

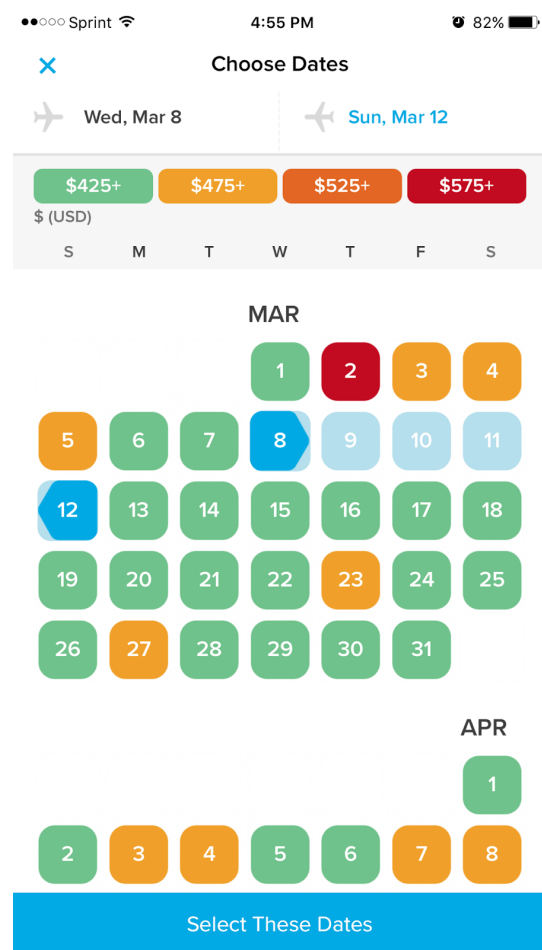
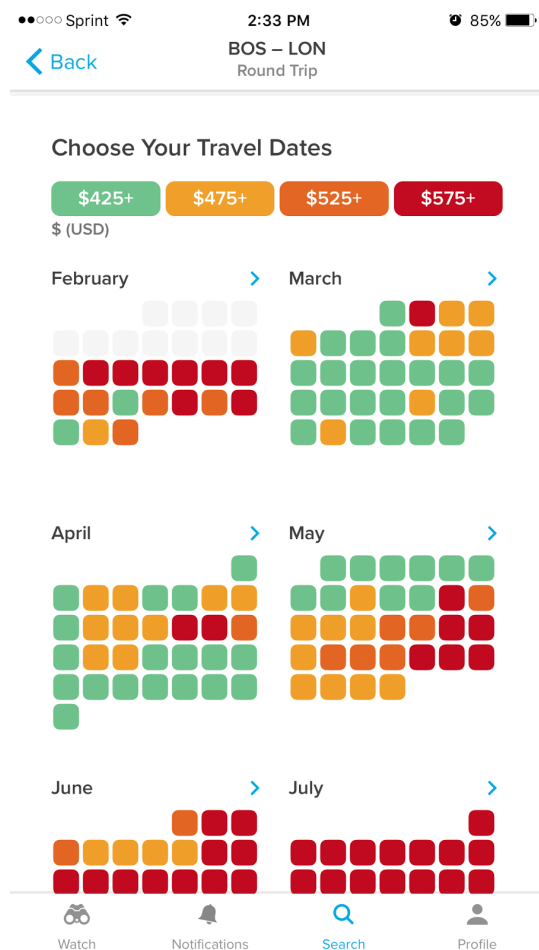
Product Engineer Homework Assignment

Thank you for taking the time to complete this test. It's lengthy, but please try to send it back to us within one week of receiving it.

[Build a Prototype](#)

[Description of the Data](#)

Hopper displays prices on a colorful calendar that helps users visualize the cheapest times to fly based on our extensive price data. Download the app to get a feel for how it works.



Build a Prototype

Product's main objective is to ensure the user has a good experience while maximizing the utility of the calendar. When a user selects a departure date, we don't update the calendar to reflect the cheapest return dates. Use the attached data to create summary pricing stats for departure and return dates, and then create a working prototype of a basic calendar that displays the cheapest departure dates and updates to reflect the cheapest return dates.

We're not expecting a production-quality solution; we are more interested in your approach and understanding of the issues involved. Along with your prototype, please provide a short write-up outlining your methodology and rationale, key findings, and any important remaining issues you'd want to tackle in production.

Description of the Data

Hopper receives several billion priced air itineraries every day, in near real-time. Each trip is part of a bundle of trips indicated by a search identifier. Usually, a bundle of trips is a set of alternative flights resulting from a consumer flight search at an online travel agency (OTA). For example, a user might search for flights from BOS to JFK, perhaps including nearby airports, with particular (possibly flexible) departure and return dates. The search returns many possible priced trip options, which forms a bundle of trips. Hopper doesn't receive any information about whether a trip was purchased, what the original query was, or any user-identifiable information.

This data includes a small sample of all the searches we saw for round-trip flights from Boston to Cancun over a period of about 18 months, with a small subset of potentially interesting features for each trip.

search_id	the bundle identifier
trip_index	the index of the trip within a bundle
received_date	date the trip was received at Hopper
received_ms	date the trip was received at Hopper
origin	origin airport
destination	destination airport

total_usd	total fare including taxes and fees
pax_type	passenger type quoted
refundable	refundable fare indicator
validating_carrier	airline selling the ticket
departure_odate	departure date in origin TZ
departure_ms	epoch milliseconds of departure
outgoing_duration	total in minutes
outgoing_stops	number of stops on outbound trip
return_odate	return date in destination TZ
return_ms	epoch millis of return time
returning_duration	total in minutes
returning_stops	number of stops on return trip
major_carrier_id	airline delivering majority of flight time
total_stops	total stops for round-trip
advance	days search before departure
length_of_stay	nights between departure and return
includes_saturday_night_stay	indicator for saturday stayover
available_seats	quoted availability at search time
lowest_cabin_class	lowest cabin class over all flights
highest_cabin_class	highest cabin class over all flights