



# Trend for Emerging Technology & Skills

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# Outline



# EXECUTIVE SUMMARY



- With the emerging of new technology, IT professionals must keep learning new knowledge and new skills.
- Top trends of technology in near future.
  - i. JavaScript, HTML/CSS, and Python are the top programming languages. SQL stays the top query language.
  - ii. PostgreSQL and MangoDB will become the top 2 databases in near future.
  - iii. Docker platform and React.js web frame keep growing their popularity in IT industry.
- IT profession is still man-dominated. It's not necessary to have an advanced degree to work in the industry.
- Java, JavaScript, and Python are in high demand in the job market. And the average salaries of those languages are above \$100k.

# INTRODUCTION



- The demand of IT profession grows fast whereas new technology and skills emerge. To keep competitive in the market, we need to understand the trends of future technology and skills in demand.
- This analysis is to help readers or IT profession to understand the trends in technology and skills by identifying the trends of popular programming languages, databases, and IDEs.
- In addition, the analysis also studied the demand and supply of skills through job postings, webpages and surveys so job seekers can better prepare themselves.
  - i. GitHub job postings reflect the demand of skills
  - ii. Surveys show what skills are available in the market now and the possible changes in near future.

# METHODOLOGY



- Collect data from various sources such as job postings, training portals, and surveys by using APIs and web scraping.
- Explore datasets to understand the size, columns, content, data types, etc. by using Pandas.
- Wrangle data to remove duplicates, find and import missing values, and to normalize data by using Pandas & NumPy.
- Analyze the datasets to understand the distribution, outliers, correlation, etc by using Pandas & Matplotlib.
- Use data visualization to show data distribution, relationships, composition, and comparison by using Matplotlib & Seaborn.
- Create a dashboard to display key trends by using IBM Cognos Analytics.

# RESULTS

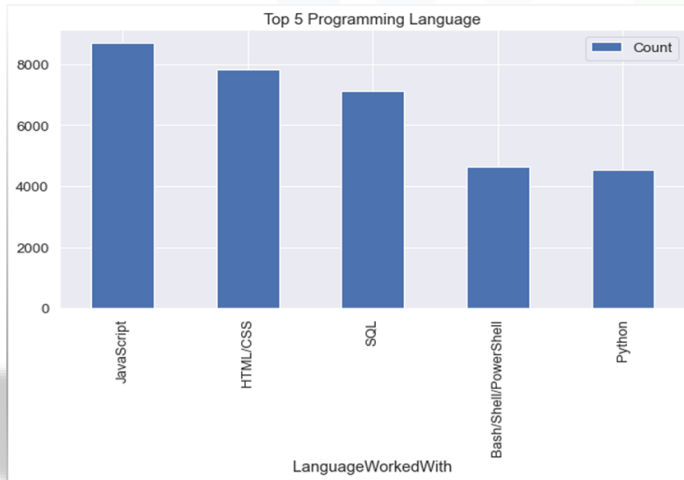


	Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith	
	0	4	C	C	MySQL	MySQL	Linux
	1	4	C++	C#	SQLite	SQLite	Windows
	2	4	C#	JavaScript	NaN	NaN	NaN
	3	4	Python	SQL	NaN	NaN	NaN
	4	4	SQL	NaN	NaN	NaN	NaN
	...	...	...	...	...	...	...
	74584	25142	Go	Python	NaN	NaN	NaN
	74585	25142	HTML/CSS	R	NaN	NaN	NaN
	74586	25142	PHP	NaN	NaN	NaN	NaN
	74587	25142	Python	NaN	NaN	NaN	NaN
	74588	25142	R	NaN	NaN	NaN	NaN

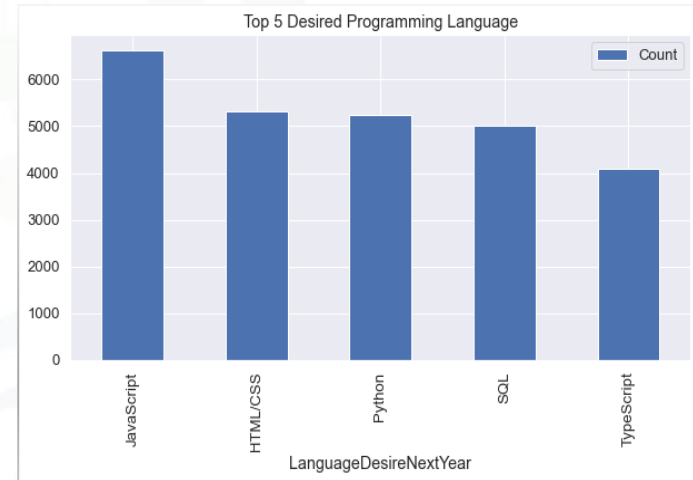
# PROGRAMMING LANGUAGE TRENDS



## Current Year



## Next Year





# PROGRAMMING LANGUAGE TRENDS

Findings and Implications



## Findings

- JavaScript is top trending language in the world
- Python and TypeScript are becoming more and more popular
- HTML/CSS and SQL still has great portion in language usage trend

## Implications

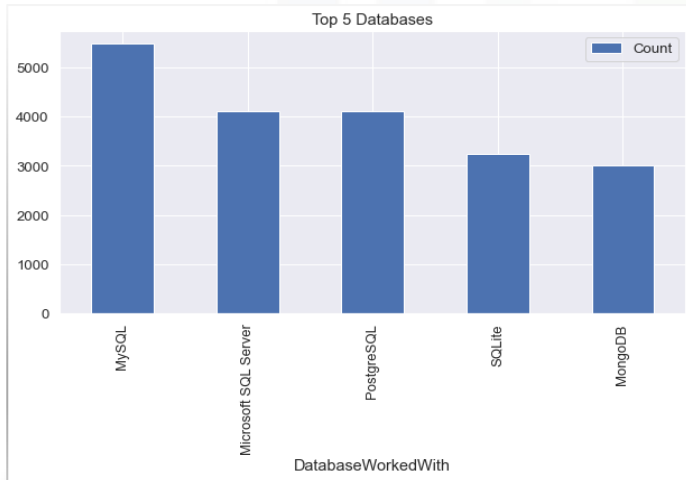
- Web developments and Web developers are still in high demands
- JavaScript and TypeScript are crucial to learn for developers
- Python is the new trending language, especially popular in AI fields



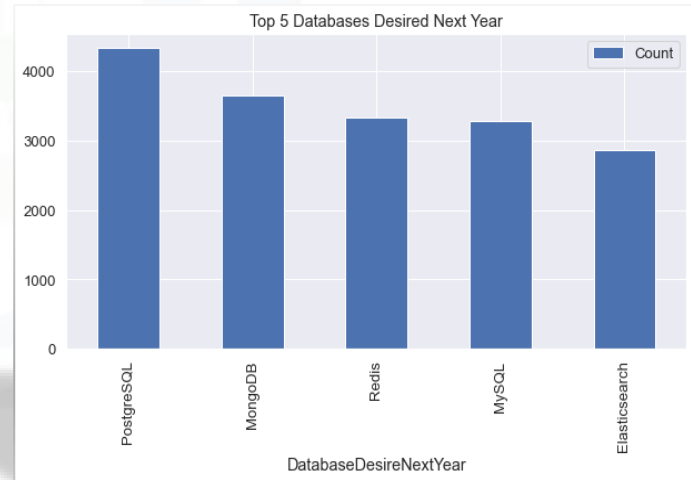
# DATABASE TRENDS



## Current Year



## Next Year



# DATABASE TRENDS

## FINDINGS AND IMPLICATIONS



### Findings

- MySQL is the most popular database
- There are still a lot of companies using Microsoft SQL Server
- MongoDB and Redis are the most favorable NoSQL database

### Implications

- Open-source databases like MySQL are still preferable
- Software development and Big Data technology still requires SQL
- NoSQL databases will make an impact for relational databases

# DASHBOARD

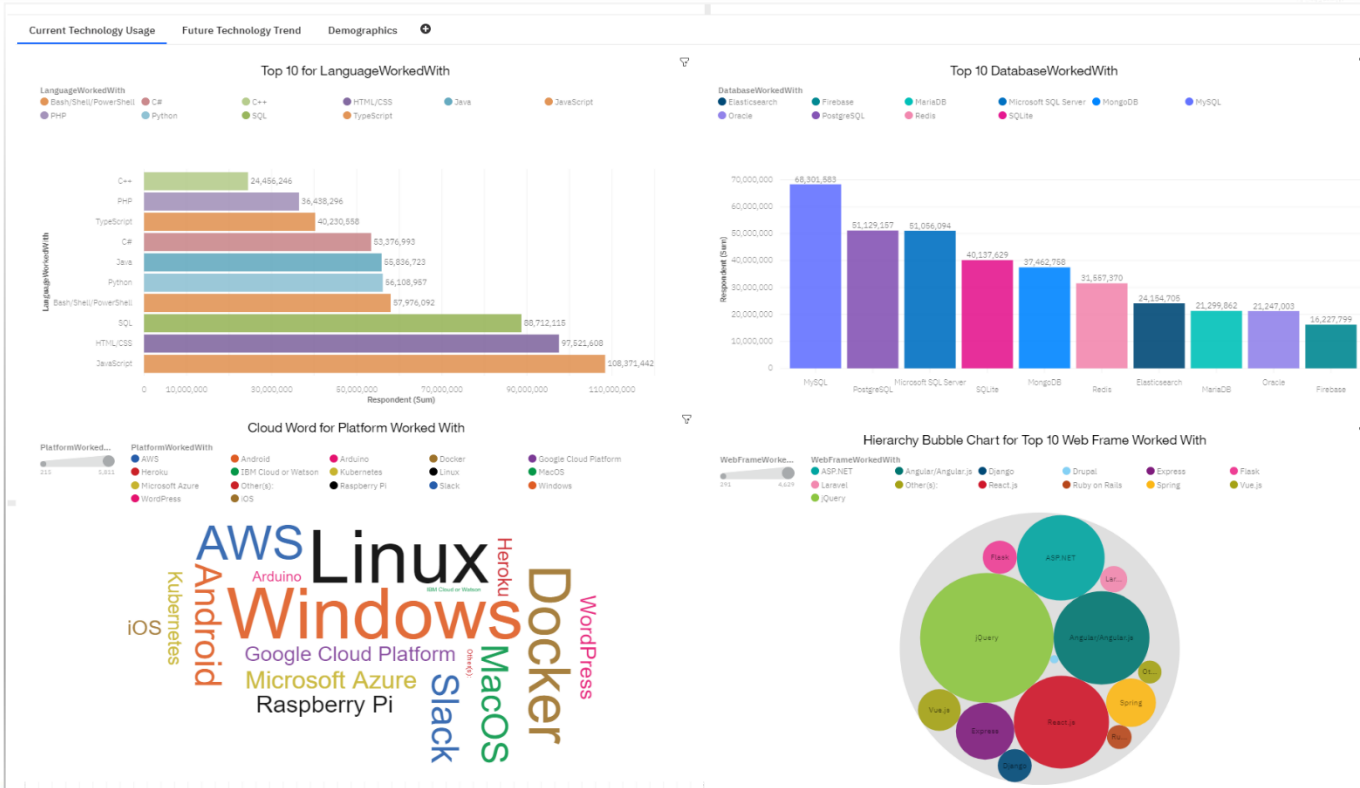
A dashboard with Cognos Dashboard Embedded (CDE)



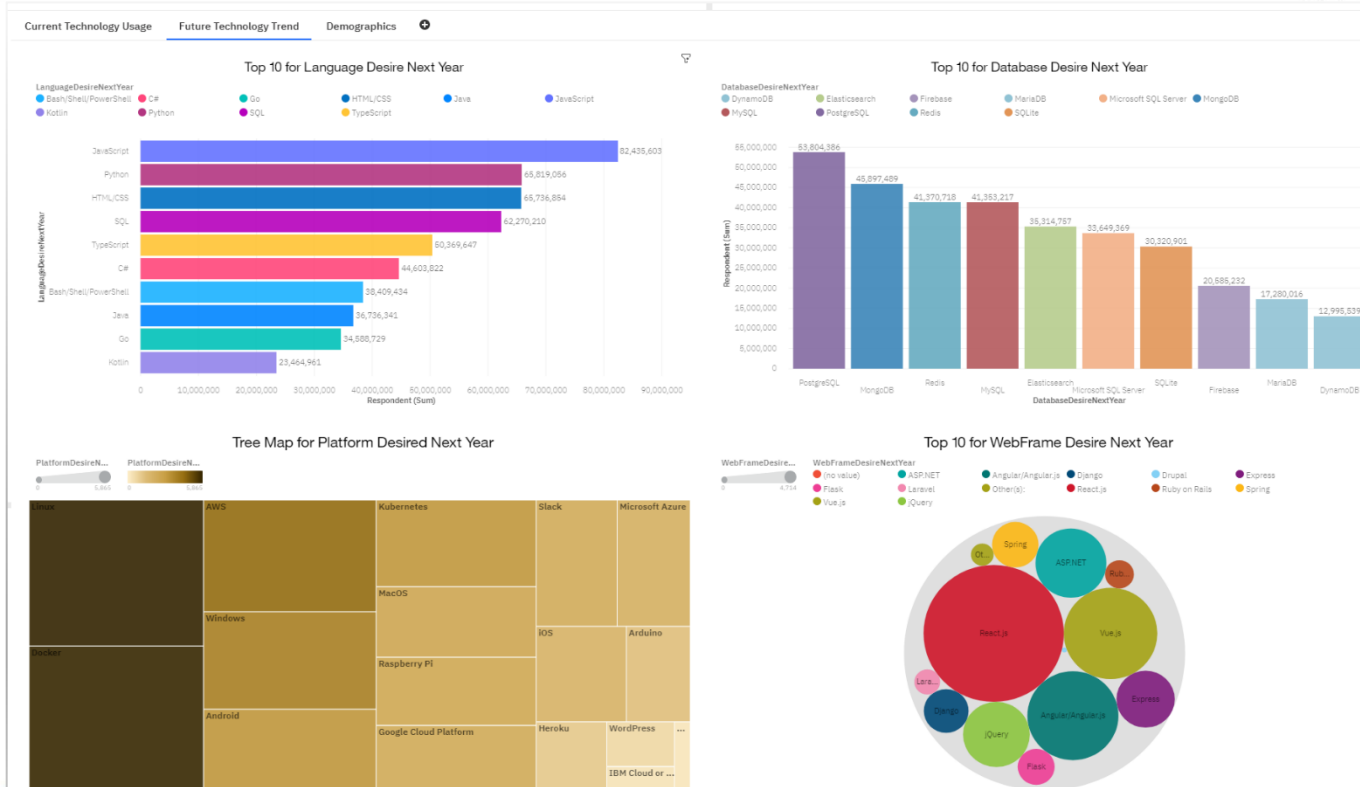
The **Permanent link** of the read-only view of **Cognos Dashboard**

<https://datapatform.cloud.ibm.com/dashboards/decb3702-894a-4450-8d2e-af2d57faf479/view/6420a12e1098039753d1bde407912f027a30770be3bbd15586877b4908667297a96c13c2c8291e5adf130766f6ec1751cd>

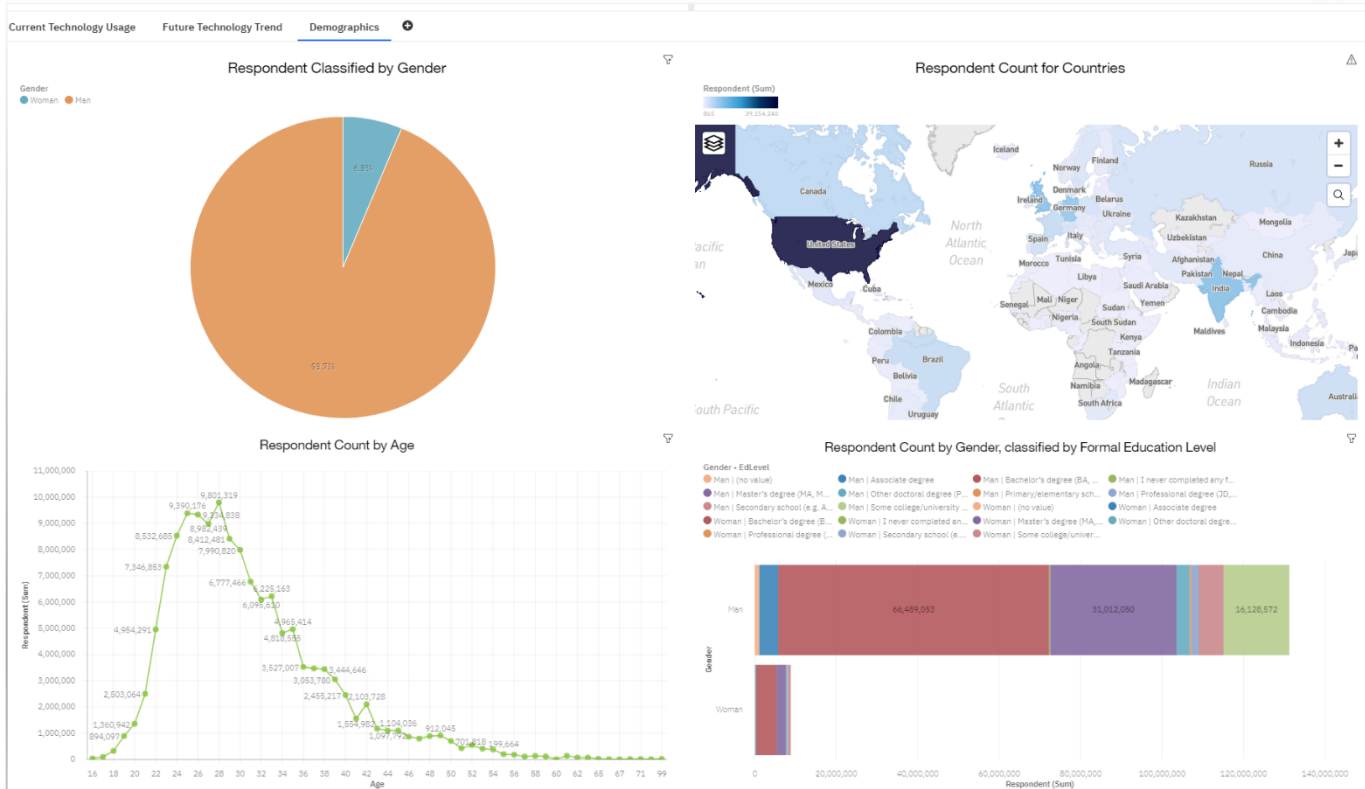
## A close-up, slightly blurred photograph of a person's hands typing on a laptop keyboard. The person is wearing a light-colored, patterned sweater over a blue long-sleeved shirt. The laptop is silver, and the keyboard is black. The background is out of focus, showing a window with natural light.



# FUTURE TECHNOLOGY TREND



# DEMOGRAPHICS



# DISCUSSION



- Technology Usage Trend Now and Future
- Gender, Age and Education Discrimination in IT Industry



# OVERALL FINDINGS & IMPLICATIONS



## Findings

- Technology trends changes every year
- USA is the top technology country
- There are extreme gender and age discrimination
- Docker and AWS are the most popular platform

## Implications

- Programmers should always follow the latest technology trends
- More countries should have the equal chance to be exposed to new technology
- Gender and Age should not be one of the concerns or benefits of Employment

# CONCLUSION



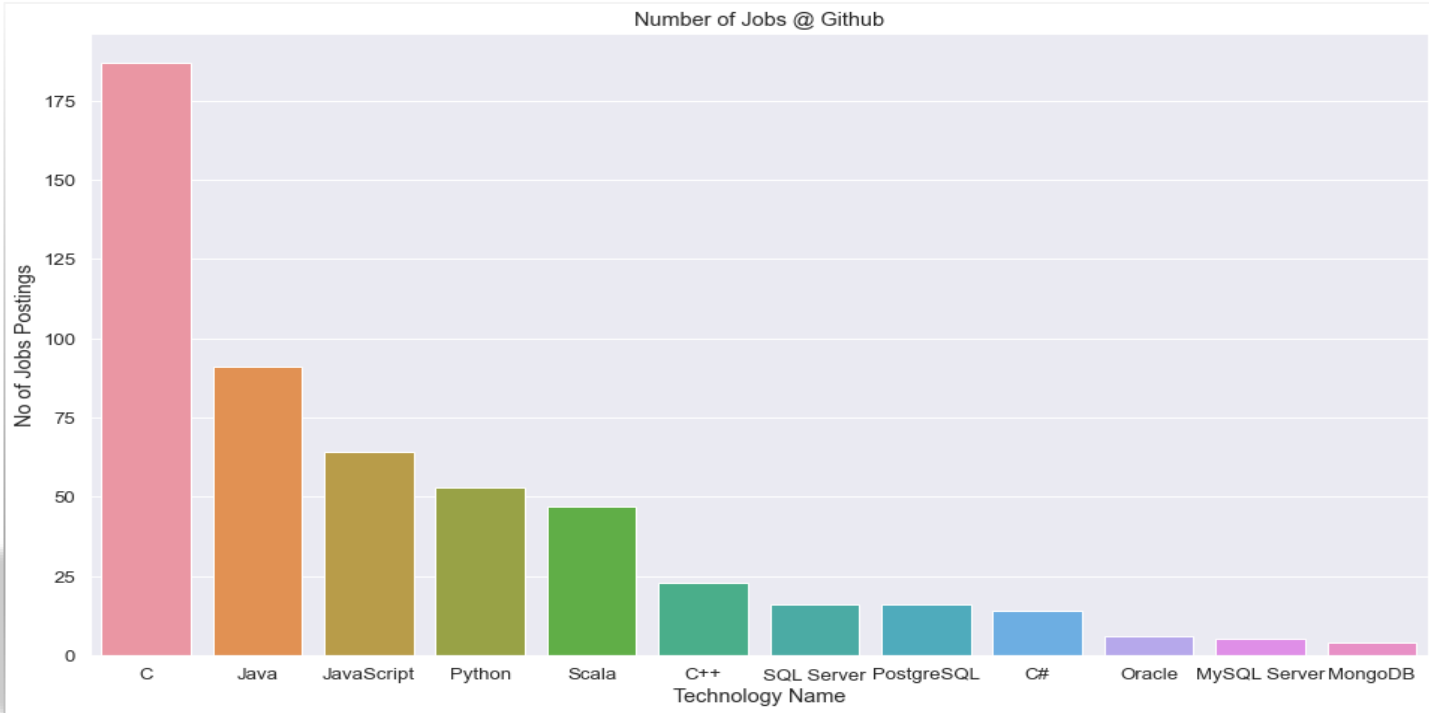
- Technology Trends
- Programming Languages, Database, Platform and Web frame Trends
- Demographics Trends
- Gender and Education
- Programming Languages Trends and Salary Trends

# APPENDIX

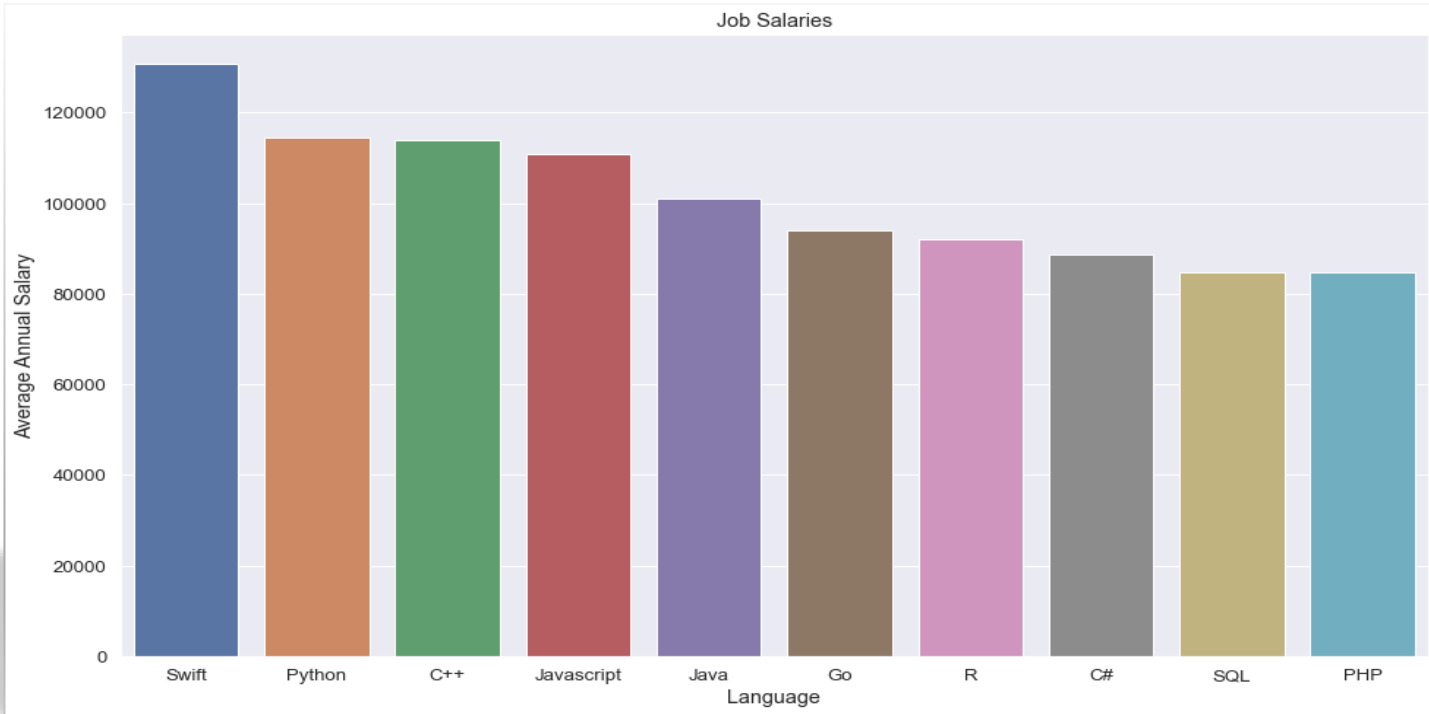


IBM Cognos Dashboard Embedded (CDE) is an AI-fueled business intelligence service that supports the entire data analytics cycle, from discovery to operationalization. It provides users with data discovery capabilities to visually explore and interact with their data to identify the key insights for improving data driven decisions. Users can perform data discovery and then quickly assemble that information into interactive, visually appealing dashboards, all without the need of formal training.

# GITHUB JOB POSTINGS



# POPULAR LANGUAGES





# Thank you

IBM Data Analyst Capstone Project  
by  
Kiam Boon Soh