Emerging Trending Skills Required In IT industry In the future

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EXECUTIVE SUMMARY

- IT industry is a competitive and ever changing industry which require constant refine new programing skill and Databases. This project is used to analyze the trends

- This project is used to analyze the trend:
  - Current Technology Usage
  - Future Technology Trend
  - Demographics in IT industry

- The project is to identify the top programming languages

- Identifying top database skills in demand

- Popular IDEs

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INTRODUCTION

- **What is the emerging trend and future skill requirements in the Industry?**
  - What are the top programming language in demand?
  - What are the top database skills in demand?
  - What are the popular IDEs?

- collecting data from various sources and identifying trends for this year's report on emerging skills:
  - Job Postings
  - Training Portals
  - Surveys

- A Data Analyst in a global IT and business consulting services firm that is known for their expertise in IT solutions and their team of highly experienced IT consultants. In order to keep pace with changing technologies and remain competitive, your organization regularly analyzes data to help identify future skill requirements.

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METHODOLOGY

1. **Data Source:** Stack Overflow, Two data is used Demographics and Survey data technologies

2. Survey Data technologies was used to analyze the current technology trend and future technology trend:
   - Respondents
   - LanguageWorked With, DataBaseWorked With, PlatfarmWorked With, WebframeWorked With
   - LanguageDesireNextYear, DataBaseDesireNextYear, PlatformDesireNextYear, WebframeDesireNextYear

3. Demographic data was used for demographic data:
   - Man and woman
   - Age
   - Formal education level and Countries

4. Data is **filtered** with:
   - NoValue or null is cleaned
   - Demographic: man and woman only

5. Illustration of the data is used as follows:
   - Python libraries: Numpy, Matplotlib, Pandas,Seaborn
   - IBM Cognos Analytics Dashboard
   - Jupyternotebook for Data Cleaning and Data Science Analysis

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RESULTS

The Results shown as follows are the analysis comparing the graphs between the current technology usage and Future technology usage.
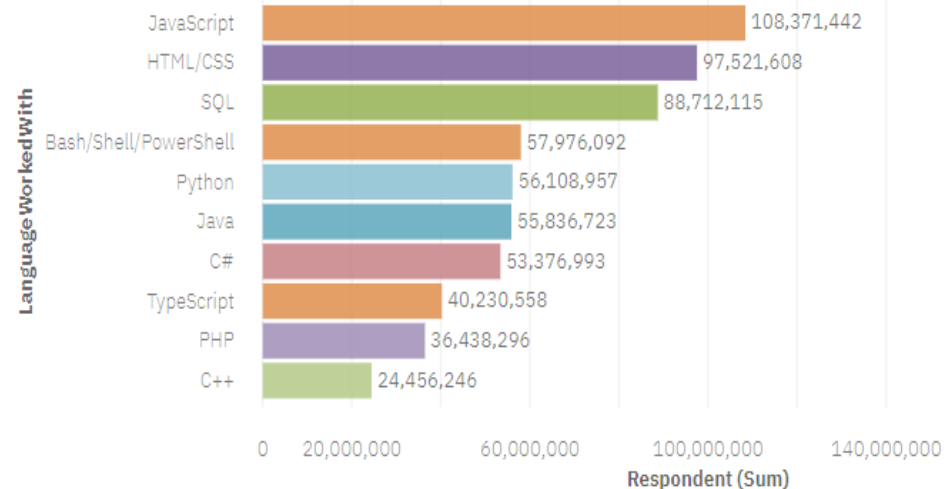
Results as follows:
1. **Programming Language trends**

2. **Database trends**

3. **IDEs trends**
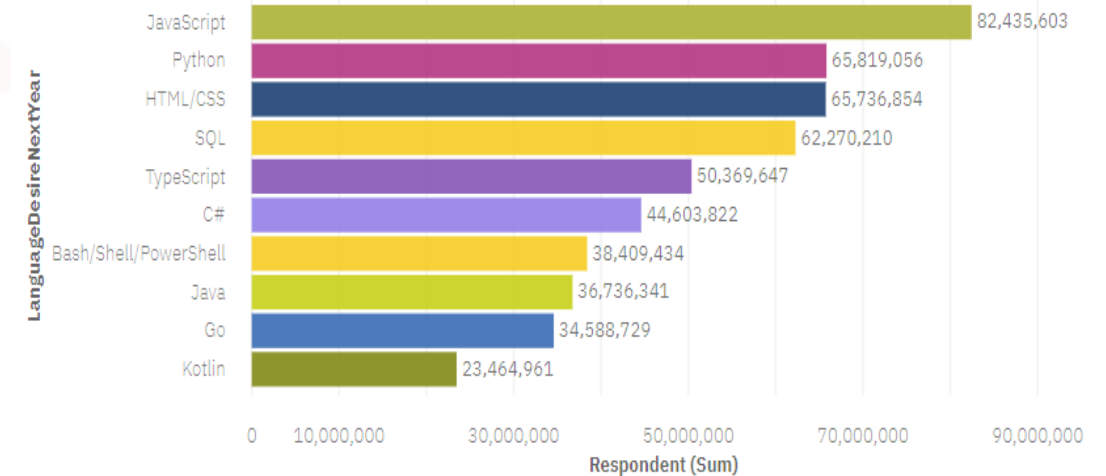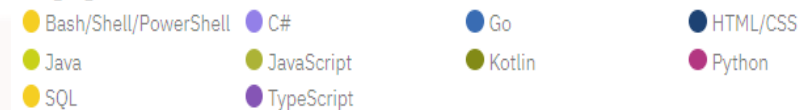
PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year

Top 10 LanguageWorkedWith

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

Language	Respondent (Sum)
JavaScript	108,371,442
HTML/CSS	97,521,608
SQL	88,712,115
Bash/Shell/PowerShell	57,976,092
Python	56,108,957
Java	55,836,723
C#	53,376,993
TypeScript	40,230,558
PHP	36,438,296
C++	24,456,246

Top 10 LanguageDesireNextYear

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

Language	Respondent (Sum)
JavaScript	82,435,603
Python	65,819,056
HTML/CSS	65,736,854
SQL	62,270,210
TypeScript	50,369,647
C#	44,603,822
Bash/Shell/PowerShell	38,409,434
Java	36,736,341
Go	34,588,729
Kotlin	23,464,961

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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is the top most demanded for current and future programming language.

- Significantly Increasing desire for Python

- The trends of programming language has shifted

- Top 5 language are:
  - JaveScript, Python,HTML,SQL, TypeScript

Implications

- JavaScript is still most popular and widely used in programming language in IT industry.

- Python has become a new desired and required skills in IT industry.

- JavaScript, Python, HTML/CSS,SQL, TypeScript are the top 5 most desired skills.

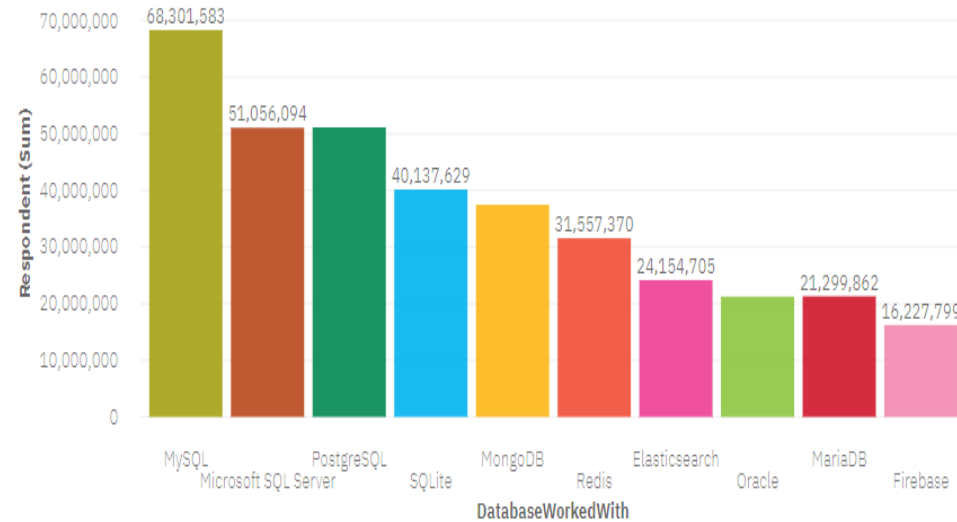- The Desire Skill for programming language has certainly Shifted.

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DATABASE TRENDS

Current Year

Next Year
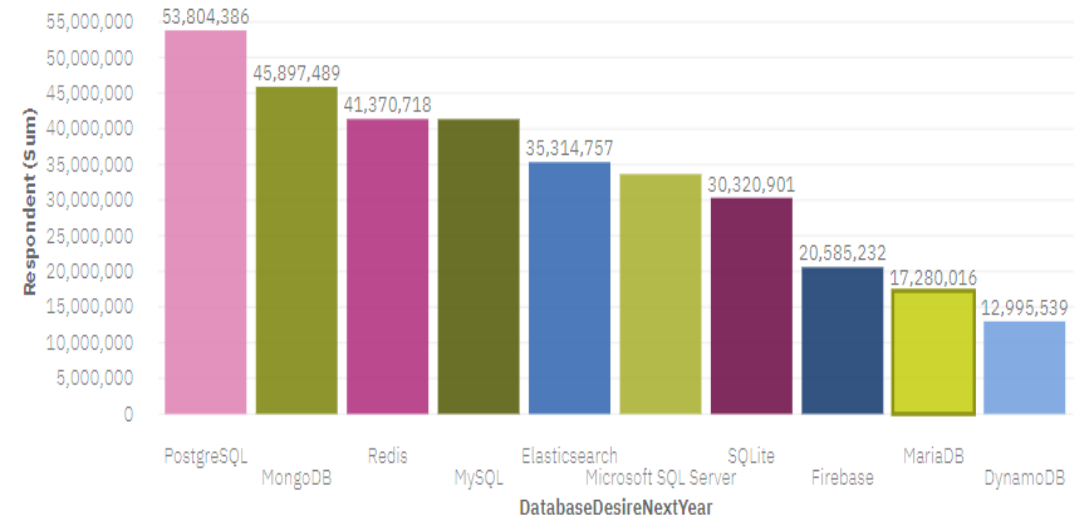
DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL,MongoDB, Redis have become the most desired Database.

- MongoDB, Redis, Elasticsearch are becoming increasingly popular for desiredDatabased roughly 10,000 increased in respondants.

- Oracle Database has become less popular and less desired

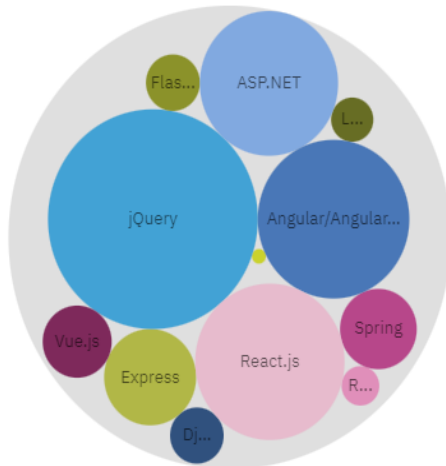- Drastic increase in the desire database skills especially for MongoBD and DynamoBD

Implications

- PostgreSQL, MongoDB,Redis,MySQL,Elasticsearch are the desired and most used Database.

- MongoDb, Redis,Elasticsearch have new and better functionalities or services.

- Oracle Database is to avoid

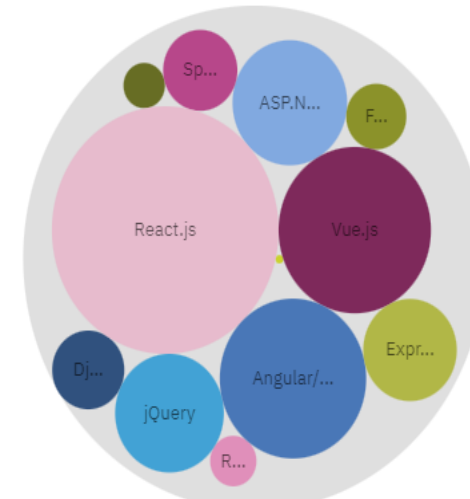- Usage of DynamoBD more research may needed

IDE TRENDS

- **Current Year**

- **Next Year**

Top 10 WebFrameWorkedWith

Respondent (Sum)
3,768,592 57,310,840

WebFrameWorkedWith
- Angular/Angular.js
- ASP.NET
- Django
- Drupal
- Express
- Flask
- jQuery
- Laravel
- React.js
- Ruby on Rails
- Spring
- Vue.js

Top 10 WebFrameDesireNextYear

Respondent (Sum)
1,970,796 58,321,909

WebFrameDesireNextYear
- Angular/Angular.js
- ASP.NET
- Django
- Drupal
- Express
- Flask
- jQuery
- Laravel
- React.js
- Ruby on Rails
- Spring
- Vue.js

IDE TRENDS - FINDINGS & IMPLICATIONS

Findings:

- There shows a trend in IDEs:

- The user for jQuery has drastically decreased.

- React.js and Vue.js have dramatically increase for the desire IDE as compared to current WebFrame worked with as illustrated in the hierarchy buble

Implications:

- People are shifting to use a better webframe such as React.js or Vue.js

- jQuery might be lacking of some functionality as compare to webframe competitors

- jQuery can be omitted from the new requirements of new technological skills

DASHBOARD

https://dataplatform.cloud.ibm.com/dashboards/8573bab0-1aed-4ba6-8dff-52be3441c91d/view/5568d77f2fed3e937cc9b5e4079f78057535275eb7bb800685d47b495d617297a8384799c87e4a5ad3175064f0ec145f9d
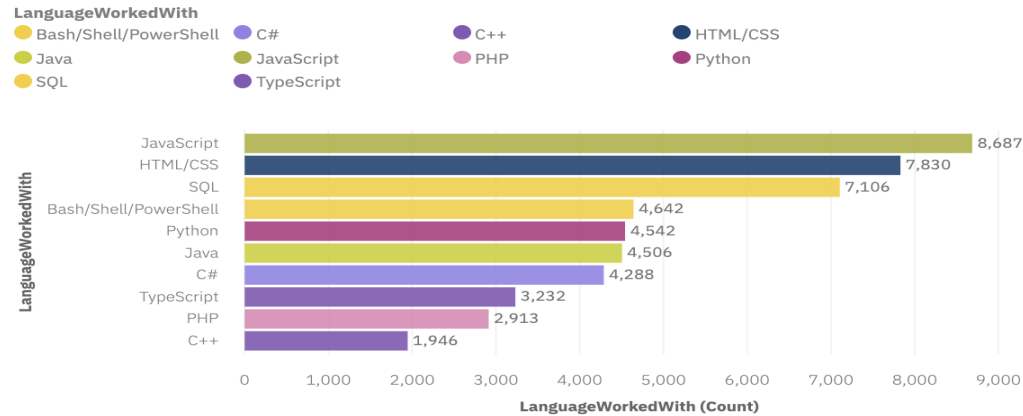
DASHBOARD TAB 1
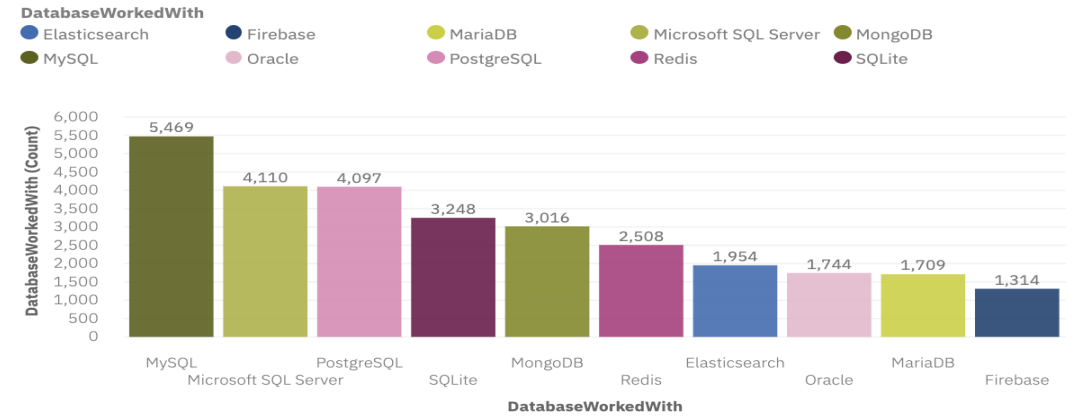
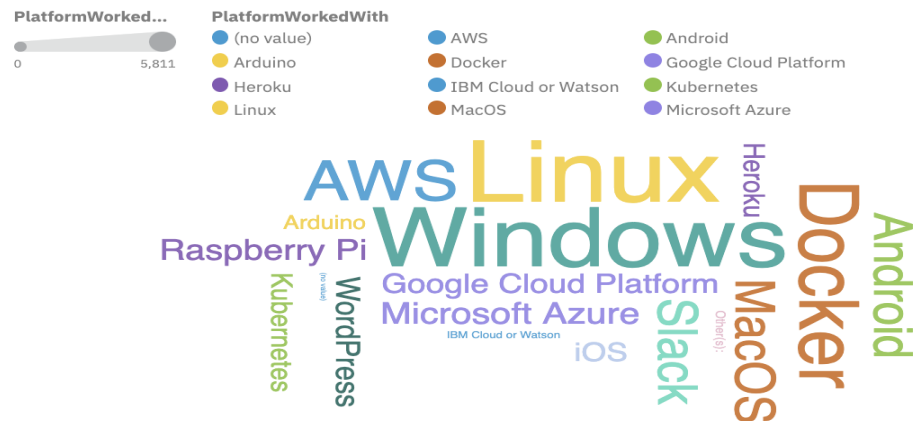Current Technology Usage   Future Technology Trend   Demographics ⊕
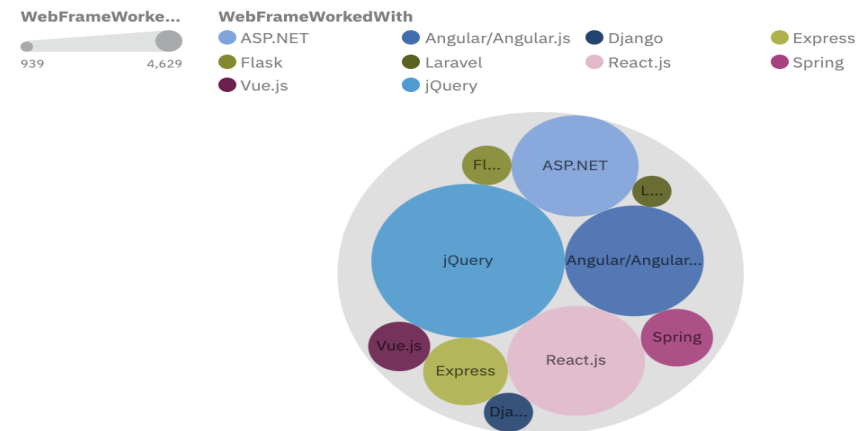
Top 10 LanguageWorkedWith

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

Language	Count
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

LanguageWorkedWith (Count)

Top 10 DatabaseWorkedWith

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

Database	Count
MySQL	5,469
Microsoft SQL Server	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

PlatformWorkedWith

PlatformWorked...   0 — 5,811

PlatformWorkedWith
- (no value)
- AWS
- Android
- Arduino
- Docker
- Google Cloud Platform
- Heroku
- IBM Cloud or Watson
- Kubernetes
- Linux
- MacOS
- Microsoft Azure

Top 10 WebFrameWorkedWith

WebFrameWorke...   939 — 4,629

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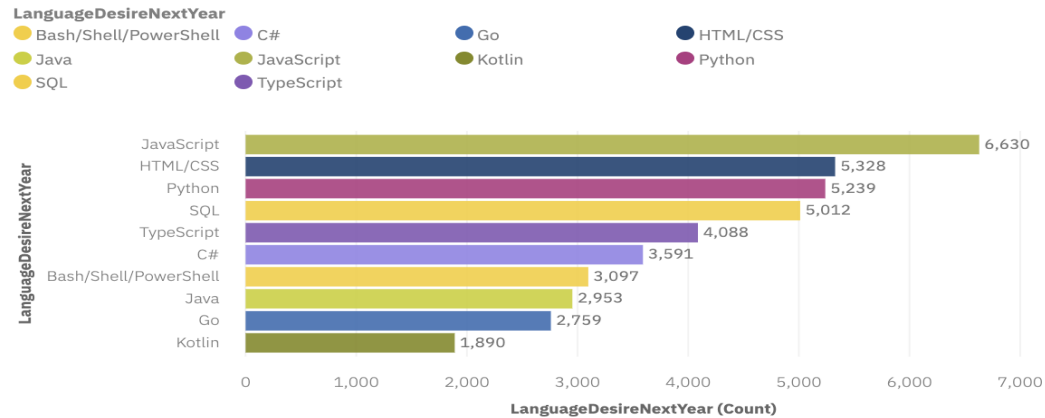- jQuery

DASHBOARD TAB 2

Current Technology Usage | **Future Technology Trend** | Demographics ⊕

Top 10 LanguageDesireNextYear

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

Top 10 DatabaseDesireNextYear

DatabaseDesireNextYear
- DynamoDB
- Elasticsearch
- Firebase
- MariaDB
- Microsoft SQL Server
- MongoDB
- MySQL
- PostgreSQL
- Redis
- SQLite

PlatformDesireNextYear

PlatformDesireN... 0 — 5,865
PlatformDesireN... 0 — 5,865

Top 10 WebFrameDesireNextYear

WebFrameDesire... 970 — 4,714

WebFrameDesireNextYear
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- React.js
- Ruby on Rails
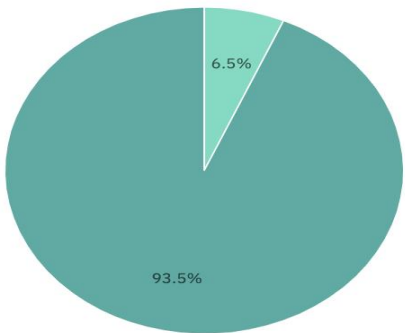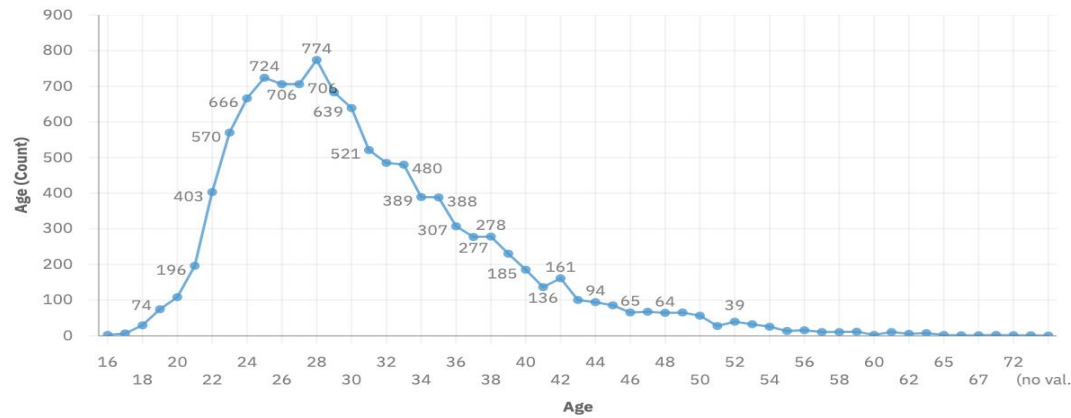- Spring
- Vue.js
- jQuery
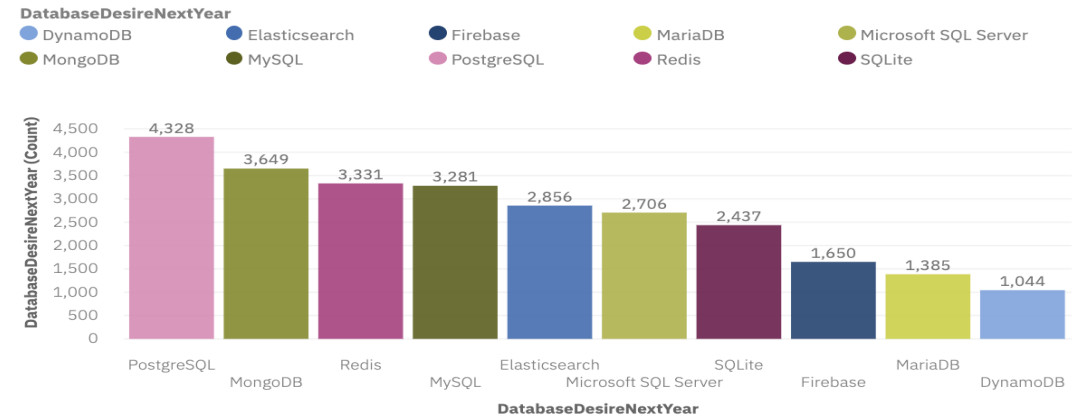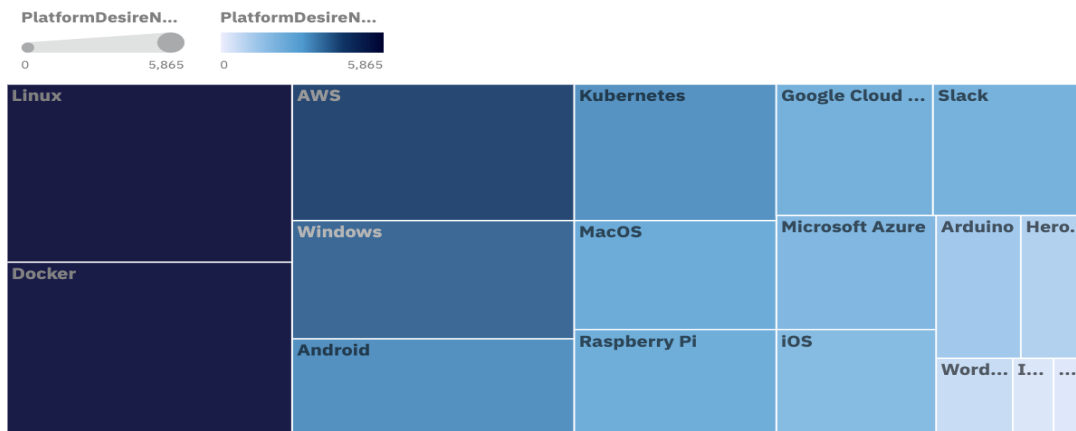
DASHBOARD TAB 3

Current Technology Usage   Future Technology Trend   **Demographics**   ⊕

Respondent classified by Gender

Gender
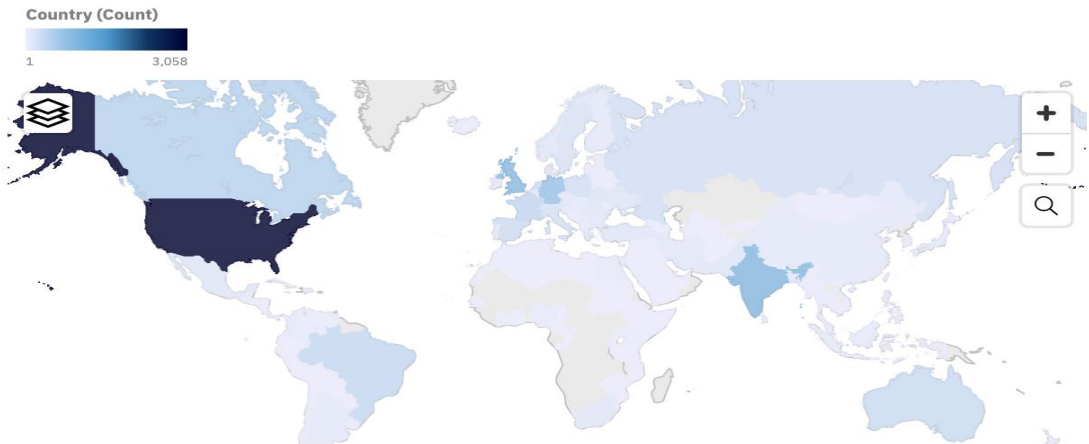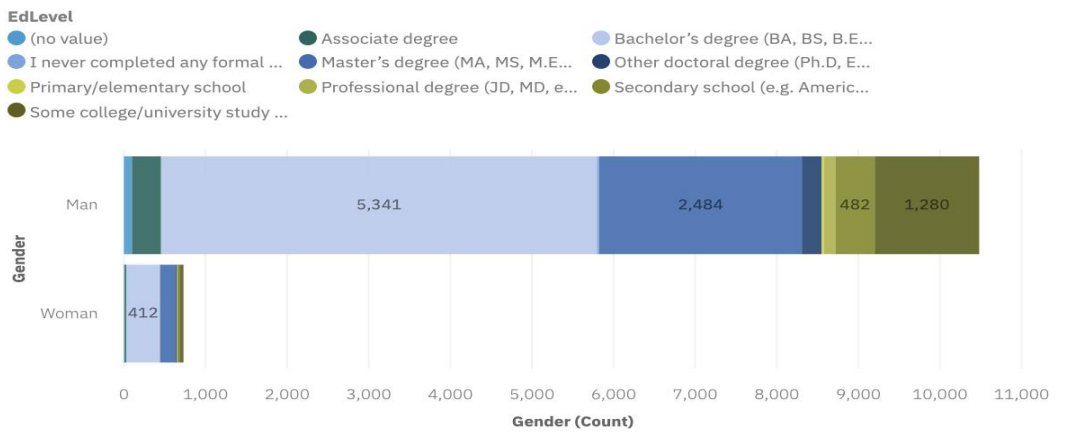● Woman ● Man

6.5%

93.5%

Respondent Count for Countries

Country (Count)

1   3,058

Respondent Count by Age

Respondent Count by Gender, classified by Formal Education Level

EdLevel
● (no value)   ● Associate degree   ● Bachelor's degree (BA, BS, B.E...
● I never completed any formal ...   ● Master's degree (MA, MS, M.E...   ● Other doctoral degree (Ph.D, E...
● Primary/elementary school   ● Professional degree (JD, MD, e... ● Secondary school (e.g. Americ...
● Some college/university study ...

DISCUSSION

- **<u>For future skills requirements and recommendations:</u>**

1. What are the Skill must have? Or DESIRE to be in the industry?

2. Top programming languages FutureDesire are:
   - JavaScripts, Python, HTML/CSS,SQL,TypeScript have become the new desire programming language that are gaining popularity in the IT industry

3. Top Database Skills:
   - PostgreSQL, MongoDB,Redis, MySQL, Elasticsearch are becoming more sought after as compared to current most popular databases that people worked with.

4. Popular IDEs:
   - React.js,Angular/Angular.js,Vue.js , jquery and ASP.net are the popular IDEs.

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OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScripts, Python, HTML/CSS,SQL,TypeScript are the new desire programming language

- PostgreSQL, MongoDB,Redis, MySQL, Elasticsearch are the new desired Database

- React.js,Angular/Angular.js,Vue.js , jquery and ASP.net are the popular IDEs

- The trends shows a drastic changes in Desire for nextyear programming languages, Database and IDEs

Implications

- Future Skills Requirements implements:

- Programming Language:
  - JavaScripts, Python, HTML/CSS,SQL,TypeScript

- Database:
  - PostgreSQL, MongoDB,Redis, MySQL, Elasticsearch

- IDEs:
  - React.js,Angular/Angular.js,Vue.js , jquery and ASP.net

- There are a few Databases that are also increasingly desire such like DynamoBd

- The numbers of Skills requirements to be able to be competitive in the IT industry has been changing in the vast development and redefine of current techonoly.

Additional FINDINGS & IMPLICATIONS

Findings

- The survey that is done where Men are more involve in the IT industry as depicts from the DashBoard 3 Pie chart where it shown about 93.7% of the industry are men.

- From the research it also shows that the respondent for the survey are roughly around age of 18-40

- From the survey also illustrated that most respondent has atleast an education level of a bachelors degree

Implications:

- There might be a relationship related between the next year desire skills and the education level of the respondent.

- Gender might plays a role in the ever changing industry of IT

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CONCLUSION

- The Open source data collected from StackFlow can be recreated and analyze to avoid any data biased.

- The technologies that worked with in current year has shown a shift in trend, in order to remain competitive changes in skills requirements are needed.

- The significant changes and desires are shown in programming languages and the databases.Hence the new requirements:

- Programming Language:
  - JavaScripts, Python, HTML/CSS,SQL,TypeScript

- Database:
  - PostgreSQL, MongoDB,Redis, MySQL, Elasticsearch

- IDEs:
 - React.js,Angular/Angular.js,Vue.js , jquery and ASP.net

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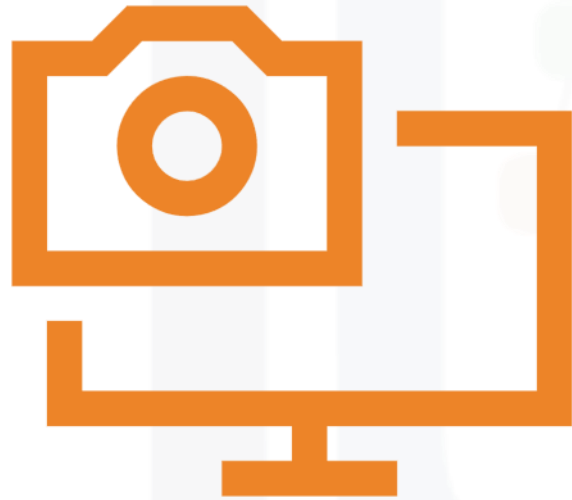
Language	Average Annual Salary
Python	$114,383
Java	$101,013
R	$92,037
Javascript	$110,981
Swift	$130,801
C++	$113,865
C#	$88,726
PHP	$84,727
SQL	$84,793
Go	$94,082

JOB POSTINGS

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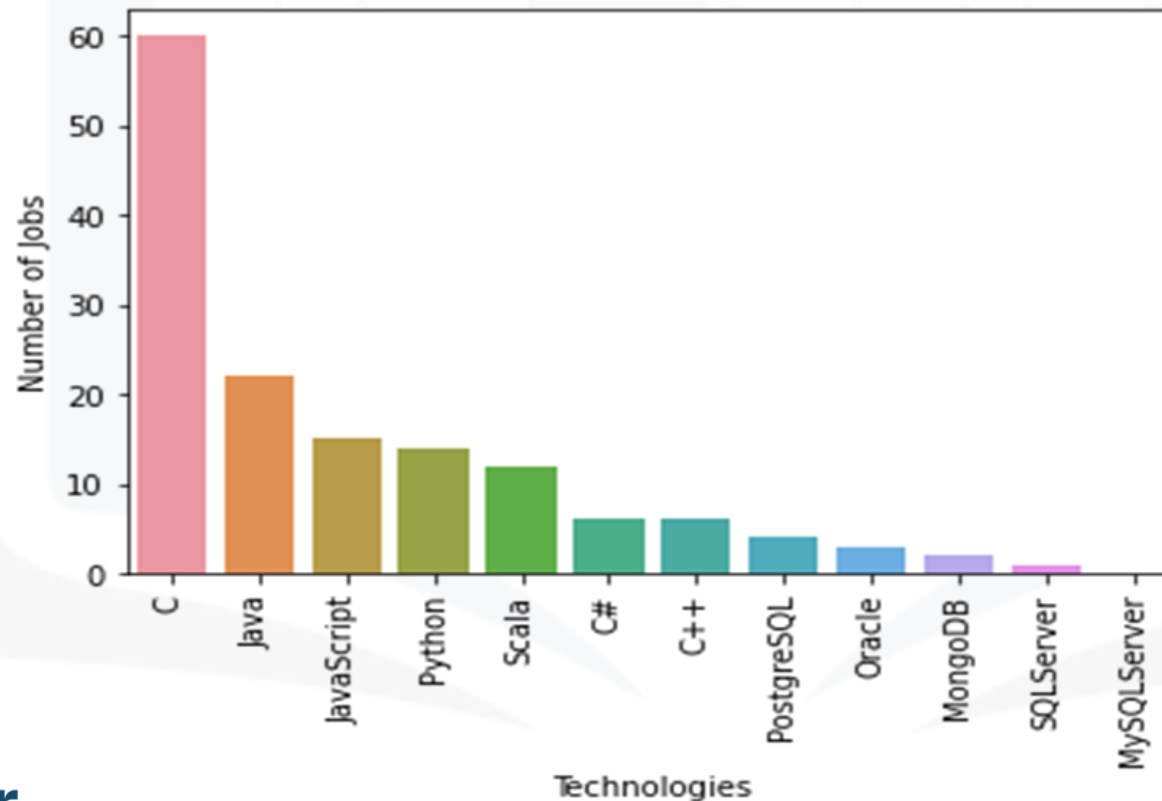
POPULAR LANGUAGES

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.