IBM DATA ANALYST CAPSTONE PROJECT

IT skill trends in 2019

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OUTLINE

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

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EXECUTIVE SUMMARY

- IT skills and jobs market trends were analised
- Collected data from various sources were collected, wrangled and cleaned
- Findings were based on Visualized data
- Main findings:
  - Promising technologies increasing in demand are MERN Stack, Python, Typescript, Cloud, Containers and NoSQL
  - Existing technologies still remain important are SQL, web programming, mobile

INTRODUCTION

- To keep pace with changing technologies and remain competitive, we have to identify future skill requirement
- We seek answers for
  - What are the top programming languages in demand?
  - What are the top database skills in demand?
  - What are the popular technologies?
- The results can be used by IT consultants, software companies and IT professionals to decide, which technologies are worth to seek

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METHODOLOGY

- Data Collection
  - GitHub Jobs API
  - WebScraping from IBM homepage
  - StackOverflow data from csv (IBM subset)
- Data Wrangling
- Exploratory Data Analysis
- Data Visualization
  - Graphs, Charts
  - Dashboards
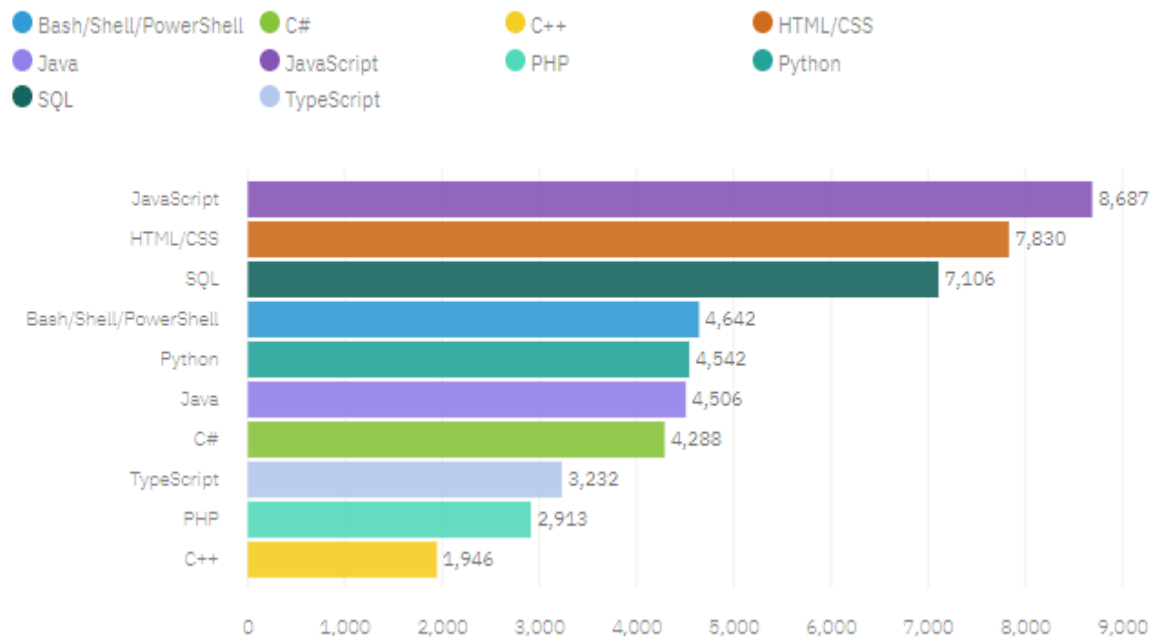- Presentation of findings
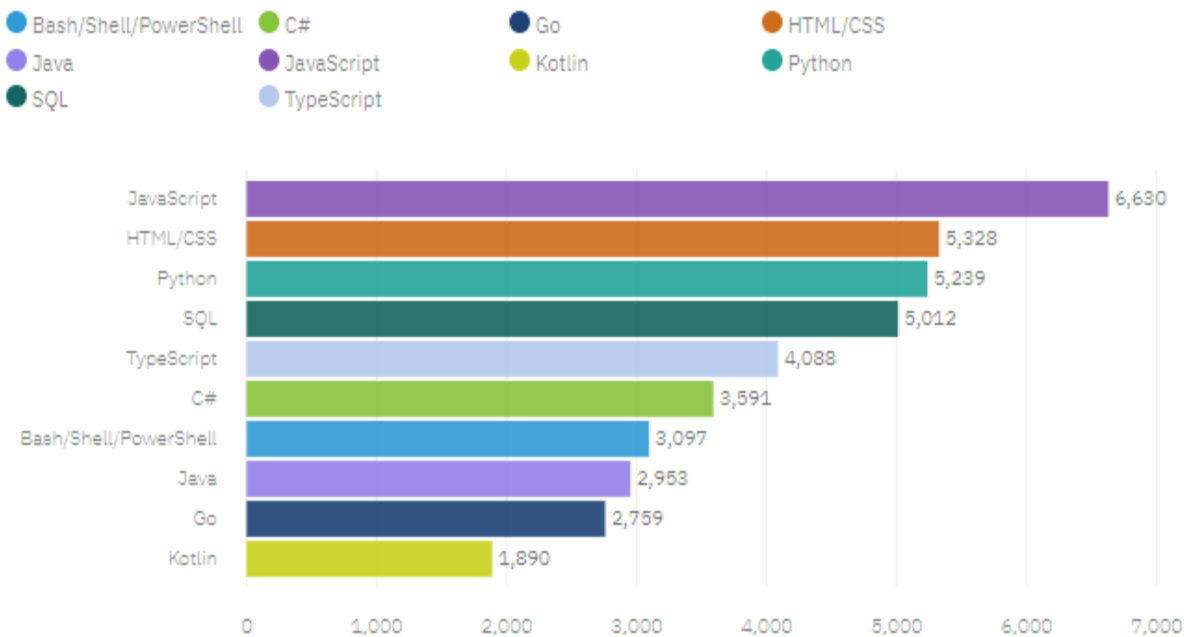
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year

Top 10 Languages Worked With

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

Language	Value
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

Next Year

Top 10 Desired Languages Next Year

● Bash/Shell/PowerShell ● C# ● Go ● HTML/CSS
● Java ● JavaScript ● Kotlin ● Python
● SQL ● TypeScript

Language	Value
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

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript & HTML/CSS has stable position at place 1 & 2
- Python gained popularity, and risen to the 3rd place
- TypeScript getting more popular
- The traditional C++ and PHP disappeared from the TOP 10, giving space to Go & Kotlin

Implications

- Web programming will remain dominant
- Typescript will gain more popularity in web development
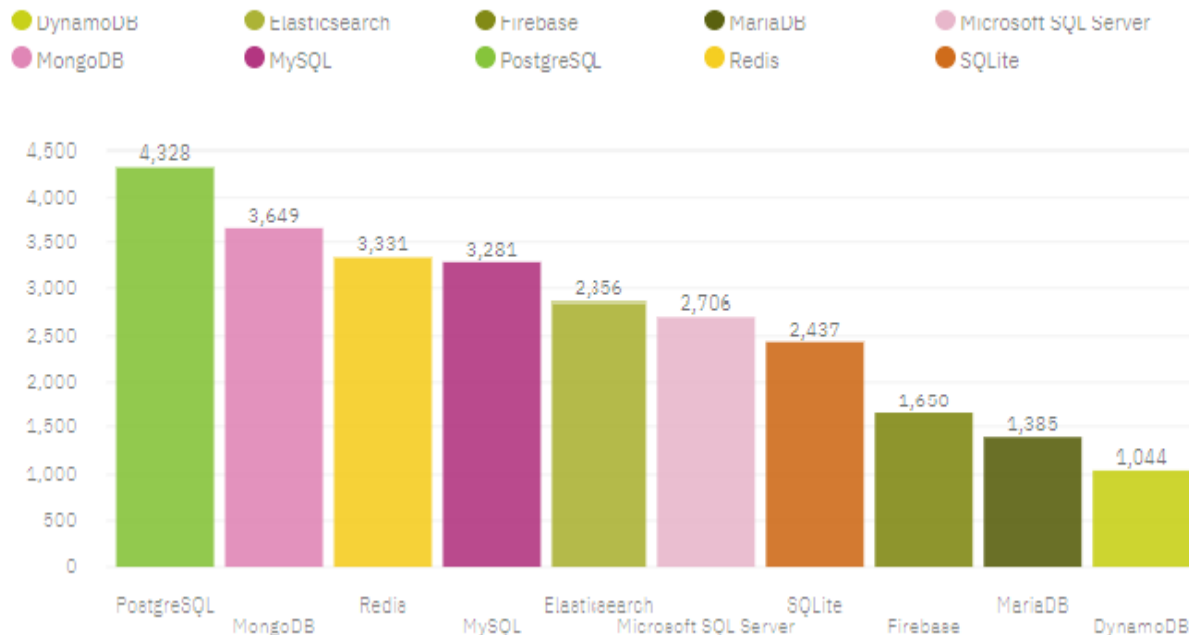- Python will gain more popularity
- Newer technologies, like Go and Kotlin will rise

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DATABASE TRENDS

Current Year
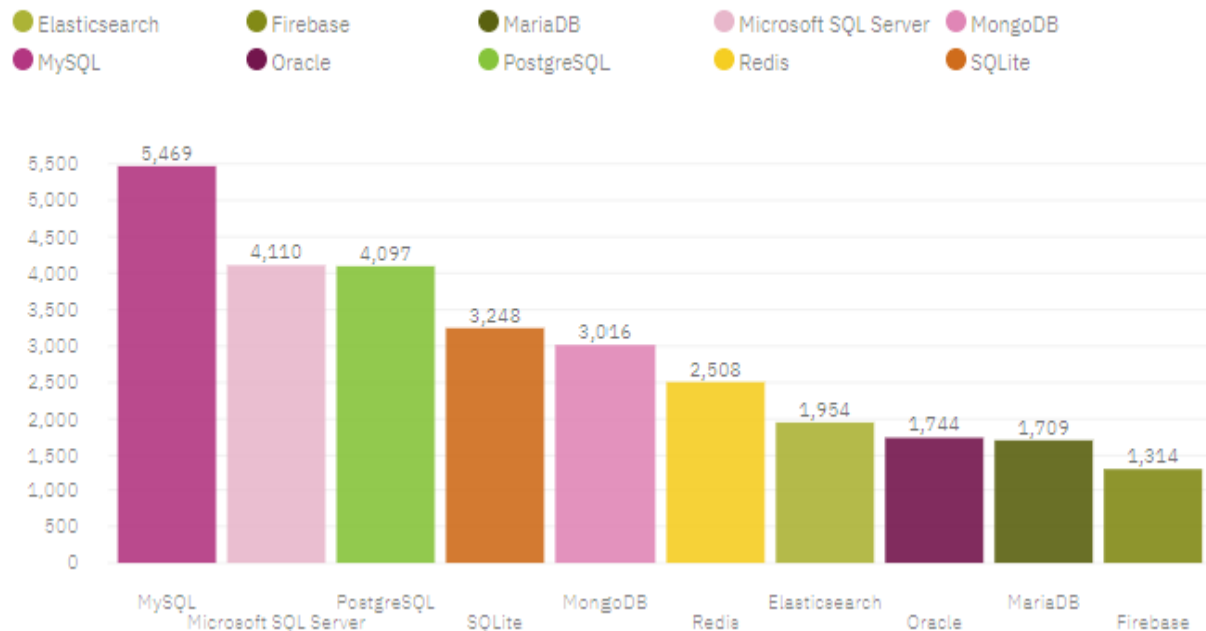
Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostrgreSQL came to 1st place
- MySQL demand will be lower
- MongoDB came to 2nd place
- Redis, Elasticsearch and Firebase gaining momentum

Implications

- Although still very popular, traditional RDMS is declining
- PostgreSQL may be more polular than MySQL
- NoSQL solutions, like MongoDB will be more popular
- Speed for mobile backends getting more important (Redis, MongoDB, etc.)

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WEB FRAMEWORK TRENDS

Current Year
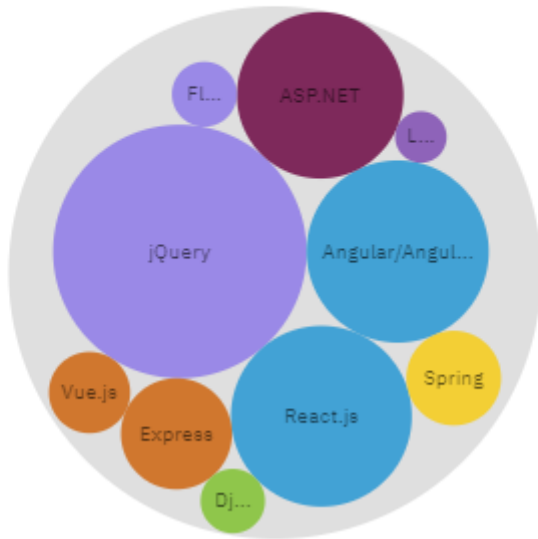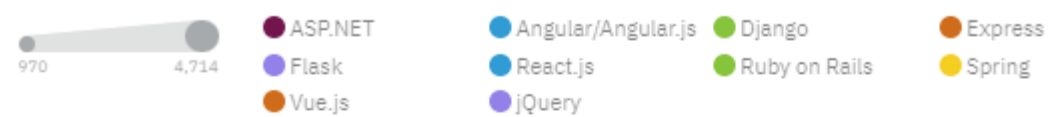
Next Year

PLATFORM TRENDS

Current Year

Next Year
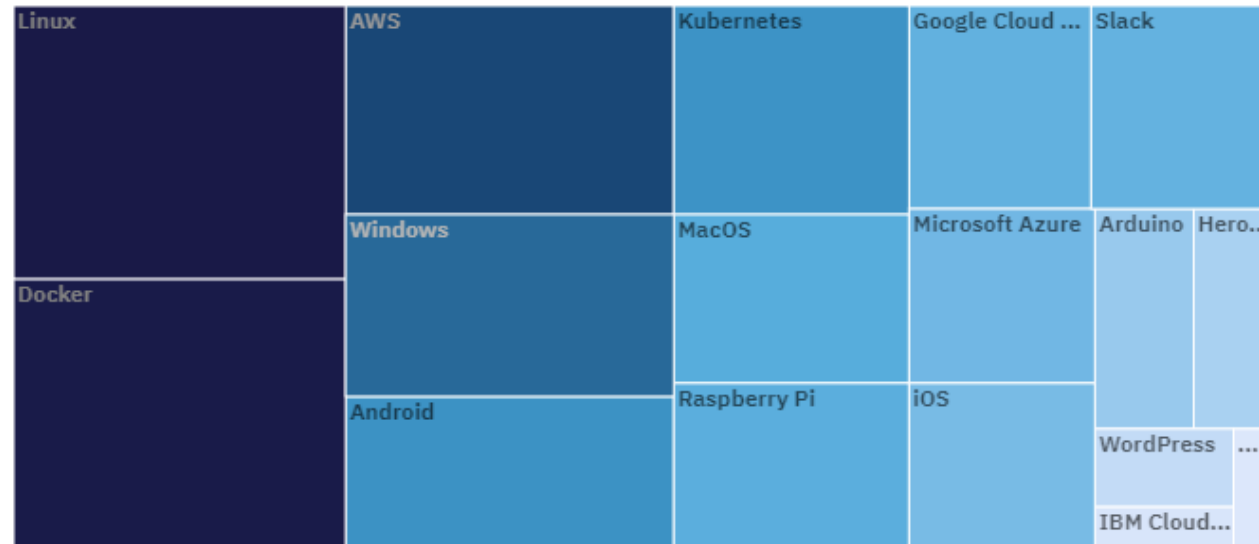
PLATFORM TRENDS – FINDINGS & IMPLICATIONS

Findings

- Demand for Linux is No. 1 among programmers
- Cloud-based platforms like AWS, Azure and Google Cloud are highly sought after
- Container technologies have high demand, Kubernetes is rising
- Mobile devices have high share

Implications

- Cloud platforms and container technologies are getting more important
- Mobile devices continue to have high importance

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DASHBOARD

Web link for the dashboard:

https://eu-de.dataplatform.cloud.ibm.com/dashboards/0fce6f02-3d33-40da-848e-8453bdde57a8/view/4038e0183da911927ffce6e4079f780e783f275bb1bbd103d1817b490a697797a83b46c2c82e4b5b8f115035f3eb440dcc
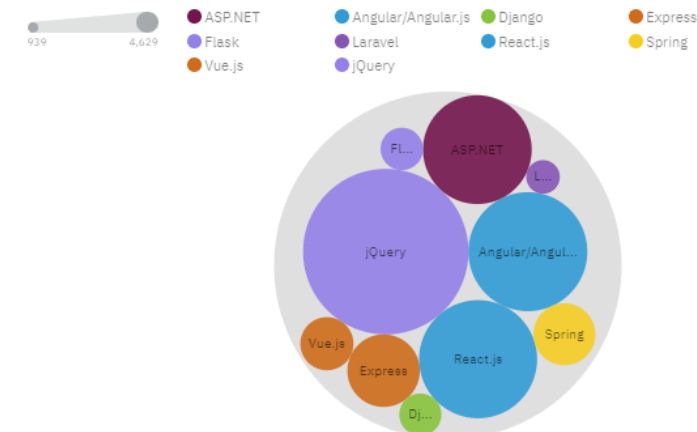
CURRENT TECHNOLOGY USEAGE
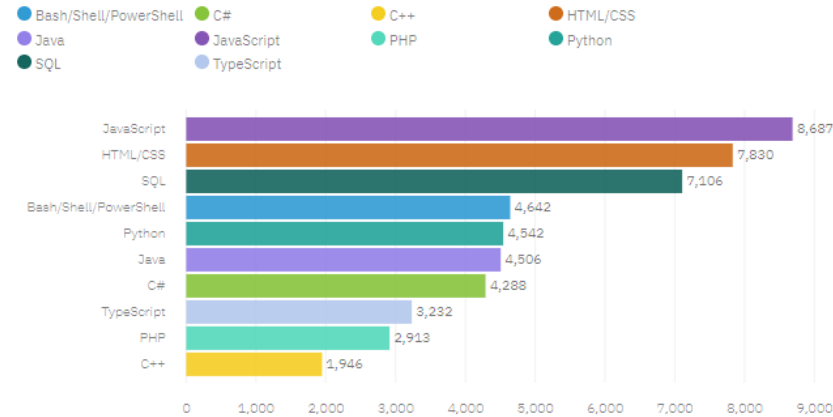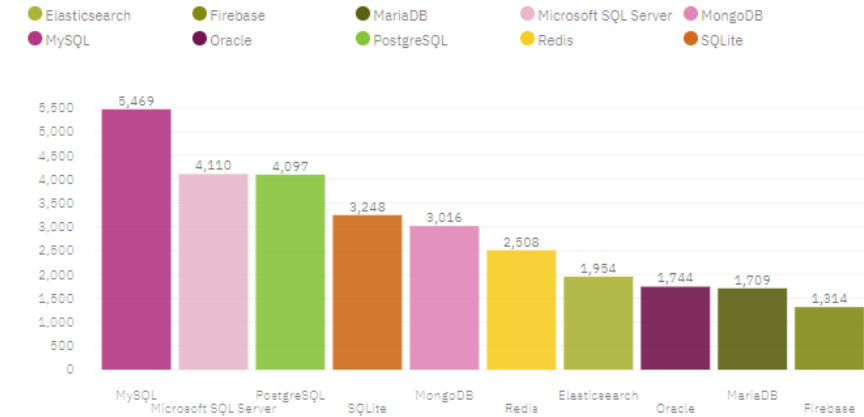
DESIRED TECHNOLOGIES
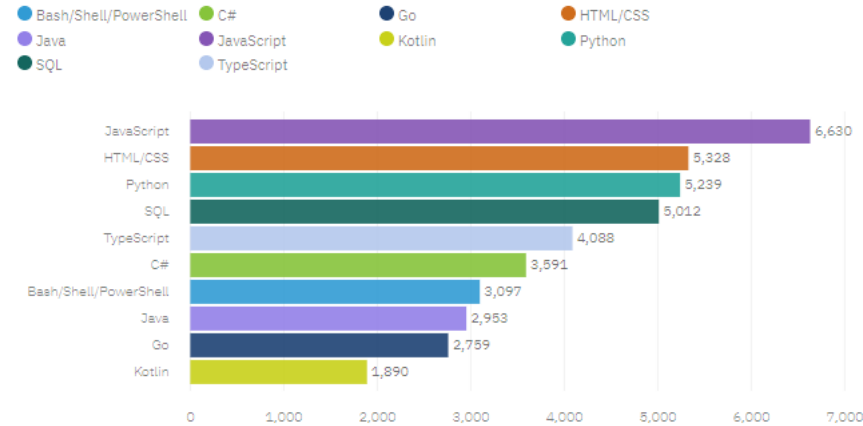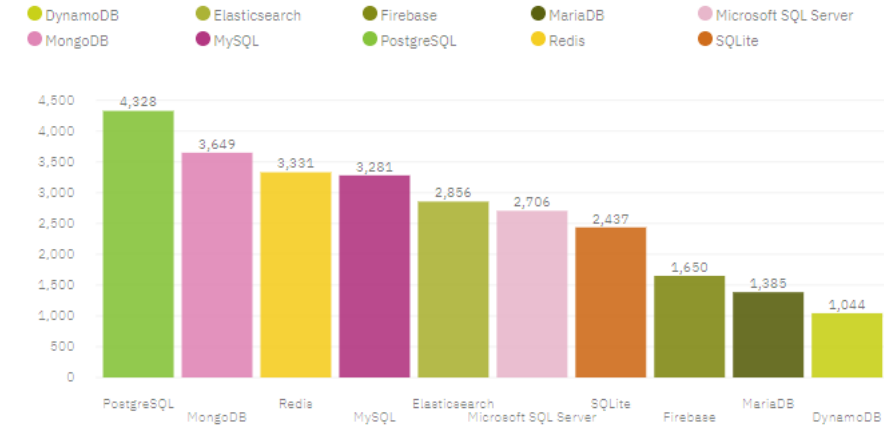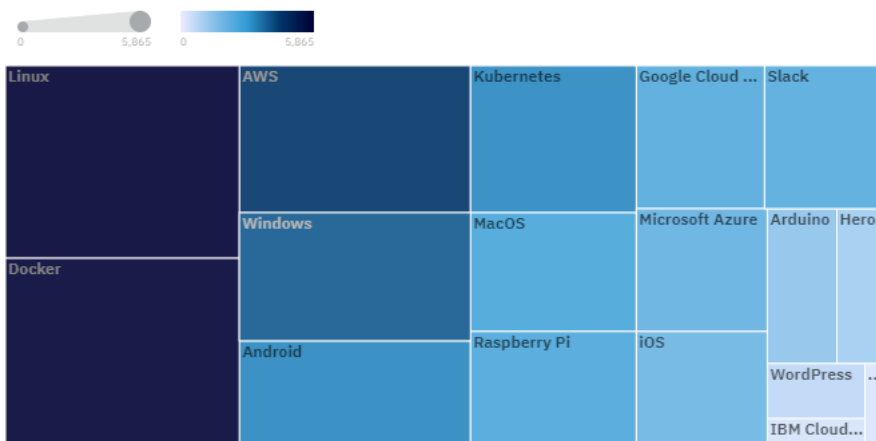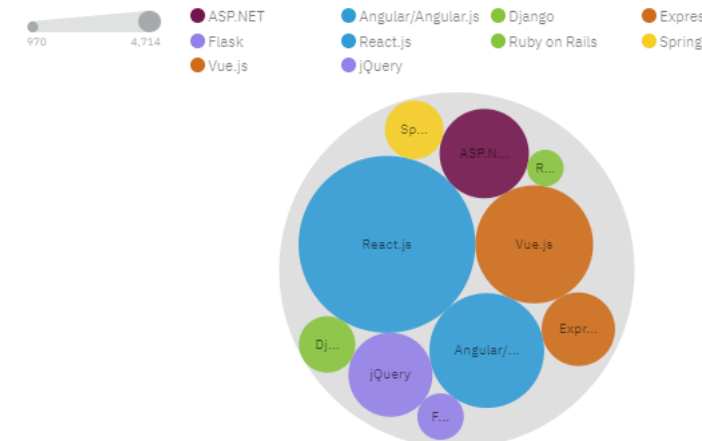
DEMOGRAPHICS
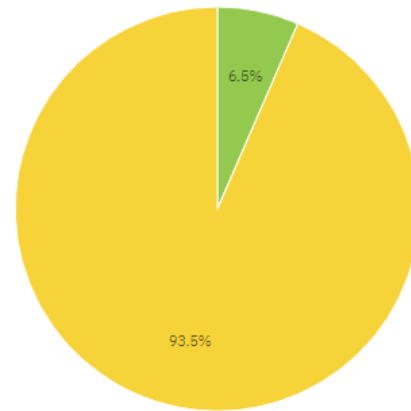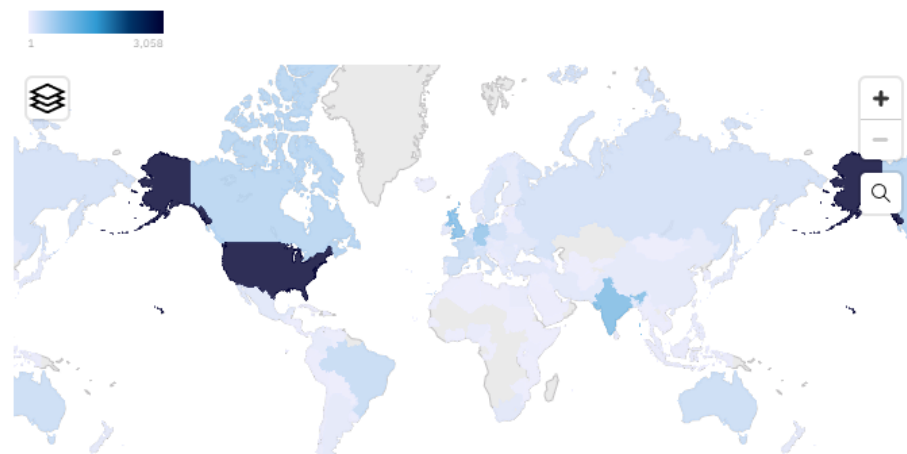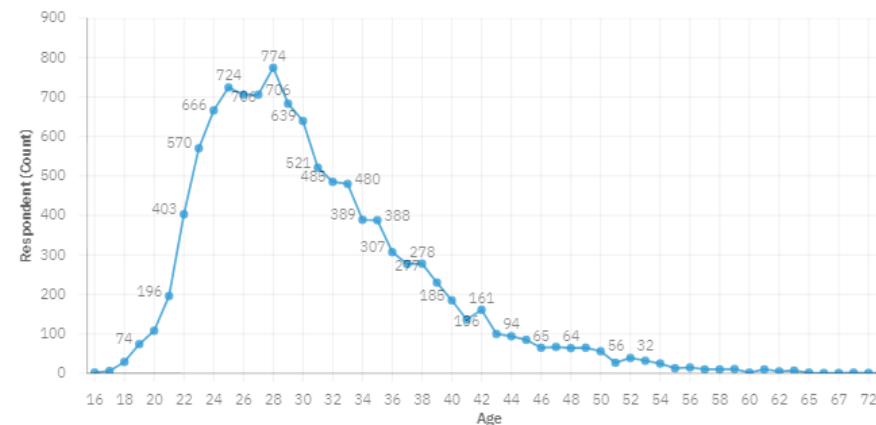
DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- Web programming dominates the used languages
- Alternatives to traditional RDMS are increasing
- Frontend JS frameworks like React and Vue getting more important
- Cloud and container technologies are on the rise

Implications

- Web programming is still a decent career choice
- Demand for NoSQL databases, and Cloud-based databases are rising
- More React and Vue developers are needed
- More Cloud and container-technology experts are needed

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CONCLUSION

- It is good idea to invest in learning the MERN Stack (MongoDB, Express, React, Node)

- It is advisable to learn Python and Typescript

- Both SQL and NoSQL are worth to learn

- Cloud, container, web and mobile programing are also very good choices

APPENDIX

- MERN Stack
- Job Postings by Location
- Average Salaries by Programming Language

MERN Stack

Souce of image: https://www.mongodb.com/mern-stack
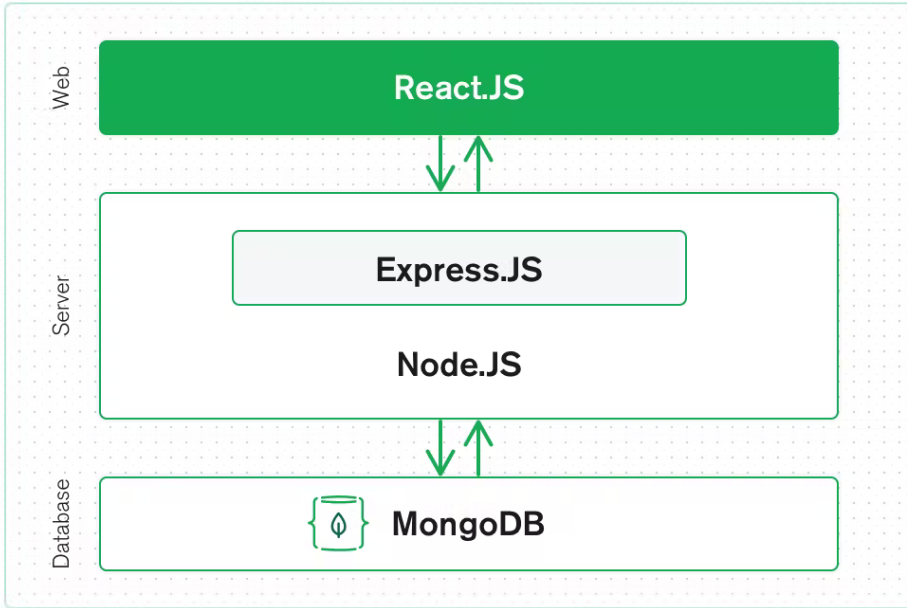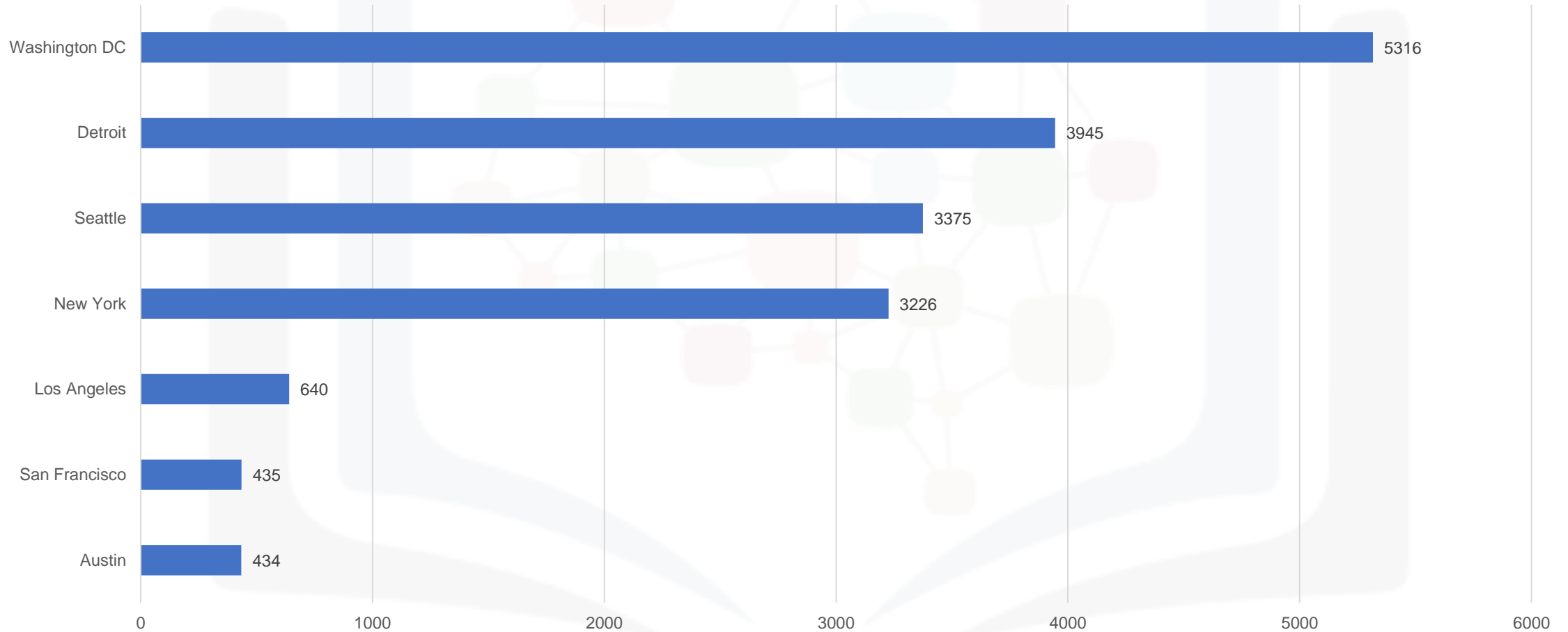
- MERN Stack is a web-programming architecture:
  - MongoDB as database tier
  - Express.js and Node.js as server tier
  - React.js as frontend tier

- According to findings
  - Demand for MongoDB and React is highly increasing
  - Demand for Web development, Javascript, Node and Express is high/stable

JOB POSTINGS

Number of IT Jobs by Location

Location	Number of IT Jobs
Washington DC	5316
Detroit	3945
Seattle	3375
New York	3226
Los Angeles	640
San Francisco	435
Austin	434

POPULAR LANGUAGES

Average Annual Salary by Language

Language	Salary
Swift	130801
Python	114383
C++	113865
Javascript	110981
Java	101013
Go	94082
R	92037
C#	88726
SQL	84793
PHP	84727