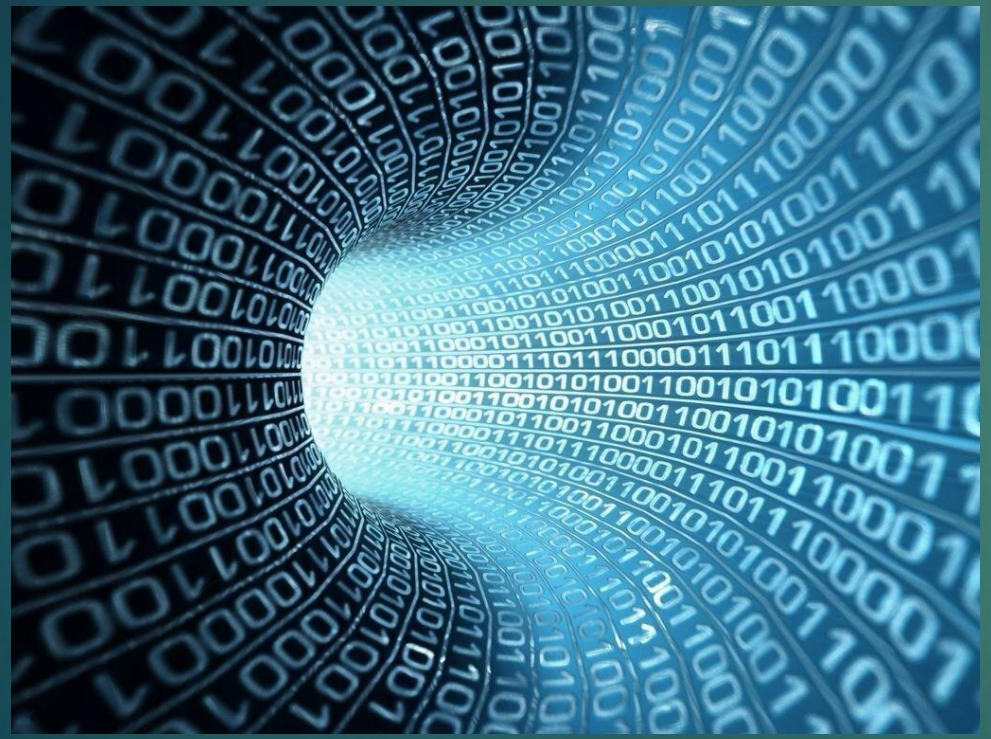


Technology trends report

Current and desired technology trends among developers from around the world based on demographic data

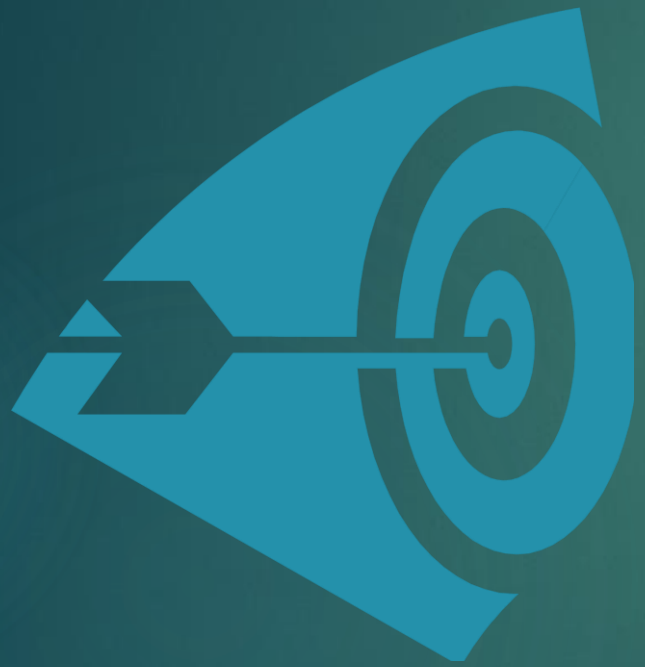
Rokibul Islam

31.0.2022

OUTLINE

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

EXECUTIVE SUMMARY

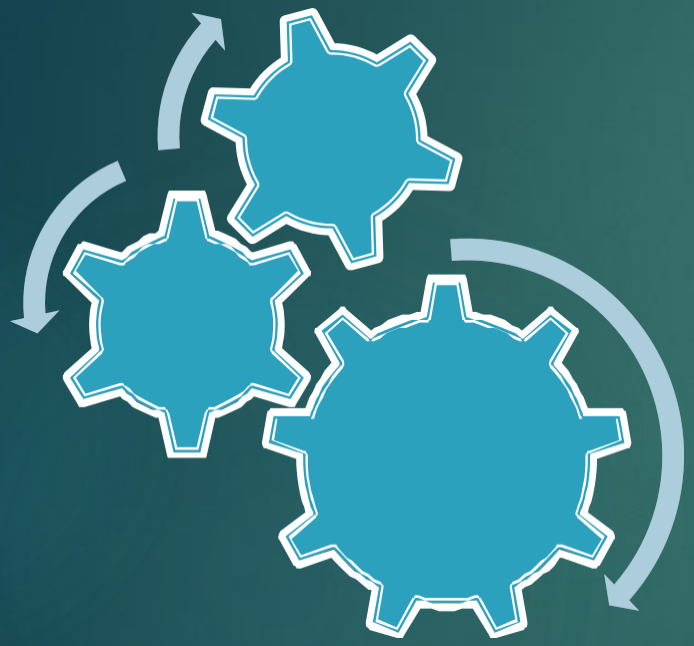


- **Current Technology Use**
  - Language Worked With
  - Database Worked With
  - Platform Worked With
  - Web Frame Worked With
- **Future Technology Trends**
  - Language Worked With
  - Database Worked With
  - Platform Worked With
  - Web Frame Worked With
- **Demographics**
  - Respondent classified by Gender
  - Respondent Count for Countries
  - Respondent Count by Age
  - Respondent Count by Gender, classified by Formal Education Level
- **GitHub Job Postings**

INTRODUCTION

- This report analyzes current and desired technology trends among developers from around the world based on demographic data
- **Audience & Stakeholders**
  - Stakeholders from IT companies
  - IT training providers
  - Software and web developers
  - Computer science students
- **Gain from the analysis**
  - Identify global technology trends for programming, databases, platforms and web frames related to web development to help determine desired skill requirements for developers worldwide
  - Identify developers interested in particular IT technologies

METHODOLOGY



- **Data Collection** using APIs & Webscraping
  - Surveys (Stack Overflow Developer Survey 2019)
  - Job postings(GitHub Jobs API)
  - Training portals (kaggle.com)
- **Data Wrangling**
- **Data Cleaning**
- **Exploratory Data Analysis**
- **Data Visualization**
  - IBM Cognos Dashboard Embedded (CDE)
  - Jupyter Notebook with Python
- **Presentation of Findings**

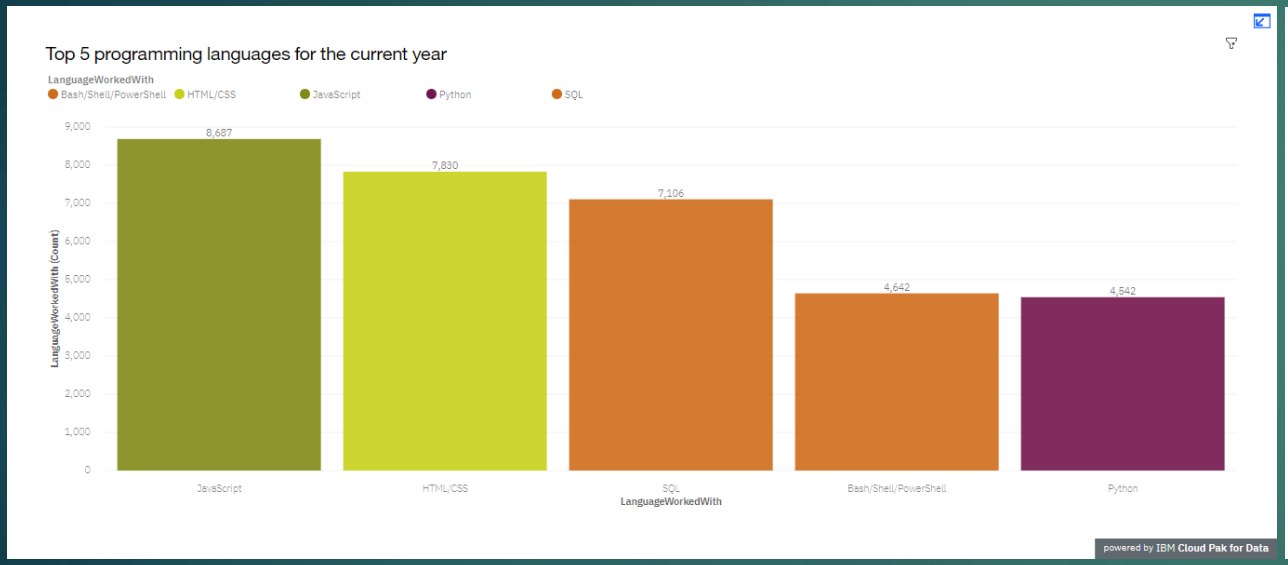
RESULTS

	Respondent	MainBranch	Hobbyist	OpenSourcer	OpenSource	Employment	Country	Student	EdLevel	UndergradMajor	...	WelcomeChange	SONewContent	Age	Gender	Trans	Sexuality	Ethnicity	Dependents	SurveyLength	SurveyEase
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, B.Eng., etc.)	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	22.0	Man	No	Straight / Heterosexual	White or of European descent	No	Appropriate in length	Easy
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	NaN	23.0	Man	No	Bisexual	White or of European descent	No	Appropriate in length	Neither easy nor difficult
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, M.Eng., MBA, etc.)	Computer science, computer engineering, or sof...	...	Somewhat more welcome now than last year	Tech articles written by other developers;Cour...	28.0	Man	No	Straight / Heterosexual	White or of European descent	Yes	Appropriate in length	Easy
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, M.Eng., MBA, etc.)	NaN	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	26.0	Man	No	Straight / Heterosexual	White or of European descent	No	Appropriate in length	Neither easy nor difficult
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, B.Eng., etc.)	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	29.0	Man	No	Straight / Heterosexual	Hispanic or Latino/Latina;Multiracial	No	Appropriate in length	Easy

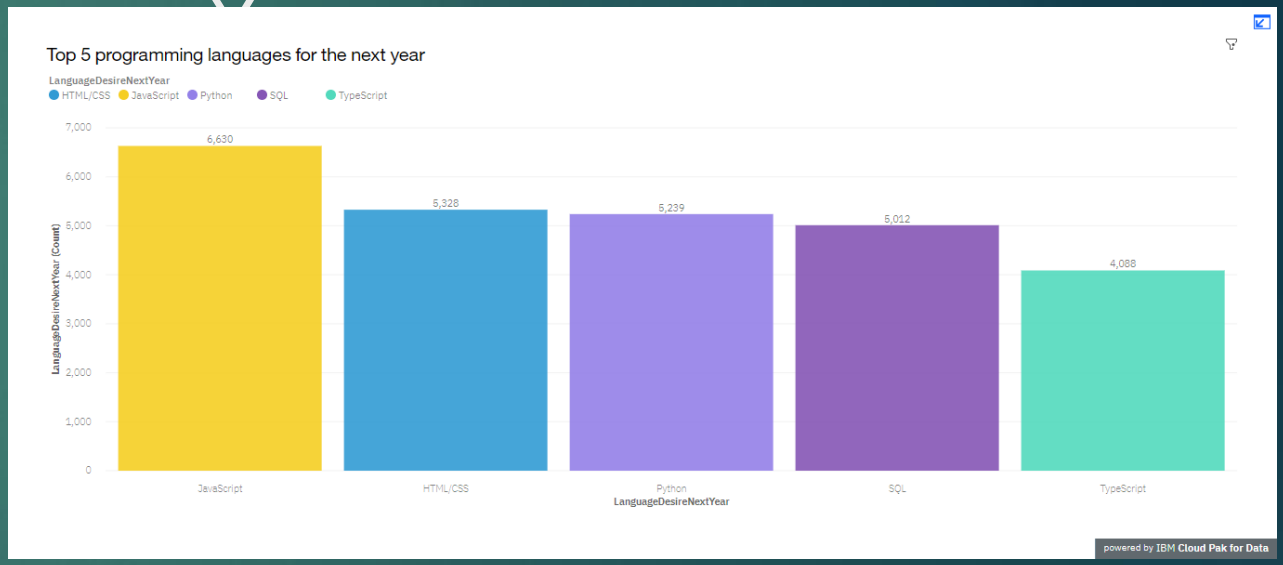
5 rows × 85 columns

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Y



PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

Findings

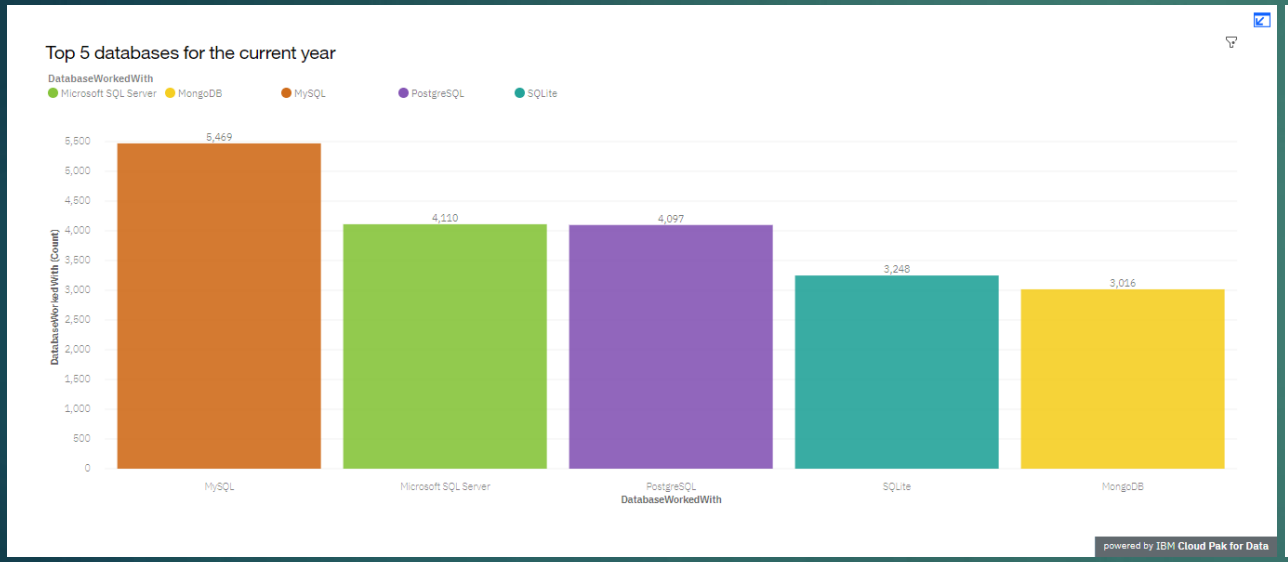
- The top three programming languages that the respondents work with and desire next year are mainly used to build websites: HTML, CSS and JavaScript
- Python is increasingly popular
- C++ and PHP are not as popular as in the past
- TypeScript chases JavaScript in popularity

Implications

- Websites and web applications development industry is continuously growing
- Python is an easy-to-use general-purpose coding language popular in the field of artificial intelligence
- C++ and PHP are being replaced by languages like Python and C#
- Typescript is a superset of JavaScript so its popularity will grow

DATABASE TRENDS

Current Year



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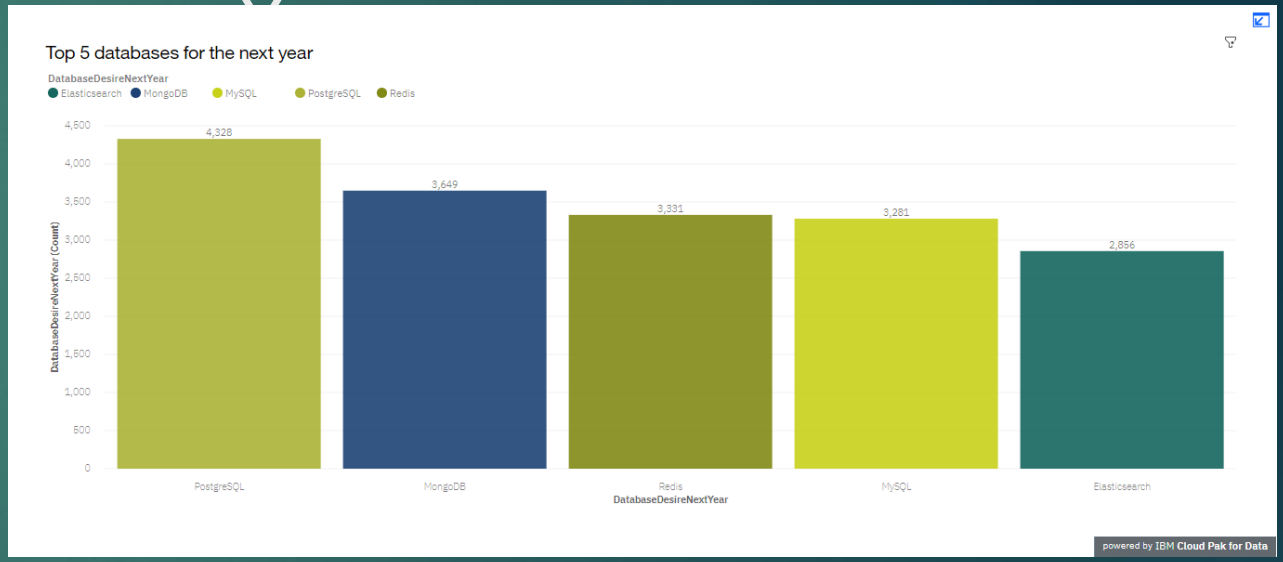


DATABASE TRENDS – FINDINGS & IMPLICATIONS

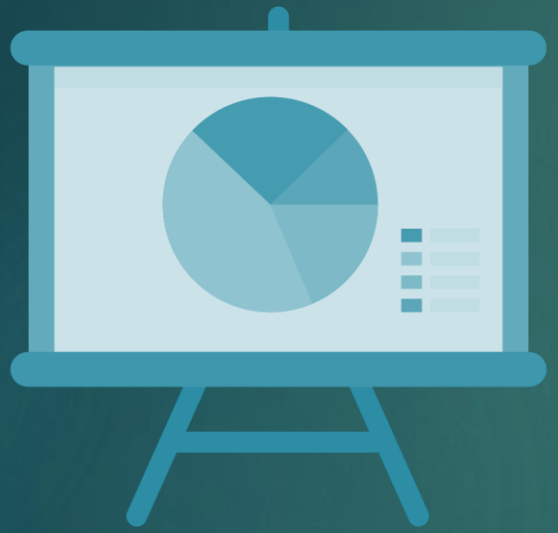
Findings

- MySQL and PostgreSQL are the most popular databases
- MangoDB and Redis databases are growing in popularity
- The popularity of Microsoft SQL Server database is declining
- Elasticsearch is increasingly used

Implications

- SQL is still the standard technology for handling relational data
- NoSQL-type databases are increasingly used
- Microsoft SQL Server is slowly being displaced by other databases
- Elasticsearch does a lot of text search where traditional RDBMS databases don't perform very well so its popularity will grow

DASHBOARD



- The permanent link of the read-only view of the Cognos dashboard:
  - https://eu-global.platform.dashboard/dashboards/e65b 92ca-c237-4c8c-8e63-bce0b91c1169/view/4567d47a10a93def45b3c4e407cb2d037f307308b0bb8004d58d7b495a3620
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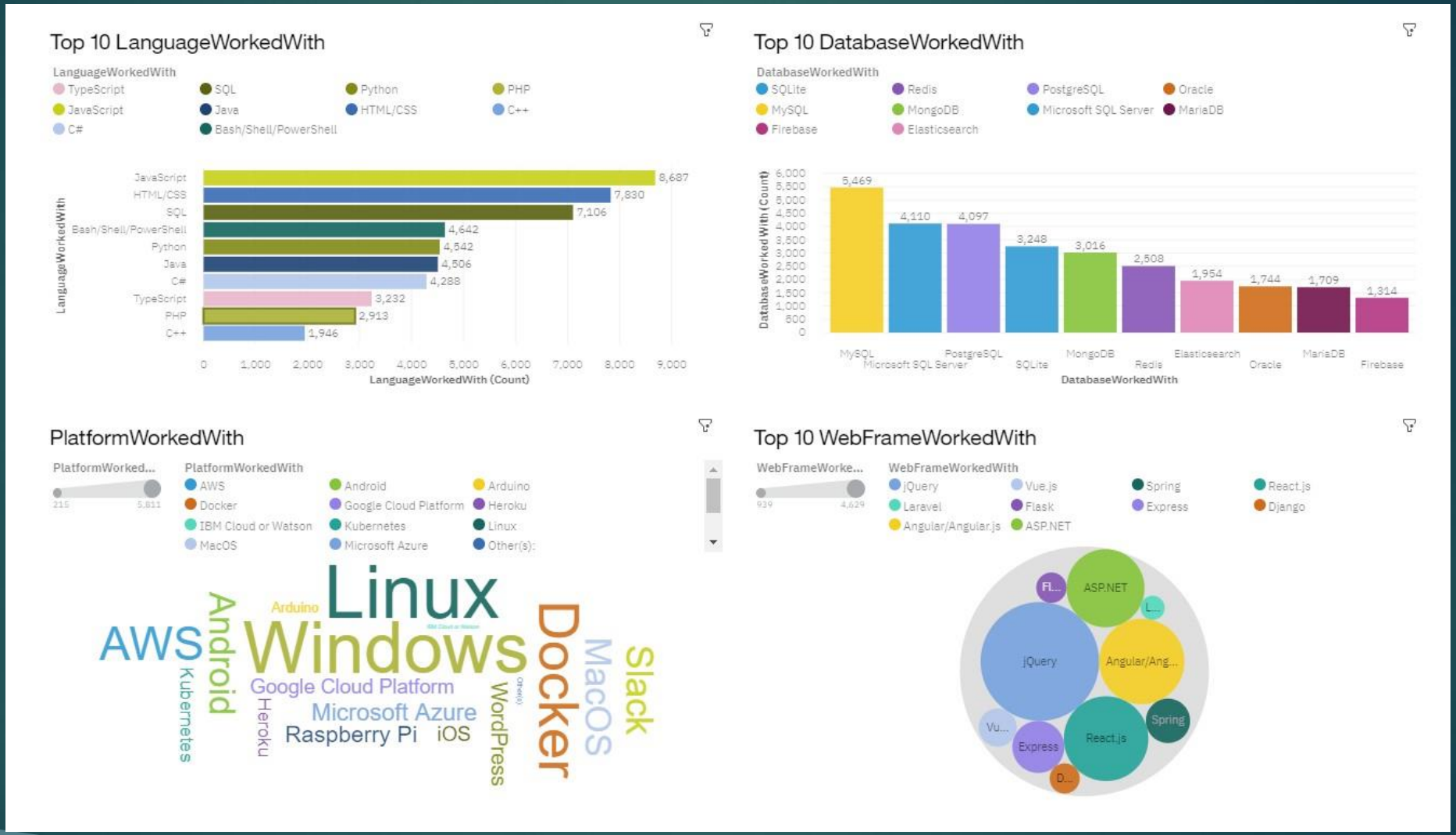
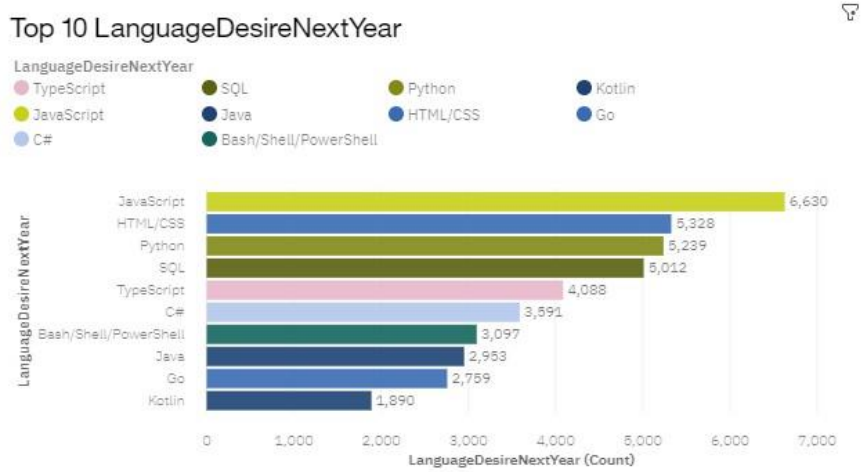
CURRENT TECHNOLOGY USAGE

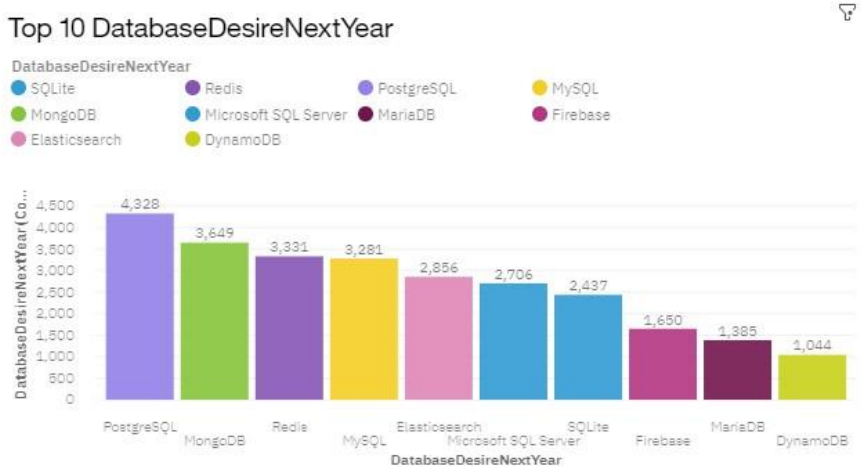


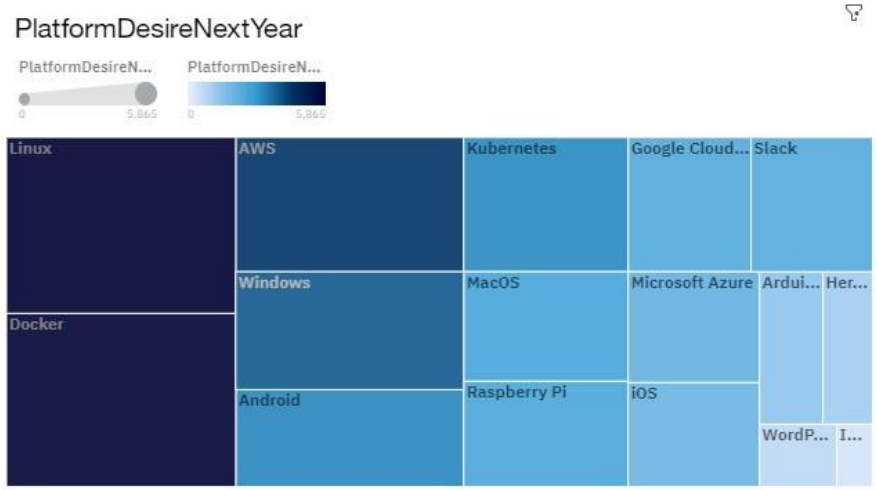
IBM Developer

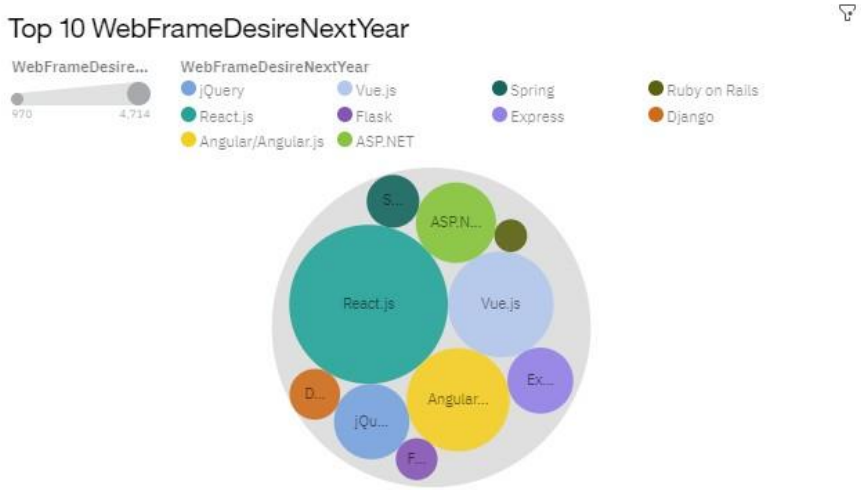
SKILLS NETWORK

FUTURE TECHNOLOGY TREND





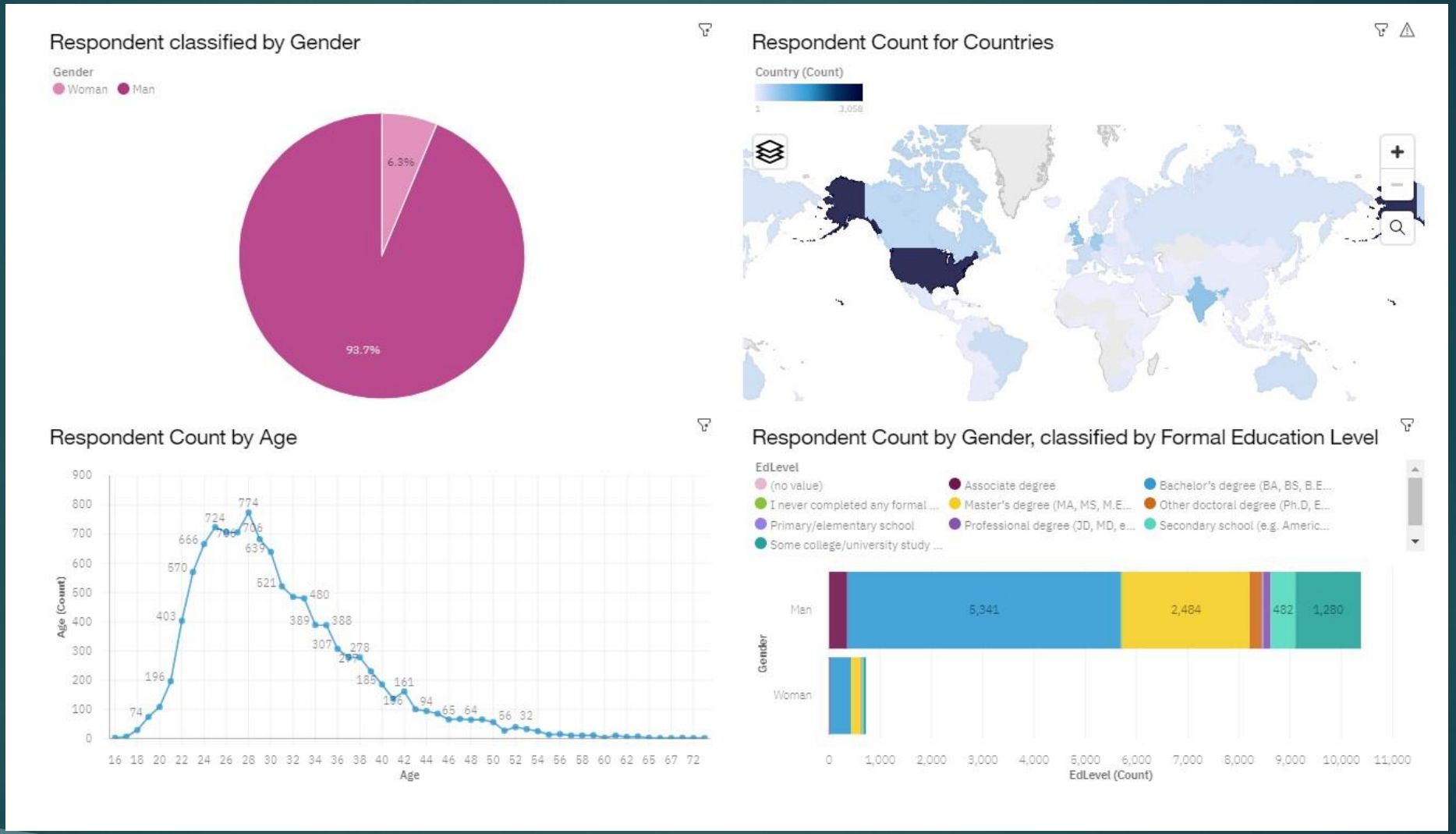




IBM Developer

SKILLS NETWORK

DEMOGRAPHICS



IBM Developer

SKILLS NETWORK

DISCUSSION

The IT technology industry is growing quickly. The fastest growth is observed in the US. The demand for technology changes from year to year and some technologies are displaced by new technologies that are easier to use. Stakeholders can use the data analysis and insights presented in this project to explore how to effectively select the technologies that will be most popular with developers and in greatest demand in the future. This knowledge will prevent stakeholders from falling behind the leading trends in the IT market. Also, demographic data shows which groups of human resources and in which parts of the world are interested in IT technologies and see their future in the IT labor market, which gives stakeholders the knowledge of where and who to recruit.

OVERALL FINDINGS & IMPLICATIONS

Findings

- The technological development is most robust in the U.S.. American technological power is unmatched
- The popularity of newer and easier-to-use technologies is growing relative to their predecessors
- Noticeable extreme gender and age
- prevalence in the tech field
- Education level determines employment

Implications

- The rest of the world can also benefit from the technologies developed in the U.S.
- The world of technology is advancing at an ever-increasing rate, offering many new opportunities previously unattainable
- There should be the same development opportunities and access to new technologies for everyone
- Human resources with a degree are more likely to be employed

CONCLUSION

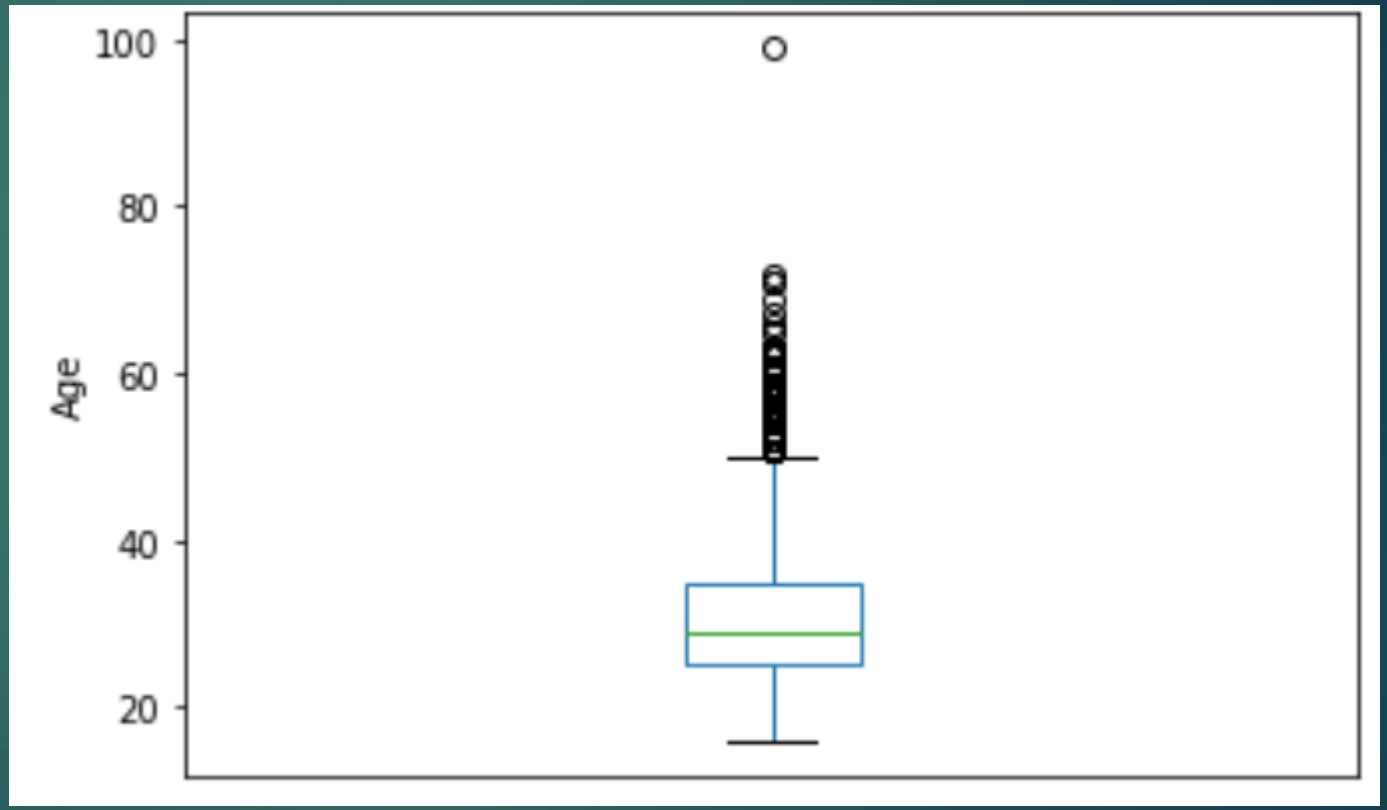
- The demand for different technologies changes every year
- Men dominate the IT market
- Many places in the world are not keeping up with the technological advances of the United States
- Bechelor's and Master's Degrees prevail among both men and women in the IT market
- The most popular programming languages are used to create websites and web applications

APPENDIX

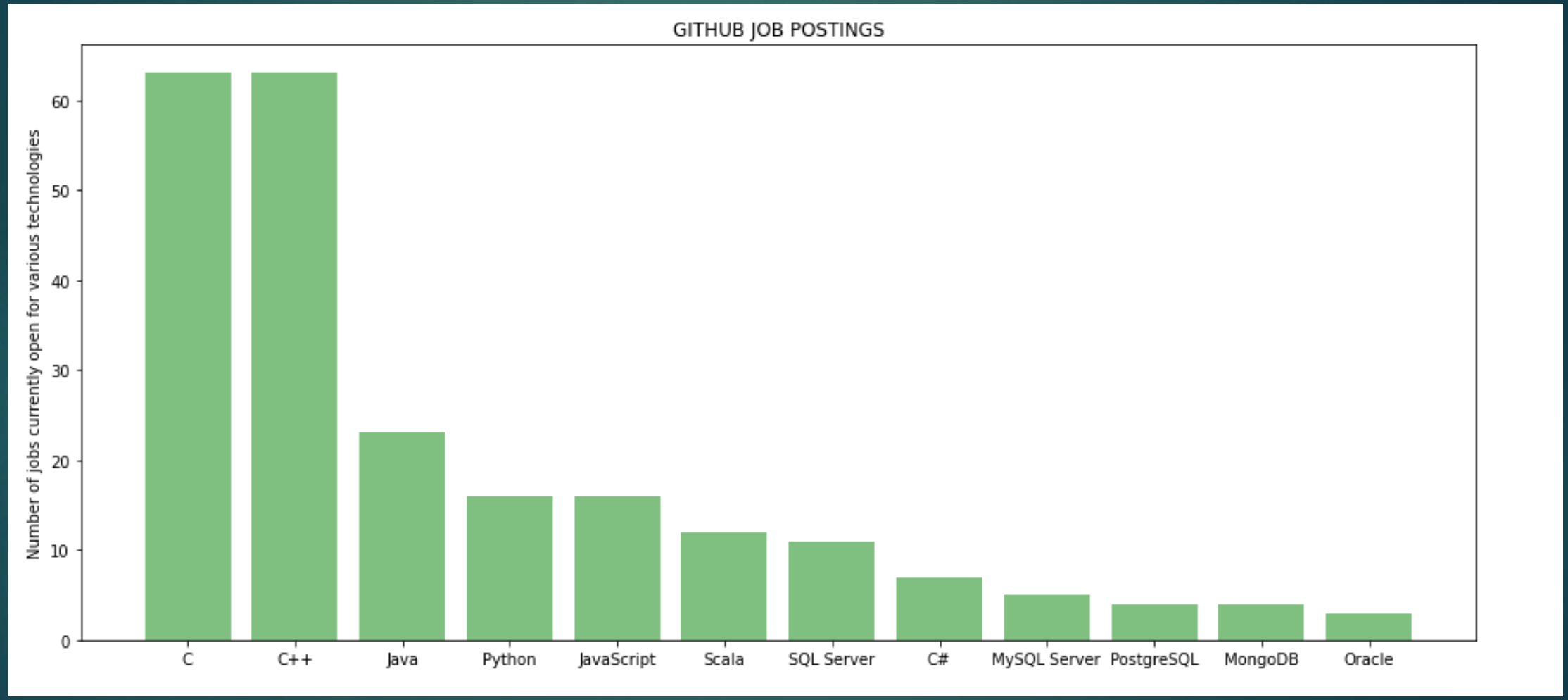
Language name and ann

```
Language--->Average Annual Salary
Python--->$114,383
Java--->$101,013
R--->$92,037
Javascript--->$110,981
Swift--->$130,801
C++--->$113,865
C#--->$88,726
PHP--->$84,727
SQL--->$84,793
Go--->$94,082
```

APPENDIX Box plot of Age



GITHUB JOB POSTINGS



POPULAR LANGUAGES