



# Data Analysis of Future Technology Trends

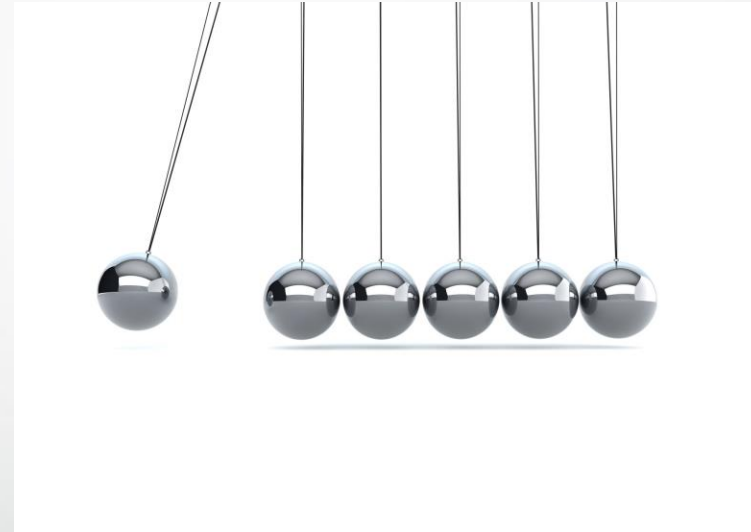
Analysis By Gurmol Singh

Aug 30/21

# OUTLINE

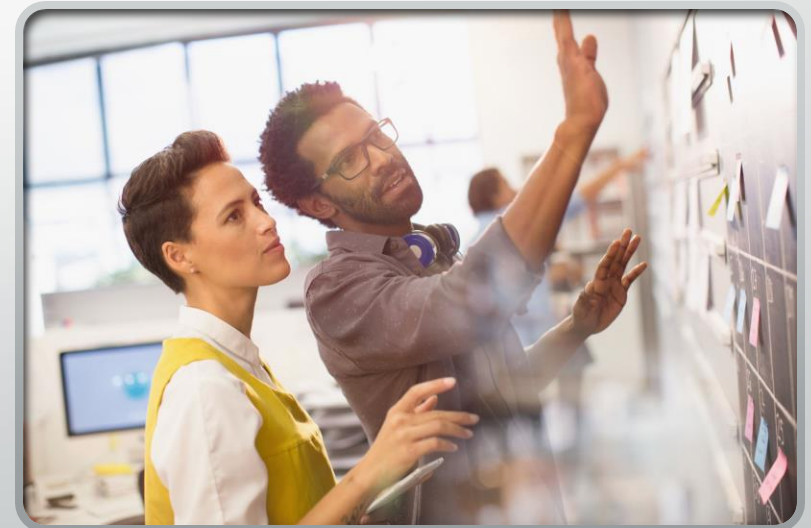


- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix



# EXECUTIVE SUMMARY

- Evaluating the technology usage trend of our Company by looking at respondents current tech usage, future usage and demographics data.
- This report will go over visualizations and current trends as well as top programming languages and databases.
- The problem is to see which language beginner programmers should learn and what has the largest job growth.
- This analysis will help future programmers decide which languages they should learn and identify the greatest job potential by looking at the data.



# INTRODUCTION



- A quick google search tells us that Javascript is the most commonly used language by (69.7%), followed by HTML/CSS(62.4%), SQL (56.9%), Python(41.6%) and Java (38.4%)

-Stack Overflow's 2020 Developer Survey

Ref: [https://bootcamp.berkeley.edu/blog/most-in-demand-programming-languages/#:~:text=According%20to%20Stack%20Overflow's%202020,\(PDF%2C%202.4%20MB\).](https://bootcamp.berkeley.edu/blog/most-in-demand-programming-languages/#:~:text=According%20to%20Stack%20Overflow's%202020,(PDF%2C%202.4%20MB).)

- We will find out if this is actually the trend within our company – business problem to be solved
- This project will provide recommendations and insights to audiences who are looking for new jobs and want to develop their skills in the most widely used programming languages.

# METHODOLOGY



We looked at 2 datasets from the lab exercises that provided us with data for visualizations.

From these datasets, a dashboard was created with 3 tabs and charts displaying bar plots of top 5 programming languages that can be compared with other previously held literature.

Web scraping was used to find facts and data to build the bar plots, IBM Cognos for dashboards, Stack Overflow Developer Survey 2019 data.

Literature review was conducted from the following source: Overflow Developer Survey 2020 data

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=> Download this 2 files [m5\_survey\_data\_demographics.csv] and [m5\_survey\_data\_technologies\_normalised.csv].

=> Upload these 2 CSV files as data assets to our project in CDE.

=> Create 3 dashboards (3 separate tabs under a single dashboard) as follows:

One dashboard using the 2 x 2 rectangle areas tabbed template - rename this dashboard tab to Current Technology Usage.

One dashboard using the 2 x 2 rectangle areas tabbed template - rename this dashboard tab to Future Technology Trend.

One dashboard using the 2 x 2 rectangle areas tabbed template - rename this dashboard tab to Demographics.

# RESULTS

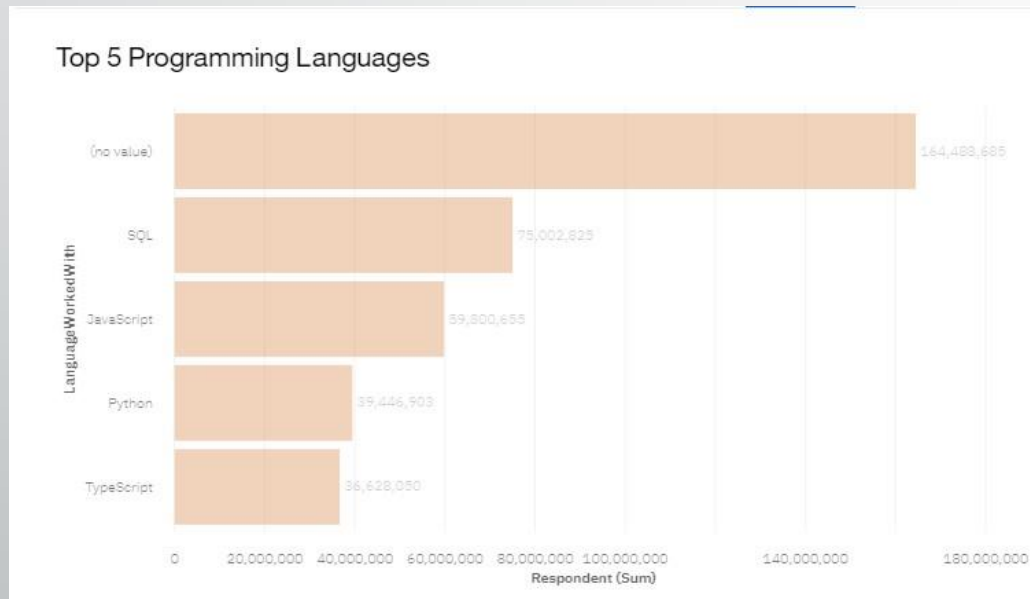
The findings are expressed in the following pages: 7-10 and the dashboard is in 11-14 and in pg. 15 is the discussion.

The first programming value this year had no value, then SQL, Javascript, Python, and Typescript. In the next year it would be HTML/CSS, javascript , no value, python and then go!

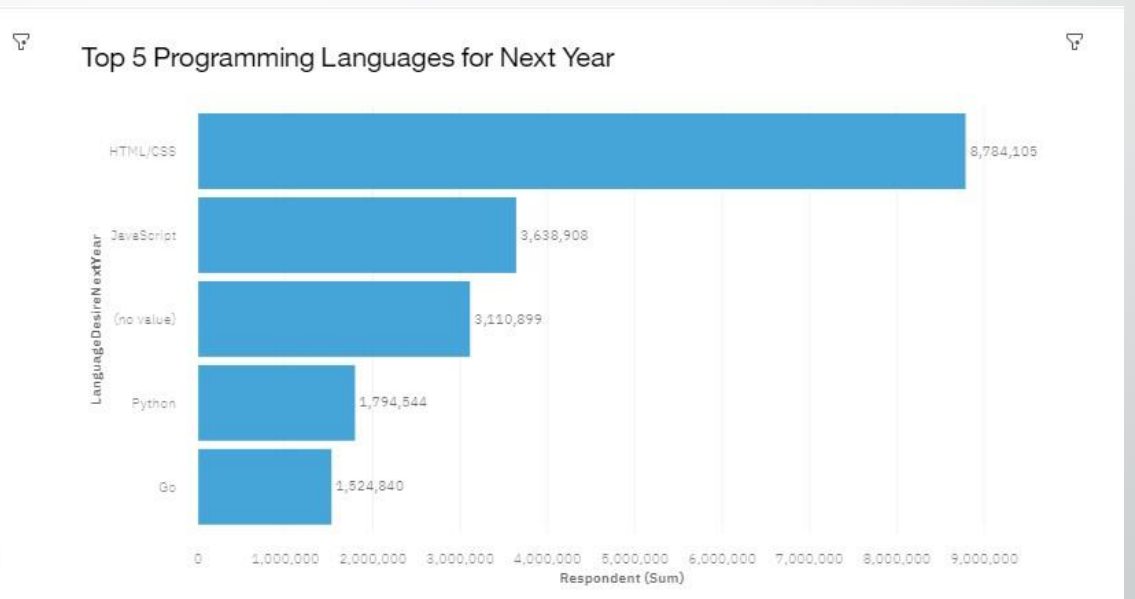
The top 5 databases this year are no value, my SQL, MongoDB, PostgreSQL and Microsoft SQL server. For the next year, it is no value, Redis, MySQL, MongoDB and Microsoft SQL server.

# PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- 164k was no value
- 75k worked in SQL
- 59k worked In Javascript
- Typescript and python can be learned interchangeably

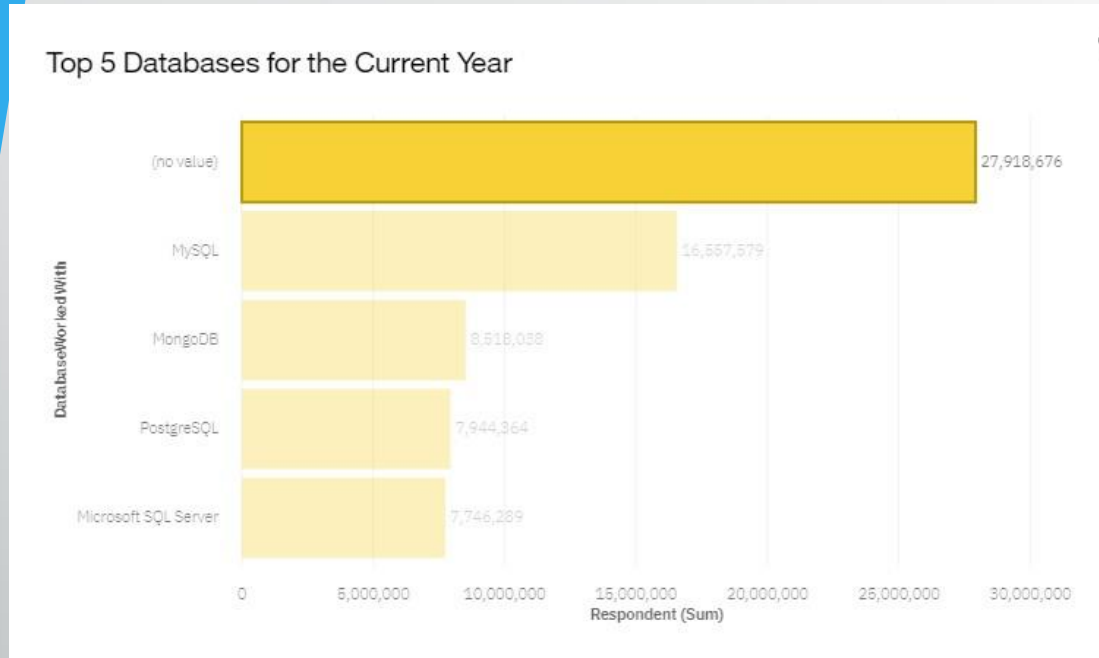
## Implications

- No value does not provide much insight
- Very popular and language to be learned
- After SQL Javascript should be learned

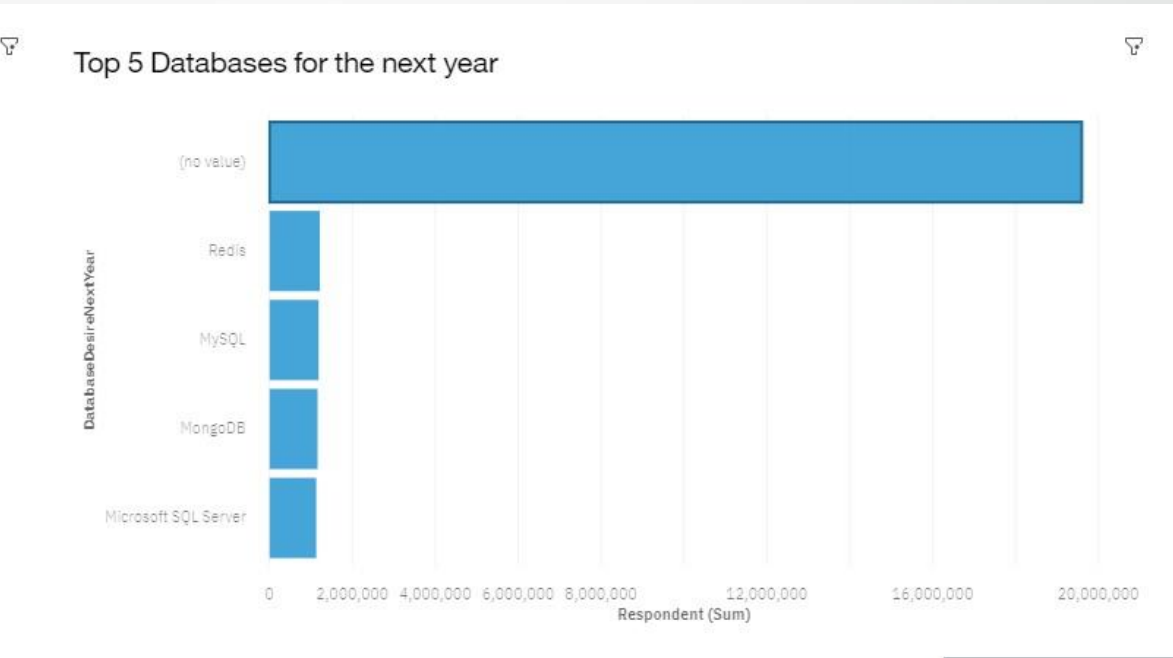


# DATABASE TRENDS

Current Year



Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- No value is at the top for the current year
- My SQL was 2nd and stayed in the top charts
- PostGRESQL was not predicted to be used in the next year

## Implications

- In the next year, Redis was used at the top
- SQL should be learned
- Instead of PostGRESQL MongoDB and Microsoft SQL Server will be used

# DASHBOARD



<https://datapatform.cloud.ibm.com/dashboards/ae247021-5a40-4152-8509-ade49638f18/view/521beb17348e1dd55edcd0e407982e552c34705fbbbb835582807b490e692597a96b1b98c82b490fdf130736a5ee410dcf>

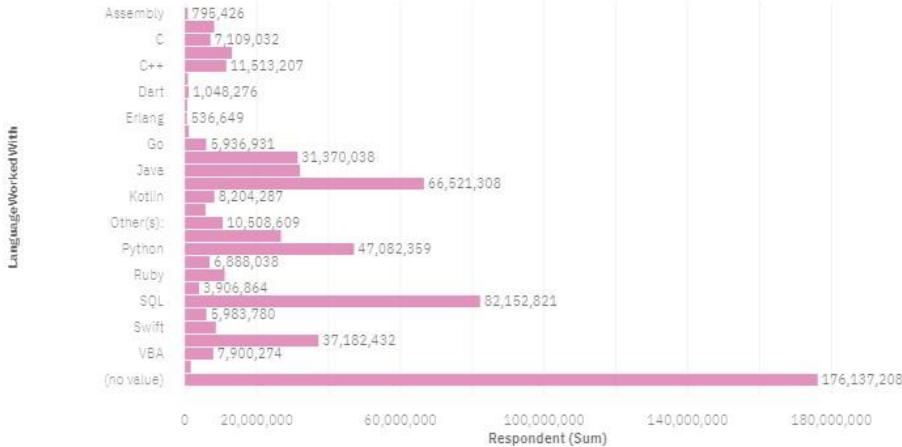
# DASHBOARD TAB 1

Current Technology Usage

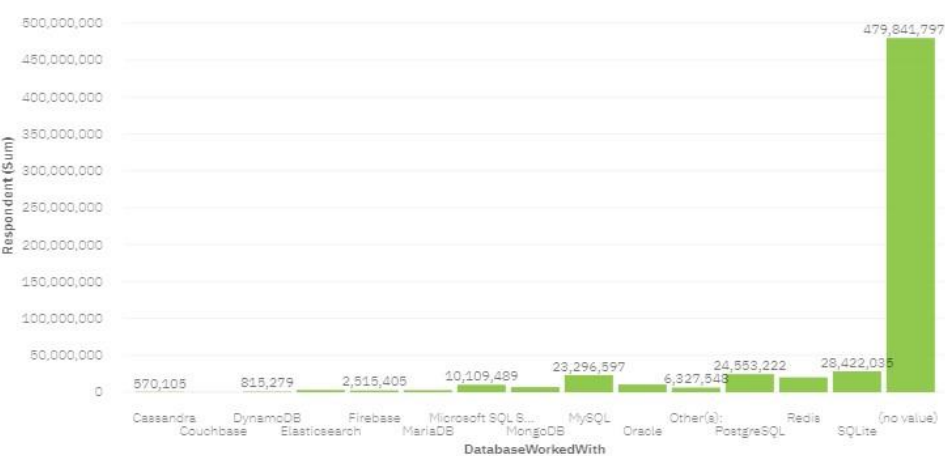
Future Technology Trend

Demographics

Top 10 LanguageWorkedWith



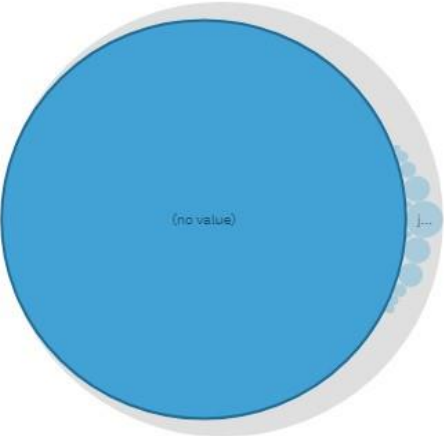
Top 10 DatabaseWorkedWith



PlatformWorkedWith



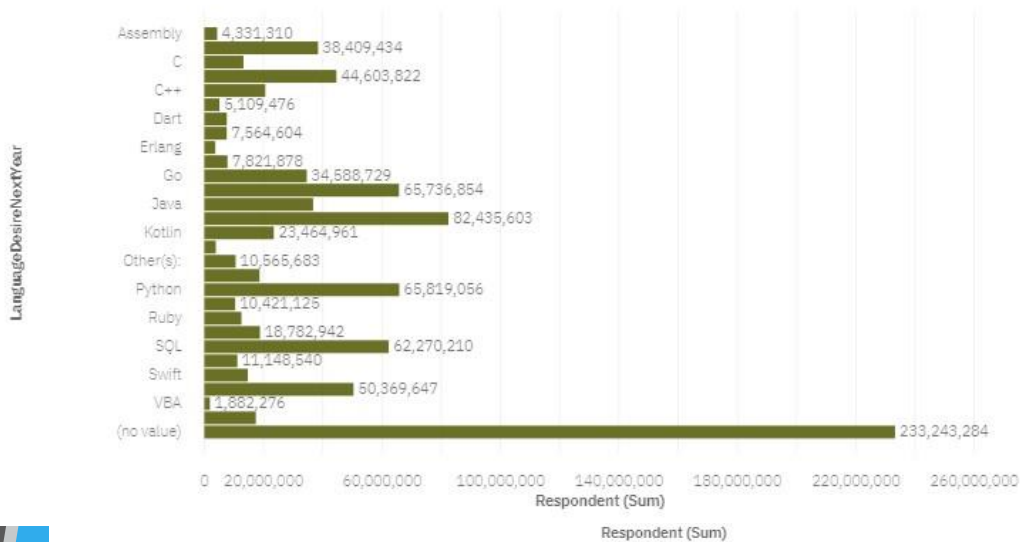
Top 10 WebFrameWorkedWith



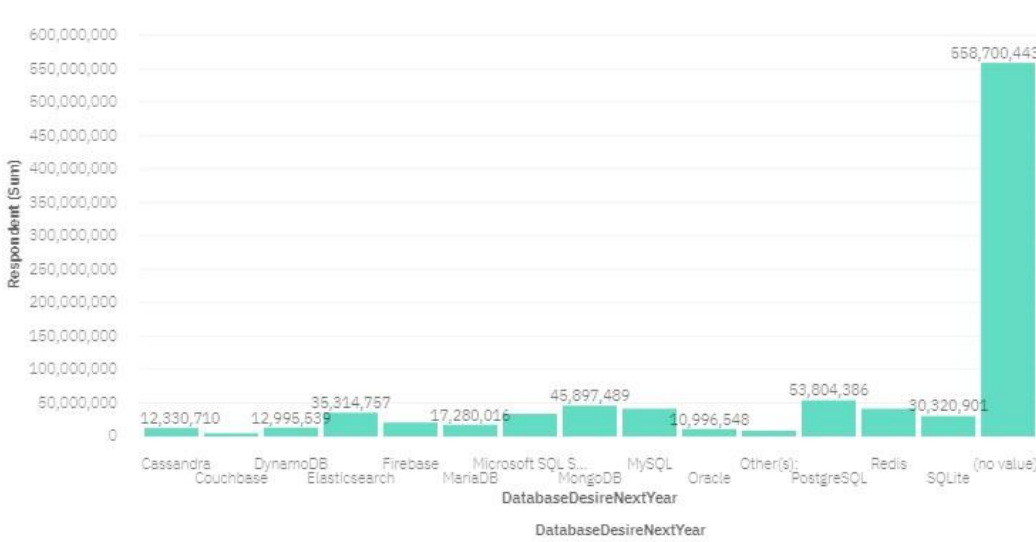
# DASHBOARD TAB 2

Current Technology Usage   **Future Technology Trend**   Demographics

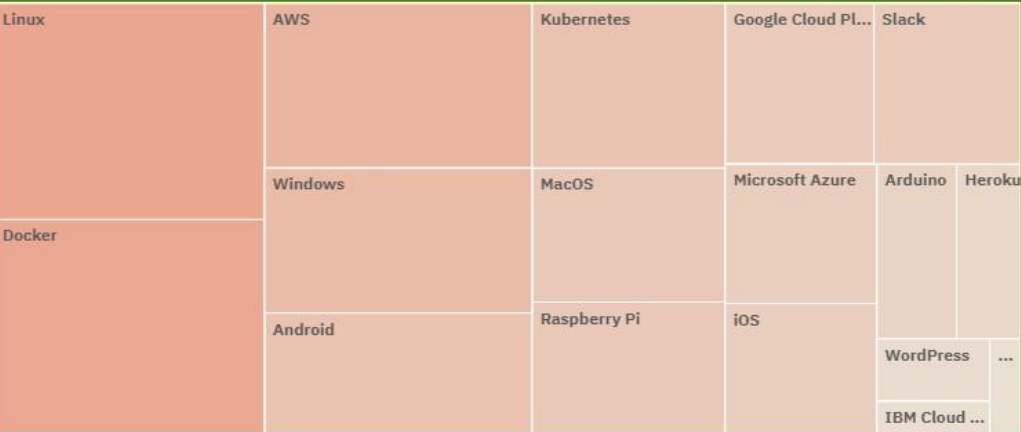
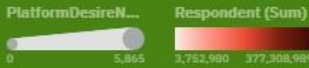
Top 10 LanguageDesireNextYear



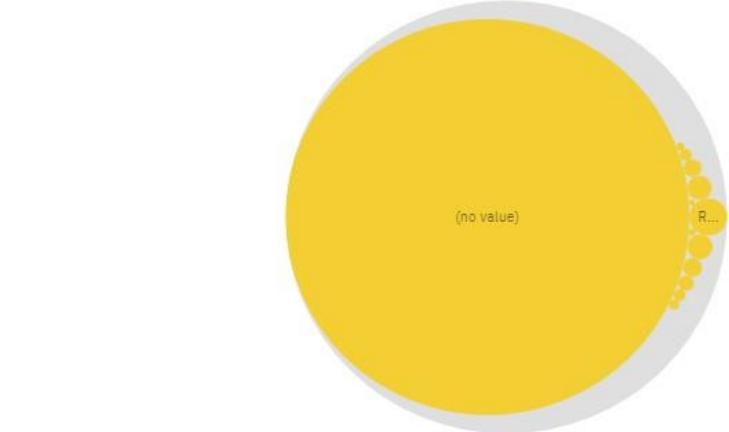
10 DatabaseDesireNextYear



PlatformDesireNextYear



Top 10 WebFrameDesireNextYear.



# DASHBOARD TAB 3

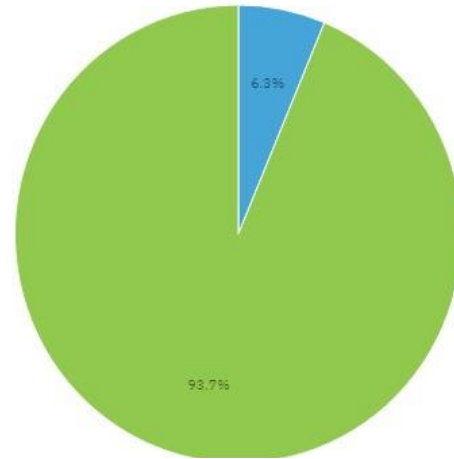
Current Technology Usage

Future Technology Trend

Demographics

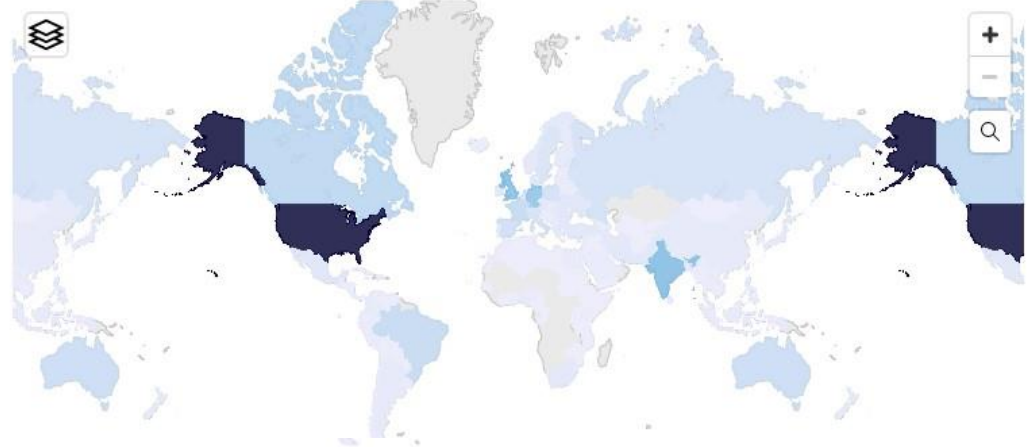
Respondent classified by Gender

Gender  
● Woman ● Man

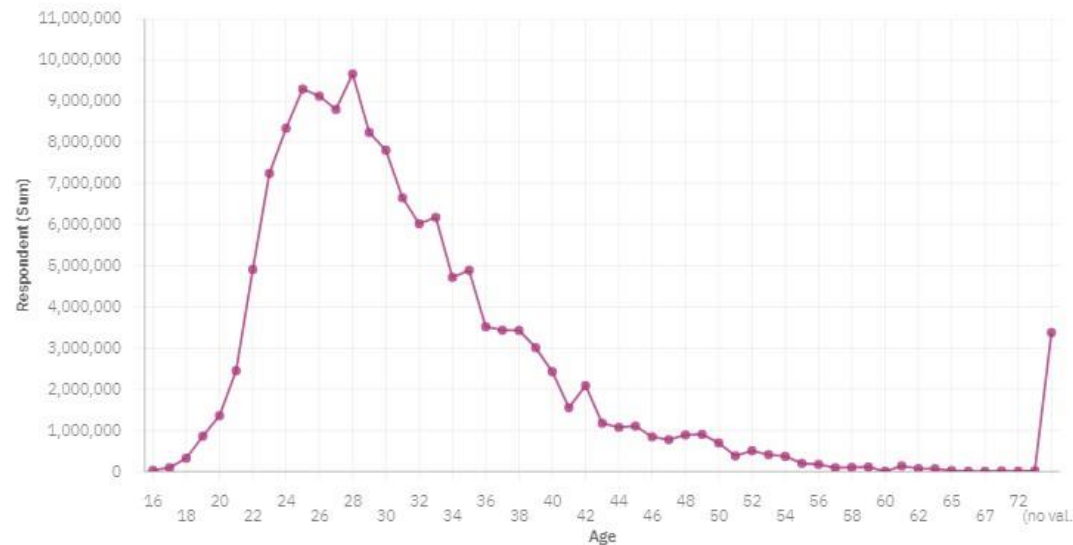


Respondent Count for Countries

Respondent (Sum)  
865 38,170,293

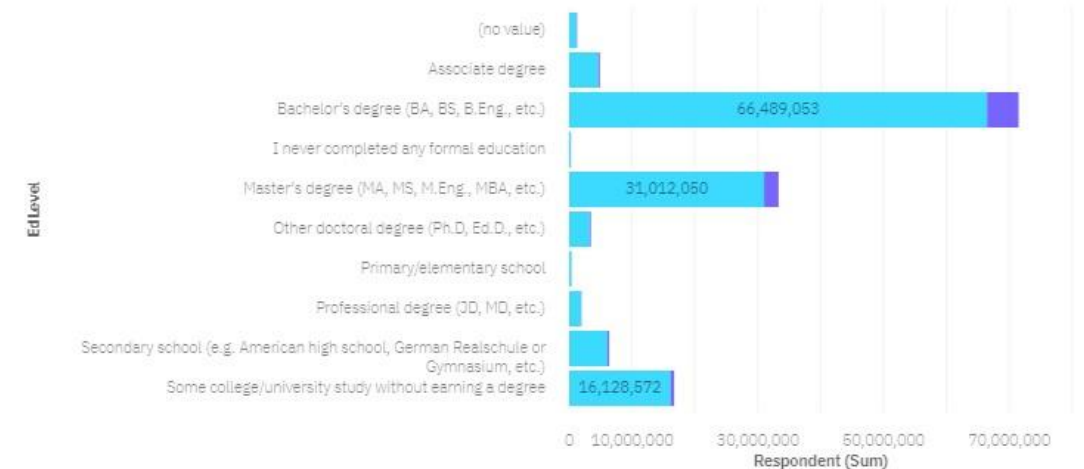


Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level

Gender  
● Man ● Woman





# DISCUSSION

From the dashboards and bar chart several trends and figures are visible. Some of which will be summarized in this section!

- SQL will be heavily used in the future regardless of year, it looks like Big Data and Database management will be the main topics of discussion in upcoming years.
- Windows, Linux, AWS, and Docker are the most popular platforms worked with Microsoft Azure and Google Cloud also being used!
- Javascript will be the most used language in the next year! Linux and Docker will be the most used Platform of Next Year
- There are more men in these fields compared to women, so we can expect a push for more women in STEM fields.
- Most respondents worked in North America and India is also an IT hub.
- Most people working were in the ages of 29-31.
- Majority of people had a Bachelors Degree.

This details the type of people in this arena as well as the most used languages and databases along with most common education level.

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- Most IT workers were middle aged
- Javascript and SQL were always popular!
- Women in STEM will be promoted
- Most workers had a bachelors degree

## Implications

- This shows that it takes time to develop IT related skills and get diversity in languages and databases.
- This language and database definitely need to be learned as they are very heavily used.
- This is an effort to create gender diversity and have a diverse workforce with individuals from all walks of life.
- Tech is very welcoming and open industry, anyone can really come in and having a bachelor's is enough to make the transition.



# CONCLUSION

- We can see that Tech is a growing industry and we need all kinds of programmers and database experts. An individual needs to have diversity in their skillset and thus can apply more of their skills to the role. Women need to be promoted more and given opportunities to enter the workforce based on the data!
- In the future, different industries can be explored to expand on this analysis. For example roles like data scientist, engineer, pipeline developer, administrator. The cloud could be explored as well like AWS, google cloud and Microsoft Azure. Even students being taught computer science in their high school classes could be added into the data set to see how many people go into tech after graduating!
- Thank you to the Coursera team for providing the datasets and making IBM cognos available for analysis.



# APPENDIX

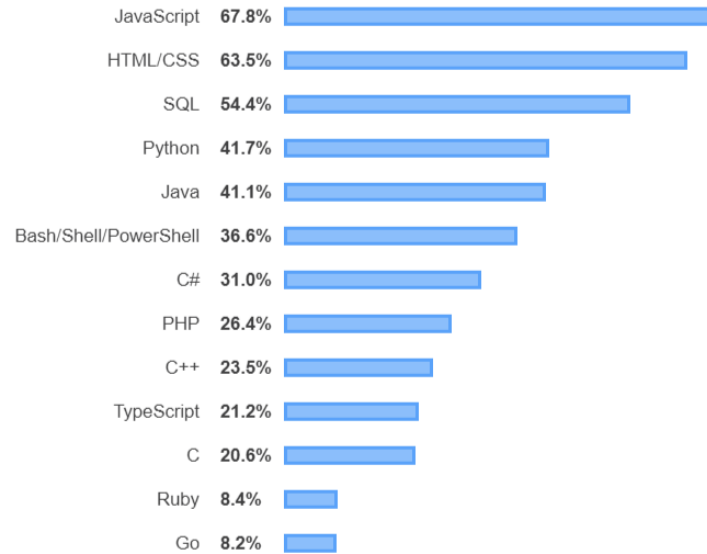


## Most Popular Technologies

### Programming, Scripting, and Markup Languages

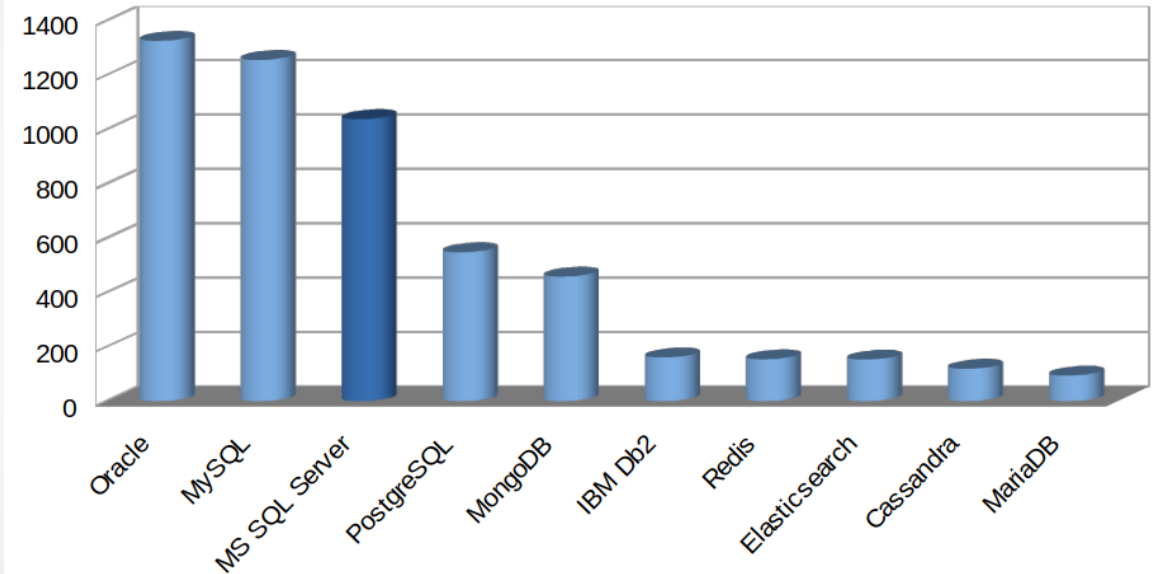
All Respondents

Professional Developers



- <https://merehead.com/blog/most-in-demand-programming-languages-2021/>

### DB-Engines Ranking Score (Dec, 2020)



- <https://towardsdatascience.com/top-10-databases-to-use-in-2021-d7e6a85402ba>

# GITHUB JOB POSTINGS

In Module 1 you have collected the job postings data using GitHub API in a file named "github-job-postings.xlsx". Present that data using a bar chart here. Order the bar chart in the descending order of number of job postings.



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# POPULAR LANGUAGES

In Module 1 you have collected the job postings data using web scraping in a file named “popular-languages.csv”. Present that data using a bar chart here. Order the bar chart in the descending order of salary.

