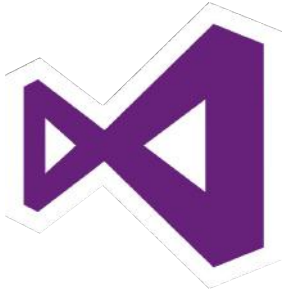
Way of parsing any text data via regular expression.

https://regex101.com/

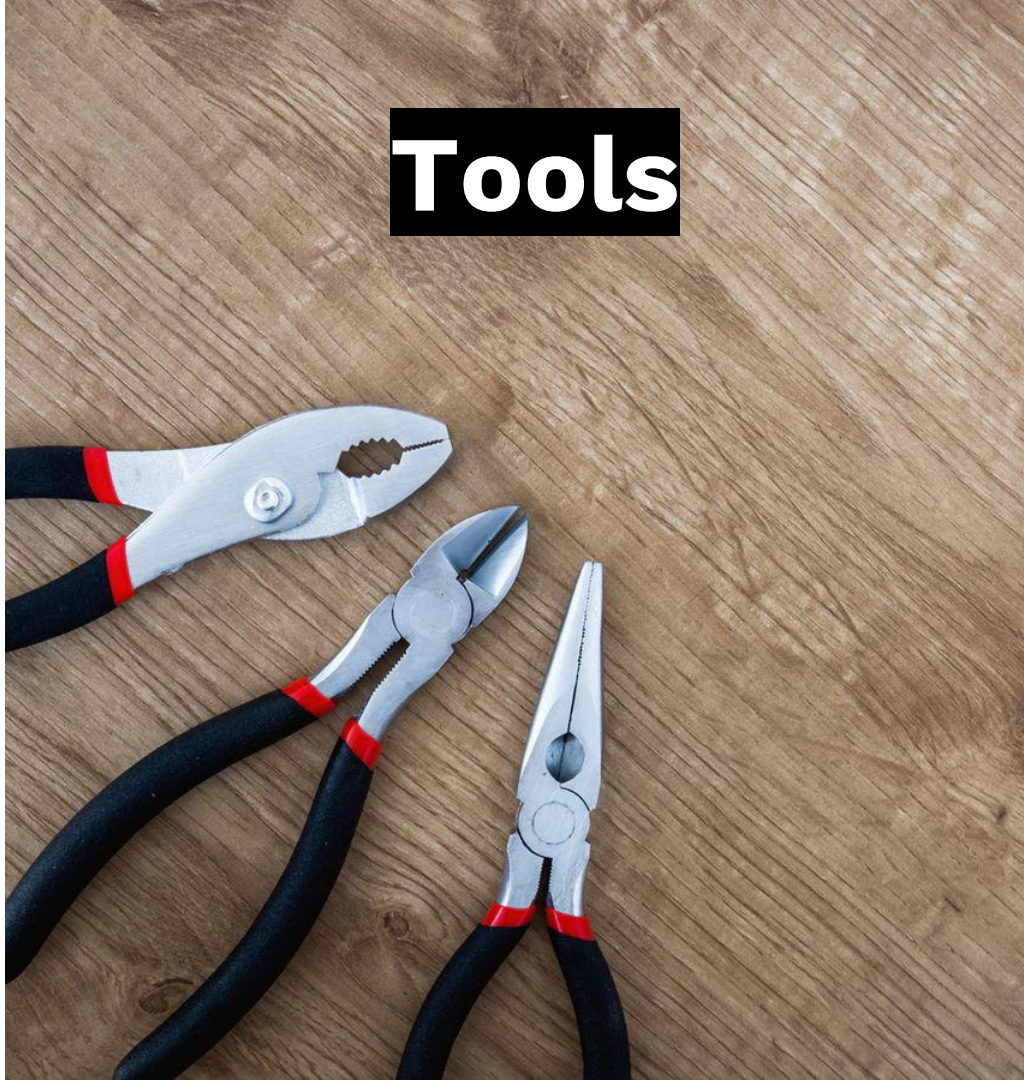
CSS

Way of Parsing HTML documents.

That's why a T**est Automation Engineer** is a good candidate for **Performance Test Engineer**.
By doing so we can call them SDET's.



etc...



Cloud Platforms

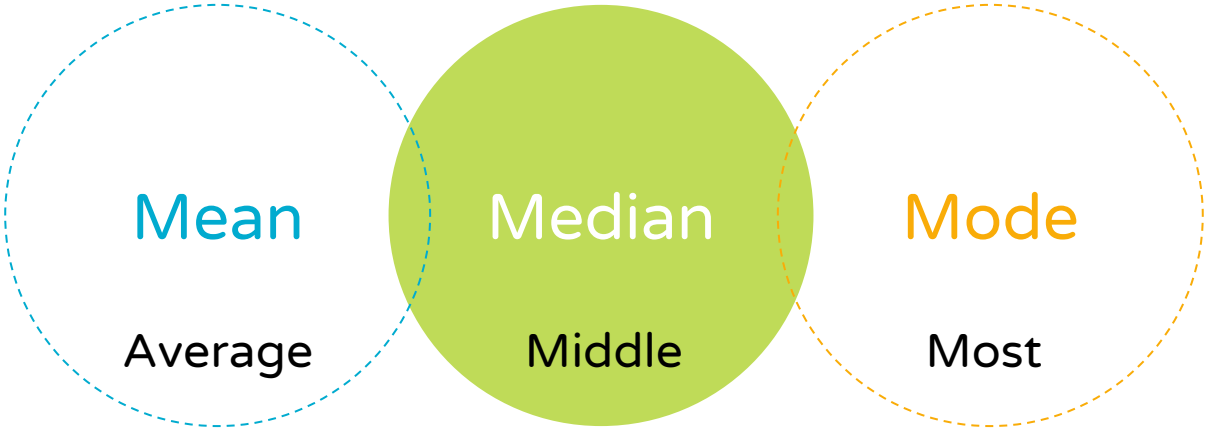
LOADIUM

etc...

Ruel 6: Statistics

Find the Mean, Median and Mode

13, 18, 13, 14, 13, 16, 14, 21, 13



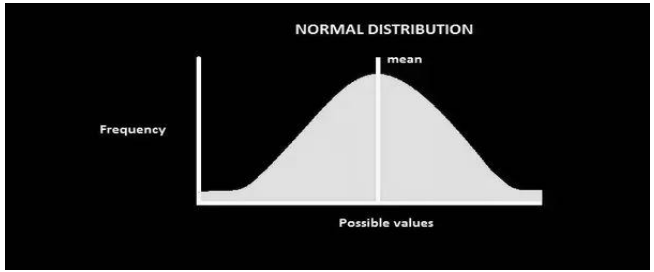
15 14 13

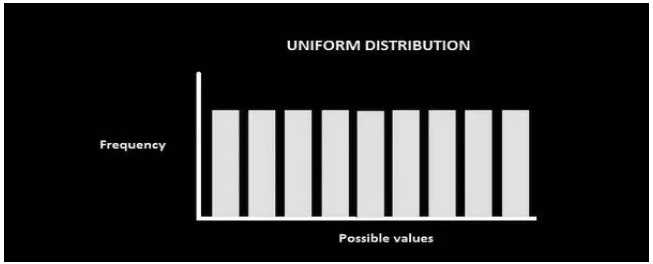
And tables to compare data

	Min	Max	Mean	Median	Mode	Std Dev	95th Per.
Data Set A	**1**	**7**	**4**	**4**	**4**	**1.5**	**6**
Data Set B	**1**	**16**	**4**	**1**	**1**	**6.0**	**16**
Data Set C	**0**	**28**	**4**	**4**	**3**	**2.6**	**8**

Uniform & Normal Distribution

Normal has a single most likely value, **uniform** has every allowable value equally likely. **Uniform** has a piecewise constant density, **normal** has a continuous bell shaped density. **Normal distributions** arise from the central limit theorem, **uniforms** do not.






GOODBYE
FRIENDS
ANY QUESTIONS ?