CAPSTONE PROJECT
Stack Overflow –
Developer Survey Results 2019

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2 November 2022

OUTLINE

EXECUTIVE SUMMARY

- Nearly 90,000 developers took the 20-minute Stack Overflow's annual Developer Survey survey in 2019

- Analysis are breakdown according to the data demographics and technologies

- Survey results are shown in this presentation
  - Programming Language Trends
  - Database Trends
  - Platform Trends
  - Web Frame Trends

INTRODUCTION

- Stack Overflow's annual Developer Survey is the largest and most comprehensive survey of people who code around the world.

- The survey is covering everything from developers' favorite technologies to their job preferences.

- Objective : To identify skill requirements in demands and future
  - Top 10 Programming Languages
  - Top 10 Databases
  - Popular Platform
  - Top 10 Web frames

METHODOLOGY

- Data Collection :
  - Stack Overflow's Developer Survey
  - Collecting Data using APIs
  - Collecting Data using Web Scraping

- Data Exploration

- Data Wrangling :
  - Finding and removing duplicates
  - Finding and imputing missing values
  - Normalization

- Exploratory Data Analysis
  - Analyzing the data distribution
  - Handling outliers
  - Finding correlation

- Data Visualization using Jupyter Notebook and IBM Cognos Analytic for dashboard.

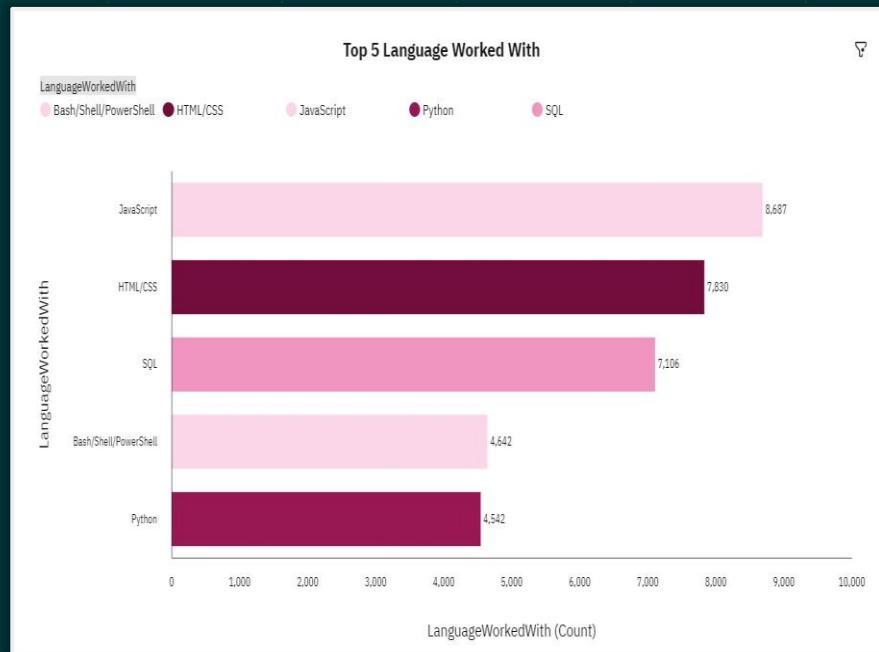- PowerPoint Presentation

RESULTS

Results for the analysis by looking at the findings and implications :

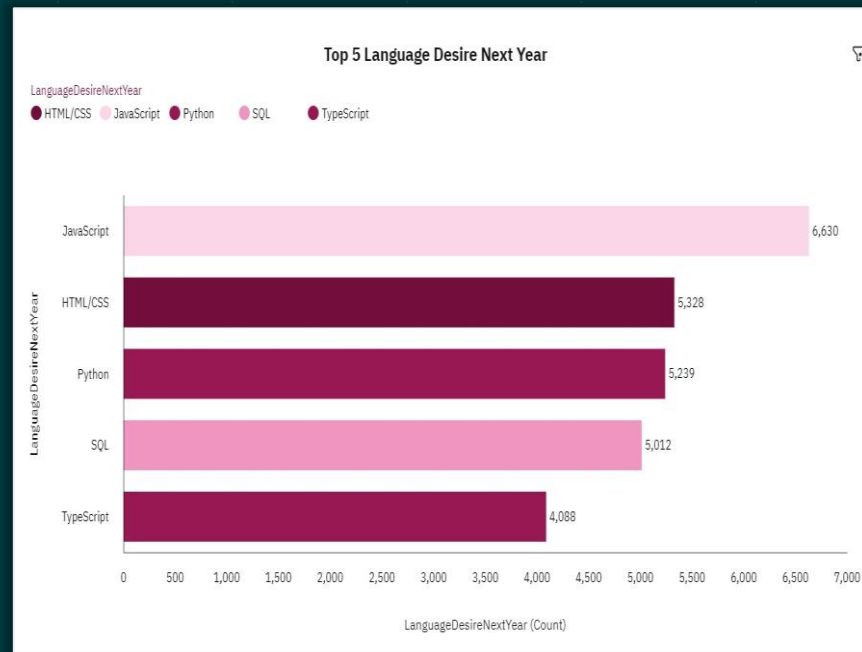- Programming Language Trends
- Database Trends

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

FINDINGS

01 **JavaScript**

JavaScript is the most commonly used programming language for year 2019 and also the most popular desired language for the upcoming year.

02 **HTML / CSS**

HTML / CSS is the second most commonly used programming language in 2019 and also as desired language for the upcoming year.

03 **Python**

Python has shown rising in the ranks this year.

IMPLICATIONS

From the results, it obviously shows that JavaScript stays demanded and more and more people want to learn about this technology. A wide variety of add-ons extend the functionality of JavaScript which is one of the reason why it is commonly used programming language.

HTML / CSS is still high in ranks because of more Professional Developers and beginners chose to use this language this year and in the future.

Python is regarded as a programming language that's easy to learn, due to its simple syntax, a large library of standards and toolkits, and integration with other popular programming languages such as C and C++. It shows that Python is the fastest-growing major programming language today. Therefore Python is high in demand and in rising trend.

DATABASE TRENDS

Current Year

Top 5 Database Worked With

DatabaseWorkedWith

Microsoft SQL Server   MongoDB   MySQL   PostgreSQL   SQLite

- MySQL: 5,469
- Microsoft SQL Server: 4,110
- PostgreSQL: 4,097
- SQLite: 3,248
- MongoDB: 3,016

Next Year

Top 5 Database Desire Next Year

DatabaseDesireNextYear

Elasticsearch   MongoDB   MySQL   PostgreSQL   Redis

- PostgreSQL: 4,328
- MongoDB: 3,649
- Redis: 3,331
- MySQL: 3,281
- Elasticsearch: 2,856
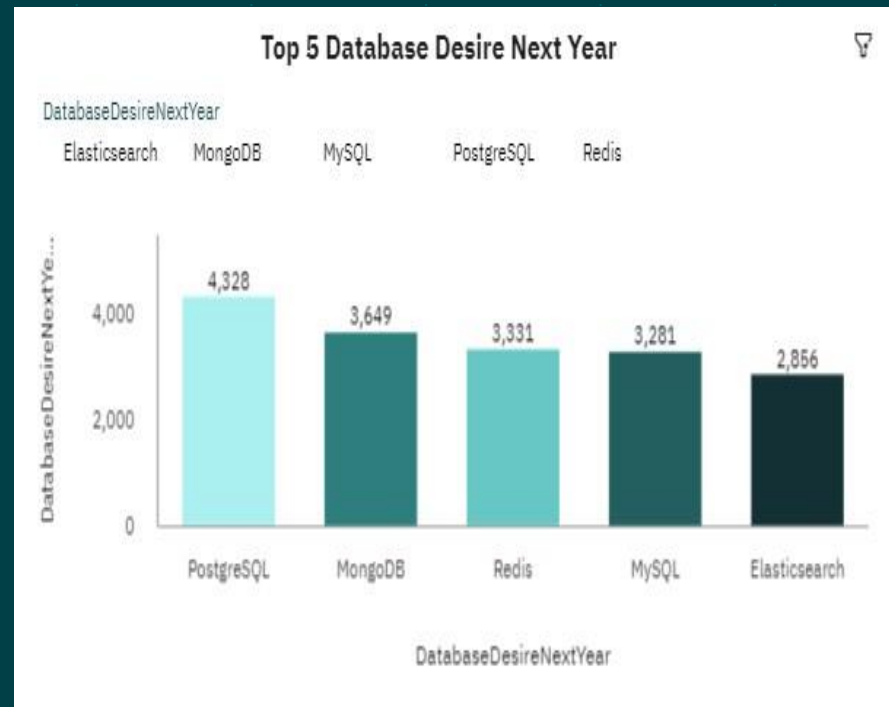
DATABASE TRENDS - FINDINGS & IMPLICATIONS

01   **PostgreSQL**

PostgreSQL is the third popular database in 2019 and it shows the trend is increasing in the future.

02   **MongoDB**

MongoDB also shows increase in popularity in the future.

03   **MySQL**

MySQL is the most popular database in 2019 but it shows less desirable in the future.

PostgreSQL is commonly used by Professional Developers. This shows that PostgreSQL is gaining popularity due to increasing demand from the Developers. And highly chances to surpass MySQL in the future.

This makes sense since it supports a large number of languages and application development platforms. MongoDB is very useful for companies which store e-commerce product catalog or content.

MySQL is the most popular because it is one of the first open-source databases, packed with extremely useful and robust features. The open-source aspect of MySQL and its maturity makes it a popular SQL database for web applications.
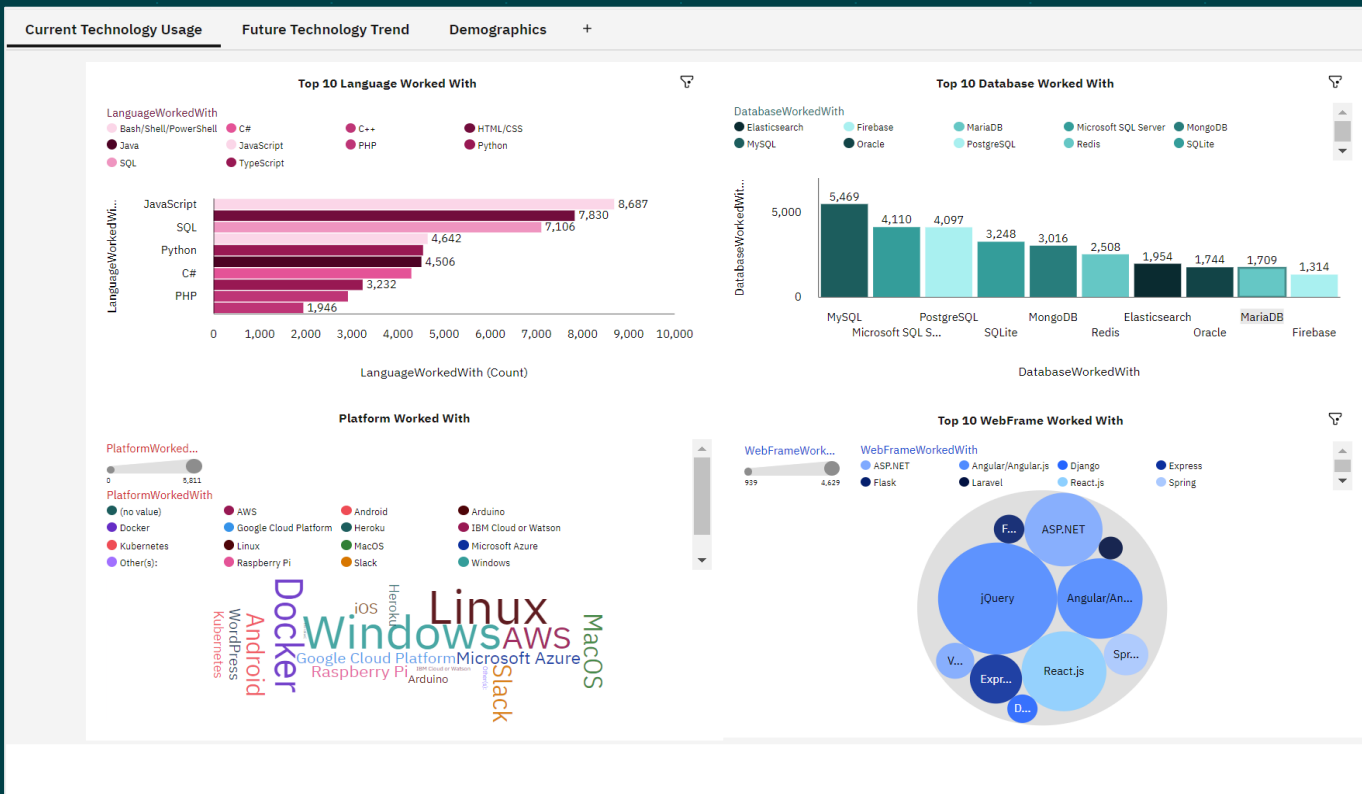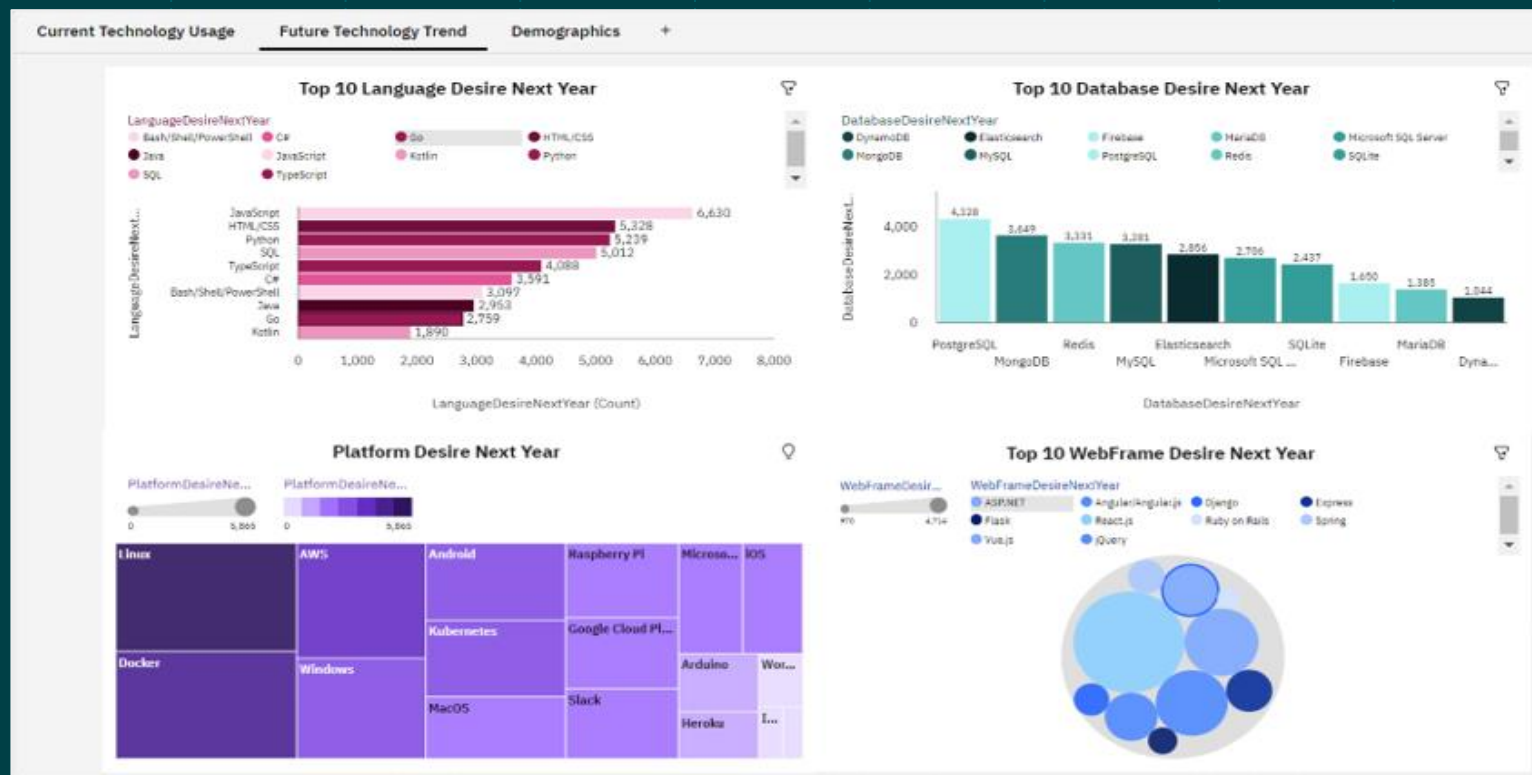
DASHBOARD

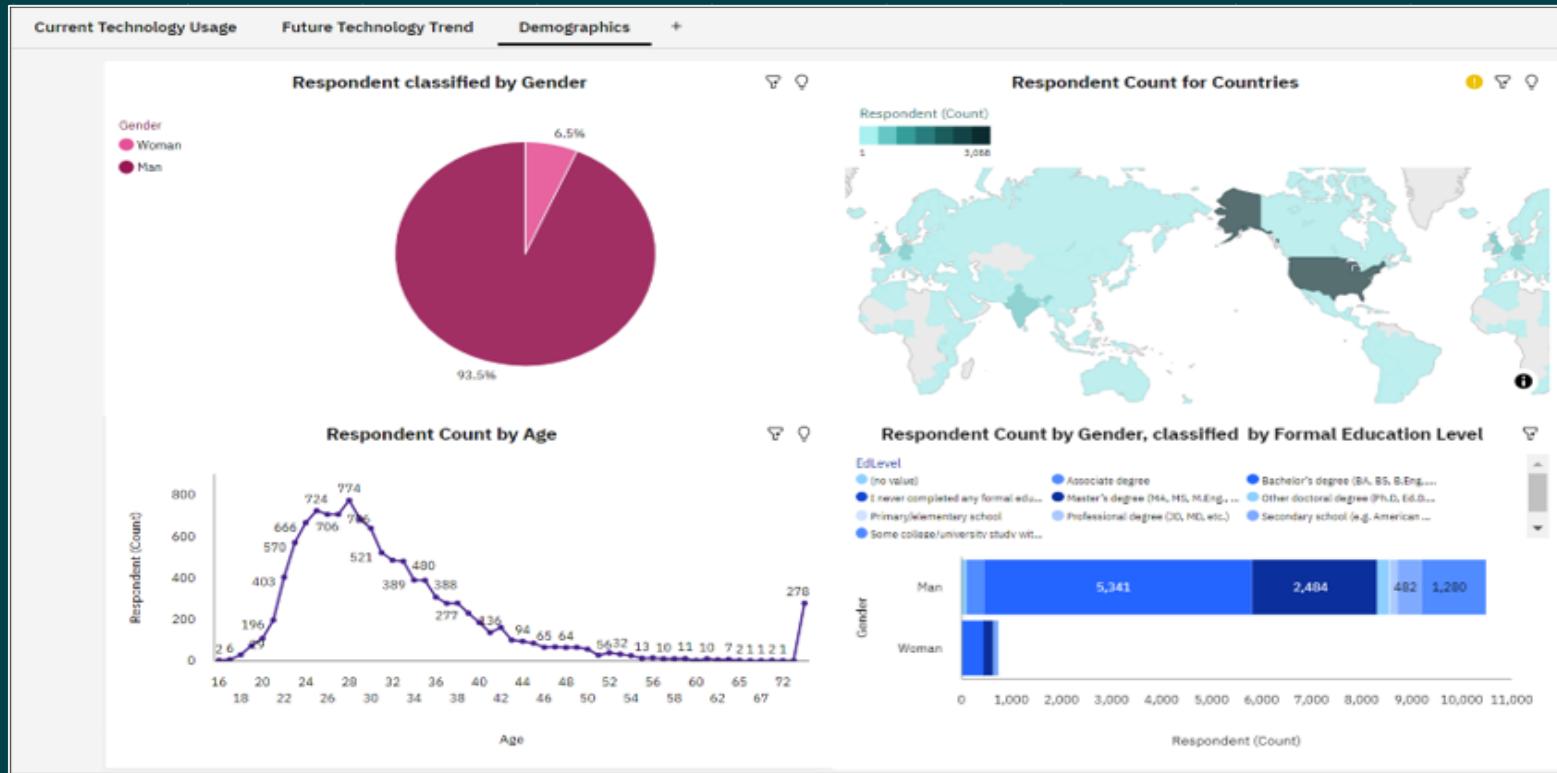[Capstone-Project---Nyrh/Week 6 Dashboard.pdf at main · Nooryourhanes/Capstone-Project---Nyrh (github.com)](#)

DASHBOARD TAB 1

Current Technology Usage | Future Technology Trend | Demographics | +

Top 10 Language Worked With

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

	Count
JavaScript	8,687
SQL	7,830
	7,106
Python	4,642
C#	4,506
PHP	3,232
	1,946

LanguageWorkedWith (Count)

Top 10 Database Worked With

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

	Count
MySQL	5,469
Microsoft SQL S...	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
Oracle	1,744
MariaDB	1,709
Firebase	1,314

DatabaseWorkedWith

Platform Worked With

PlatformWorked...
0 — 5,811

PlatformWorkedWith
- (no value)
- AWS
- Android
- Arduino
- Docker
- Google Cloud Platform
- Heroku
- IBM Cloud or Watson
- Kubernetes
- Linux
- MacOS
- Microsoft Azure
- Other(s):
- Raspberry Pi
- Slack
- Windows

Top 10 WebFrame Worked With

WebFrameWork...
939 — 4,629

WebFrameWorkedWith
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- Laravel
- React.js
- Spring

jQuery, ASP.NET, Angular/An..., React.js, Spr..., F..., V..., Expr..., D...

DASHBOARD TAB 2

DASHBOARD TAB 3

DISCUSSION

Overal findings and implications are discussed by looking at the findings :

- Programming Language Trends
- Database Trends
- Dashboard for Current and Future Technology Usage and Demographic Characteristics.

OVERALL FINDINGS & IMPLICATIONS

LANGUAGE

Top 3 for Current Technology Usage : **JavaScript, SQL, Python**

Top 3 for Future Technology Usage : **JavaScript, HTML / CSS, Python**

DATABASE

Top 3 for Current Technology Usage : **MySQL, Microsoft SQL Server, PostgreSQL**

Top 3 for Future Technology Usage : **PostgreSQL, MongoDB, Redis**

PLATFORM

Top 3 for Current Technology Usage : **Linux, Windows, Docker**

Top 3 for Future Technology Usage : **Linux, Docker, AWS**

WEB FRAME

Top 3 for Current Technology Usage : **Node.js, .NET, .NET Core**

Top 3 for Future Technology Usage : **JavaScript, HTML / CSS, Python**

- Increase in popularity shows that there is in high demand that are due to increase job postings and high-based salary.
- Technologies are clustered together into related ecosystems that tend to be used by the same developers.
- There is a large cluster for web development (with JavaScript, HTML/CSS, TypeScript, and React.js) connected via SQL to one for Microsoft technologies (with C#, Visual Studio, and .NET Core).
- This year also we can observes a cluster of operations technologies with Docker, AWS, and PostgreSQL connected to the Python ecosystem network through Linux.
- Therefore, the correlation of these technologies lead to high in popularity in their respective groups.

CONCLUSION

- Based on the findings, as a conclusion, the technologies popularities and demands are correlated to each other in the system.

- According to the job postings and salaries based on the different type of languages, we are pretty sure that which technologies are in demand.

- Mostly for the findings, there are more men who are interested to these technologies in comparison to women. As a recommendation, more awareness and advertisement can be made to both genders as we are moving to era of technology where can benefit both genders.

- As a recommendation, by looking at the survey results, we can predict what the future technology are look alike.
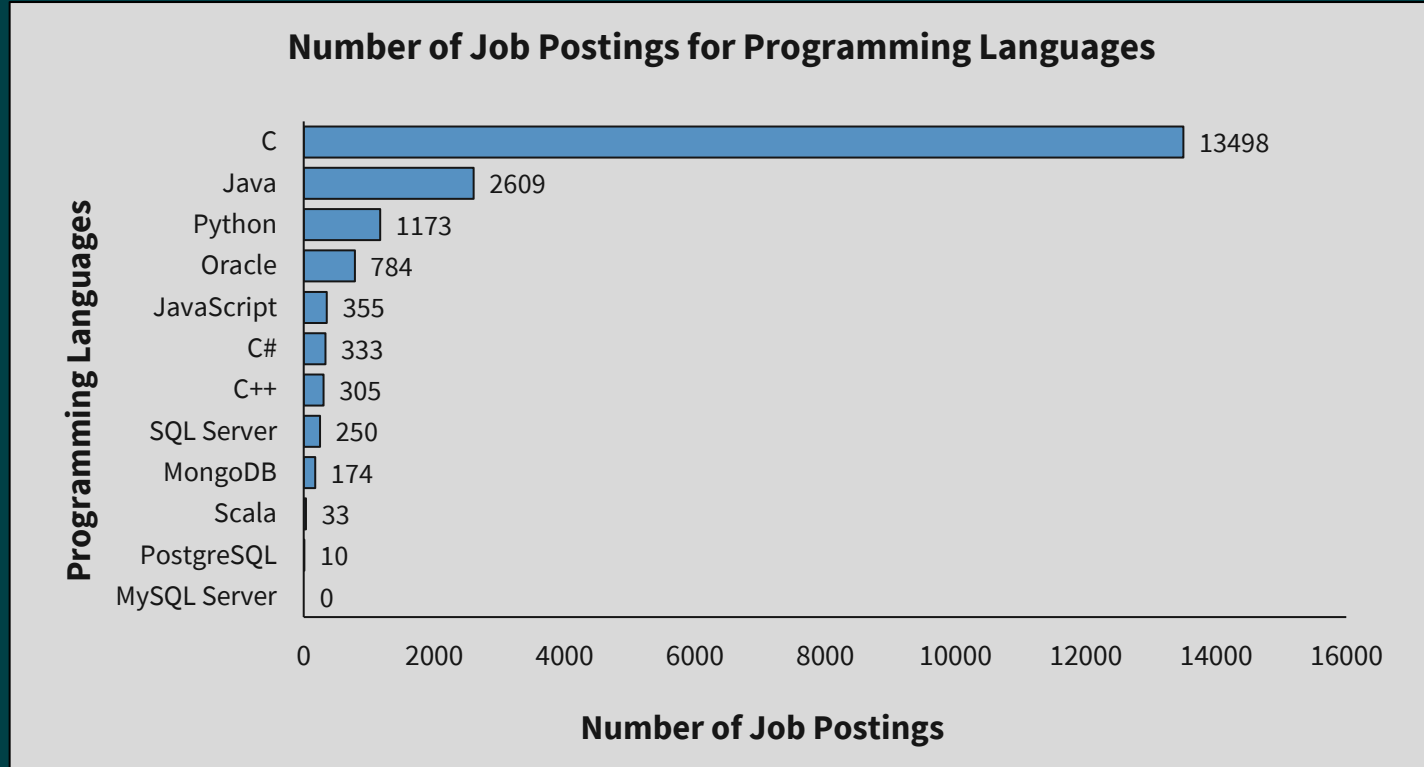
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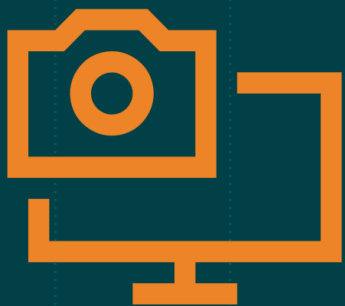
These includes Number of Job Postings and Popular Languages graphs.

JOB POSTINGS

Number of Job Postings for Programming Languages

POPULAR LANGUAGES

Average Annual Salary For Popular Programming Languages

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

Average Annual Salary