ANALYSIS OF THE SOFTWARE ENVIRONMENT OF DEVELOPERS IN AGE CATEGORIES AND GENDER

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OUTLINE

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- Discussion
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EXECUTIVE SUMMARY

- Comparison of programming languages, DBMS, Tools are a common topic of discussion between software engineers. Programming languages are designed, indicated and implemented every year to keep up with changing programming paradigms. We found it in the report.

- We have shown that the indicator of the progress of the tendency to use software products in the context of countries has not found applications.

- Visualization of data approved the opinion that the practice of the programmer's work is such that knowledge of one programming language and one programming environment is clearly not enough. You can constantly use different languages or the environment depending on the task that is clearly tracked on the monitoring panel.

- A significant proportion in the labor market in the surveyed areas belongs to men. It cannot be argued that women occupy a very small percentage here that only 8 percent of women respondents were investigated.

- In this article, we determined how objectively there is a bachelor's formation (at a minimum) to create various types of software products. Permanent self-education will be in the trend in the development of information systems.

- For all countries of the world, development trends in it and age categories are the same. 23-37 years of age arising Assortment of actively working respondents

INTRODUCTION

What language of progrimation to you to learn to earn $ 150 thousand per year?

If you develop a career programming, and not as a hobby, you need to navigate the vacancies market.

Many begin to program still at school and well to know the basic market trends in advance.

Of course, this does not mean that it is necessary to limit your horizons in the only language. The secret of success is usually for any developer to become a pros in something one, and then master the adjacent areas that will complement each other and move towards one goal.

- The annual Developer Survey is the largest and most comprehensive survey of people who code around the world. Why are women much less in this area than men?

- Report presents trends in the development

  of information technologies by gender .

- An interesting picture takes place between the index of preferences and market requirements

- Analysis define whether it is worth paying to a comparative analysis of data on the gender and place of residence.

- Why some programming languages hold the leading positions not the first year and other of them up to 5 of top from the last ratings.

- How the technology market reacts to the constantly increasing demand of the Big Data.

- We can assume why so far developers prefer an open resource of database management systems
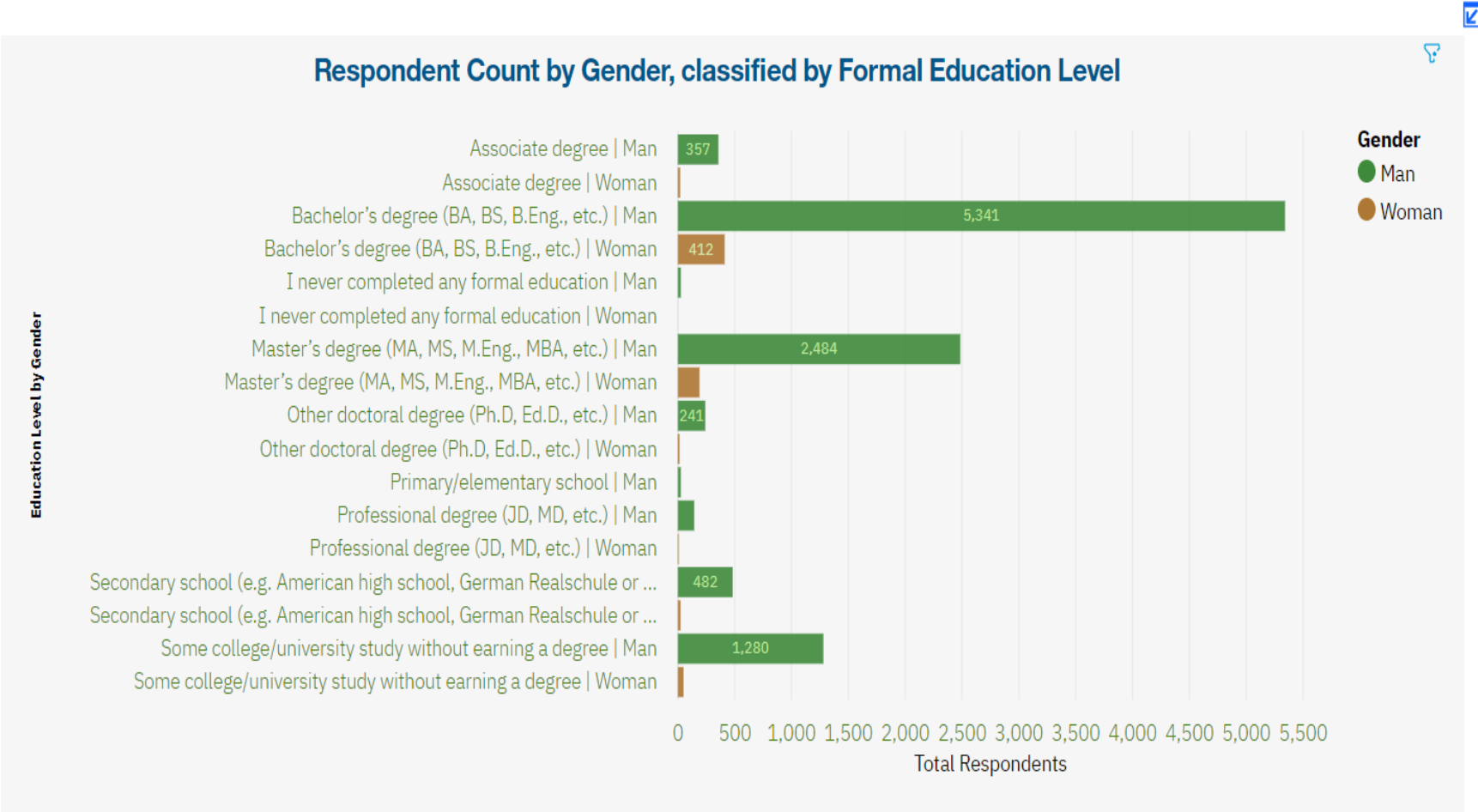
METHODOLOGY

- We need create some visualizations and add them to dashboards using Cognos Dashboard Embedded (CDE).

- The dataset we are going to use in this paper comes from the following source: https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/

- Download the 2files m5_survey_data_demographics.csv and m5_survey_data_technologies_normalised.csv.

- Create Notebook in IBM Cloud Pack for Data for analysis

- Create Dashboards for vizualizaition
  - Exclud empty rows of Datasets
  - Set filtr Men\Women

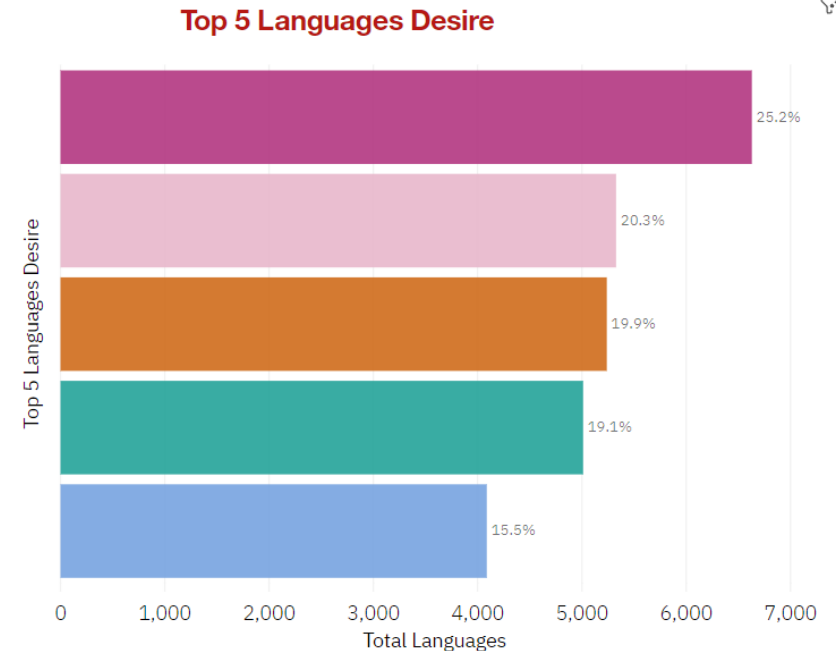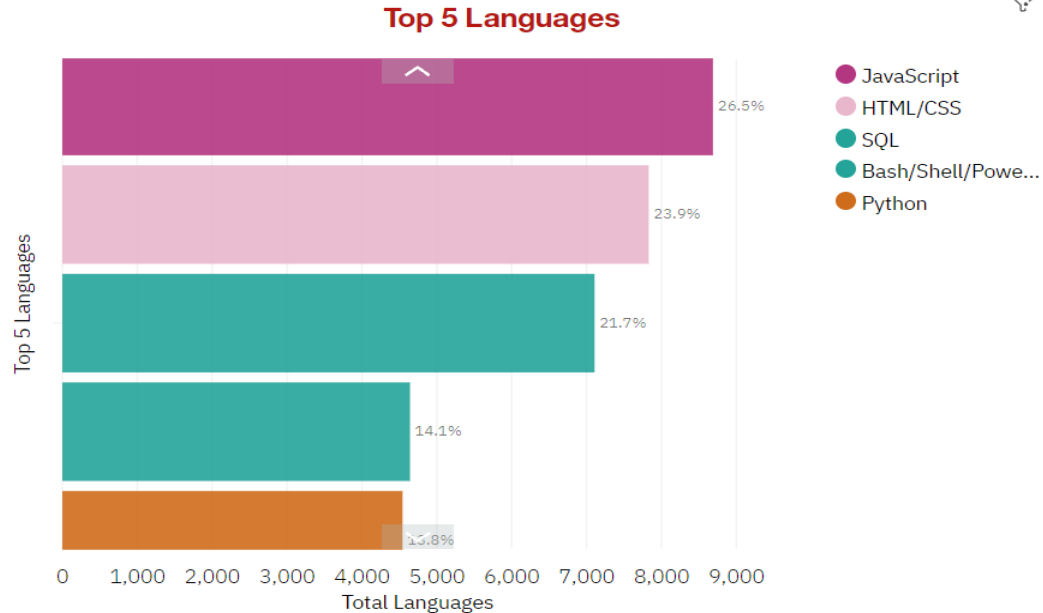# SUMMARY STATISTICS OF THE DESCRIPTION AGE AND FORMAL EDUCATIONAL LAVEL

count	11111.000000
mean	30.778895
std	7.393686
min	16.000000
25%	25.000000
50%	29.000000
75%	35.000000
max	99.000000

Respondent Count by Gender, classified by Formal Education Level

Gender
- ● Man
- ● Woman

Education Level by Gender	Total Respondents
Associate degree | Man	357
Associate degree | Woman	
Bachelor's degree (BA, BS, B.Eng., etc.) | Man	5,341
Bachelor's degree (BA, BS, B.Eng., etc.) | Woman	412
I never completed any formal education | Man	
I never completed any formal education | Woman	
Master's degree (MA, MS, M.Eng., MBA, etc.) | Man	2,484
Master's degree (MA, MS, M.Eng., MBA, etc.) | Woman	
Other doctoral degree (Ph.D, Ed.D., etc.) | Man	241
Other doctoral degree (Ph.D, Ed.D., etc.) | Woman	
Primary/elementary school | Man	
Professional degree (JD, MD, etc.) | Man	
Professional degree (JD, MD, etc.) | Woman	
Secondary school (e.g. American high school, German Realschule or ...	482
Secondary school (e.g. American high school, German Realschule or ...	
Some college/university study without earning a degree | Man	1,280
Some college/university study without earning a degree | Woman	

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500

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PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Allocated a group of five main languages, where **JavaScrip**t and **HTML/CSS** being popular.

- More than 20 years the leader of programming language was **Python** and continue to be in the main group of leaders.

- Developed Microsoft Project **TypeScript** is rapidly gaining popularity.
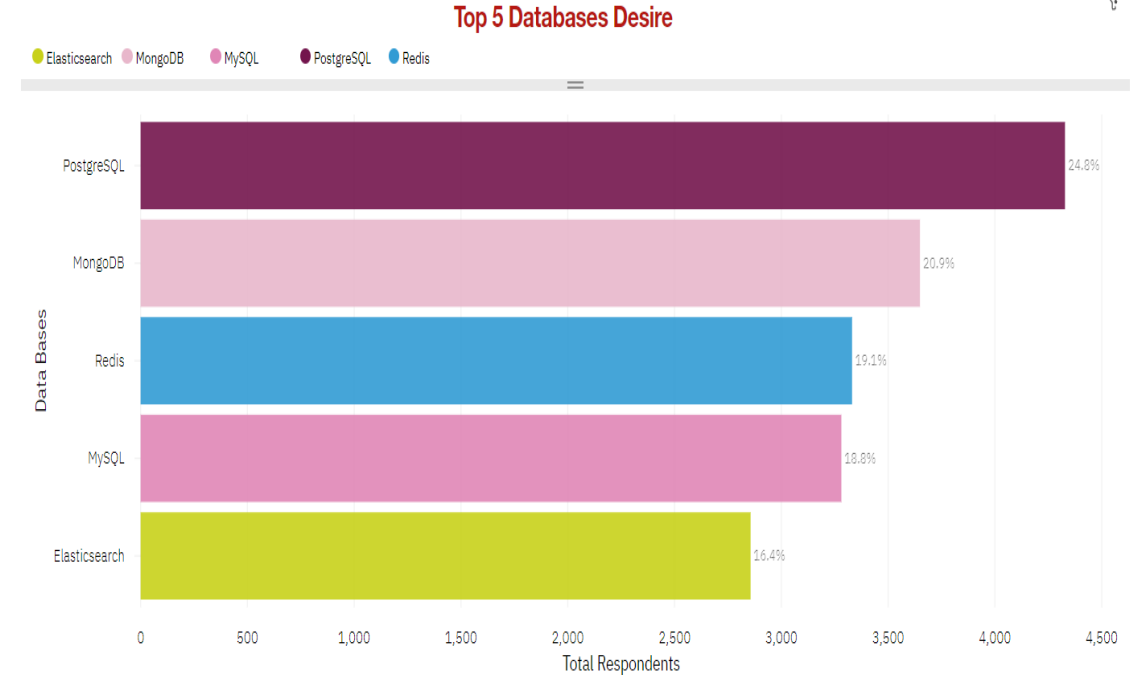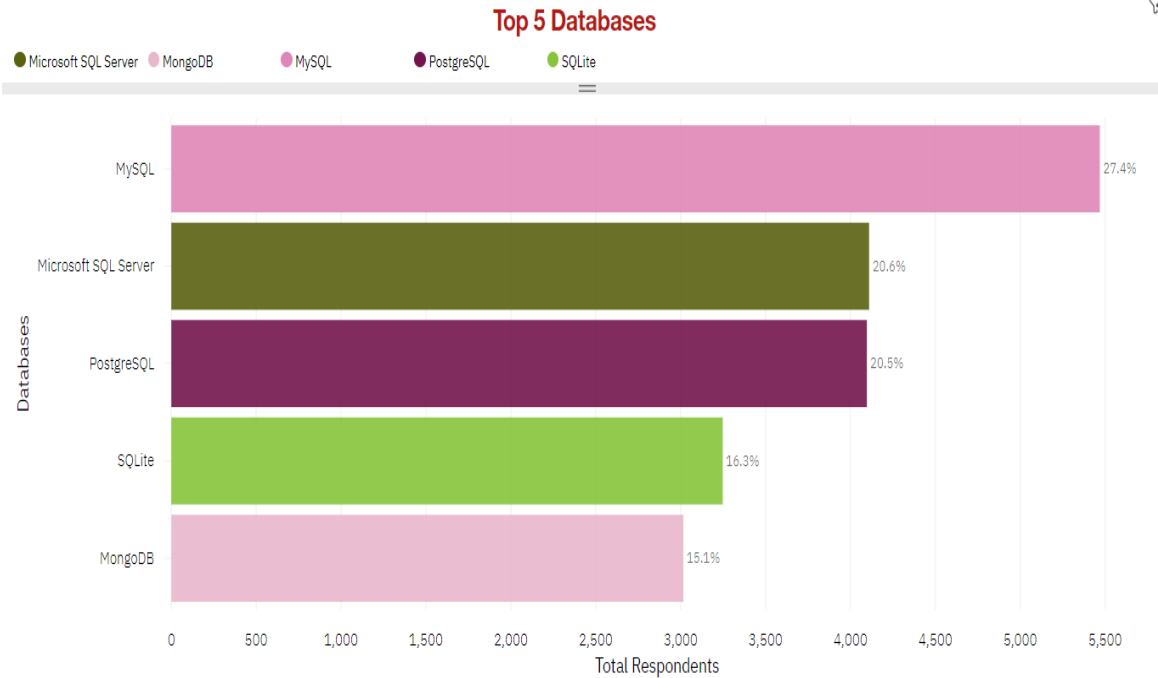
- **SQL** continue ot be in trend as a scripting language

Implications

- Universal **SQL** working on different platforms unconditioned will remain in the top five leaders.

- **TypeScript will** be more demand in future is ranked 5th in desirer languages while **bash** is not ranked

- **UNIX** systems are distributed mainly among the servers, which suggests **Bash/Shell** to remain in the top five leaders in the future.

- Obveously, **Python** retains leading positions with its comprehensive use in programming

DATABASE TRENDS

Current Year

Top 5 Databases

● Microsoft SQL Server ● MongoDB ● MySQL ● PostgreSQL ● SQLite

Databases	Total Respondents
MySQL	27.4%
Microsoft SQL Server	20.6%
PostgreSQL	20.5%
SQLite	16.3%
MongoDB	15.1%

Next Year

Top 5 Databases Desire

● Elasticsearch ● MongoDB ● MySQL ● PostgreSQL ● Redis

Data Bases	Total Respondents
PostgreSQL	24.8%
MongoDB	20.9%
Redis	19.1%
MySQL	18.8%
Elasticsearch	16.4%

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most commonly used database. MSSQL Server has taken the second spot this year, edging ahead of PostgreSQL.

- SQLight and Mongo DB are the pot 5 for last three years.

- Proportionally, more developers want to continue working with SQLight

- NOSQL database confidently occupy leading positions

Implications

- Recently, ELASTICSEARCH is widely used as a search engine and to monitor applications. Most respondents want to use it in next year

- Redis quickly received community support and turned into a well-scalable storage of data structures in memory widely used in the industry.

- Relational DBs will still account for more than 80% of the total operational database market through next year

- The need for storage of semi-structured data and improved MongoDB will be more sought-after
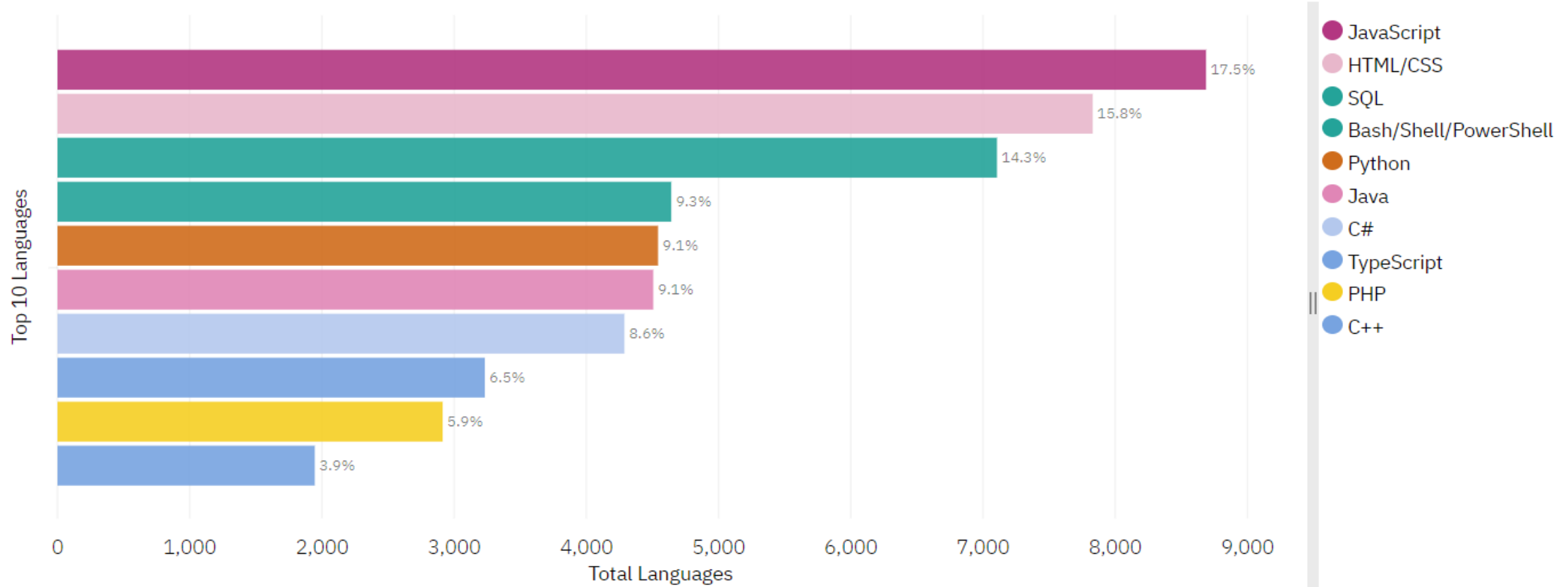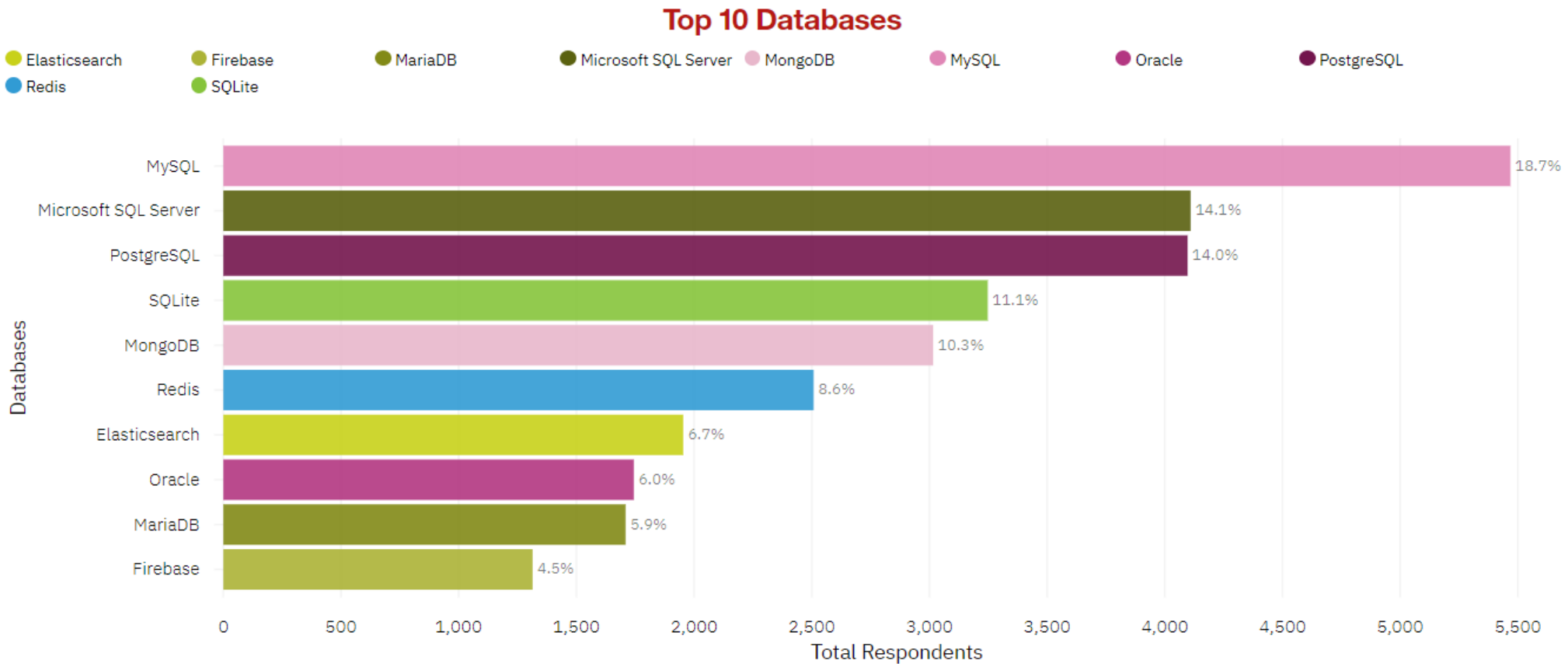
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DASHBOARD

https://dataplatform.cloud.ibm.com/dashboards/3b1e4071-b26c-4e62-a2e3-feba6ed43d2a/view/0760e51e2ea214f055ede2e407ca2a072b31245db5bb8a0686d07b4906337197a8684592c8264b09d2190164f7be1b0c9a

DASHBOARD TAB 1

Top 10 Languages

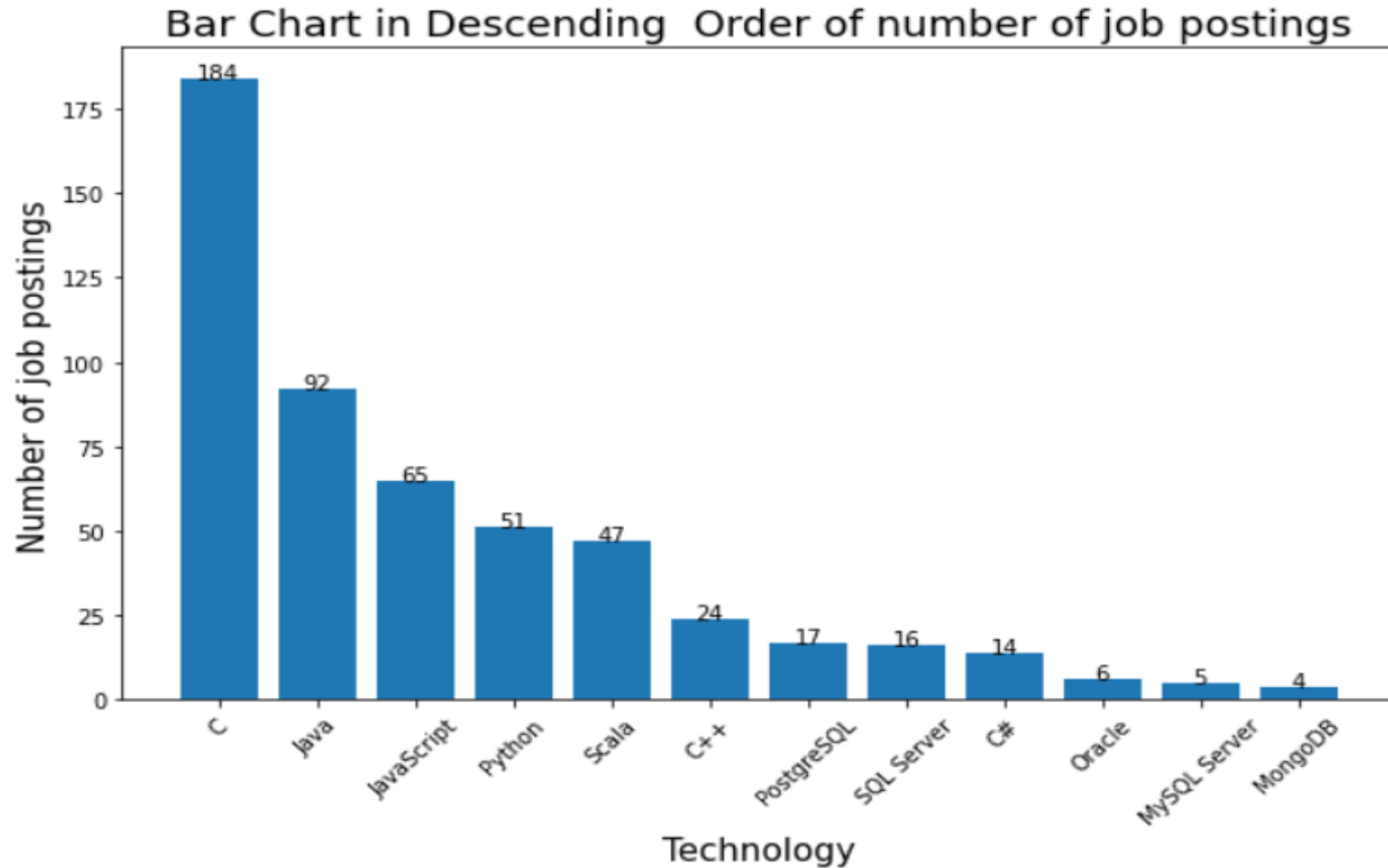| Top 10 Languages	
● JavaScript	17.5%
● HTML/CSS	15.8%
● SQL	14.3%
● Bash/Shell/PowerShell	9.3%
● Python	9.1%
● Java	9.1%
● C#	8.6%
● TypeScript	6.5%
● PHP	5.9%
● C++	3.9%

X-axis: Total Languages (0 – 9,000)

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DASHBOARD TAB 2

Top 10 Databases

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

NUMBER OF JOB POSTING

Bar Chart in Descending Order of number of job postings

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Platforms Desire in Next Year

Platforms Desire in Next Year
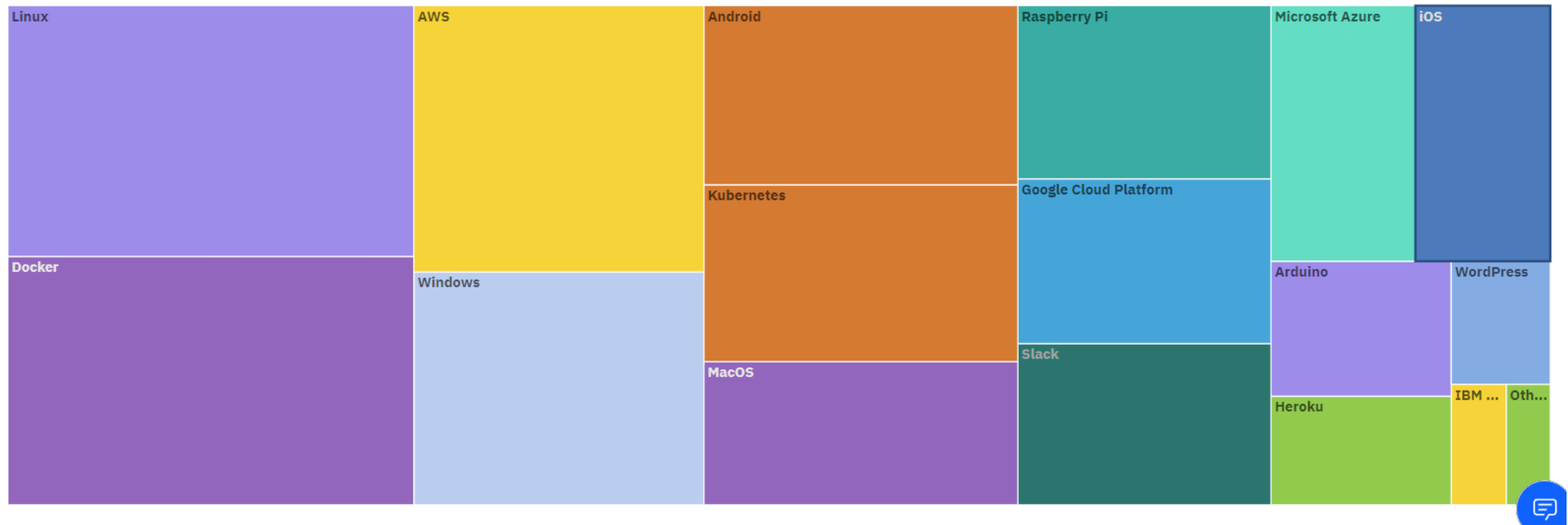
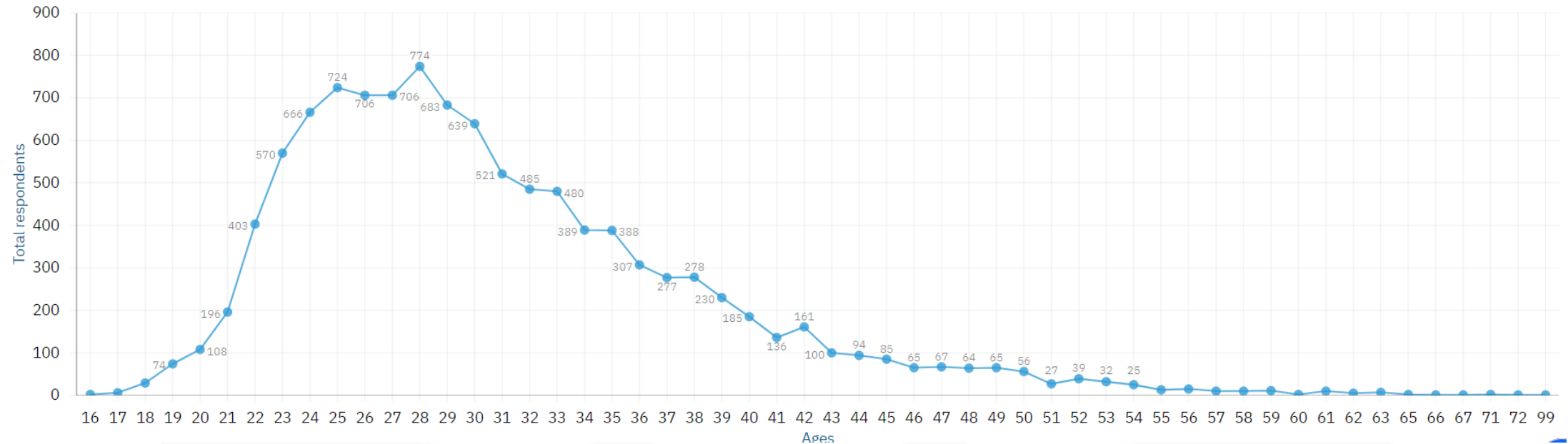# INDEX PREFERENCES

INDEX PREFERENCES OF LANGUAGES IN NEXT YEAR
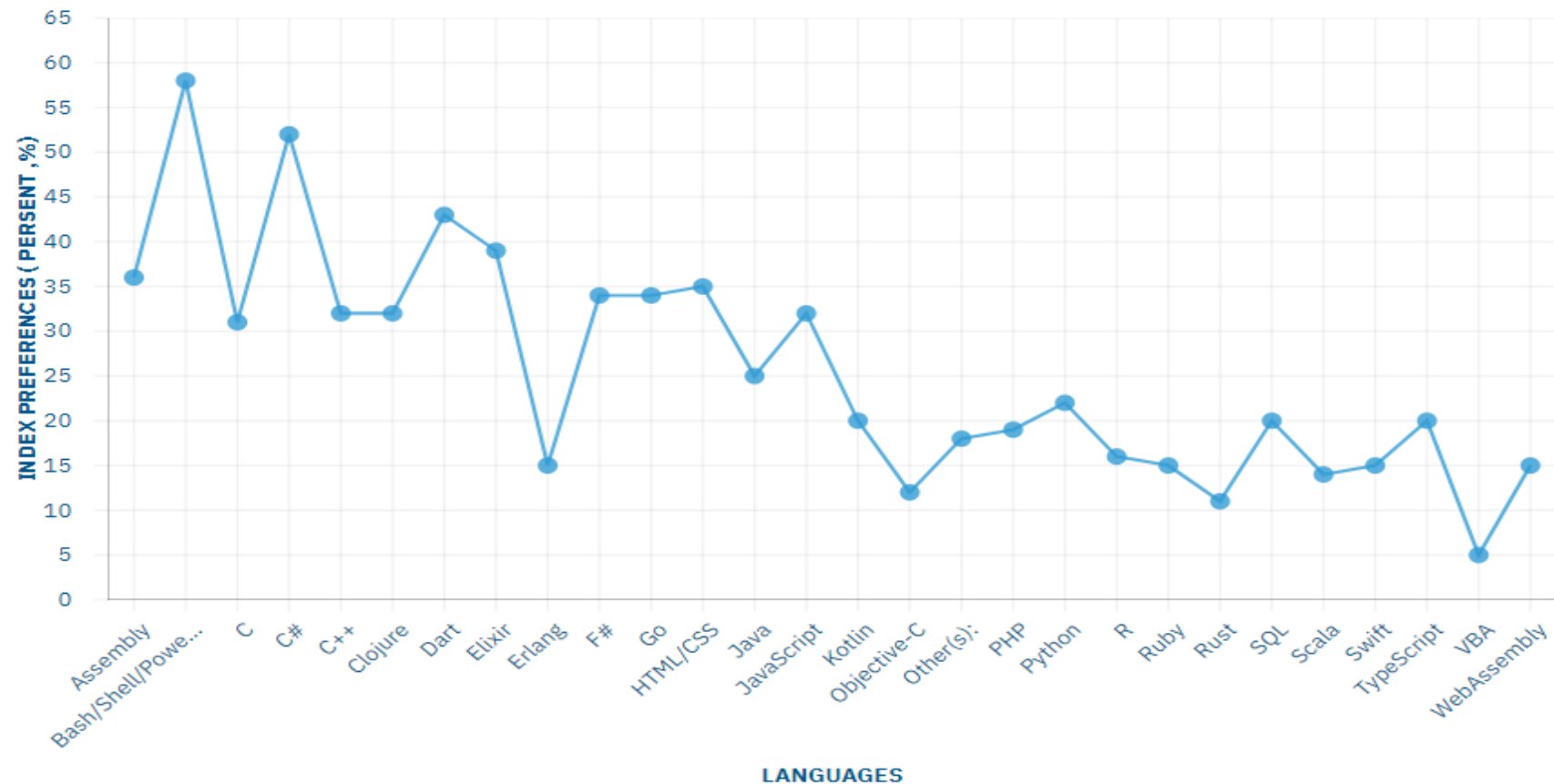
CLASSIFICATION BY GENDER

Respondents classified by Gender

Gender
- Woman
- Man

6.5%

93.5%

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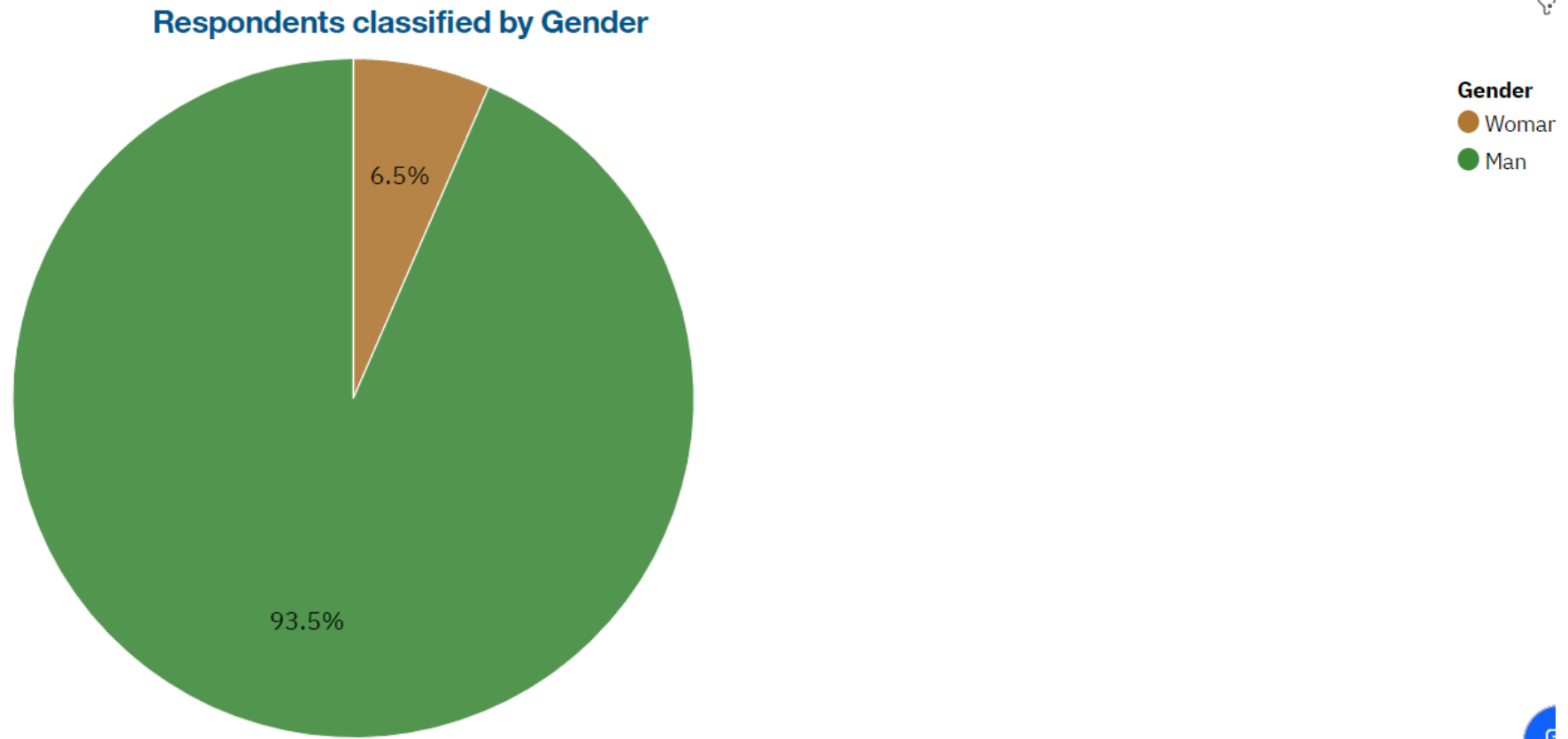
AGE CATEGORIES ENGAGED IN CODIND

Respondents Count by Age

DISCUSSION

- Databases are the cornerstone of any software applications. The database will be needed to you if you develop software for the Internet, machine learning, embedded systems, enterprises,internet things.

- Twenty years ago, it was much easier to choose a database. In most cases, you can choose one of the SQL databases, and everything is ready. But in the modern software development, the choice of a suitable database is one of the most difficult tasks.

- With the advent of microservice, clouds, distributed applications, global scaling, semi-structured data, large data, low-delay data: various NOSQL NEWSQL databases are now added to the traditional SQL databases as MongoDB, ElasticSearch, Redis

- More than 50 percent of respondents do not want to work next year with new technologies, why?

- After about 40 years disappears the need to work in IT

OVERALL FINDINGS & IMPLICATIONS

Findings

- The result of the last year was the departure of Microsoft Access out of dozens, he, together with the COBOL programming language, reminds that the life cycle of technology can be very long.

- Open Source DBMS - open source database management systems caught up with commercial closed source databases. Open Source MySql, PostgreSQL, SQLight against Microsoft SQL, Mongo at Commercial.

- Python has a negative dynamics, there is a trend of transition from JavaScript on TypeScript

- Database data on the basis of NoSQL get widespread

Implications

- The appearance of node.js made it possible to fallstack-development of web-based webs on JavaScript. As a result, the developers of server parts of applications were also strong possibilities of JavaScript, and the operations of the JS ecosystem, the libraries that became actually use in the server environment. This strengthens the position of the JavaScript in the future

- PostgreSQL works almost on all UNIX platforms, including UNIX-like systems, such as Linux is desire platform of developers in future

- We see how the ratings of some applications and programming languages are gaining. There is a notion of durability of using databases or programming languages. Therefore, it is safe to predict that in the coming years we will not see global changes here.
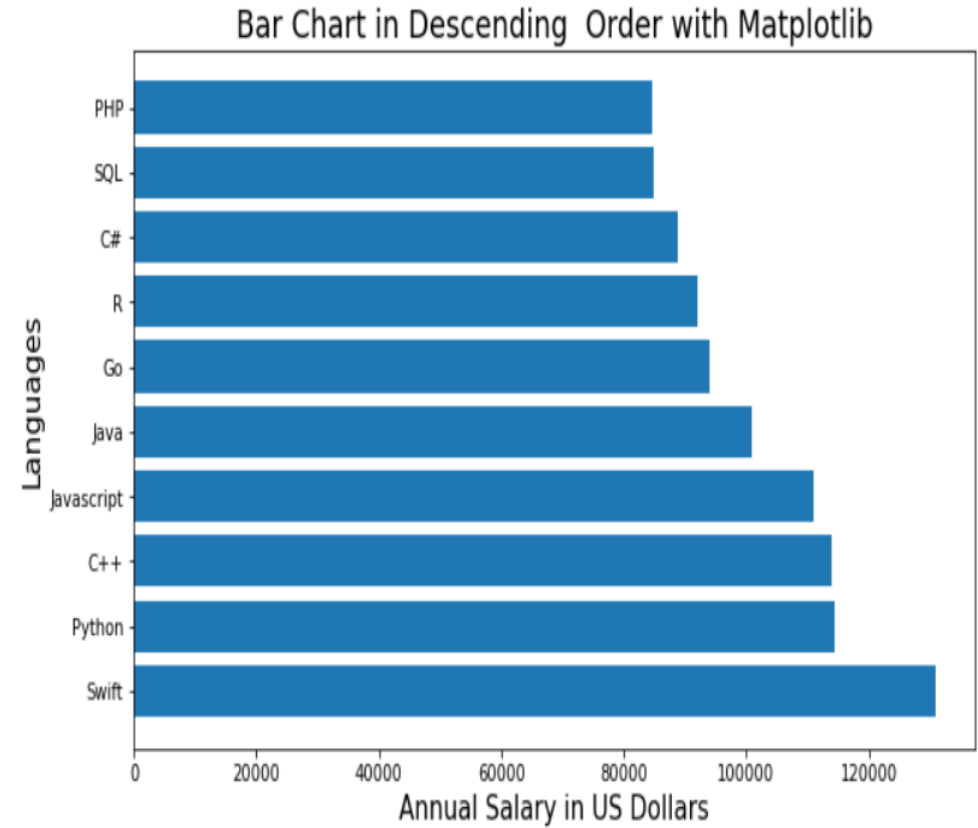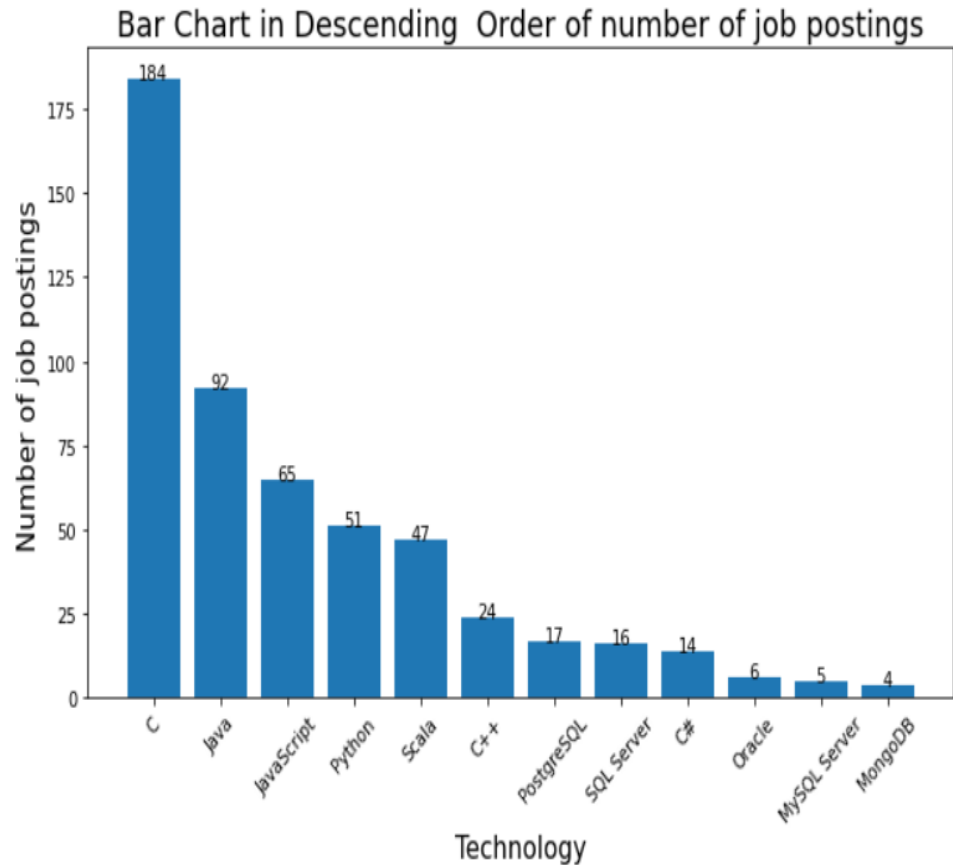
- The future will be for Big Data
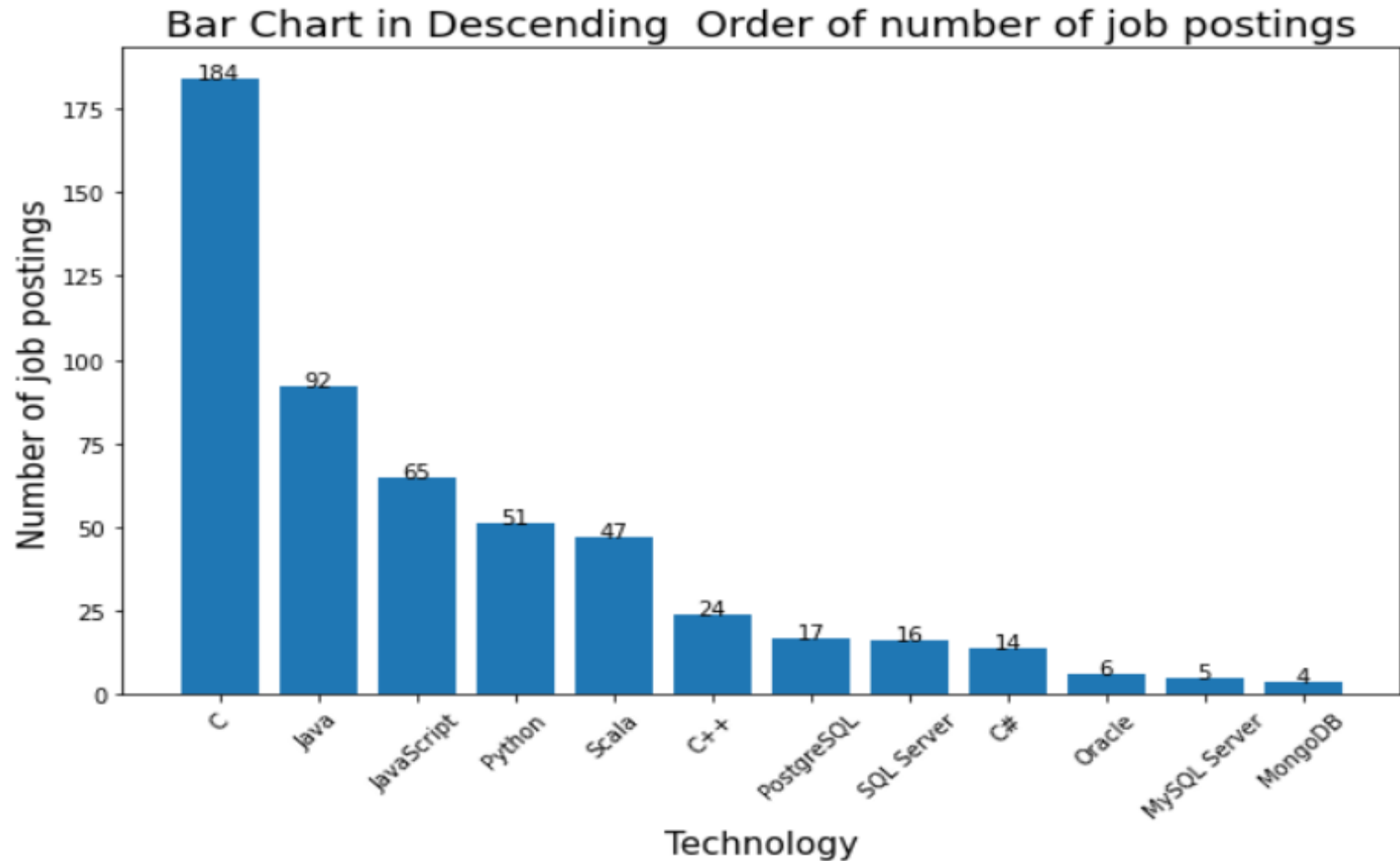
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CONCLUSION

- Developers are always in a trend with new developments of the software world ecosystem. As Big Data Developer is the one who is responsible to work with MongoDB. Data analys showed this new trend in the five leaders

- Developers prefer to work with an open software resource as MySQL

- There are no age limits among developers.

- Charts "Number of Job Postings" , "Programming Language Trends" and "Data Base Trend" showed the same desired languages and Data Bases

- Java and JavaScript remains the leader among the languages of the current year, desired in the following year, and among the first languages on Job Postings, but the "Preference index" is for Bash, C, C++(more than 50% respondents). It can be assumed that the IT market is at the "turning point".

- Preferences to work with various platforms did not receive a special direction in the analysis

- The ages categories donot have the limitation

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APPENDIX

Bar Chart in Descending Order of number of job postings

Bar Chart in Descending Order with Matplotlib

GITHUB JOB POSTINGS

Bar Chart in Descending Order of number of job postings

POPULAR LANGUAGES

Bar Chart in Descending Order with Matplotlib