Technology Trends Analysis

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OUTLINE

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

EXECUTIVE SUMMARY

- Identified the top programming skills that are most in demand from various sources including:
  - Job Postings
  - Training Portals
  - Surveys
- Scraped internet web sites and accessed APIs to collect data in various formats (.csv files, excel sheets, and databases)
- Performed Data Wrangling, Exploratory Data Analysis, & Data Visualization
- Created Data Analytics Dashboard with IBM Cognos Analytics

INTRODUCTION

- Scenario: Recently hired as a Data Analyst by a global IT and business consulting services firm that is known for their expertise in IT solutions and team of IT consultants
- To keep pace with changing technologies and remain competition, our organization analyzes data to help identify future skill requirements
- Tasked with collecting data from various sources and identifying trends for this year's report on emerging skills
- Uncovered trends from data analysis including:
  - What are the top programming languages in demand?
  - What are the top database skills in demand?
  - What are the popular IDEs?

METHODOLOGY

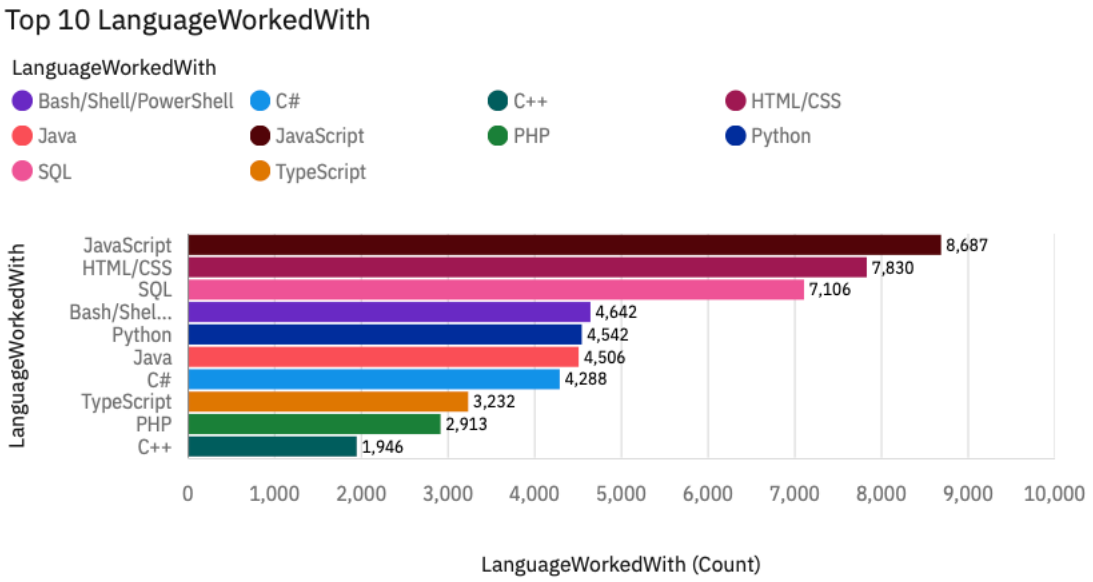
- Data Collection
  - Collecting data using APIs, Webscraping
- Data Wrangling
  - Finding & determining missing values, finding & removing duplicates, normalizing data
- Exploratory Data Analysis
  - Distribution, Outliers, Correlation
- Data Visualization
  - Visualizing distribution of data, relationships, composition & comparison
- Dashboard Creation
- Presentation of Findings

RESULTS

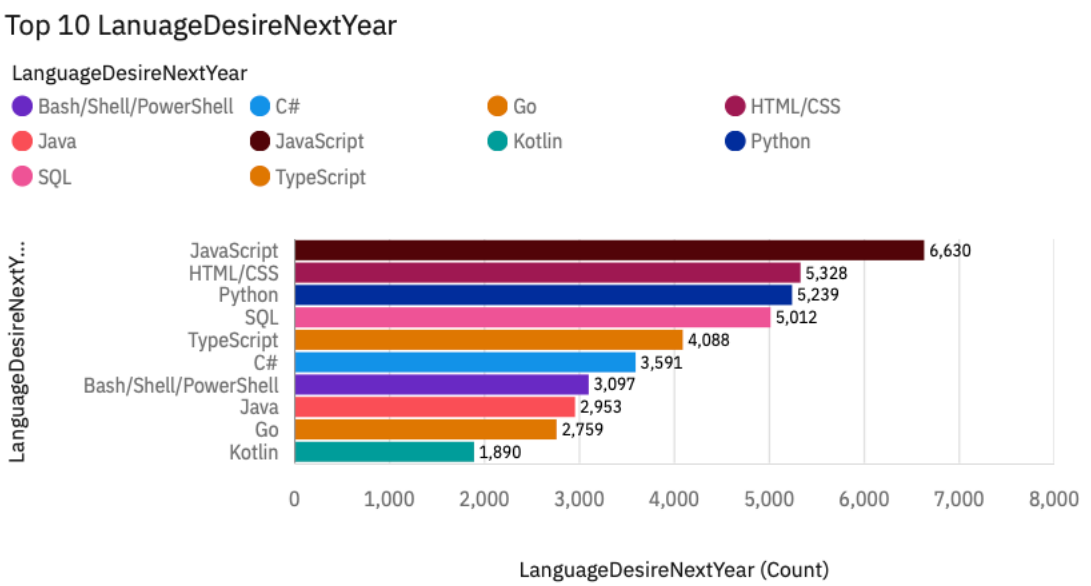
	Respondent	MainBranch	Hobbyist	OpenSourcer	OpenSource	Employment	Country	Student	EdLevel	UndergradMajor	...	WelcomeChange	S
0	4	I am a developer by profession	No	Never	The quality of OSS and closed source software ...	Employed full-time	United States	No	Bachelor's degree (BA, BS, B.Eng., etc.)	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	de
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, M.Eng., MBA, etc.)	Computer science, computer engineering, or sof...	...	Somewhat more welcome now than last year	de
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	de
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	de

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

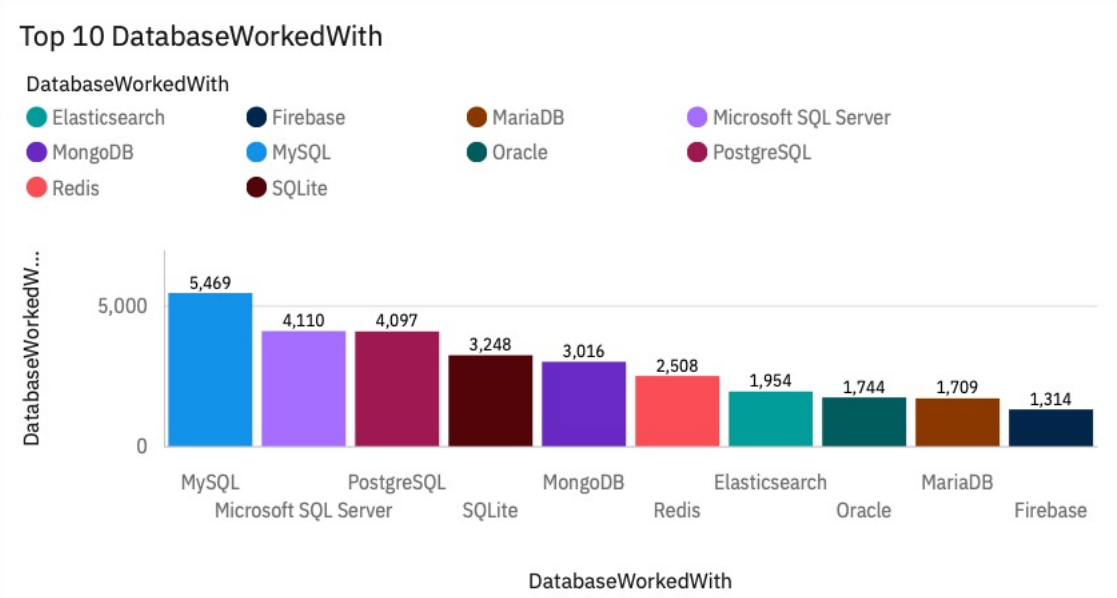
- JavaScript, HTML, SQL are the most popular languages worked with
- Python and Typescript are the fastest-growing languages
- Bash/Shell/Powershell, Java decreasing in number of users

Implications

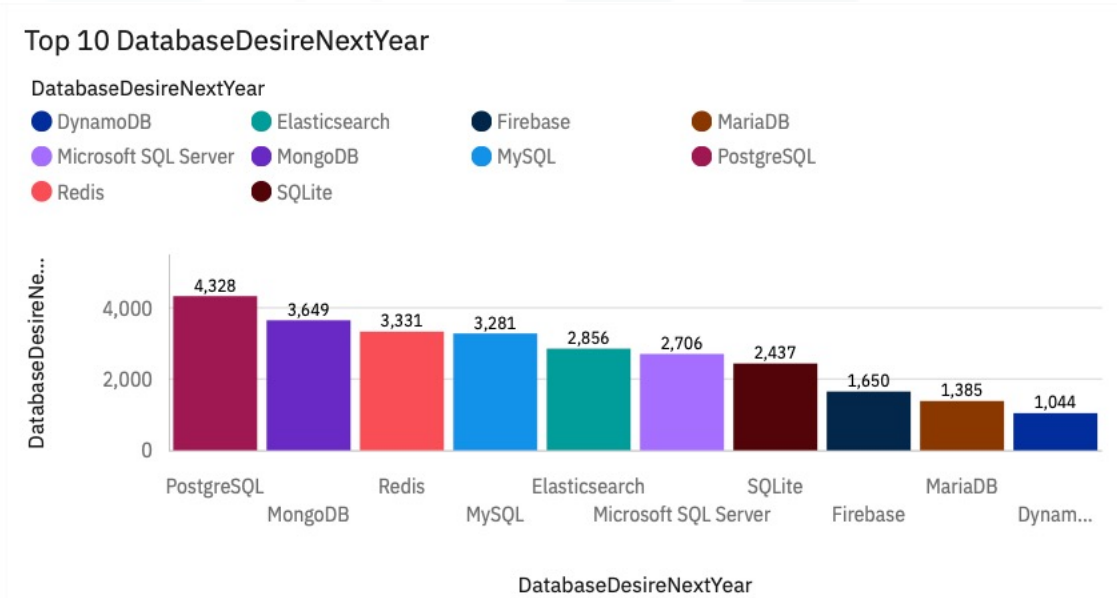
- Web Developers still in demand
- Python increasing with Artificial Intelligence and Machine Learning high in demand
- SQL still sought after by companies who utilize Big Data technology

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL and Microsoft SQL Server are the most used databases
- Increasing interest in PostgreSQL and MongoDB
- Elasticsearch: New & up-and-coming

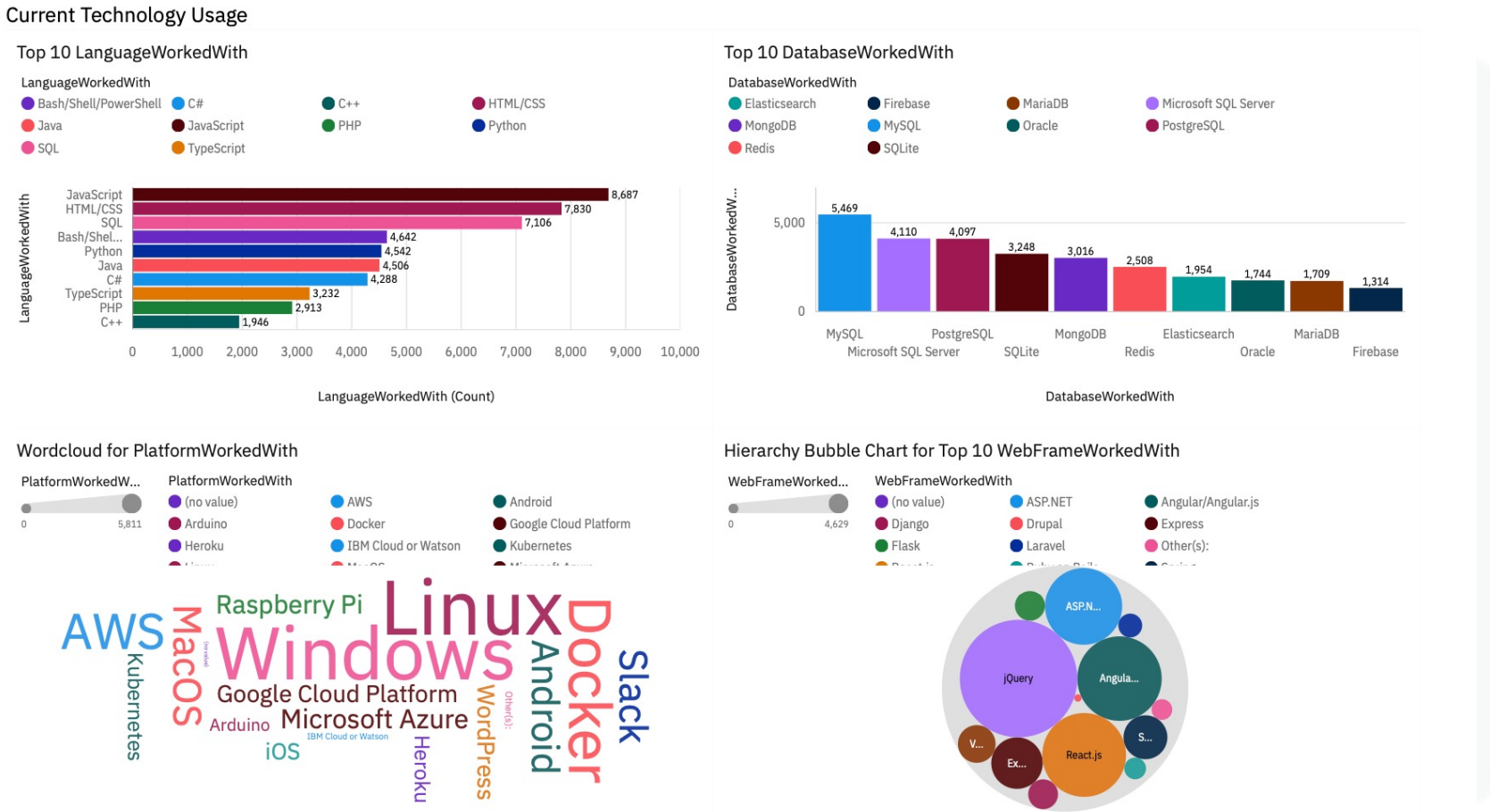
Implications

- Popular open source databases are still preferred to closed source
- NoSQL necessary and important for large data storage needs
- Emerging all-in-one platform that allows you to store, search, and analyze quickly

DASHBOARD

<https://github.com/mroh0519/IBM_CapstoneProject2/blob/main/m5_survey_data_dashboard.pdf>

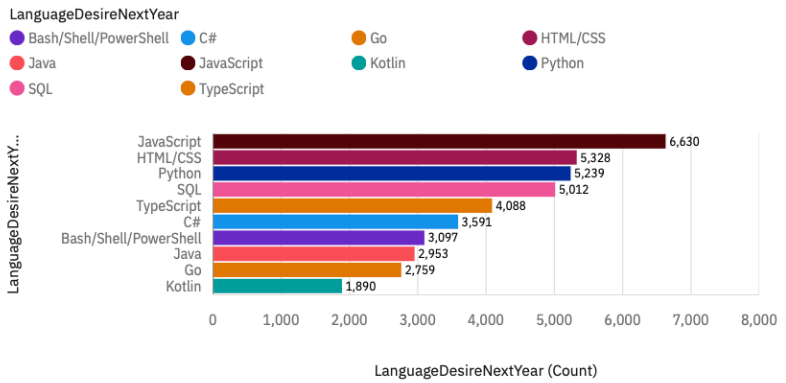
DASHBOARD TAB 1



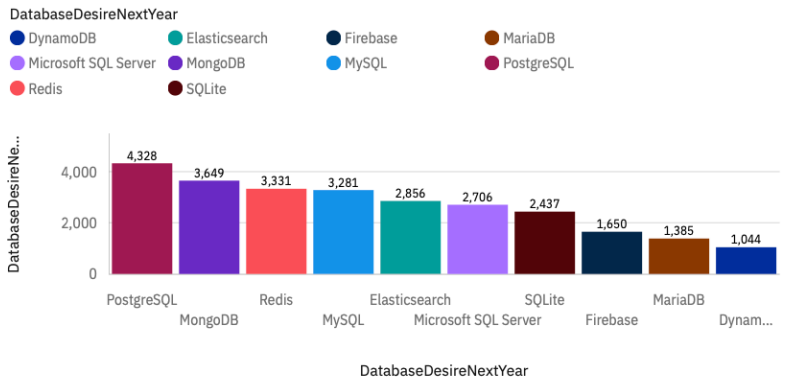
DASHBOARD TAB 2

Future Technology Trend

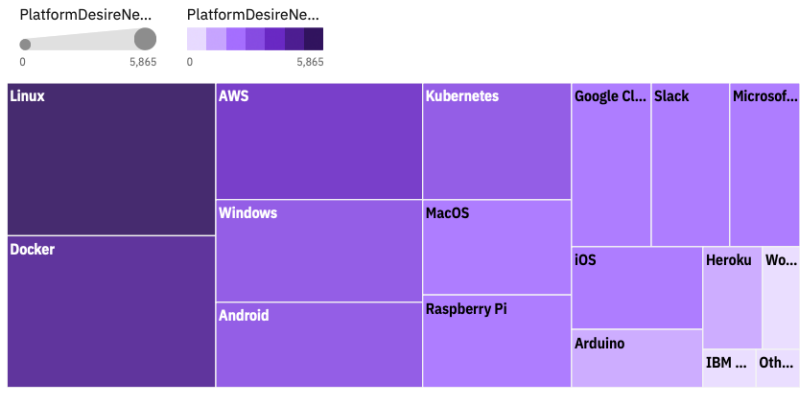
Top 10 LanuageDesireNextYear



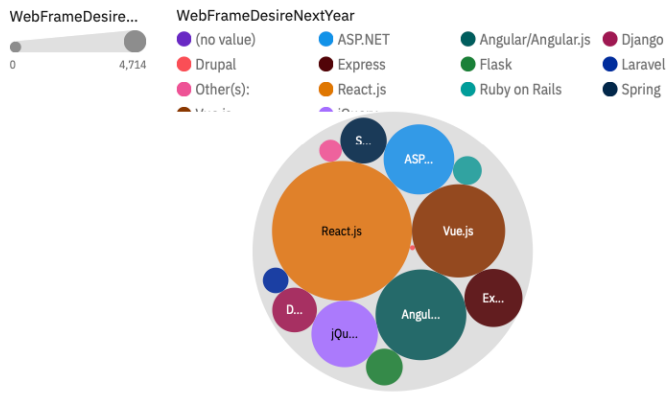
Top 10 DatabaseDesireNextYear



Tree Map Chart for PlatformDesireNextYear



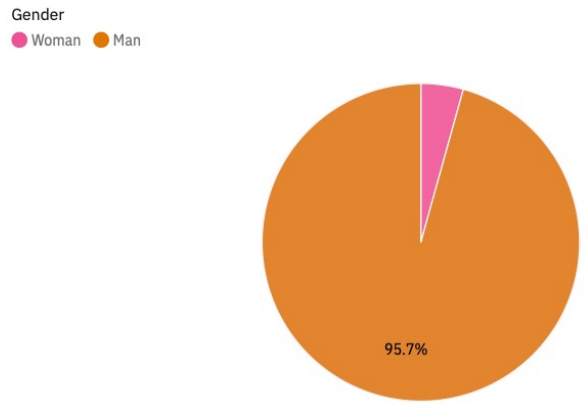
Hierarchy Bubble Chart for Top 10 WebFrameDesireNextYear



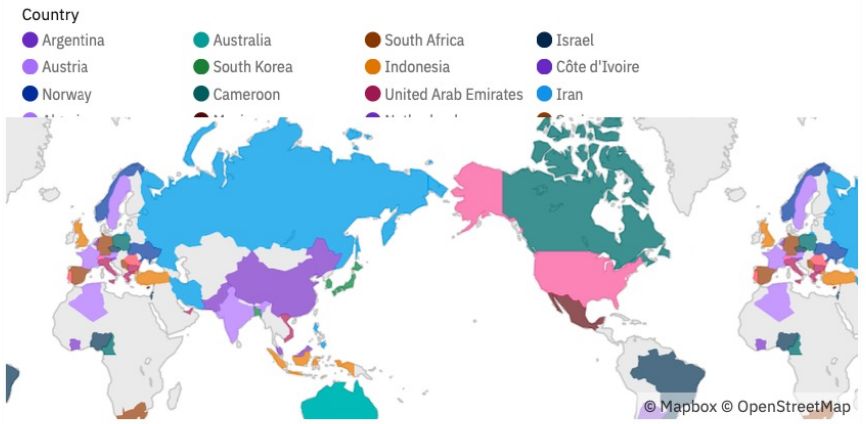
DASHBOARD TAB 3

Demographics

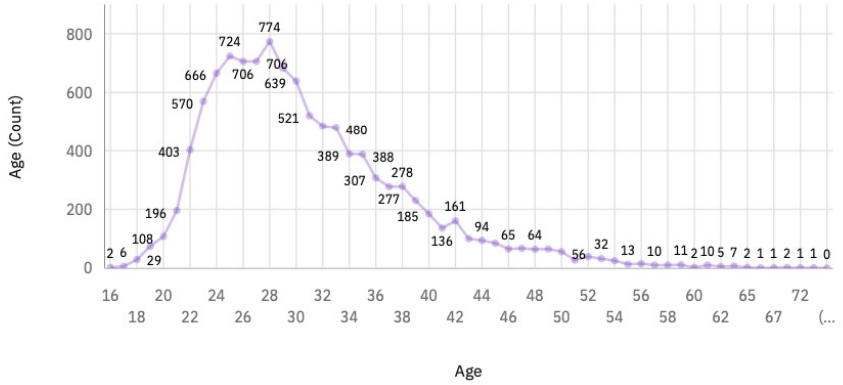
Respondents Classified by Gender



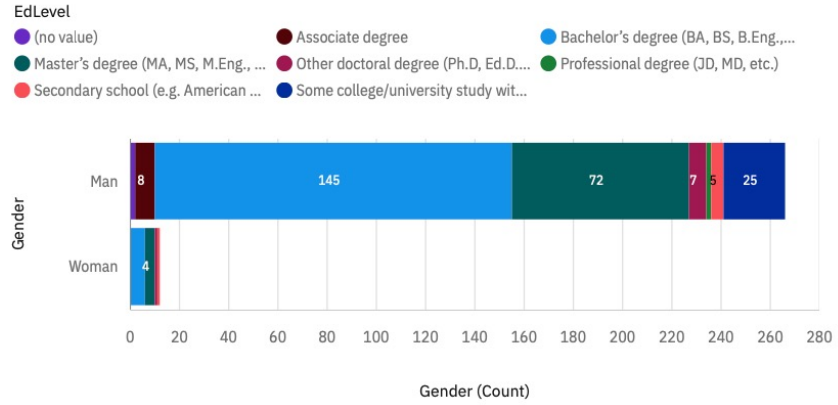
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, Classified by Formal Education Level



DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- Over 95% of respondents male
- Developers mostly located in developed countries
- Technology trends change on a yearly basis
- JavaScript widely used and TypeScript also increasing in popularity
- Docker and AWS platforms growing vastly

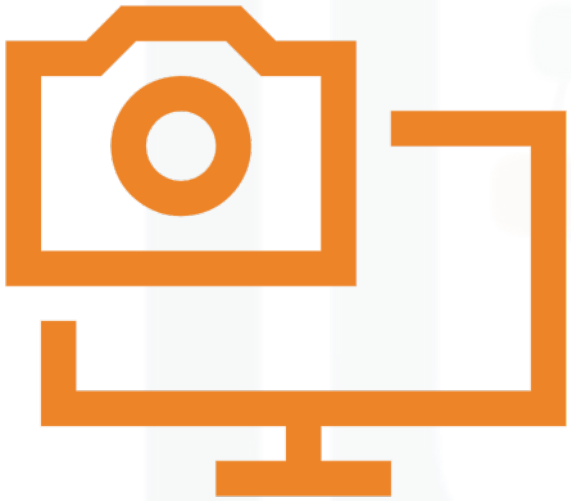
Implications

- Gender gap in technology
- More effort needed to bridge the gap for lagging countries
- Programmers should always follow the latest technologies
- JavaScript and TypeScript web frameworks gaining followers
- Young developers without a post-graduate degree the majority

CONCLUSION

- Trends for this current year and the next year
- Programming languages, Database, and Platform trends
- Demographics overview
- Gender and Education overview
- Programming languages and salary trends
- Future actions

APPENDIX

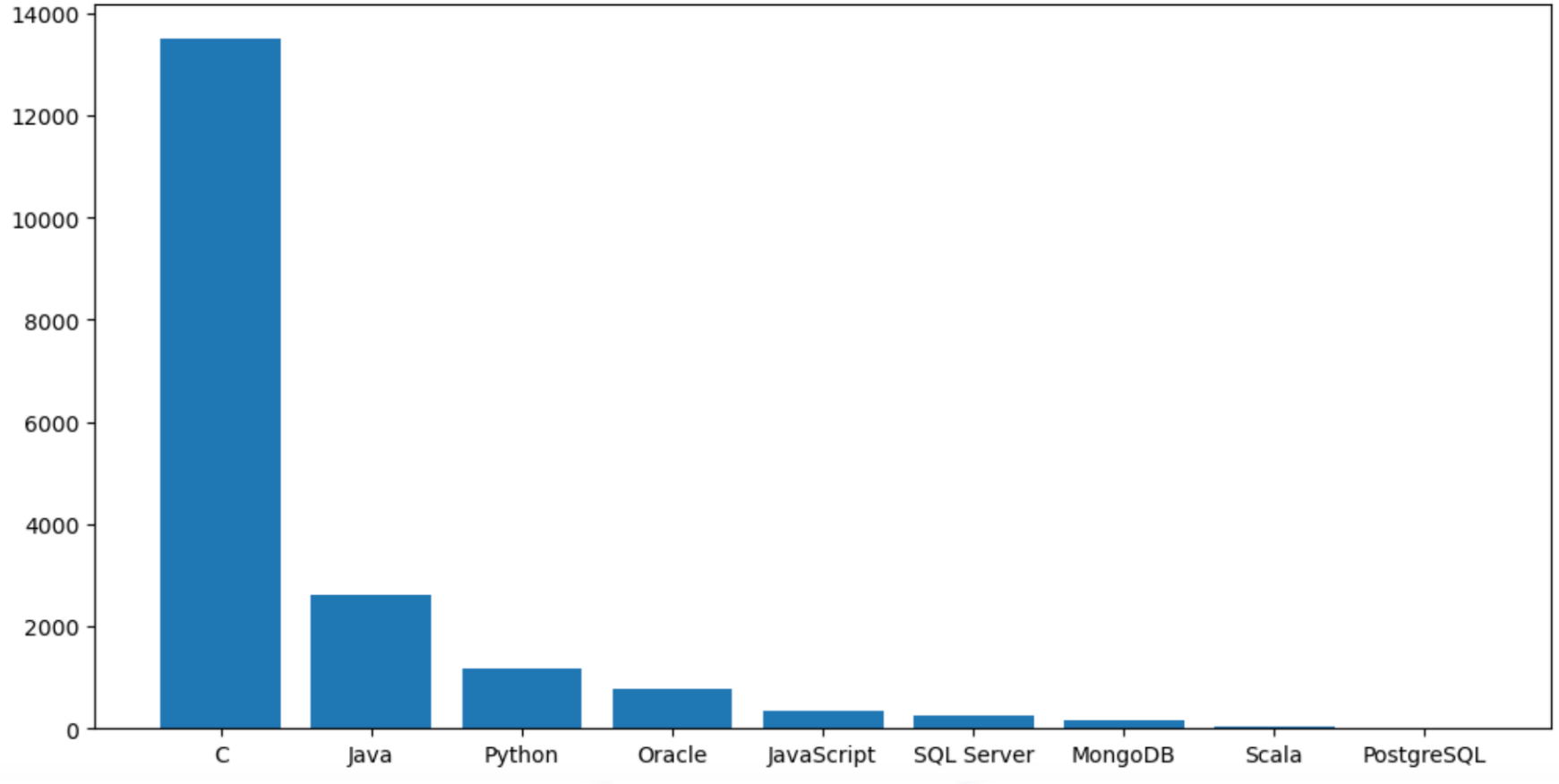


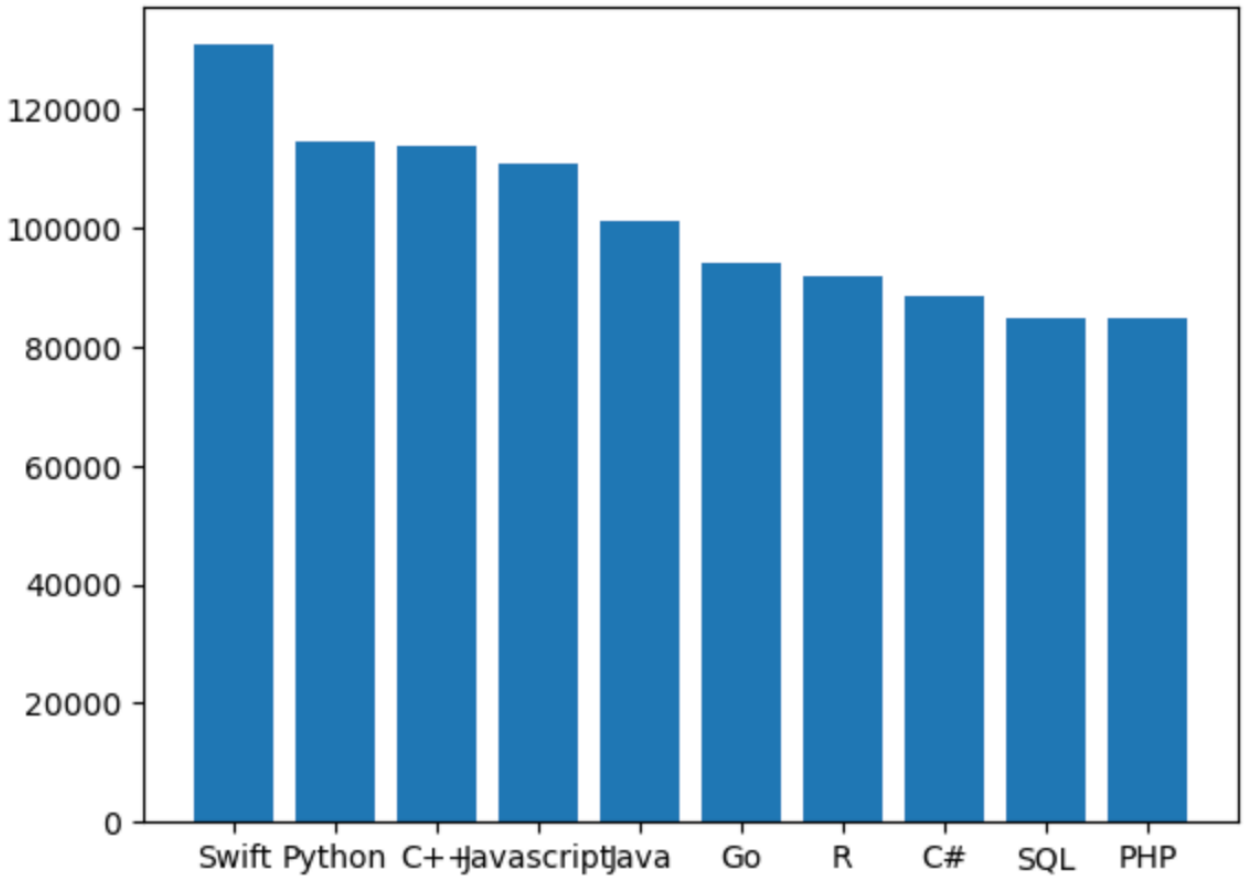
	Language	Average Annual Salary
5	Swift	130801
1	Python	114383
6	C++	113865
4	Javascript	110981
2	Java	101013
10	Go	94082
3	R	92037
7	C#	88726
9	SQL	84793
8	PHP	84727

	Language	Job Postings
0	C	13498
3	Java	2609
5	Python	1173
7	Oracle	784
4	JavaScript	355
8	SQL Server	250
11	MongoDB	174
6	Scala	33
10	PostgreSQL	10

JOB POSTINGS

Top Job Postings by Programming Languages



POPULAR LANGUAGES

Top Average Annual Salaries for Programming Languages