Analyzing Developers' Technology Trends

Ajay Kalyan K

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IBM **Developer**

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OUTLINE

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

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EXECUTIVE SUMMARY

- Analyze key technology trends influencing the development community.

- Assess the impact of these trends on software development in terms of:
  - Programming Languages
  - Databases
  - Web Frames
  - Platforms

- Identify and predict the future trends.

- Demographics and it's influence.

- Gender gap

INTRODUCTION

- **About:**
  Analyze technology trend in software and web development among developers around the world

- **Purpose of this Analysis:**
  - Identify the top programming languages, database, platform and web frame skills in demand
  - Identify skill requirements for future
  - Identify human resource gap in the industry

- **Audience for this Presentation:**
  - Programmers
  - IT industry leaders
  - Computer science students

METHODOLOGY

- Data Collection (Sources)
  - Stack overflow developer 2019 survey
  - GitHub job postings
  - Programming languages annual salary
- Data Wrangling
- Data Exploration
- Data Cleaning
- Data Visualization
  - Python matplotlib & turtle
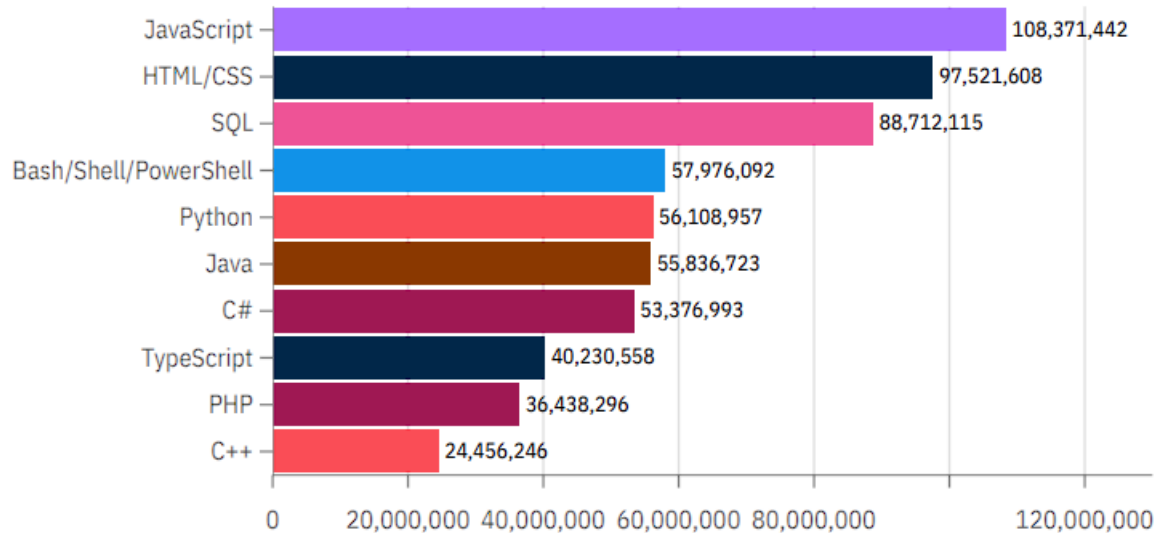 - IBM Cognos
- Presentation

RESULTS

	Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith
0	4	C	C	MySQL	MySQL	Linux
1	4	C++	C#	SQLite	SQLite	Windows
2	4	C#	JavaScript	NaN	NaN	NaN
3	4	Python	SQL	NaN	NaN	NaN
4	4	SQL	NaN	NaN	NaN	NaN
...	...	...	...	...	...	...
74584	25142	Go	Python	NaN	NaN	NaN
74585	25142	HTML/CSS	R	NaN	NaN	NaN
74586	25142	PHP	NaN	NaN	NaN	NaN
74587	25142	Python	NaN	NaN	NaN	NaN
74588	25142	R	NaN	NaN	NaN	NaN

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PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year

Top 10 Languages Worked With

Language	Value
JavaScript	108,371,442
HTML/CSS	97,521,608
SQL	88,712,115
Bash/Shell/PowerShell	57,976,092
Python	56,108,957
Java	55,836,723
C#	53,376,993
TypeScript	40,230,558
PHP	36,438,296
C++	24,456,246

Top 10 Most Desired Languages for the Next Year

Language	Value
JavaScript	82,435,603
Python	65,819,056
HTML/CSS	65,736,854
SQL	62,270,210
TypeScript	50,369,647
C#	44,603,822
Bash/Shell/PowerShell	38,409,434
Java	36,736,341
Go	34,588,729
Kotlin	23,464,961

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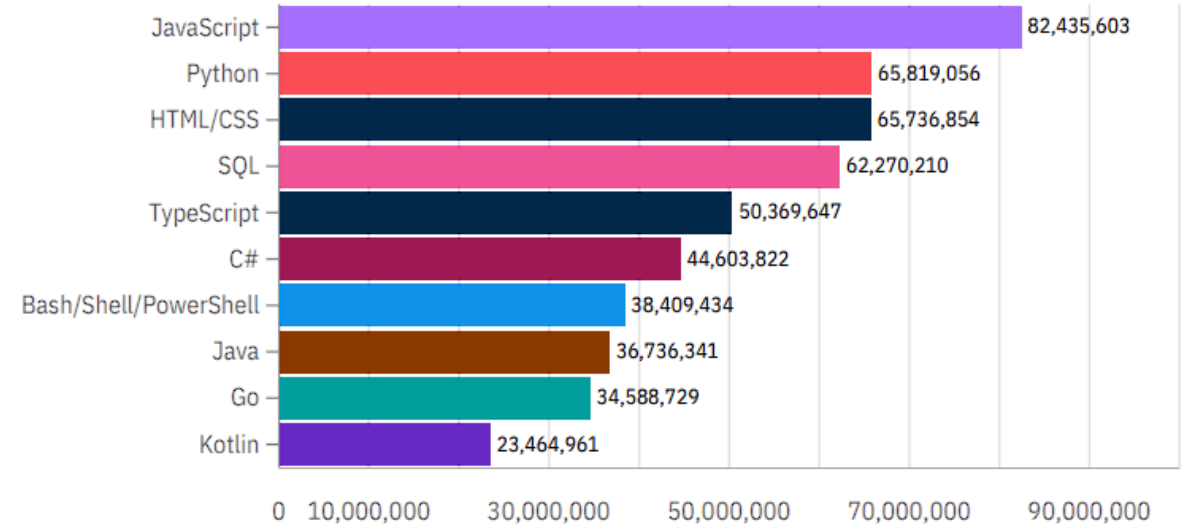
PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is top trending language in the world

- Python and TypeScript are becoming more and more popular

- HTML/CSS and SQL still has great portion in language usage trend

Implications

- Web developments and Web developers are still in high demands

- JavaScript and TypeScript are crucial to learn for developers

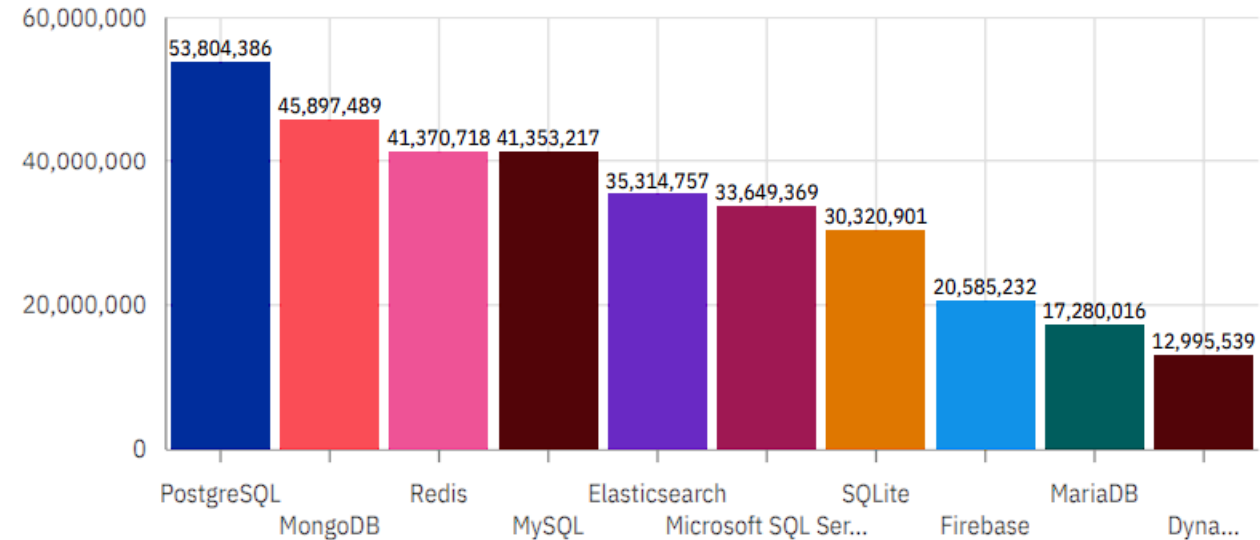- Python is the new trending language, especially popular in AI fields

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DATABASE TRENDS

Current Year

Next Year

Top 10 Databases Worked With
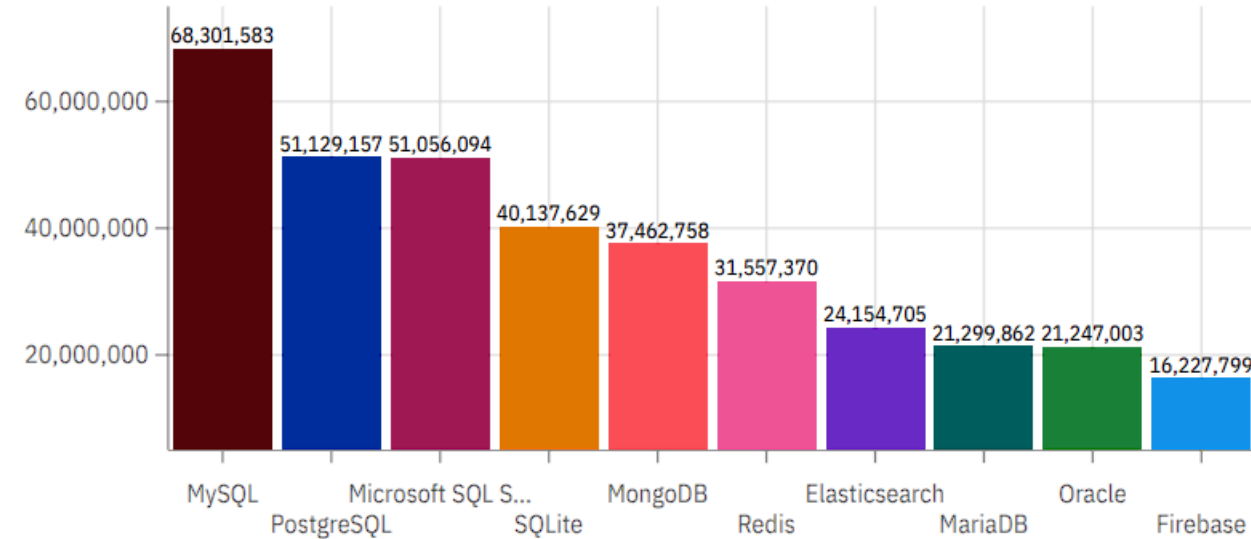
Top 10 Most Desired Database for the Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most Database worked with, followed by PostgreSQL and Microsoft SQLServer
- PostgreSQL is the most desired database to learn by people.

Implications

- Software development and Big Data technology still requires SQL
- PostgreSQL is an important database to learn.
- NoSQL databases will make an impact for relational databases
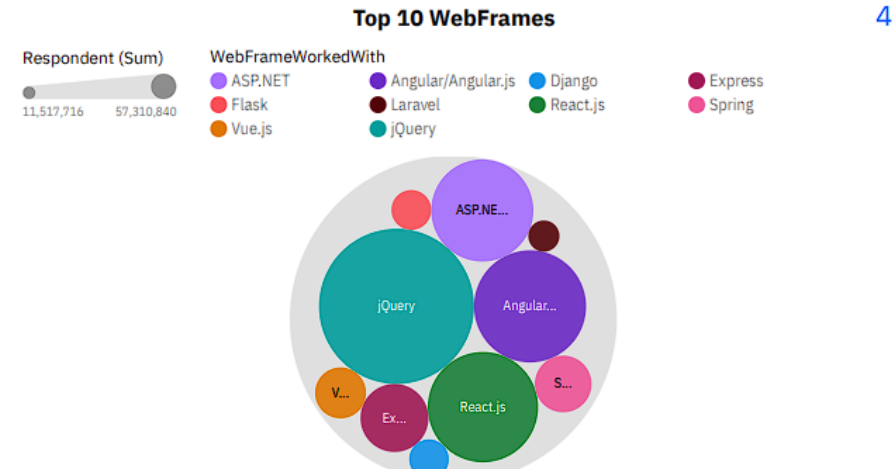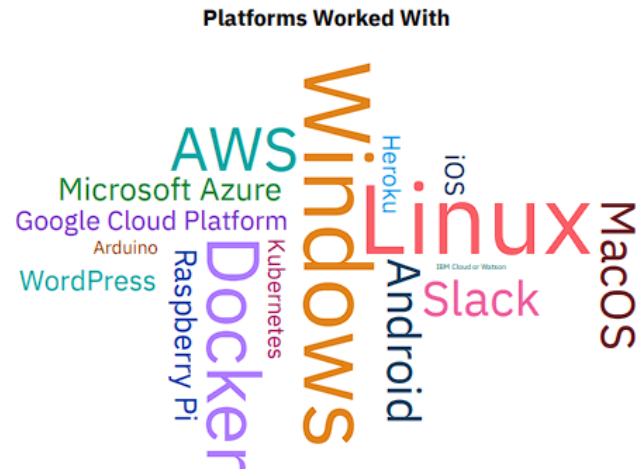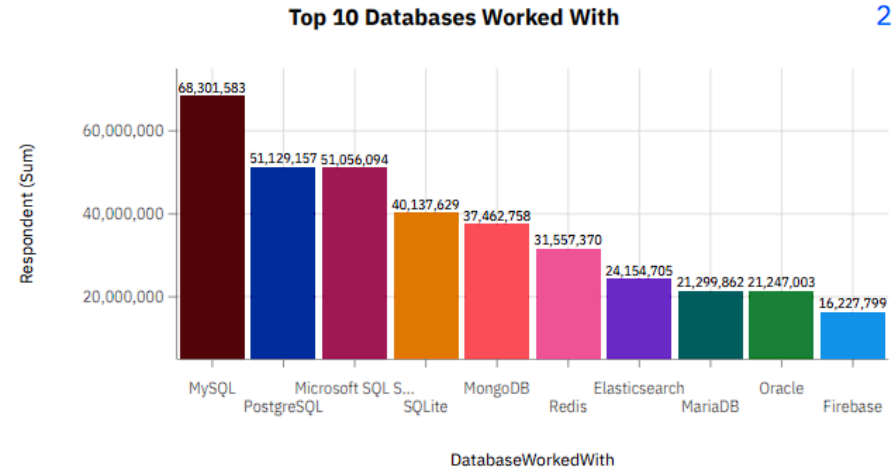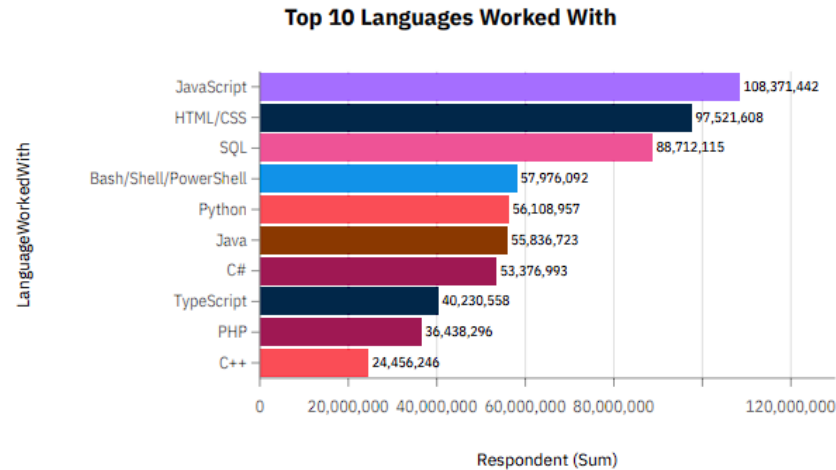
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DASHBOARD

Dashboard GitHub Link:

https://github.com/kal-aj/IBM-Data-Analyst-Capstone-Project/blob/e6a5aa312a18bf466167e64234891a944848e77e/Part%20A%20-%20Building%20a%20dashboard%20with%20IBM%20Cognos%20Analytics.pdf
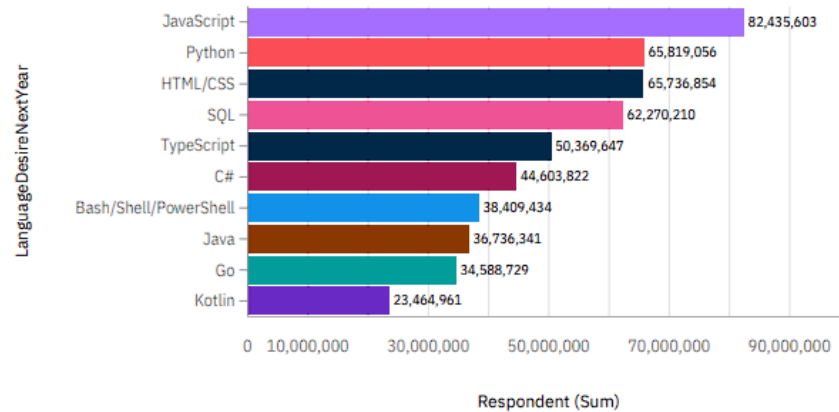
DASHBOARD TAB 1

Current Technology Usage

Top 10 Languages Worked With — 1

Language	Respondent (Sum)
JavaScript	108,371,442
HTML/CSS	97,521,608
SQL	88,712,115
Bash/Shell/PowerShell	57,976,092
Python	56,108,957
Java	55,836,723
C#	53,376,993
TypeScript	40,230,558
PHP	36,438,296
C++	24,456,246

LanguageWorkedWith

Respondent (Sum)

Top 10 Databases Worked With — 2

Database	Respondent (Sum)
MySQL	68,301,583
PostgreSQL	51,129,157
Microsoft SQL S...	51,056,094
SQLite	40,137,629
MongoDB	37,462,758
Redis	31,557,370
Elasticsearch	24,154,705
MariaDB	21,299,862
Oracle	21,247,003
Firebase	16,227,799

DatabaseWorkedWith

Platforms Worked With — 3

AWS, Windows, Microsoft Azure, Heroku, iOS, Linux, Google Cloud Platform, Arduino, IBM Cloud or Watson, MacOS, WordPress, Kubernetes, Docker, Android, Slack, Raspberry Pi

Top 10 WebFrames — 4

Respondent (Sum)
11,517,716 — 57,310,840

WebFrameWorkedWith
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- Laravel
- React.js
- Spring
- Vue.js
- jQuery

jQuery, Angular..., ASP.NE..., React.js, V..., Ex..., S...

DASHBOARD TAB 2

Future Technology Trend

Top 10 Most Desired Languages for the Next Year 5

Language	Respondent (Sum)
JavaScript	82,435,603
Python	65,819,056
HTML/CSS	65,736,854
SQL	62,270,210
TypeScript	50,369,647
C#	44,603,822
Bash/Shell/PowerShell	38,409,434
Java	36,736,341
Go	34,588,729
Kotlin	23,464,961

Top 10 Most Desired Database for the Next Year 6

PostgreSQL 53,804,386 · MongoDB 45,897,489 · Redis 41,370,718 · MySQL 41,353,217 · Elasticsearch 35,314,757 · Microsoft SQL Ser... 33,649,369 · SQLite 30,320,901 · Firebase 20,585,232 · MariaDB 17,280,016 · Dyna... 12,995,539
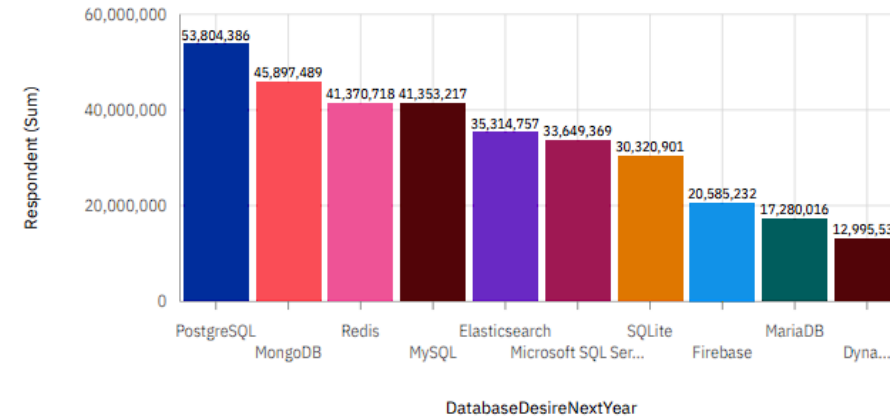
Most Desired Platforms for the Next Year 7

Linux · Docker · AWS · Windows · Android · Kubernetes · MacOS · Raspberry Pi · Google Cl... · iOS · Arduino · Slack · Heroku · Microso... · WordP... · I...
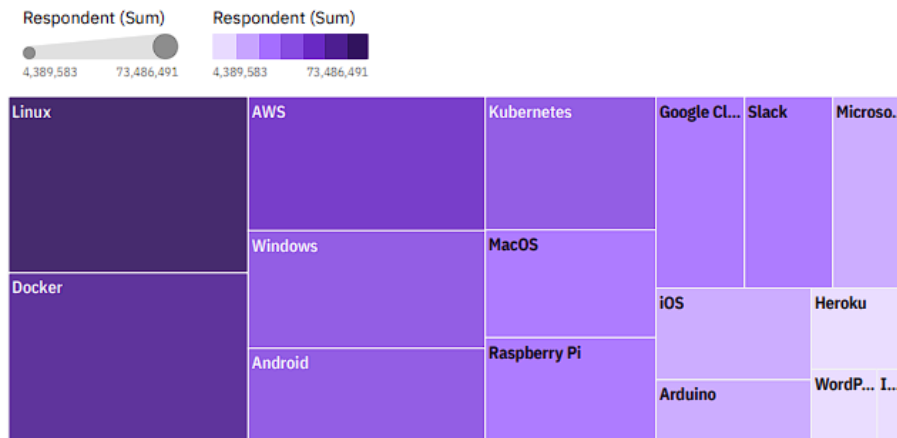
Top 10 Most Desired WebFrames for the Next Year 8

WebFrameDesireNextYear
- ASP.NET
- Flask
- Vue.js
- Angular/Angular.js
- React.js
- jQuery
- Django
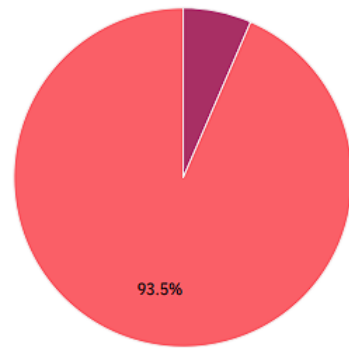- Ruby on Rails
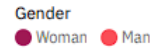- Express
- Spring

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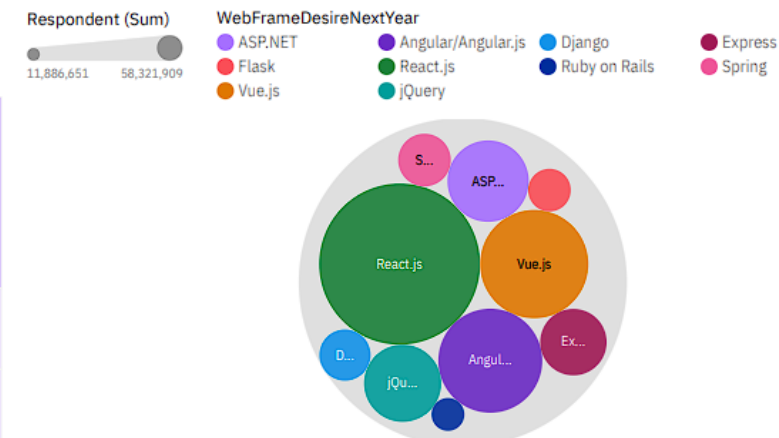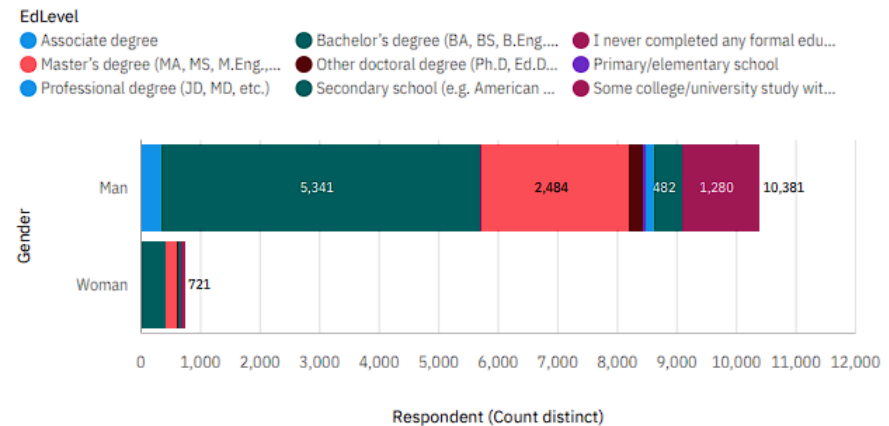
DASHBOARD TAB 3

Demographics

Respondent classified by Gender 9

Gender
● Woman ● Man

93.5%
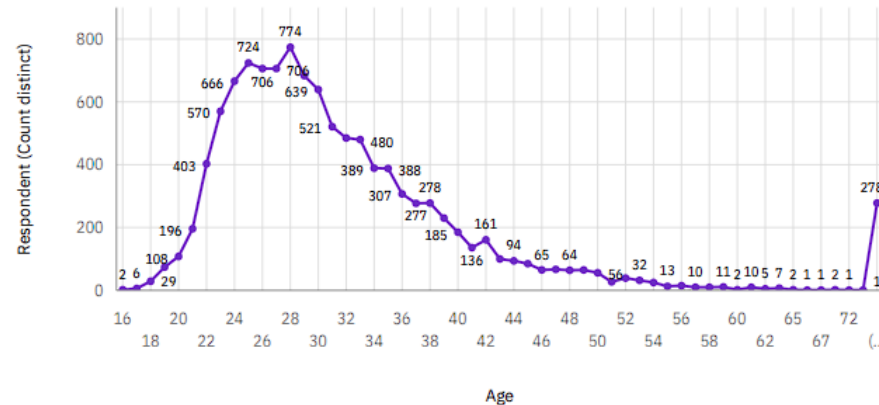
Respondent Count for Countries 10

1188 1459 114 16 310 49 53 201 24 163 86 268 68 1063 837 50 3152 2646 913 3581 645 19 17 1895 2070 427 427

© Mapbox © OpenStreetMap

Respondent Count by Age 11

800 — 774
724 — 706 706
666 — 639
570 — 521
403 — 480
389 388
307 — 278
277
196 — 185 — 161
108 — 136 — 94 — 65 64
2 6 — 29 — 56 — 32 — 13 — 10 — 11 2 10 5 7 2 1 1 2 1 — 278
1

Respondent (Count distinct)

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 72 (...

Age
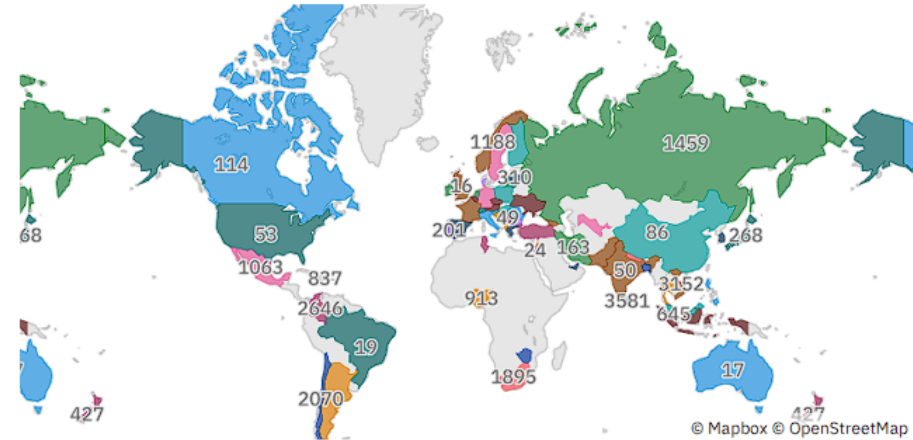
Respondent Count by Gender, classified by Formal Education Level 12

EdLevel
● Associate degree ● Bachelor's degree (BA, BS, B.Eng.... ● I never completed any formal edu...
● Master's degree (MA, MS, M.Eng.,... ● Other doctoral degree (Ph.D, Ed.D... ● Primary/elementary school
● Professional degree (JD, MD, etc.) ● Secondary school (e.g. American ... ● Some college/university study wit...

Man: 5,341 — 2,484 — 482 — 1,280 — 10,381

Woman: 721

Gender

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 11,000 12,000

Respondent (Count distinct)

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DISCUSSION

- Technology Trends nowand future
- Training and Reskilling workers
- Females participation in Technology field
- Bridge divide of technology gaps in developing countries
- Age and education discrimination

OVERALL FINDINGS & IMPLICATIONS

Findings

- Technology trends changes every year

- USA, India and China are the countries with most developers

- There are extreme gender and age discrimination

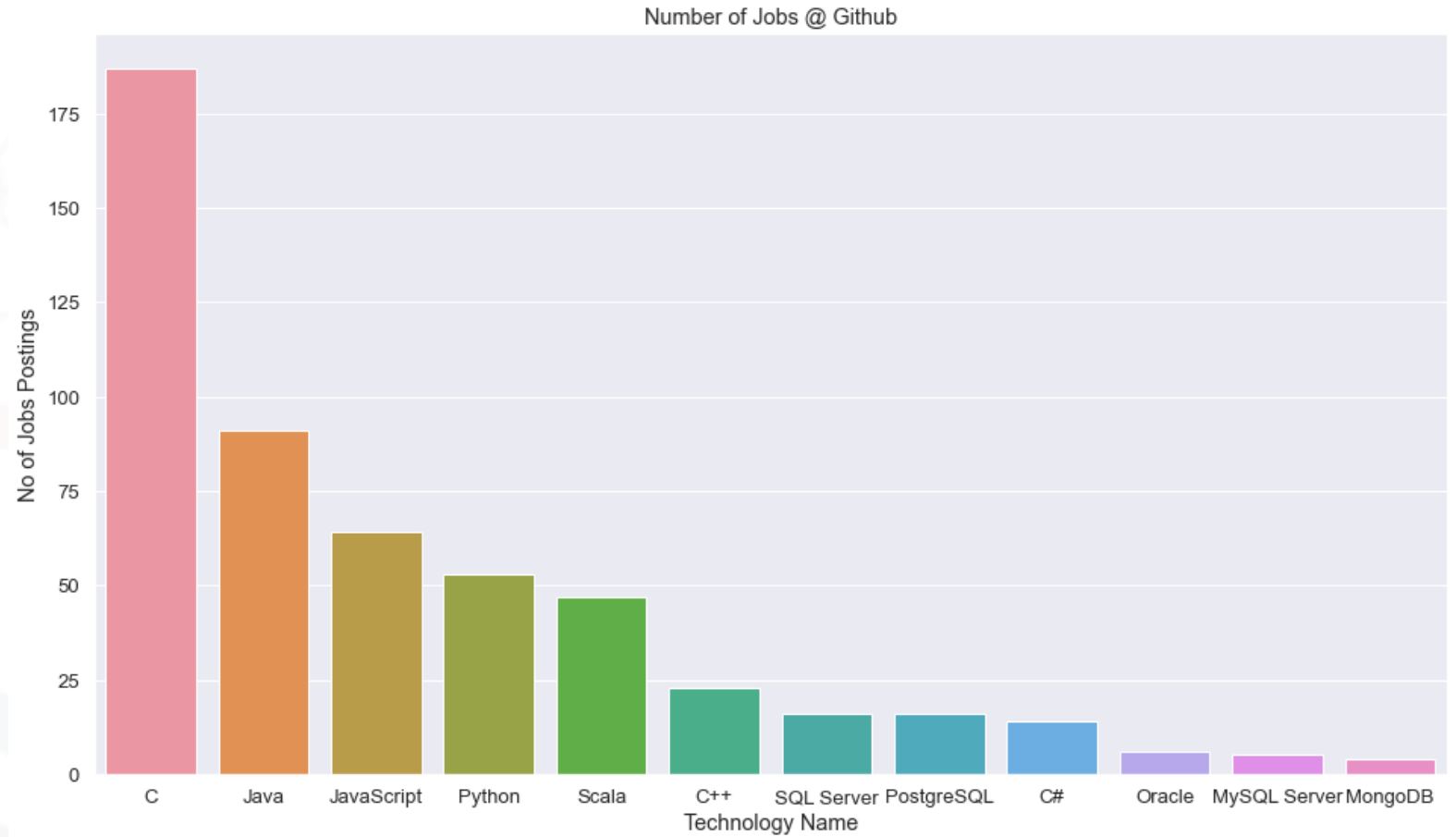- Docker and AWS are the most popular platform

Implications

- Programmers should always follow the latest technology trends

- More countries should have the equal chance to be exposed to new technology

- Gender and Age should not be one of the concerns or benefits of Employment
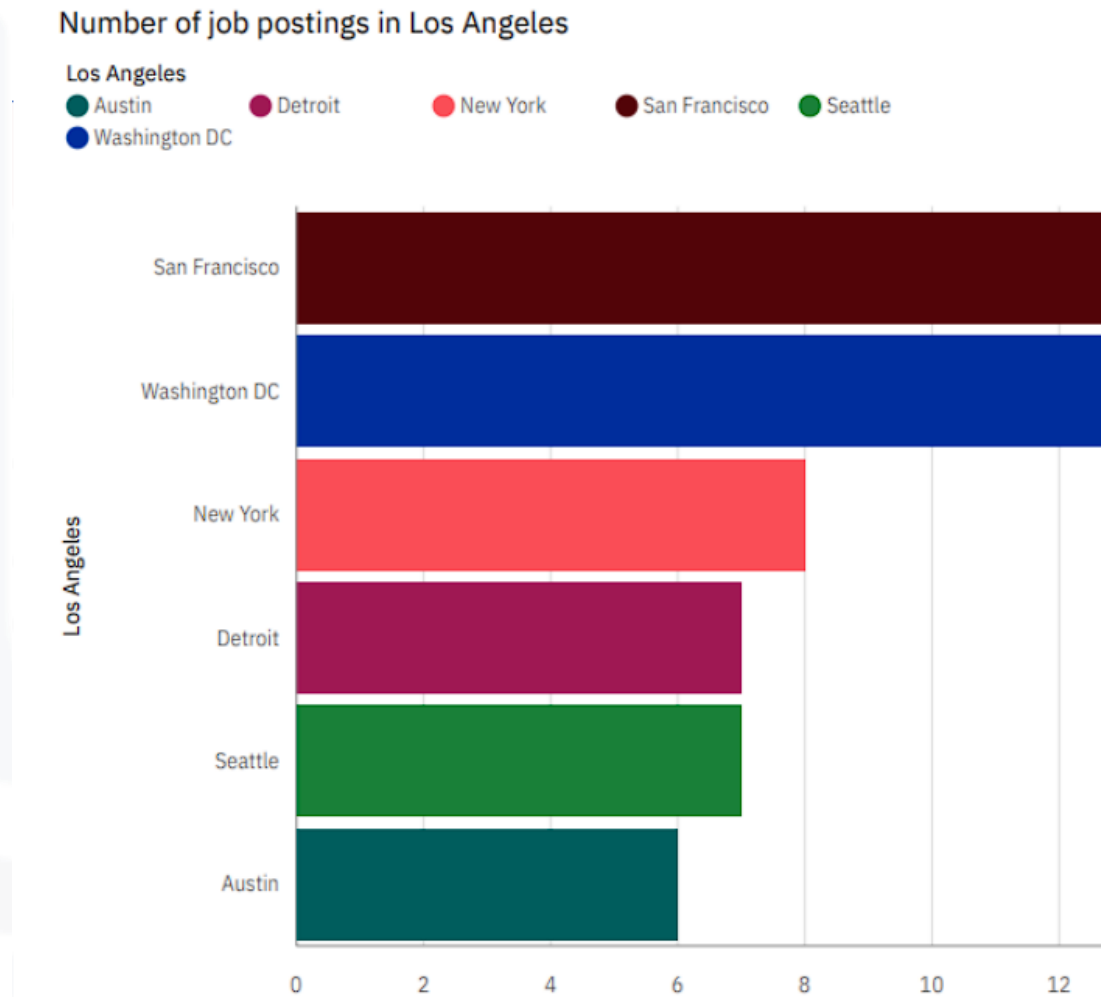
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CONCLUSION

- Javascript, HTML/CSS,SQL always have a constant demand

- Demand for Python is very high and is greatly increasing

- PostGRE SQL is seems to be highly liked and useful than the rest, while MySQL is dropping in demand

- Expertise in Linux would be very beneficial

- While there is a huge gender gap in the industry, there is a great scope for women too

APPENDIX

Number of Jobs @ Github

JOB POSTINGS

POPULAR LANGUAGES