design exercise

Daniel Jackson · Autodesk, Boston · March 17-18, 2025

your turn: restaurant reservations

State Street Provisions

★★★★⯨ 4.6 · 💬 1390 Reviews · 💵 $30 and under · 🍴 American

📍 255 State Street, Boston, MA 02109

Overview · Private dining · Popular dishes · Photos · Menu · Reviews

Good for groups · Good for special occasions · Good for business meals

A welcoming contemporary restaurant with a touch of rustic charm, State Street Provisions is today's answer to the taverns that once offered respite to the fishermen and tradesmen who worked in Boston's bustling Long Wharf. Historicall...

Read more

Private dining

Private Dining
100 Standing • 100 Seated

Custom Up to 100

Make a reservation

👤 6 people ⌄

📅 Mar 14, 2025 ⌄ 🕐 7:00 PM ⌄
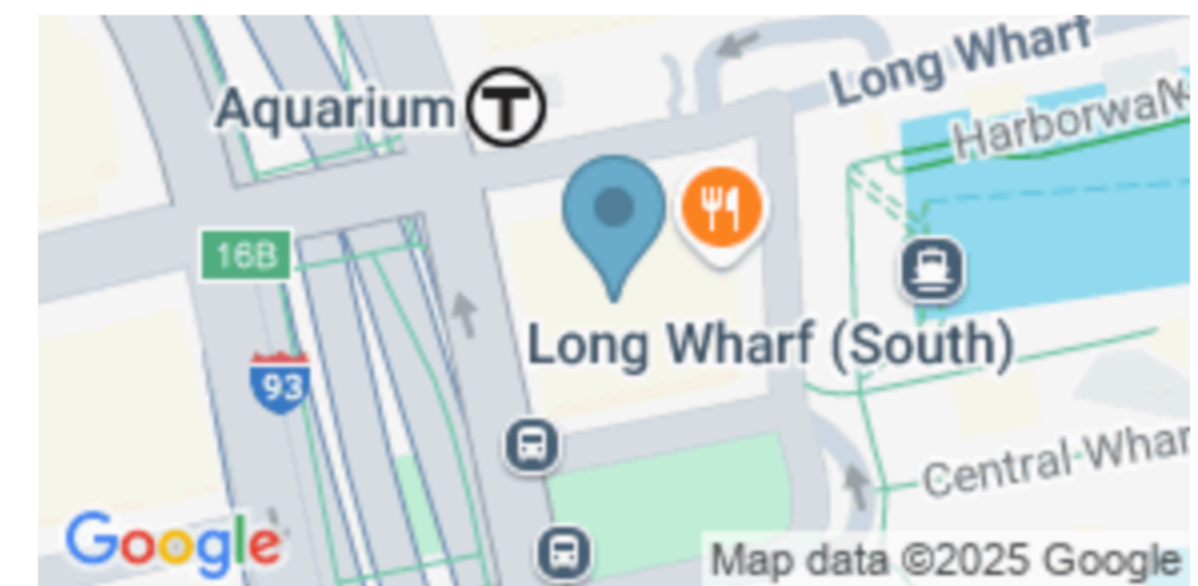
Select a time

6:30 PM · 6:45 PM · 7:15 PM · 7:30 PM

🔔 Notify me

📈 Booked 35 times today

⏱ You're in luck! We still have 4 timeslots left

📍 255 State Street, Boston, MA 02109

your challenge

pick a name
specific to function
but for general use

describe purpose
why design or use it?
value to stakeholders

tell story
a simple scenario
of how it's used
including setup

list actions
by user or system
key steps, not UI

specify state
what's remembered
enough for actions

identify the key concepts
give a name and purpose to each

define the core concept
figure out its operational principle (story), actions & state

thinking about synchronizations
are there any non-trivial synchronizations?

now pick some design issues, discuss & report back

can you book two restaurants for same time?
how to handle no-shows?
what if a party overstays their slot?

design questions

paying deposits for reservations
rating restaurants you've been to
confirming you're coming by SMS
special events that use many tables

function extensions

what if a bot books all the slots?
a malicious actor cancels your reservation?

security threats

how might you adjust the design?
change existing concepts?
change existing syncs?
add concepts or syncs?

are there more consequences?
is this function desirable?
knock-on effects?
implications for the future?

my solution

concept RestaurantReservation

state
 slots: **set** Slot
 date: Slot -> **one** Date
 time: Slot -> **one** Time
 tables: Slot -> **one** Table
 lo, hi: Table -> **one** Int
 reservations: **set** Reservation
 owner: Reservation -> **one** User
 table: Reservation -> **one** Table
 party_size: Reservation -> **one** Int

actions
new_slot (d: Date, t: Time): Slot
new_table (s: Slot, lo, hi: Int): Table
get_free (s: Slot): **set** Table
reserve (t: Table, u: User, party: Int): Reservation
cancel (r: Reservation)
checkin (r: Reservation)

a real story of restaurant reservations

Daniel Jackson

gift coupon

September 1, 2021 at 10:16 AM

To: ░░░░░░░░░░░░░░░░░░░░░░░░

Details

Dear ░░░░░░░░░░░,

░░░░░░░░░░░░░ gave me for my birthday last May a coupon for two dinners.

Since I live in Boston and work full time, it's not so easy to make a time to come to NYC. I'd planned to come in mid-October, and waited until this morning to try to make a reservation. But even though I got online at 9:00 exactly, and clicked on a free slot, it was marked as sold out when the website came back.

I'm thinking that given how popular your restaurant is, how hard it is to make a reservation, and the fact that I don't live in NY, it really doesn't make sense for me, and I'm wondering if you could refund the coupon.

I can give you all the details and send it back to you. I hope you can honor this request. I can't imagine you'd be losing any business in doing so, as you seem to have no trouble filling all your slots! (Congrats!).

Best,

Daniel Jackson

Info

September 1, 2021 at 7:24 PM

Re: gift coupon

To: Daniel Jackson

Hello Daniel,

Thank you for reaching out to ███████ ██████ ███. We truly understand how intense booking a reservation at our restaurant can be, and we genuinely wish we could accommodate everyone around the world who wishes to dine with us. Unfortunately, we are unable to issue a refund for gift cards purchased.

As an other option, we have six bar stools at the main bar that are available on a first-come, first served basis and you may order our bar tasting menu at the main bar in addition to cocktails, light snacks and our a la carte menu.

Our doors open Tuesday- Saturday at 5pm. Generally speaking, the best time to get a spot is right when the doors open, but it really depends on each individual day. Once you arrive, the maître d' at the door can let you know of availability at the bar and if it is at capacity. We do encourage checking back throughout the service, as things change quickly.

If we can be of further assistance, please don't hesitate to reach out.

Sincerely
Rebecca

Rebecca ████ Guest Relations

Dear Rebecca,

Thank you for your response. I'm sure you're very busy, but I think you might have sent me a stock response without fully appreciating my situation.

I don't live in New York City, so coming by to try and get a spot isn't possible. I would be making a special trip so I can't book the trip until i have the reservation in hand.

Furthermore, with my brother having spent $▮▮) on the coupon, I don't think sitting at the bar would be a good option.

And finally, the very fact that you can't accommodate everyone who wants to dine with you should surely make it easy for you to refund someone who has paid but is unable to use the coupon!

This is really a huge amount of money, and—to be honest—it leaves a very sour taste to think that you will essentially be holding our money until some time comes in the future that we'll be able to come to New York and simultaneously obtain a reservation, which seems (as you note in your first paragraph) to be a very hard thing to achieve!

I do hope you'll reconsider.

—Daniel

MR **Marcia** ▮▮ ▮▮▮ September 2, 2021 at 5:25 PM

FW: gift coupon

To: Daniel Jackson

Hi Daniel,

Rebecca forwarded along your email to me so that I can circle back with you. Unfortunately, as Rebecca said, we are unable to refund gift card purchases. It has always been, and will continue to be our policy. Our gifts card never expire so you are welcome to try at a later time to get a reservation in the dining room if you don't want to dine at a bar stool. As a last resort, there are third party sites where you can sell or trade the card. I'm so sorry that we can't be of more help and I know it is frustrating when reservations are not easily attainable.

Thanks,
Marcia

Marcia ▮▮▮▮
Chief Financial Officer
▮▮▮▮▮▮▮

Upcoming gift card litigation issues

October 16, 2021 at 4:29 AM

Details

To: ▓▓▓ ▓▓▓, ▓▓▓, ▓▓▓ ▓▓▓, ▓▓▓ ▓▓▓, Cc: Daniel Jackson

Hi Marcia, ▓▓▓ and ▓▓▓

I just wanted to give you a heads-up about the upcoming litigation and likely negative social media so that we have a chance to head off if you act now.

Marcia has been corresponding with Daniel about her refusal to refund the gift certificate despite the fact that reservations at ▓▓▓ are not conveniently available and the failure to disclose this at the point of purchase after being specifically asked about it.

The card issuer has now charged back the credit card transaction and Daniel has also initiated a court action in Massachusetts. Quite apart from the costs of filing a defense, this will obviously bring negative publicity, and since this will impact both ▓▓▓ and ▓▓▓ objectives, I thought it would be helpful to give you a chance to evaluate whether the profit on retaining one unusable gift certificate is greater than the PR and social media damage.

When this kind of corporate sharp practice becomes public, it's common for the principals in the business to deny that they knew what was going on, and to insist that they were shocked, shocked to discover what their underlings were doing.

That's why I've copied ▓▓ ▓▓ into this email: if in future your company should claim on his behalf that he wasn't aware of what was going on, then this email will prove that incorrect.

My recommendation for your next steps would be as follows: refund, apology, undertaking to change future processes around gift certificates.

▓▓▓ ▓▓▓

Daniel Jackson

October 19, 2021 at 9:02 AM

Re: Upcoming gift card litigation issues

Details

To: Marcia ███ ██, Cc: ▀ ▄█▪██

H Marcia,

Thank you for offering to refund.

To cancel my suit, I'd be grateful if you'd also cover the cost of its filing, which was $74.08 (receipt appended below), assuming there are no additional costs in dismissing the case. This can be refunded to the same credit card.

Daniel Jackson

your turn:
boarding pass

a much harder problem

your task
identify some key concepts for this application
figure out in rough terms what each will do

some hints
boarding pass can be shared with others
may change after installed (eg, gate, seat, time)
can read by scanning or by NFC

takeaways:
your turn

what did you learn from this exercise?

what's next?

reflections
last session of the day
then rest, dinner, sleep (phew !)

tomorrow
design moves
granularity of concepts
how strongly to sync