

# Stack Overflow Developer Survey – Trends and Insights

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**SOWMYA THOKALA**



# OUTLINE

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

# EXECUTIVE SUMMARY

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## Summary of Key Findings from survey\_data\_updated.csv

### 1. Most Popular Technologies:

**Programming Languages:** Python, JavaScript, and Java dominate; SQL remains essential.

**Databases:** MySQL, PostgreSQL, and MongoDB are widely used, showing a balance between SQL & NoSQL.

**Platforms:** Windows, Linux, AWS, and Docker indicate the importance of cloud and DevOps.

**Web Frameworks:** React.js, Angular, and Django lead in frontend and backend development.

### 2. Industry Trends:

- Python & JavaScript are the most in-demand languages.
- Both SQL & NoSQL databases are crucial for development.
- Cloud computing (AWS, Azure, GCP) is widely adopted.
- React.js dominates frontend development.
- DevOps tools like Docker & Kubernetes are gaining traction.



# INTRODUCTION

## Purpose of the Report:

This report analyzes technology usage trends based on survey responses, focusing on programming languages, databases, platforms, and web frameworks. The goal is to identify the most widely used and emerging technologies to help professionals and organizations make informed decisions.

## Target Audience:

- **Software Developers & Engineers** – To understand industry trends and skill demands.
- **Data Analysts & Scientists** – To align database and programming expertise with market needs.
- **IT Managers & Decision-Makers** – To guide technology adoption in organizations.
- **Students & Job Seekers** – To focus on in-demand skills for career growth.

## Key Findings:

- **Programming Languages:** Python & JavaScript lead; SQL remains crucial.
- **Databases:** SQL & NoSQL databases are both essential for different applications.
- **Platforms:** Cloud computing (AWS, Azure, GCP) and DevOps tools (Docker, Kubernetes) are in high demand.
- **Web Frameworks:** React.js dominates frontend development, with Angular & Django also popular.

## Value of the Report:

- Helps professionals **align their skills** with industry trends.
- Guides companies in **technology selection** for projects.
- Supports job seekers in **identifying high-demand skills**.
- Assists educators in **curriculum development** for relevant technical training.



# METHODOLOGY

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- **Data Sources & Collection Methods:** The dataset used for this report is: “survey\_data\_updated.csv”, which consists of responses from a global technology survey conducted among professionals in software development, data science and IT-related fields.

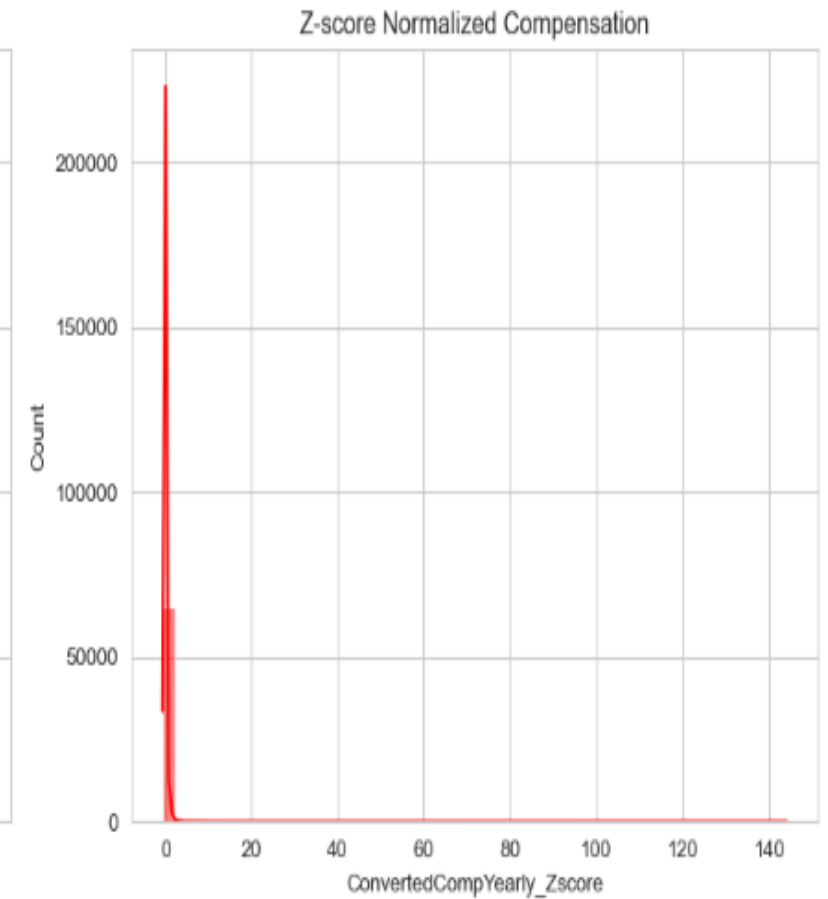
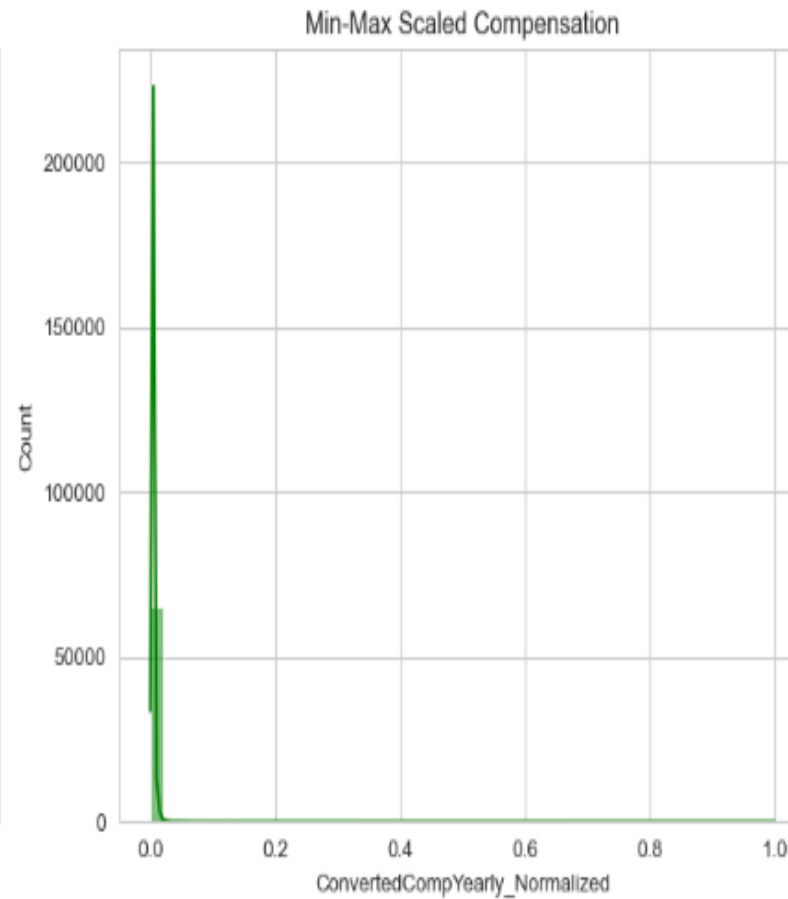
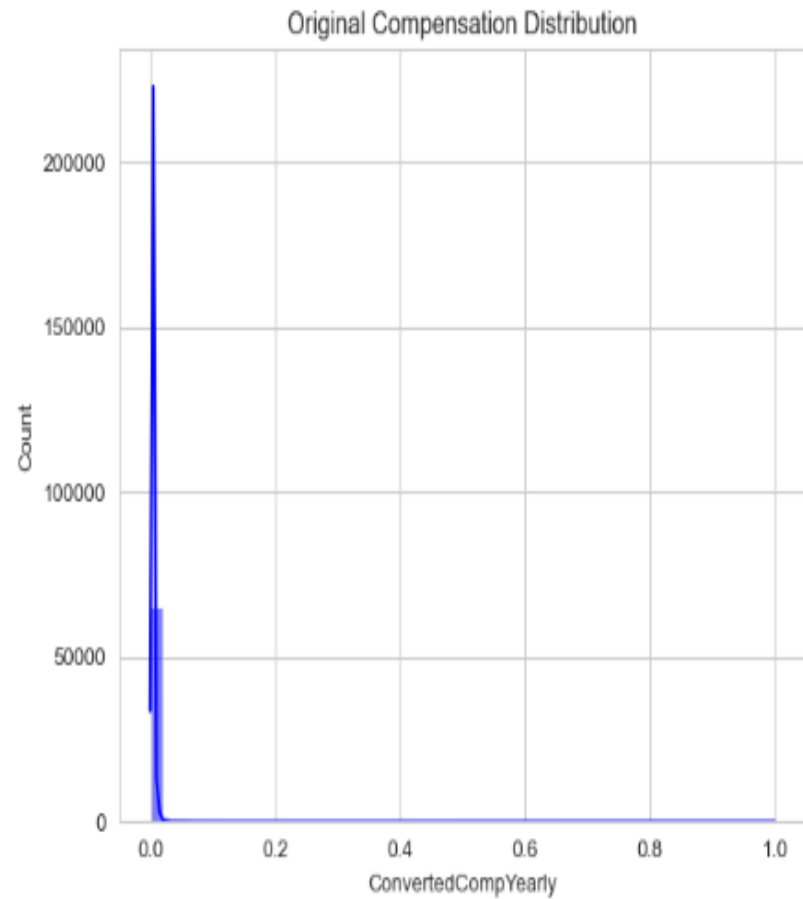
## **Key Data Wrangling Steps:**

Before analyzing and visualizing the data, several preprocessing steps were performed:

- Handling missing values
- Data type conversions
- Encoding Categorical Variables
- Normalization & Standardization
- Data Visualization Preparations



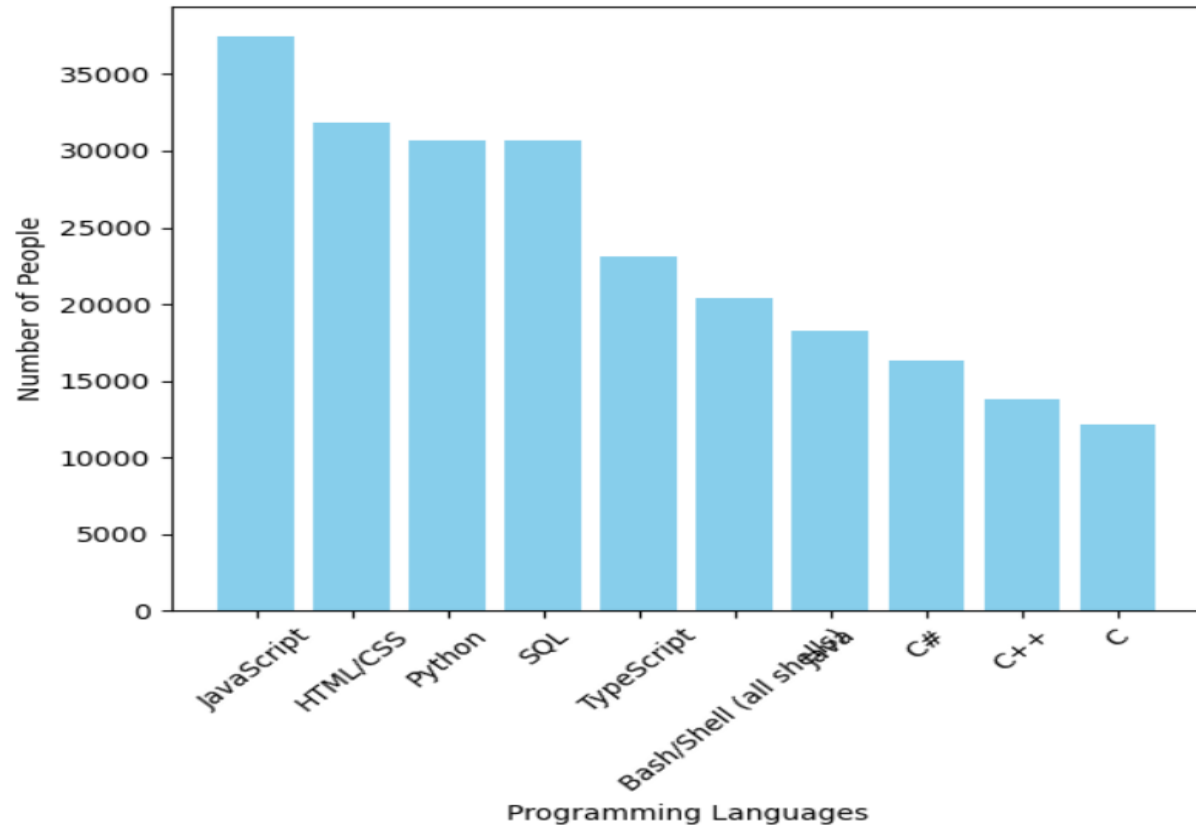
# RESULTS



# PROGRAMMING LANGUAGE TRENDS

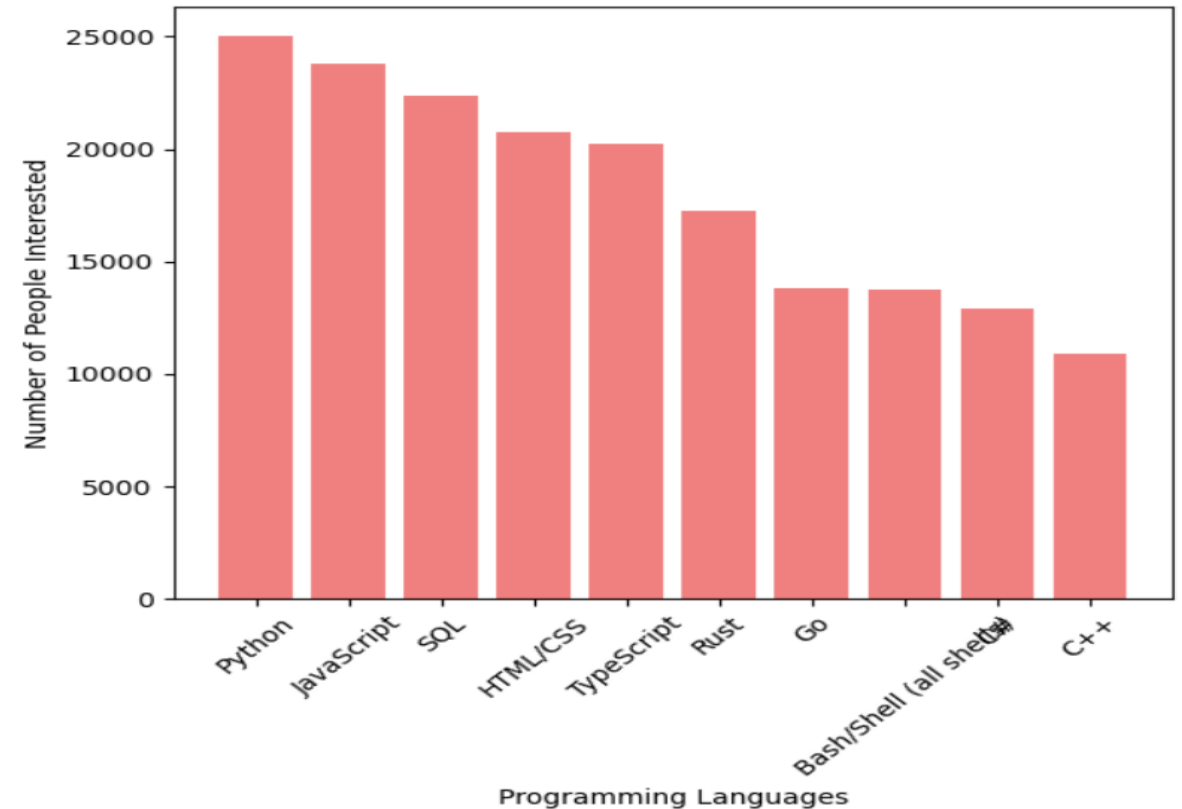
## Current Year

Top 10 Programming Languages People Have Worked With



## Next Year

Top 10 Anticipated Programming Languages for Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- From the above bar graph the top 1 programming language in the current year is Java script.
- HTML is in the second place followed by Python and SQL.
- Python and SQL is used by almost same number of people.

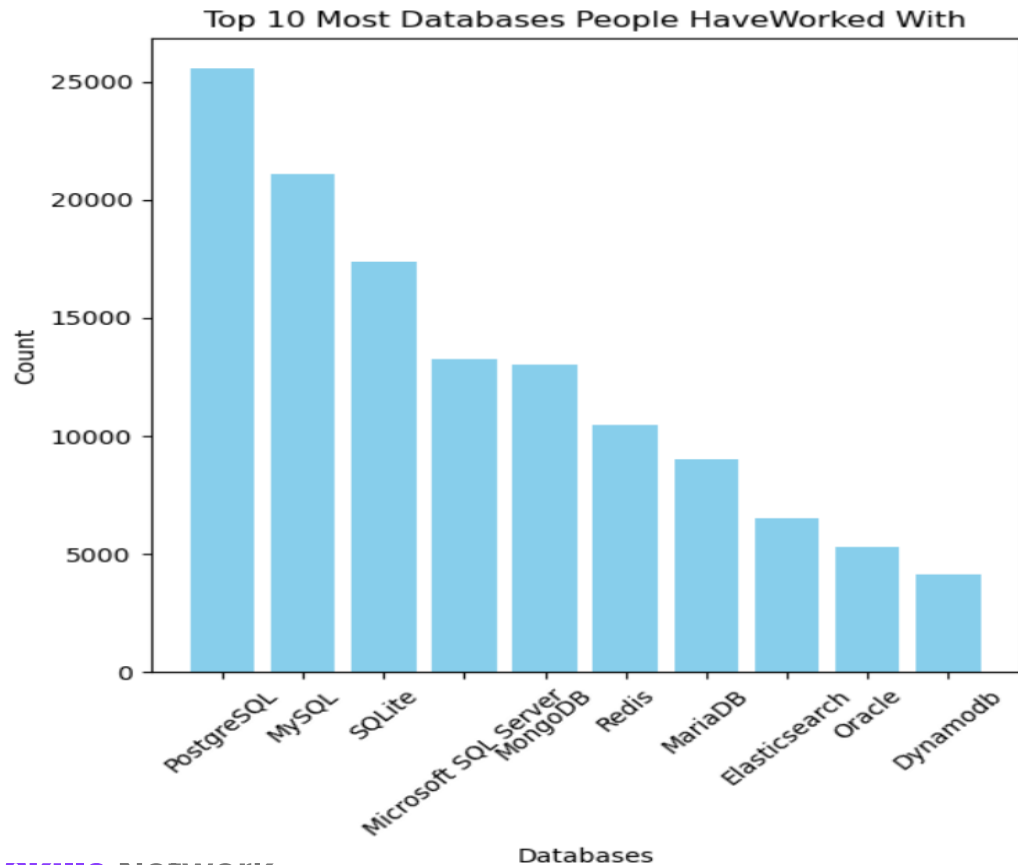
## Implications

- Even though Java script is the most popular language used by the people in the current year people are tend to learn python for the coming year.
- After Python people are interested to learn java script.
- Java script, HTML/CSS, Python and SQL are the top 4 programming languages in the current year and for the coming year.

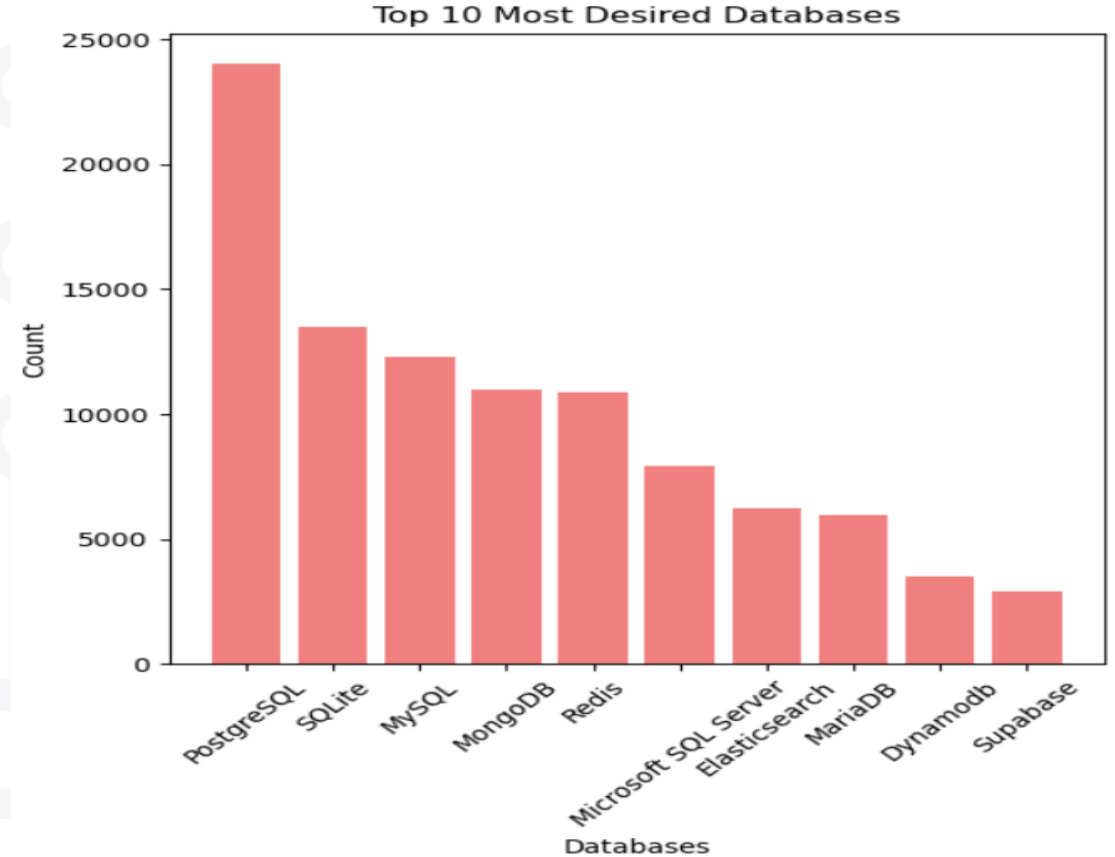


# DATABASE TRENDS

## Current Year



## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- The above bar graph was used to visualize the top 10 databases people have worked with, as per the graph PostgreSQL is the top database people have worked with followed by MySQL and SQLite.
- Microsoft SQL server and MongoDB have equal number of users of approximately in between the range of 10000 and 15000.
- Dynamodb is least preferred database among the developer's community followed by Oracle.

## Implications

- PostgreSQL is the preferred database in the current and for the next year with slight variation in the number of users for the coming year.
- MySQL and SQLite are in the top 3 preferred databases with interchange in the positions and decrease in the number of users.
- Oracle was replaced by the supabase in the top 10 desired databases.



# DASHBOARD

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Below is the GitHub link of IBM Cognos Analytics and Google Looker Studio Dashboards.

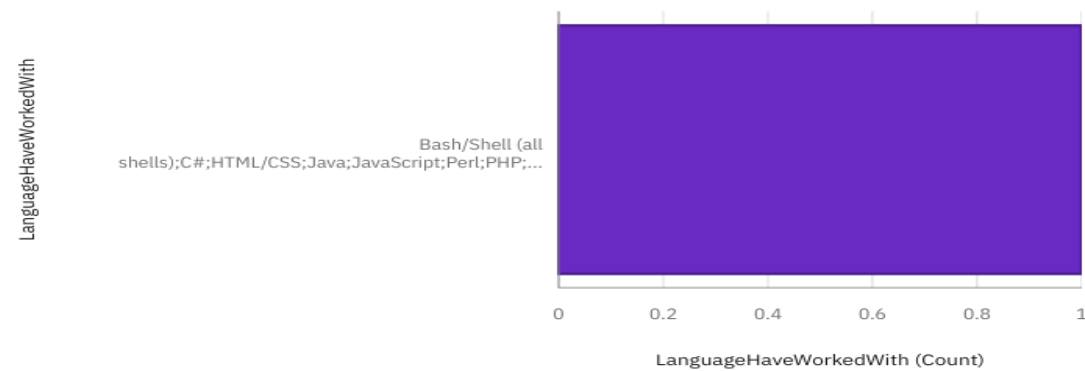
<https://github.com/SowmyaThokala/IBM-Data-Analyst>



# DASHBOARD TAB 1

## Current Technology Usage

Top10LanguageHaveWorkedWith



Top10DatabaseHaveWorkedWith



Top 10 PlatformHaveWorkedWith

PlatformHaveWorkedWith

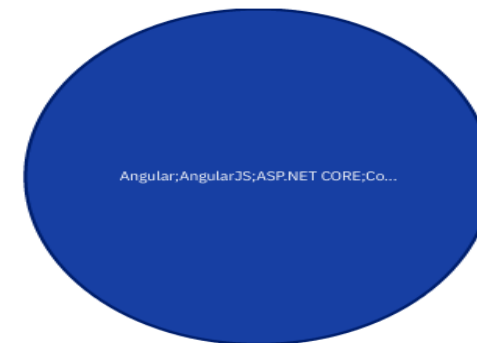
- Amazon Web Services (AWS);Clo...

Amazon Web Services (AWS);Cloudflare;Digital Ocean

Top 10 WebFrameHaveWorkedWith

PlatformHaveWorkedWith

- Amazon Web Services (AWS);Clo...



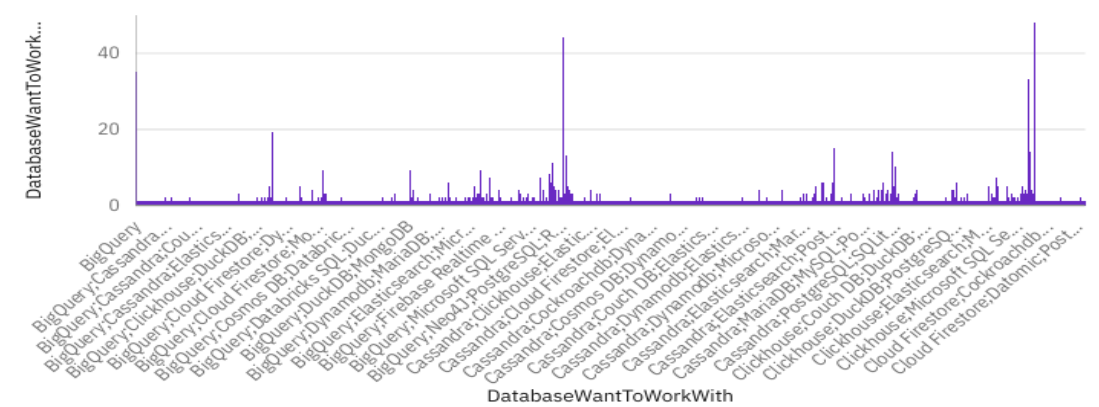
# DASHBOARD TAB 2

## Future Technology Trend

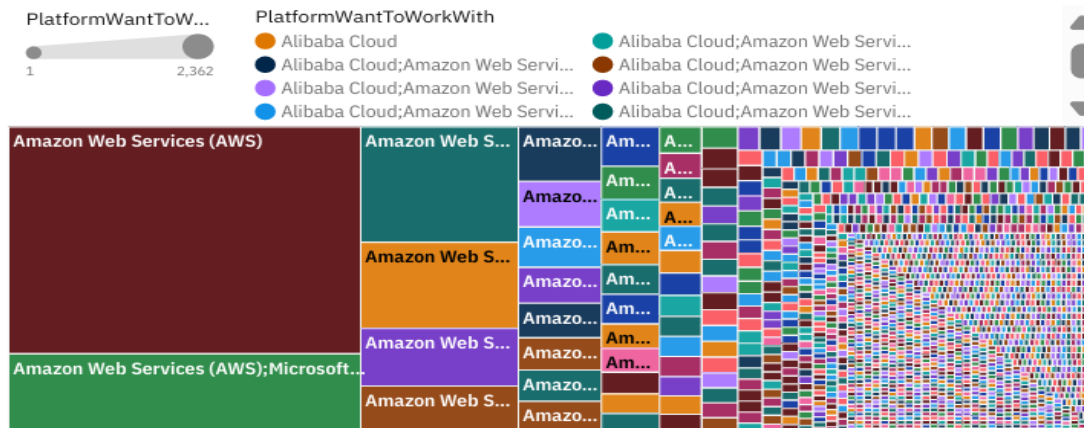
Top10LanguageWantToWorkWith



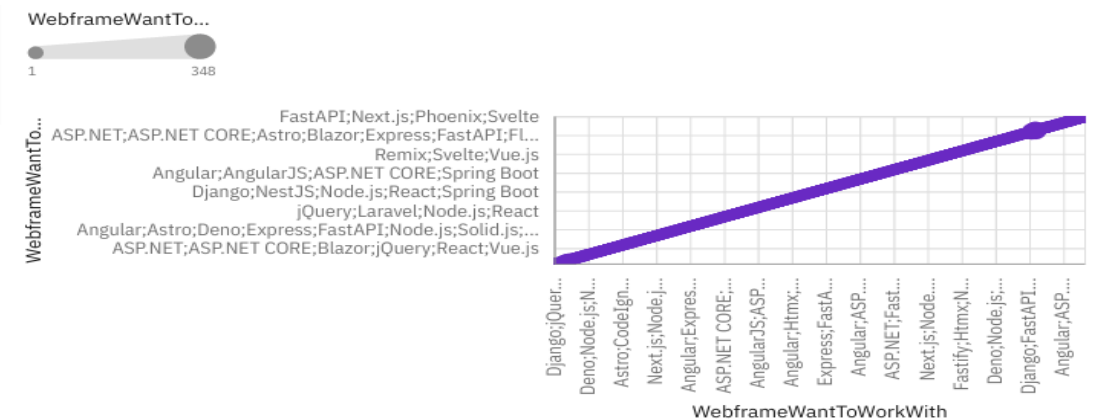
Top10DatabaseWantToWorkWith



Top 10 PlatformWantToWorkWith



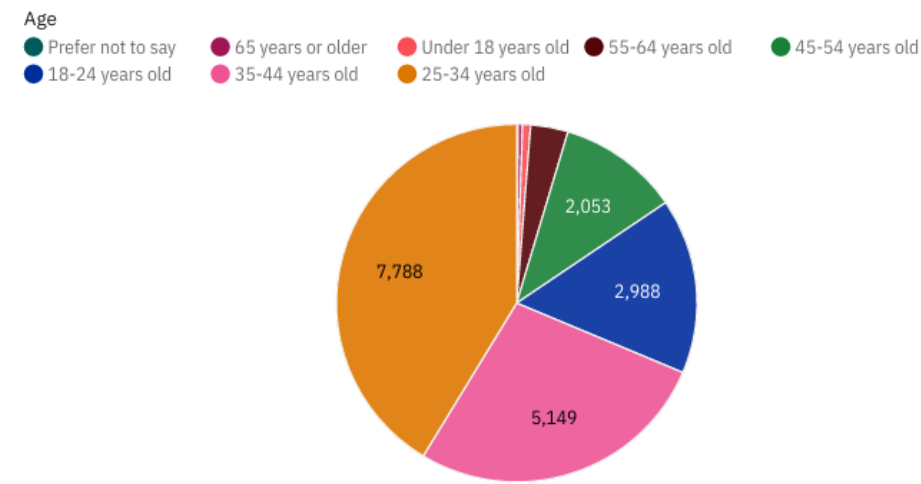
Top 10 WebframeWantToWorkWith



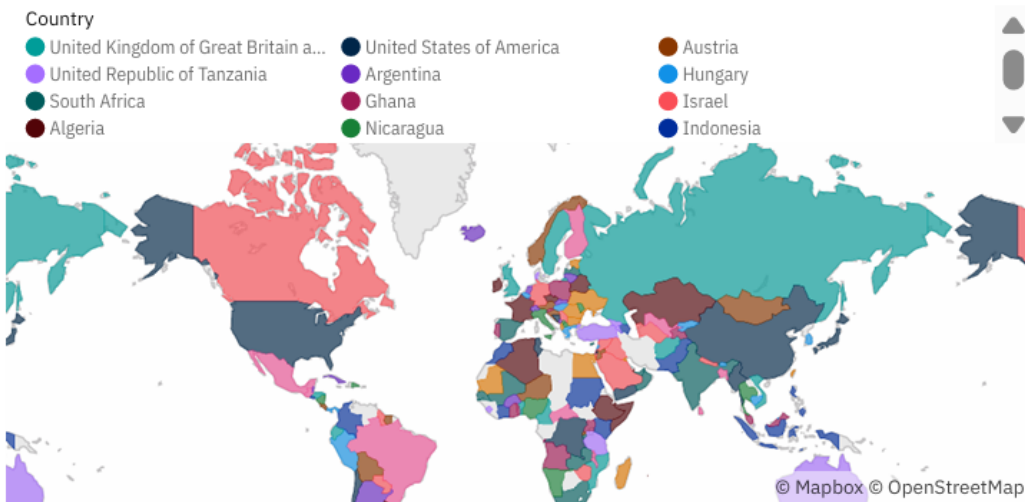
# DASHBOARD TAB 3

## Demographics

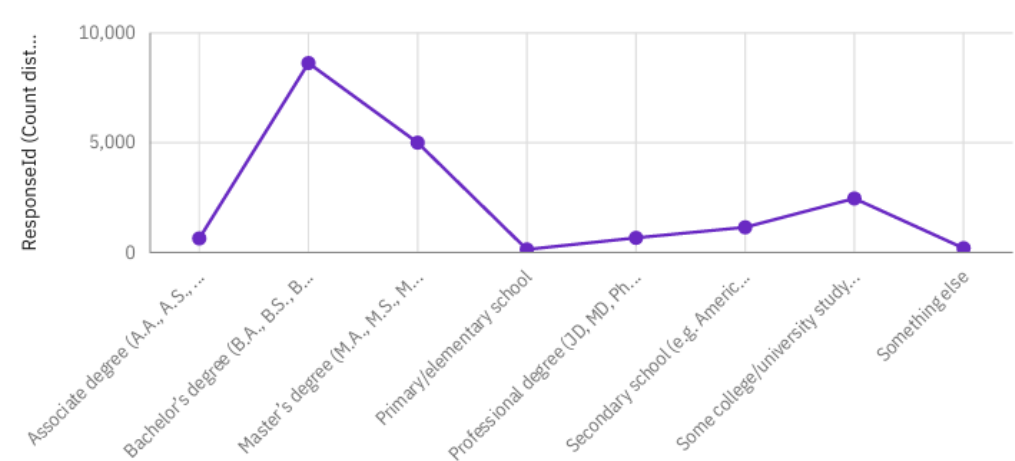
Capture Respondent distribution by Age



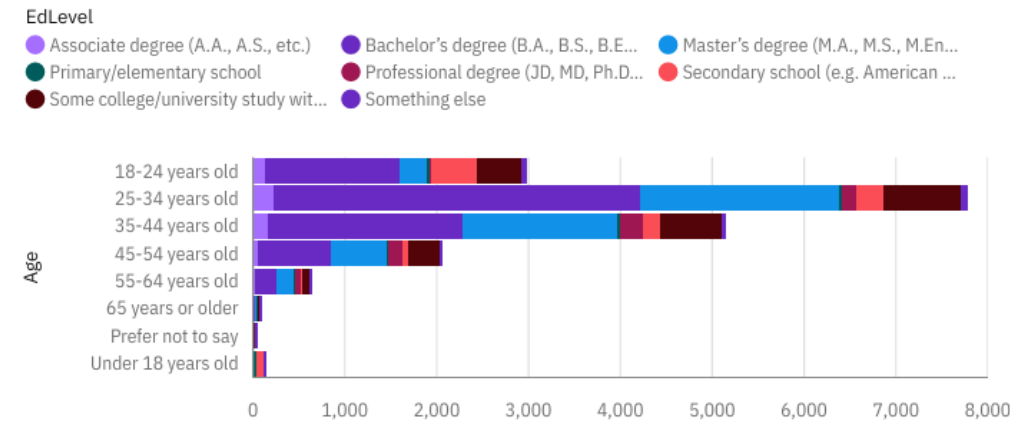
Capture Respondent Count by Country



Capture Respondent distribution by Formal Education Level



Capture Respondent Count by Age, classified by Education Level



# DISCUSSION

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- From the three dashboards we found the top 10 programming languages, top 10 databases, top 10 platforms, top 10 web frames have worked with and want to work in the future.
- Distribution of respondents according to their age, edlevel of respondents by age and their country of origin.
- From the demographics dashboard we can see that the people doing bachelor's degree and masters degree are between the age group of 25 – 34 years.
- Bachelor's degree is the most popular degree among respondents followed by masters.
- United kingdom of Great Britain is the top country where most of the respondents belong to.

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

- Top 10 programming people have worked with.
- Top 10 databases people have worked with.
- Job satisfaction by professional coding experience

## Implications

- Top 10 programming languages people want to work with is in line with programming languages people have worked with slight change in the preference.
- Top 10 desired databases is same as databases people have worked with indicates the popularity of databases among developer's.
- Professional coding experience is directly proportional to both job satisfaction and yearly compensation.





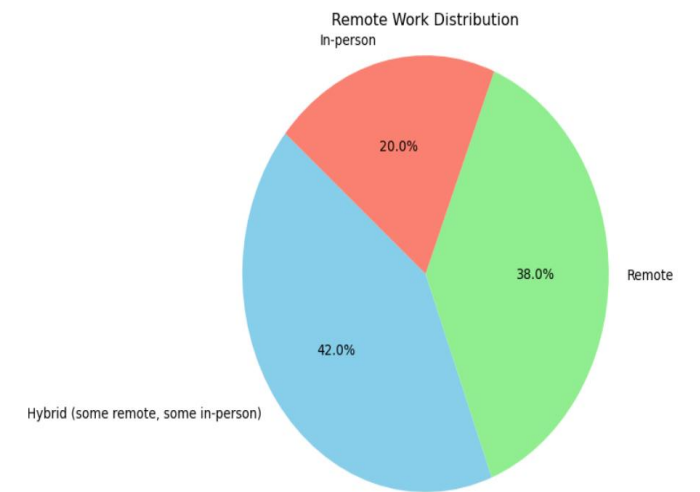
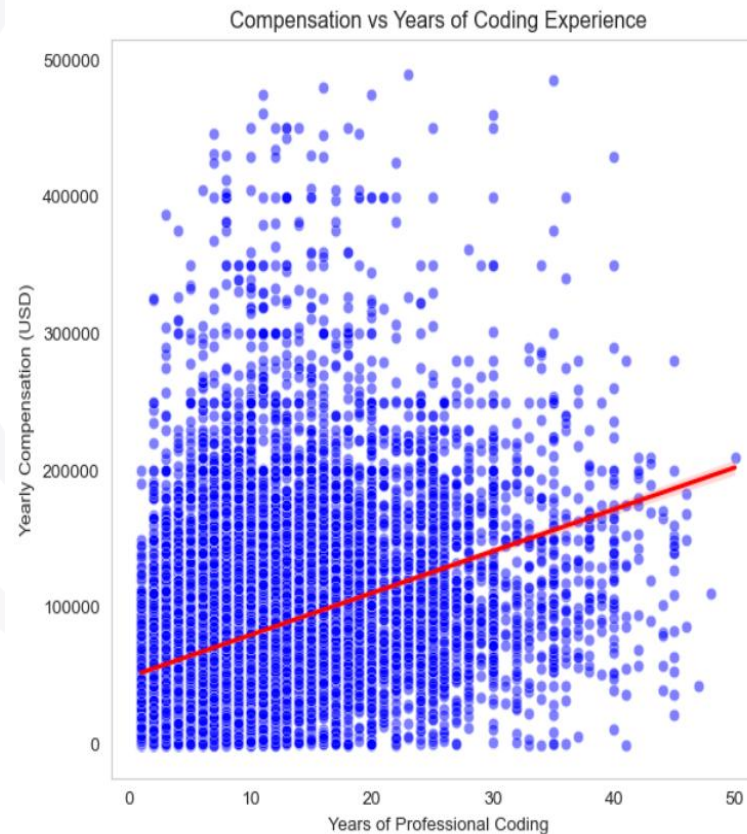
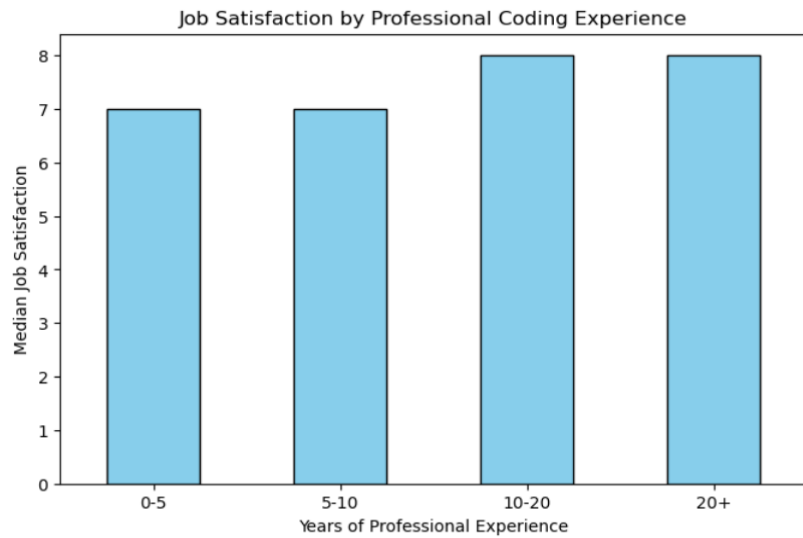
# CONCLUSION

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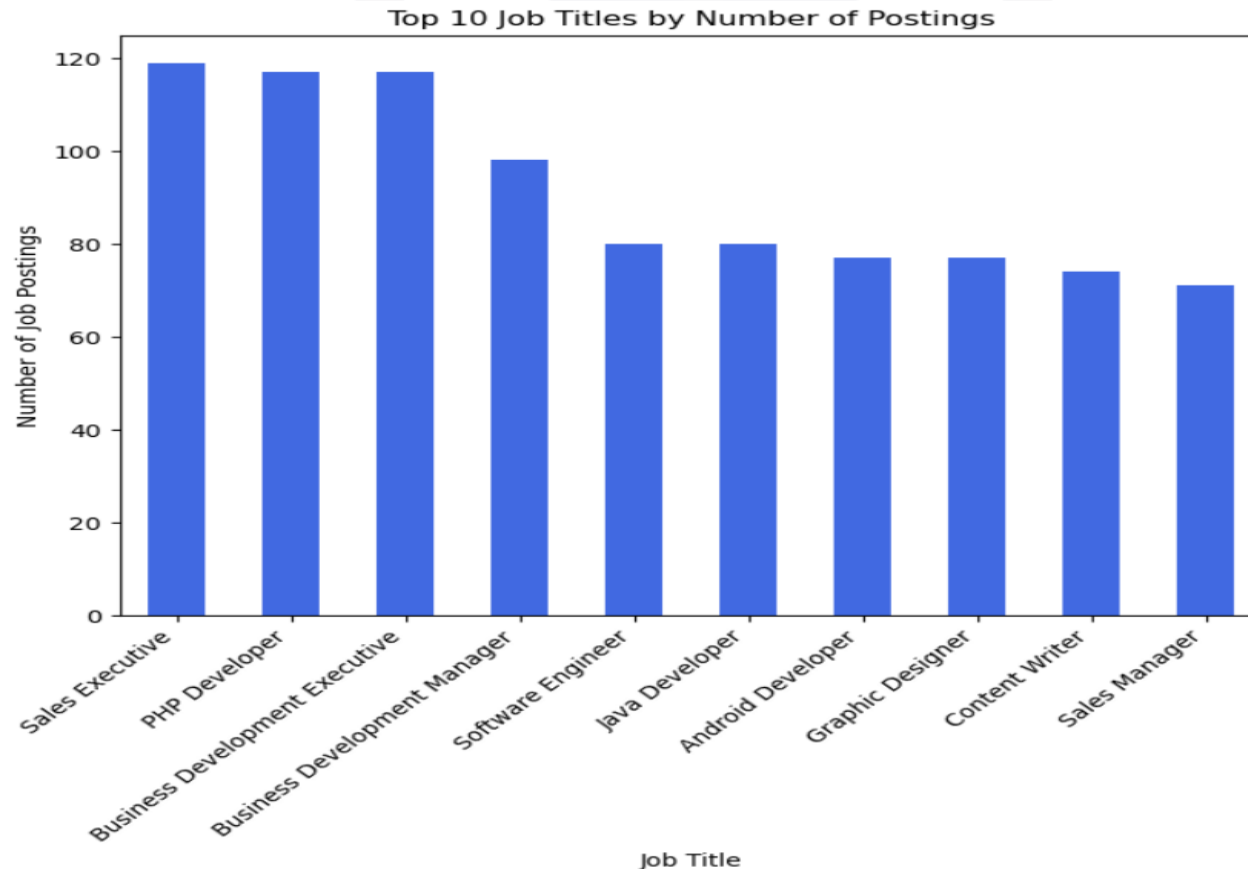
- Distribution of “ConvertedCompYearly” is almost same before and after normalization, indicating data is in the range before normalization.
- As the coding experience is increasing job satisfaction and yearly compensation is also increasing.
- Top programming languages, data bases, Platforms, Web frames are useful for the people who want to learn new skills as per industry needs.
- Age of respondents doing higher studies helps in planning the people for their higher studies.

# APPENDIX



# JOB POSTINGS

Bar chart in the descending order of the number of job postings(url = <https://cf-courses-data.s3.us.cloudobjectstorage.appdomain.cloud/IBMDA0321ENSkillsNetwork/labs/module%201/Accessing%20Data%20Using%20APIs/jobs.json>)



# POPULAR LANGUAGES

Order the bar chart in the descending order of salary(url = “[https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming\\_Languages.html](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html)”).

