Technology Trends and Analysis

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OUTLINE

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

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EXECUTIVE SUMMARY

- Programming is famous career nowadays

- Trends in Programming Language Survey
  - Top 10 Languages Respondent currently work with
  - Top 10 Databases Respondent currently work with
  - Survey of Languages, Platforms, Databases and Web Frames respondent desire work next year

- Gender Gaps in Jobs

- Most of developer want to learn more than 1 language

- Different programming language offer different range of average annual salary

- Technological Gaps in Countries

- Survey of Respondent use Technologies based on Age

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INTRODUCTION

'Analyzing Trends in Software Development'

Purpose:
1) Popular IDEs
2) Skill Requirement for future
3) Top Databases skills in demand
4) Top Languages currently used by Responder
5) Future platforms Responder desire work with Next Year

Audience: Human Resource and IT Department

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METHODOLOGY

- Data Collection Sources
  - Stack Overflow Developer 2019 Survey
  - GitHub Job Postings
  - Programming Languages Annual Salary
- Data Exploration
- Data Cleaning
- Data Visualization
- Presentation

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RESULTS

Below Mentioned Data Table used to Identify the Results.

|	Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith	PlatformDesireNextYear
1	4.0	C	C	MySQL	MySQL	Linux	Linux
2	4.0	C++	C#	SQLite	SQLite	Windows	Windows
3	4.0	C#	JavaScript	NaN	NaN	NaN	NaN
4	4.0	Python	SQL	NaN	NaN	NaN	NaN
5	4.0	SQL	NaN	NaN	NaN	NaN	NaN
...	...	...	...	...	...	...	...
74585	25142.0	Go	Python	NaN	NaN	NaN	NaN
74586	25142.0	HTML/CSS	R	NaN	NaN	NaN	NaN
74587	25142.0	PHP	NaN	NaN	NaN	NaN	NaN
74588	25142.0	Python	NaN	NaN	NaN	NaN	NaN
74589	25142.0	R	NaN	NaN	NaN	NaN	NaN

74589 rows × 14 columns

The results come out with three dashboard;
- First dashboard is about programming language, database, platform as well as web frame used in their daily jobs.
- Second dashboard is about information answered regarding to future desired things to learn by respondent about programming language, database, platform.
- Third dashboard briefly display information about demographic data of the respondent.
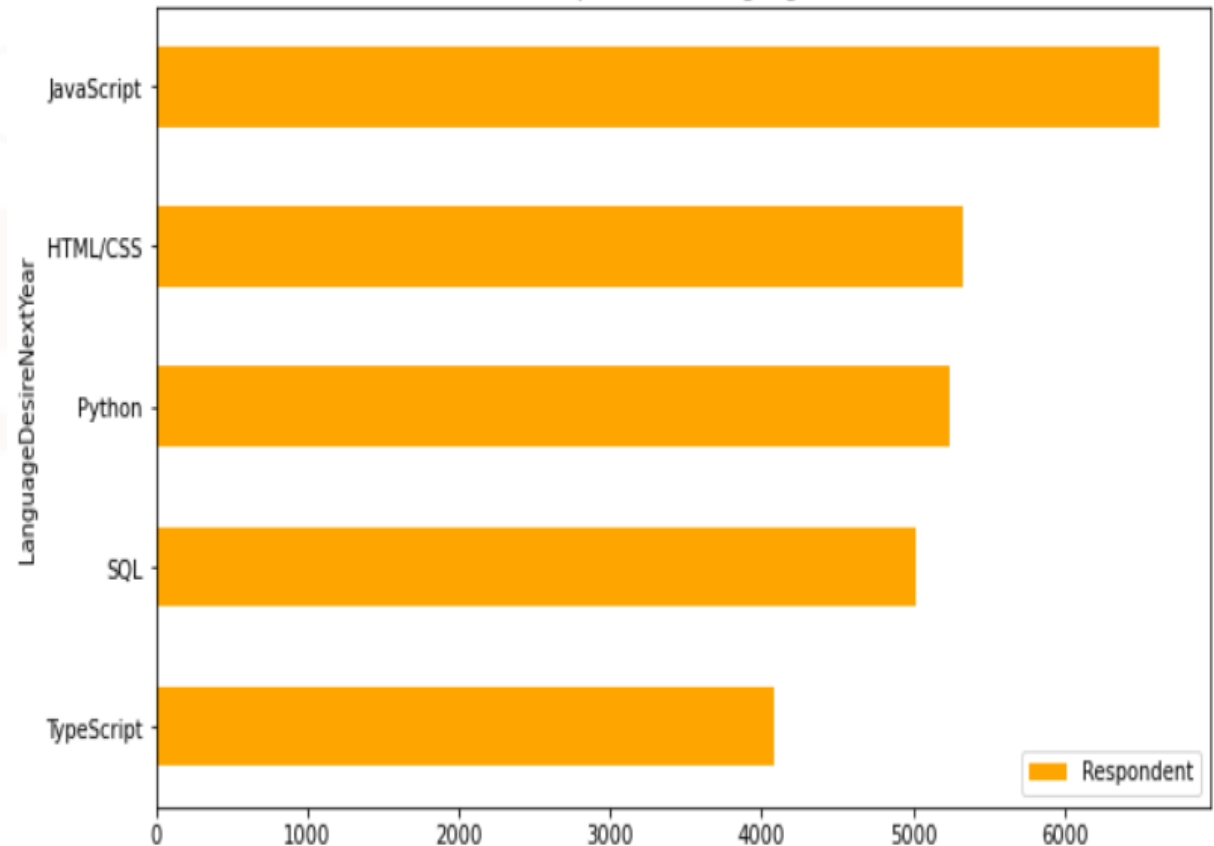
PROGRAMMING LANGUAGE TRENDS

Current Year
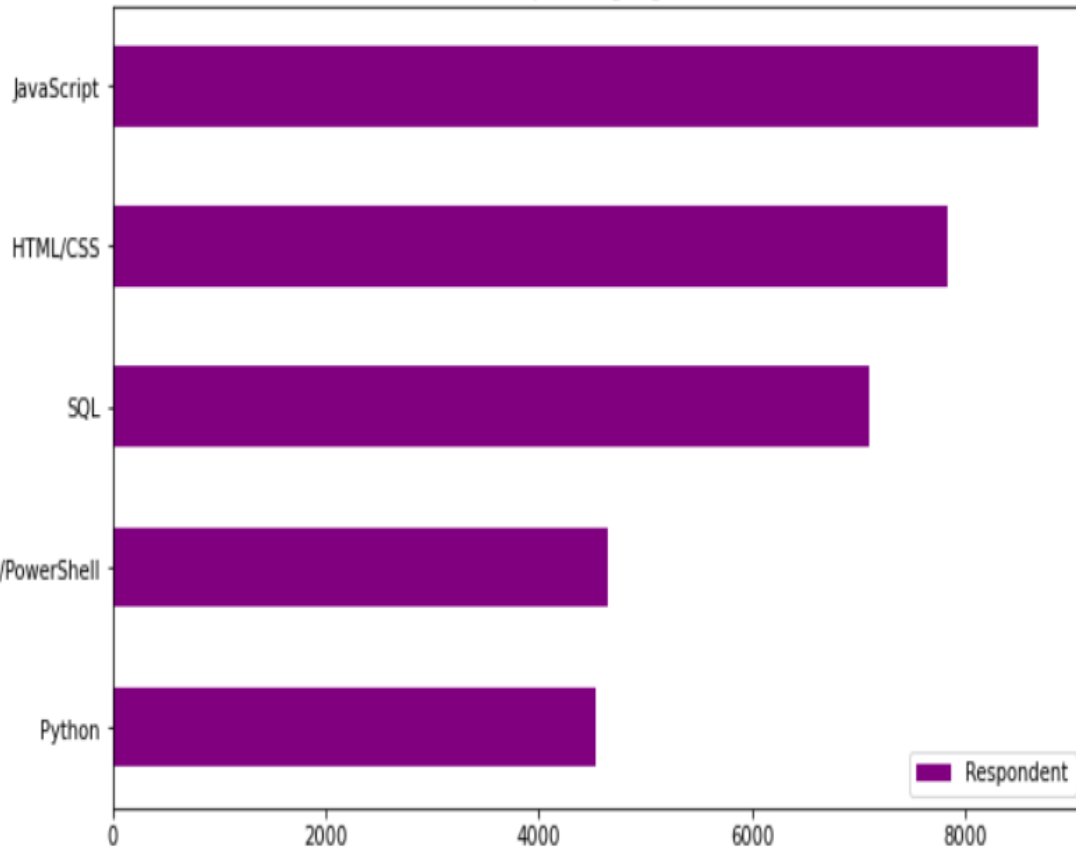
Next Year

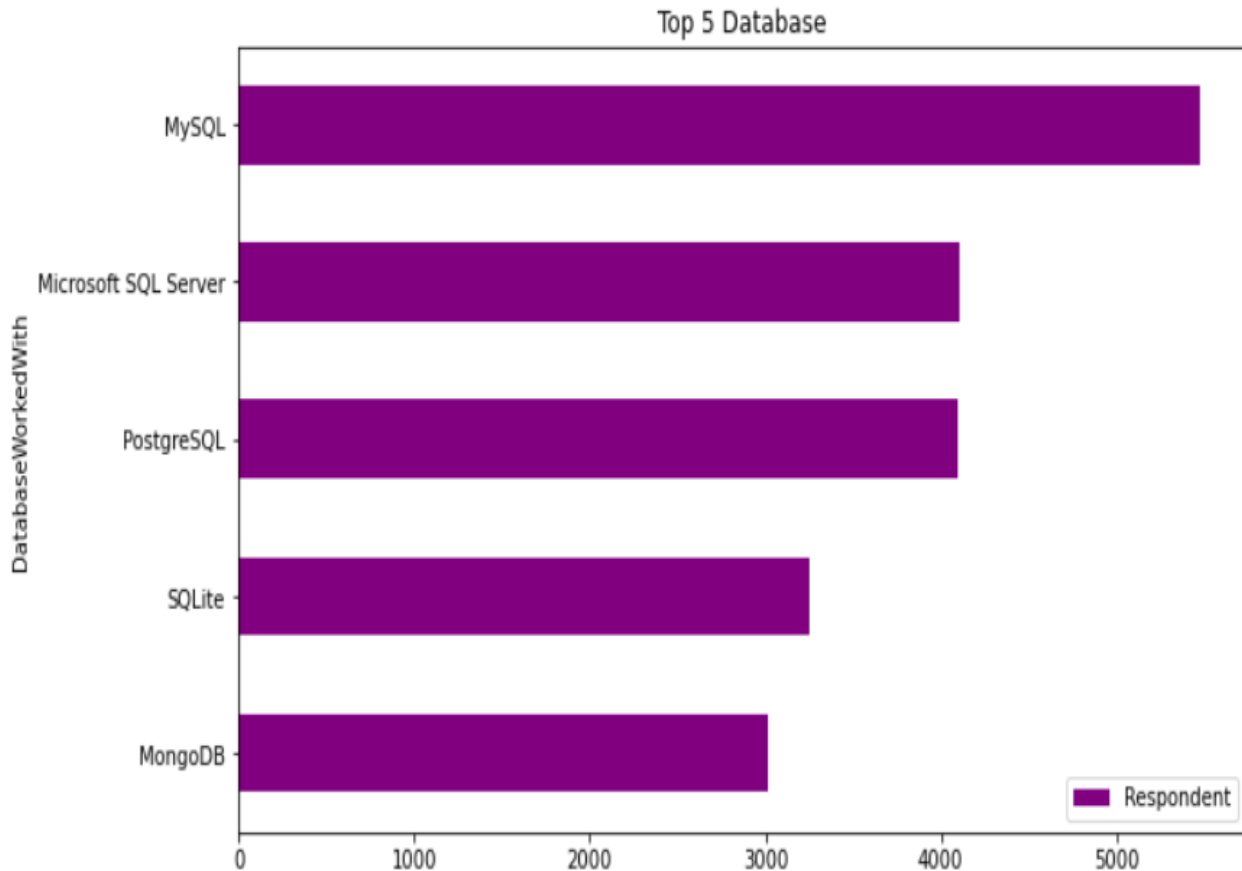# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings:

- JavaScript, HTML/CSS, SQL are top 3 this year

- Python and Typescript becoming popular next year

- PowerShell edged out in next year

- Plus, Bash/Shell had been chosen as top desired language to learn in upcoming year.

Implications:

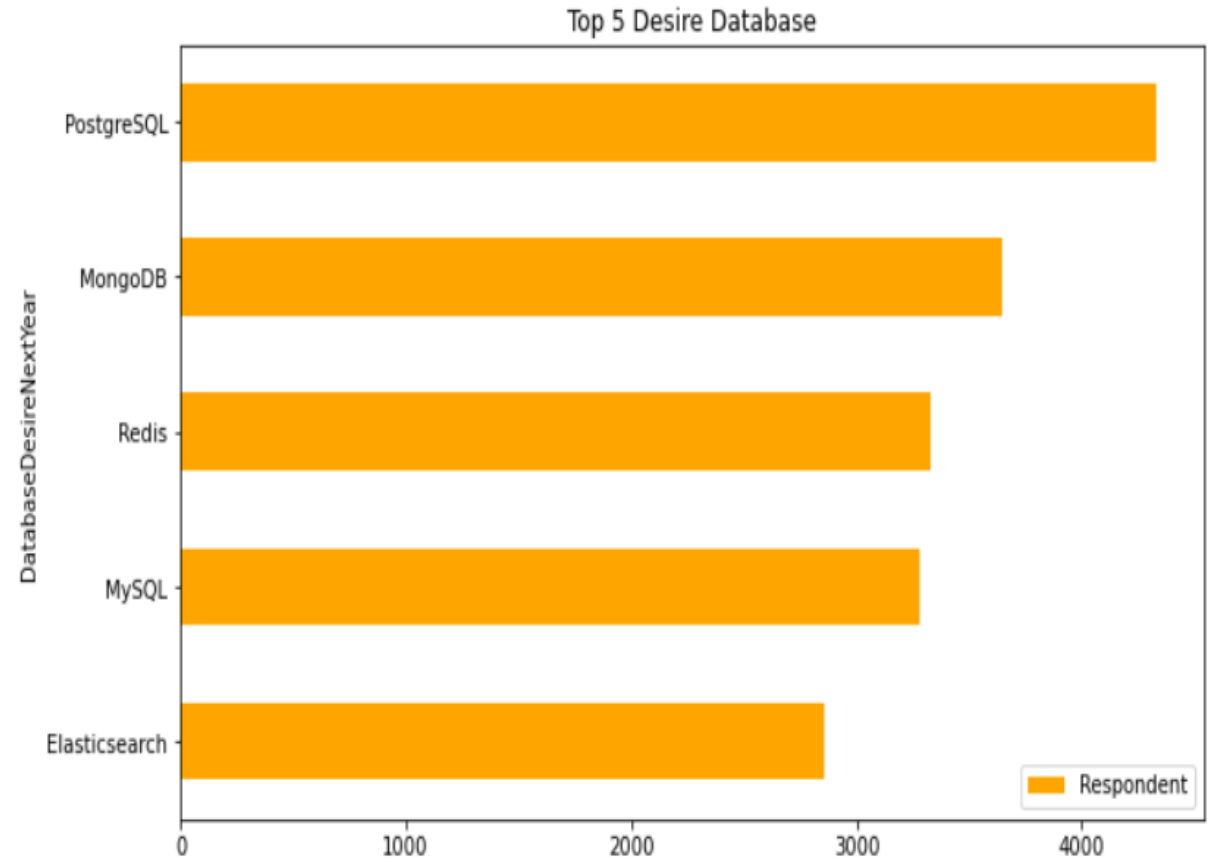- Web development are still in high demand

- Big Data technology in companies still requires SQL

- With AI and ML in rising demand, Python is best choice

- Others non-top of the table language also should be fine to learn because there is still a demand for it.

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DATABASE TRENDS

Current Year

Next Year

Top 5 Database

Top 5 Desire Database

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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings:

- MySQL most popular
- Behind is Microsoft SQL
- MongoDB and Redis are upcoming favorites
- New kid on the block: Elasticsearch

Implications:

- Open-source databases are still preferable in companies
- NoSQL databases will make an impact for storing non-relational data
- Redis supports abstract data types
- Pre-tuned search to website, app, or ecommerce store
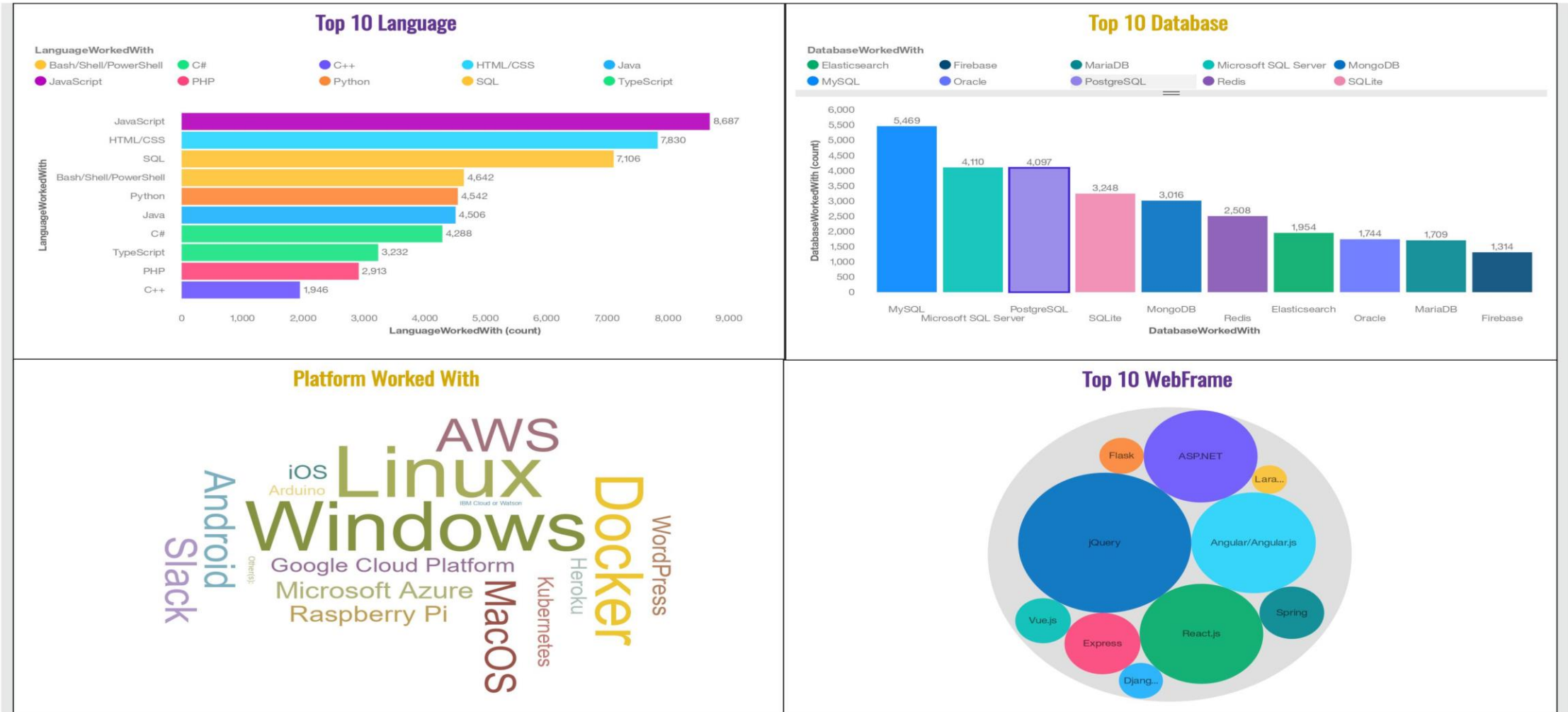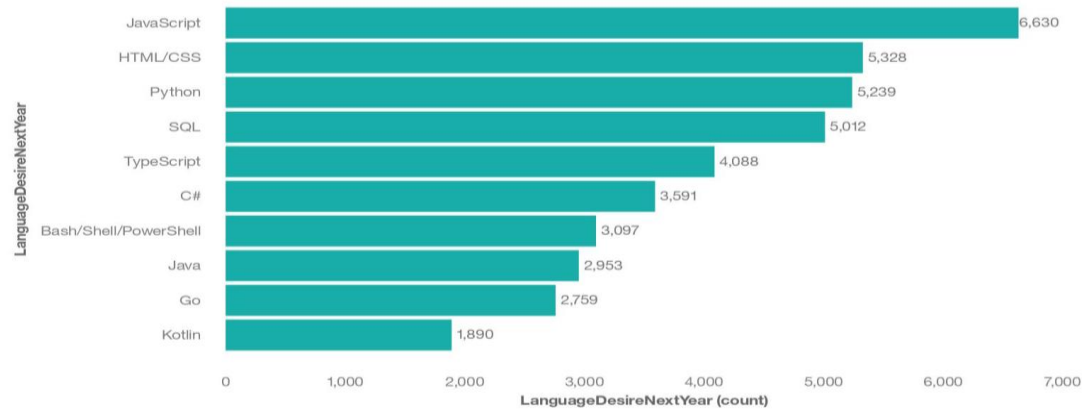
DASHBOARD

IBM COGNOS DASHBOARD LINK

https://eu-gb.dataplatform.cloud.ibm.com/dashboards/15342083-c886-49f0-b3f7-57b30fc0963c/view/7f17e61e64832a9e69f6c0e4079a24542b62775db5bb805182827b490c367997a83a1bc5c827185adb130661fab9430cc0

DASHBOARD Current Technology Usage

Top 10 Language

LanguageWorkedWith
● Bash/Shell/PowerShell   ● C#   ● C++   ● HTML/CSS   ● Java
● JavaScript   ● PHP   ● Python   ● SQL   ● TypeScript

Language	count
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

Top 10 Database

DatabaseWorkedWith
● Elasticsearch   ● Firebase   ● MariaDB   ● Microsoft SQL Server   ● MongoDB
● MySQL   ● Oracle   ● PostgreSQL   ● Redis   ● SQLite

Database	count
MySQL	5,469
Microsoft SQL Server	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
Oracle	1,744
MariaDB	1,709
Firebase	1,314

Platform Worked With

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

Top 10 WebFrame

Flask ASP.NET Lara... jQuery Angular/Angular.js Vue.js Express React.js Spring Djang...

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DASHBOARD Future Technology Trend

Top 10 Language Desire Next Year

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

Top 10 Database Desire Next Year

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

Platform Desire Next Year

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

Top 10 WebFrame Desire NextYear

Spring, ASP.NET, Ru..., React.js, Vue.js, Django, jQuery, Angular/Angular.js, Express, Flask

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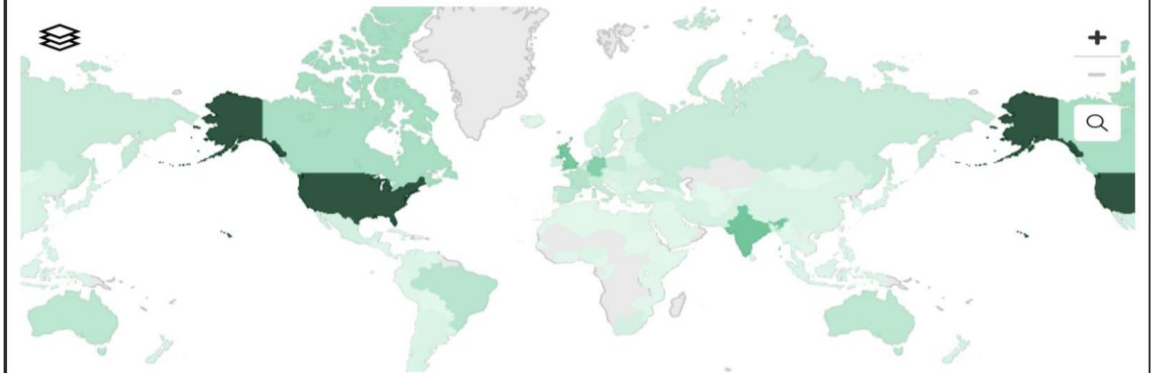SKILLS NETWORK
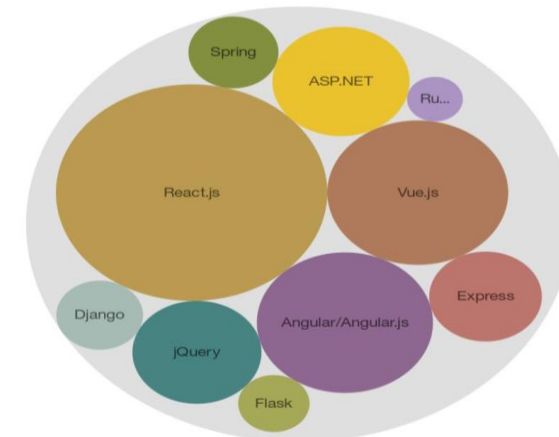
DASHBOARD Demographics

Respondent classified by Gender

Gender
- Woman
- Man

6.3%

93.7%
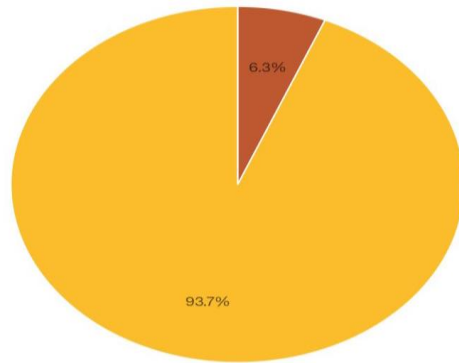
Respondent Count for Countries

Respondent (Cou...

1   3,127

Respondent Count by Age

900
800   787
738 722 722
700   679   651
581
600   531
500   406   489   483
395 393
400
308
300   203   232 279
187
200   196 162
78   95
100   57 32   287
0
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
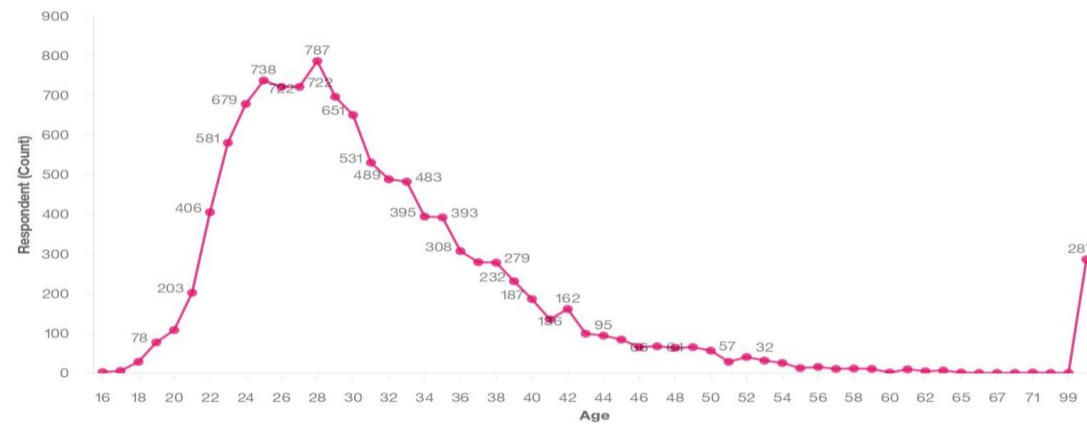
Respondent (Count)

Respondent Count by Gender, classified by Formal Education Level

Man   357   5,341   2,484   482   1,280

Woman   412

Gender

0   1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 11,000
Respondent (Count)
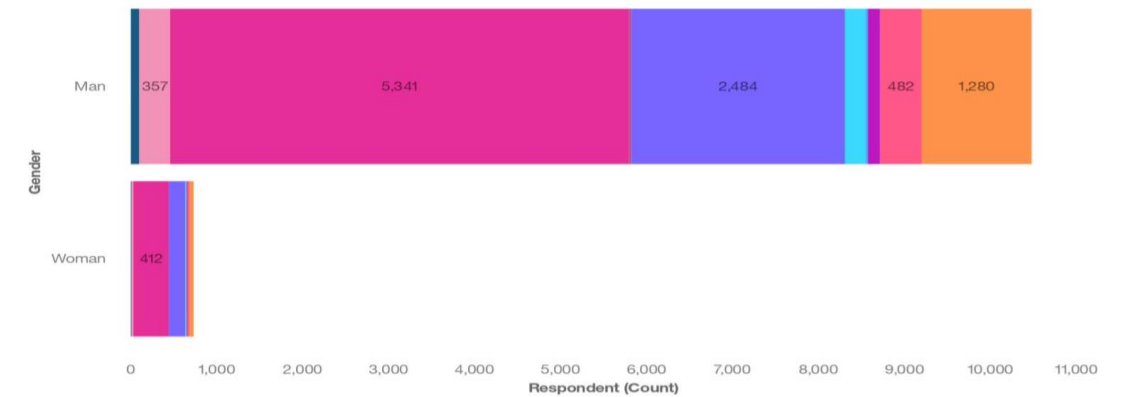
DISCUSSION

- Technology Trends now and future
- Preferred programming language seems to changed time by time as well as other databases, platform and web frame
- Training and Reskilling workers
- Females participation in Technology field
- Bridge divide of Technology Gaps in Developing Countries
- Eliminate Age and Education discrimination in employment

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OVERALL FINDINGS & IMPLICATIONS

Findings:

- Fast changing technology every year

- Concentration on several countries like USA and India

- Gender gap in technology jobs

- Platforms like Docker and AWS are growing

Implications:

- Companies need to be flexible and adjust to rapid changes

- Need to spread technology out to lagging countries

- Impact of job hiring's

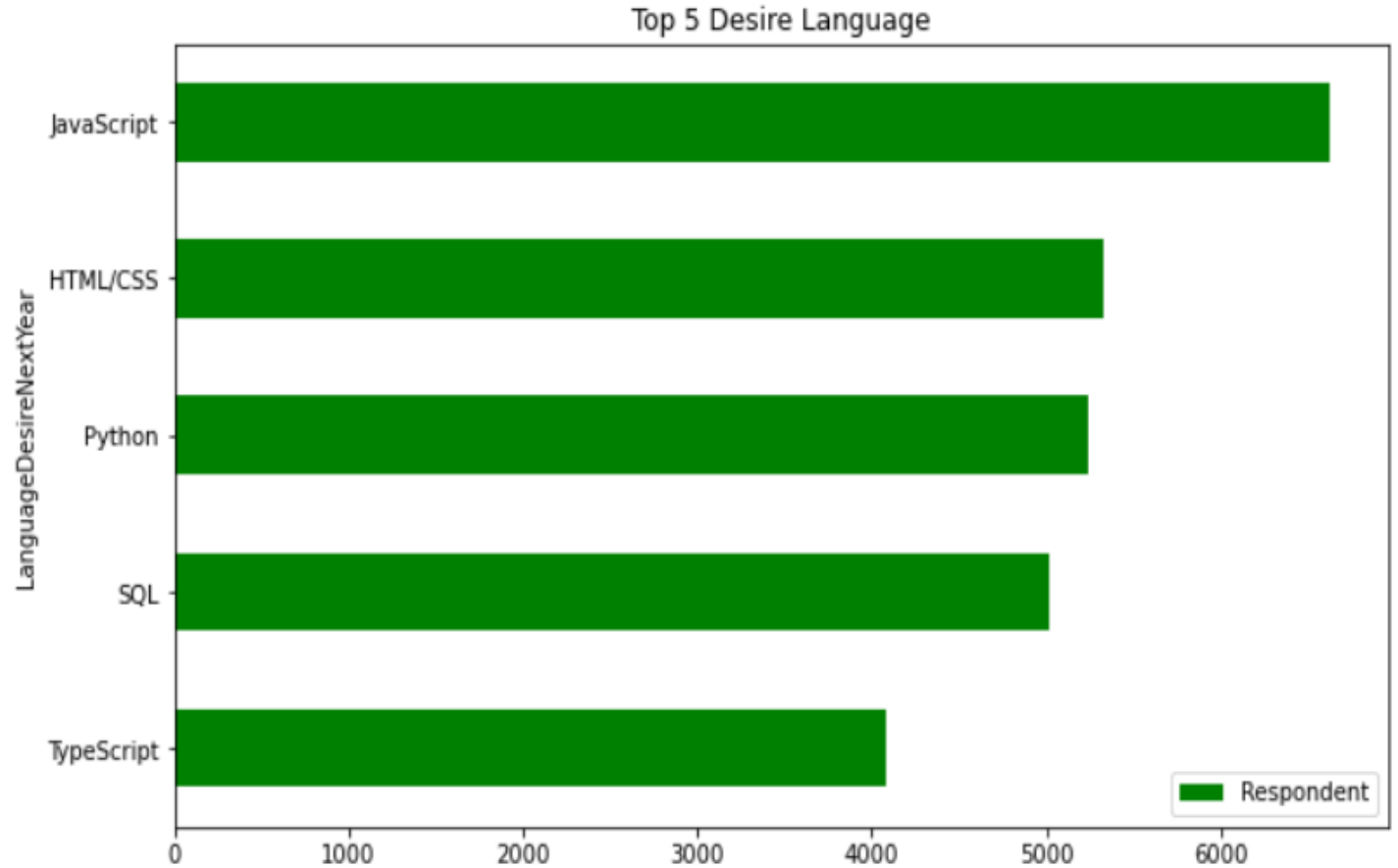- Shift to faster app deployments and cloud services in future

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CONCLUSION

"In future, Incorporate Machine Learning to predict trends and salaries"
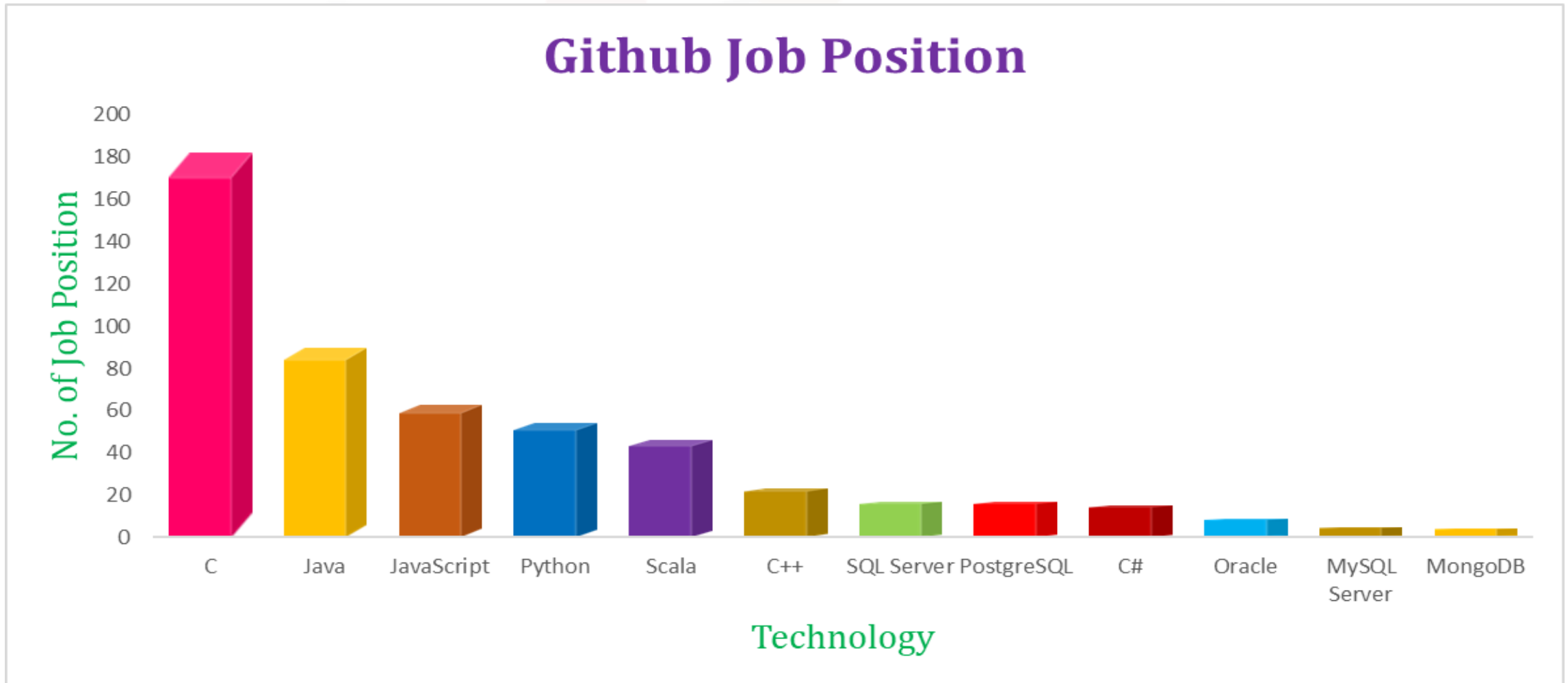
- Having knowledge in few programming language, databases, platform and web frame is important.
- Tech tools are very diverse and the preference keep changing time by time.
- Its important to keep upskilling in tech in order to cope with current trends
- Keep learning and gain knowledge for other skills is key to be a developer
- Demographics overview

APPENDIX

Top 5 Desire Language

GITHUB JOB POSTINGS

Github Job Position

No. of Job Position (y-axis): 0, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200

Technology (x-axis): C, Java, JavaScript, Python, Scala, C++, SQL Server, PostgreSQL, C#, Oracle, MySQL Server, MongoDB

POPULAR LANGUAGES

Language Job Salary

Average Annual Salary (x-axis: Language)

Language	Average Annual Salary
Python	$1,14,383
Java	$1,01,013
R	$92,037
Javascript	$1,10,981
Swift	$1,30,801
C++	$1,13,865
C#	$88,726
PHP	$84,727
SQL	$84,793
Go	$94,082

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