



Future Skills Requirements for IT Industry

Ammara Maryam

May 9, 2024

OUTLINE



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

EXECUTIVE SUMMARY



- ▶ The IT sector is competitive and ever-changing, necessitating the ongoing refinement of new programming skills and databases. This project is used for analyzing trends.
- ▶ This project is used to analyze the trend:
 - ❑ Current Technology Usage
 - ❑ Future Technology Trend
 - ❑ Demographics in IT industry
- ▶ The study aims to determine the top programming languages.
- ▶ Identifying popular database skills and integrated development environments.

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 at a worldwide IT and business consulting organization recognized for its competence in IT solutions and highly experienced IT experts. To stay up with evolving technology and remain competitive, your firm does frequent data analysis to determine future skill requirements.

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, PlatformWorked 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

RESULTS

The Results shown as follows are the analysis comparing the graphs between the current technology usage and Future technology usage.

Results as follows:

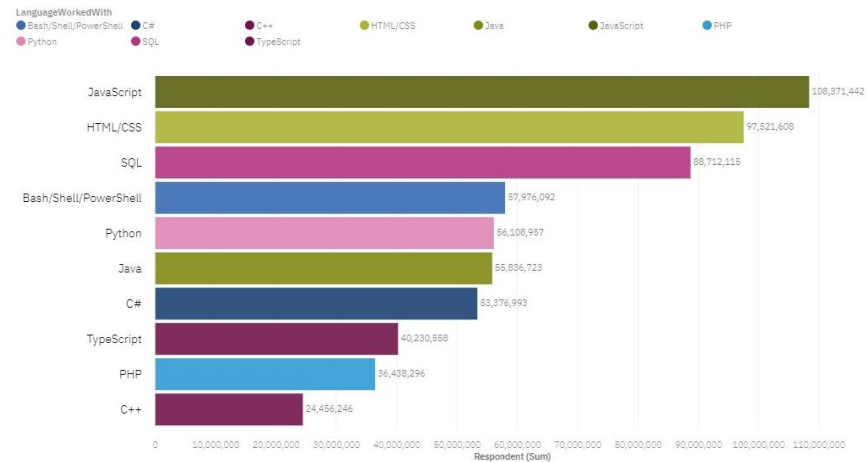
1. Programming Language trends
2. Database trends
3. IDEs trends

PROGRAMMING LANGUAGE TRENDS

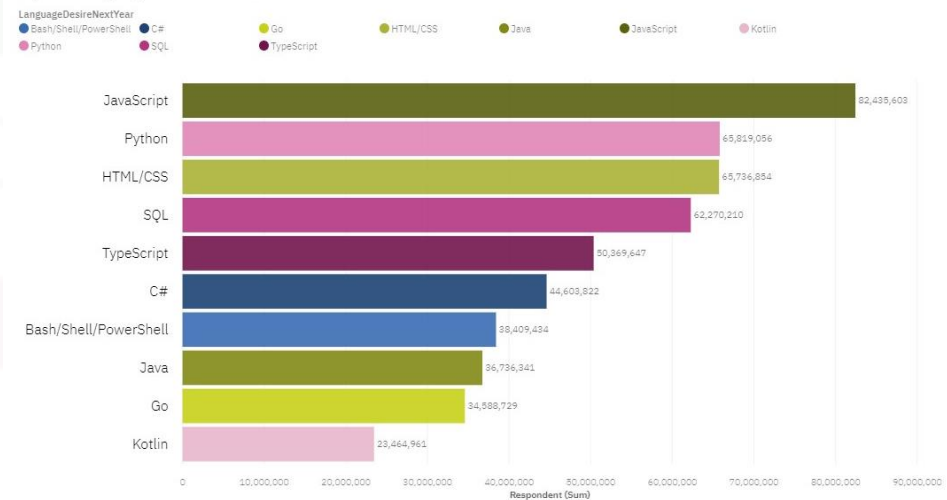
Current Year

Next Year

Top 10 LanguageWorkedWith



Top 10 LanguageDesireNextYear



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings:

- ▶ JavaScript is the most popular programming language today and in the future.
- ▶ Significantly Increasing desire for Python
- ▶ The trends of programming language has shifted
- ▶ Top 5 language are:
 - ❑ JavaScript
 - ❑ Python
 - ❑ HTML
 - ❑ SQL
 - ❑ TypeScript

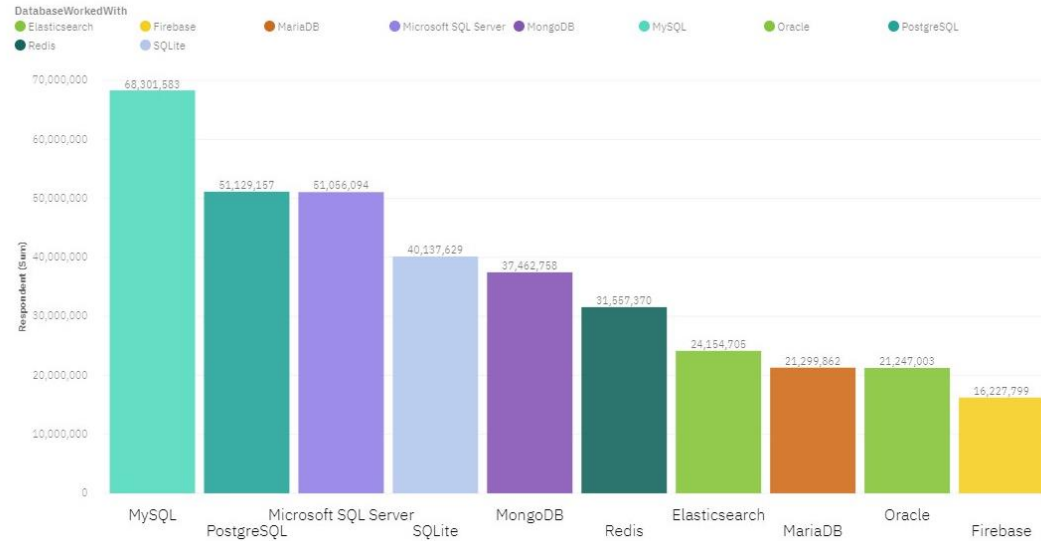
Implications:

- ▶ 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.

DATABASE TRENDS

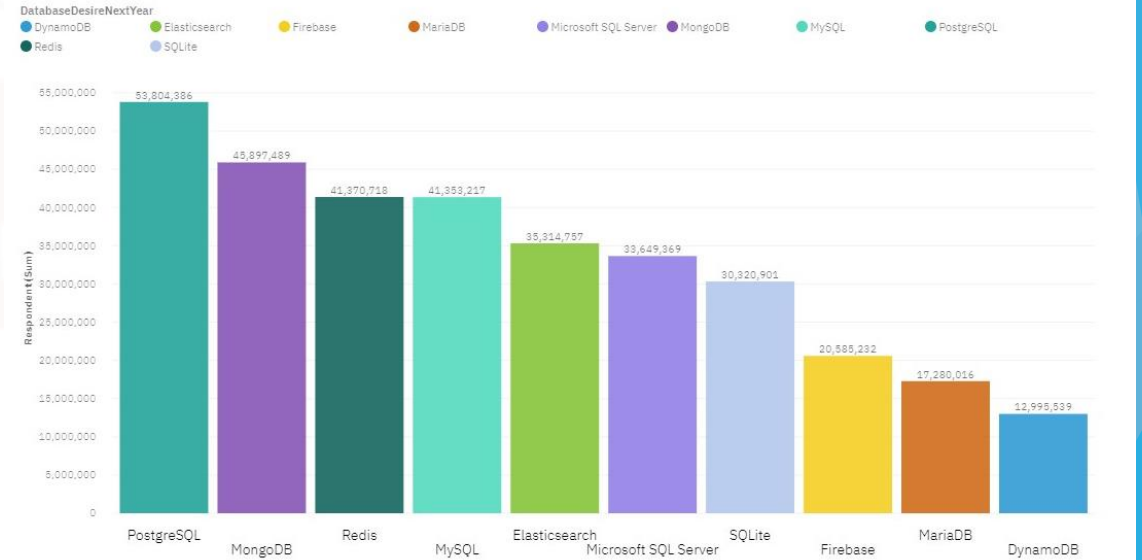
Current Year

Top 10 DatabaseWorkedWith



Next Year

Top 10 DatabaseDesireNextYear



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings:

- ▶ PostgreSQL, MongoDB, Redis have become the most desired Database.
- ▶ MongoDB, Redis, Elasticsearch are becoming increasingly popular for desired Databases roughly 10,000 increased in respondents.
- ▶ Oracle Database has become less popular and less desired
- ▶ Drastic increase in the desire database skills especially for MongoDB and DynamoDB

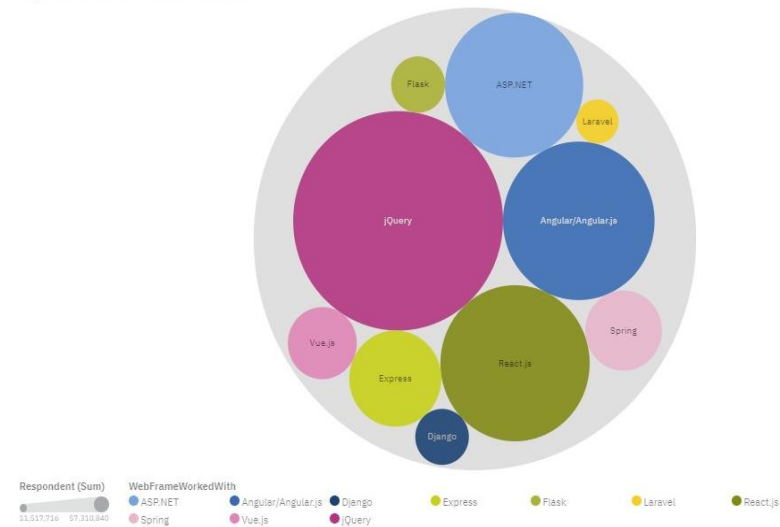
Implications:

- ▶ 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 DynamoDB more research may needed.

IDE TRENDS

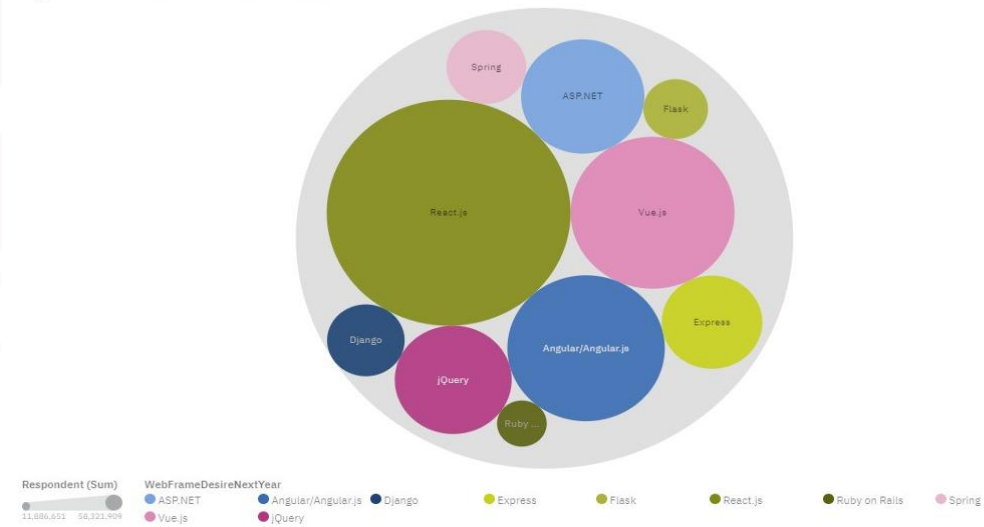
Current Year

Top 10 WebFrameWorkedWith



Next Year

Top 10 WebFrameDesireNextYear



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 Web Frame worked with as illustrated in the hierarchy bubble.

Implications:

- ▶ People are shifting to use a better web frame such as React.js or Vue.js
- ▶ jQuery might be lacking of some functionality as compare to web frame competitors
- ▶ jQuery can be omitted from the new requirements of new technological skills

DASHBOARD

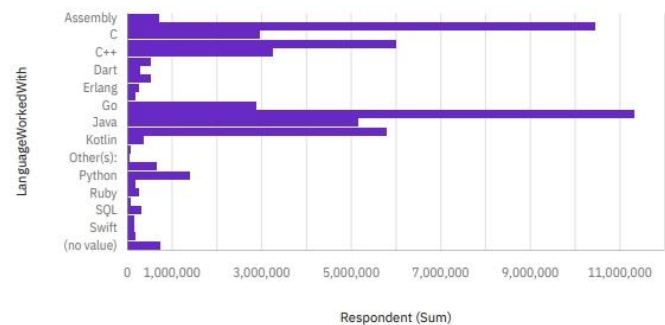


<https://github.com/Ammara17/Assignment>

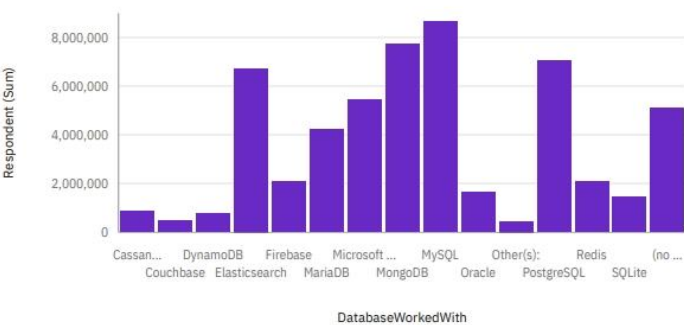
DASHBOARD TAB 1

Current Technology Usage

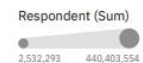
Top 10 LanguageWorkedWith



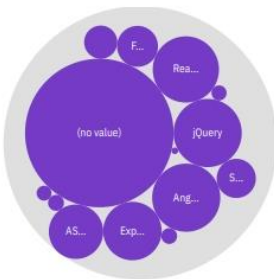
Top 10 DatabaseWorkedWith



PlatformWorkedWith



Top 10 WebFrameWorkedWith

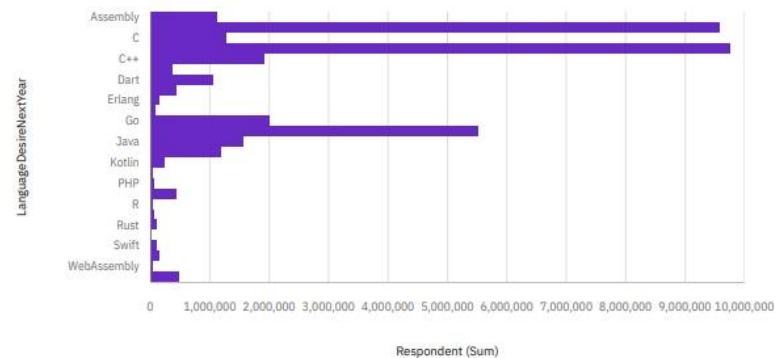


(no value)

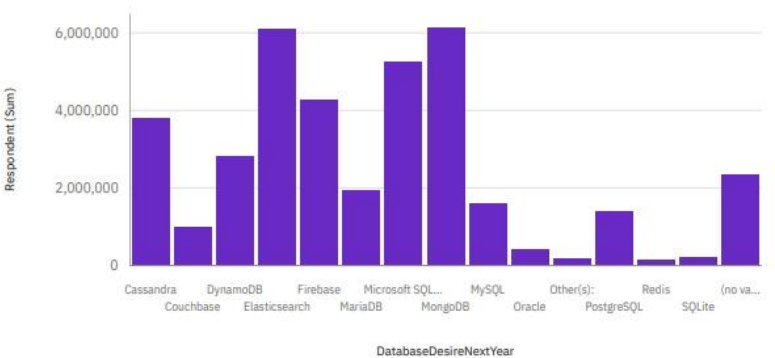
DASHBOARD TAB 2

Future Technology Trend

Top 10 LanguageDesireNextYear



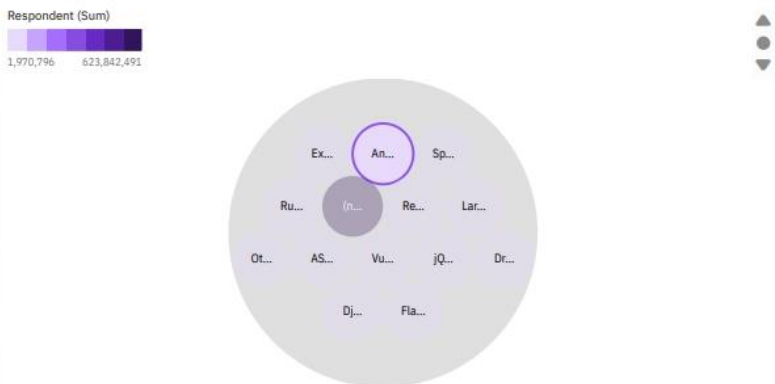
Top 10 DatabaseDesireNextYear



PlatformDesireNextYear



Top 10 WebFrameDesireNextYear

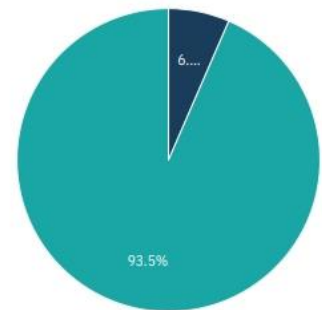


DASHBOARD TAB 3

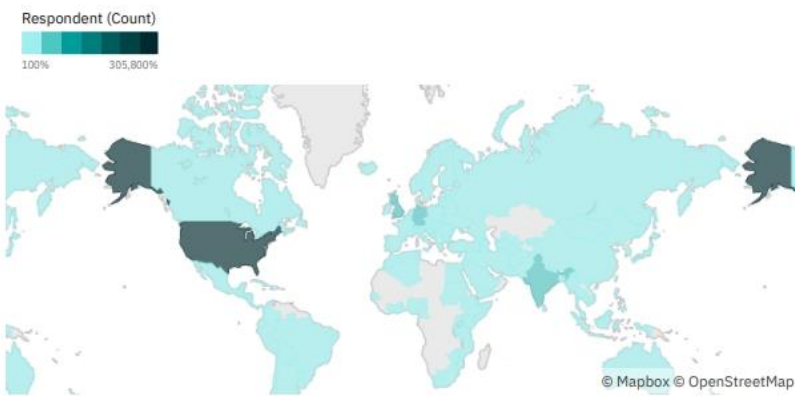
Demographics

Respondent classified by Gender

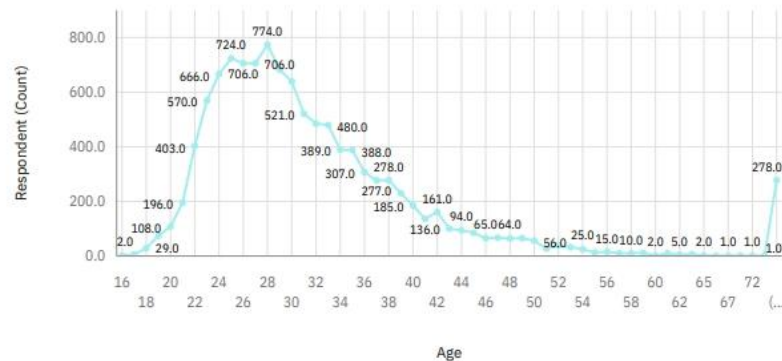
Gender
● Woman ● Man



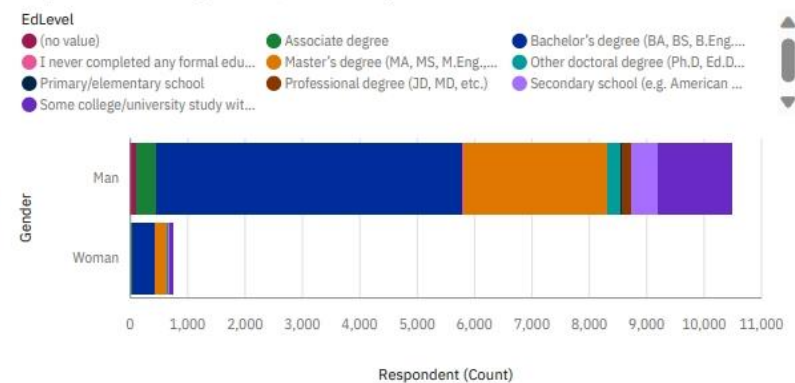
Respondent Count for Countries



Respondent by Age



Respondent Count by Gender, classified by Formal Education Level



DISCUSSION



- ▶ For future skills requirements and recommendations:
 1. What are the Skill must have? Or DESIRE to be in the industry?
 2. Top programming languages Future Desire are:
 - ▶ JavaScript's, 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.

OVERALL FINDINGS & IMPLICATIONS

Findings

- ▶ JavaScript's, 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 next year programming languages, Database and IDEs

Implications

- ▶ Future Skills Requirements implements:
- ▶ Programming Language:
 - ▶ JavaScript, 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 DynamoDB
- ▶ 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 technology.

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 at least 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

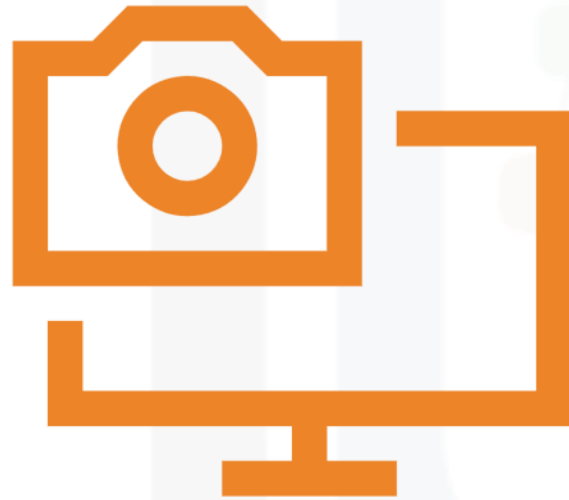
CONCLUSION



- ▶ The Open source data collected from Stack Flow 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:
 - ▶ JavaScript's, Python, HTML/CSS, SQL, TypeScript
- ▶ Database:
 - ▶ PostgreSQL, MongoDB, Redis, MySQL, Elasticsearch
- ▶ IDEs:
 - ▶ React.js, Angular/Angular.js,Vue.js , jQuery and ASP.net

APPENDIX

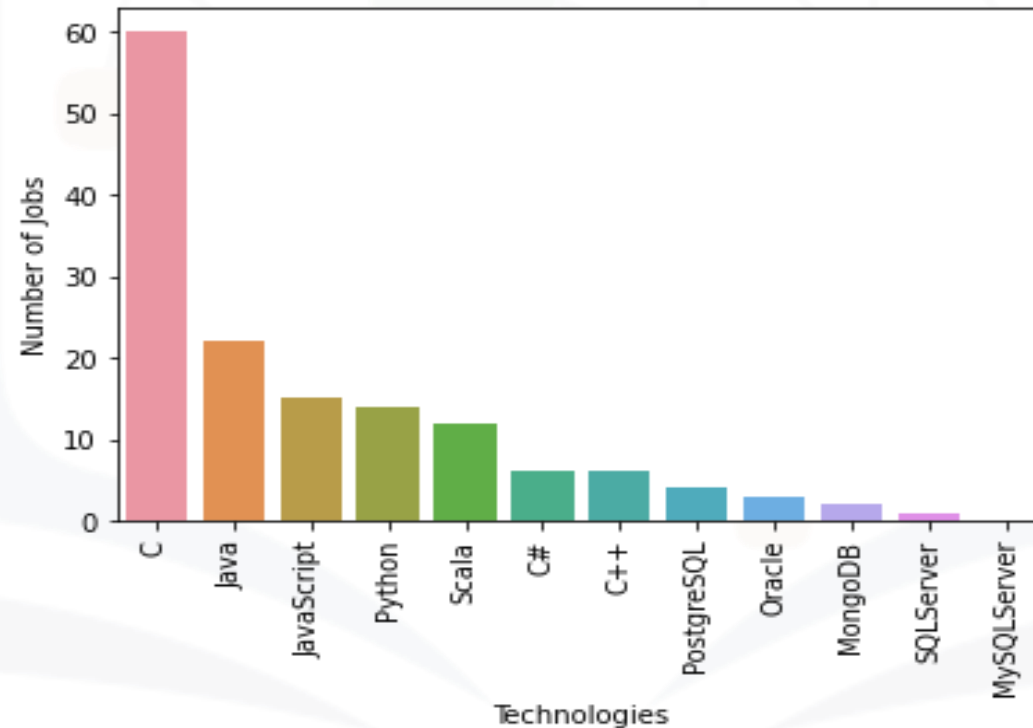
file named *popular-languages.csv*



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

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.



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.

