Fresha Analytics Engineer
Case Study

Thank you for applying for a role with Fresha. As the final stage of the interview process, we'd like you to complete a case study exercise and present back to us. This is a chance for you to demonstrate your skills against a real example of the type of work you'd be doing as an Analytics Engineer at Fresha.

If you have any questions or concerns, please get in touch with us.

About Fresha

Fresha is the world's largest booking software-enabled marketplace for beauty and wellness. Our innovative go-to-market strategy, in which we provide world-class booking software for salons, barbershops, spas, and massage parlours to manage their calendars and business operations without any subscription fees, has allowed us to rapidly become a market leader.

In addition to our free software, we also offer a marketplace through which businesses may receive new clients (for which we take a one-time commission of 20% of the value of the first booking made by that consumer), as well as fully-integrated online and in-store payments capabilities through our partnership with Adyen. We have 110K active partners across the world, with 31% currently monetised through either new client fees or through payments.

Case Study

Fresha offers partners the option to purchase "add ons", for an additional fee charged as a subscription, that extends the free functionality available in the product. Currently we have 4 add ons:

- **Google Reviews**: prompt customers to add a review to your google profile
- **Insights**: access premium reports for your business
- **Data connector**: gain direct access to your data in a managed warehouse
- **Compensation**: payroll features to enable you to manage timesheets and pay staff via the app

We've shared with you a few datasets related to add-ons, described below, that we'd like you to analyse. You can present your work however you like; notebooks, a document or slides are all fine.

Instances

Generated when a partner expresses an interest in an add on for the first time. Columns marked with green background are not needed for the task and can be ignored unless you receive a custom bonus task that involves them.

Column	Description
Provider ID	The partner associated with the add on

Add on instance id	A unique identifier for the instance
Created at	When the partner first expressed an interest in the add on
Add on name	The type of add on the instance relates to
Is enabled	Whether the partner currently has access to the add on
Payment period unit	The calendar period (e.g. month, year) in which this instance's periods' length is expressed
Payment period multiplier	How many payment_period_units are included in a standard period for this instance, e.g. with payment_period_unit = 'monthly' and payment_period_multiplier = 3, the partner would be charged for the add-on every three months
Key driver	The variable that scales add-on price - it's an aspect of the partner's business, typically the number of locations or team members they have added in the system
Current key driver value	Unsurprisingly, it's the present value of the key driver for this instance
Fixed price USD	The price component that does not scale and is always the same for each period
Variable price USD	The price component that scales with key_driver and can be different for every period

Periods
Represents a distinct billing period associated with a subscription. Columns marked with green background are not needed for the task and can be ignored unless you receive a custom bonus task that involves them.

Column	Description
Add on period pk	Unique id for the period
Add on instance id	A unique identifier for the instance
Add on subscription id	Unique id of a continuous stream of periods when this add-on instance is active
Payment period status	Indicating if the period is free, paid or unpaid
Is trial period	Indicates if the period is a free trial
Created at	When the period was created
Active from	The start of the period
Active to	The end of the period
Price USD	The cost of the period in USD, that covers the subscription period

Key driver value	Value of the main variable deciding each period's price - see instances for more context

Partners
Some basic information about our partners who have add ons.

Column	Description
Provider id	Unique identifier for the partner
Key country	Where the provider is located
Staff segment	The size of the business
Created at	When the partner joined Fresha
Business type	The type of business

Calendar
Convenient table of standardised dates so that they don't need to be generated each time

Column	Description
Calendar date	Continuous dates
Month	Date truncated to month

We'd like to approach this problem as an analytics engineer:
1. Understand the data model
2. Propose SQL code for an `add_on_periods` model, reading from some or all of the above tables, that will allow accurate and convenient analysis
   a. Some derived columns are expected to make the analysis task easier, no need to add unrelated extra columns
3. Propose a `monthly_add_on_revenue` model, adapting your `add_on_periods` to complete the Revenue topic
   a. No need to repeat all the columns from `add_on_periods` in the revenue model, the essentials are:
      i. provider_id
      ii. add_on_period_pk
      iii. add_on_name
      iv. Revenue month
      v. Revenue value
4. Reading only from your models and possibly `calendar`, perform an analysis of add on periods and present back to us on the topics below

a. You might not have access to table materialisation tools, it's fine to store your model as a CTE in your queries for now, provided that the CTE code is always the same

Analysis Topics
- Free trial conversion
  - What proportion of trials are converted into paid periods?
  - How does this conversion rate vary by add on type, country and business type?
- Payment failures
  - How many periods are unpaid and how much is this worth in lost payments?
- Retention
  - What's our churn rate from each add on type?
  - How often do churned Partners reactivate?
- Revenues
  - Keeping in mind that:
    - periods can cover different time ranges
    - due to accounting principles we should spread revenues evenly over the duration of the subscription periods
  - Can you calculate how much revenue we've generated each month from these add ons?

You might need to make some assumptions about this data to complete the analysis. This is absolutely fine, just make a note in your presentation.

This is a simulated database problem so we expect SQL solutions rather than programming ones (e.g. python).

Good luck!