Reliability Nightmares

The coloring book

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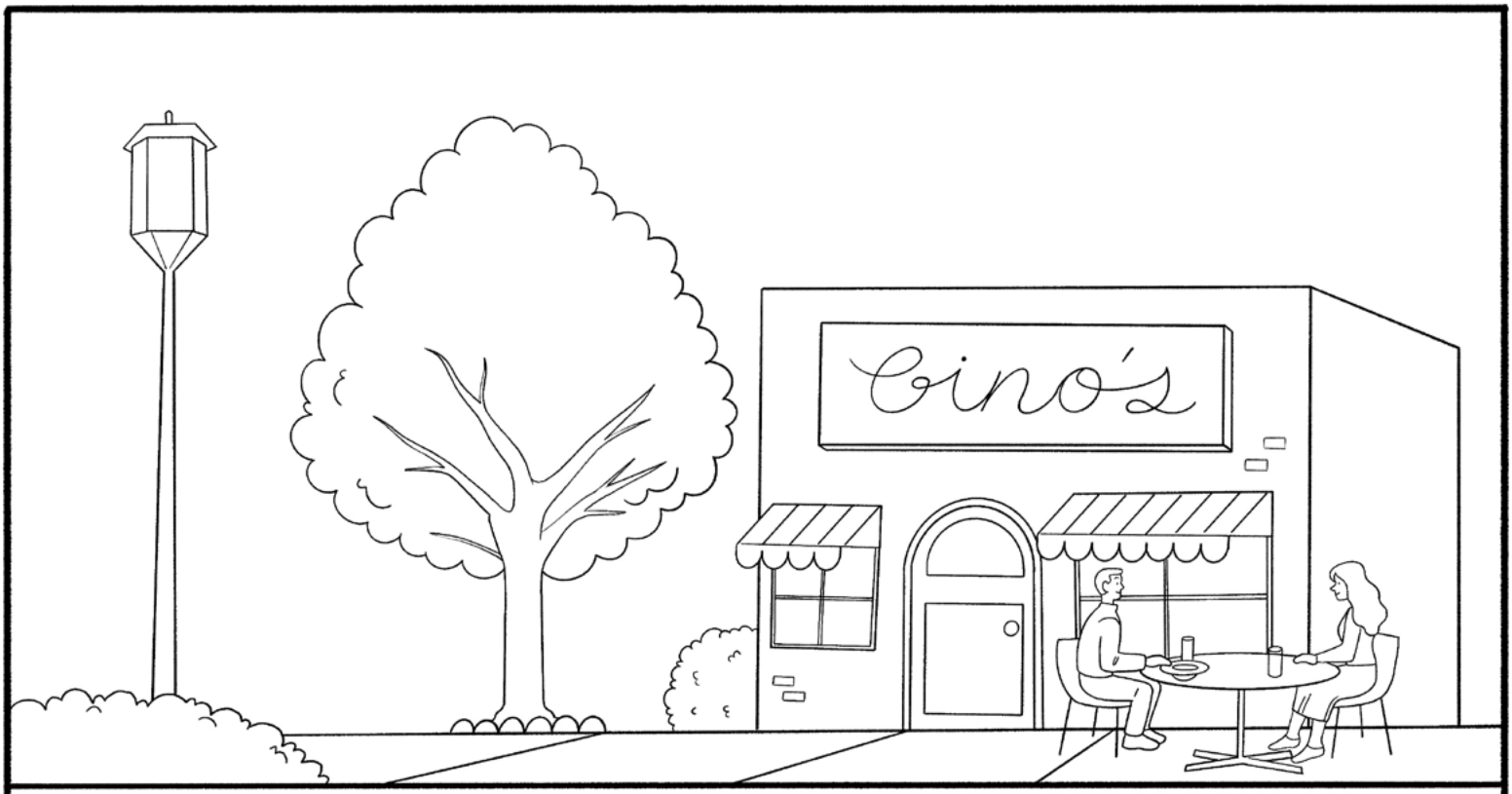
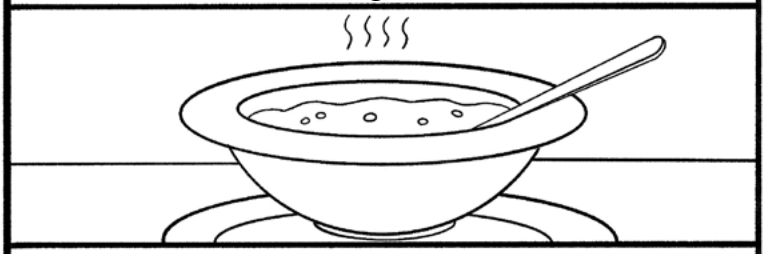


Gino's was a successful family-owned restaurant,
renowned for good food and good times.

Gino passed away and left the restaurant to his son, Leo, who quit his job to run it.
Gino had a natural instinct for running a restaurant. Leo does not.

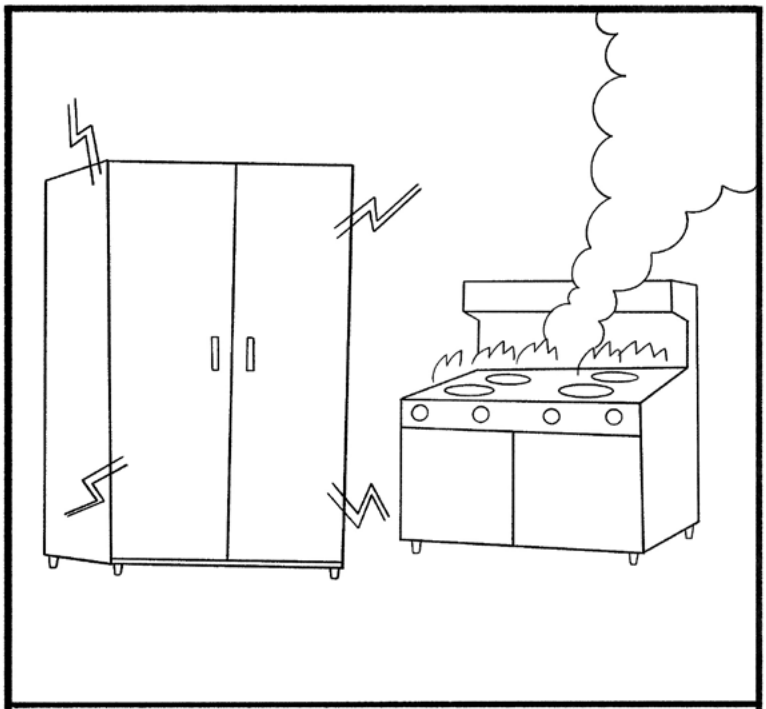
Wrong food.



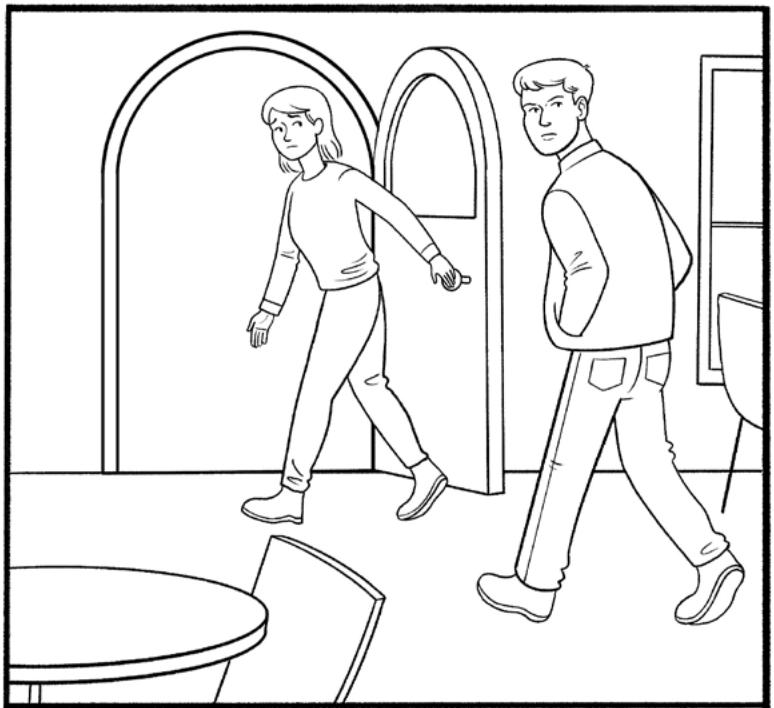
Cold food.

Gross food.

The waitstaff are either bombarded or bored.



Food spoils due to a freezer failure, and a poorly maintained oven causes a kitchen fire.



Loyal customers were disappointed and started leaving. Word was getting around that Gino's was "not what it used to be."

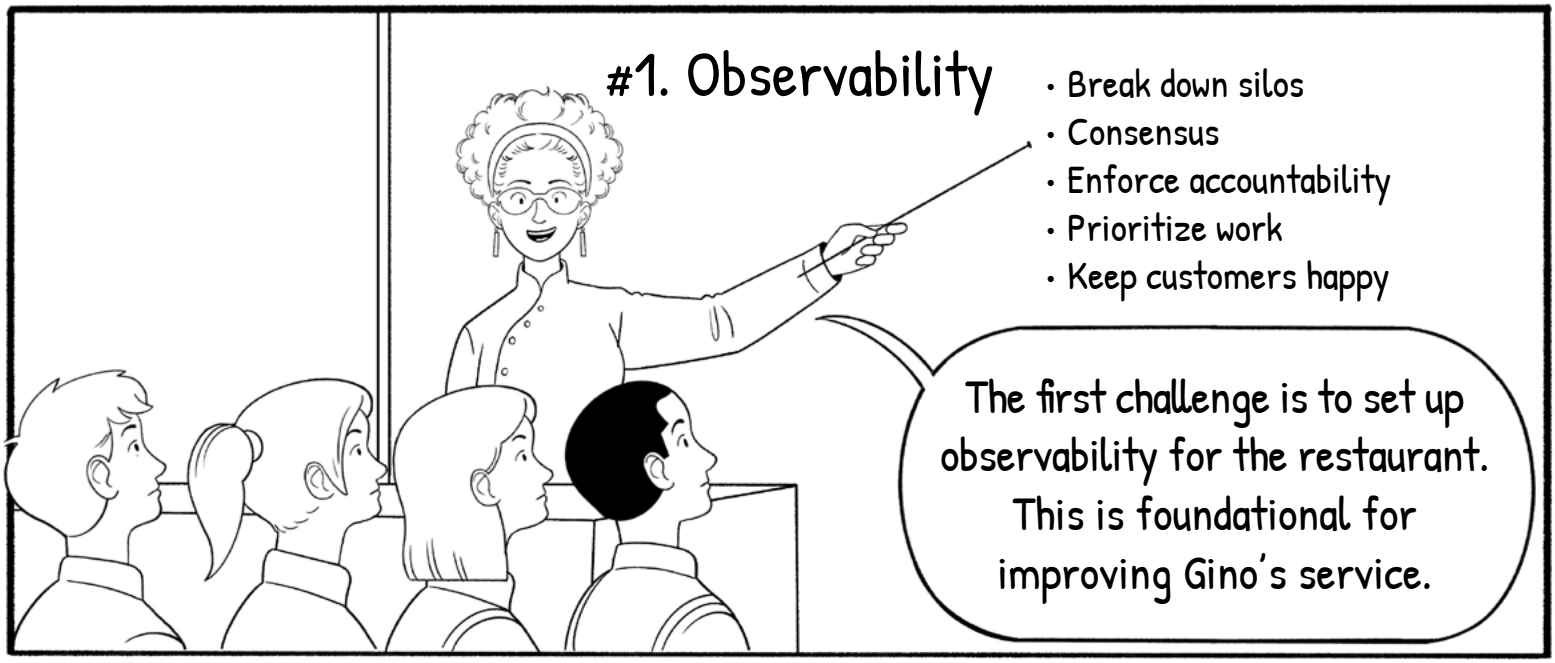

I can't do this.
45 years in operation!
Will this be the last?
KNOCK
KNOCK
Who's that at the door?
Hi! I'm celebrity chef Cookie Cache!
You're hosting your sister's wedding
reception! Let's get this place
whipped into shape!!

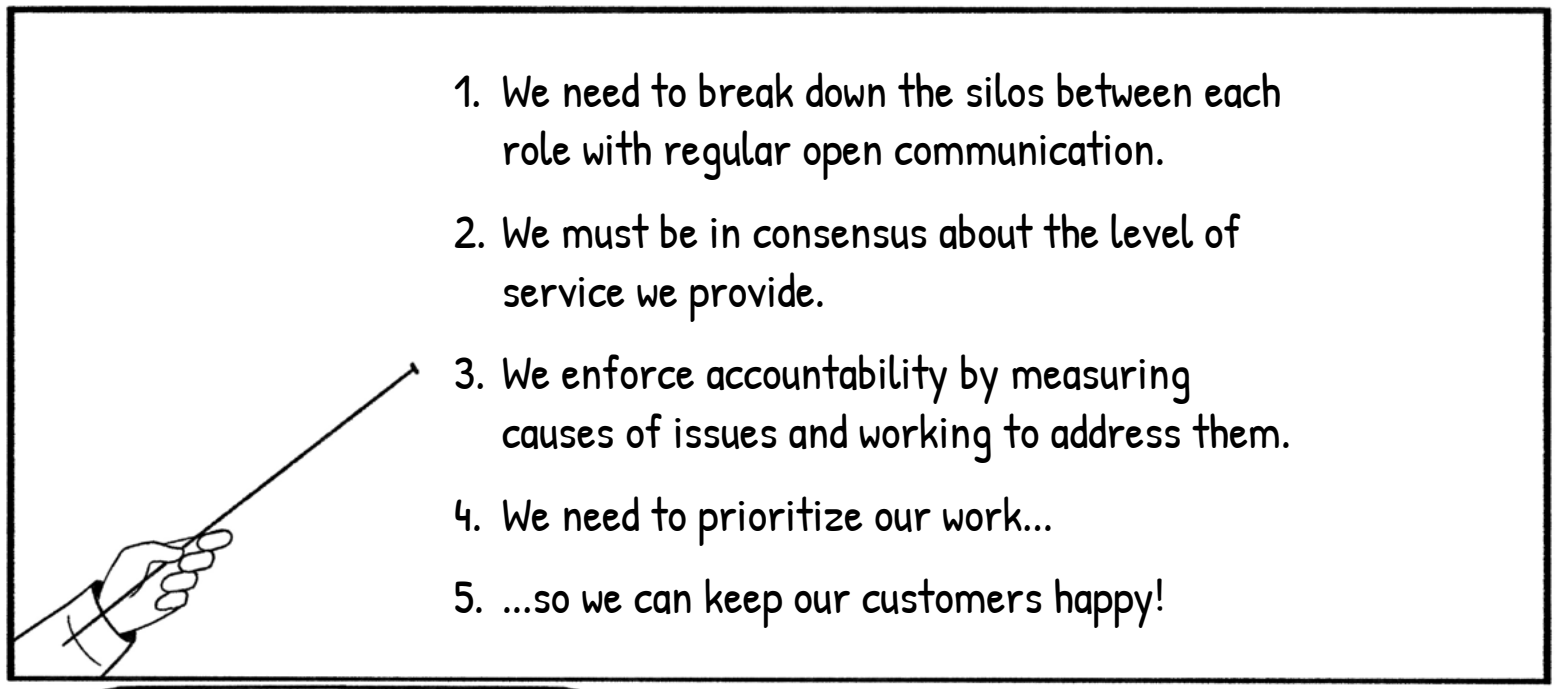
The first task is for Chef Cache to evaluate Gino's dining experience—sample the menu and check out the service.


Our specials of the day are J2EE spaghetti with artisanal memory leaks, bash'ed shellfish on bare metal, and home-cooked biz-critical ancient LAMP stack pancakes.
I'll try the LAMP stack, please!
[90 minutes pass]
... Hey, uh, Leo?
Apologies for the wait! I'll check!

Five Challenges

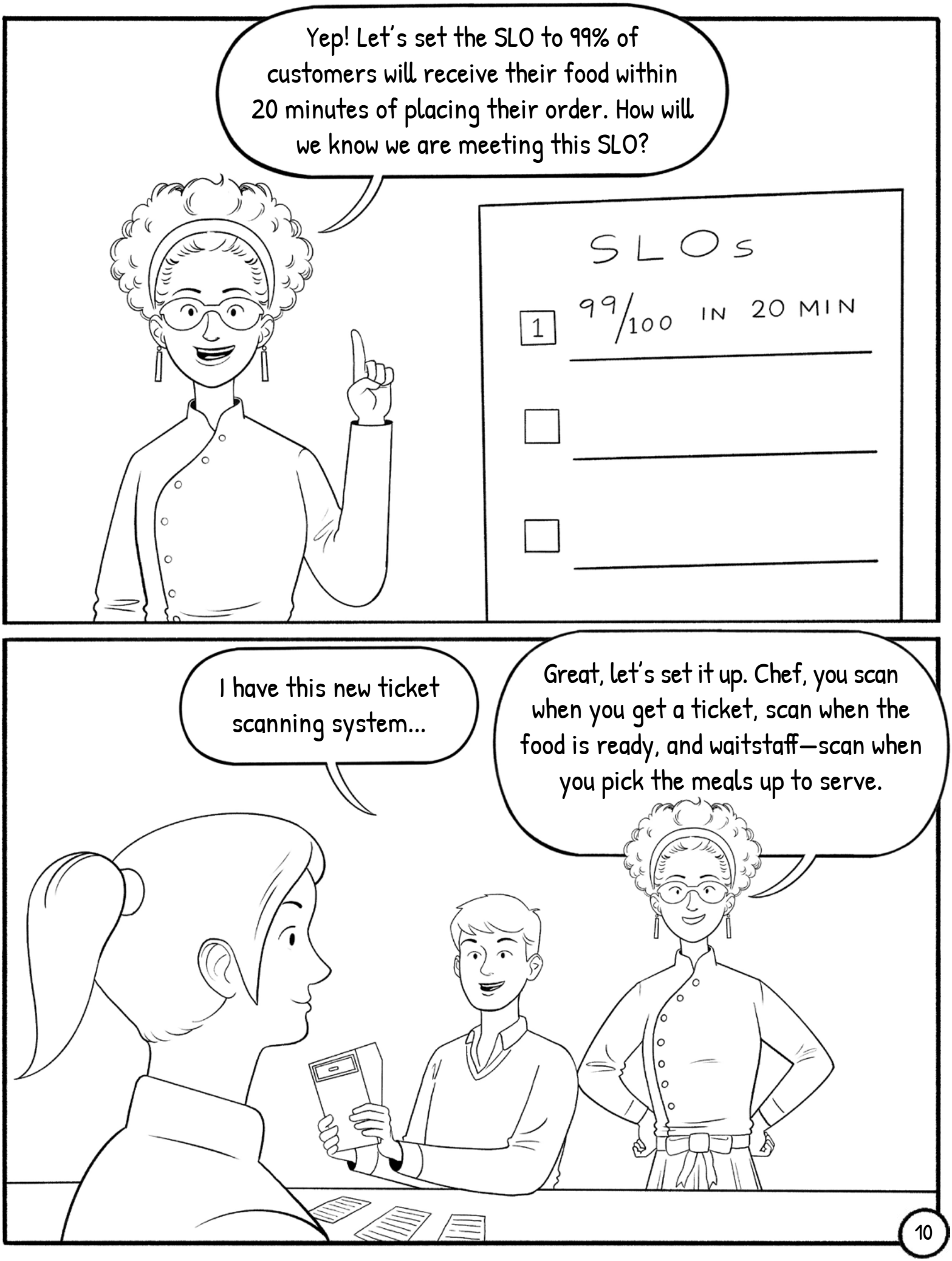
There is a better way. I will teach you how to run Gino's as a managed service. You'll have five challenges, one per day. We'll close Gino's for the week and get you ready for the wedding!


#1. Observability
• Break down silos
• Consensus
• Enforce accountability
• Prioritize work
• Keep customers happy
The first challenge is to set up observability for the restaurant. This is foundational for improving Gino's service.


1. We need to break down the silos between each role with regular open communication.
2. We must be in consensus about the level of service we provide.
3. We enforce accountability by measuring causes of issues and working to address them.
4. We need to prioritize our work...
5. ...so we can keep our customers happy!


You need to know your equipment works, your food supplies are fresh and stocked, and that customers are served in a timely manner. You need data to achieve all of this.
How do we do it?


To accomplish this, we'll define service-level objectives for Gino's. SLOs are a set of goals you'd like to achieve that represent what your customers expect. We'll collect data to measure whether we meet our SLOs or not.
SLOs
We've had a lot of dishes sent back lately because they weren't served right away and got cold. Can we set an SLO for that?

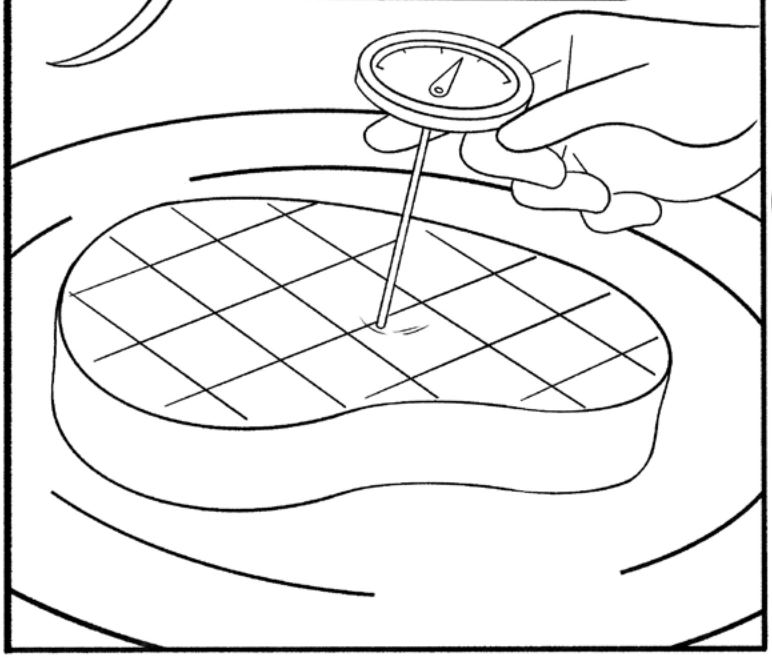

Yep! Let's set the SLO to 99% of customers will receive their food within 20 minutes of placing their order. How will we know we are meeting this SLO?
SLOs
1
99/100 IN 20 MIN
I have this new ticket scanning system...
Great, let's set it up. Chef, you scan when you get a ticket, scan when the food is ready, and waitstaff—scan when you pick the meals up to serve.


How about supplies? So we don't have to tell customers we're out of their favorite dishes quite so much?
Brilliant! Our SLO can be no more than two dishes omitted per week due to supply. How do we measure this?
The scanners can do inventory tracking too!
SLOs
1 99/100 IN 20 MIN
Dashboard
Great, let's set the scanners up to track inventory. Once everything is set up, let's schedule monthly SLO meetings. We can talk about how we're doing at meeting our SLOs, and tweak, retire, or create new ones.
SLOs
1 99/100 IN 20 MIN

#2. Safety and self-healing


What about when it's less clear there's a problem? I had to bring 15 orders back last week because the customers disagreed about the steak doneness.
We can't be perfect on subjective things. Let's create an SLO—1/100 customers will send their steaks back. We can set an error budget for doneness. For a medium steak what would your range be?
Medium rare to medium-well done. Not well done or rare.
That means that of 100 steaks ordered, only one will be out of range. If we get more than one out of range, it is time to do something about it ASAP. Let's call that an 'incident'.

So measure it! Measure before you send them out. Time them and use a thermometer—don't just go by your gut—until you meet the SLO.



And if you hit two steak returns in one day, you can self-heal by using thermometers on every steak afterwards to make sure no more get returned and so you can recalibrate yourself.

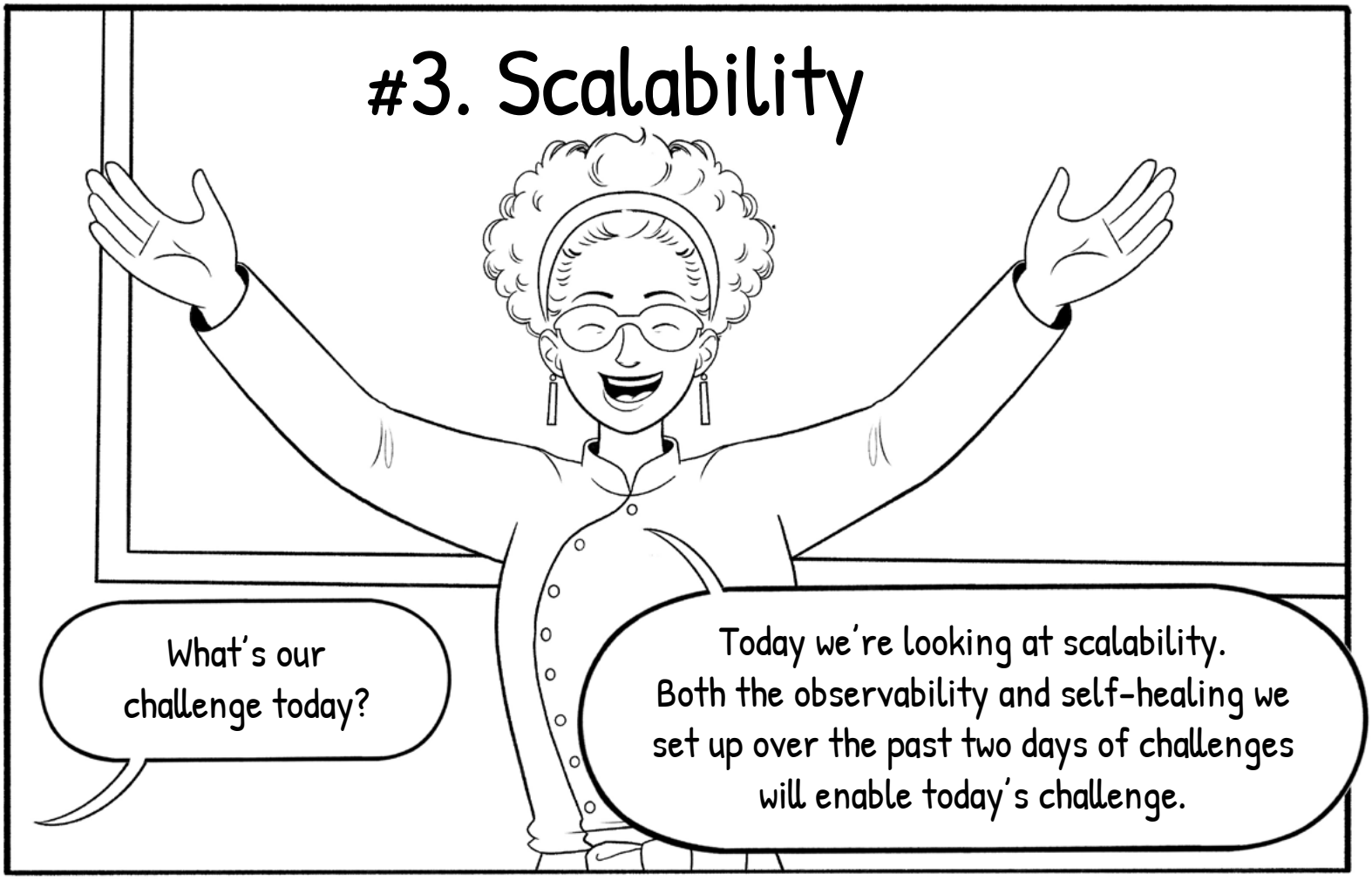
Hmm...maybe something is wrong with the stove?

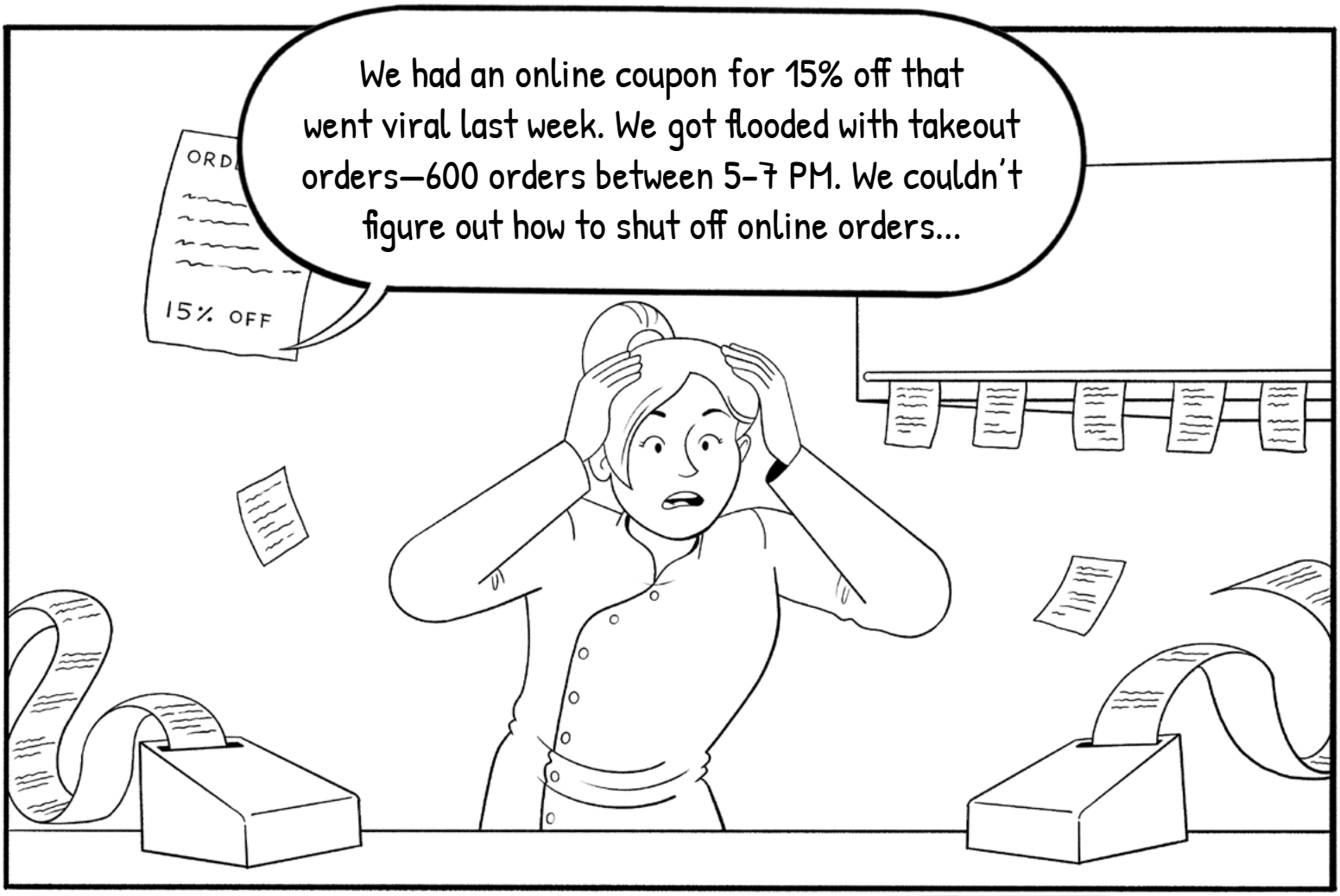
#2. Safety and self

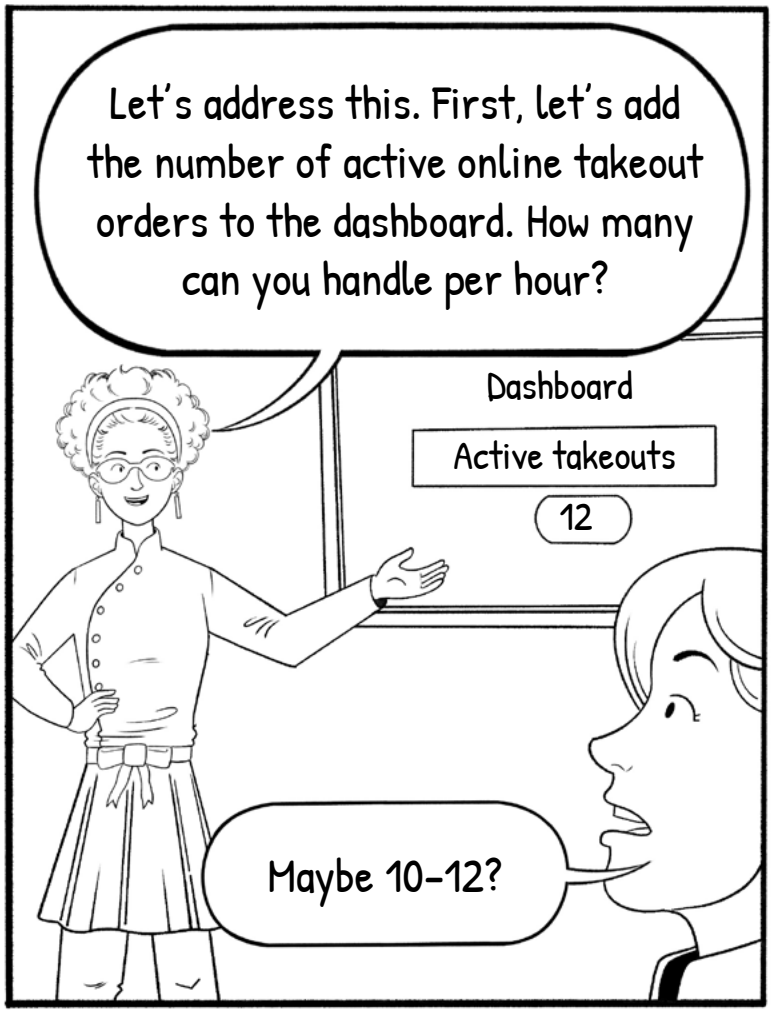
1. steak

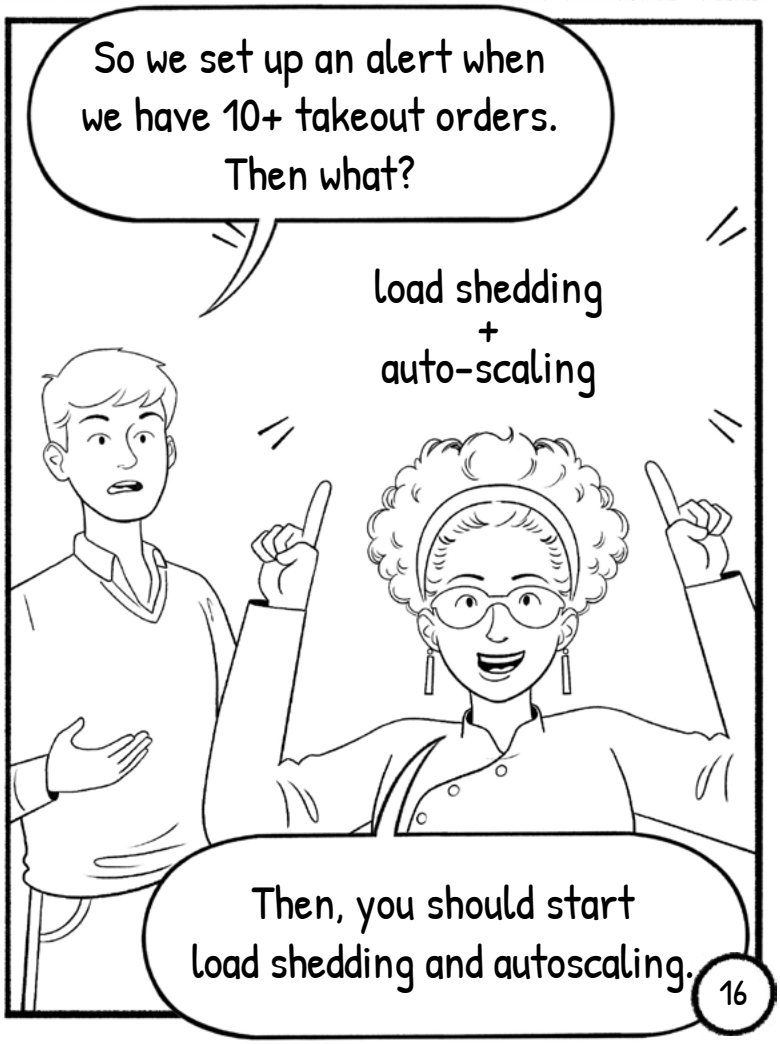
So let's list out all of these kinds of potential issues and set error budgets for them. Then we can track them each day on our dashboard!

#3. Scalability



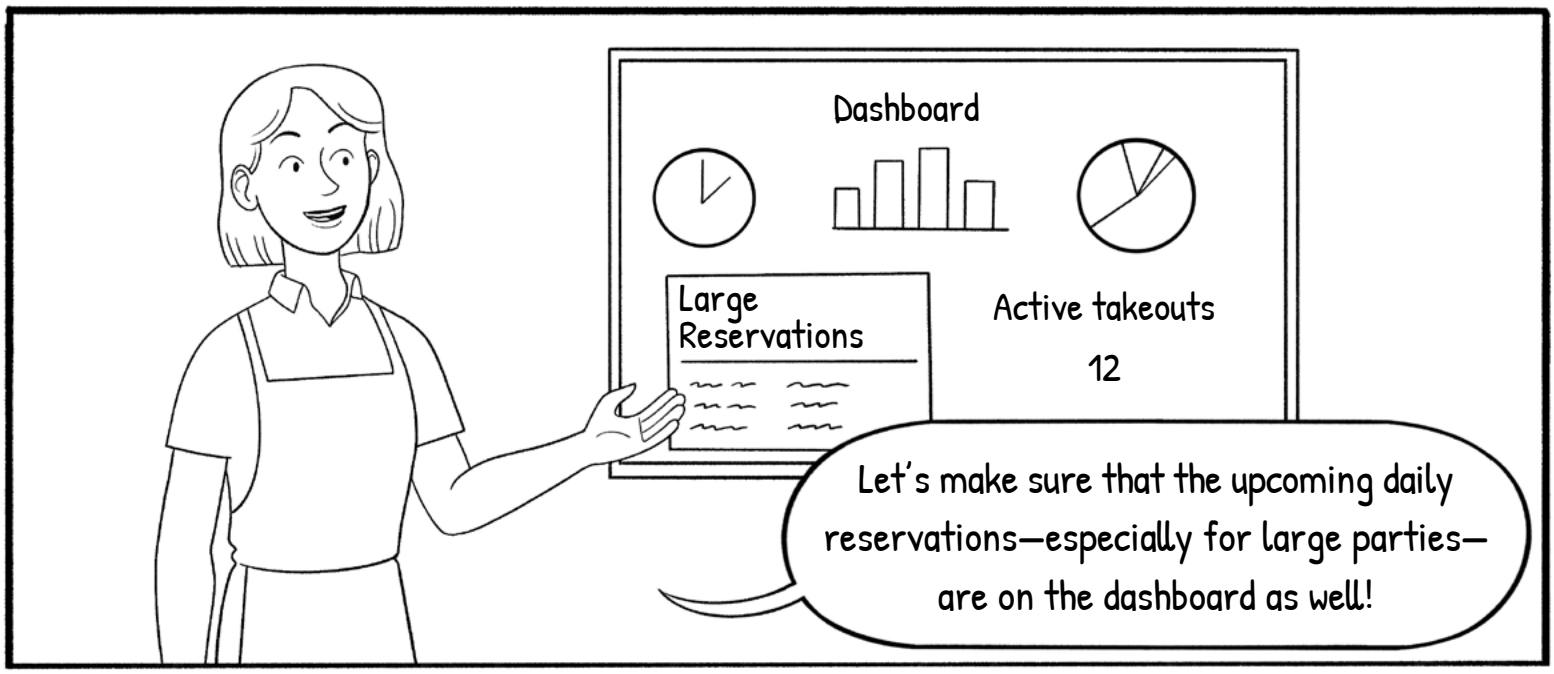

We had an online coupon for 15% off that went viral last week. We got flooded with takeout orders—600 orders between 5-7 PM. We couldn't figure out how to shut off online orders...
15% OFF


Let's address this. First, let's add the number of active online takeout orders to the dashboard. How many can you handle per hour?
Dashboard
Active takeouts
12
Maybe 10-12?

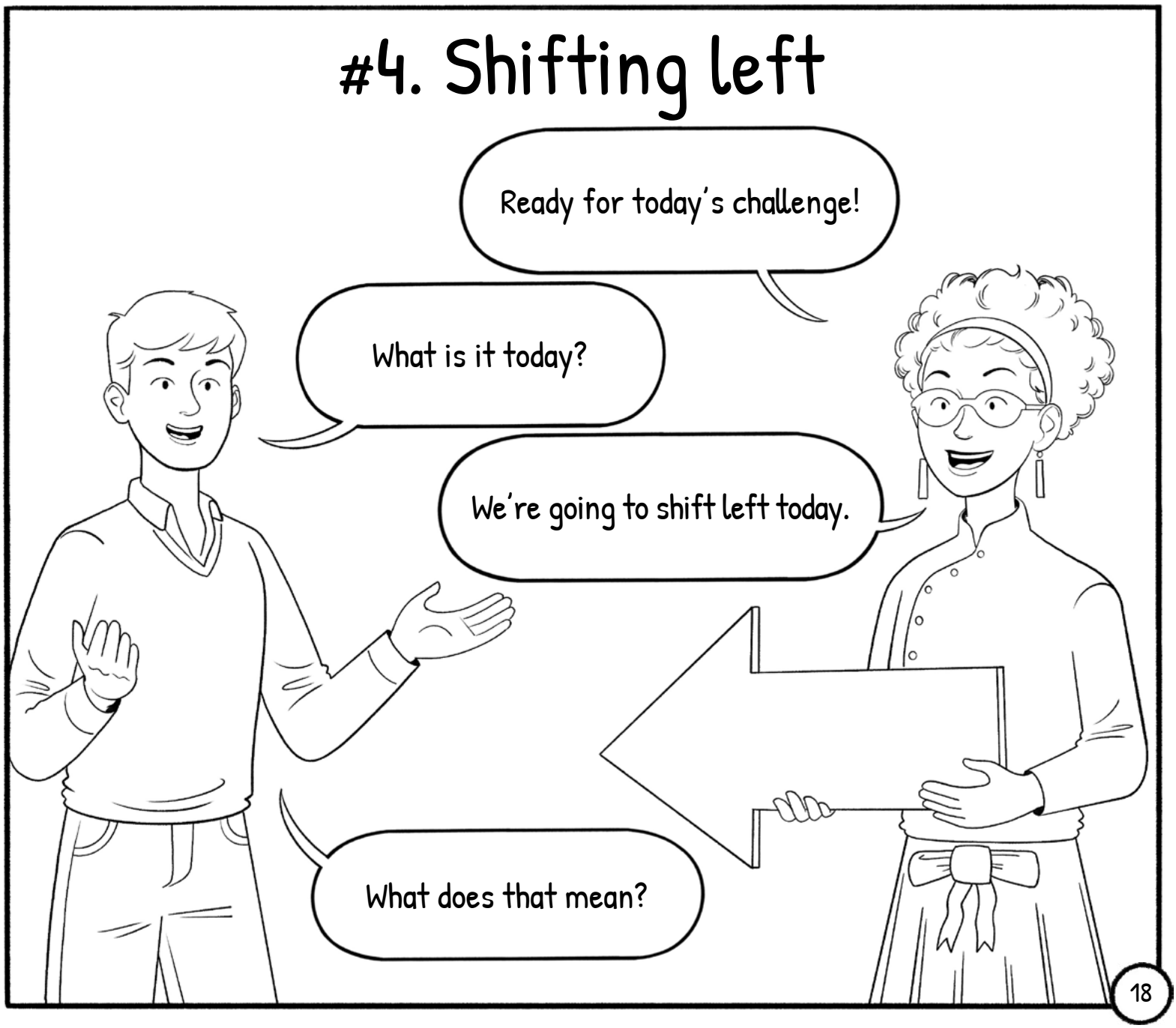

So we set up an alert when we have 10+ takeout orders. Then what?
load shedding
+
auto-scaling
Then, you should start load shedding and autoscaling.

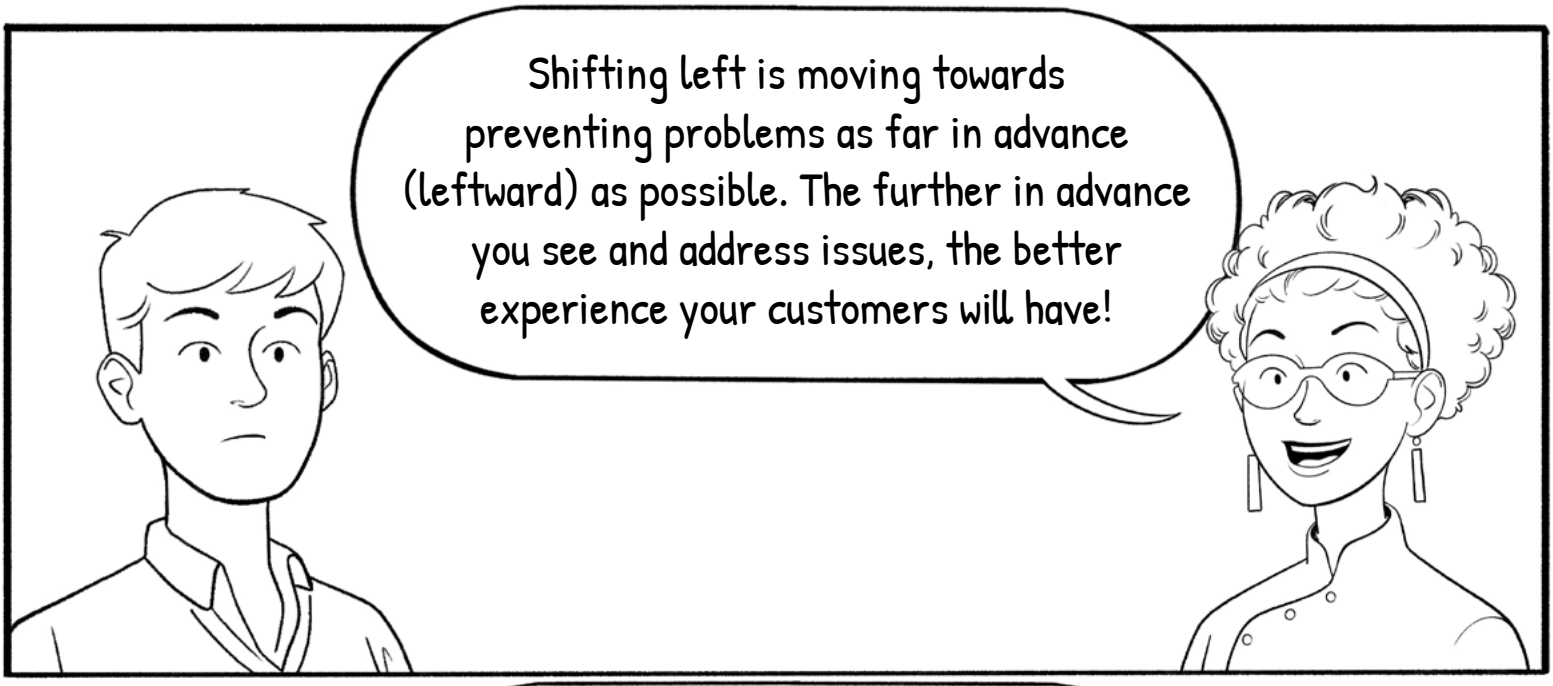

Load shedding is when you drop some tasks purposely to work through your queue. To load shed here, you could add a 20 minute wait to new dine-in guests. You can also pad out time estimates online to buy time to work thru the queue.
Gino's
Estimated Time
+ 20 minutes

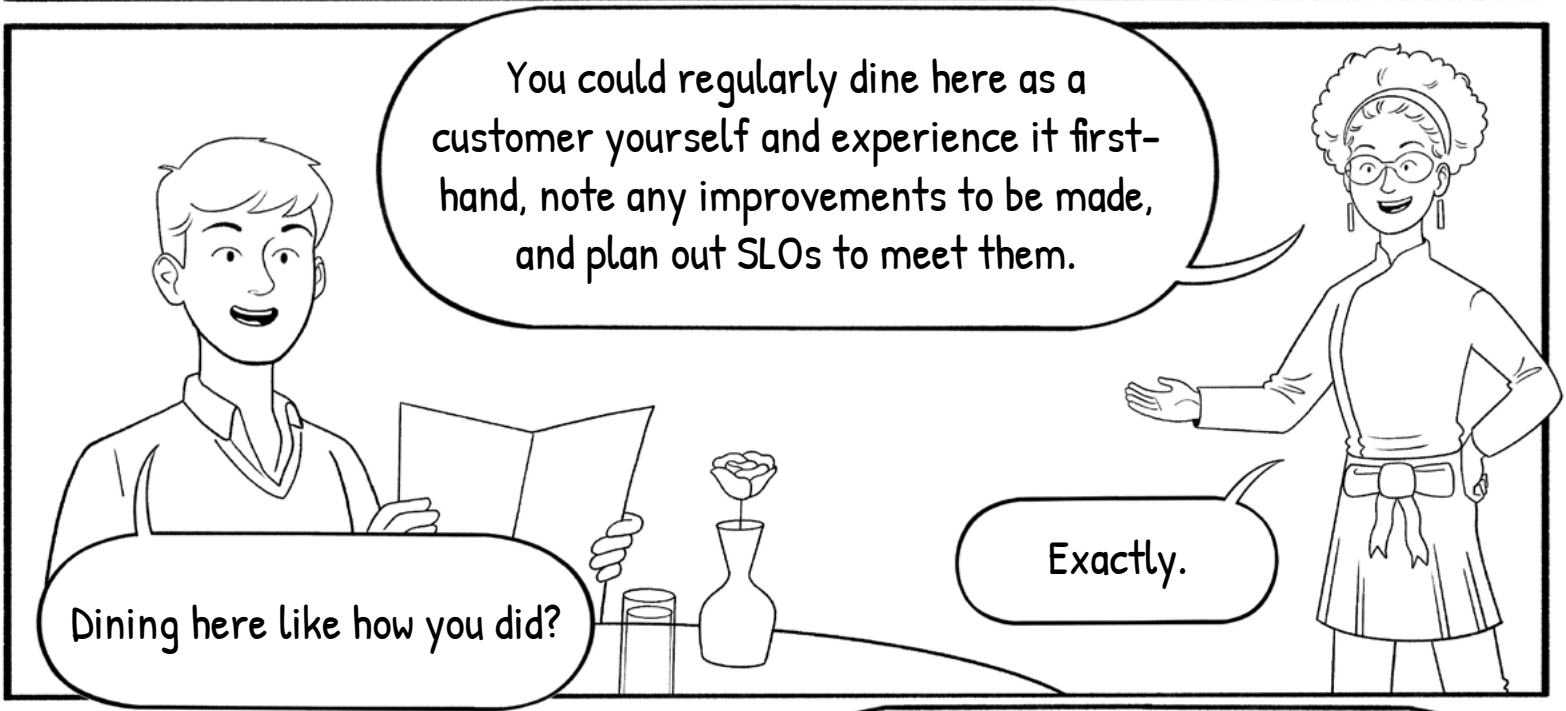

Autoscaling is when you horizontally scale out your capacity on demand. Say you have a large party reservation coming when takeout orders are high— you could call in extra staff to meet the demand if load shedding can't free up enough resources.

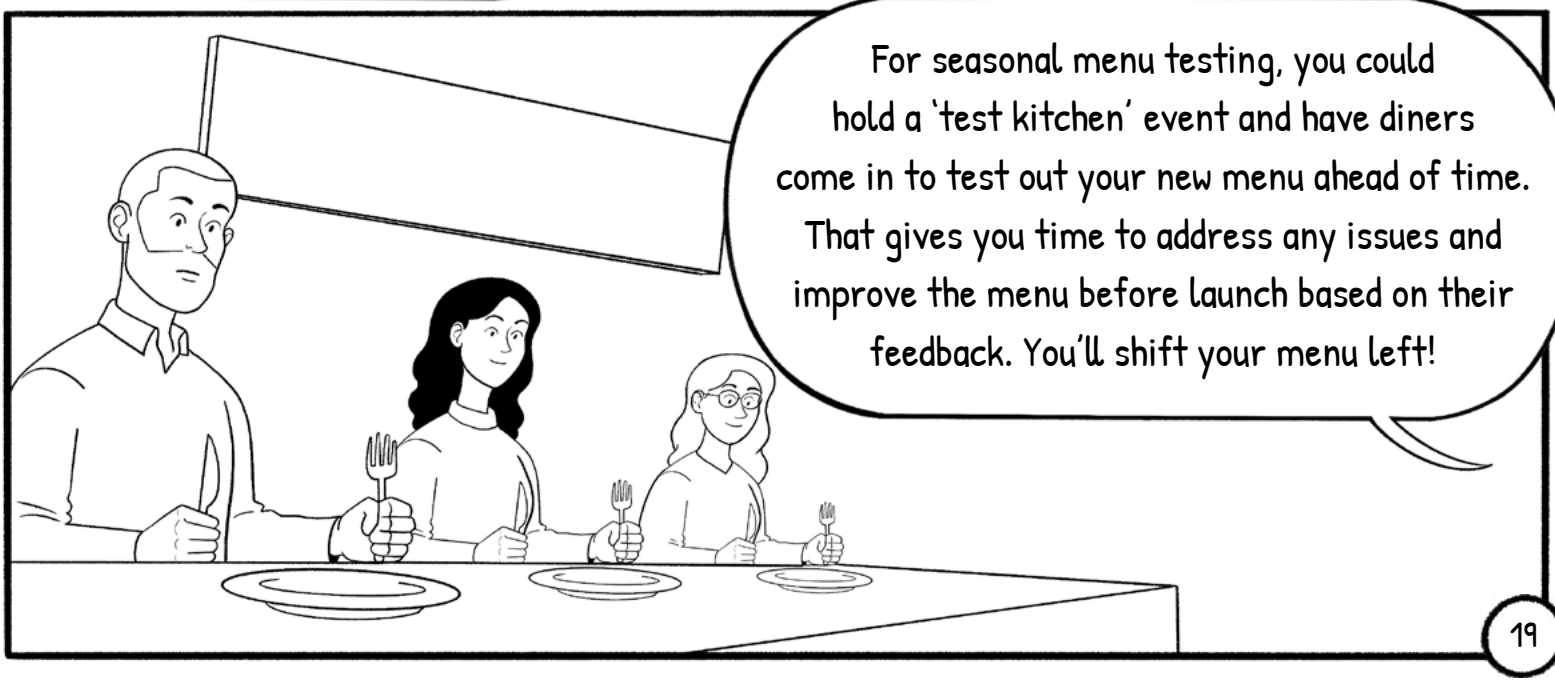


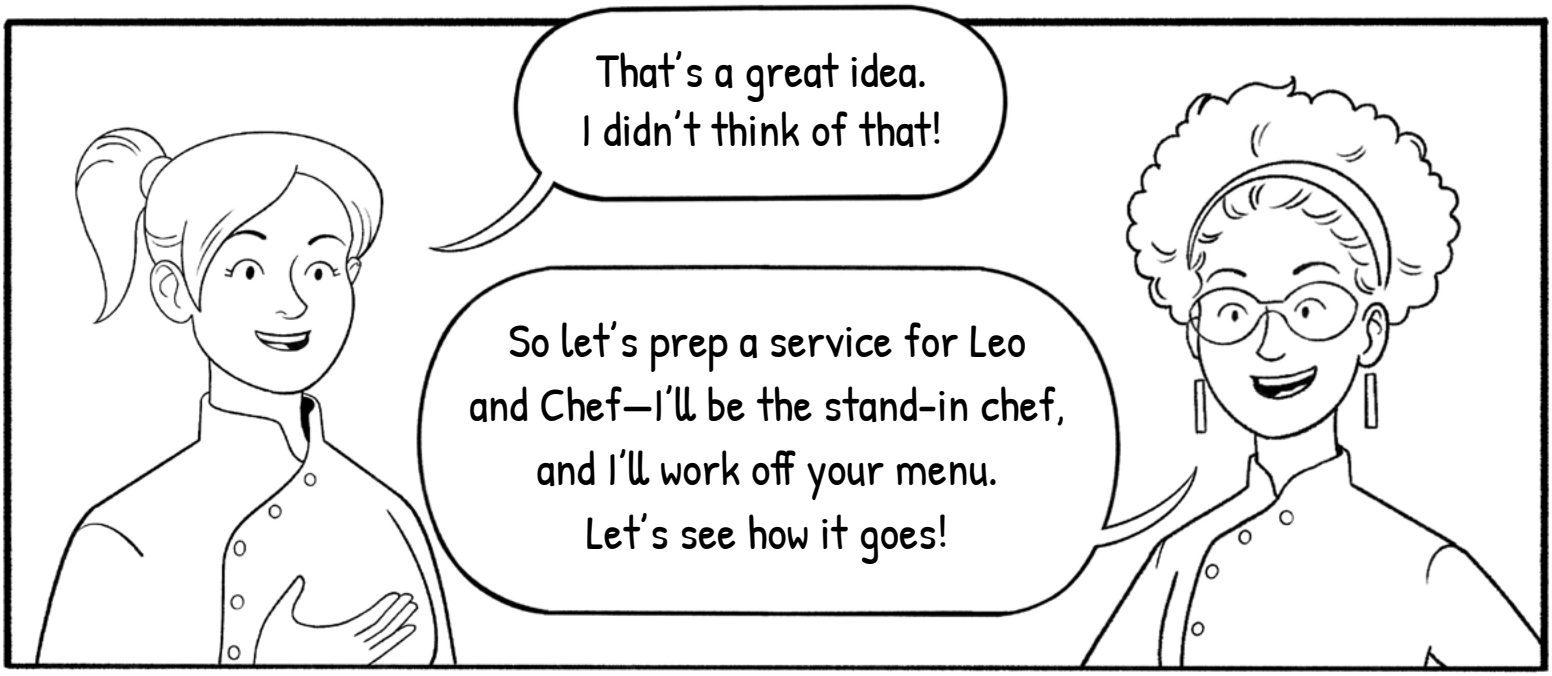
#4. Shifting left

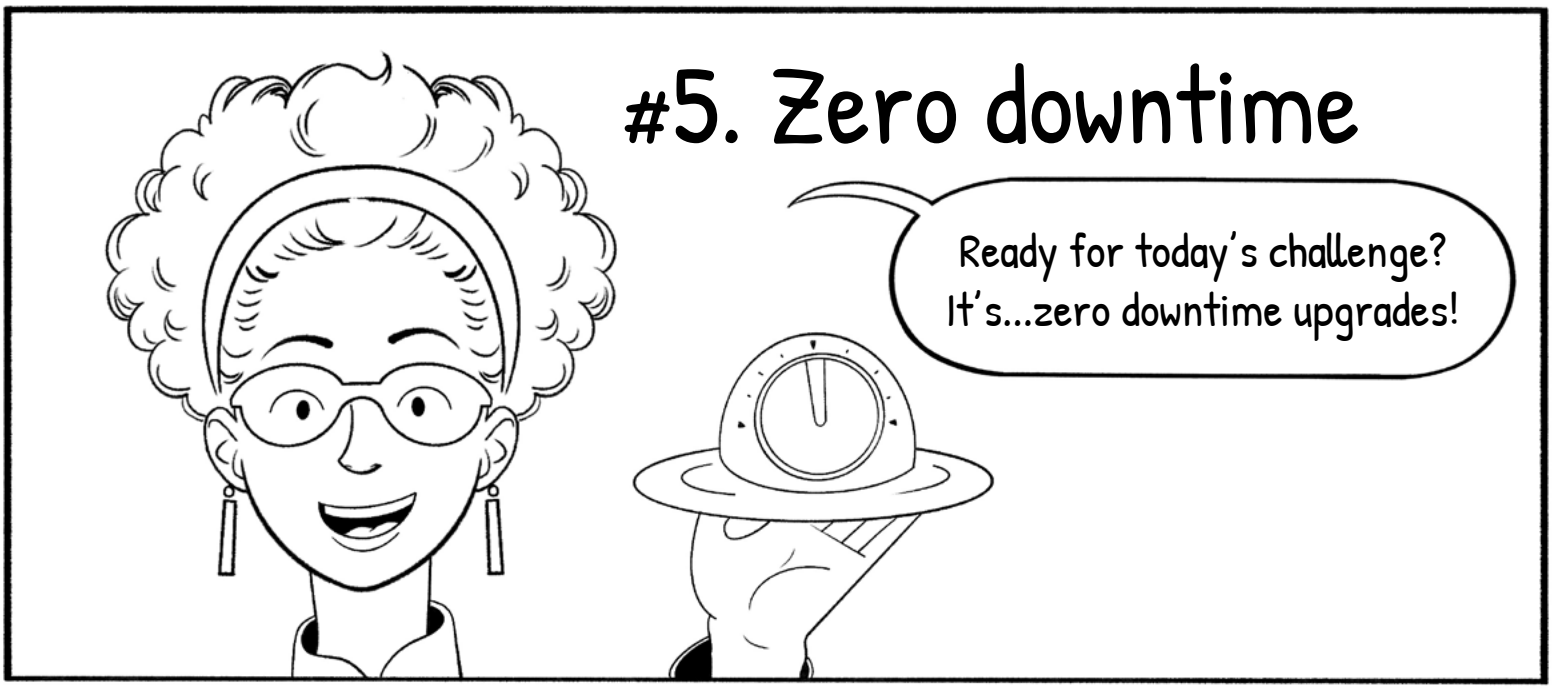



Shifting left is moving towards preventing problems as far in advance (leftward) as possible. The further in advance you see and address issues, the better experience your customers will have!


You could regularly dine here as a customer yourself and experience it first-hand, note any improvements to be made, and plan out SLOs to meet them.
Dining here like how you did?
Exactly.

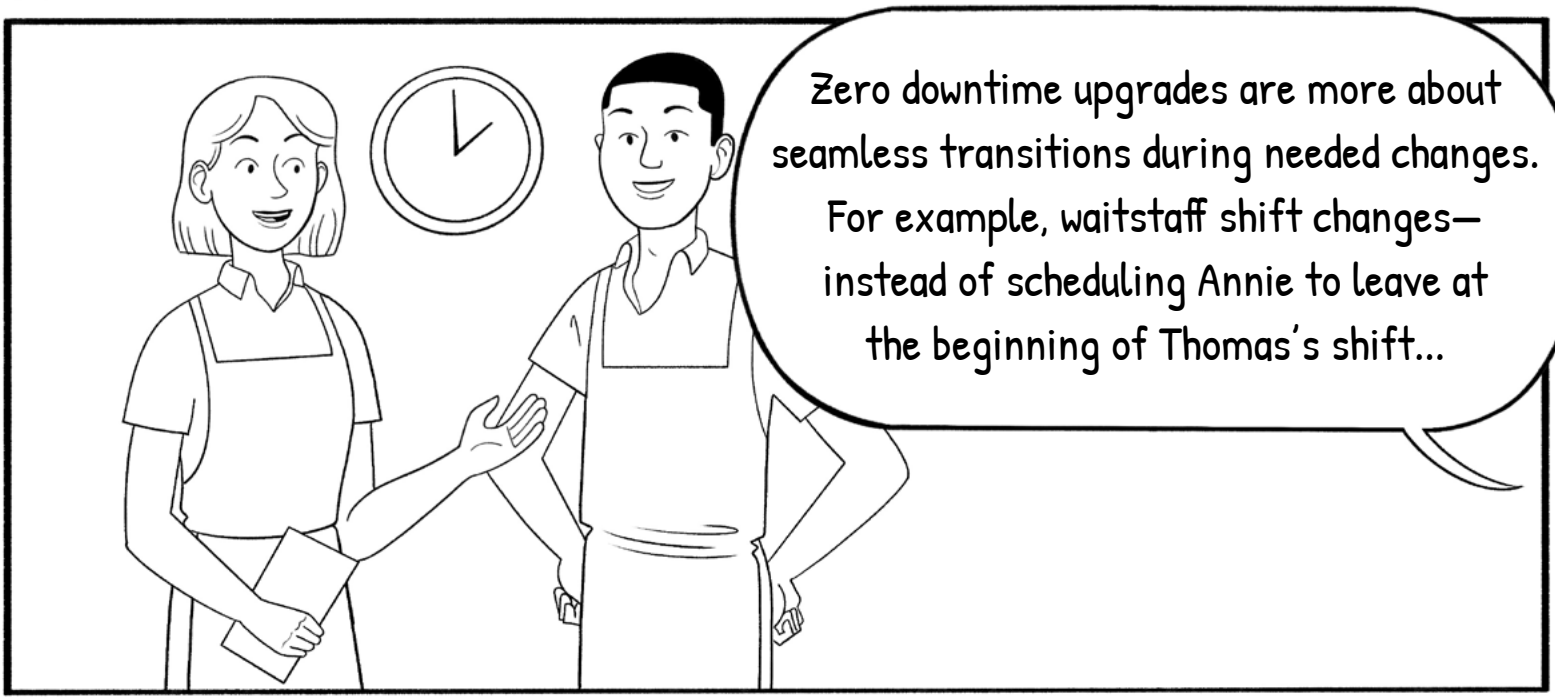

For seasonal menu testing, you could hold a 'test kitchen' event and have diners come in to test out your new menu ahead of time. That gives you time to address any issues and improve the menu before launch based on their feedback. You'll shift your menu left!

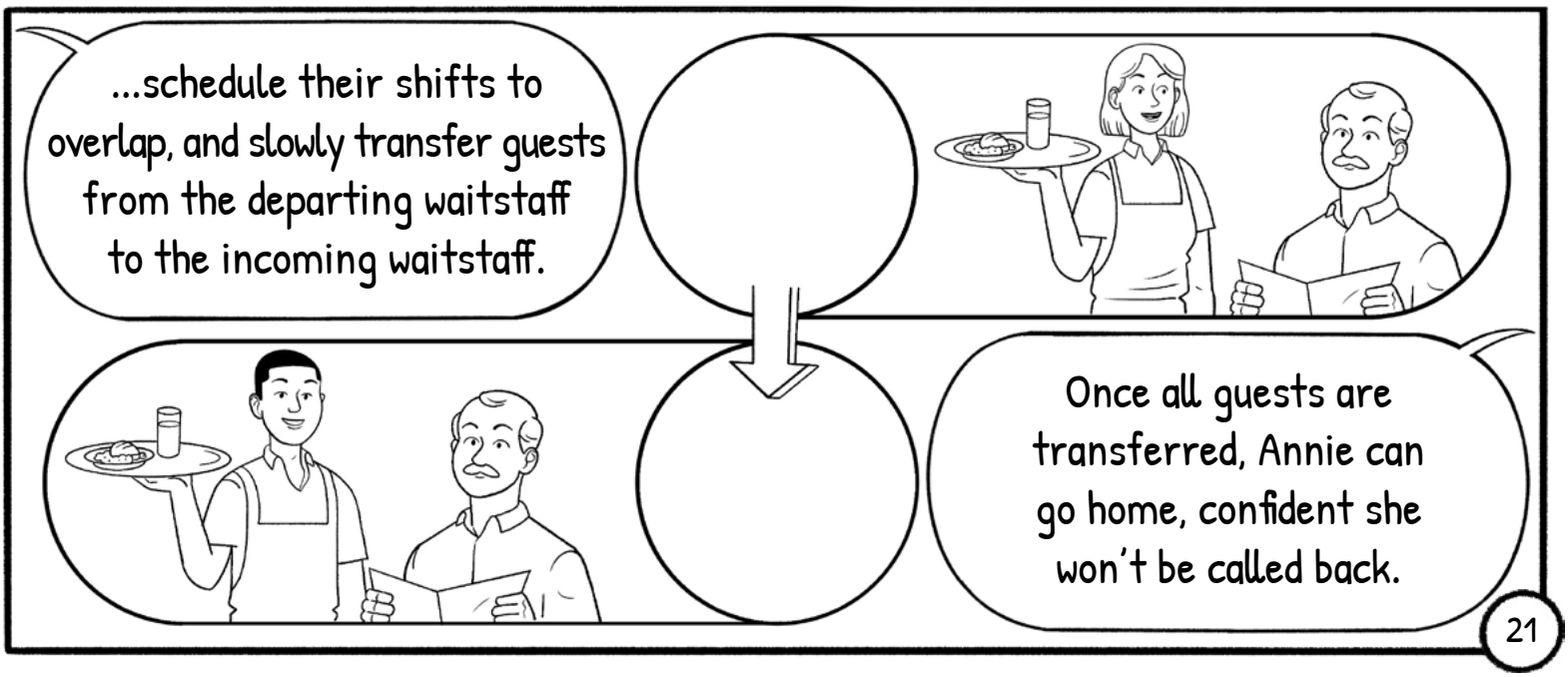

That's a great idea.
I didn't think of that!
So let's prep a service for Leo and Chef—I'll be the stand-in chef, and I'll work off your menu. Let's see how it goes!


#5. Zero downtime
Ready for today's challenge? It's...zero downtime upgrades!

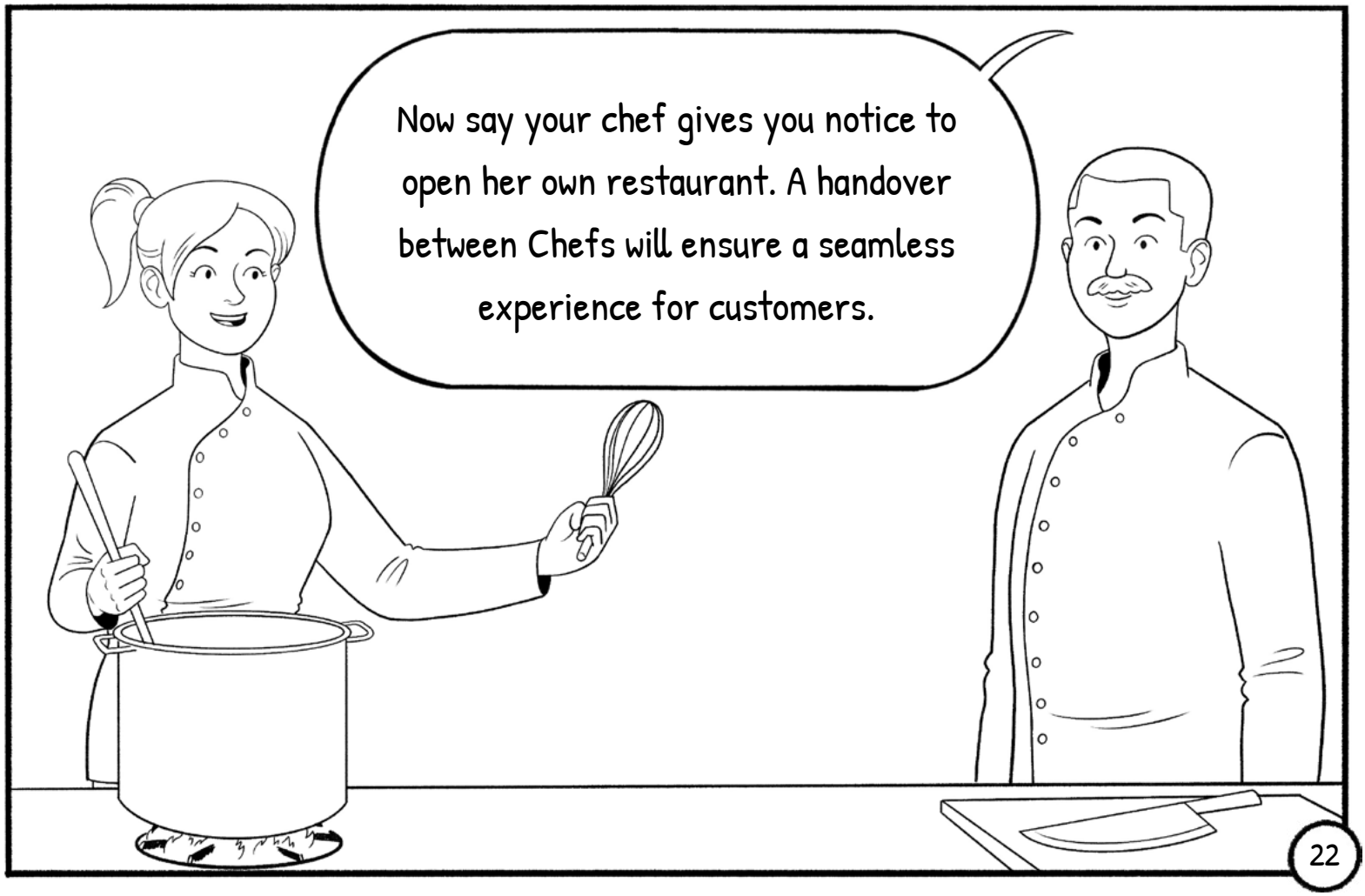

Zero downtime? We need our 15 minute breaks!

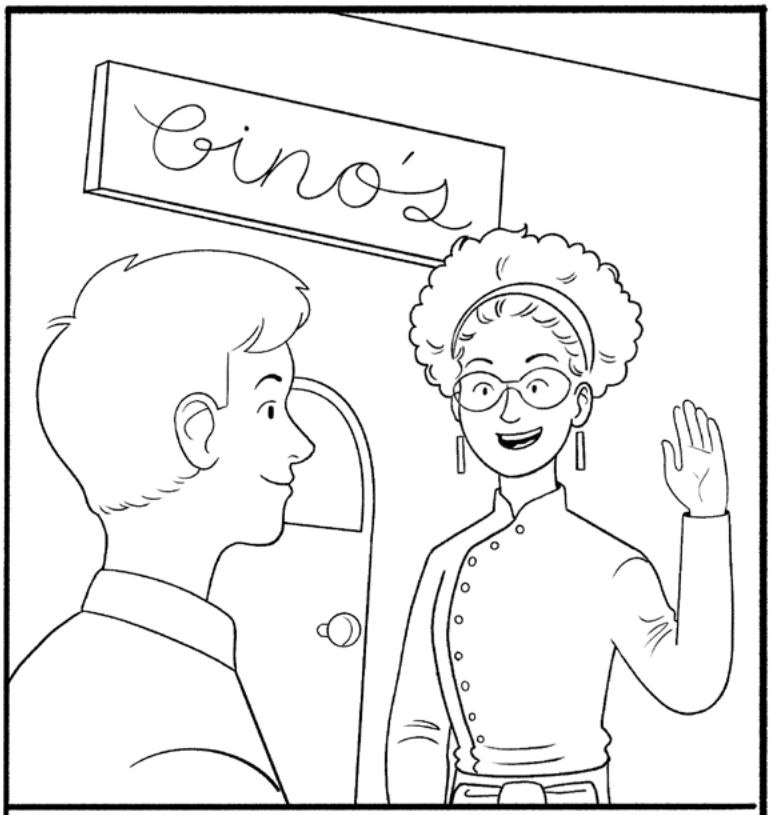

Of course, of course! You need breaks to do your best work— we want to prevent burnout and help you do your best work!


Zero downtime upgrades are more about seamless transitions during needed changes. For example, waitstaff shift changes— instead of scheduling Annie to leave at the beginning of Thomas's shift...

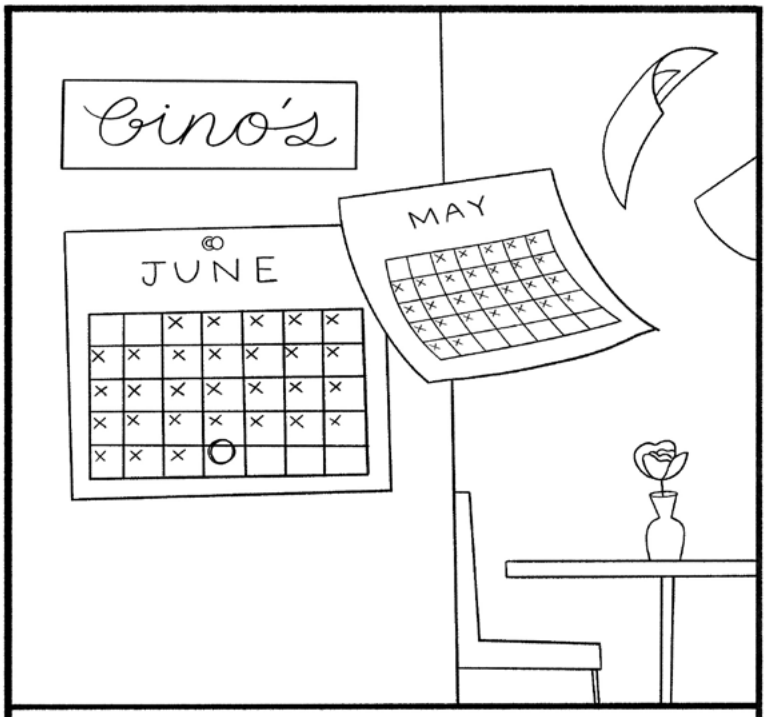

...schedule their shifts to overlap, and slowly transfer guests from the departing waitstaff to the incoming waitstaff.
Once all guests are transferred, Annie can go home, confident she won't be called back.


That would be great! We're always so rushed between shifts, sometimes we neglect a customer waiting on a drink they ordered before our shift, for example!

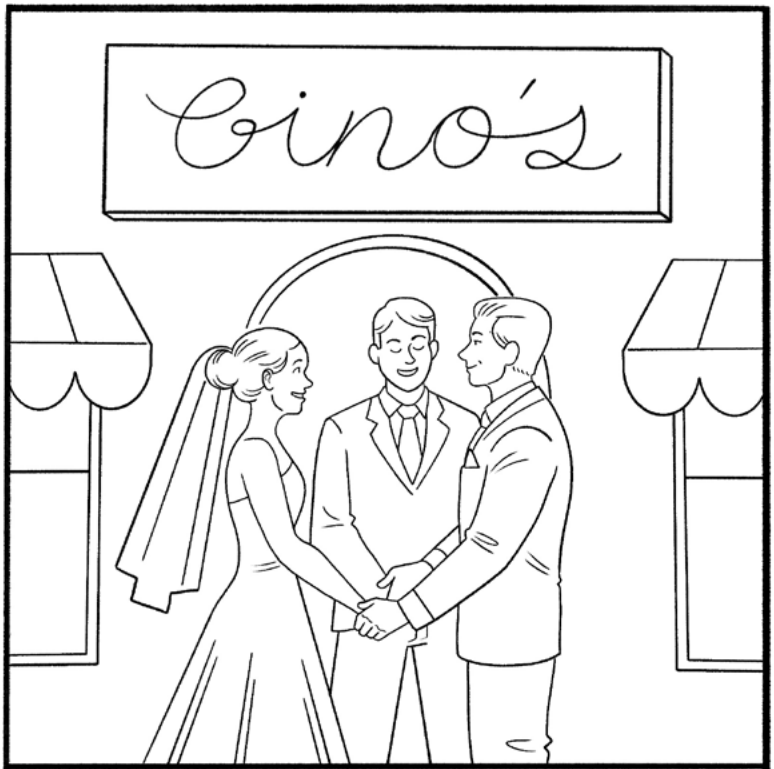

Now say your chef gives you notice to open her own restaurant. A handover between Chefs will ensure a seamless experience for customers.



Chef Cookie Cache left Gino's at the end of day five.

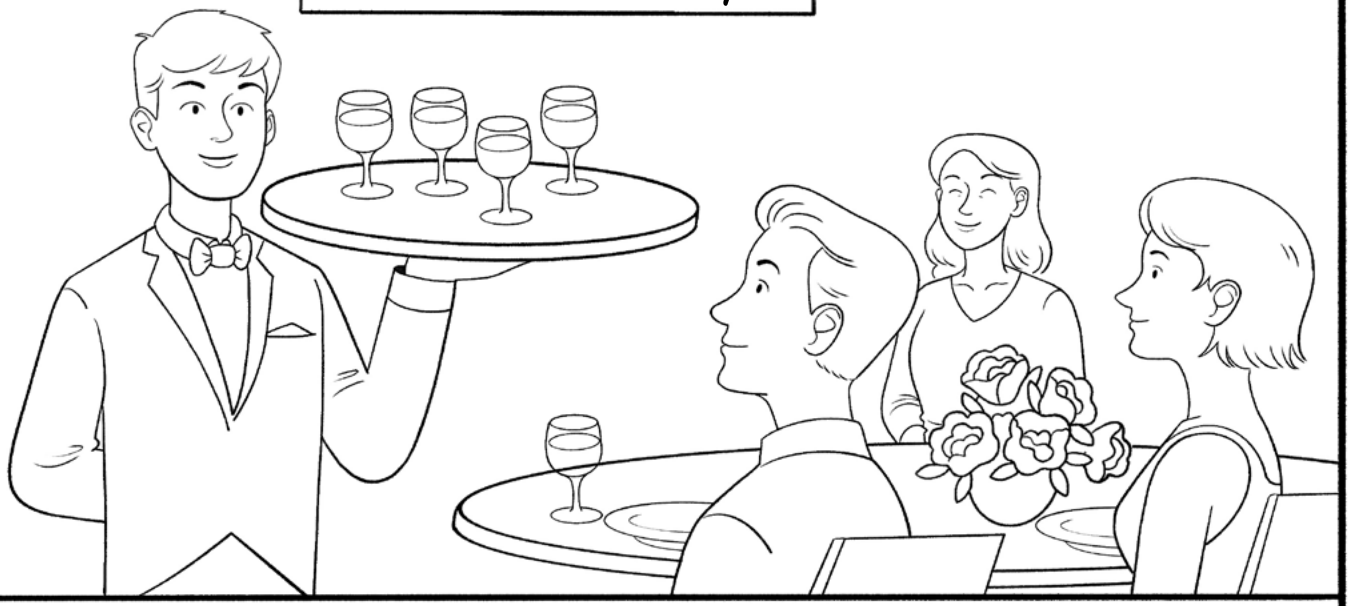


In the months leading up to his sister's wedding reception, Leo put into practice the lessons from the five managed service challenges...



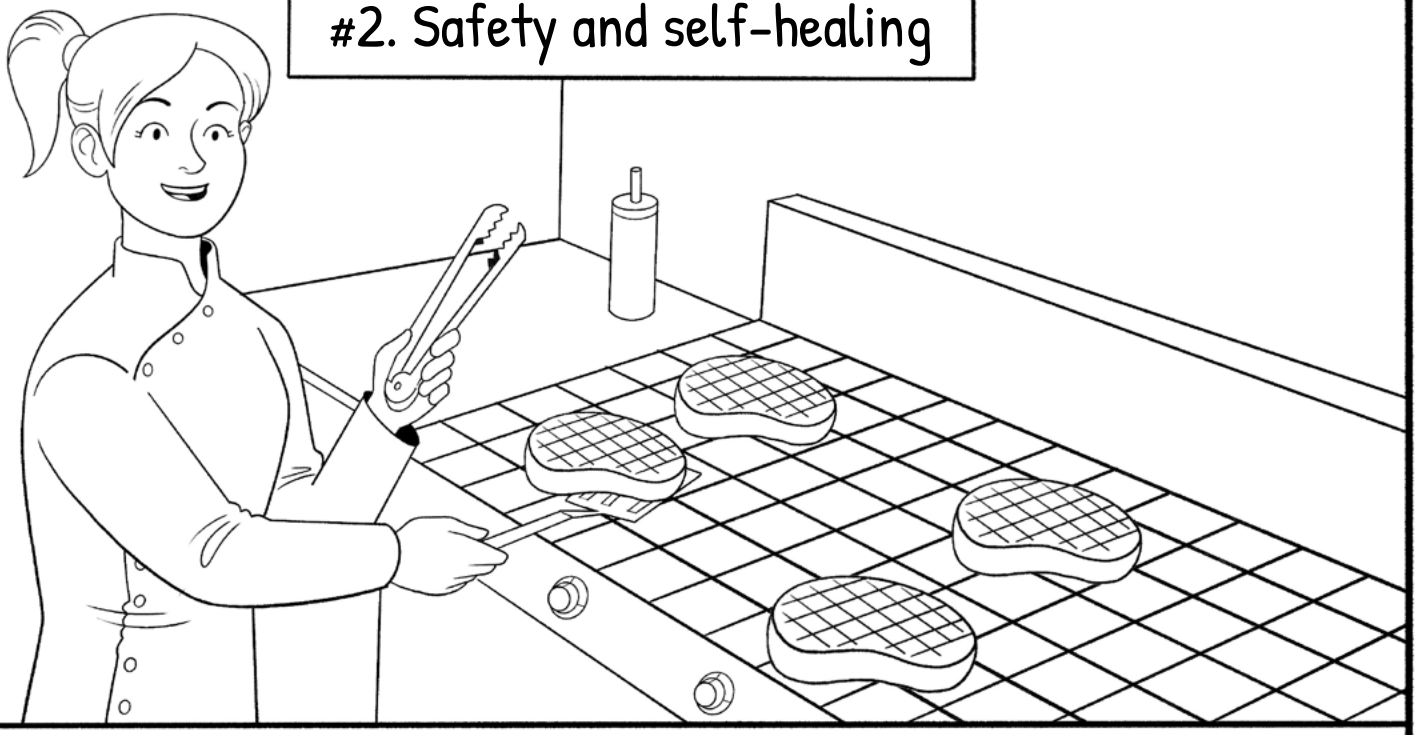
...and the wedding reception at Gino's went off without a hitch. Each lesson helped avert issues.

#1. Observability



The dashboard pointed out when three reception tables were in danger of not meeting a 20 min food wait SLO—Leo was able to step in and help the waitstaff get the food to the guests on time.

#2. Safety and self-healing

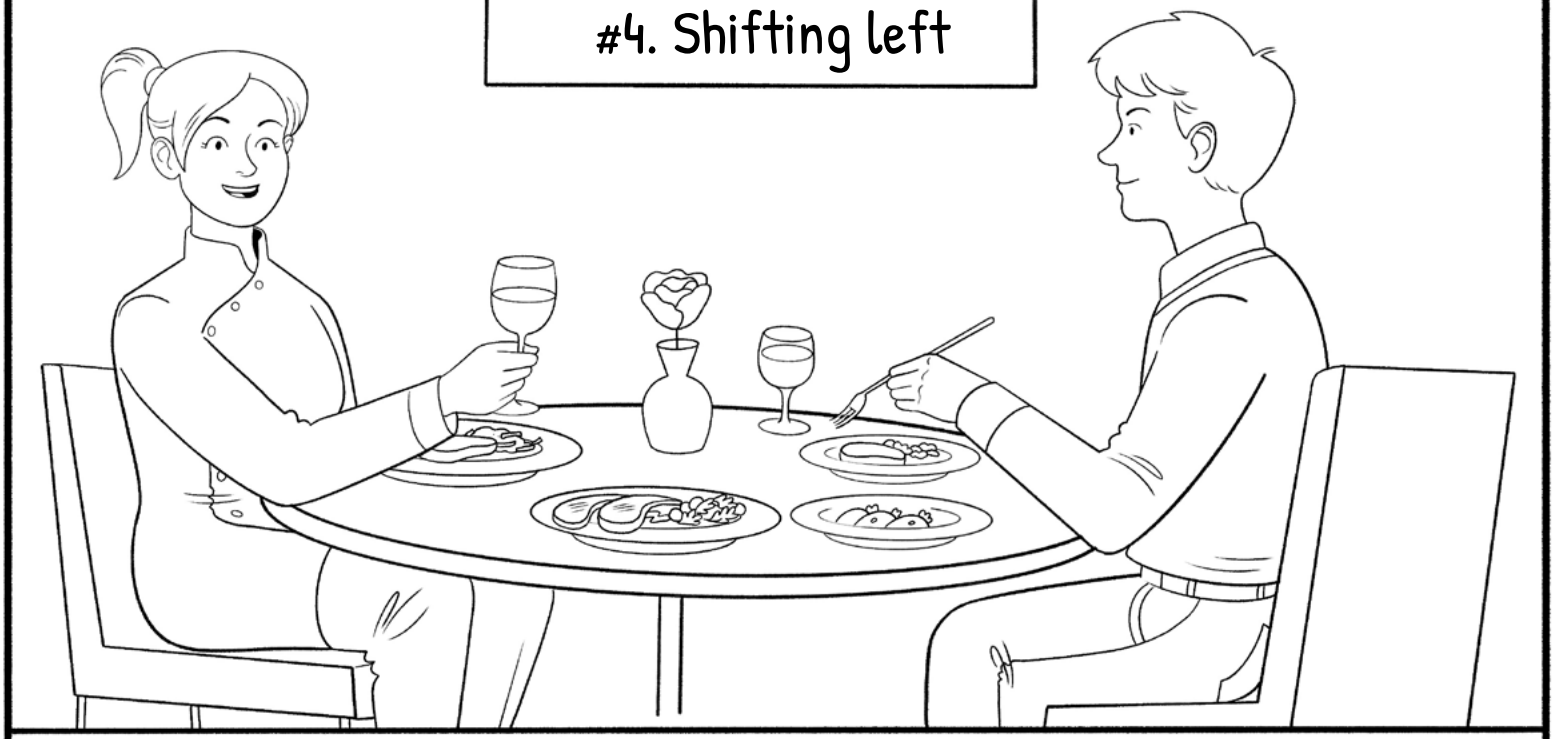


Out of 200 guests, four sent their steaks back—and only one was outside of the error budget for doneness. Chef's steak SLO was met for the event!

#3. Scalability

When the dance floor opened up, the bar was overwhelmed with drink orders. Leo took waitstaff off of dessert service (everyone was dancing anyway) to help auto-scale the bar. Once the bar quieted down, those waitstaff continued serving dessert.

#4. Shifting left



Leo and Chef did a dry-run of the reception menu and improved the wine pairing and dessert options based on the experience—both were a big hit at the event!

#5. Zero downtime

The reception ran six hours—well past midnight. From monthly staff meetings and regular communication, Leo knew Annie had to leave at 11. Leo started taking over her guests and by 11 she was all set to go home.

Mia, Leo's sister, was thrilled, and the entire family had a blast!
Gino's, the family restaurant, was saved, and became a much greater success.
Leo's dad would have been proud!

Observability

1 ..... 2 ..... 3 ..... 4 5

Never tried to get metrics out of it

Regularly enable new metrics for SRE team working closely with service development and product teams

Safety and self-healing

1 ..... 2 ..... 3 ..... 4 5

My codebase OOM kills routinely, oops.

My codebase checks for common preventable failures and avoids them.

Scalability

1 ..... 2 ..... 3 ..... 4 5

I have no idea of the capacity limits of my codebase in production.

My codebase's default deployment includes capacity-limit based auto-scaling and load shedding.

Shifting left

1 ..... 2 ..... 3 ..... 4 5

I've never run my codebase in Production before.

I work in a DevOps team that is regularly involved in production deployment and operations, and am directly responsible for its reliability.

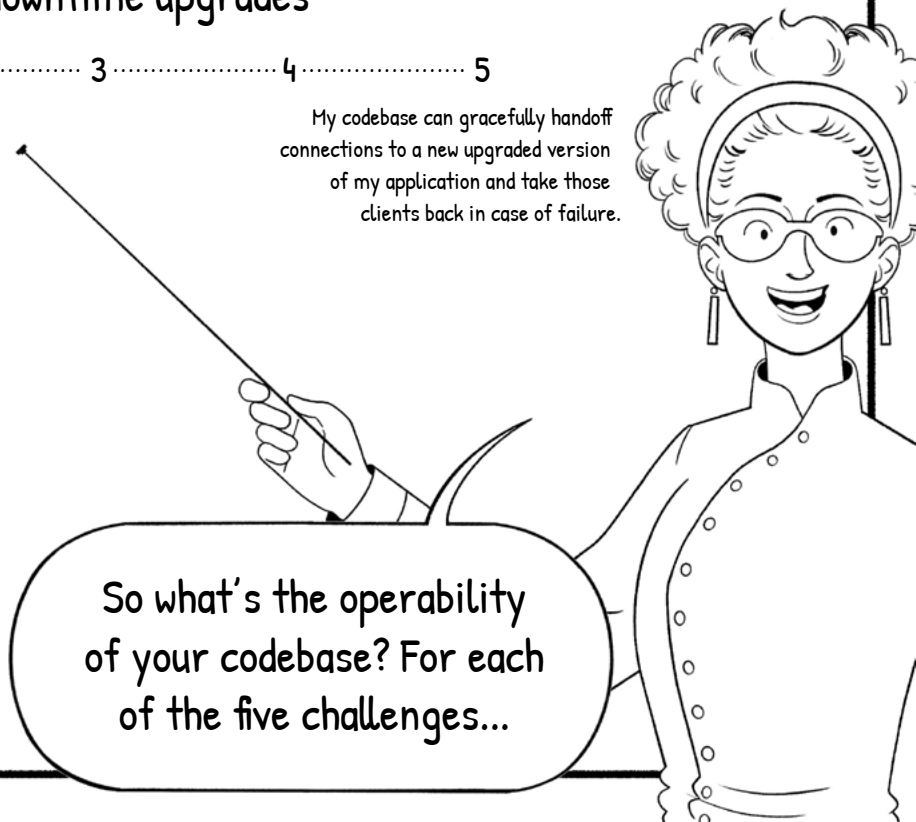
Zero downtime upgrades

1 ..... 2 ..... 3 ..... 4 5

Upgrading my codebase requires a weeks-long consulting engagement.

My codebase can gracefully handoff connections to a new upgraded version of my application and take those clients back in case of failure.

Check your score on the next page!

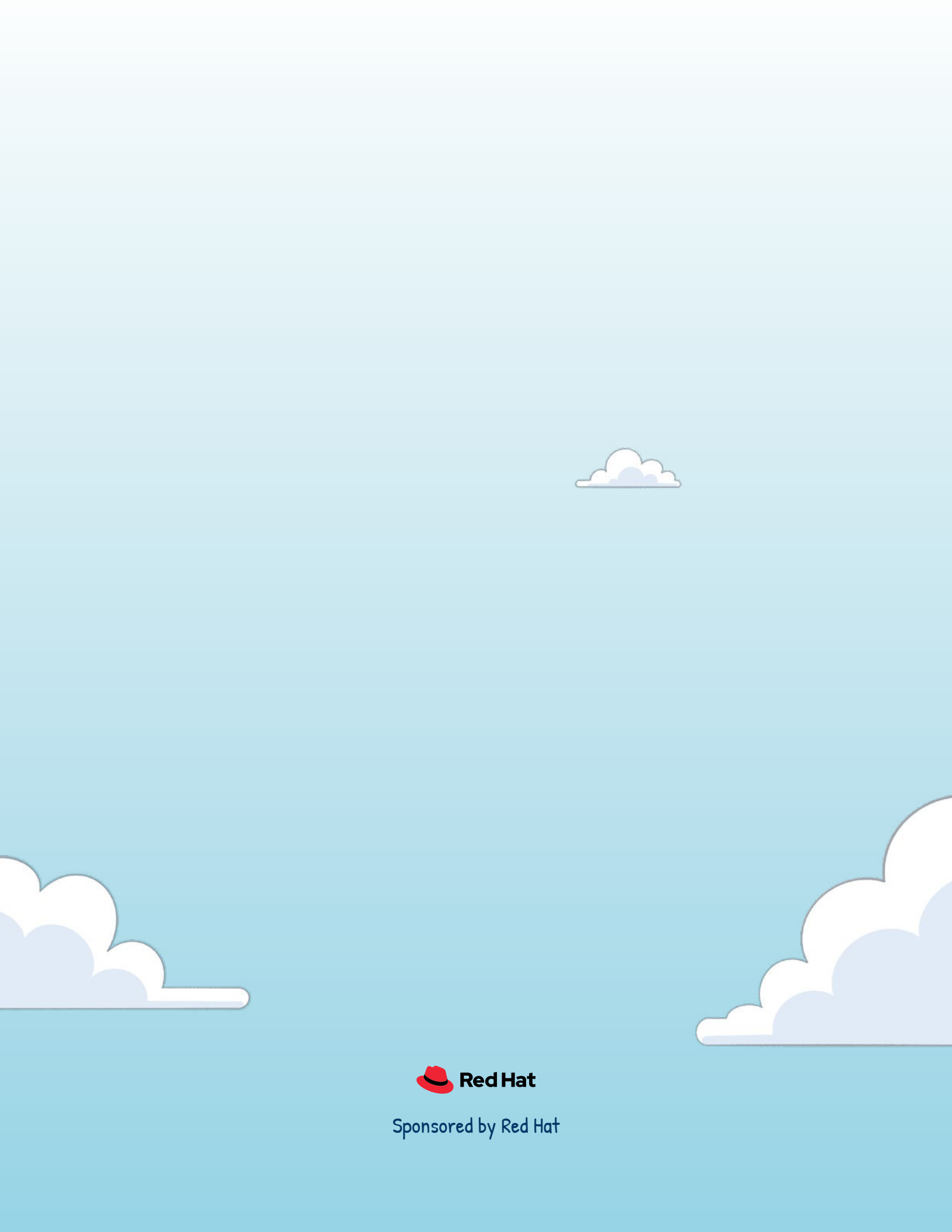


How many points did you get?
Add them up, let's see
where you are!

0–10 ..... beginner
11–20 ..... advanced
21+ ..... expert

Stable, Secure, Performant, and Boring

red.ht/sre-coloring-book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