# How we work

At RealFi, we aim for impactful and pragmatic data analysis. Here’s how we get things done:

* **Tech Stack:** We mainly use Python and SQL for data analysis and manipulation, with AWS for our cloud solutions.
* **Reusability:** We’re a small, agile team and we’d like to stay that way. That’s why we emphasize creating solutions that are reusable, automated, and scalable.
* **Collaboration:** We use Git for collaboration, allowing team members to work together smoothly, learn from each other, and maintain code quality.
* **Communication:** If you have questions or need clarification, feel free to reach out via email to [liam.furman@iohk.io](mailto:liam.furman@iohk.io). Open communication is crucial to our success.

This is the kind of approach we appreciate in your work with us!

# Context

## RealFi

You work for RealFi, a private debt marketplace that connects fintechs with investors. These fintechs offer small-business loans but need debt capital themselves to keep lending. RealFi bridges that gap by connecting fintechs with investors who provide the necessary funds. We perform data-backed due diligence to determine if a fintech is a solid investment. If they are, we structure a loan deal and list it on our platform. Investors can then explore opportunities, decide where to invest, and use our platform to monitor the fintech's performance in real time.

**Example:** A fintech called CashConnect lends to small businesses in East Africa. They provide loans ranging from $100 to $200 with a 30-day term. After three years of operation, CashConnect has successfully grown its loan book to $14.2 million. They’re ready to scale but need more capital to keep lending. So, they turn to RealFi, which, after a thorough data-backed due diligence process, determines that CashConnect is a solid investment. RealFi connects them with investors willing to provide an 18-month loan of $2 million at an attractive rate. We organise the deal, earn a spread, and integrate with CashConnect’s Loan Management System (LMS) for real-time monitoring and analytics.

## Data-backed due diligence

At RealFi, we believe that analysing fintechs' granular [loan tape](https://www.finleycms.com/blog/what-is-a-loan-tape) data allows us to make smarter investment decisions compared to traditional methods that rely on aggregated financial statements. Here are some of the ways we do this:

* **Real-time Monitoring:** By integrating directly with fintechs' Loan Management Systems (LMS), we gain access to high-frequency loan tape data, enabling us to spot issues as they come up.
* **Forecasting:** The wealth of loan tape data lets us leverage machine learning techniques to enhance our predictions and forecasting of fintech performance.
* **Fraud Detection:** We can identify fraudulent activities within the fintech’s operations and among their end-borrowers.

# Task

You are a data analyst on RealFi’s investment team, leading the loan tape analysis. A fintech company called Swift Loan is seeking $1 million in debt capital, and the team is conducting due diligence to determine if they are a suitable investment.

Here’s their [loan tape data](https://drive.google.com/drive/folders/1N_xTRE0bupkycrctx8eTfKTRDYvwFDfv?usp=drive_link) and accompanying [data dictionary](https://docs.google.com/spreadsheets/d/1Fyg17MuK-2x7L3chnp2PKr-oPv6QhRFGHlVfqF3MiQY/edit?usp=sharing).

Your tasks are:

1. **Create a data quality report for the investment team:** What is your evaluation of the loan tape data quality? Is it accurate and consistent enough for further analysis? How do you rate Swift Loan’s data capabilities, and what follow-up questions would you ask at this early stage to get a better understanding?
2. **Develop a plan of action to address any data quality issues:** Propose a detailed approach for addressing any inconsistencies and ensuring the integrity of the data moving forward. How would you communicate your findings and proposed solutions to the investment team? How would you engage with Swift Loan on an ongoing basis? Share examples of any reports that you feel could be useful in this process.
3. **Provide portfolio performance metrics to the investment team:** The investment team needs your assistance in calculating key portfolio performance metrics from the loan tape. While the loan tape may not be perfectly clean, please be pragmatic and handle any data issues as best you can. Additionally, they’re interested in any other metrics/visualizations that might be valuable beyond the key metrics. Show these in a report or mock dashboard. They key metrics are:
   1. Write off rate
   2. Collections rate
   3. Gross yield
   4. Average days in arrears
4. **Share actionable insights with Swift Loan:** We want to demonstrate RealFi’s value to Swift Loan beyond just providing debt capital. Analyze the loan tape to identify trends and opportunities that can enhance their business performance. Feel free to explore any insights or techniques you find valuable—this is our chance to showcase our capabilities to Swift Loan. Please compile your findings and recommendations into a report. If you believe additional data would aid in making a better decision, specify what data you would request and explain why.

# Submission

Please submit all relevant materials, including your code, plots, links to repositories, and final reports. We’re particularly interested in understanding your thought process and methodology, so feel free to document your work as you progress. The journey you take to arrive at your conclusions is just as important as the final output.

# Evaluation

We’ll evaluate your responses based on the accuracy and completeness of your answers, the quality of your code, the insights you draw from the data, how well you communicate those insights, and your alignment with the principles outlined in the **How We Work** section.