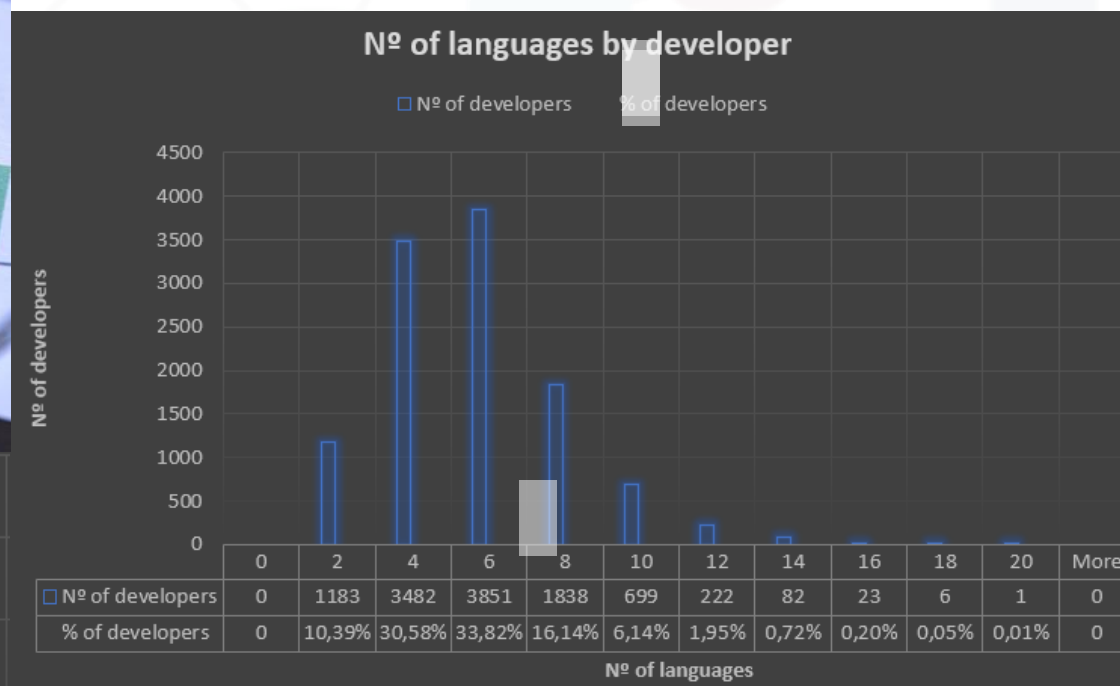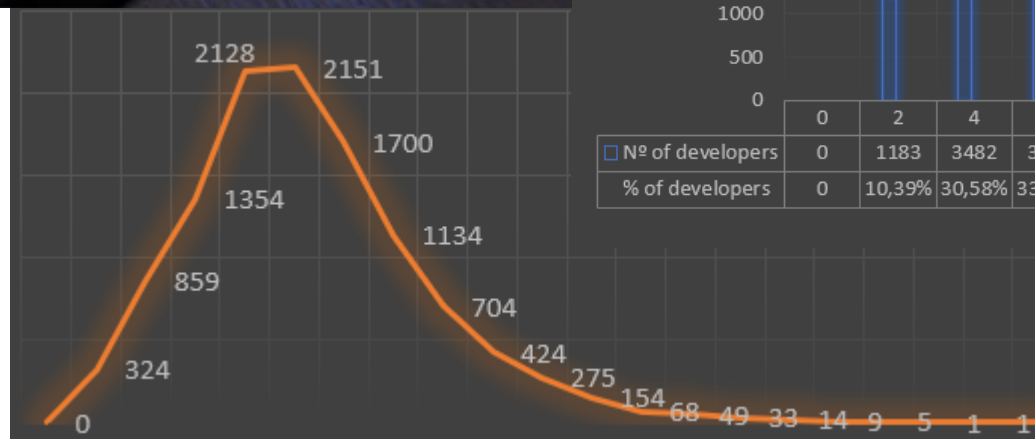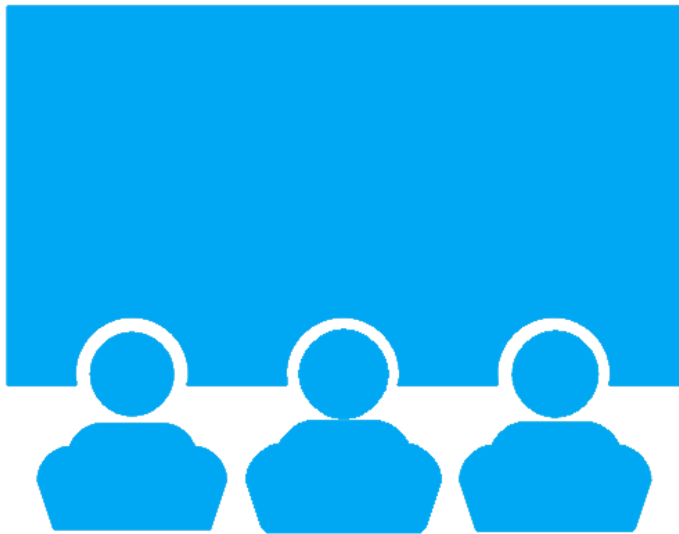# 2019 Stack overflow developer survey

Guillermo Fantoni

07/23/2021

OUTLINE

- ▶ Executive Summary
- ▶ Introduction
- ▶ Methodology
- ▶ Results
  - ▶ Visualization – Charts
  - ▶ Dashboard
- ▶ Discussion
  - ▶ Findings & Implications
- ▶ Conclusion
- ▶ Appendix

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EXECUTIVE SUMMARY

- ▶ Programming languages trends(WEB->Js,HTML/CSS; DB->SQL; Analytics->Python)

- ▶ Databases trend(MySQL, MongosDB)

- ▶ Dashboard
  - ▶ Used technologies(Js, MySQL, Windows)
  - ▶ Technologies wanted to learn(Js, Docker, PostgreSQL)
  - ▶ Demographic data (Gender inequality, Young people)

- ▶ Overall findings

- ▶ Most demanded jobs(C,Java,Js,Python)

- ▶ Popular languages(Swift,Python,C++,Js)

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INTRODUCTION
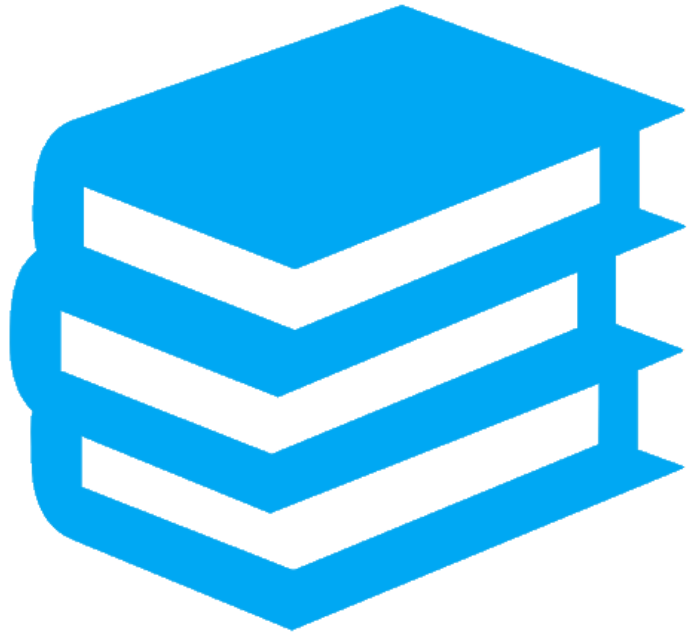
- Stack Overflow's annual Developer survey is the largest survey of developers, and bring
- Nearly 90,000 developers participle in the survey
- This survey analyze the most common technologies
- Also demographic data is included
  - Countries of origin and education level
  - Gender and age of participants

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METHODOLOGY
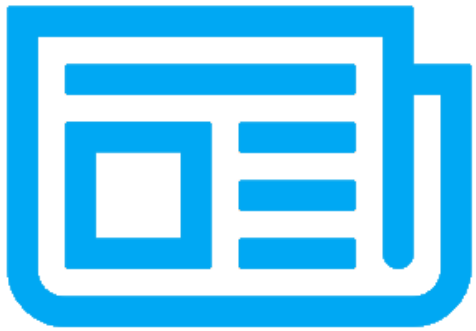
- Nearly 25000 participants data is analyzed
- The dataset is wrangling and prepare in a Jupyter notebook.
- The data visualization are developed with:
  - Cognos
  - Microsoft excel

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RESULTS
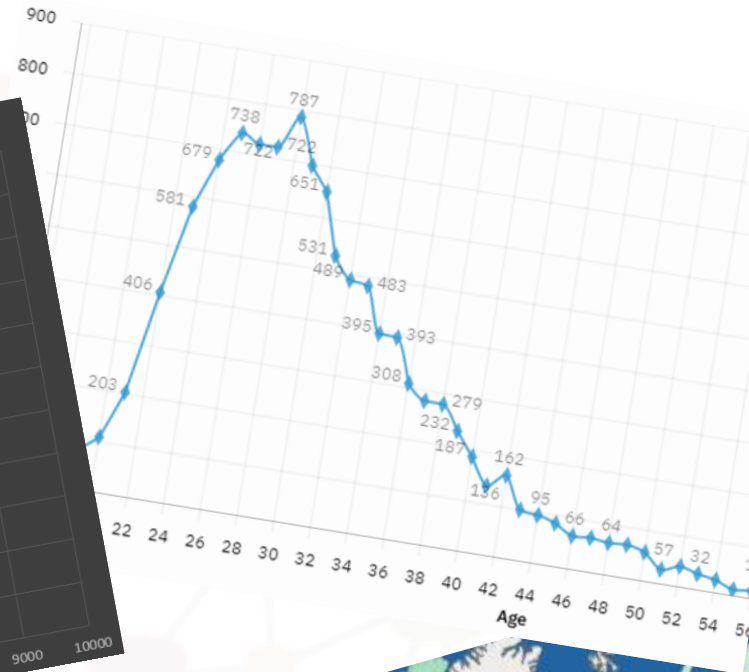
PROGRAMMING LANGUAGE TRENDS

Top 5 languages

Language	Value
Python	4,542
Bash/Shell/PowerShell	4,642
SQL	7,106
HTML/CSS	7,830
JavaScript	8,687
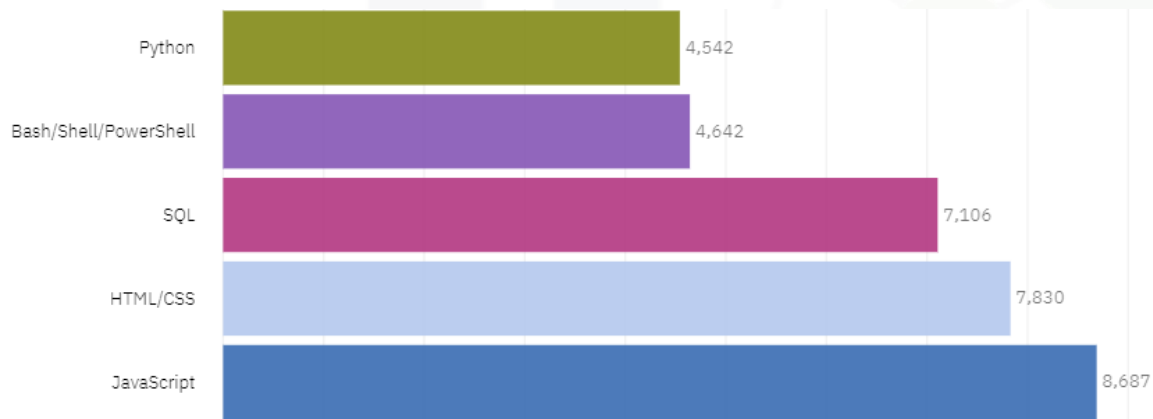
TOP 5 languages wanted to learn next year

Language	Value
TypeScript	4,088
SQL	5,012
Python	5,239
HTML/CSS	5,328
JavaScript	6,630

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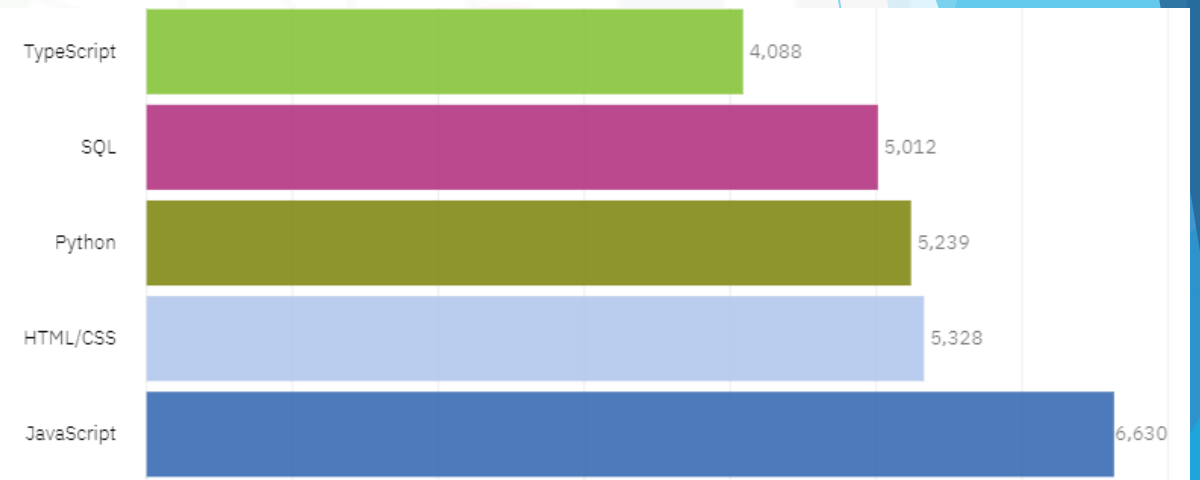
PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

Findings

- On average the participants use 5 languages

- Javascript and HTML/CSS are the most demanded languages.

- SQL are in the top 5 in both cases

- New languages are appearing and introducing very powerful functionalities with few lines of code

Implications

- programmers acquire great multidisciplinarity

- WEB programming are the principal develop activity.

- Relational databases are essential

- The world is increasingly specialized and gets better tools for each situation.

DATABASE TRENDS

TOP 5 databases
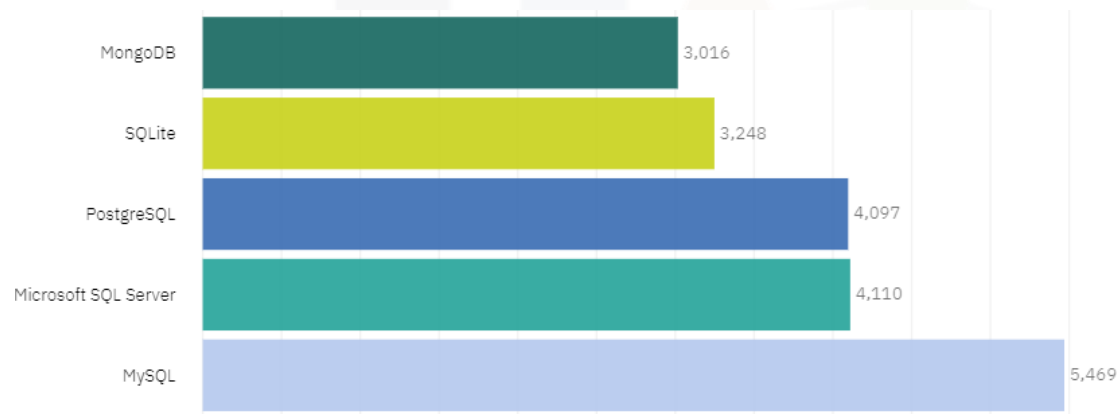
TOP 5 databases wanted to learn next year

Database	Value
MongoDB	3,016
SQLite	3,248
PostgreSQL	4,097
Microsoft SQL Server	4,110
MySQL	5,469

Database	Value
Elasticsearch	2,856
MySQL	3,281
Redis	3,331
MongoDB	3,649
PostgreSQL	4,328

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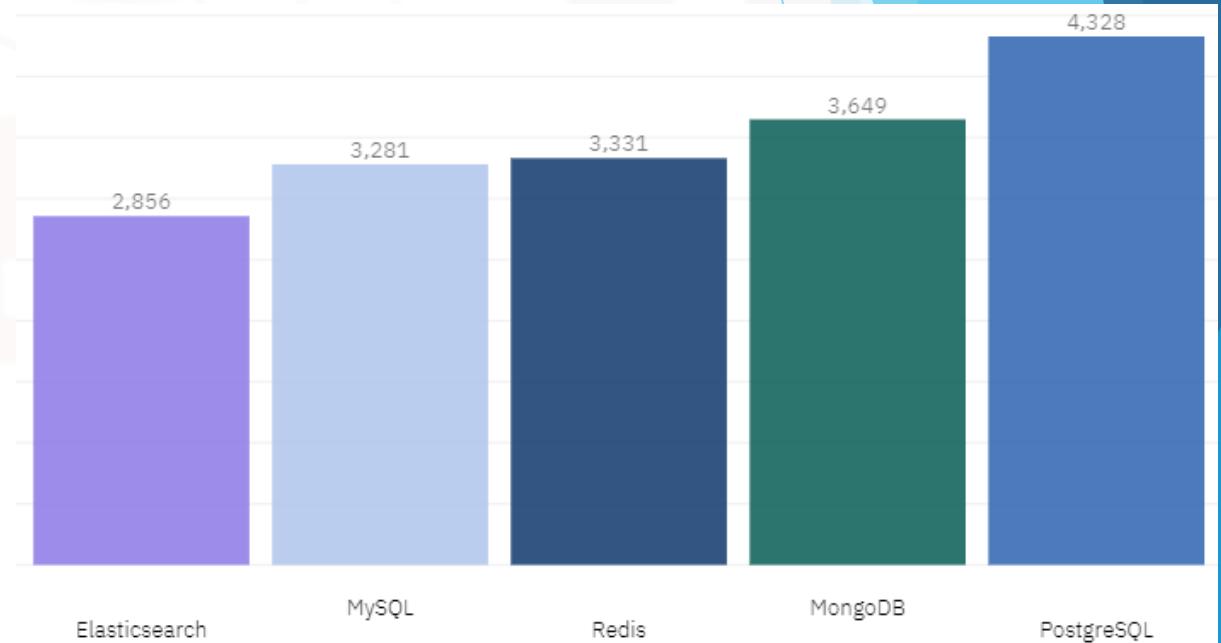
DATABASE TRENDS – FINDINGS & IMPLICATIONS

Findings

▶ MySQL are the commonly database

▶ MongoDB is the fifth common database, but the second for learn next year.

▶ A large number of databases are used

Implications

▶ MySQL is the most used database, it can be integrated with a multitude of platforms and languages.

▶ The NoSQL databases are growing.

▶ Databases are more flexible than ever. Each of one have a peculiarity and it enables a better management of data.
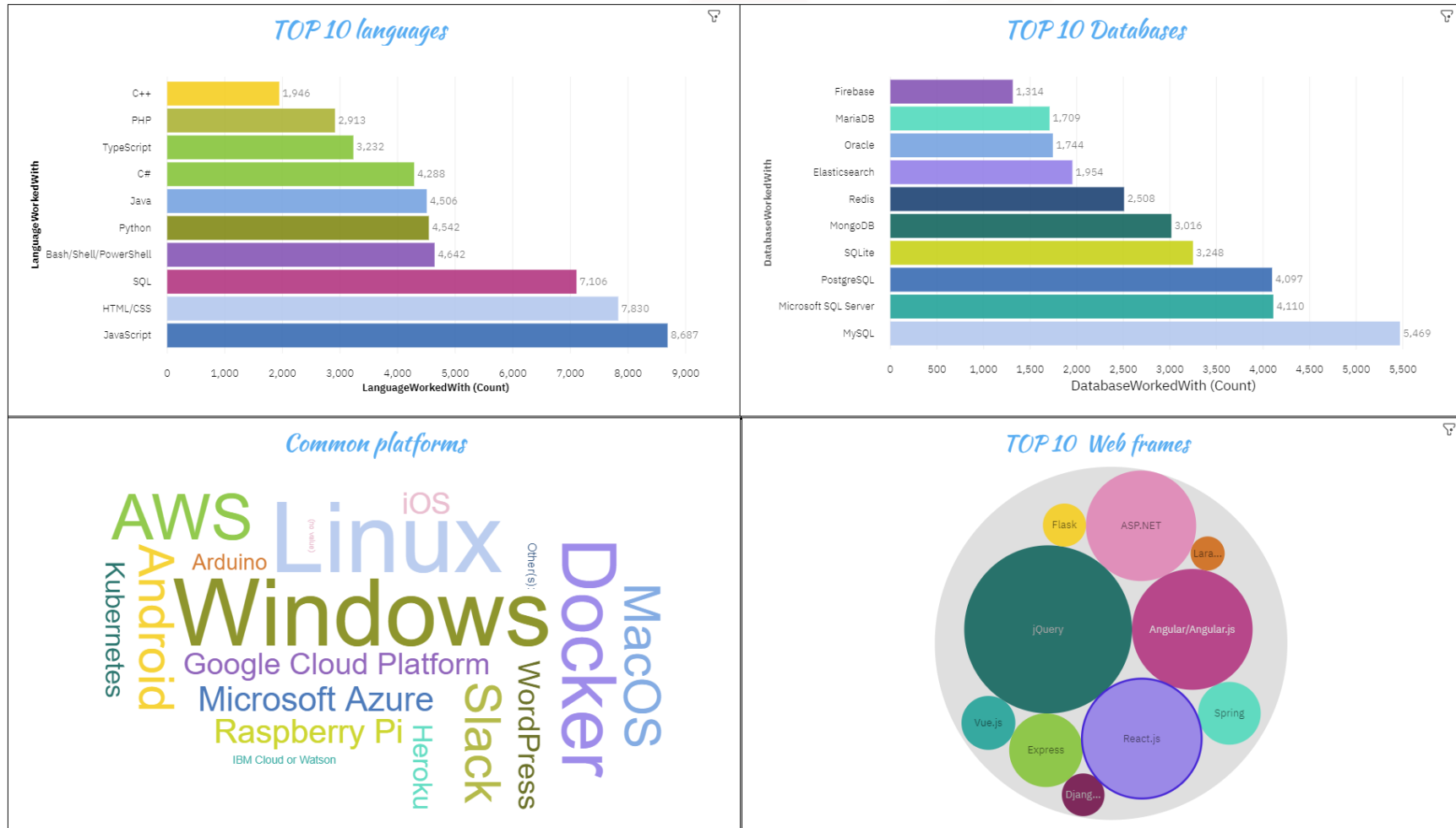
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DASHBOARD

▶ **Link to Cognos Dashboard**
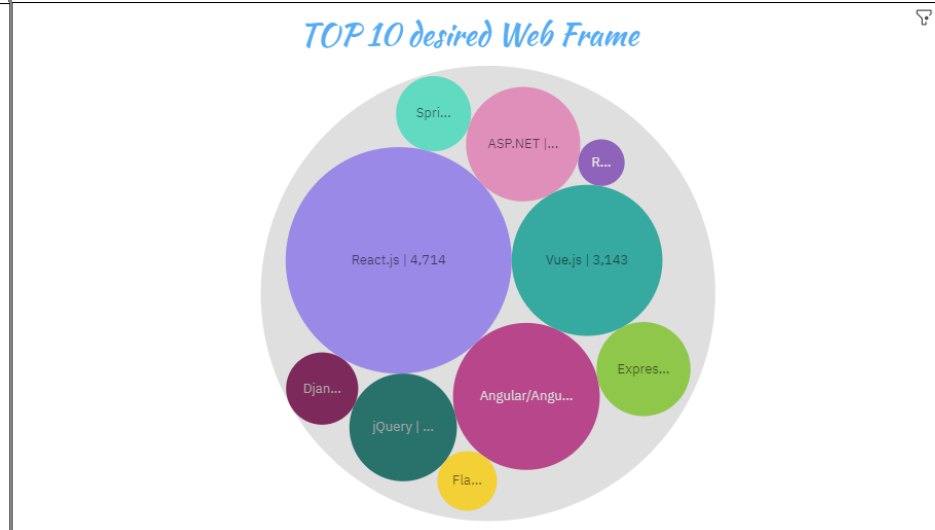

Commonly platforms wordcloud
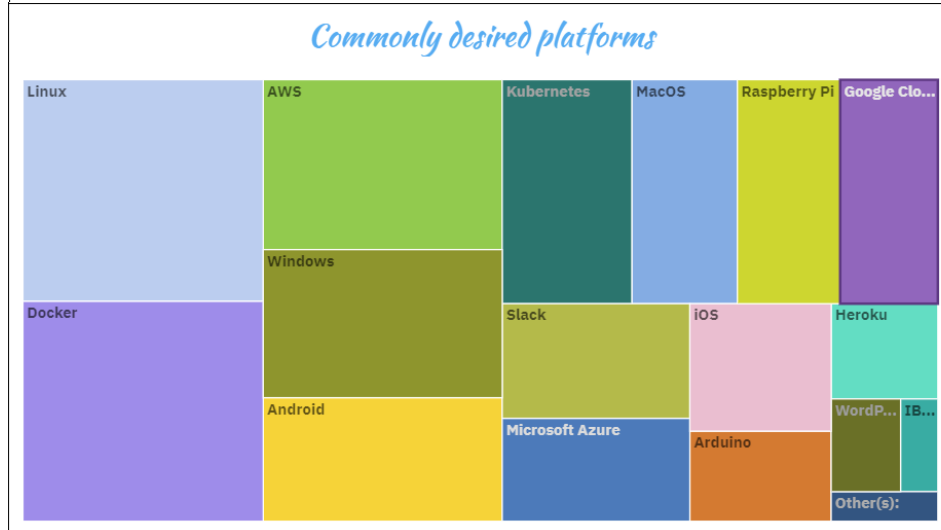
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DASHBOARD TAB 1
Most common used technologies

DASHBOARD TAB 2
Technologies wanted to learn

TOP 10 desired languages

Language	Count
Kotlin	1,890
Go	2,759
Java	2,953
Bash/Shell/PowerShell	3,097
C#	3,591
TypeScript	4,088
SQL	5,012
Python	5,239
HTML/CSS	5,328
JavaScript	6,630

TOP 10 desired Databases

Database	Count
DynamoDB	1,044
MariaDB	1,385
Firebase	1,650
SQLite	2,437
Microsoft SQL Server	2,706
Elasticsearch	2,856
MySQL	3,281
Redis	3,331
MongoDB	3,649
PostgreSQL	4,328

Commonly desired platforms

Linux, AWS, Kubernetes, MacOS, Raspberry Pi, Google Clo..., Docker, Windows, Slack, iOS, Heroku, Android, Microsoft Azure, Arduino, WordP..., IB..., Other(s):

TOP 10 desired Web Frame

Spri..., ASP.NET | ..., R..., React.js | 4,714, Vue.js | 3,143, Djan..., jQuery | ..., Angular/Angu..., Expres..., Fla...

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DASHBOARD TAB 3
Demographic data

Gender of respondents

Gender
- (no value)
- Woman;Man;Non-...
- Woman;Man
- Woman;Non-binar...
- Man;Non-binary, g...
- Non-binary, gender...
- Woman
- Man

6.5%

92.5%

Respondent count for country

Country (Count)
3,127

1

Age distribution

Age (Count)

900
800 — 787
738
722 722
700 — 679 651
581
600
531
500 — 489 483
406 395 393
400 308
300 279
203 232
200 187
162
136
100 — 78 95
66 64 57 32
16

16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 65 67 71 99
Age

Education level by gender

EdLevel
- (no value)
- Associate degree
- Bachelor's degree (BA, BS...
- I never completed any for...
- Master's degree (MA, MS, ...
- Other doctoral degree (Ph...
- Primary/elementary school
- Professional degree (JD, M...
- Secondary school (e.g. Am...
- Some college/university st...

Gender

(no value)

Woman;Man;Non-binary, genderqueer, or gender
non-conforming

Woman;Man

Woman;Non-binary, genderqueer, or gender
non-conforming

Man;Non-binary, genderqueer, or gender
non-conforming

Non-binary, genderqueer, or gender
non-conforming

Woman

Man   5,341   2,484   1,280

0 1,000   3,000   5,000   7,000   9,000   11,000
Gender (Count)

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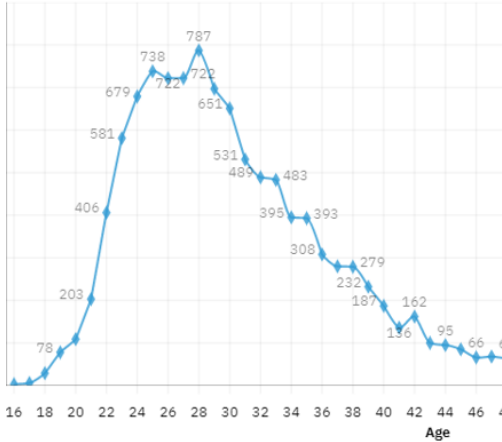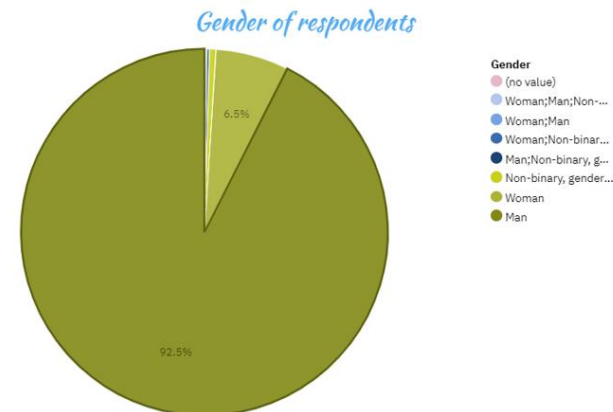SKILLS NETWORK

DISCUSSION

The world is becoming more complex and automated, technological jobs will grow and only countries that adapt will continue to develop.

Sadly only the **6,5%** of the respondent are women. this would suppose an economic inequality given that the jobs of the future are technological.

Gender of respondents

OVERALL FINDINGS & IMPLICATIONS

Findings

- Tech jobs are mostly done by men
- Tech roles are adopted by young people.
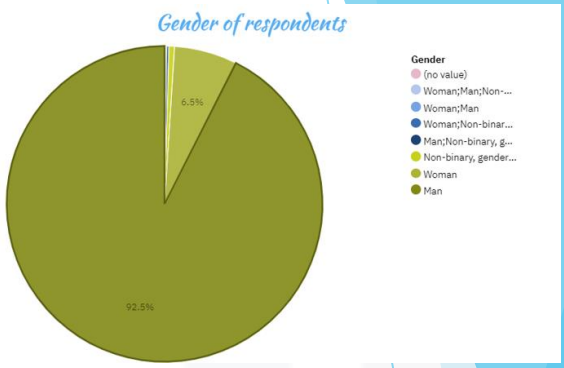- EEUU, India, UK and Germany are the main countries with tech jobs.

Implications

- In the world are a big segregation by gender, this would suppose an economic inequality
- Most new jobs need at least one technologic tool. The jobs of the future will be technological
- The number of Jobs are correlated with the technological development. This countries have a highest technological level
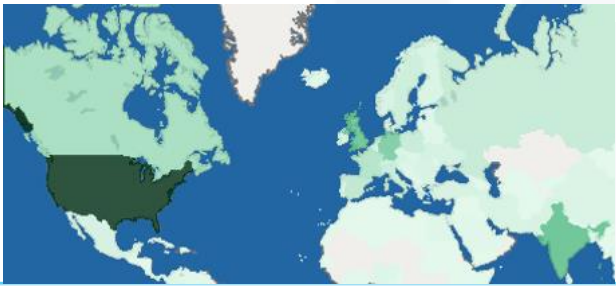
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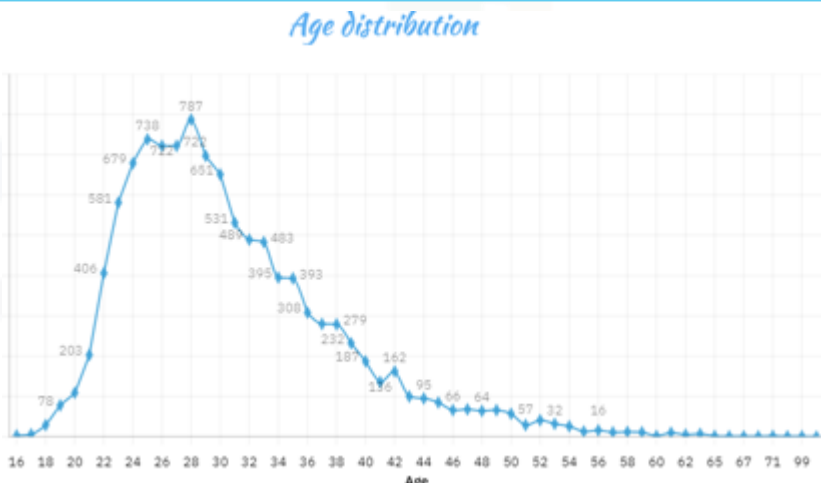
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CONCLUSION

In the world are a big segregation by gender, this would suppose an economic inequality

Gender of respondents

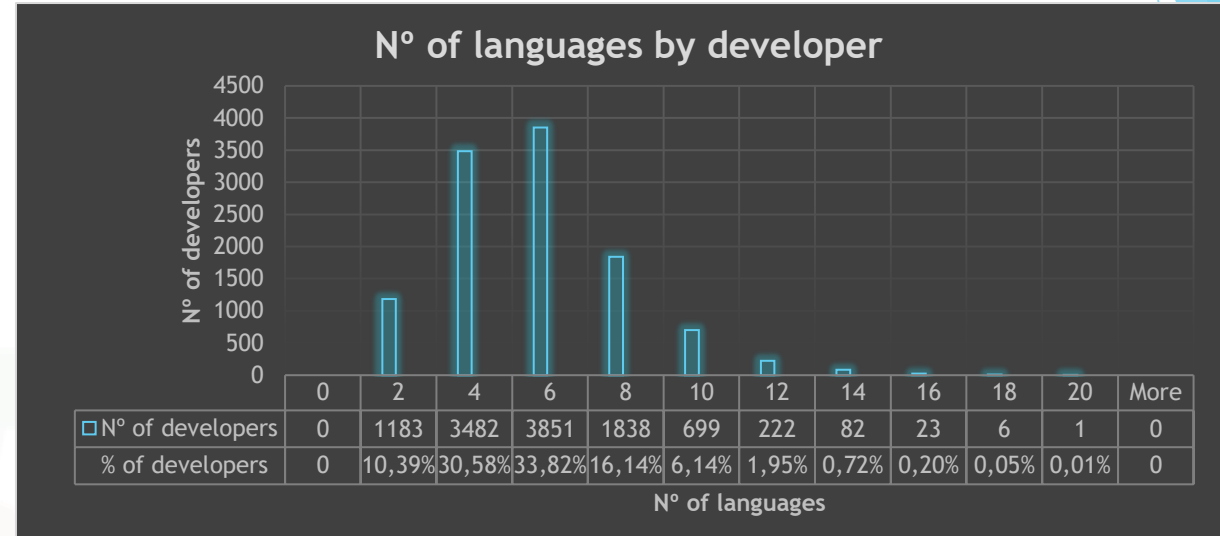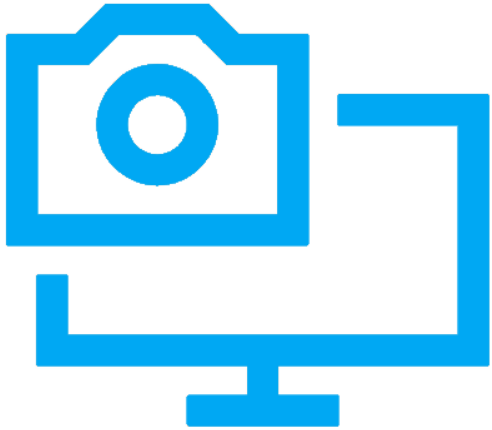WEB programming are the principal develop activity

EEUU, India, UK and Germany are countries with highest technological level

Age distribution

A large group of developers are Young.

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APPENDIX

Nº of languages by developer

	0	2	4	6	8	10	12	14	16	18	20	More
Nº of developers	0	1183	3482	3851	1838	699	222	82	23	6	1	0
% of developers	0	10,39%	30,58%	33,82%	16,14%	6,14%	1,95%	0,72%	0,20%	0,05%	0,01%	0

Nº of languages

Mean	5,250900149
Standard Error	0,022257997
Median	5
Mode	5
Standard Deviatic	2,375148322
Sample Variance	5,641329552
Kurtosis	1,417515055
Skewness	0,859922554
Range	18
Minimum	1
Maximum	19
Sum	59792
Count	11387
Confidence Level	0,04362951

Distribution of Nº of languages
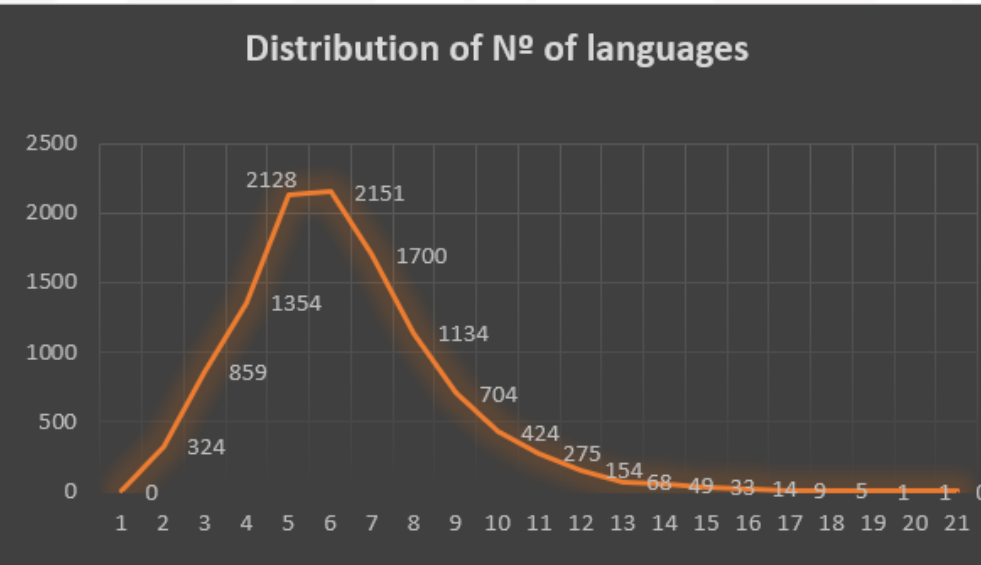
The number of languages by developer shaped normal distribution with the center in 5.
The 64% of develovepers know between 2 and 6 languages.

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GITHUB JOB POSTINGS

Number of job posting

Technology	N° Job posting
C	184
java	92
JavaScript	65
Python	51
Scala	47
C++	24
PostgreSQL	17
SQL Server	16
C#	14
Oracle	6
MySQL Server	5
MongoDB	4

N° Job posting
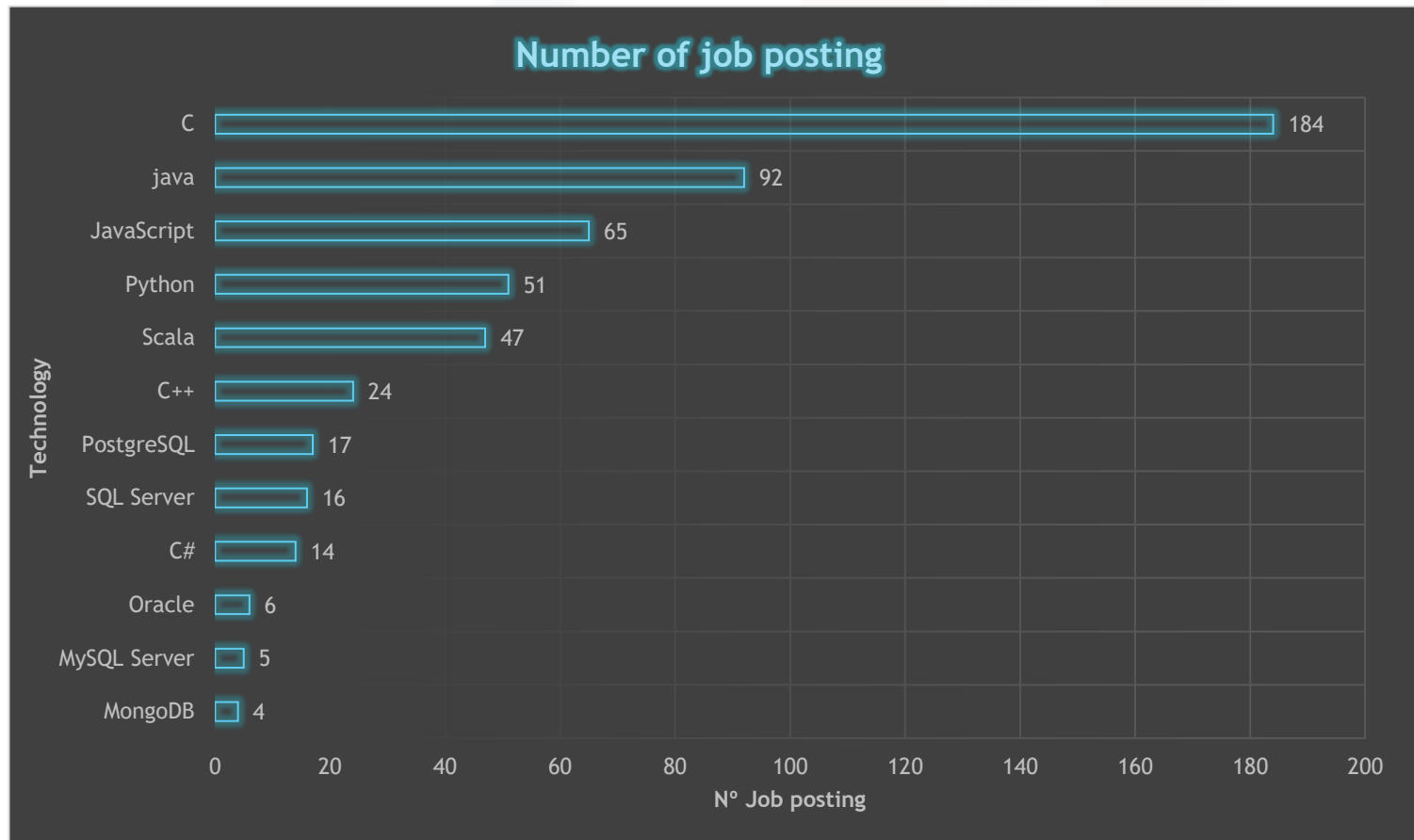
Altough C isn't a language in fashion, it is still powerful and is the main language in job offer. Python and Java are the most offer Jobs after C.

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