



Stack Overflow Developer Survey 2019

Mckinley Petalver

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<https://www.linkedin.com/in/mckinleypetalver/>

OUTLINE



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EXECUTIVE SUMMARY



- Analysis of recent data collected from diverse demographic groups within the technological professional community sheds light on both current and future trends in **programming languages, databases, web frameworks, and platforms.**
- Current Trends:
 - Dominance of Python, HTML/CSS, and JavaScript in programming languages.
 - Prevailing use of mySQL, with Windows, Linux and Docker leading in platform choices.
- Future Aspirations:
 - Growing interest in Kotlin and Go for programming languages.
 - Emerging curiosity in PostgreSQL, MongoDB and Redis for databases and React.js for web frameworks.

INTRODUCTION



- Provide actionable insights into developer skills, preferences, and aspirations.
- Inform strategic decision-making for talent acquisition, training, technology adoption, and product development.
 - Explore current data trends using visualizations
 - Uncover patterns for future trends
- Spotlight on respondent demographics for a nuanced perspective.
 - Age
 - Gender
 - Country
 - Education Level

METHODOLOGY



- Data Collection
 - Web scraping
 - APIs
 - Request library
- Data Wrangling
 - Accurate
 - Complete
 - Reliable
 - Timeliness
 - Relevance
- Exploratory Data Analysis
 - Data distribution
 - Outliers
 - Correlations
- Data Visualization
 - Graphs

```
import pandas as pd
import requests as r
dataset_url = "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m1_survey_data.csv"
df = pd.read_csv(dataset_url)

# your code goes here
print(df.shape)
```

Python

Python

(11552, 85)

```
df.head()
```

Python

	Respondent	MainBranch	Hobbyist	OpenSourcer	OpenSource	Employment	Country	Student	EdLevel	UndergradMajor	...	WelcomeChange	SONewContent	Age	Gender	Trans
0	4	I am a developer by profession	No	Never	The quality of OSS and closed source software ...	Employed full-time	United States	No	Bachelor's degree (BA, BS, B.Eng., etc.)	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	22.0	Man	No
1	9	I am a developer by profession	Yes	Once a month or more often	The quality of OSS and closed source software ...	Employed full-time	New Zealand	No	Some college/university study without earning ...	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	NaN	23.0	Man	No
2	13	I am a developer by profession	Yes	Less than once a month but more than once per ...	OSS is, on average, of HIGHER quality than pro...	Employed full-time	United States	No	Master's degree (MA, MS, M.Eng., MBA, etc.)	Computer science, computer engineering, or sof...	...	Somewhat more welcome now than last year	Tech articles written by other developers;Cour...	28.0	Man	No
3	16	I am a developer by profession	Yes	Never	The quality of OSS and closed source software ...	Employed full-time	United Kingdom	No	Master's degree (MA, MS, M.Eng., MBA, etc.)	NaN	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	26.0	Man	No
4	17	I am a developer by profession	Yes	Less than once a month but more than once per ...	The quality of OSS and closed source software ...	Employed full-time	Australia	No	Bachelor's degree (BA, BS, B.Eng., etc.)	Computer science, computer engineering, or sof...	...	Just as welcome now as I felt last year	Tech articles written by other developers;Indu...	29.0	Man	No

5 rows × 85 columns

DUPLICATES

```
# your code goes here
print(df.duplicated().any())
print(len(df[df.duplicated()]))
```

Python

```
True
154
```

```
# your code goes here
df.drop_duplicates(inplace=True)
```

Python

IMPUTATION

```
# your code goes here
print(df['WorkLoc'].value_counts())
```

Python

```
Office                6806
Home                  3589
Other place, such as a coworking space or cafe    971
Name: WorkLoc, dtype: int64
```

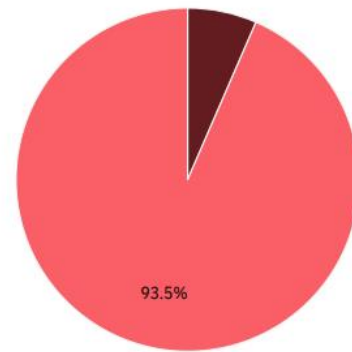
```
# your code goes here
df['WorkLoc'] = df['WorkLoc'].fillna('Office')
```

Python

Demographics

Respondent by Gender

Gender
● Woman ● Man

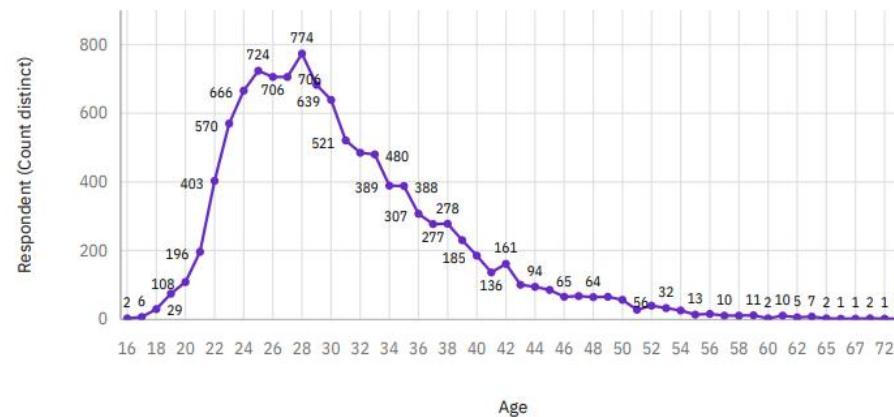


Respondent for Country regions

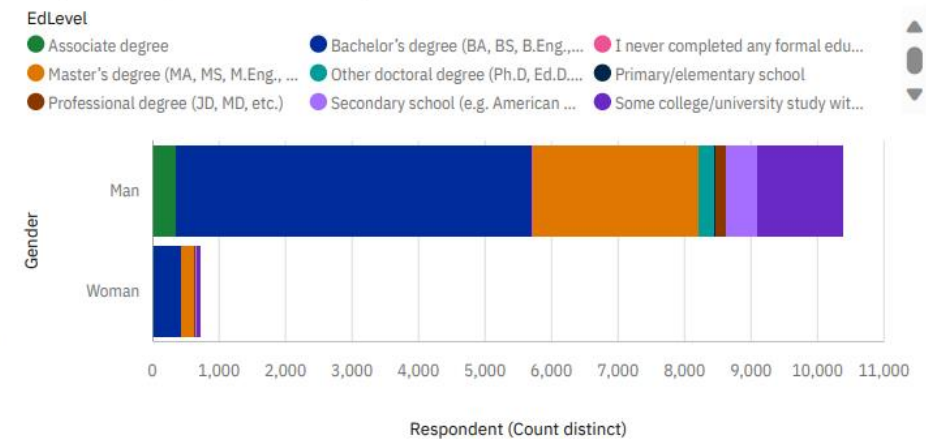
Respondent (Count)
1 3,058



Respondent by Age



Respondent by Gender colored by EdLevel



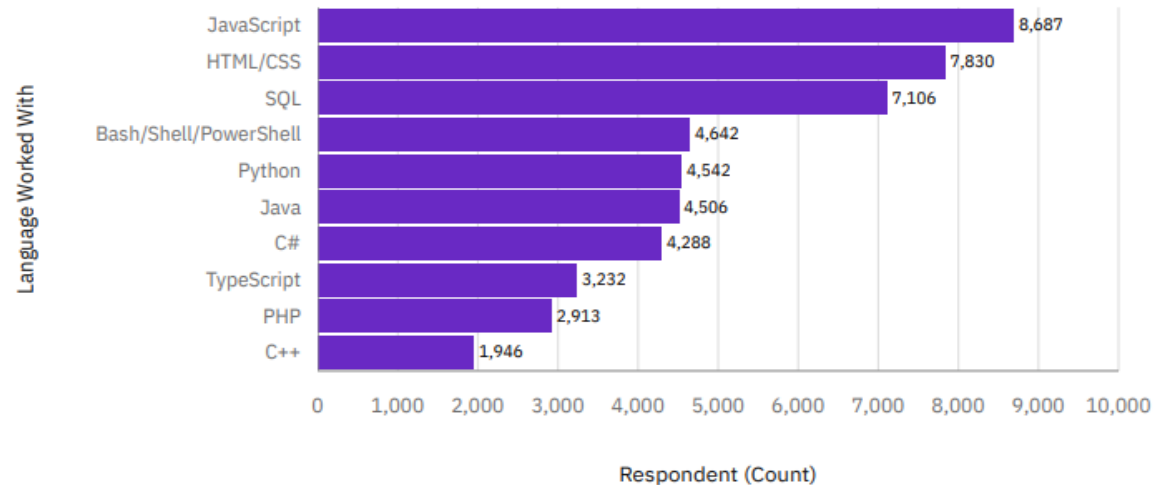
RESULTS



PROGRAMMING LANGUAGE TRENDS

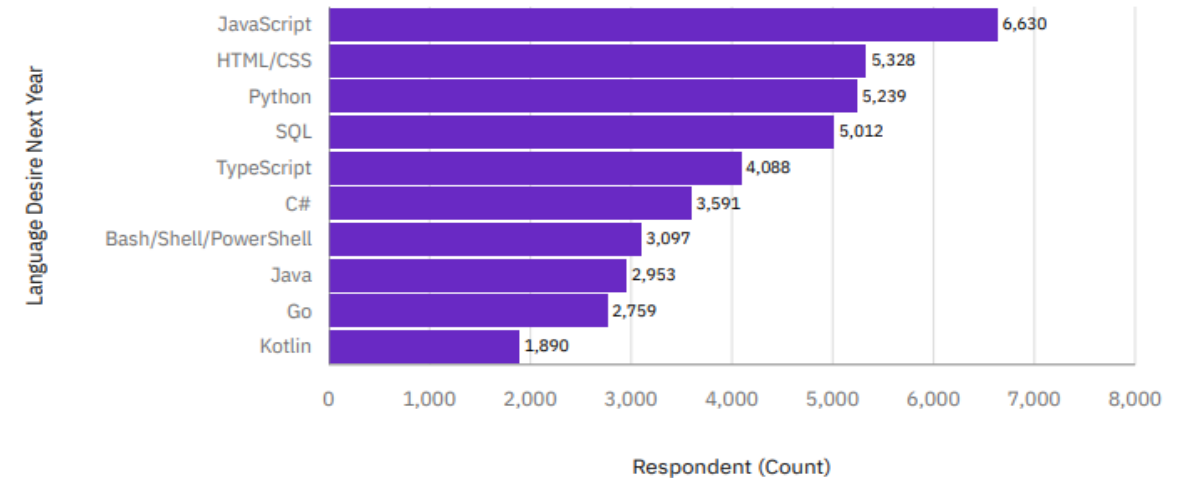
Current Year

Top 10 Programming Language Experience



Next Year

Top 10 Desired Programming Languages



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

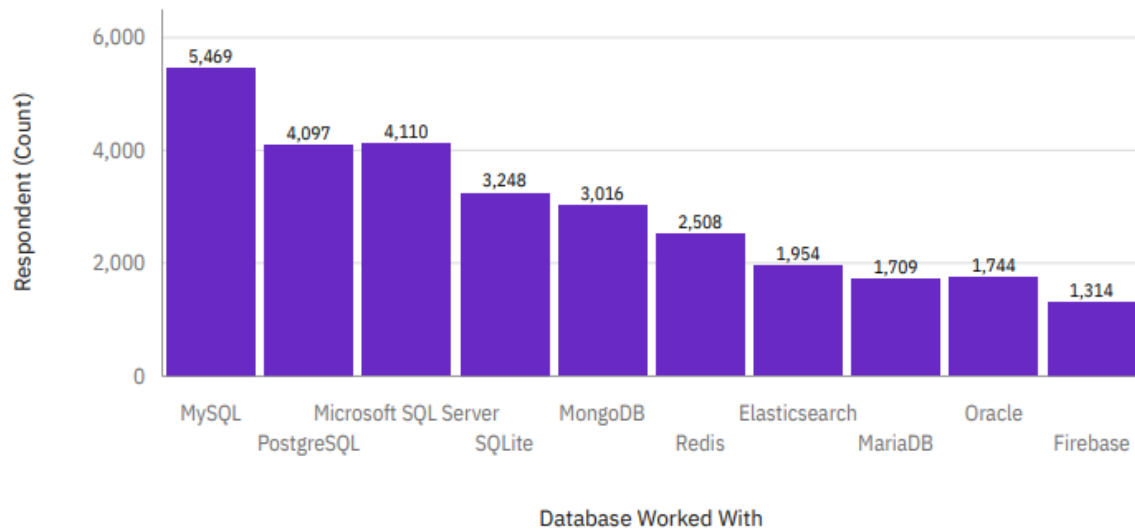
- JavaScript and HTML/CSS maintain their top positions, albeit experiencing a slight decline.
- Decline in Java and PHP.
- Uprising Kotlin and Go languages

Implications

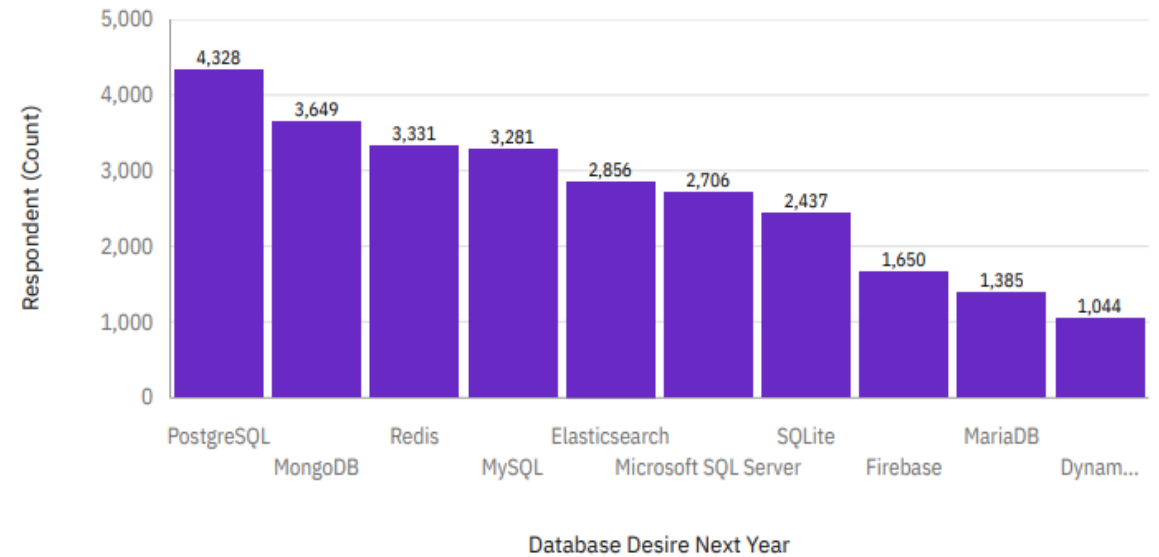
- Programmers shifting to newer languages.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Decline in mySQL
- Huge rise in PostgreSQL and MongoDB
- Slight rise in Redis

Implications

- Databases trend shift.
- Establishment of PostgreSQL and MongoDB in the market.

DASHBOARD



<https://drive.google.com/file/d/1zMRfTnJHQ3IcZ7Eh2bQGuUkyWBNKId7L/view?usp=sharing>

DISCUSSION



OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript and HTML/CSS persist at the forefront but show a slight decline.
- MySQL usage sees a decline.
- Kotlin, Go and Redis are on the rise.

Implications

- Programmers are adapting to newer languages.
- Organizations may need to consider the evolving landscape for skill requirements.
- Significant shifts in database preferences call for industry adaptation.

CONCLUSION



- **Dynamic Industry Trends:** The findings highlight the industry's adaptability to emerging technologies in both programming languages and databases, creating a dynamic and ever-changing landscape.
- **Necessity of Adaptation:** Professionals and organizations are urged to adapt to evolving trends by embracing newer languages and databases. This adaptation is crucial for maintaining relevance and competitiveness in the continuously evolving tech ecosystem.
- **Strategic Insights:** The identified trends offer valuable insights for strategic decision-making. Individuals and businesses can leverage these insights to align their skills and infrastructure with both current and future demands of the tech industry.

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Thank You!

Mckinley Petalver