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IBM Developer

SKILLS NETWORK

EXECUTIVE SUMMARY

This document shows the results of the different activities carried out in the laboratories as part of the final project of the IBM professional certificate in data analysis. As a data analyst I have been tasked with collecting data from various sources and identifying trends for this year's report on emerging skills.

- The first task was to compile the main most in-demand programming skills from various sources, including

- Once the data was collected, a complete analysis was performed to identify insights and trends that may include the following:

✓ What are the most popular programming languages?

✓ What are the most in-demand database knowledge?

✓ What are the most popular IDEs?

- Finally, visualizations were carried out to show the most relevant information and a dashboard was created with the results.

INTRODUCTION

A global IT and business consulting services company known for its expertise in IT solutions and its 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 skills needs.

METHODOLOGY

To reach the final results, the following steps were carried out:

1. Data collection by Webscraping

2. Data Cleaning and Transformation with Numpy and pandas

3. Exploratory analysis

4. Charts for data visualization with matplotlib and searborn

5. Results Dashboard in Looker Studio
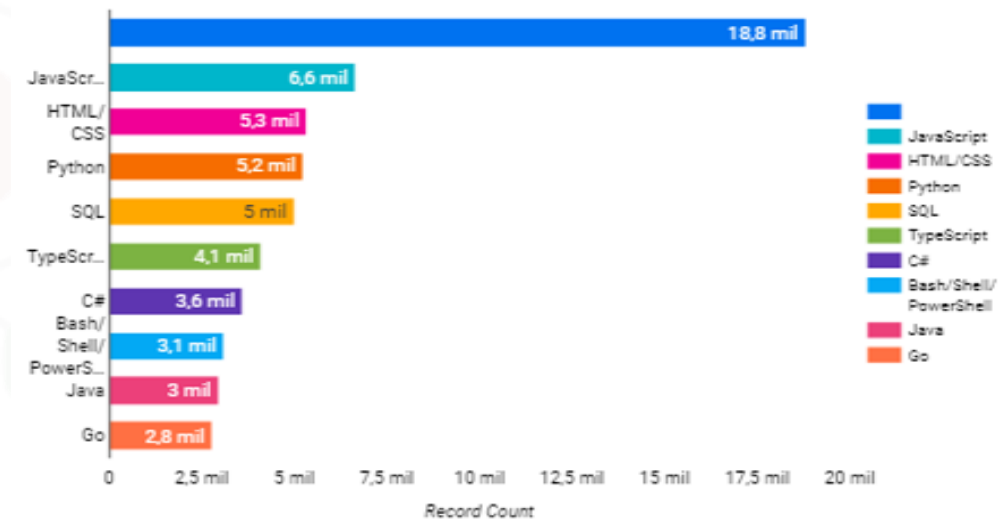
PROGRAMMING LANGUAGE TRENDS

Current Year

The Top 10 best programming languages.
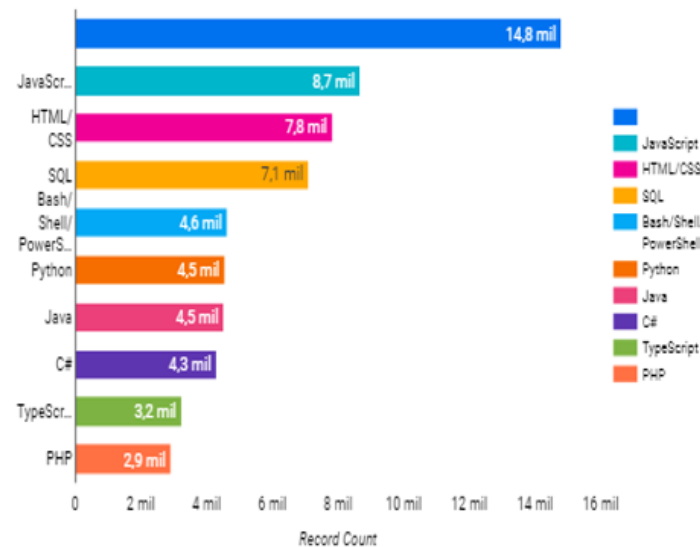
Bar chart of top 10 programming languages for the current year.

Next Year

Top 10 Language Desire Next Year

Bar chart of top 10 programming languages for the next year.

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

The graphs present current and future trends in the most popular and desired programming languages, allowing the following conclusions and implications to be made:

1. Javascript dominates the current and future landscape:
• **Conclusion:** Javascript is the most popular programming language in the current year (14.8 million registrations) and remains the most desired for the next year (18.8 million). This highlights its importance in the industry, both in web development and cross-platform applications.
• **Implication**: Developers looking to stay competitive must learn and master Javascript as its relevance shows no signs of diminishing.

2. Growth in demand for Python:
• **Conclusion**: Although in the current year Python occupies an intermediate place (4.5 million records), the projected demand for next year shows significant growth, ranking as the third most desired language (5.2 million).
• **Implication**: The growing adoption of Python in areas such as data science, artificial intelligence, and automation will drive its popularity, indicating that specializing in this language will be advantageous in the coming years.

3. Decrease in PHP and Java:
• **Conclusion**: PHP and Java rank low on both charts, with significantly less demand compared to other languages. Java shows a slight drop in its current and future popularity, while PHP already has low adoption.
• **Implication**: Although still useful in certain niches, the relevance of these languages is declining, which could indicate lower job demand in the future. Developers who focus on PHP or Java might consider learning more in-demand languages.

4. HTML/CSS, SQL and Bash/Shell are still essential:
• **Conclusion**: HTML/CSS, SQL and Bash/Shell maintain a constant presence in both years. These languages and tools are essential for web development, database management and systems administration.
• **Implication**: These languages will continue to be crucial for software developers and system administrators. Having a solid knowledge of them provides a versatile foundation in developing and managing technology projects.
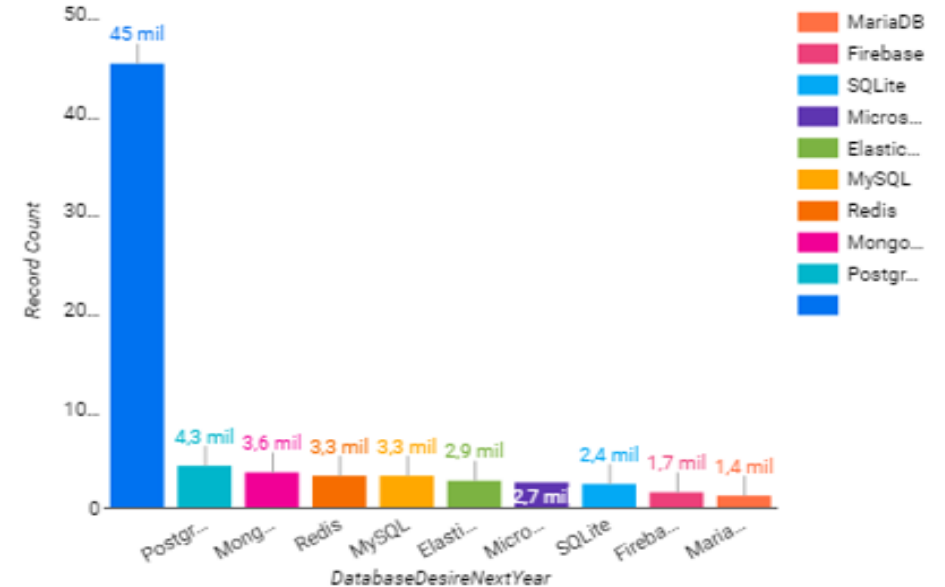
DATABASE TRENDS

Current Year

The Top 10 best databases
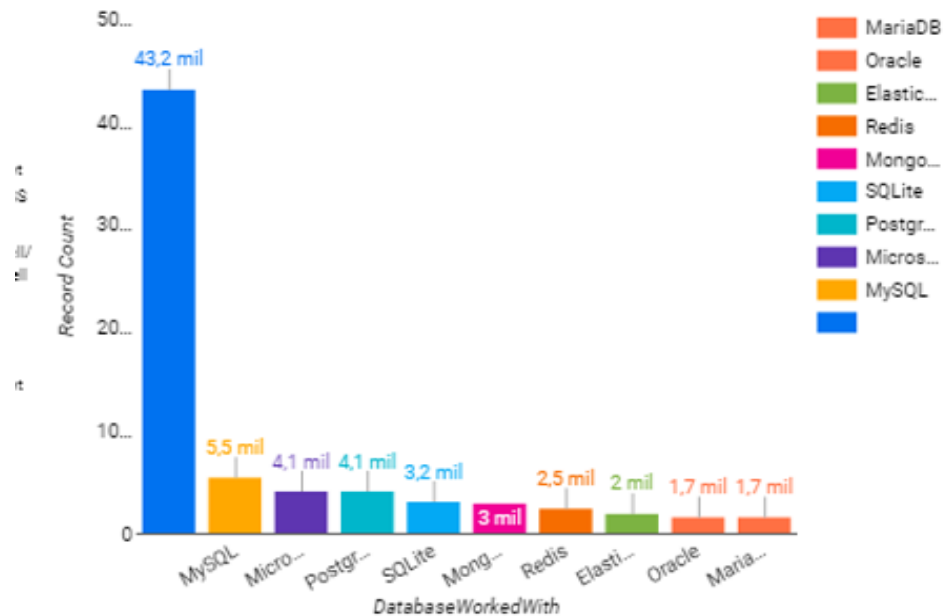
Bar chart of top 10 databases for the current year.

Next Year

Top 10 Database Desire Next Year

Bar chart of top 10 databases for the next year goes here.

DATABASE TRENDS - FINDINGS & IMPLICATIONS

These graphs show the trends of the most used and desired databases, both in the current year and those projected for the next year. From these data, the following conclusions and implications can be drawn:

1. Transition from MySQL to PostgreSQL:

• **Conclusion**: MySQL is the most popular database in the current year with 43.2 million records, but PostgreSQL is the most desired database for the next year with 45 million records. This shows a transition in interest towards PostgreSQL.

• **Implication**: PostgreSQL is gaining ground as a more desirable option due to its advanced features, robustness and the flexibility it offers, especially for large projects and scalable systems. Developers and database administrators should consider learning or improving their PostgreSQL skills to align with this emerging trend.

2. Reduction in the use of MySQL:

• **Conclusion**: Although MySQL is currently dominant, the demand for this database decreases significantly in next year's projections (3.3 million), being surpassed by other technologies such as MongoDB, Redis, and SQLite.

• **Implication**: Although MySQL is still important, its popularity is declining. Those working with MySQL should keep an eye on the diversification of database technologies and consider acquiring skills in more modern alternative databases.

3. Growth of NoSQL databases like MongoDB and Redis:

• **Conclusion**: MongoDB and Redis are gaining relevance. MongoDB goes from 3.2 million in the current year to 4.3 million in next year's wish list, while Redis shows stable growth, from 2.5 million to 3.6 million.

• **Implication**: NoSQL databases, such as MongoDB and Redis, are being increasingly adopted due to their ability to handle unstructured data and their performance in real-time and big data applications. Developers focused on modern applications, such as IoT and real-time analytics, should focus on learning and applying these technologies.
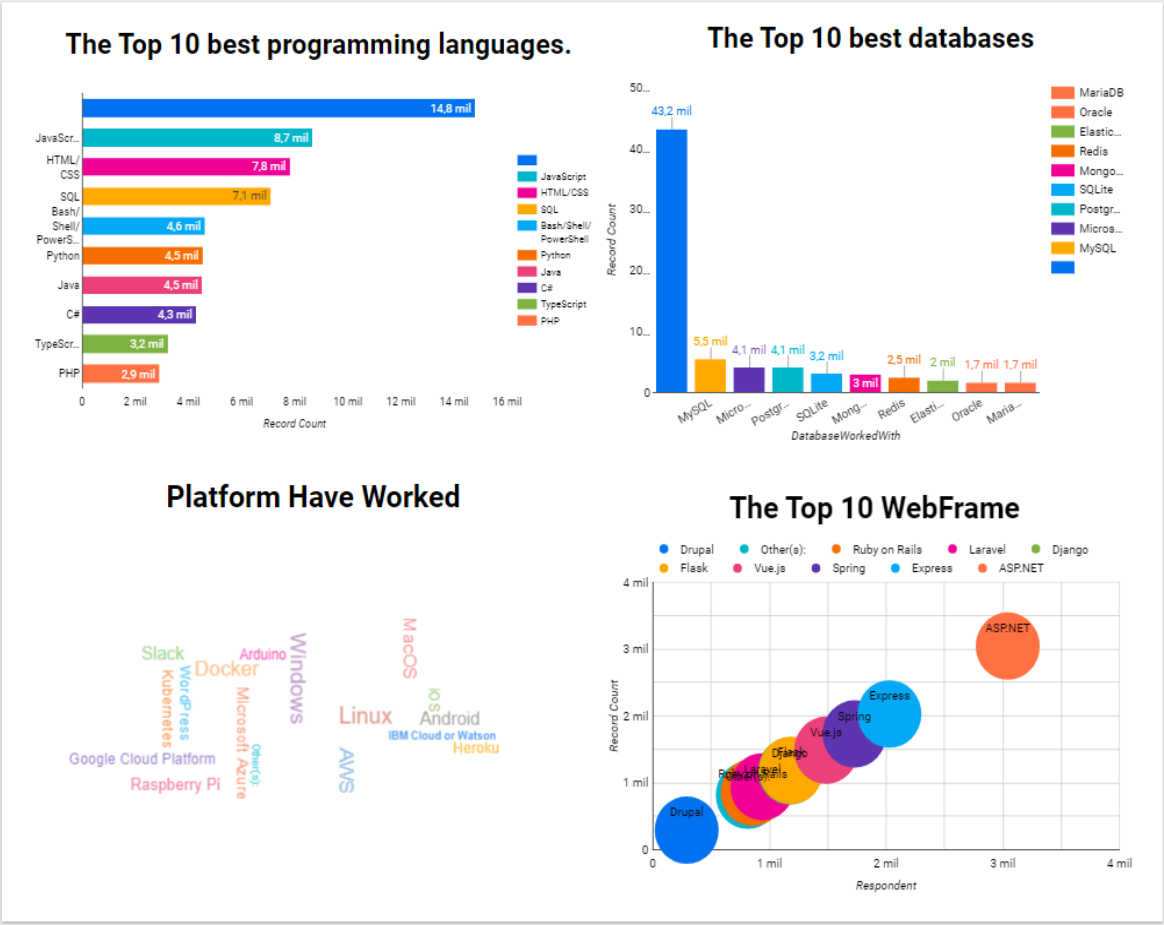
DASHBOARD

https://github.com/soytephagonzalez/LABORATORIO/blob/main/Laboratorio%20dashboard%20en%20looker%20studio.pdf

DASHBOARD : Current use of technology.

DASHBOARD : Future technology trend.
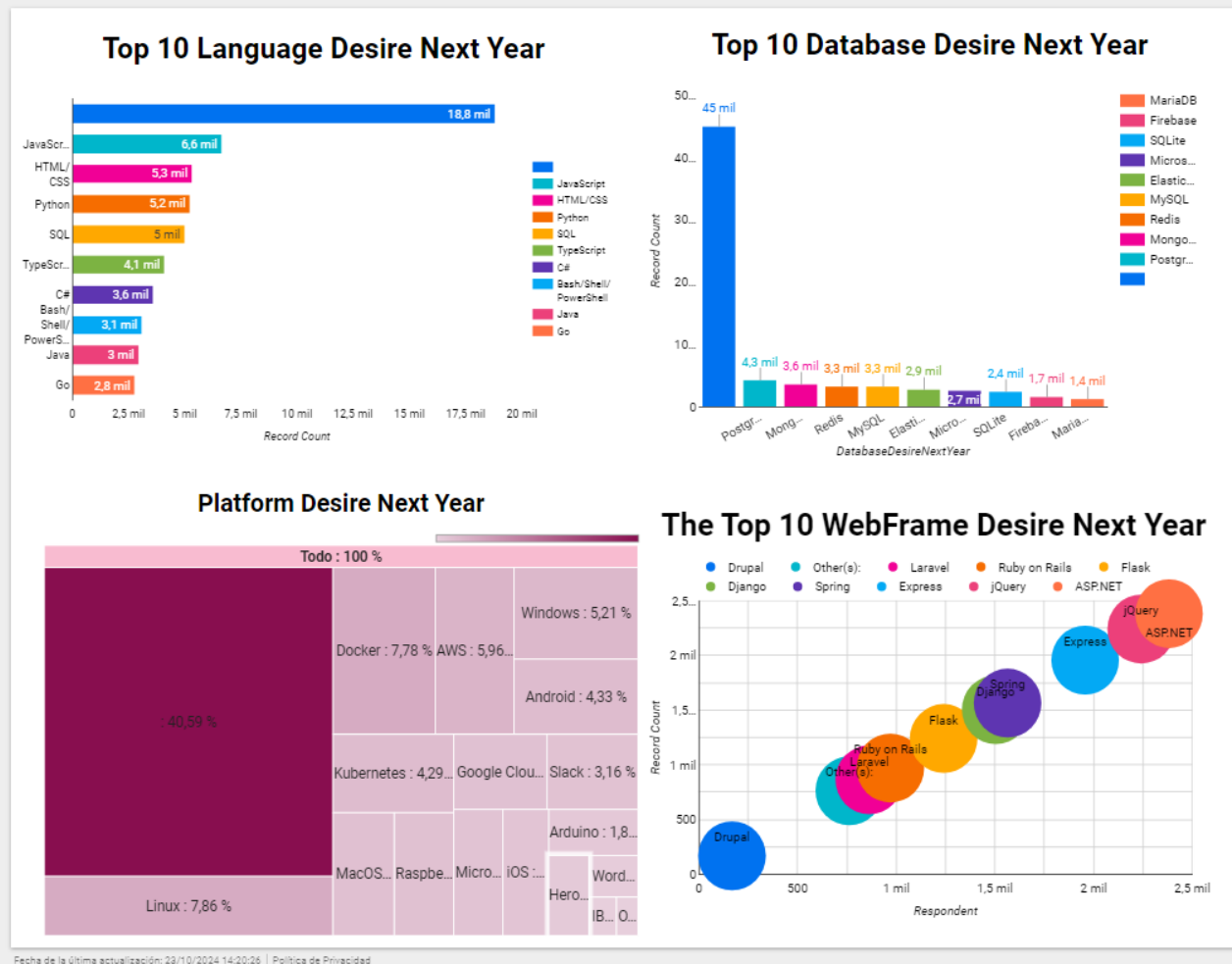
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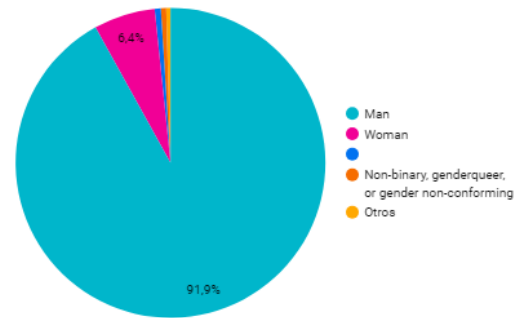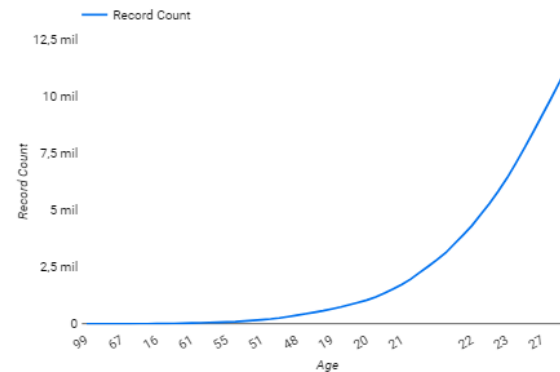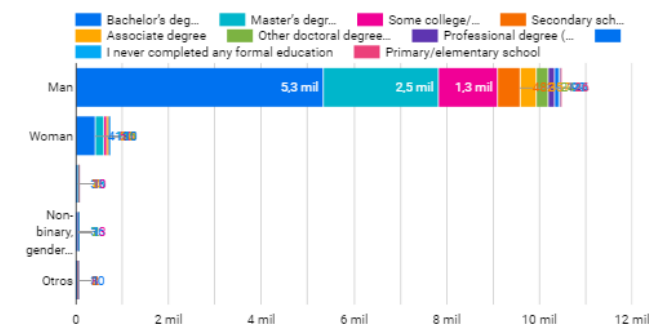
DISCUSSION

- Languages like Javascript, Python, and core languages like HTML/CSS and SQL will continue to lead in the near term, while emerging languages like Go may offer opportunities in new technology areas. Being aware of these trends will help developers adapt and stay competitive in an ever-evolving job market.

- Database trends indicate a transition towards more modern and scalable technologies such as PostgreSQL, MongoDB and Redis, while more traditional databases such as MySQL and Oracle are losing popularity. Adaptability and the ability to handle large amounts of data and non-relational structures will be crucial for developers in the near future..

- Webframe bubble charts reflect a trend toward diversification and growth of lighter, more modern frameworks, while more traditional ones like ASP.NET and Ruby on Rails continue to have a significant presence. Developers should be prepared to work with a variety of tools and technologies as the industry continues to diversify.

OVERALL FINDINGS & IMPLICATIONS

Findings

❖ Projected Growth of PostgreSQL and MySQL

❖ Increased Interest in Lightweight and Modern Frameworks (Flask, Django, Express)

❖ jQuery and Redis Continue to Remain Relevant

Implications

❖ Implication: PostgreSQL is projected to surpass MySQL in popularity next year, indicating a preference for a more advanced database with robust scalability features. Developers and companies should focus on learning and adopting PostgreSQL as it will be a key asset in the near future.

❖ Implication: Next year's projected increase in usage and interest in frameworks such as Flask, Django and Express reflects a clear trend toward lighter, more agile and flexible tools suitable for modern web applications. This indicates that labor demand is leaning towards skills in these frameworks.

❖ Implication: Despite being older technologies, both jQuery (in web frameworks) and Redis (in databases) maintain their popularity and are projected for constant growth. This suggests that although many companies adopt new technologies, they do not completely abandon solutions that work well for certain purposes.

CONCLUSION

❖ The Future of Databases is Leaning towards PostgreSQL: PostgreSQL is poised to become the most desired database, suggesting that many companies are looking for advanced features such as geospatial data handling and extensibility. Developers should prioritize learning this technology to meet future demand.

❖ Agile and Versatile Frameworks Are Positioned as Preferred: Frameworks like Flask, Django and Express are seeing significant growth due to the need for fast and scalable solutions in web development. This indicates a transition from heavier or traditional technologies to more efficient and specialized tools.

❖ Traditional Technologies Do Not Disappear Completely: Although there is a clear push towards more modern technologies, tools like jQuery and Redis are still relevant and useful in many applications, so they still have an important place in the technology ecosystem. This means that developers must continue to maintain these skills while adopting new technologies.

APPENDIX: Additional bar graph

Record count of DevEnviron