Business Case – Company Quality Items

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Executive Summary

The company “Quality Items” is a retail service business (e-commerce) which is experiencing significant rapid growth that requires more users utilizing the same local server; the company’s current database is based on a SQL infrastructure, which has become obsolete to manage its expanding product demand and customer base. Its current system is facing data availability issues, limited scalability, operational inefficiencies, and security vulnerabilities, which are not allowing to support the increasing volumes of data. These problems are affecting the company’s performance to deliver a proper service to their clients, especially during peak operational periods.

In order to address these issues, the company “Quality Items” has considered hiring a third-party IT firm to do the migration of its local SQL server to a cloud-based solution, Azure SQL Database. This process is expected to foster the scalability of the system, improve data security, and provide more robust recovery options. The project is structured into three stages, starting with assessment, migration, and optimization, with clear milestones and deliverables. Assessing current and future business needs, involving the principal stakeholders throughout the planning and execution phases, and ensuring an adequate transition and training for company areas to adapt to the new system are key recommendations for a successful cloud migration.

Issue

At early operational stages and with limited resources, “Quality Items” adopted and integrated various technological solutions across supply chain processes, addressing their specific operational needs at that time. However, as the company experienced an accelerated rate of growth, it now faces an increasing customer base and a growing demand for its products. Facing accelerated growth has led to challenges related to data availability, scalability, security, disaster recovery and operational efficiency.

Currently, the company relies on its on-premises solutions for data management, which are not scalable and are presenting performance issues on various operational processes within the organization. “Quality Items” manages multiple databases on SQL Server to handle inventory, sales, customer data, and reporting. As the demand continues increasing, SQL server setup is inadequate for managing large amounts of data as these databases are known by strict adherence to schemas, and any alterations can significantly impact their performance. The on-premises infrastructure also presents limitations in terms of data availability and scalability, leading to bottlenecks during peak operations. Additionally, security concerns are rising due to potential vulnerabilities in the current setup, and the actual disaster recovery capabilities are not appropriate to ensure immediate backups in the event of failure. Moreover, the management and maintenance of on-premises databases requires manual efforts, reducing operational efficiency.

Considering these challenges, it is crucial to migrate the existing SQL Server databases to a cloud solution (Azure SQL Database). Through this migration, “Quality Items” aims to enhance data protection, increase disaster recovery capabilities, and to ensure scalability in the long term.

Anticipated Outcomes

Overall, there are several benefits from this migration and the improvements would be noticeable across different areas of the organization. Migrating the databases of "Quality Items" from a local to a cloud infrastructure (Azure) will bring various advantages, enhancing multiple aspects of the organization. The migration will provide a more robust, secure and scalable infrastructure to support its increasing business needs. This transition will improve operational efficiency and facilitate communication between stakeholders.

Initially, key areas within the organization would see noticeable improvements, as several business functions become more efficient and integrated. Once the migration is done, and with a scalable infrastructure, the integration with other technologies will be easier, allowing the company to eventually focus on specific areas to embrace innovation and continuous improvement. These are the main benefits of improving the data management process:

1. **Scalability**: Resources should be integrated into the operation to meet increasing demands of the business, to perform during peak times and to adjust to the operational needs.
2. **Security**: Enhanced data protection measures and practices will contribute to data storage, management and transformation.
3. **Real-Time Data Access**: Improved access to data contributes to better business decisions at different organizational levels.
4. **Data Integration**: Integration with other technologies will ensure scalability and innovation across different areas within the business.
5. **Availability and Reliability**: Increased uptime for operational processes

6. **Personalization:** Customer information will enable the offering of personalized marketing and recommendations to improve customer experience.
7. **Analytics and Insights:** Advanced Analytics capabilities will increase the generation of insights for planning and decision-making purposes.

Recommendation

To ensure a successful migration the company should undertake a thorough assessment considering the current and future needs, to oversee the main and most important requirements, and to ensure scalability for future integrations. These are the main recommendations before starting the project execution:

- Ensure the business teams are actively involved during the planning and execution phases to ensure the aim of the project is aligned with the business's long-term goals and objectives.
- Evaluating the main functional and technical requirements (Technologies, infrastructure, resources, budget) will determine the immediate needs for the migration.
- Technical resources should be prioritized due to the nature of the project, identifying the specific technical requirements will contribute to
- Key stakeholders must be included in the assessment, planning and execution phases to gain clear insights from the business areas and to better understand their operational needs, this will contribute to better planning and decision making.
- A detailed plan is recommended to outline each step of the process and determine timelines, resource allocation, responsibilities, budget, and risks.
- Up-skilling and Re-skilling must be considered for specific teams that are directly involved with the integration, management and maintenance of the new technology.

Justification

Migrating the current databases to a cloud solution offers various benefits that justify proceeding with the project. Considering the rapid growth and increasing data volumes of "Quality Items", the current digital solutions for data management purposes were demonstrated not to be sufficient to support the demand for services during peak times. Enhancing scalability became imperative for the business given the increasing operational needs, and the long-term strategic goals of the company. Overall, a new digital solution for data management, transformation, storage and protection is recommended to support the specific requirements of the business. This migration offers a robust, secure, and scalable infrastructure to ensure operational efficiency, and contribute to the growth of the business.

Business Case Analysis Team

Role	**Description**	**Name/Title**
Executive Sponsor	Provides resources and support for the project	The company owner
Project Manager	Manages the project team and business case	Daniel Pinilla
Data Engineer	Manages, collet, and convert raw data into usable information	Adrian Tudela / Almendra Garcia
Data Analyst	Determines how to solve problems using data	Yadira Alvarado

Machine Learning Engineer	Improving existing artificial intelligence systems in automation	Bruno Diaz

Problem Definition

Problem Statement

The retail medium-sized company named “Quality Items” has been through an increment in the demand for its e-commerce website, which meant an increasing number of new users in the increasing the demand of e-commerce website, generating an unexpected rise in the number of new users of employees, suppliers, and customers to provide support for stakeholders and customers, affecting their main operational processes and performance. Given that the firm manages its database on a local server, the software cannot support the increment of files, images and data sets in their back office, making the front office (website) slow in high-demand hours and generating delays in the upload processes for their principal stakeholders. In the same way, the client's users started to complain about delays and loss of connection in the website due to a saturation of the database at the moment of managing various accounts, each one with different information about their searches and cart. The back office started to be saturated as well, given the new entrances of suppliers that demand to upload more data and make connections with the ERP to update in real time the stock of each store. A company that has a local data server without encrypted security is predisposed to suffer data leaks with essential information about customers, suppliers and employees; this is why “Quality Items” has the challenge of ensuring that the

private data of the stakeholders is secure and will not suffer leaks from third parties that may penetrate local servers through Wi-Fi or other methods.

Organizational Impact

The current business model of this company is related to the usage of a local database in a Microsoft SQL server where the users add and process information resulting from tools such as Microsoft Excel, PowerBI, and other data processing programs. The implementation of a data cloud transition has several impacts on the company, starting with the capability of storing important data from a local server to a cloud server on the internet that lets users store significantly more quantity of data, where they can access it in different locations at the same time, increasing the flexibility of the internal processes of the company with a more secure system.

The impact on the principal users of the firm is having a secure cloud server that will lead them to have efficient operations due to having expanded storage, where managers have access to real-time monitoring of the back office and the front end. The suppliers will have a platform where they can upload their information about products and services with a more efficient system connected with external and internal ERP systems. The employees can upload information and make changes in the back office about the structure of the website, manage the orders from clients, and store files and data sets in an expanded database with several consulting tools to find the required information in an efficient way. The customer service will be optimized by increasing the website experience by having a more potent database that supports large quantities of users online at the same time and holds more products and services in several sectors of the webpage.

Technology Migration

The process involves transferring the existing databases (Microsoft SQL Server) to a cloud-based service (Azure SQL Database). The migration aims to ensure minimal disruption to business operations while upgrading to a more scalable and secure environment.

Project Overview

Project Description

"Quality Items" is a mid-sized e-commerce company that is experiencing significant growth. The current on-premises SQL Server database is inadequate to support its rapidly growing customer base and increasing product demand. As the company grows, the existing data management infrastructure faces significant challenges in terms of scalability, data availability, security, and operational efficiency. The rigid schema structure of SQL Server configuration, coupled with manual maintenance efforts, is creating performance bottlenecks during peak operations, posing risks of data vulnerabilities and insufficient disaster recovery capabilities. This situation requires a migration to a scalable Azure cloud-based solution to improve operational efficiency, management and data security to support long-term growth.

Migrating from one system to another requires 6 fundamental steps:

1. Evaluate the current system to plan a schedule detailing the need for resources and key milestones.
2. Evaluate schemes and compatibility in both the current and target systems to understand the migration structure and requirements.

3. Database preparation by configuring the destination environment and ensuring the storage and computing power are ready to receive data, during this process it is required to have a backup copy of the source database as a precautionary measure.
4. Data migration, data is extracted from the source system to transform it and adjust it to the destination schema, load the transformed data into the destination system and monitor the process by detecting errors or interruptions.
5. Testing and Validation to guarantee the success of the migration with accurate, complete and functional data.
6. Go-Live where the system works with the migrated data.

The process described is important to minimize downtime, ensure data integrity, and reduce the risk of post-migration issues.

The Migration from local SQL Server to Azure Cloud SQL Database for quality articles is a learning case for growing companies where it allows us to focus on process improvements to obtain efficiency using Agile tools.

Goals and objectives

Business Goal/Objectives	**Description**
Enhance scalability and data performance	• Get better management of the volume of data information without losing quality of performance. • Implement dashboards and generate real-time reports to make informed decisions.

Strengthen data protection	• Ensure that customer, supplier and employee data is encrypted and meets data protection standards. • Establish a data recovery process to minimize downtime and information loss if the system fails.
Increase operating efficiency	• Automate recurring tasks to reduce manual effort and focus that time on strategic initiatives. • Integrate the new database with CRM to optimize work and improve the user experience.
Improve business flexibility	• Provide training to employees to ensure familiarity with the new cloud system. • Flexible system to possible changes such as storage of greater volumes of information, expanding product lines.

Project Assumptions

- **Minimum downtime:** The migration will be planned and executed to minimize downtime to ensure business operations are not disrupted.
- **Data protection:** The migration will comply with all data protection regulations. Azure will be configured to meet or exceed current security standards, without loss or damage, ensuring continuity of operations.

- **System compatibility:** Existing applications and tools (e.g., Microsoft Excel, PowerBI) are compatible with Azure SQL Database and will function normally after migration.
- **System adaptation:** employees and suppliers will receive training to adapt to the new system with minimal interruption.
- **Cost management:** Migrating to Azure will be cost-effective and the long-term savings in operational costs will exceed the initial investment.

Project Constraints

Under an agile approach, constraints are managed with flexibility and adaptability. Here are some of the constraints that were determined:

- **Value (Scope):** It will be ensured that all features from the SQL Server will be available and fully functional in the Azure SQL Database without loss, corruption, or inconsistency and complying with GDPR and HIPAA regulations.
- **Schedule:** Phases I, II, and III can extend up to six, twelve and eight weeks respectively. This is possible due to the sprint reviews which is the time to showcase the team's completed work and gather feedback from stakeholders.
- **Cost:** It involves Azure SQL Database licenses and project fees and wages.
- **Compatibility:** Some existing tools and processes for database management in the company may not be compatible with Azure; therefore, it will be required to adopt new ones and adjust the tasks after every iteration.
- **Post-Optimization:** Backups, monitoring, or scaling will be implemented and will be automated.

Major Project Milestones

Milestones/Deliverables	Target Date
Project Charter Approved	08/11/2024
Project Plan Review and Approved	08/12/2024
Project Kickoff	08/13/2024
Phase I Complete: Assess the database for cloud migration	08/27/2024 (two weeks)
Phase II Complete: Migration Completed	09/24/2024 (four weeks)
Phase III Implemented and Complete: Optimization	10/08/2024 (two weeks)
Completion and Final Report	10/10/2024

Strategic Alignment

To achieve the company's goals, it was necessary to make a set of decisions, where the team agreed that Cloud Migration would be the way to achieve those objectives which will dissolve many of the limits on innovation. Here in the table below, it is explained how each objective is related to the project.

Plan	Business Goals/Objectives	Relationship to Project

Cloud Migration Strategy through rehosting (lift-and-shift)	Enhance scalability and data performance	A scalable cloud solution enables organizations to respond appropriately and cost-effectively to increase storage and performance in times when traffic or workload demands suddenly increase or grow continuously. It allows information to travel rapidly in both directions, across computing systems.
	Strengthen data protection	Through a careful designed architecture, we will obtain the desired insights and secure the privacy of consumers' data. By using edge computing and AI technologies, it will be applied the design choices of sufficiency, aggregation, and alteration at the data collection stage.
	Increase operating efficiency	The cloud will allow to solve the problem of current compute resource limitations and reduce its daily maintenance, which is a significant IT cost.
	Improve business flexibility	The cloud will turn employees more flexible; because they can complete their tasks in and out of the workplace and have access to business documentation through web browser by not

	having a restriction on devices and location. It promotes external and internal collaboration.

Budget

Type of Cost	Item	Total Amount in CAD ($)
Development	Project Manager (1)	7500
	Data Engineer (2)	16700
	Data Analyst (1)	5000
	Machine Learning Engineer (1)	5000
Maintenance and Support	-	Included in ML engineer wage
Contingency Expenses	-	2000
Instance A7 Core 8 RAM 56GB		1030 per month[1]

Note. [1]From https://azure.microsoft.com/en-ca/pricing/details/cloud-services/?ef_id=_k_Cj0KCQjwn9y1BhC2ARIsAG5IY-74D_d_ddcK1OUgwr09WgRFg0QBthUCO-B-huMhcoqwsTD80wNJeUUaAje6EALw_wcB_k_&OCID=AIDcmmqz3gd78m_SEM__k_Cj0KCQjwn9y1BhC2ARIsAG5IY-74D_d_ddcK1OUgwr09WgRFg0QBthUCO-B-huMhcoqwsTD80wNJeUUaAje6EALw_wcB_k_&gad_source=1&gclid=Cj0KCQjwn9y1BhC2ARIsAG5IY-74D_d_ddcK1OUgwr09WgRFg0QBthUCO-B-huMhcoqwsTD80wNJeUUaAje6EALw_wcB.

Type of Cost	Total Amount in CAD ($)

Total Cost of the project	21170
Monthly Costs for Instance A7 Core 8 RAM 56GB	1030 per month[1]

Alternatives Analysis

1. Google Cloud Platform (GCP) and Amazon Web Services (AWS)

To enhance data protection while giving the company data disaster recovery capabilities, and scalability, relevant options to be considered for migrating the data are GCP and AWS. In fact, both platforms are top cloud services that offer companies a unique service to host, manage, and scale databases.

In terms of scalability, these suggested servers give companies the capacity to develop scalable environments that allow databases to grow based on the expansion of the organization without implementing relevant updates in the overall infrastructure of the company (Krissaane et al., 2020) Moreover, the acquisition of GCP and AWS will strongly reinforce the security and compliance aspects of the company, as these servers are suitable to deal with data protection policies and comply with different global safety standards, which potentially boosts the trust and reputation of the company among users. Furthermore, these platforms will reinforce different procedures of the organization by allowing the integration with other cloud services, making it possible for the company to use advanced analytics, machine learning and AI applications to manage the data more efficiently (Krissaane et al., 2020).

In the case of Google Cloud Platform (GCP), by using GCP SQL, the platform provides a server named Cloud SQL, which gives companies the capacity to acquire

automated backups or replications of data and even failover capabilities (Krissaane et al., 2020). Besides, it facilitates the integration with other Google Cloud Services, such as BigQuery, Dataproc, Dataflow, and Cloud Dataprep, among others, which potentially allows the usage of advanced analytics and machine learning workflows to improve the management of the databases while taking into consideration the importance of the service compatibility and the ongoing training for the team to get used to new technologies (Krissaane et al., 2020).

Moreover, the Relational Database Service (RDS) can be acquired through AWS, which provides automated patching and backups to keep the data safe. Furthermore, AWS offers a tool that is compatible with SQL Server, which is the Aurora tool. This option is attractive if the company is currently looking to enhance its scalability and performance beyond that with an SQL Server. The addition of AWS will contribute by giving a strong focus on security and compliance (Krissaane et al., 2020).

It is true that this solution comes with many benefits for the company and its objective; however, it brings many challenges with it. To start with, the migration complexity as this trespassing the data from SQL Server to GCP and AWS will require some updates and changes within the infrastructure architecture to adapt databases to specific services (Krissaane et al., 2020). In this line, future migrations will be more expensive and complex as achieving a strong integration with both platforms may lead to a dependence on a specific provider. Additionally, if cost management is not carefully managed, it is easy to incur cost overruns as both platforms have a pay-as-you-go modality.

2. Third-party Solutions

By taking into consideration the possibility of having a specialized third party that can facilitate the migration process, the company will be able to minimize the risk of moving the data. This service will be a great option, considering that not all organizations have the confidence and in-house expertise that is required for larger and more complex migrations.

One of the options of a third party is DBMOTO by HiT Software, which is a change migrating that specializes in trespassing data for retailers from an SQL server to a multi-cloud space that this firm is used to prevent any errors or inconsistencies during the transition (HiT Software Inc., 2012). Additionally, there is SharePlex by Quest Software, which is a decent provider for migrating data from SQL servers to other cloud-databases, such as Sybase or Teradata, avoiding any downtimes (Burt, 2013).

Using specialized third parties can bring enough knowledge to ensure a smooth transition from one server to another while drastically reducing the time required for the migration due to the expertise and workflows of these companies. Moreover, these providers can assist the company with post-migration support or consultancy to address any issue that may arise after the migration process is completed.

Part of the challenges is primarily the cost of getting this service done, as it could be expensive depending on the size of the data, the complexity of the migration and the level of post-migration support needed (Burt, 2013). Additionally, relying on third parties for these projects creates dependencies on the same provider if any issue arises or if the platform needs ongoing maintenance. Besides, compatibility is a relevant challenge, too, as not all the tools or servers that third parties use are fully compatible with cloud platforms, so the

selection process of a provider needs to be accurate to avoid integration problems in the long term.

3. Adapting the current SQL server with Alternative Cloud Services Solutions

The third alternative solution that is proposed is that instead of thinking of a full migration to the could in a specific platform, the organization can improve its current SQL Server by integrating different tools that allow it to meet its goals, such as giving them scalability, data protection and disaster recovery. This approach allows for gradual change while keeping control of imperative and well-known systems.

To address the need for scalability, it would be a solution to integrate IBM Cloud Databases for SQL, as IBM offers services to efficiently manage SQL Server database, which can be updated and used in a hybrid environment. It provides a scalable solution to deal with heavier workloads and allows an easy integration with SQL Server (IBM, n.d.). This tool allows companies to expand database capabilities without complicated changes in their infrastructures. Furthermore, for data protection, and from the same provider, it is possible to adapt the current SQL Server with IBM Cloud Hyper Protect Crypto Services, which allows the database to be integrated with encryption and key management in order to protect sensitive information and control, as this option allows the company to retain control over the keys (IBM, n.d.). In the case of the need for disaster recovery, a solution would be the inclusion of Veeam Cloud Connect, as this tool provides companies with disaster recovery solutions that are fully compatible with SQL Server. This solution offers backups and replication services to the cloud in order to give businesses continuity in the case of a disaster with their data (Veeam, n.d.).

One of the biggest challenges of this option is the security and overall compliance concerns, as managing information in different environments can make data governance harder, especially while ensuring the application of data protection policies, access controls, and encryption standards in all environments. Along the same line, there could be complications in disaster recovery management due to the multiple platforms and their different recovery processes or data replications in each of these spaces. Additionally, the expertise or knowledge is a challenge, too, because integrating and managing hybrid environments that include multiple cloud solutions requires having a deep understanding of each of these platforms to identify the tools and APIs and to efficiently manage each interface, which is why it is imperative that the company provide ongoing training to stay up to date to any change in the usage of these systems.

Alternatives	Reasons to not choose this option
Alternative 1: Google Cloud Platform (GCP) and Amazon Web Services (AWS)	• High costs and complex migration to two databases to fulfill the needs of the project. • Maintenance, updates and changes in the infrastructure architecture to adapt databases to specific services. • Dependence in the provider • Accurate cost management due to pay method of both platforms.
Alternative 2: Third-party Solutions (Hit Software & Quest Software)	• High costs and difficulty of migration for larger database.

	• Post migration support needed. • Ongoing training in the usage of the new platforms • Compatibility issues, especially for the long term • Dependence in the provider
Alternative 3: Adapting the current SQL server with Alternative Cloud Services Solutions	• Security and data compliance issues (different environments) • Complex data governance • Ensuring that safety standards are applied on the different tools • Diverse data recovery processes and data replications in each tool. • Expertise while managing and integrating a hybrid environment.

Agile Project Charter

Project Name: Cloud Migration through rehosting for Quality Items			
SCRUM Master and Leader	**Product Owner**	**Team Members**	
Daniel Pinilla	Adrian Tudela	Almendra Garcia Bruno Diaz Yadira Alvarado	
Expected Start Date	**Expected End Date**	**Date of Document**	**Amount**
08/11/2024	10/10/2024		21170 CAD per project
			1030 CAD per month[1]

Project Details

Success Metrics	Description
Enhance scalability and data performance	• Improve processing speed. • Reduce the delay time of real-time reports. • Improve user satisfaction score with the use of the new system.
Strengthen data protection	• Comply with standard encryption protocols (customers, suppliers and employees). • Do not record any data breach incidents. • Reduce data recovery time, 100% data recovered.
Increase operating efficiency	• Increase task automation rate. • Savings on operating costs. • CRM integration efficiency.
Improve business flexibility	• Ensure that all users are trained in the use of the new system. • Improve scalability response time. • Obtain maximum score in flexibility and ease of use of the new system.

Risks

Category	Description
Technical and Operational	• Prolonged migration stage times • Changes in organizational priorities that reallocate resources • Failed migration technical hurdles • Multitude of corrections due to lack of planning. • Service interruptions during the migration that can disrupt business operations
Economic	• Resource cost overrun • Unexpected budgetary changes • Lack of visibility into on-going costs
Legal	• Non-compliance with timing commitments • Changes in regulations of in data sovereignty and privacy
Market	• Data privacy concerns among stakeholders

Appendix A

Team Charter

Team Roles

Name	Role	Reason
Daniel Pinilla	Project Manager	• Experience in leading teams and IT projects. • Strategic management experience. • Budgeting, financial planning, and cost management expertise.
Adrian Tudela / Almendra Garcia	Data Engineer	• Expertise in Data Analytics and Big Data.
Yadira Alvarado	Data Analyst	• Expertise in Data Analytics and Big Data.
Bruno Diaz	Machine Learning Engineer	• Expertise in automation of processes. • GDPR knowledge.

Tasks Assignation

- We will discuss our experience to assign tasks based on skills and interests.
- The workload will be equally assigned based on which tasks require in-depth analysis and research**.**

Team Ground Rules

- All members should communicate through teams and WhatsApp. Meeting schedule and location: Once a week, every Wednesday from 7:00 pm to 9:00 pm by Microsoft Teams.
- Attendance is required for every session. If anyone is not available to attend the meeting, he or she must notify through with one day of anticipation to reschedule.
- Members should provide timely feedback on progress of work.
- Members should frequently check platforms for updates on group projects
- Members should not back out at the last minute when the project is due.

Monitoring

The project will be developed under an agile approach to adapt and respond quickly to customer's feedback. Daily Stand-ups meetings will take place in-house with the team, and the kanban dashboard will be updated, and the project manager will discuss the tasks that will be done during the day. The metrics to be monitored are total tasks, tasks completed, in progress, not started, duration of the project, and the overall progress.

Problem solving

- If one of team members drops out of the course, a meeting will take place immediately to redistribute tasks among the current team fairly.
- If someone gets sick, the project manager will evaluate and decide if the task will be reassigned to another team member or if it can be postponed.

- If there is a loss of work due to technical problems, the project manager must seek immediately professional help to recover the data. However, this will be avoided by ensuring that everyone involved in the team must have a backup of the data they are working on.

Conflict Management

- Different points of view, work style conflicts and personality clashes will be solved by clarifying the source of conflict, active listening and ensuring clear communication to meet the common goal.
- Validation of each point of views will ensure an effective work environment. Not completing the assigned task on time will be discussed during the OGL and the leader of the team will control and monitor each member's task status. We will appoint a neutral member to mediate discussions.
- Deal with conflict through communication
- Evenly distributing work amongst group members with clear instructions to avoid miscommunication Everyone working as a team and work together

Communication Tools

- Microsoft Teams
- Jira
- Miro
- WhatsApp

Approvals

Name	Title	Signature
1. Daniel Pinilla	Project Manager	DP
2. Adrian Tudela	Data Engineer	AT
3. Almendra Garcia	Data Engineer	AG
4. Yadira Alvarado	Data Analyst	YA
5. Bruno Diaz	Machine Learning Engineer	BD

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