

# Data Analyst Intern Take-Home Exercise

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## Overview

At LeanTaaS, we pride ourselves on considering bright, driven candidates from a wide variety of backgrounds. To make sure that you can showcase your full range, we'd like you to complete this take home exercise. We know your time is valuable, but we've given you this exercise for the following reasons:

**It gives you the opportunity to learn about us.** Did we choose a thoughtful and challenging exercise? Are these the types of problem solving and analytics for you? If so, you'll be more excited about working with us.

**It gives us the opportunity to learn about you.** Were you able to clearly communicate your ideas and assumptions? Can you strike a good balance between completeness and time to ship? Are you comfortable navigating with imperfect data or making conclusions in imperfect contexts? This is your time to shine, so show us what we can't see in the limited time available in a phone screen or interview.

**Our expectations:** We expect the homework may take you several hours to complete. We know you have limited information; it's okay to make some assumptions and base your work off of those. (But if you have questions, don't hesitate to ask!) We look forward to getting a glimpse into your thinking process and creativity.

Complete the exercise below, and imagine yourself as a member of our team where:

- Your results will be used by our customers, so we must be confident in the findings.
- Others on the team will want to understand and reuse your methodology, so be sure to use clear variable or field names and annotate your work as required.
- The results of the assignment should be summarized in forms of an email, a short report, or a slide deck that is clear and professional enough to show to a customer. Please also send the workbooks or scripts you used to do the analysis.

## Assignment

You work on the iQueue for Infusion Centers team as a Data Analyst Intern. We have just started working with Infusion Center ABC, where the patient wait times in the infusion center have been increasing recently. Because of this, Infusion Center ABC is interested in implementing our iQueue for Infusion Center solution, which will help improve the operational efficiency.

Infusion Center ABC has just sent us their first dataset, which includes 5 days of appointment records (LeanTaaS\_Infusion\_Data\_Analyst\_Intern\_Assignment.csv). The purpose of this dataset, which will eventually be loaded into our iQueue web application, is to serve as an initial test file to help us understand how their data is structured and how we will be receiving recurring files in the future. This data may have been sourced from multiple different tables in the customer's system. It is important to iron out any data issues at this early stage to mitigate against delays later on in the program.

You have been tasked with reviewing this test dataset with the internal teams, identifying any issues that would deem it unusable and providing preliminary analysis on patient wait times:

- A. Please review the dataset and identify any issues in the data that could potentially cause problems for the iQueue application, using Python. Highlight and summarize the issues that you noticed in this dataset to review with the internal teams together.
- B. Pick **one** of the issues you identified and describe how you'd fix this issue in Python.
- C. Determine quantitatively the patient wait times in the infusion center and how that impacts the infusion center operations.

You will be assessed in the following areas: technical and analytical skills, problem solving skills, critical thinking skills, communication and presentation skills.

Note that the typical expected patient journey is as follows:

- a. Patient checks in at front desk
- b. Patient is seated
- c. Patient's first medication starts
- d. Patient's last medication stops
- e. Patient leaves chair
- f. Patient checks out at front desk

## Data Dictionary

INPATIENT_DATA_ID	Unique identifier of the appointment
DEPARTMENT_ID	ID of the infusion unit
DEPARTMENT_NAME	Name of the infusion unit
VISIT_TYPE	Visit Type
APPT_LENGTH	Expected duration of the appointment in minutes
APPT_STATUS_NAME	Appointment status

CONTACT_DATE	Date of appointment
APPT_DTTM	Scheduled DateTime of appointment
CHECKIN_DTTM	DateTime patient checked in
CHECKOUT_DTTM	DateTime patient checked out
APPT_MADE_DATE	Date appointment was made

APPT_CANC_DATE	Date appointment was canceled, if canceled
CHAIR_START	Time patient seated in chair
INFUSION_START	Time first infusion was started
INFUSION_END	Time last infusion ended
CHAIR_OUT	Time patient left chair
ORDER_DESCRIPTION	Medication order details
ORDER_STATUS	Medication order status
CHAIR	Bed/chair resource appointment is booked into