



Analysis of IT Trends

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OUTLINE



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EXECUTIVE SUMMARY



- Data was collected from 3 different sources
- Visualization of the data collected revealed trends in programming languages and databases as well as in several demographics such as:
 - Greatest number of respondents use JavaScript as their programming language and this trend is set to continue in the next year
 - The largest part of respondents use MySQL as their database but PostgreSQL is predicted to be the top database next year
 - Technology gap among countries
 - Gender gap in tech jobs

INTRODUCTION



- The IT Industry is rapidly growing
- As such, there is need to Identify skills required to fill future jobs
- Consequently, it is imperative to know:
 - What are the top programming languages in demand?
 - What are the top go-to databases?
 - Which platforms are most preferable?
 - Which web frames are most efficient?
- This presentation is for Human Resource Professionals, IT Leads, MD/CEOs and anyone who has an interest in Tech

METHODOLOGY



- Data was collected from the following Sources:
 - Stack Overflow Developer 2019 Survey
 - GitHub Job Postings
 - Programming Languages Annual Salary
- Data Cleaning and Exploration using Python
- Data Visualization using IBM Cognos Dashboard
- Presentation of Insights using Microsoft PowerPoint

RESULTS

Results are based on these tables:

	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

RESULTS CONT'D

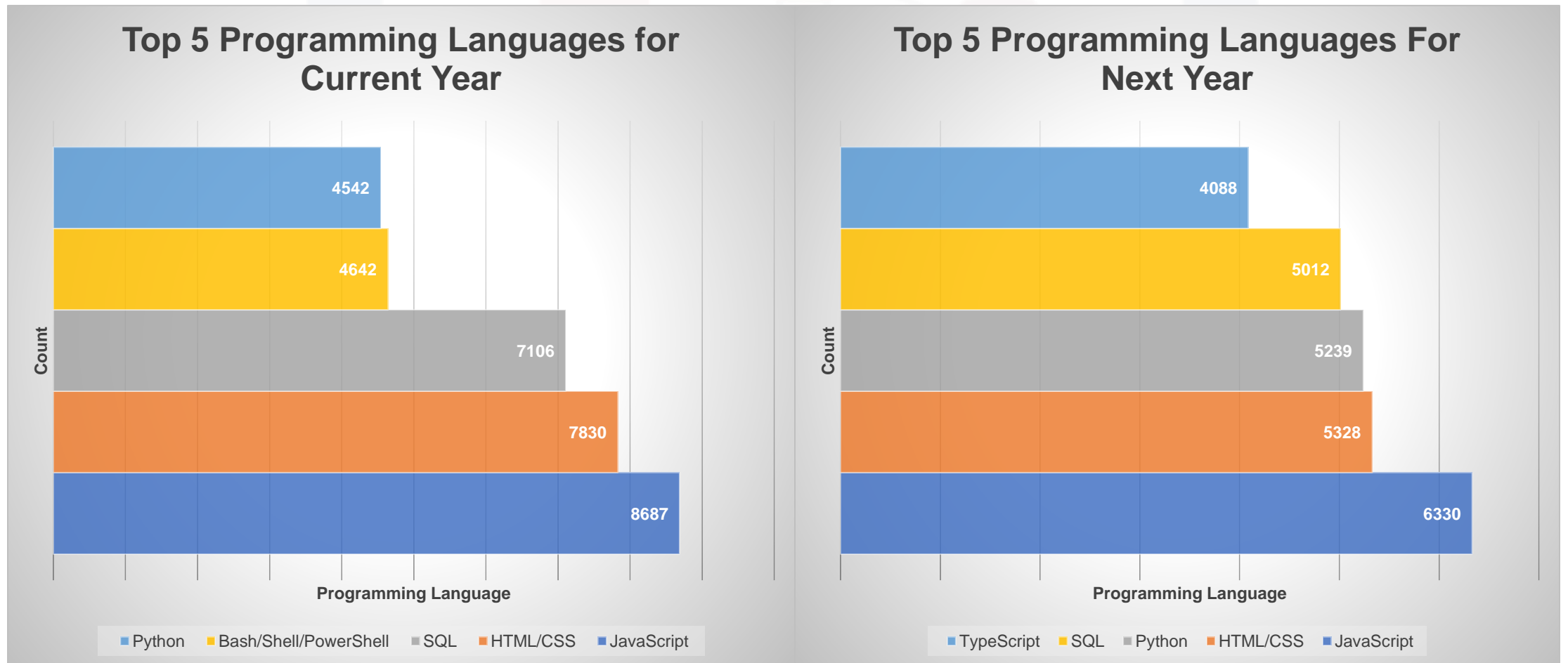
	Respondent	MainBranch	Hobbyist	OpenSource	OpenSource	Employment	Country	Student	EdLevel	UndergradMajor	WellcomeChange	SONewCo
0	4	I am a developer by profession	No	Never	The quality of OSS and closed source software ...	Employed full-time	United States	No	Bachelor's degree (BA, BS, BEng., etc.)	Computer science, computer engineering, or sof...	Just as welcome now as I felt last year	Tech a written by developers;
1	9	I am a developer by profession	Yes	Once a month or more often	The quality of OSS and closed source software ...	Employed full-time	New Zealand	No	Some college/university study without earning ...	Computer science, computer engineering, or sof...	Just as welcome now as I felt last year	
2	13	I am a developer by profession	Yes	Less than once a month but more than once per ...	OSS is, on average, of HIGHER quality than pro...	Employed full-time	United States	No	Master's degree (MA, MS, MEng, MSA, etc.)	Computer science, computer engineering, or sof...	Somewhat more welcome now than last year	Tech a written by developers;
3	16	I am a developer by profession	Yes	Never	The quality of OSS and closed source software ...	Employed full-time	United Kingdom	No	Master's degree (MA, MS, MEng, MSA, etc.)	NaN	Just as welcome now as I felt last year	Tech a written by developers;
4	17	I am a developer by profession	Yes	Less than once a month but more than once per ...	The quality of OSS and closed source software ...	Employed full-time	Australia	No	Bachelor's degree (BA, BS, BEng., etc.)	Computer science, computer engineering, or sof...	Just as welcome now as I felt last year	Tech a written by developers;
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11547	25136	I am a developer by profession	Yes	Never	OSS is, on average, of HIGHER quality than pro...	Employed full-time	United States	No	Master's degree (MA, MS, MEng, MSA, etc.)	Computer science, computer engineering, or sof...	Just as welcome now as I felt last year	Tech a written by developers;
11548	25137	I am a developer by profession	Yes	Never	The quality of OSS and closed source software ...	Employed full-time	Poland	No	Master's degree (MA, MS, MEng, MSA, etc.)	Computer science, computer engineering, or sof...	A lot more welcome now than last year	Tech a written by developers;
11549	25138	I am a developer by profession	Yes	Less than once per year	The quality of OSS and closed source software ...	Employed full-time	United States	No	Master's degree (MA, MS, MEng, MSA, etc.)	Computer science, computer engineering, or sof...	A lot more welcome now than last year	Tech a written by developers;
11550	25141	I am a developer by profession	Yes	Less than once a month but more than once per ...	OSS is, on average, of LOWER quality than prop...	Employed full-time	Switzerland	No	Secondary school (e.g. American high school, G...	NaN	Somewhat less welcome now than last year	
11551	25142	I am a developer by profession	Yes	Less than once a month but more than once per ...	OSS is, on average, of HIGHER quality than pro...	Employed full-time	United Kingdom	No	Other doctoral degree (PhD, EdD., etc.)	A natural science (ec. biology, chemistry, phy...	Just as welcome now as I felt last year	Tech a written by developers;

11398 rows x 85 columns

RESULTS CONT'D

↑	Respondent	LanguageWorkedWith	LanguageD...NextYear	DatabaseWorkedWith	DatabaseD...NextYear	PlatformWorkedWith	PlatformD...eNextYear	WebFrame...rkedWith	WebFrame...NextYear	DevEnviron	OpSys	Containers	BlockchainOrg	BlockchainIs
	11	11	11	11	11	11	11	11	11	11	11	11	11	11
	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
4	C	C	MySQL	MySQL	Linux	Linux	Null	Null	Eclipse	Null	Null	Null	Null	Null
4	C++	C#	SQLite	SQLite	Windows	Windows	Null	Null	Vim	Null	Null	Null	Null	Null
4	C#	JavaScript	Null	Null	Null	Null	Null	Null	Visual Studio	Null	Null	Null	Null	Null
4	Python	SQL	Null	Null	Null	Null	Null	Null	Visual Studio Code	Null	Null	Null	Null	Null
4	SQL	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
9	Bash/Shell/PowerShell	Bash/Shell/PowerShell	DynamoDB	PostgreSQL	AWS	AWS	Express	Express	Vim	Null	Null	Null	Null	Null
9	C#	C	PostgreSQL	Redis	Docker	Docker	Ruby on Rails	Ruby on Rails	Null	Null	Null	Null	Null	Null
9	HTML/CSS	HTML/CSS	SQLite	SQLite	Heroku	Heroku	Other(s):	Other(s):	Null	Null	Null	Null	Null	Null
9	JavaScript	JavaScript	Null	Null	Linux	Linux	Null	Null	Null	Null	Null	Null	Null	Null
9	Python	Ruby	Null	Null	MacOS	MacOS	Null	Null	Null	Null	Null	Null	Null	Null
9	Ruby	Rust	Null	Null	Slack	Slack	Null	Null	Null	Null	Null	Null	Null	Null
9	Rust	SQL	Null	Null	Null	Other(s):	Null	Null	Null	Null	Null	Null	Null	Null
9	SQL	TypeScript	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
9	TypeScript	WebAssembly	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
9	WebAssembly	Other(s):	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
9	Other(s):	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null
13	Bash/Shell/PowerShell	Bash/Shell/PowerShell	Couchbase	Firebase	Android	Android	Angular/Angular.js	Express	Vim	Null	Null	Null	Null	Null
13	HTML/CSS	HTML/CSS	DynamoDB	MySQL	AWS	AWS	ASP.NET	Vue.js	Visual Studio	Null	Null	Null	Null	Null
13	JavaScript	JavaScript	Firebase	Redis	Docker	Docker	Express	Null	Visual Studio Code	Null	Null	Null	Null	Null
13	PHP	Rust	MySQL	Null	IBM Cloud or Watson	IBM Cloud or Watson	jQuery	Null	Xcode	Null	Null	Null	Null	Null
13	SQL	SQL	Null	Null	iOS	Linux	Vue.js	Null	Null	Null	Null	Null	Null	Null
13	TypeScript	TypeScript	Null	Null	Linux	Slack	Null	Null	Null	Null	Null	Null	Null	Null

PROGRAMMING LANGUAGE TRENDS



PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

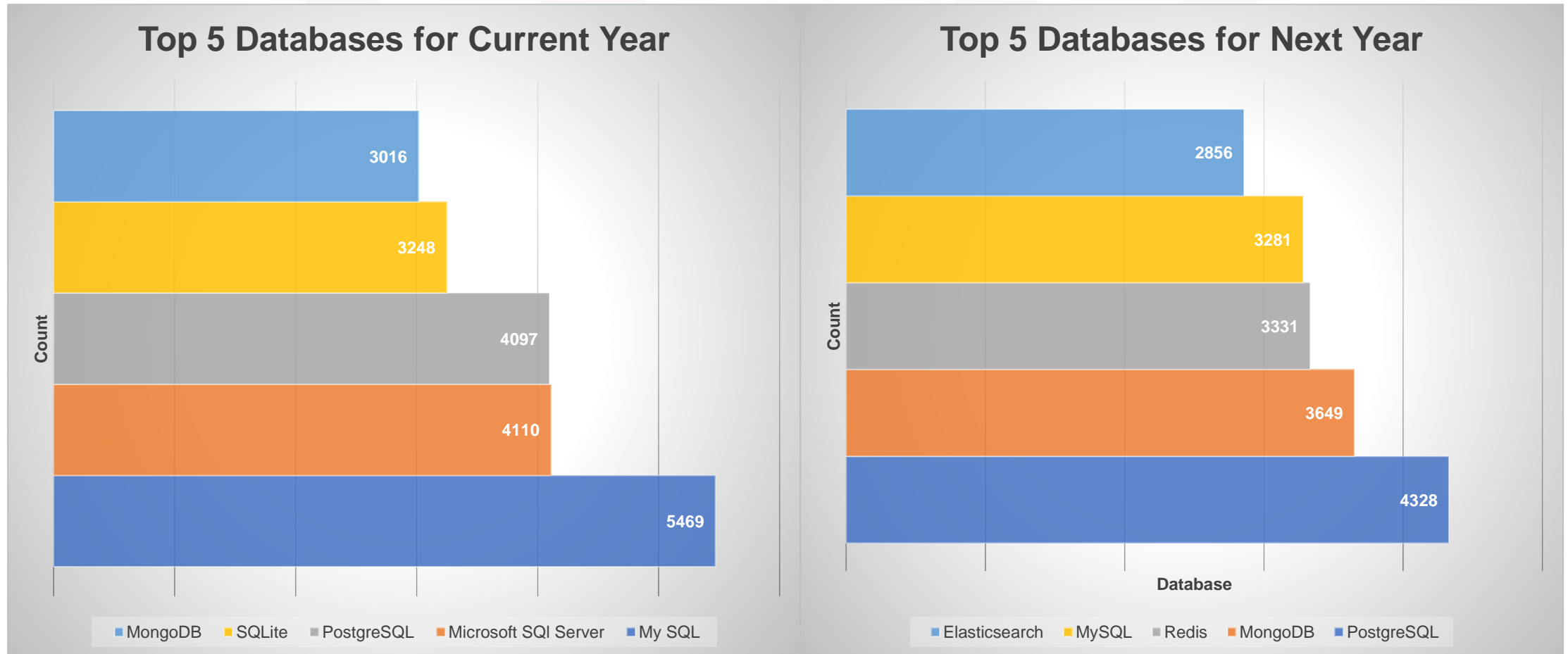
Findings

- JavaScript, HTML/CSS, SQL, Shell and Python are top 5 languages in current year
- Python is becoming popular and will make the top 3 next year
- Shell is replaced by TypeScript in the top 5 languages next year

Implications

- Web development still remains a sought after skill
- Python and SQL looks set to becoming increasingly popular as the fields of Data Analytics, Data Science, Data Engineering, AI and Machine Learning expands

DATABASE TRENDS



DATABASE TRENDS – FINDINGS & IMPLICATIONS

Findings

- Redis and Elasticsearch are set to break into the top 5 databases for next year while Microsoft SQL Server and SQLite will drop down
- MongoDB and PostgreSQL are becoming even more popular
- MySQL losing popularity but still makes top 5 databases for next year

Implications

- Relational databases still relevant
- Non-relational databases becoming popular due to the vast amount of different data types being generated
- Open-source databases still preferable for IT experts

DASHBOARD



The Cognos Dashboard Permanent Link:

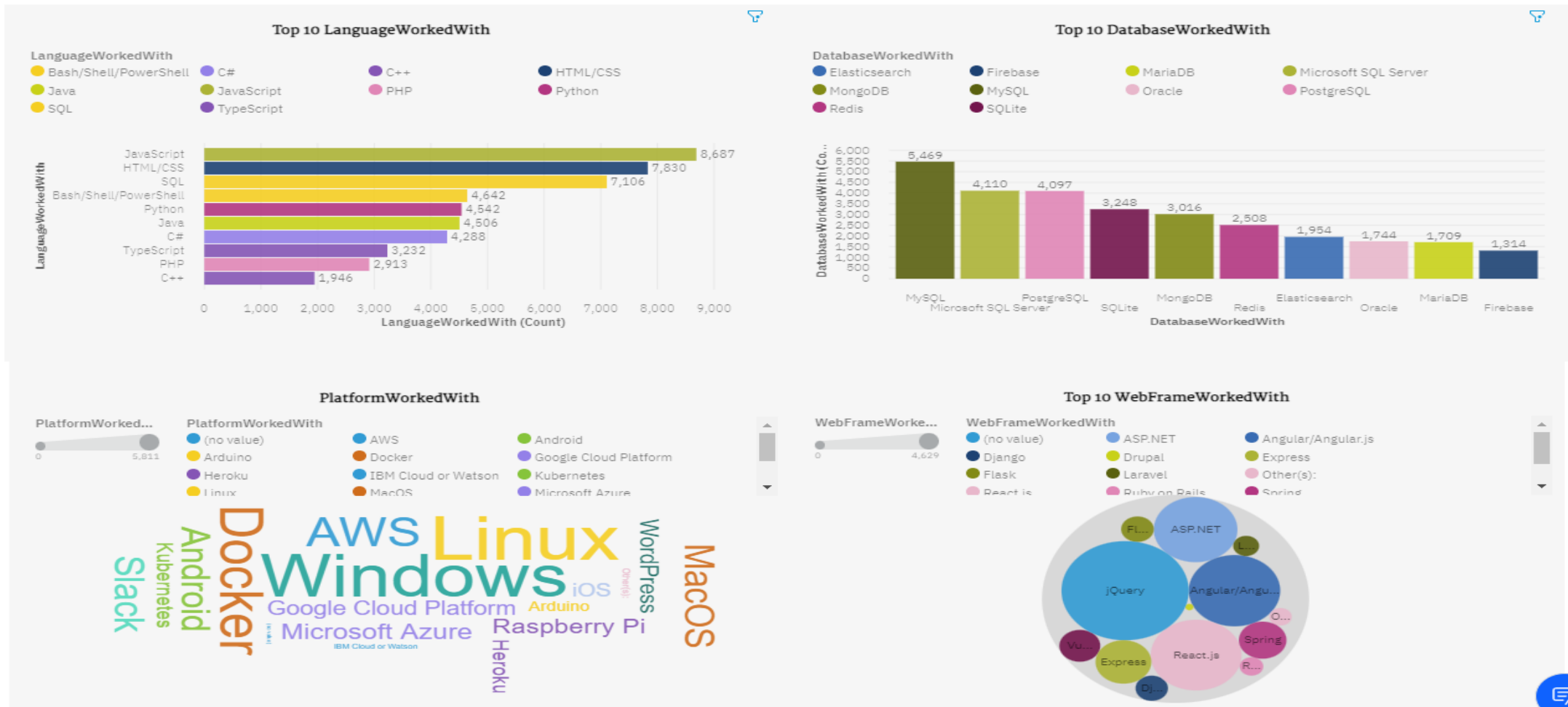
<https://dataplatfom.cloud.ibm.com/dashboards/3ed76312-e1cd-46ec-9080-58e51ad95235/view/6122e20932a81b8965f2b5e407cf7a022f63735be4bb835089d37b495b692297a96b41c5c82d4d5f89115166a6e8460f9b>

DASHBOARD TAB 1

Current Technology Usage

Future Technology Trend

Demographics



IBM Developer

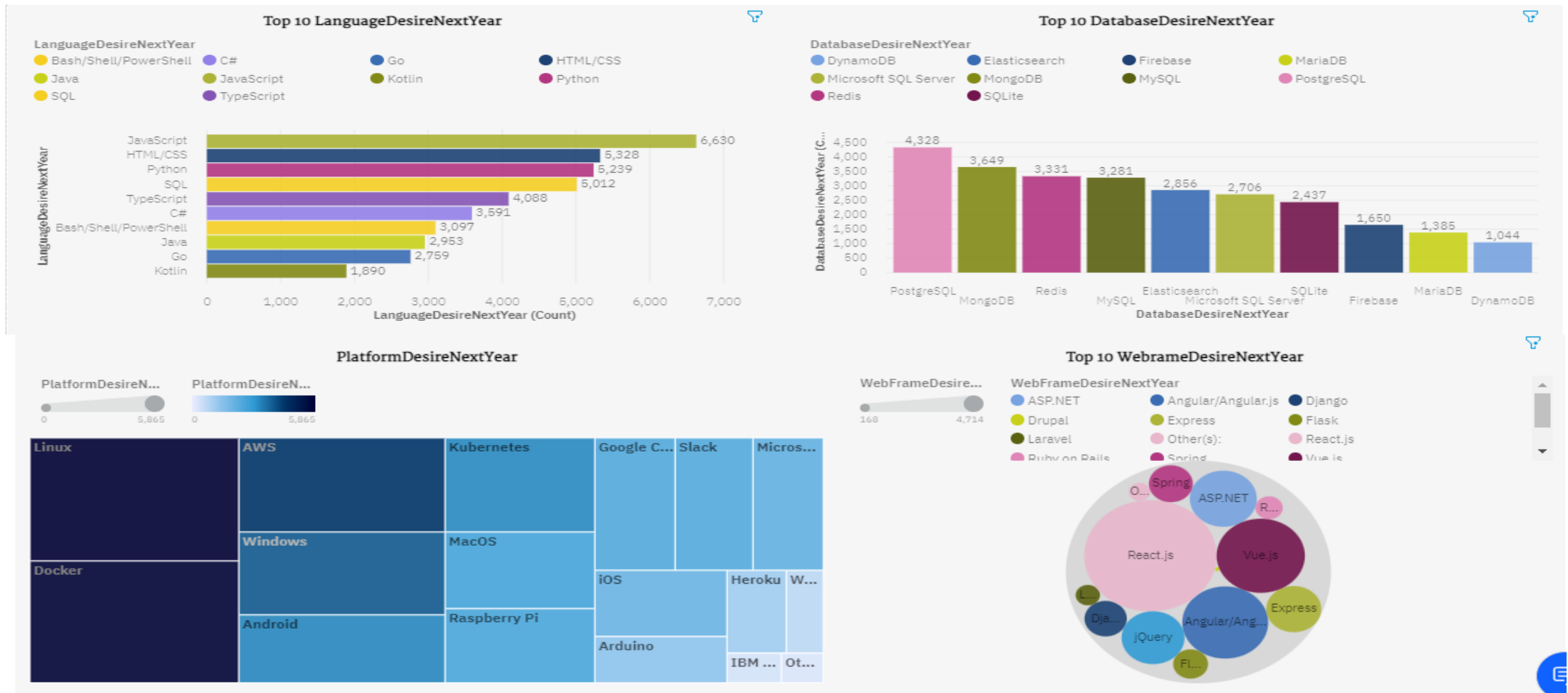
SKILLS NETWORK

DASHBOARD TAB 2

Current Technology Usage

Future Technology Trend

Demographics



DASHBOARD TAB 3

Current Technology Usage

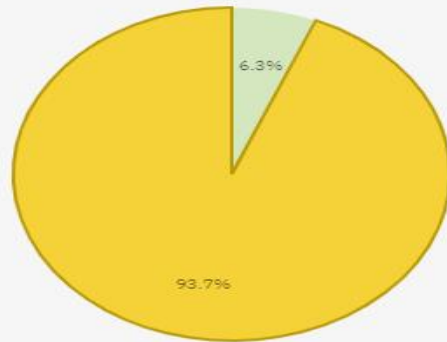
Future Technology Trend

Demographics



Respondent Classified by Gender

Gender
● Woman ● Man

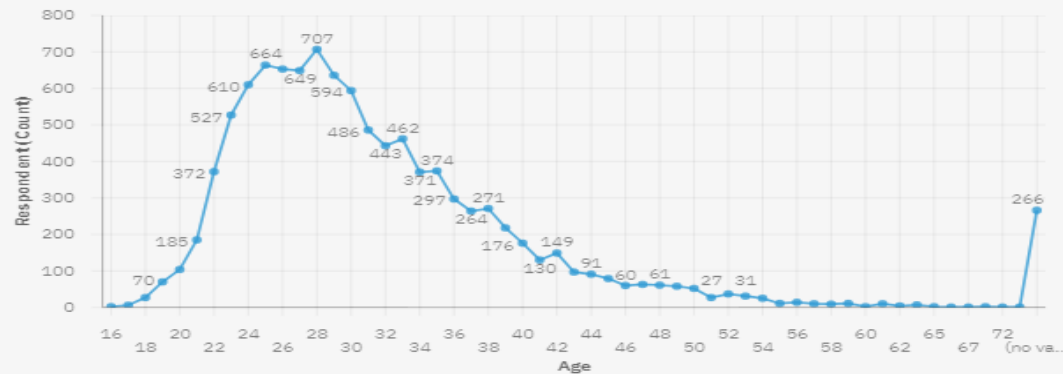


Respondent Count for Countries

Respondent (Cou...
1 2,005



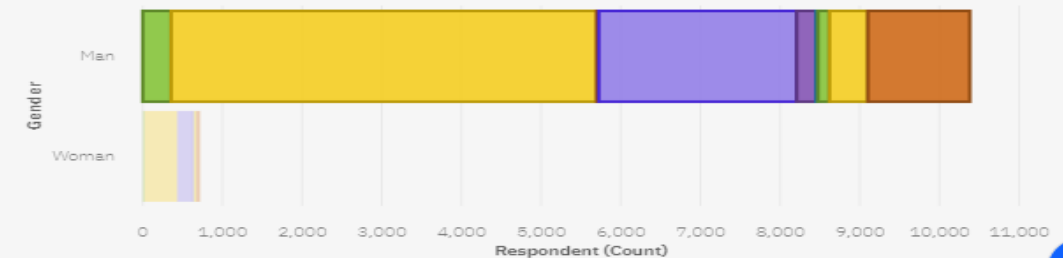
Respondent Count by Age



Respondent Count by Gender Classified by Formal Education Level

EdLevel

● Associate degree ● Bachelor's degree (BA, BS, B.E... ● I never completed any formal ...
● Master's degree (MA, MS, M.E... ● Other doctoral degree (Ph.D, E... ● Primary/elementary school
● Professional degree (JD, MD, e... ● Secondary school (e.g. Americ... ● Some college/university study ...



DISCUSSION



- From current and future trends in the IT space, it can be seen that knowledge of more than one language and /or database will distinguish IT workers from their peers.
- HTML, CSS and Javascript continue to be relevant for Web developers while Python and SQL are the language of choice for Data Analysts

OVERALL FINDINGS & IMPLICATIONS

Findings

- Tech evolving at a fast pace
- Most respondents reside in the US
- Gender gap in technology jobs
- Disparity among countries in IT
- Platforms like Docker and AWS are growing

Implications

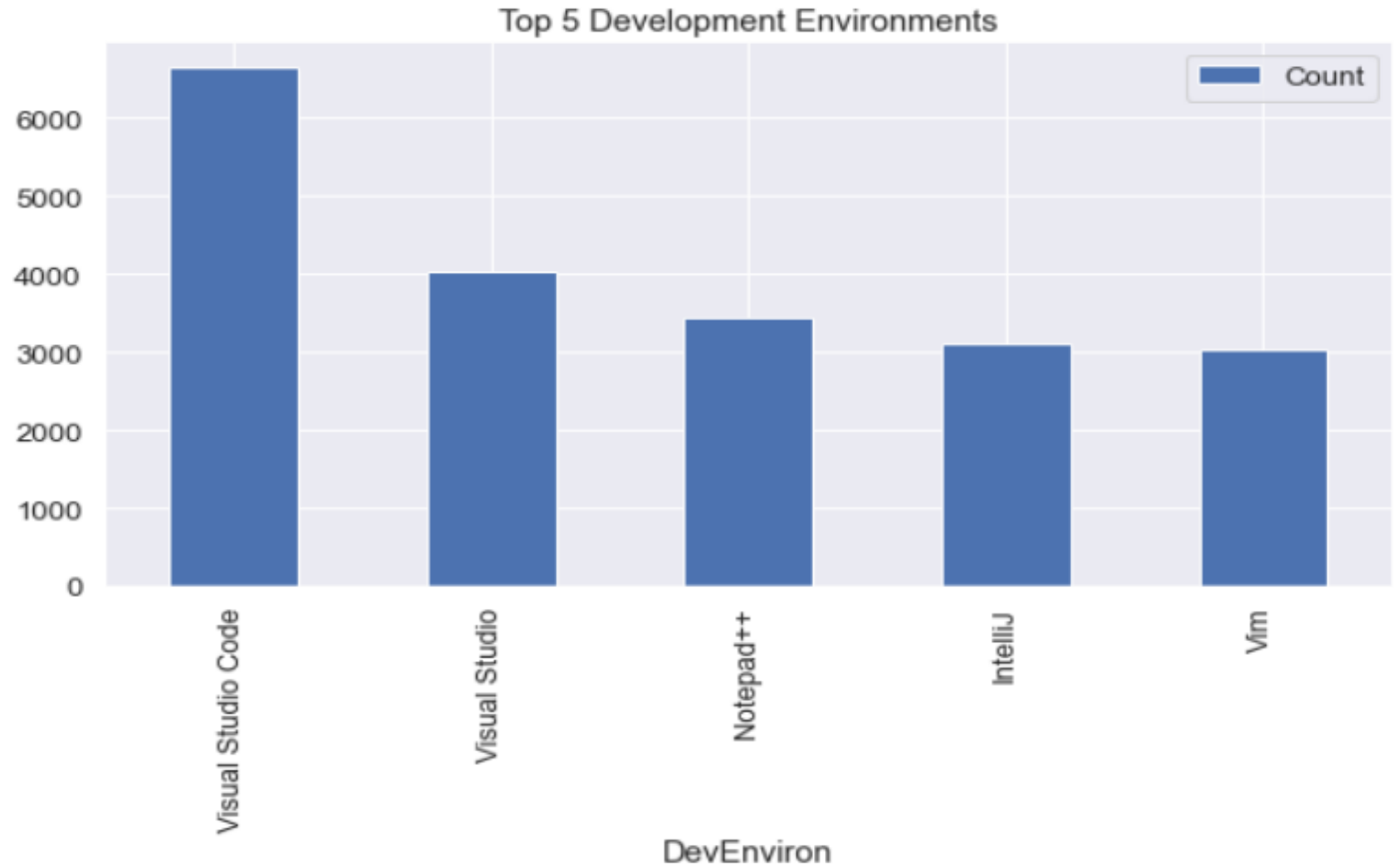
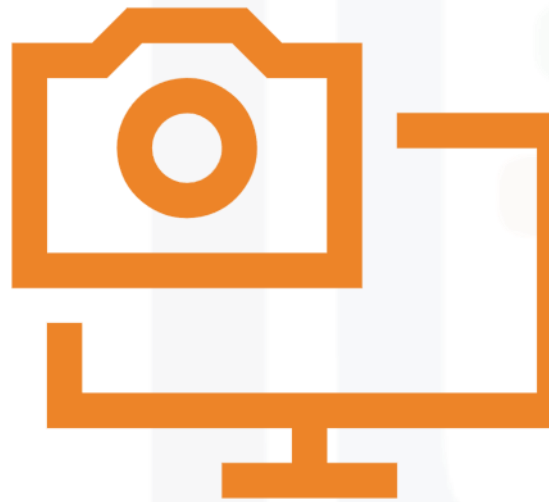
- Companies need to be flexible and adjust to ever evolving world of IT
- More IT jobs are likely to be in the US
- Developing countries and females playing catch up in Tech
- Shift to faster app deployments and cloud services in future

CONCLUSION

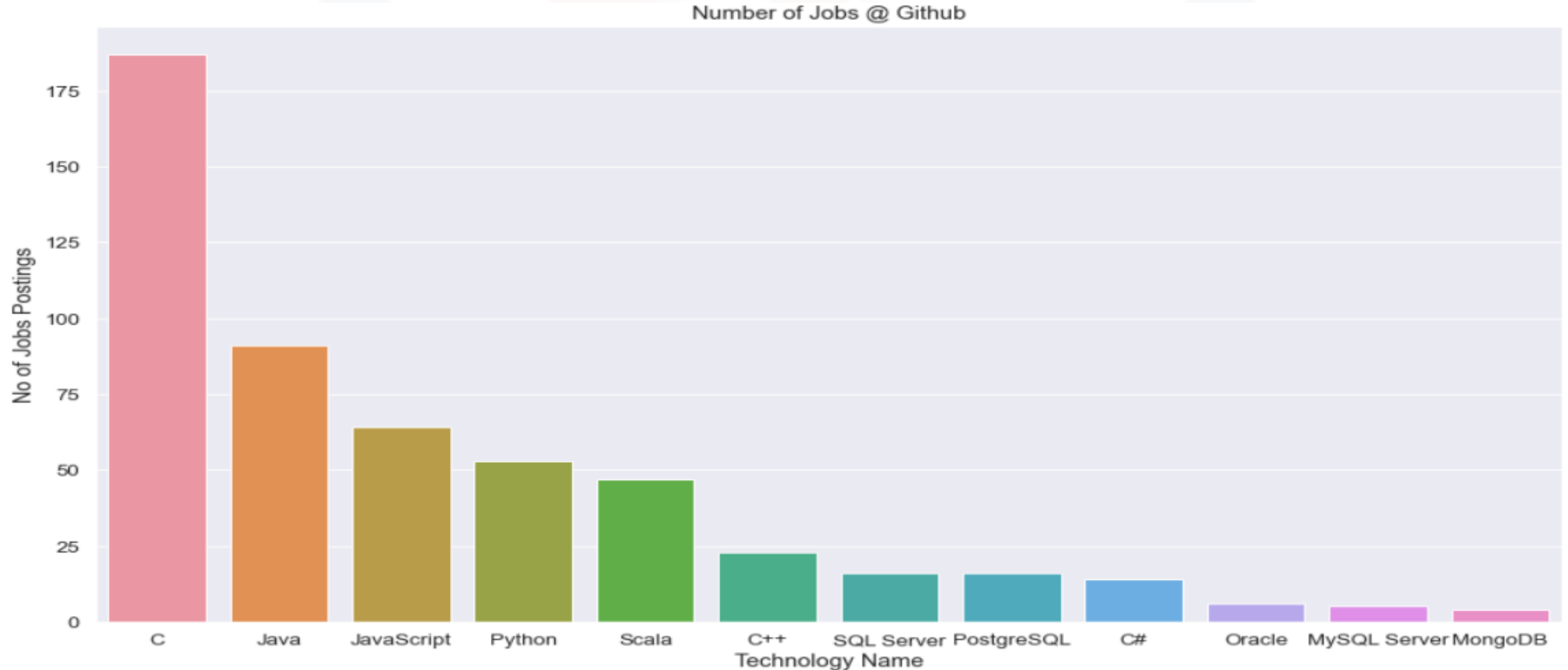


- The Tech industry will continue to remain vital to the world's economy
- It would be necessary to train and reskill workers to fill IT roles
- Females and younger people should be encouraged and supported to participate in IT
- The gap in IT between countries should be narrowed
- Serious efforts should be channeled to eliminate age and gender discrimination in IT employment

APPENDIX



GITHUB JOB POSTINGS



POPULAR LANGUAGES

