

# Application for Interactive Financial Report Analysis

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Developed by **Roman Michele**  
as **Portfolio project** (showcase of AI-based Application capabilities using LLM, RAG and Python)

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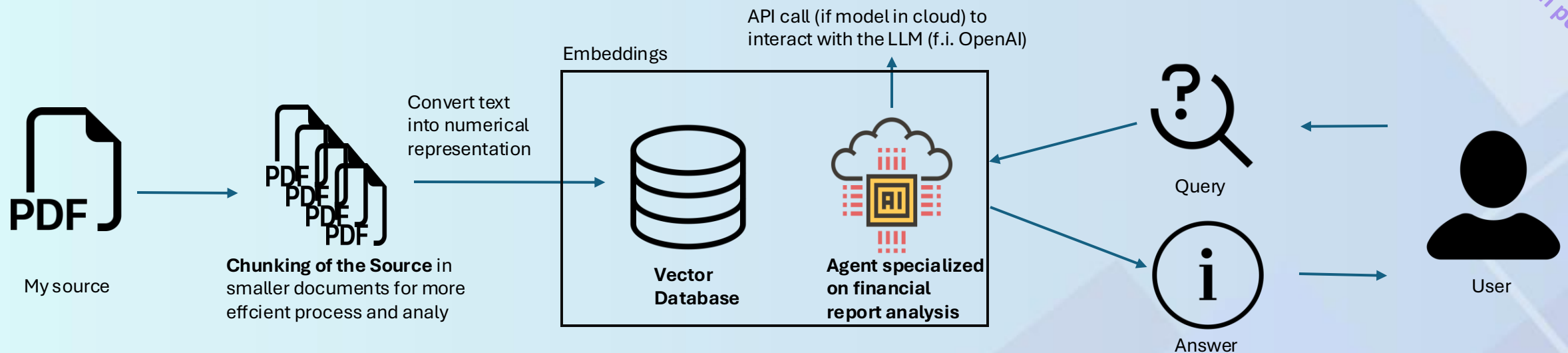
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# Introduction to the problem

- Companies generate complex financial reports with a large amount of data.
- Manually extracting key information is time-consuming, costly, and error-prone.
- There is a need for intelligent tools to facilitate analysis and support informed decision-making.

## Why use LLM and RAG

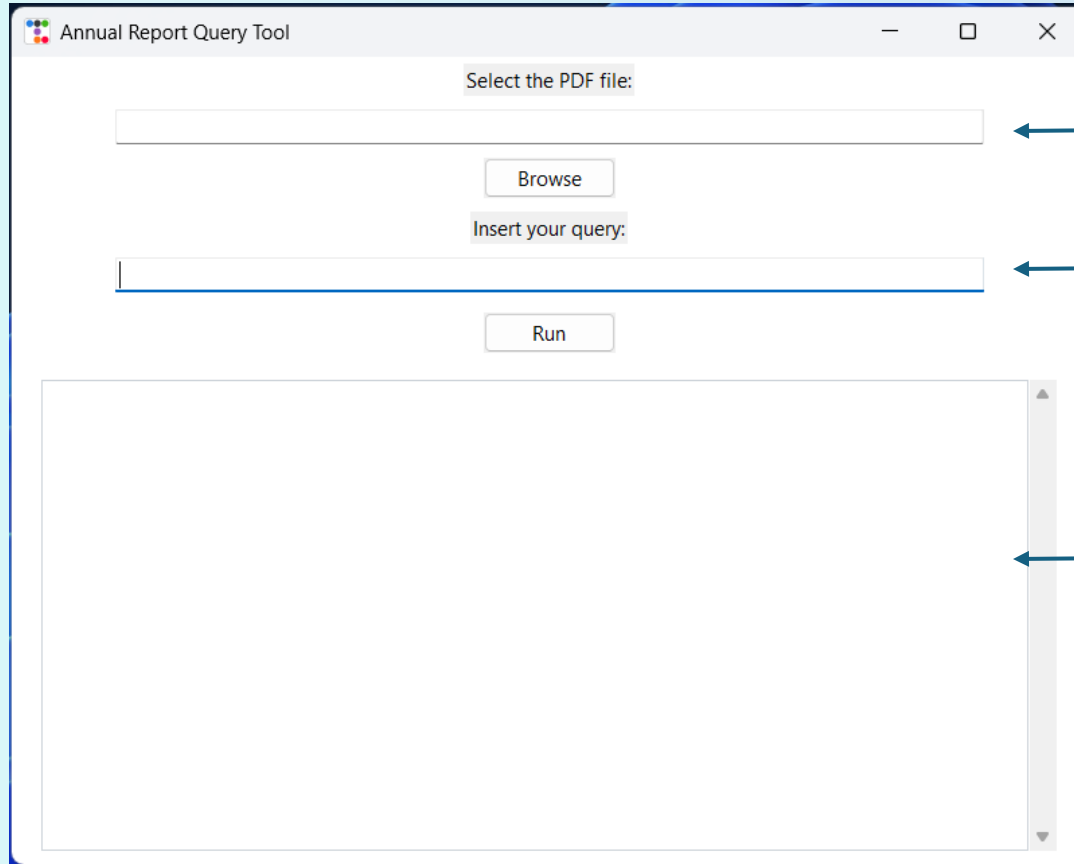
- LLM (Large Language Models): In short define the most likely word that come after considering the context. Performance change with the model performance.
- RAG (Retrieval-Augmented Generation): In short is an efficient way to customize an LLM with your own data.



- These technologies allow for rapid and effective querying of financial reports.

# How the Application work?

## Application Layout



The screenshot shows a web application window titled "Annual Report Query Tool". The interface includes a text input field for selecting a PDF file, a "Browse" button, a text input field for inserting a query, and a "Run" button. Below these inputs is a large, empty rectangular area for displaying the answer. Arrows from the text labels on the right point to these specific elements: the first arrow points to the PDF selection input, the second to the query input, and the third to the answer display area.

Load your PDF file

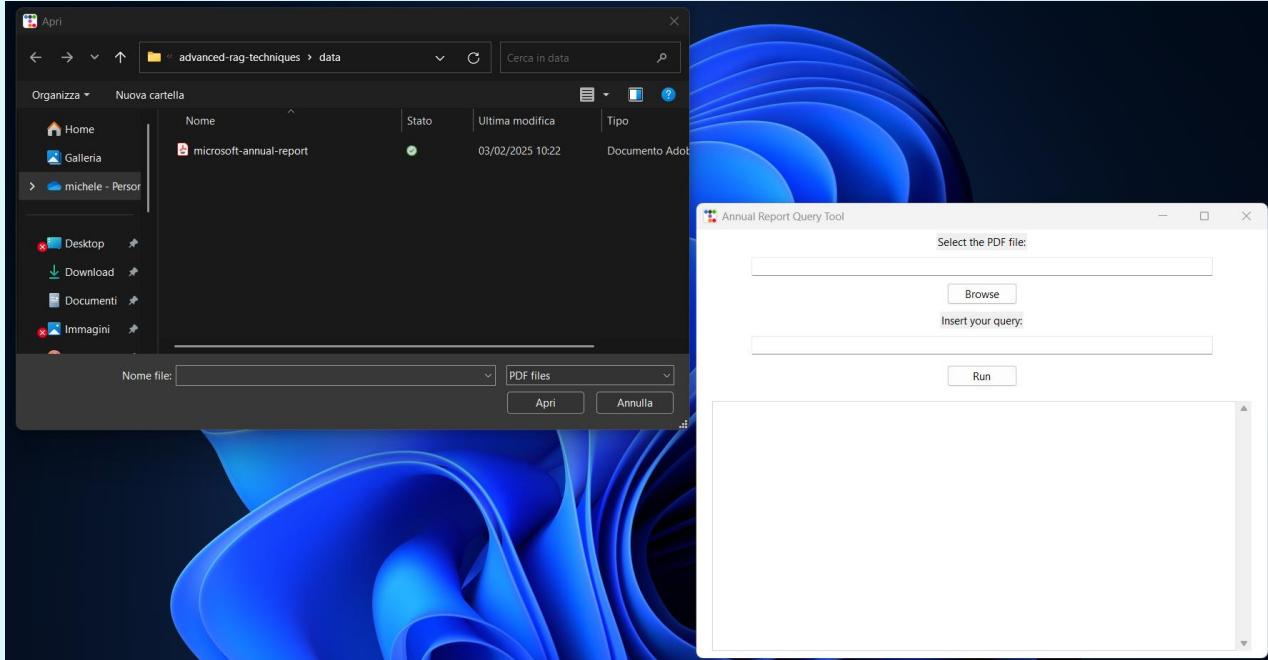
Write your question about the financial document

Get your answer

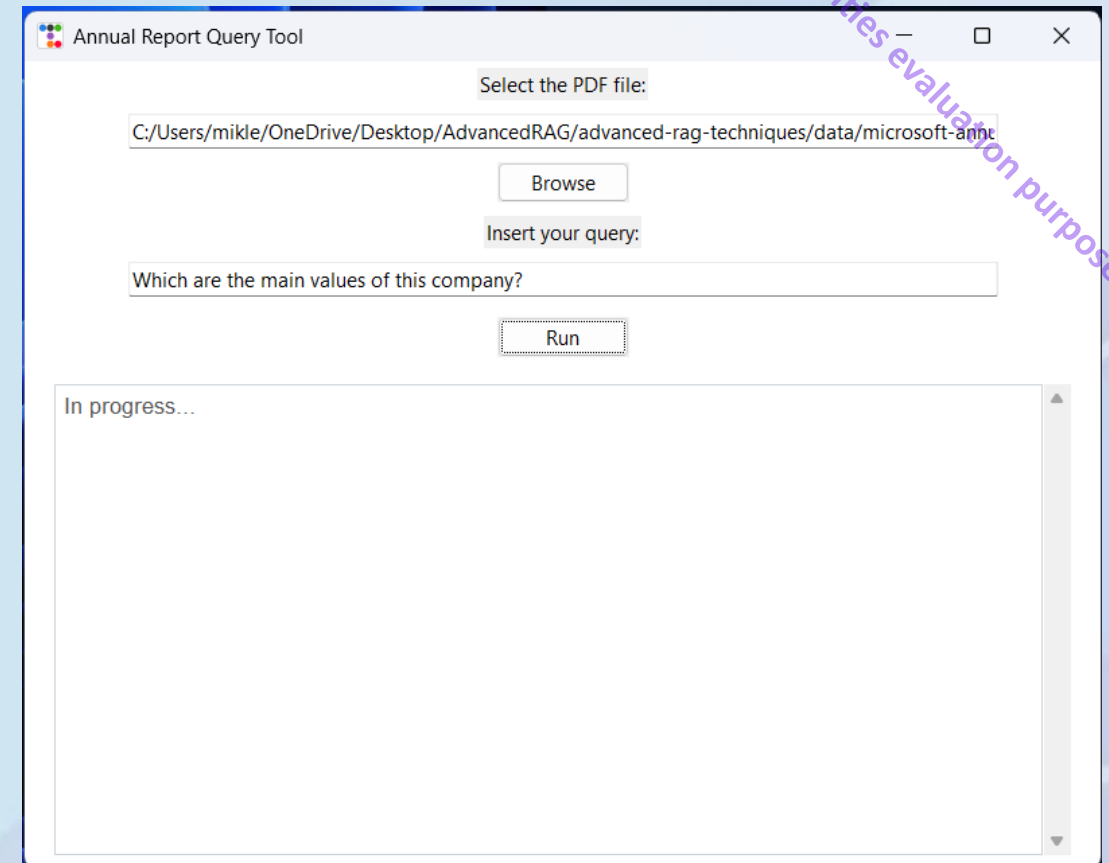
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# How the Application work?

**Browse your financial report** (example with 'Microsoft annual report 2023', 116 pages)



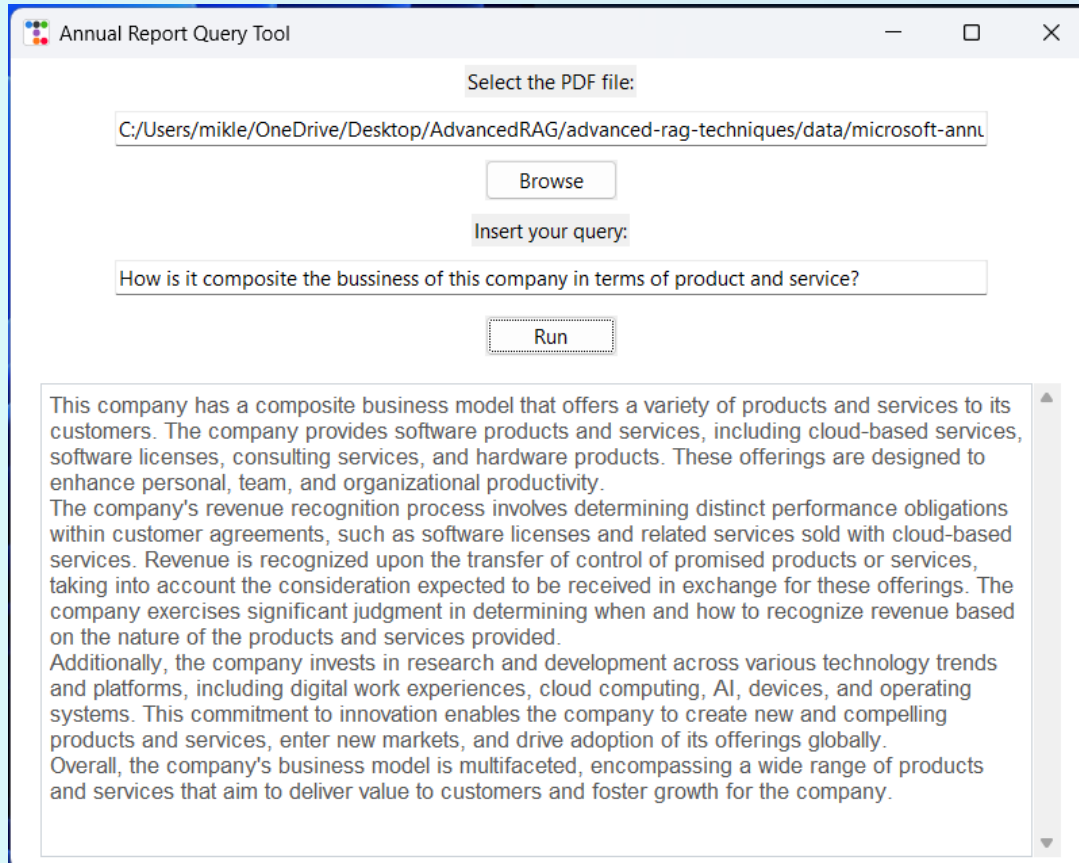
Make **your question** concerned to the document.



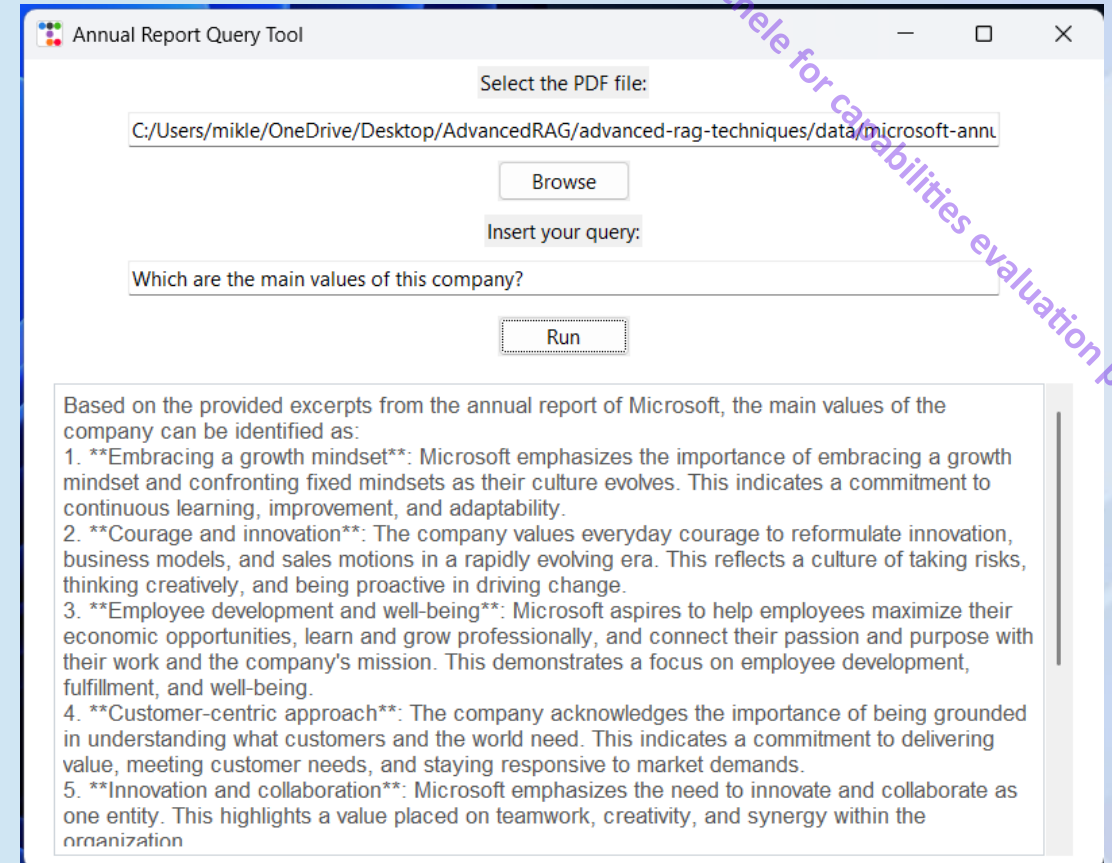
The answer generation  
may ask some seconds

# How the Application work?

Get you **answers** which can be **descriptive or numerical according to your needs**.



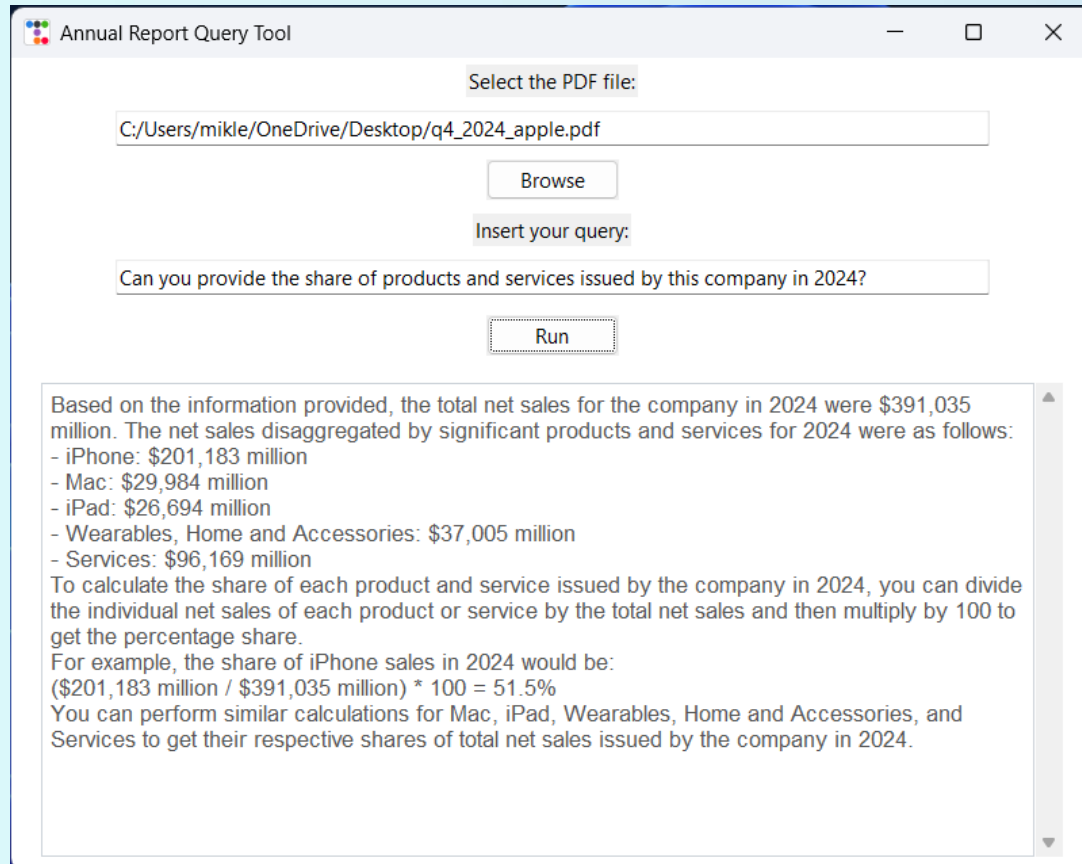
The screenshot shows the 'Annual Report Query Tool' window. It has a title bar with standard window controls. The main area contains a 'Select the PDF file:' label, a text input field with the path 'C:/Users/mikle/OneDrive/Desktop/AdvancedRAG/advanced-rag-techniques/data/microsoft-annu', a 'Browse' button, an 'Insert your query:' label, a text input field with the query 'How is it composite the bussiness of this company in terms of product and service?', and a 'Run' button. Below the input fields is a large text area displaying the answer: 'This company has a composite business model that offers a variety of products and services to its customers. The company provides software products and services, including cloud-based services, software licenses, consulting services, and hardware products. These offerings are designed to enhance personal, team, and organizational productivity. The company's revenue recognition process involves determining distinct performance obligations within customer agreements, such as software licenses and related services sold with cloud-based services. Revenue is recognized upon the transfer of control of promised products or services, taking into account the consideration expected to be received in exchange for these offerings. The company exercises significant judgment in determining when and how to recognize revenue based on the nature of the products and services provided. Additionally, the company invests in research and development across various technology trends and platforms, including digital work experiences, cloud computing, AI, devices, and operating systems. This commitment to innovation enables the company to create new and compelling products and services, enter new markets, and drive adoption of its offerings globally. Overall, the company's business model is multifaceted, encompassing a wide range of products and services that aim to deliver value to customers and foster growth for the company.'



The screenshot shows the 'Annual Report Query Tool' window. It has a title bar with standard window controls. The main area contains a 'Select the PDF file:' label, a text input field with the path 'C:/Users/mikle/OneDrive/Desktop/AdvancedRAG/advanced-rag-techniques/data/microsoft-annu', a 'Browse' button, an 'Insert your query:' label, a text input field with the query 'Which are the main values of this company?', and a 'Run' button. Below the input fields is a large text area displaying the answer: 'Based on the provided excerpts from the annual report of Microsoft, the main values of the company can be identified as: 1. **\*\*Embracing a growth mindset\*\***: Microsoft emphasizes the importance of embracing a growth mindset and confronting fixed mindsets as their culture evolves. This indicates a commitment to continuous learning, improvement, and adaptability. 2. **\*\*Courage and innovation\*\***: The company values everyday courage to reformulate innovation, business models, and sales motions in a rapidly evolving era. This reflects a culture of taking risks, thinking creatively, and being proactive in driving change. 3. **\*\*Employee development and well-being\*\***: Microsoft aspires to help employees maximize their economic opportunities, learn and grow professionally, and connect their passion and purpose with their work and the company's mission. This demonstrates a focus on employee development, fulfillment, and well-being. 4. **\*\*Customer-centric approach\*\***: The company acknowledges the importance of being grounded in understanding what customers and the world need. This indicates a commitment to delivering value, meeting customer needs, and staying responsive to market demands. 5. **\*\*Innovation and collaboration\*\***: Microsoft emphasizes the need to innovate and collaborate as one entity. This highlights a value placed on teamwork, creativity, and synergy within the organization.'

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# How the Application work?



The screenshot shows a web application window titled "Annual Report Query Tool". It has a light gray header bar with a logo on the left and standard window controls (minimize, maximize, close) on the right. The main content area is white and contains the following elements:

- A label "Select the PDF file:" above a text input field containing the file path "C:/Users/mikle/OneDrive/Desktop/q4\_2024\_apple.pdf".
- A "Browse" button below the file path input.
- A label "Insert your query:" above a text input field containing the query "Can you provide the share of products and services issued by this company in 2024?".
- A "Run" button below the query input.
- A large text area at the bottom displaying the results of the query, which includes a summary of net sales and a list of products with their respective sales figures.

Based on the information provided, the total net sales for the company in 2024 were \$391,035 million. The net sales disaggregated by significant products and services for 2024 were as follows:

- iPhone: \$201,183 million
- Mac: \$29,984 million
- iPad: \$26,694 million
- Wearables, Home and Accessories: \$37,005 million
- Services: \$96,169 million

To calculate the share of each product and service issued by the company in 2024, you can divide the individual net sales of each product or service by the total net sales and then multiply by 100 to get the percentage share.

For example, the share of iPhone sales in 2024 would be:  
 $(\$201,183 \text{ million} / \$391,035 \text{ million}) * 100 = 51.5\%$

You can perform similar calculations for Mac, iPad, Wearables, Home and Accessories, and Services to get their respective shares of total net sales issued by the company in 2024.

Working good **changing the financial documents** as your needs (example with 'Apple financial report 2024', 121 pages)

# Conclusion

- This solution demonstrates how LLM and RAG technologies can increase drastically the potential of the financial data analysis, improving efficiency and supporting strategic decision-making.

## Limitation

- Dependency on model accuracy (LLM are not an 100 % right technology, so far)
- Privacy due to loading of documents to LLM platform (it may be kept in local with possible limitation in performance)
- The need for continuous data updates due to the fast technology development
- Performance management with high volumes of data and costs (which may decrease with time and technology affirmation)

## (Few of the many) potential use cases

- Analysis of legal and contractual documentation
- Enancing customer service
- Maniging company FAQ for company onboarding, training or customers
- ....