



PROGRAMMING TRENDS ANALYSIS

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EXECUTIVE SUMMARY



THE PROGRAMMING TRENDS ANALYSIS IS CONDUCTED IN ORDER TO FIND TRENDS AND PATTERNS ON PROGRAMMING TECHNOLOGIES.

THE ULTIMATE AIM IS THE FIRM TO DO THE BEST BUDGET ALLOCATION ON INVESTING AT MOST-WANTED TECHNOLOGIES AND TO FIND WHICH ONES ARE NOT DESIRED FOR FUTURE USE.

FINALLY OUR HR DEPARTMENT WILL BE ABLE TO UNDERSTAND WHAT SKILLS TO LOOK FOR IN FUTURE NEW OPENING JOBS AND TO RUN COURSES FOR EMPLOYEES INCLUDING THESE TECHNOLOGIES.

INTRODUCTION

HELLO EVERYONE, MY NAME IS VASILIS KOUKOREMPAS AND I BELONG AT DATA ANALYSTS DEPARTMENT. I AM RESPONSIBLE FOR CONDUCTING THE PROGRAMMING TRENDS ANALYSIS AND IM HAPPY TO SHARE WITH YOU THE INSIGHTS OF THIS ANALYSIS.

FIRSTLY THIS PRESENTATION IS RELATED WITH THE TRENDS OF PROGRAMMING TECHNOLOGIES, DEPICTING WHICH ONES ARE MOST POPULAR THIS YEAR AND WHICH ONES ARE GOING TO BE THE NEXT YEARS.

THIS WILL HELP OUR HR DEPARTMENT TO DECIDE WHICH SKILLS TO SEARCH FOR IN NEW ENTRIES BUT ALSO TO ORGANIZE COURSES WITH THESE TECHNOLOGIES.

THERE ARE FOUR DOMAINS ANALIZED:

- 1. Current vs Future Programming Languages**
- 2. Current vs Future Databases**
- 3. Current vs Future Platforms**
- 4. Current vs Future Webframes**
- 5. Demographics of Respondents**



METHODOLOGY



- **FIRSTLY I COLLECTED DATA FROM GITHUB JOBS API AND I SAVED IT ON AN EXCEL WORKBOOK FILE NAMED "GITHUB-JOB-POSTINGS.XLSX" FROM WHICH I MADE THE FIRST BAR-PLOT OF APPENDIX. THEN I WEB-SCRAPPED DATA FROM THIS 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) AND I SAVED IT ON A CSV FILE FROM WHICH I MADE MY SECOND APPENDIX BAR-PLOT.**
- **THE DATA SOURCE OF DASHBOARDS COMES FROM THE STACK OVERFLOW DEVELOPER SURVEY AT 2019 USING A SUBSET OF THE WHOLE DATASET.**
- **THE DASHBOARDS WERE MADE WITH COGNOS ANALYTICS.**
- **I CLEANED THE DATASET IN JUPYTER NOTEBOOK USING PYTHON MAINLY IN PANDAS DATAFRAME DEALING WITH DUPLICATES AND REPLACING NULL VALUES WITH THE AVERAGE OR THE FREQUENCY. THEN I NORMALIZED THE COLUMN 'YEARLY_INCOME' FOR BETTER REPRESENTATION OF DATA.**
- **AFTER I DEVELOPED EXPLORATORY ANALYSIS ON DATA VISUALIZING THE DISTRIBUTION AND DEALING WITH OUTLIERS.**
- **I ALSO VISUALIZED THE DATA INSIDE JUPYTER NOTEBOOK WITH MATPLOTLIB AND SEABORN MAKING A HISTOGRAM FOR DATA DISTRIBUTION, SCATTER PLOT FOR WATCHING RELATIONSHIPS AND BAR-LINE CHARTS FOR COMPARING DATA.**
- **LASTLY, I APPLIED STATISTICAL ANALYSIS FINDING PEARSON CORRELATION AND P-VALUES FOR ALL VALUES OF DATASET.**

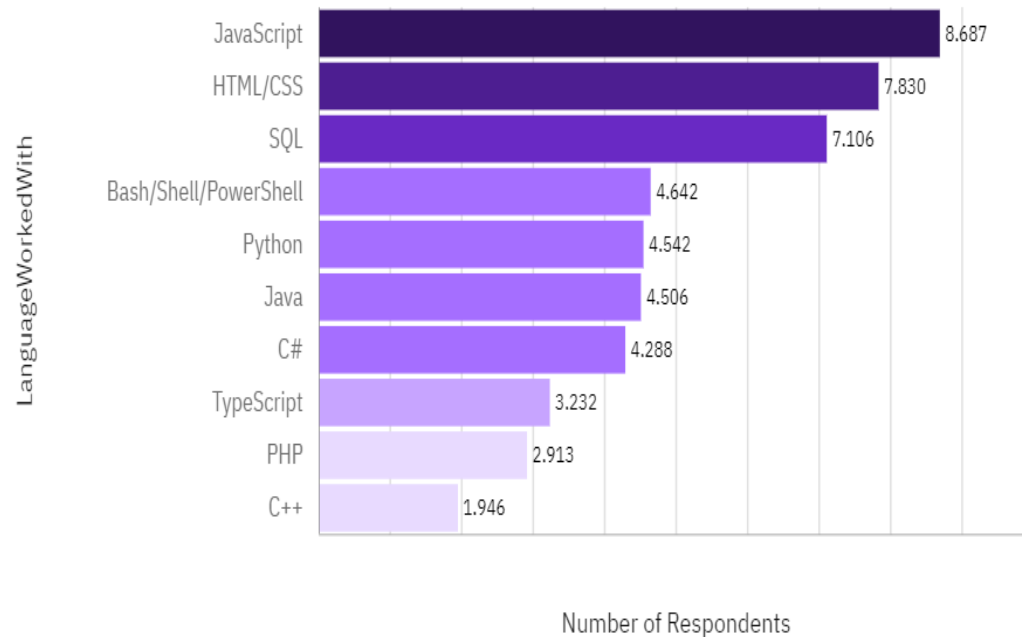
RESULTS



PROGRAMMING LANGUAGE TRENDS

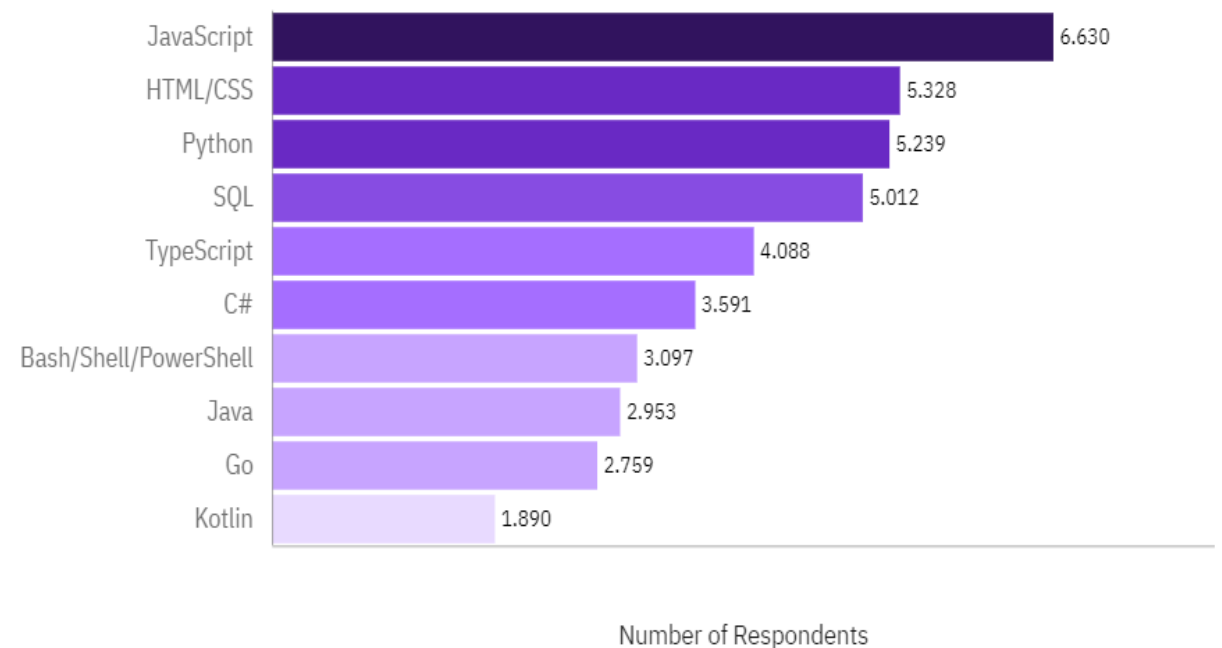
CURRENT YEAR

Top 10 Programminng Languages Worked With



NEXT YEAR

Top 10 Programming Languages willing to work next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

FINDINGS

- **THE TOP 3 MOST FAMILIAR PROGRAMMING LANGUAGES NEXT YEAR ARE JAVASCRIPT, HTML AND PYTHON.**
- **PYTHON SEEMS TO GROW RAPIDLY.**
- **THERE SEEMS TO BE A DECREASE FOR SQL, TYPESCRIPT AND BASH FOR THE NEXT YEAR.**

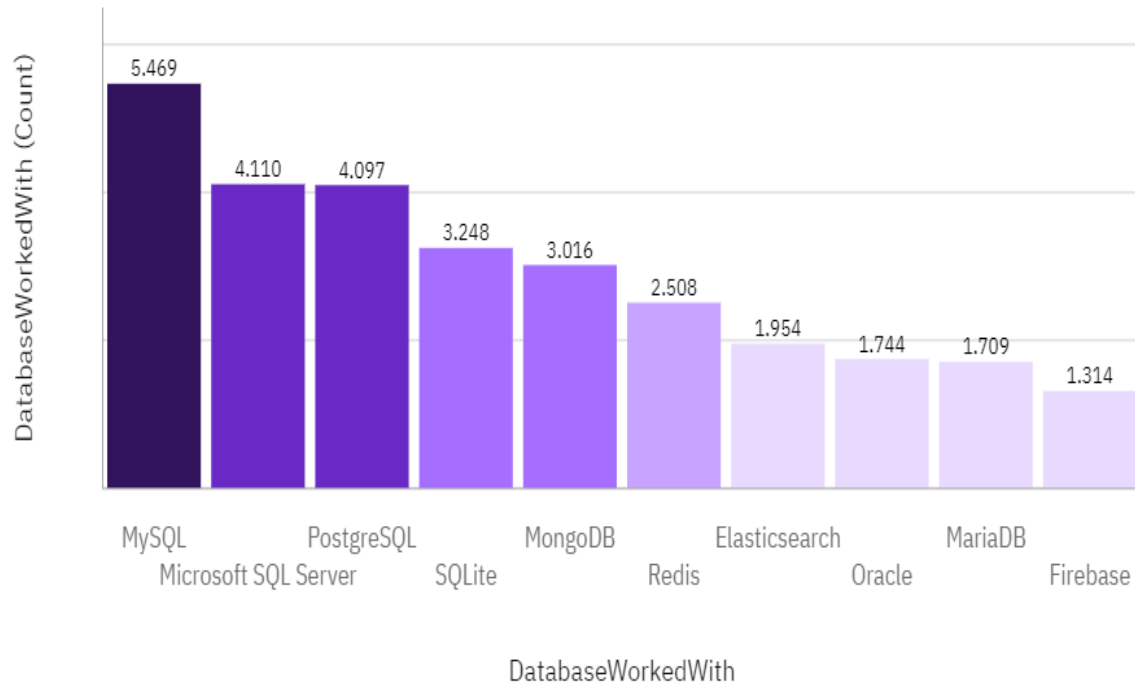
IMPLICATIONS

- **OUR COMPANY SHOULD IMMEDIATELY START INVESTING IN PYTHON AND JAVASCRIPT. HR DEP SHOULD START ORGANIZING COURSES WITH THESE PROGRAMMING LANGUAGES. ALSO IT SHOULD BE A PREREQUISITE FOR THE NEW ENTRIES KNOWING THE ABOVE LANGUAGES.**
- **SQL SEEMS TO LOSE GROUND BUT IT IS A VERY FAMILIAR LANGUAGE WHICH OUR COMPANY SHOULD ALSO TAKE INTO ACCOUNT.**
- **LASTLY FOR JAVA , GO AND COTLIN LANGUAGES OUR COMPANY SHOULD NOT TAKE INTO CONSIDERATION.**

DATABASE TRENDS

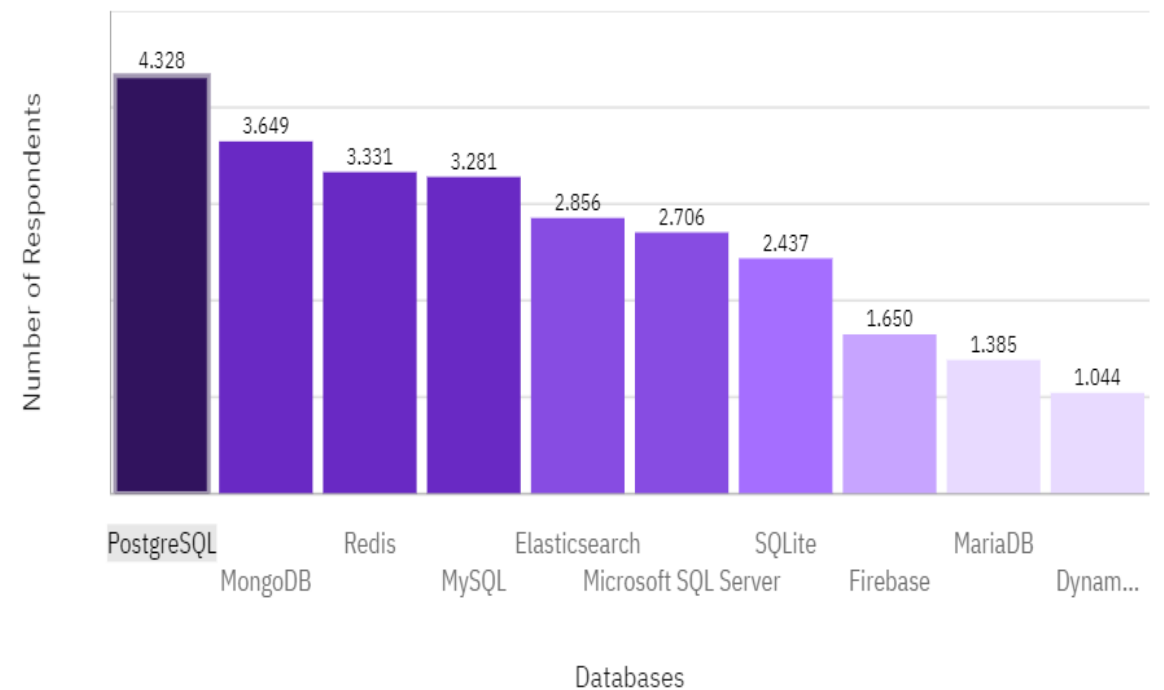
CURRENT YEAR

Top 10 Databases Worked With



NEXT YEAR

Top 10 Desired Next Year Databases



DATABASE TRENDS - FINDINGS & IMPLICATIONS

FINDINGS

- **REFERRING WITH DATABASES TRENDS WE SEE MANY FLUCTUATIONS ESPECIALLY AT THE TOP 3 PLACES.**
- **IT SEEMS THAT NEXT YEAR POSTGRESQL, MONGODB AND REDIS WILL CATCH THE TOP 3 POSITIONS.**
- **MYSQL SEEMS LOSING ALMOST 50% OF HIS SUPPORTERS GOING DOWN FROM 1ST TO 4TH POSITION.**
- **ORACLE IS GOING OUT OF TOP 10 DATABASES FOR THE NEXT YEAR.**

IMPLICATIONS

- **DATA ANALYSTS DEPARTMENT SHOULD START GETTING FAMILIAR WITH POSTGRESQL, MONGODB AND REDIS DATABASES.**
- **MAYBE THE KNOWLEDGE OF USING MYSQL SHOULD STOP BEING A PREREQUISITE FOR NEW ENTRIES.**
- **OUR COMPANY COULD STOP INVESTING AT ORACLE, MARIA DB AND FIREBASE DATABASES.**

DASHBOARD

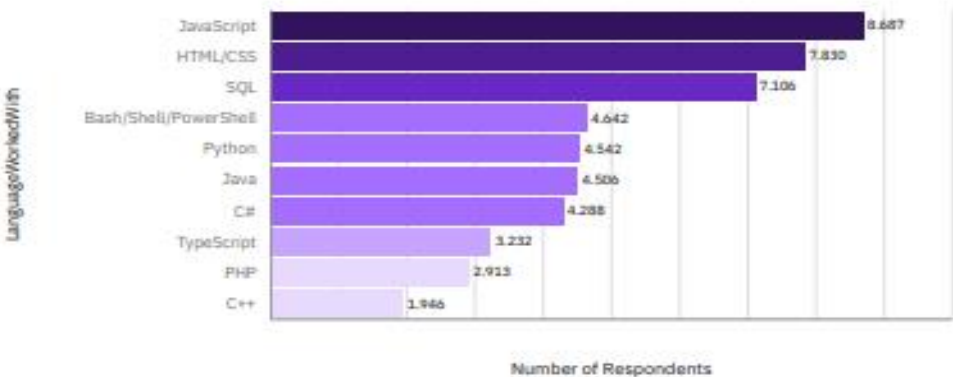


YOU CAN FIND THE DASHBOARD [HERE](#)

DASHBOARD TAB 1

Current Technology Usage

Top 10 Programming Languages Worked With

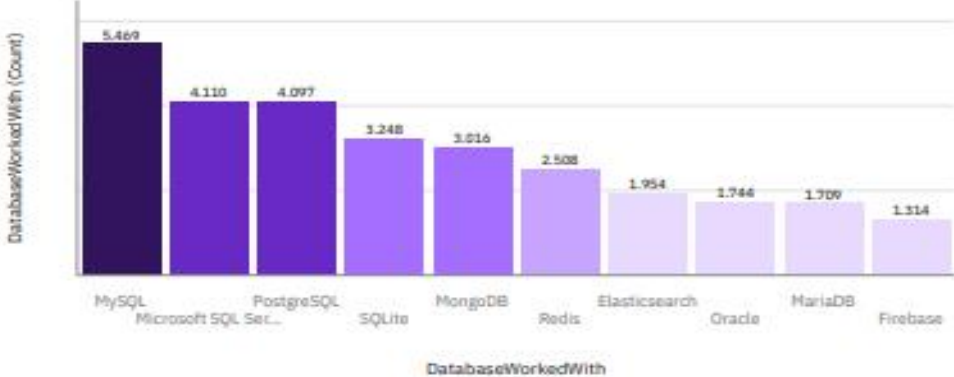


Most Used Platforms



1

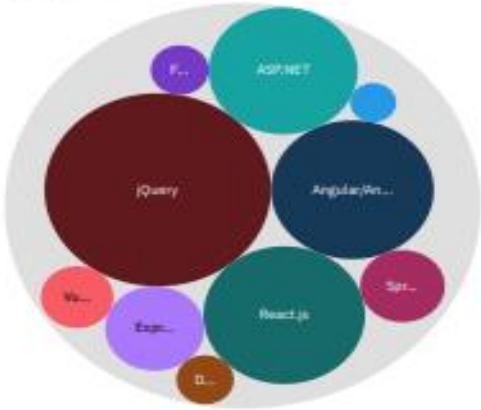
Top 10 Databases Worked With



2

3

Top 10 Webframes Worked With

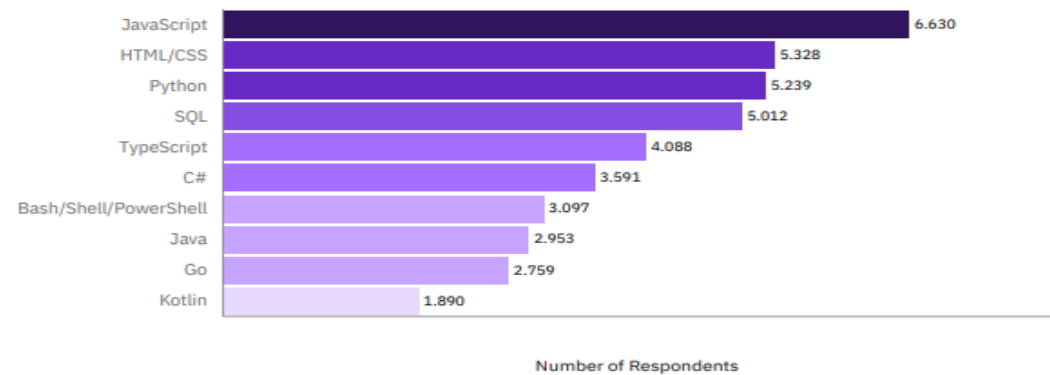


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DASHBOARD TAB 2

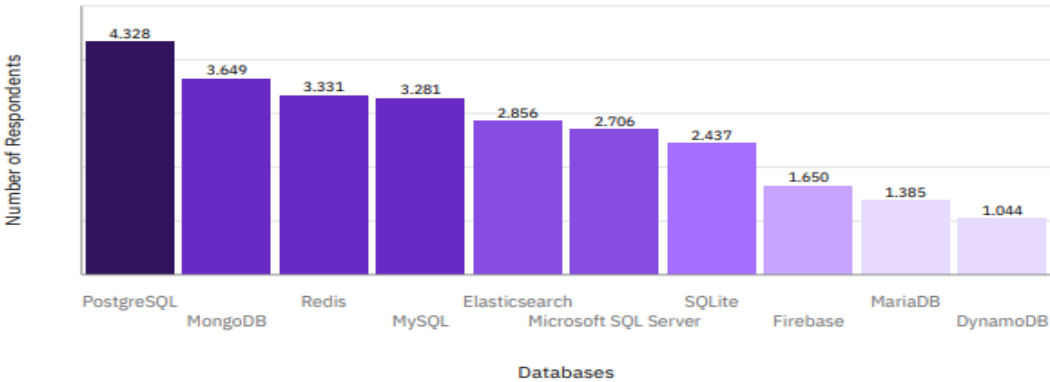
Future Technology Trend

Top 10 Programming Languages willing to work next Year



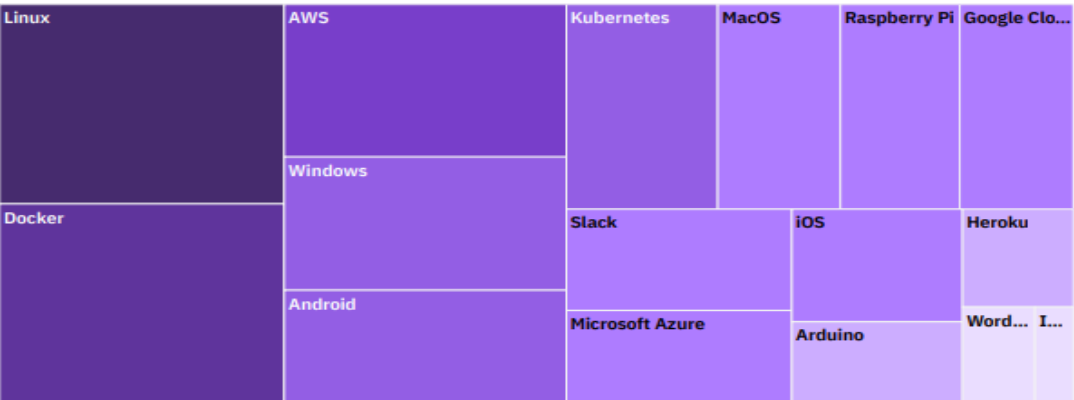
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Top 10 Desired Next Year Databases



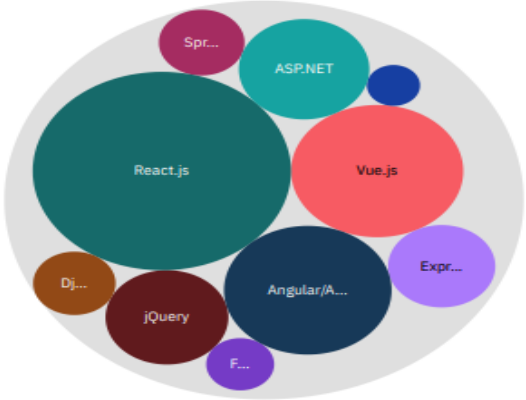
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Most Desired Next Year Platforms



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Top 10 Webframes Desired Next Year

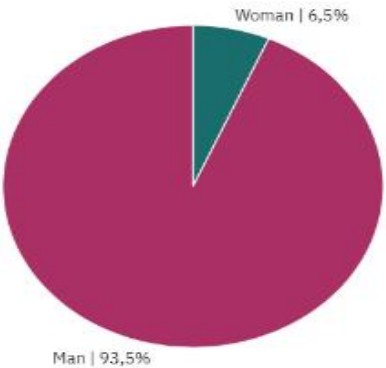


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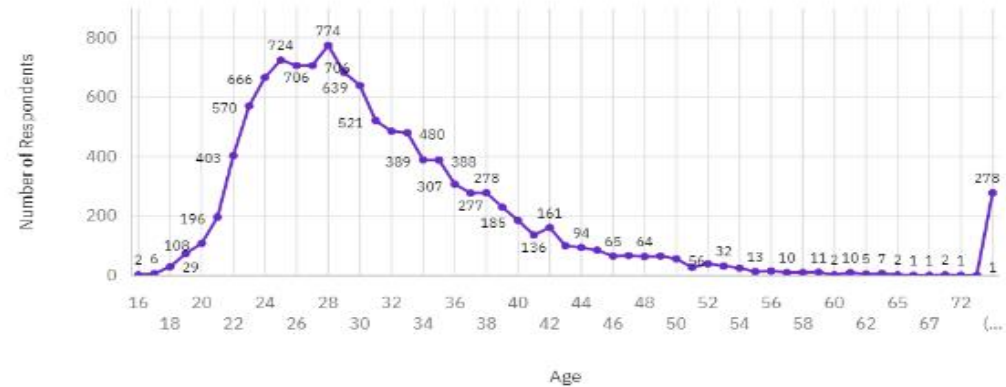
DASHBOARD TAB 3

Demographics

Percentage of Respondents by Gender



Number of Respondents by Age



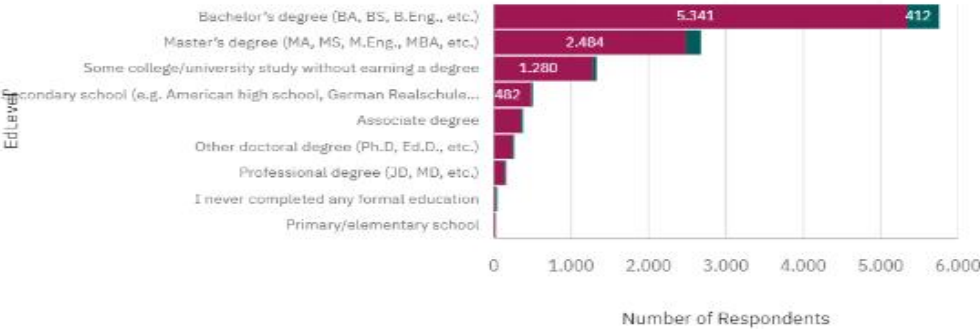
9 Density of Respondents per Country



10

11 Respondent by Education Level

Gender
● Man
● Woman



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DISCUSSION



OVERALL FINDINGS & IMPLICATIONS

FINDINGS

- **THE MOST POPULAR PROGRAMMING LANGUAGES ARE GOING TO BE JAVASCRIPT, HTML AND PYTHON WITH PYTHON BEING VERY RAPIDLY INCREASING.**
- **THE TOP 3 MOST DESIRED DATABASES ARE POSTGERSQL, MONGODB AND REDIS WITH MYSQL GOIND DOWN THREE PLACES UNTIL 4TH**
- **AT PLATFORMS WE DO NOT SEE ANY FLUCTUATION BETWEEN NOW AND NEXT YEAR SINCE LINUX, DOCKER, AWS, WINDOWS AND ADROID BEING THE MOST DESIRED PLATFORMS.**
- **WE ALSO SEE THAT THE THREE MOST DESIRED WEBFRAMES ARE REACT.JS, VUE.JS AND ANGULAR.JS.**
- **AT DEMOGRAPHICS DASHBOARD WE SEE THAT ALMOST 96% OF RESPINDENTS WERE MEN, THE MOST OF THEM WHERE FROM USA, INDIA ,GERMANY, AND ENGLAND. ALSO THE BIGGER PART OF THEM BELONG AT THE AGE GROUP 22-44 YEARS OLD.**

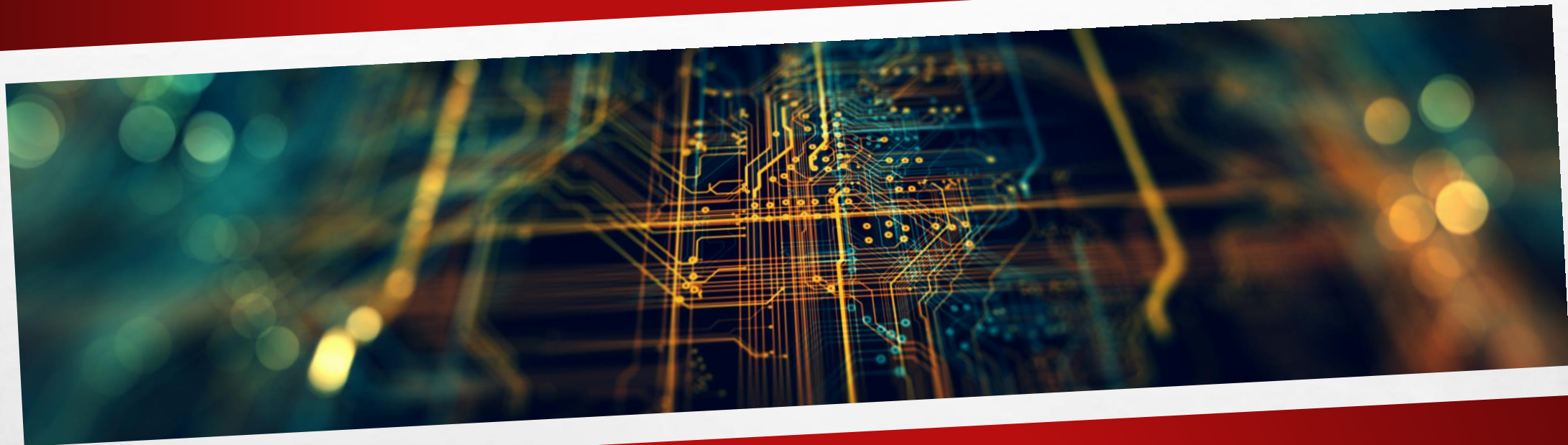
IMPLICATIONS

- **OUR COMPANY SHOULD FOCUS ON INVESTING AT THE TOP 3 PROGRAMMING LANGUAGES AND DATA BASES IN ORDER TO KEEP UP WITH INNOVATIVE AND FUTURE TECHNOLOGIES.**
- **ALSO IT SHOULD BE SPENT A BIG AMOUNT OF BUDGET AT PLATFORMS LIKE LINUX, DOCKER AND WINDOWS RATHER THAN OBSOLETE PLATFORMS.**
- **IT SEEMS THAT THE MOST RESPONDENTS WERE MEN, SO OUR COMPANY COULD ORGANIZE PROGRAMMING FESTIVALS AIMING TO BRING MORE WOMEN IN THE FIELD.**
- **LASTLY, IT SEEMS THAT USA, INDIA, GERMANY AND ENGLAND ARE THE COUNTRIES WITH THE MOST RESPONDENTS, SO OUR COMPANY COULD SEARCH FOR TALENTS IN THESE REGIONS.**

CONCLUSION



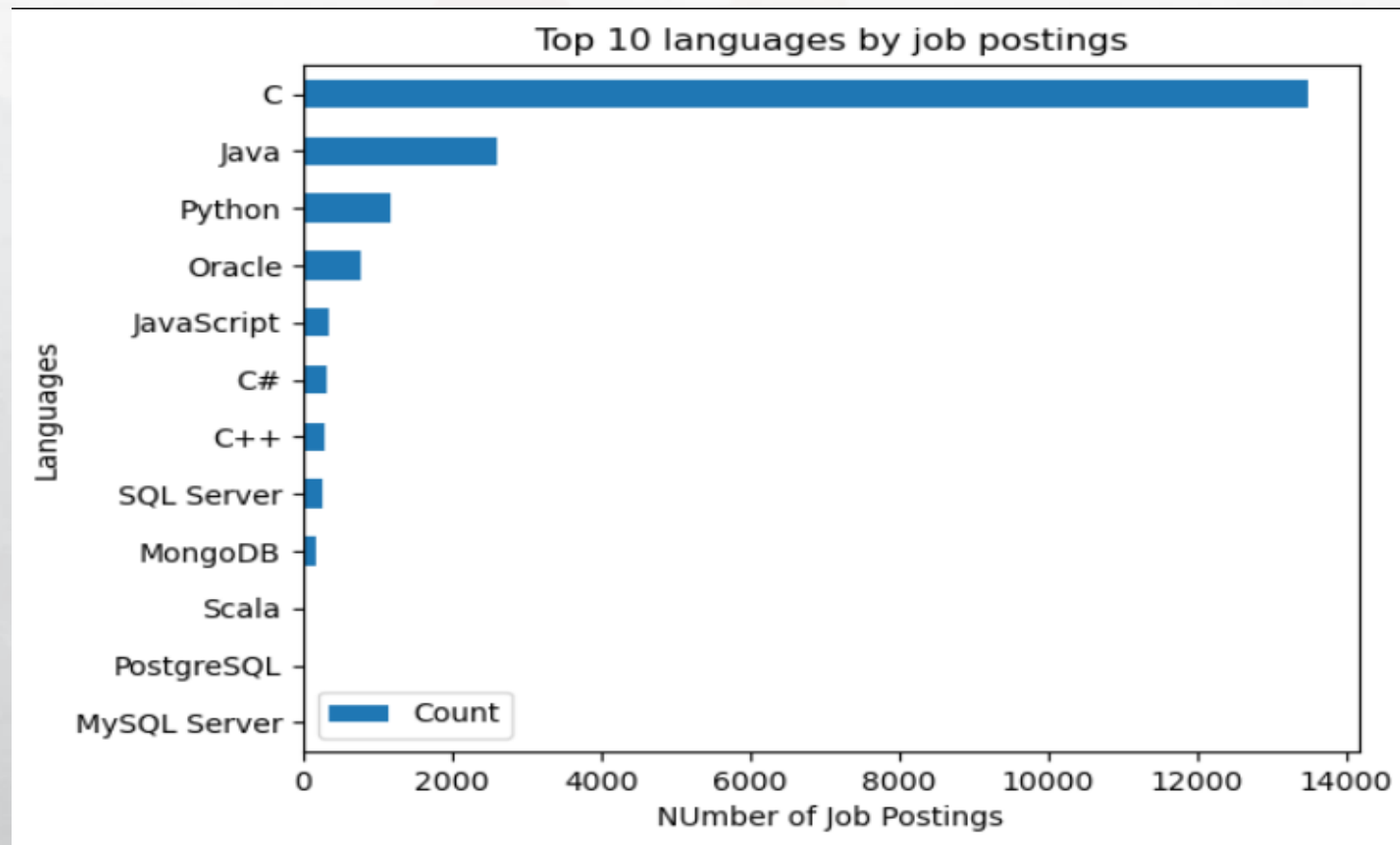
- **THERE SHOULD BE RIGHT BUDGET ALLOCATION AT INVESTING ON INNOVATIVE TECHNOLOGIES.**
- **THE EXISTING EMPLOYEES SHOULD BE EDUCATED WITH THE GROWING TECHNOLOGIES BY COURSES AND PROGRAMMING FESTS.**
- **HR DEPARTMENT SHOULD SEARCH FOR NEW EMPLOYEES WHO HAVE SKILLS RELATED TO THESE TECHNOLOGIES.**
- **OUR COMPANY SHOULD INVEST ON COUNTRIES LIKE USA, GERMANY, INDIA, AND ENGLAND WHERE THERE IS HIGHER DEMAND OF PROGRAMMERS.**



APPENDIX



JOB POSTINGS



POPULAR LANGUAGES

