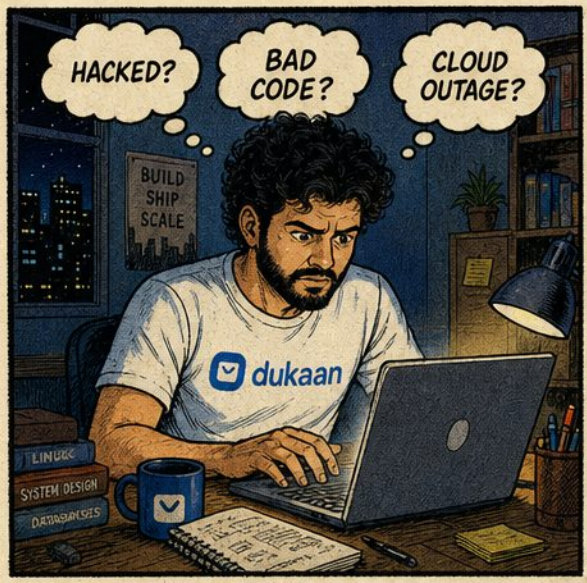
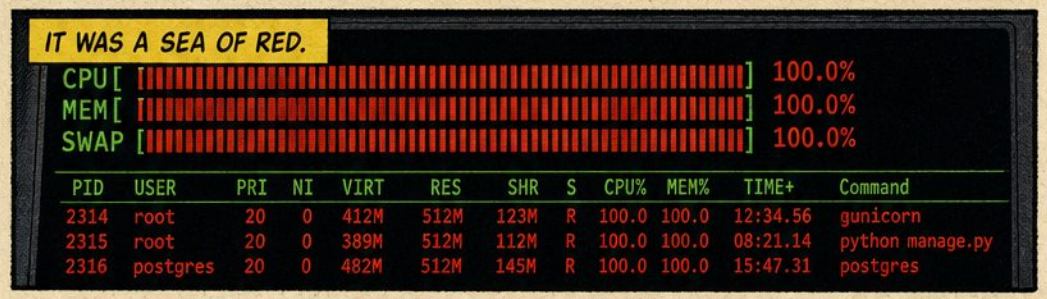

DUKAAN COMICS PRESENTS
ISSUE NO. 1
Rs. 5
HINDI-ENGLISH
THE ACCIDENTAL CTO
EPISODE 1: THE 3 AM CALL
THE SERVER IS DYING!
3:14
DREAM BIG BUILD BIGGER
dukaan
512MB
SUUMIT
IDEA
FOCUS
IMPACT
DATA STRUCTURES IN C++
BASED ON A TRUE STORY!
FROM A BIHAR VILLAGE TO INDIA'S TECH STAGE!
ALSO INSIDE: THE BIRTH OF DUKAAN!
8906123 456789
01


THE PHONE DIDN'T JUST RING... IT SCREAMED.
FOCUS BUILD REPEAT
BZZZT! BZZZT!
3:14 AM
3 AM CALLS FROM MY CO-FOUNDER MEANT ONLY ONE THING.
SUUMIT
HELLO...?
SUBHASH! UTH! SAB BANDH HO GAYA HAI!
MAKE IT SIMPLE, MAKE IT WORK.
(WAKE UP! EVERYTHING IS DOWN!)
OKAY, OKAY... SHANTI. I'M ON IT.
RULE ONE OF FIREFIGHTING: DON'T BECOME PART OF THE FIRE.
1


HACKED?
BAD CODE?
CLOUD OUTAGE?
BUILD SHIP SCALE
dukaan
LINUX
SYSTEM DESIGN
DATABASES

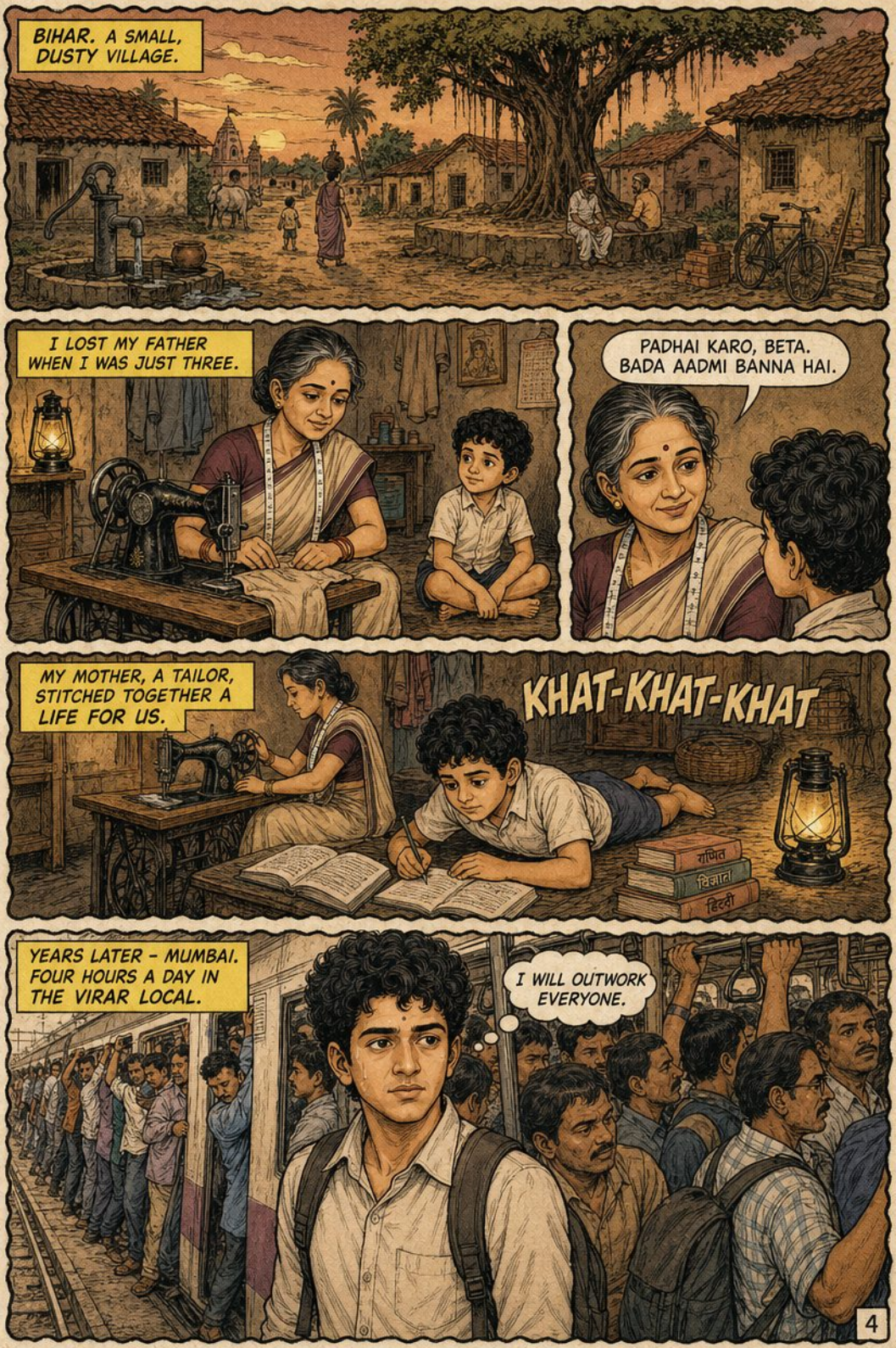

THE CURSOR BLINKED.
AND BLINKED. AND BLINKED.
$ ssh root@dukaan.app


SITE NAHI KHUL RAHI! APP PE ERROR! COMPLETE BLACKOUT!


IT WAS A SEA OF RED.
CPU[100.0%
MEM[100.0%
SWAP [100.0%
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
2314 root 20 0 412M 512M 123M R 100.0 100.0 12:34.56 gunicorn
2315 root 20 0 389M 512M 112M R 100.0 100.0 08:21.14 python manage.py
2316 postgres 20 0 482M 512M 145M R 100.0 100.0 15:47.31 postgres


TOTAL MEMORY: 512MB
GULP!


FIVE HUNDRED AND TWELVE MB?! MY PHONE HAS 8 GB!
STORAGE
512 MB
8 GB
dukaan
dukaan
WE HAD TRIED TO HOST A ROCK CONCERT IN A TELEPHONE BOOTH.
TELEPHONE
KRAAAK!
THOUSANDS OF SHOPS. MILLIONS OF PRODUCTS. ALL ON ONE TINY MACHINE.
HOW DID A GUY WITH NO COMPUTER SCIENCE DEGREE END UP RESPONSIBLE FOR ALL THIS?
dukaan
TO UNDERSTAND THAT... WE HAVE TO GO BACK.

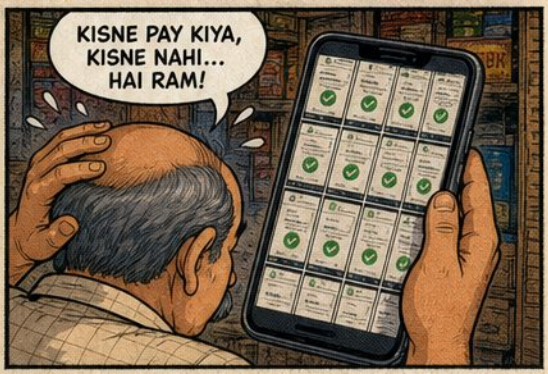

BIHAR. A SMALL, DUSTY VILLAGE.
I LOST MY FATHER WHEN I WAS JUST THREE.
PADHAI KARO, BETA. BADA AADMI BANNA HAI.
MY MOTHER, A TAILOR, STITCHED TOGETHER A LIFE FOR US.
KHAT-KHAT-KHAT
गणित
विज्ञान
हिन्दी
YEARS LATER – MUMBAI. FOUR HOURS A DAY IN THE VIRAR LOCAL.
I WILL OUTWORK EVERYONE.


2020. THE WORLD PRESSED PAUSE.
किराणा माल
STAY HOME


FOR SMALL SHOPKEEPERS, WHATSAPP BECAME THE ONLY STOREFRONT.
CHAKKI ATTA
TAZAA CHAI
DESI NAMAK
SHUDH DAL
SUPER BASMATI CHAWAL


WhatsApp
PDF
3/5
EK PACKET MAGGI, DO KILO ATTA, AADHA KILO CHEENI, WOH BLUE WALA LAYS...
10:42 AM


SORRY MADAM, BLUE LAYS KHATAM, GREEN CHALEGA?
TAZAA CHAI
DESI NAMAK


KISNE PAY KIYA, KISNE NAHI... HAI RAM!


THIS IS A DISASTER...


किराना स्टोर
मोबाइल रिपेयर
SUBHASH, YAAR, THIS IS CRAZY!
dukaan
THIS UNCLE IS RUNNING HIS WHOLE SHOP ON WHATSAPP. HE IS LOSING ORDERS, MIXING UP PAYMENTS!
जनता जनरल स्टोर
फैन्सी कलेक्शन
SO WHAT DO WE DO?
dukaan
EK APP! WOH APNA SAAMAN LIST KARE, CUSTOMER SEEDHA ORDER KARE. NO PDFS! JUST A LINK!
DUKAAN!
ONE WORD. ONE SHOP. FOR EVERY SHOPKEEPER IN INDIA.
dukaan


WE GAVE OURSELVES ONE WEEKEND. 48 HOURS.
48:00
PROBLEM: KIRANA UNCLE GOES DIGITAL?
KEEP IT SIMPLE!
dukaan
NO CAR. FIRST, A SKATEBOARD!
dukaan
THAT'S IT? THAT'S THE WHOLE APP?
THAT'S THE WHOLE APP.
1. CREATE STORE
2. ADD PRODUCTS
3. SHARE LINK
dukaan
A TINY PLOT OF LAND ON THE INTERNET. BUT IT WAS OURS.
CHOOSE YOUR PLAN
512MB RAM - 1 CPU - $5/MONTH - BANGALORE
DEPLOY SERVER
CLICK!
HOUR 47...
dukaan
zzzz
mydukaan.io/uncle-kirana
ATTA 5KG Rs.265
OIL 1L Rs.140
SALT 1KG Rs.20
NOODLES Rs.14
ARRE WAAH! MERI APNI DUKAAN!


WE LAUNCHED WITH NO MARKETING. IT EXPLODED.
BHAI! LOG PAAGAL HO GAYE HAIN!
2,700,000
SELLERS IN 2 MONTHS
AND ALL OF IT STILL RAN ON ONE $5 SERVER.
HISSS...
512MB
SUUMIT... THE SERVER ISN'T SICK. IT'S DEAD. WE NEED A REAL FIX.
3:14 AM
dukaan
THEN BUILD IT.
TO BE CONTINUED... NEXT: EPISODE 2 - THE GREAT DIVORCE!

DUKAAN COMICS PRESENTS

ISSUE NO. 2
Rs. 5
HINDI-ENGLISH

THE ACCIDENTAL CTO

OPEN-HEART SURGERY ON A LIVE APP!

EPISODE 2: THE GREAT DIVORCE

BASED ON A TRUE STORY!

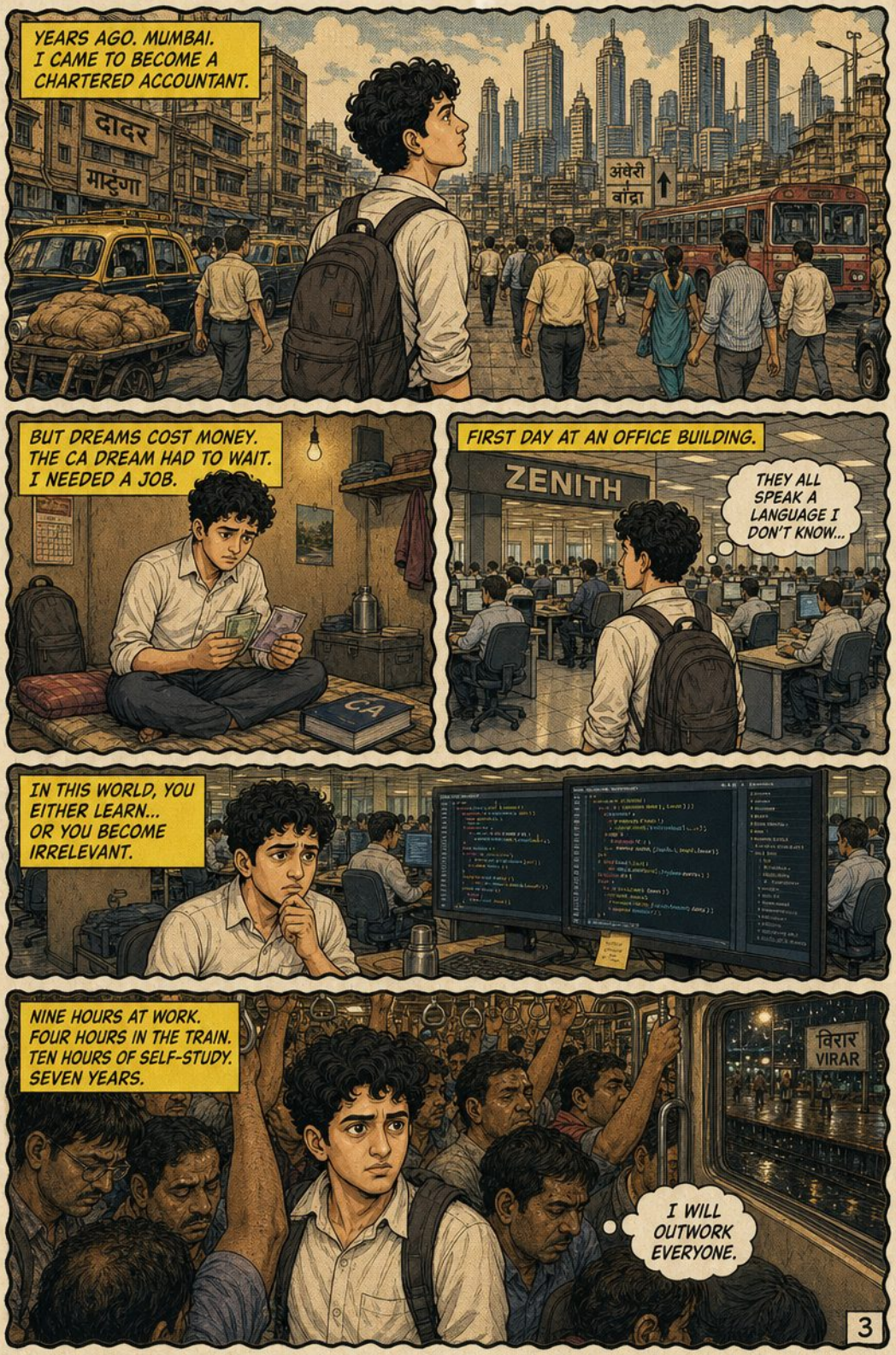


ONE SERVER BECOMES TWO!

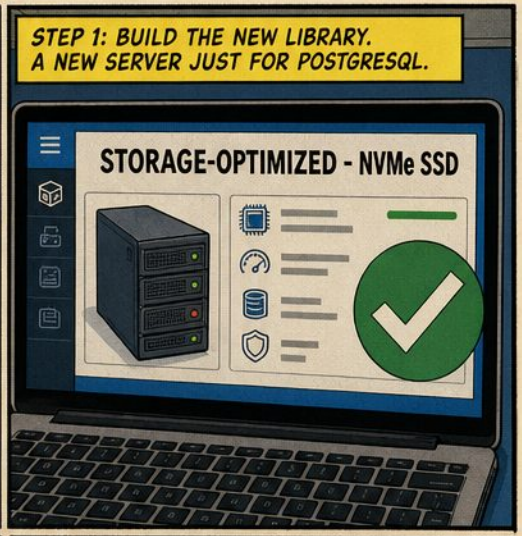
ALSO INSIDE: THE TRAFFIC COP!

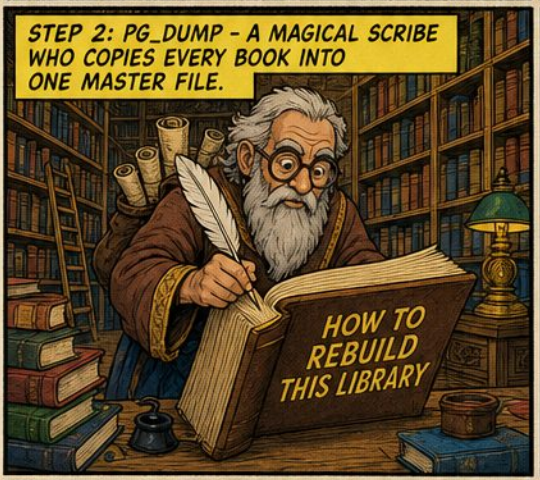

THE MORNING AFTER THE CRASH. THE FIRE WAS OUT... FOR NOW.
PLAN
1.
2.
3.
DON'T GIVE UP!
dukaan
TO-DO (AGAIN)
WE CAN'T JUST KEEP RESTARTING IT, SUBHASH. WE NEED A REAL FIX.
WHAT IS THE ACTUAL PROBLEM?
THE DATABASE. THE DATABASE IS CHOKING EVERYTHING ELSE TO DEATH.
Tasks: 175, 512 thr, 2 running
Load average: 12.73 11.52 9.31
Uptime: 3 days, 07:21:15
100.0%
99.4%
100.0%
99.8%
100.0%
100.0%
99.7%
100.0%
POSTGRES
TO EXPLAIN, I WENT BACK TO OUR SINGLE CHEF KITCHEN.
dukaan
1

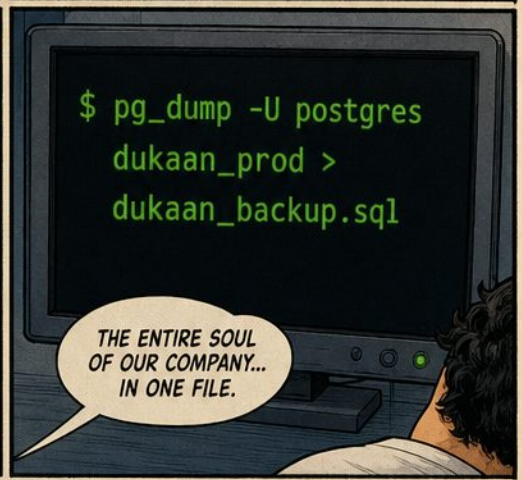

ONE TINY ROOM. CHEF, COUNTERTOP AND PANTRY - ALL TOGETHER.
OUR $5 SERVER
CPU
RAM
DISK
BUT OUR CHEF WASN'T COOKING. HE WAS RUNNING TO THE PANTRY ALL DAY.
CPU
DHAD-DHAD-DHAD!
SIR... ORDERS?
NOT NOW! I'M FINDING THE DAL!
NGINX
CPU
WE NEED TO SEPARATE THEM. A KITCHEN FOR THE CHEF. A LIBRARY WITH ITS OWN LIBRARIAN.
dukaan
KITCHEN (APP)
LIBRARY (DATABASE)
ONE SERVER BECOMES TWO. THE GREAT DIVORCE.


YEARS AGO. MUMBAI.
I CAME TO BECOME A CHARTERED ACCOUNTANT.
दादर
माटुंगा
अंधेरी
वांद्रा
BUT DREAMS COST MONEY.
THE CA DREAM HAD TO WAIT.
I NEEDED A JOB.
CA
FIRST DAY AT AN OFFICE BUILDING.
ZENITH
THEY ALL SPEAK A LANGUAGE I DON'T KNOW...
IN THIS WORLD, YOU EITHER LEARN...
OR YOU BECOME IRRELEVANT.
NINE HOURS AT WORK.
FOUR HOURS IN THE TRAIN.
TEN HOURS OF SELF-STUDY.
SEVEN YEARS.
विरार
VIRAR
I WILL OUTWORK EVERYONE.


WE WROTE IT LIKE A PRE-FLIGHT CHECKLIST. NO IMPROVISING.
dukaan
MIGRATION PLAYBOOK


STEP 1: BUILD THE NEW LIBRARY. A NEW SERVER JUST FOR POSTGRESQL.
STORAGE-OPTIMIZED - NVMe SSD


STEP 2: PG_DUMP - A MAGICAL SCRIBE WHO COPIES EVERY BOOK INTO ONE MASTER FILE.
HOW TO REBUILD THIS LIBRARY


$ pg_dump -U postgres dukaan_prod > dukaan_backup.sql
THE ENTIRE SOUL OF OUR COMPANY... IN ONE FILE.


STEP 3: SCP IT ACROSS. REBUILD IT ON THE OTHER SIDE.
dukaan_ backup.sql
WHOOISH!


NO ERRORS... PLEASE, NO ERRORS...

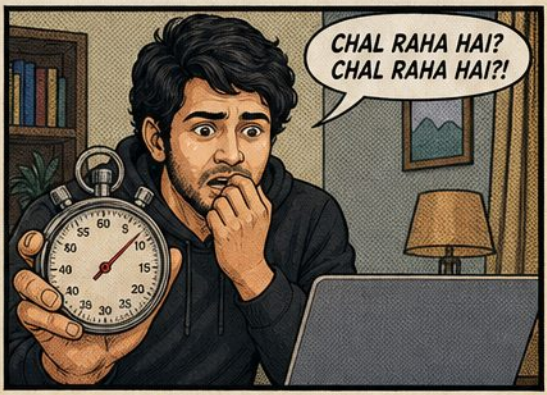


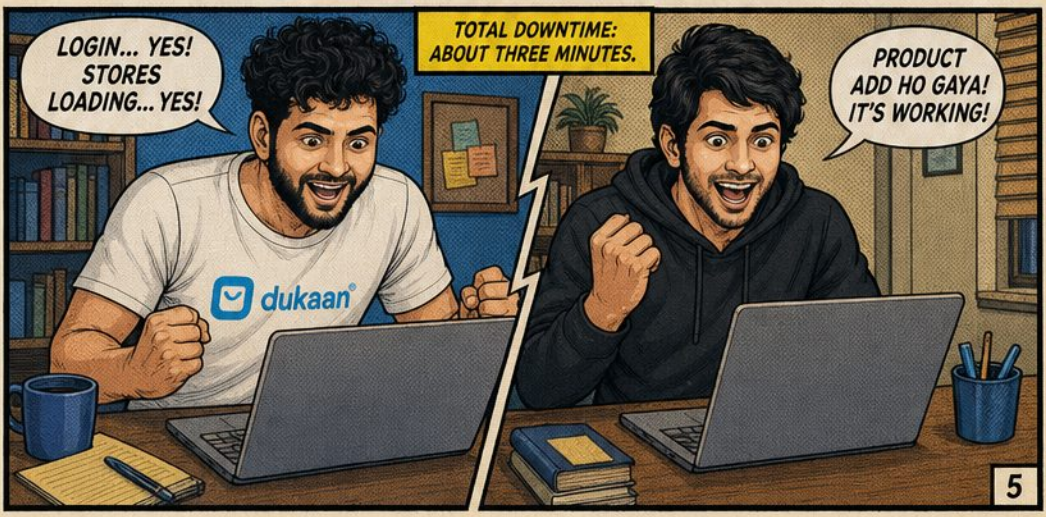
settings.py

THE ACTUAL HEART SURGERY. ONE LINE.

```
1  DATABASES = {
2      'HOST': 'localhost',
3      'HOST': '10.132.8.21',
4  }
```



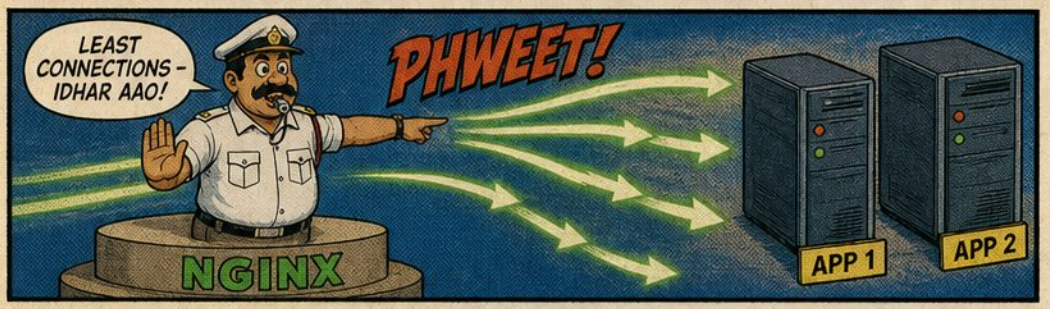


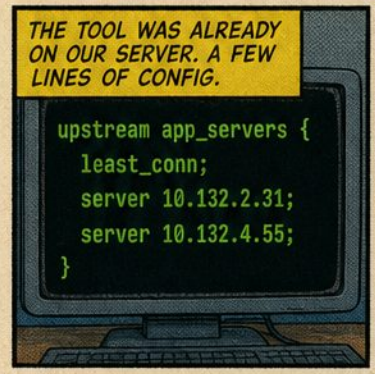



THE KITCHEN WAS CLEAN.
THE LIBRARY WAS ORGANIZED.
USERS SAID THE SITE
FELT SNAPPIER.
APP SERVER
DATABASE SERVER
BHAI, WE SURVIVED!
CHEERS!
dukaan
BUT EVERY TRIP TO THE LIBRARY
NOW COST 2 MILLISECONDS.
ONE PAGE MADE 50 TRIPS.
50 TRIPS x
2MS = 100MS
PREFETCH_RELATED:
11 TRIPS BECAME 2.
SHOPPING LIST
FEWER TRIPS.
ONE TRIP WITH A
SHOPPING LIST!
dukaan
SQL
ORDERS, PAYMENTS,
INVENTORY - THEY NEED
STRICT RULES. WE STAY
WITH POSTGRESQL.
dukaan
NOSQL


THEN A TEXTILE SELLER FROM SURAT SHARED HER STORE IN A HUGE FACEBOOK GROUP. AND A TECH BLOG WROTE ABOUT US.
સુરત ટેક્સ્ટાઈલ બજાર
Check out my store on Dukaan! https://myduk aan.io/store/ Join group & support! 2.1K
TECH BYTES
MEET DUKAAN
BEEP! BEEP! BEEP!
02:17
Sunday, 2:17 AM
HIGH CPU ON APP SERVER
CRITICAL: CPU AT 100% FOR 5 MINUTES
slide to unlock
(WHAT HAPPENED NOW?)
AB KYA HUA?
02:17 AM
CODE. SLEEP. REPEAT.
DATABASE: FINE
APP SERVER: 100%
FWOOOSH!
KEEP SHIPPING
SCALE UP
SCALE OUT
dukaan
NOT ONE SUPER-CHEF. MANY CHEFS!
BUILD SOLVE GROW
7











TO BE CONTINUED... NEXT: EPISODE 3 - GHOSTS IN THE DATA!

DUKAAN COMICS PRESENTS

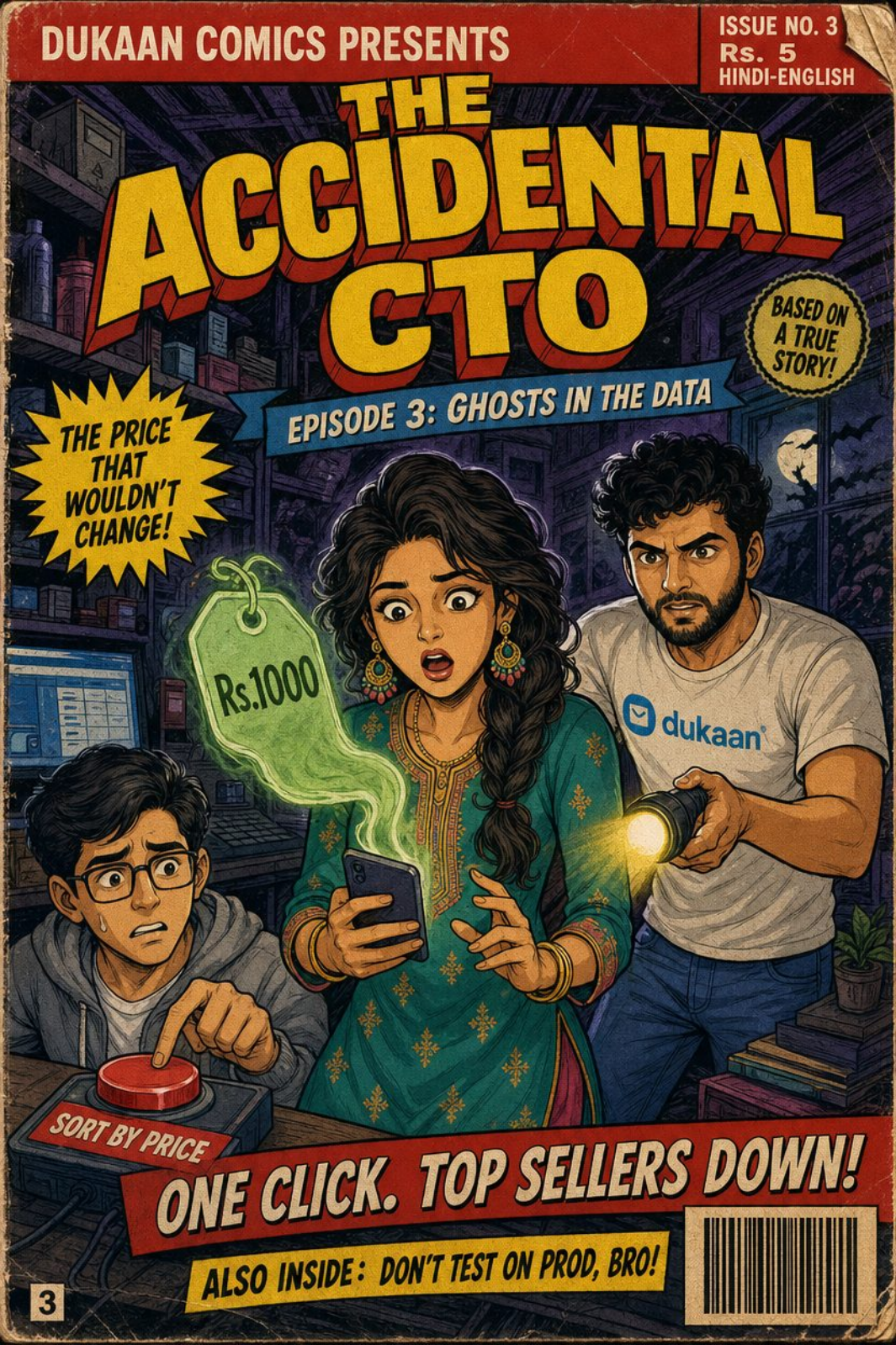
ISSUE NO. 3
Rs. 5
HINDI-ENGLISH

THE ACCIDENTAL CTO

BASED ON A TRUE STORY!

EPISODE 3: GHOSTS IN THE DATA

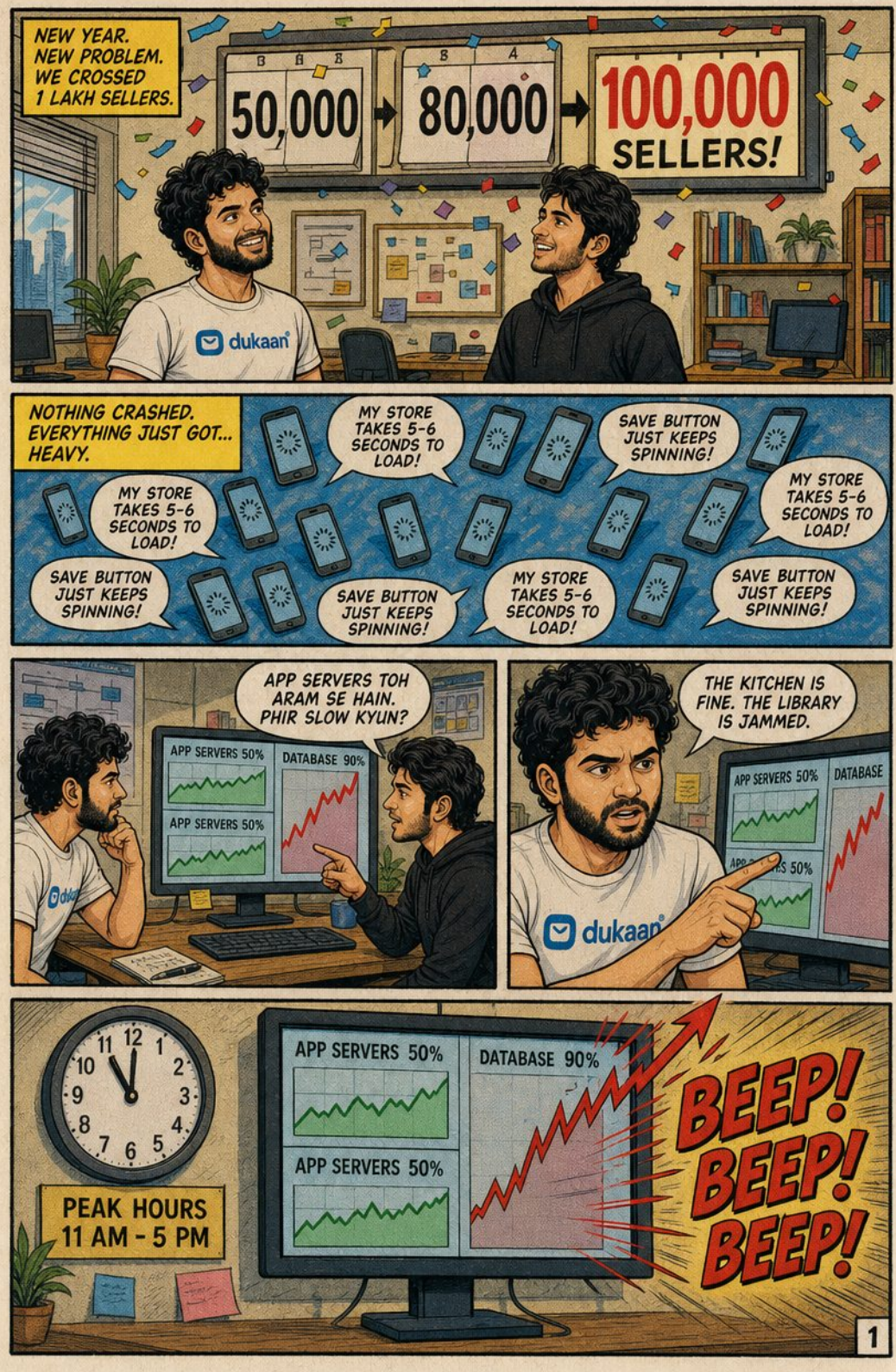
THE PRICE THAT WOULDN'T CHANGE!

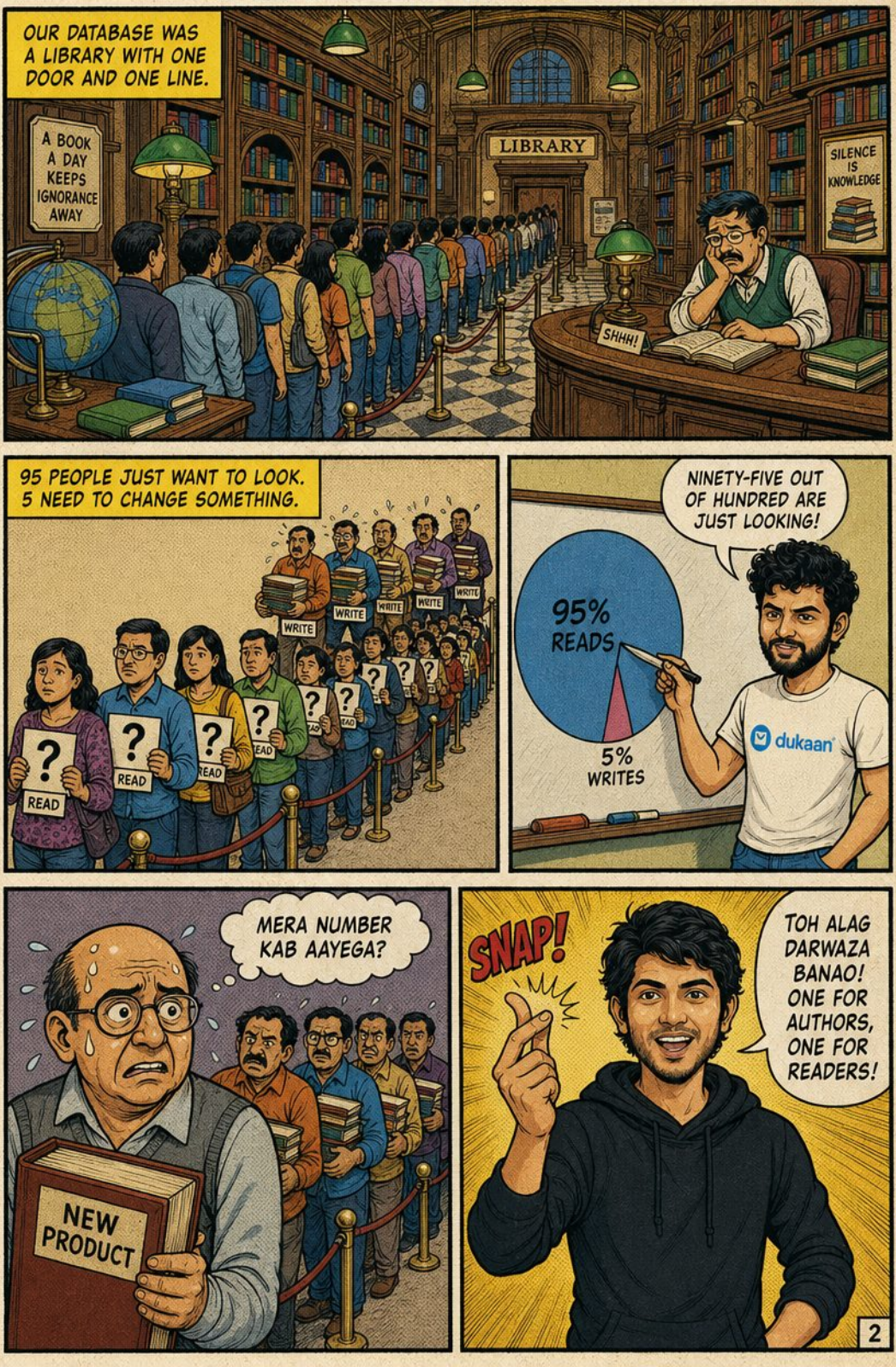


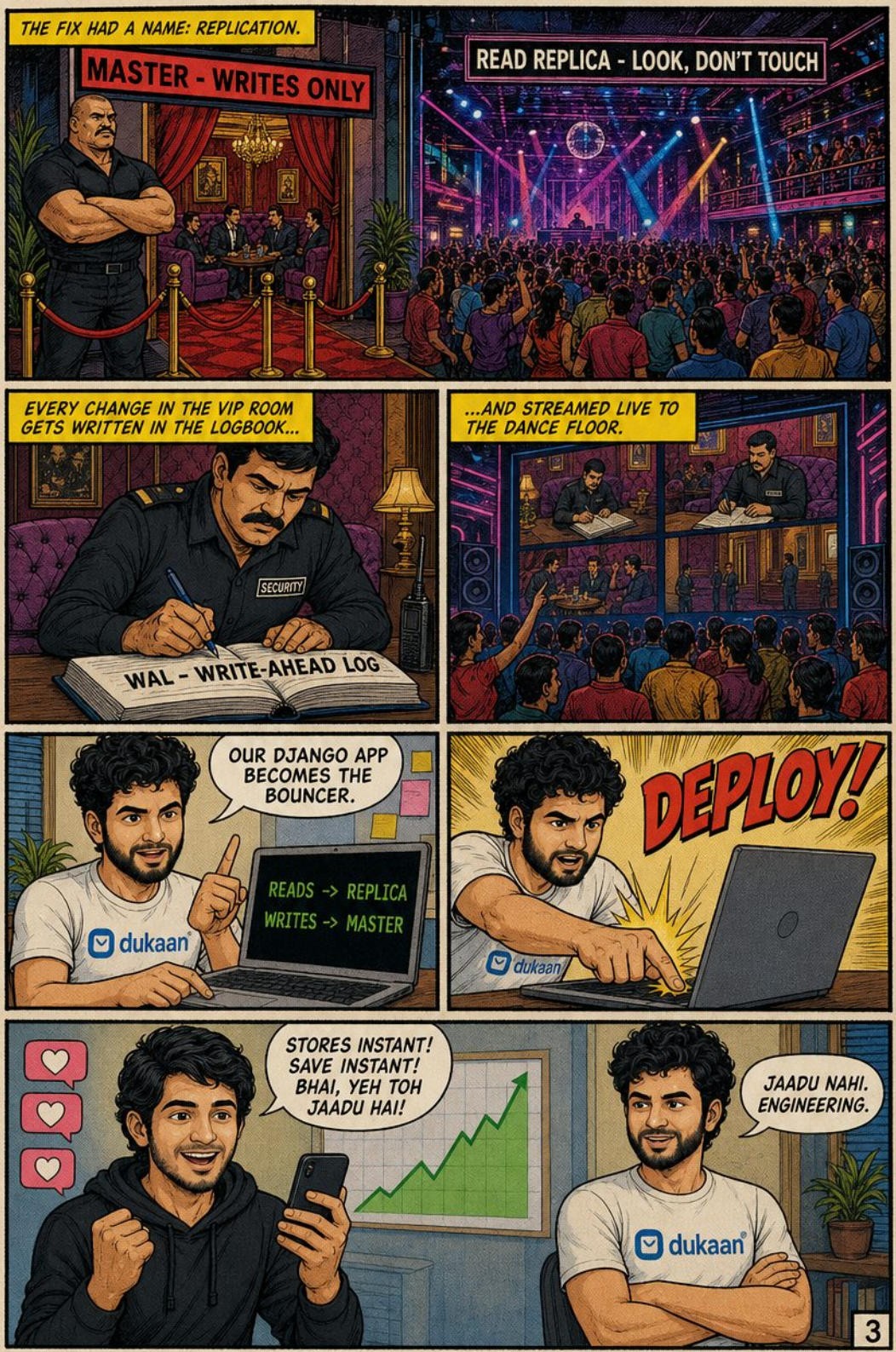
ONE CLICK. TOP SELLERS DOWN!

ALSO INSIDE: DON'T TEST ON PROD, BRO!

3


NEW YEAR. NEW PROBLEM. WE CROSSED 1 LAKH SELLERS.
50,000
80,000
100,000 SELLERS!
dukaan
NOTHING CRASHED. EVERYTHING JUST GOT... HEAVY.
MY STORE TAKES 5-6 SECONDS TO LOAD!
SAVE BUTTON JUST KEEPS SPINNING!
MY STORE TAKES 5-6 SECONDS TO LOAD!
SAVE BUTTON JUST KEEPS SPINNING!
MY STORE TAKES 5-6 SECONDS TO LOAD!
SAVE BUTTON JUST KEEPS SPINNING!
MY STORE TAKES 5-6 SECONDS TO LOAD!
SAVE BUTTON JUST KEEPS SPINNING!
APP SERVERS TOH ARAM SE HAIN. PHIR SLOW KYUN?
APP SERVERS 50%
DATABASE 90%
APP SERVERS 50%
THE KITCHEN IS FINE. THE LIBRARY IS JAMMED.
APP SERVERS 50%
DATABASE
dukaan
PEAK HOURS 11 AM - 5 PM
APP SERVERS 50%
DATABASE 90%
APP SERVERS 50%
BEEP! BEEP! BEEP!
1

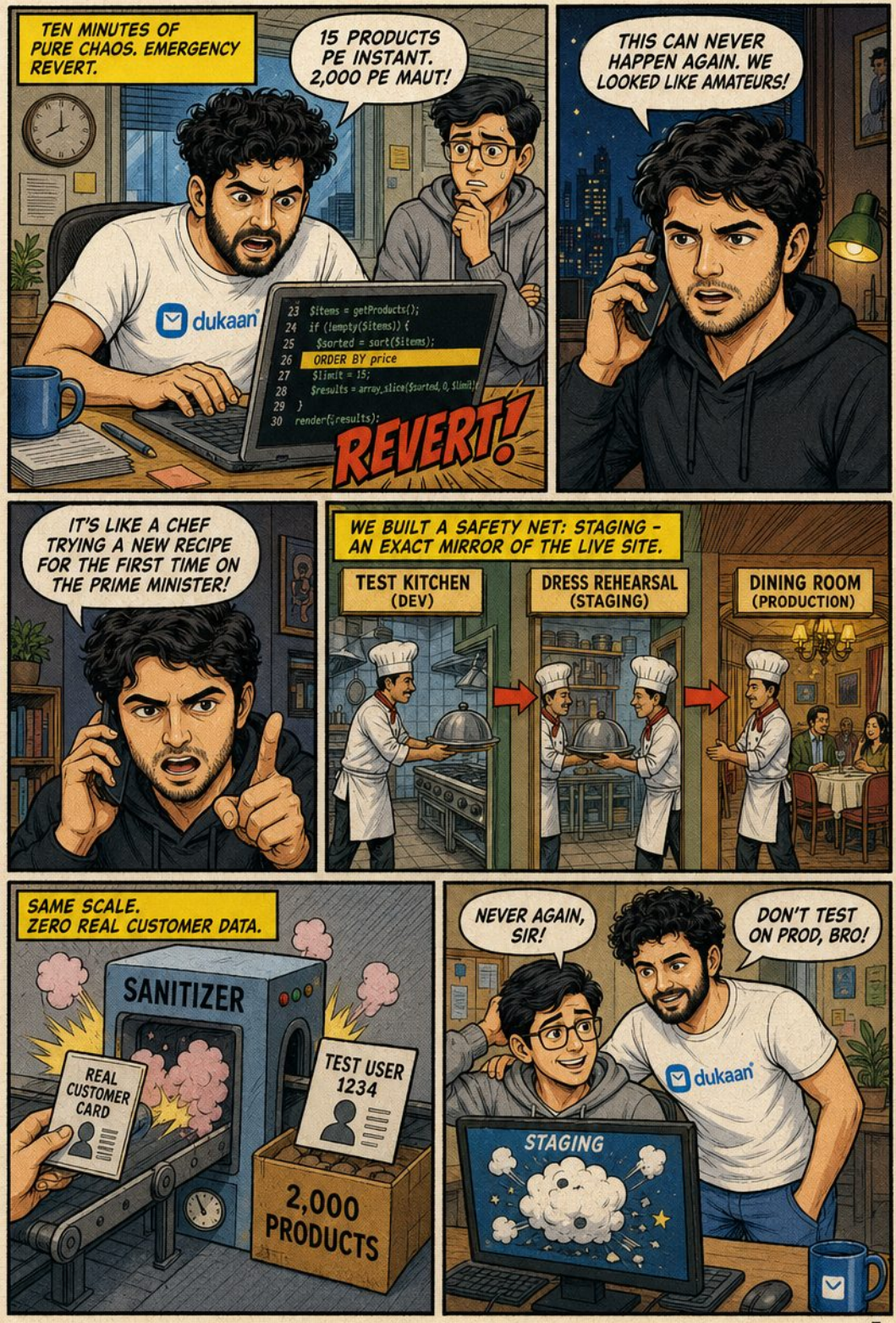

OUR DATABASE WAS A LIBRARY WITH ONE DOOR AND ONE LINE.
A BOOK A DAY KEEPS IGNORANCE AWAY
LIBRARY
SILENCE IS KNOWLEDGE
SHHH!
95 PEOPLE JUST WANT TO LOOK. 5 NEED TO CHANGE SOMETHING.
READ
WRITE
NINETY-FIVE OUT OF HUNDRED ARE JUST LOOKING!
95% READS
5% WRITES
dukaan
MERA NUMBER KAB AAYEGA?
NEW PRODUCT
SNAP!
TOH ALAG DARWAZA BANAO! ONE FOR AUTHORS, ONE FOR READERS!
2


THE FIX HAD A NAME: REPLICATION.
MASTER - WRITES ONLY
READ REPLICA - LOOK, DON'T TOUCH
EVERY CHANGE IN THE VIP ROOM GETS WRITTEN IN THE LOGBOOK...
SECURITY
WAL - WRITE-AHEAD LOG
...AND STREAMED LIVE TO THE DANCE FLOOR.
OUR DJANGO APP BECOMES THE BOUNCER.
READS -> REPLICA
WRITES -> MASTER
dukaan
DEPLOY!
dukaan
STORES INSTANT! SAVE INSTANT! BHAI, YEH TOH JAADU HAI!
JAADU NAHI. ENGINEERING.
dukaan
3


MEET PRIYA. SHE SELLS HANDMADE JEWELLERY ON DUKAAN.
HANDMADE WITH LOVE
EDIT LISTING
ANTIQUE NECKLACE
PRICE
Rs.1000
Rs.800
SAVE
FLASH SALE! 800 RUPEES!
TAP!
SAVED!
AB DEKHTE HAIN STORE PE...
HAAN?! STILL 1000?!
MY STORE
ANTIQUE NECKLACE
Rs.1000
ADMIN MEIN 800... STORE PE 1000... MERA STORE TOOT GAYA?!
REFRESH! REFRESH! REFRESH!
PRIYA HAD JUST MET... THE GHOST OF OLD DATA.
Rs.1000


HER SAVE WENT TO THE MASTER. HER VIEW WENT TO THE REPLICA - ONE SECOND BEHIND.
VIP ROOM
MASTER
LAG: 1 SECOND
DANCE FLOOR
REPLICA
SAVE
SAVE
VIEW STORE
REPLICATION LAG IS NOT A BUG. IT IS PHYSICS!
dukaan
IF YOU JUST CHANGED SOMETHING, FOR 60 SECONDS YOU READ FROM THE MASTER.
VIP PASS - 60 SEC
WE CALLED IT PRIYA'S VIP PASS.
VIP ROOM
MASTER
VIP PASS - 60 SEC
ARRE WAAH! 800! PERFECT!
Rs.800
POOF!


THE TEAM GREW. ONE TUESDAY, OUR NEW JUNIOR DEV ROHAN BUILT A SIMPLE FEATURE.
FOCUS CODE DELIVER
CODE TEST REPEAT
MERE 15 PRODUCTS PE PERFECT CHAL RAHA HAI! PUSH!
ALL PRODUCTS
SORT BY PRICE
₹199 ₹249 ₹299 ₹349 ₹399
₹449 ₹499 ₹549 ₹599 ₹649
₹699 ₹749 ₹799 ₹849 ₹899
CLICK!
STRAIGHT FROM HIS LAPTOP... TO THE LIVE SITE. NO SAFETY NET.
+5 MIN
LIVE SITE
ALL PRODUCTS
BRRRING!
SUUMIT
SUBHASH! OUR TOP SELLERS ARE DOWN! GAVRANMISAL.COM, JAIN SHIKANJI - ALL THE BIG GUYS!
MERA STORE KHUL HI NAHI RAHA! CUSTOMERS JA RAHE HAIN!
2,000 PRODUCTS


TEN MINUTES OF PURE CHAOS. EMERGENCY REVERT.
15 PRODUCTS PE INSTANT. 2,000 PE MAUT!
dukaan
23 $items = getProducts();
24 if (!empty($items)) {
25 $sorted = sort($items);
26 ORDER BY price
27 $limit = 15;
28 $results = array_slice($sorted, 0, $limit);
29 }
30 render($results);
REVERT!
THIS CAN NEVER HAPPEN AGAIN. WE LOOKED LIKE AMATEURS!
IT'S LIKE A CHEF TRYING A NEW RECIPE FOR THE FIRST TIME ON THE PRIME MINISTER!
WE BUILT A SAFETY NET: STAGING - AN EXACT MIRROR OF THE LIVE SITE.
TEST KITCHEN (DEV)
DRESS REHEARSAL (STAGING)
DINING ROOM (PRODUCTION)
SAME SCALE. ZERO REAL CUSTOMER DATA.
SANITIZER
REAL CUSTOMER CARD
TEST USER 1234
2,000 PRODUCTS
NEVER AGAIN, SIR!
DON'T TEST ON PROD, BRO!
dukaan
STAGING


YEARS AGO, I WAS THE NEW KID TOO.
ZENITH
MY MANAGER, IMRAN SYED, SAW MY HUNGER.
SUBHASH, BUILD THE NEW COMPANY INTRANET.
IT WAS A TEST. I DELIVERED.
PHP
MySQL
CODE FUEL
SOMEONE GAVE ME A CHANCE ONCE. NOW BREAK THINGS - BUT ON STAGING!
DEAL!
SHIP SMALL, IMPACT BIG.
PLAN
BUILD
TEST
DEPLOY
dukaan
STAGING: ALL TESTS PASSED
!
STORE BAHUT SLOW HAI!
TO BE CONTINUED... NEXT:
EPISODE 4 - THE NEED FOR SPEED!

DUKAAN COMICS PRESENTS

ISSUE NO. 4
Rs. 5
HINDI-ENGLISH

THE ACCIDENTAL CTO

EPISODE 4: THE NEED FOR SPEED

114 QUERIES PER PAGE!



BASED ON A TRUE STORY!

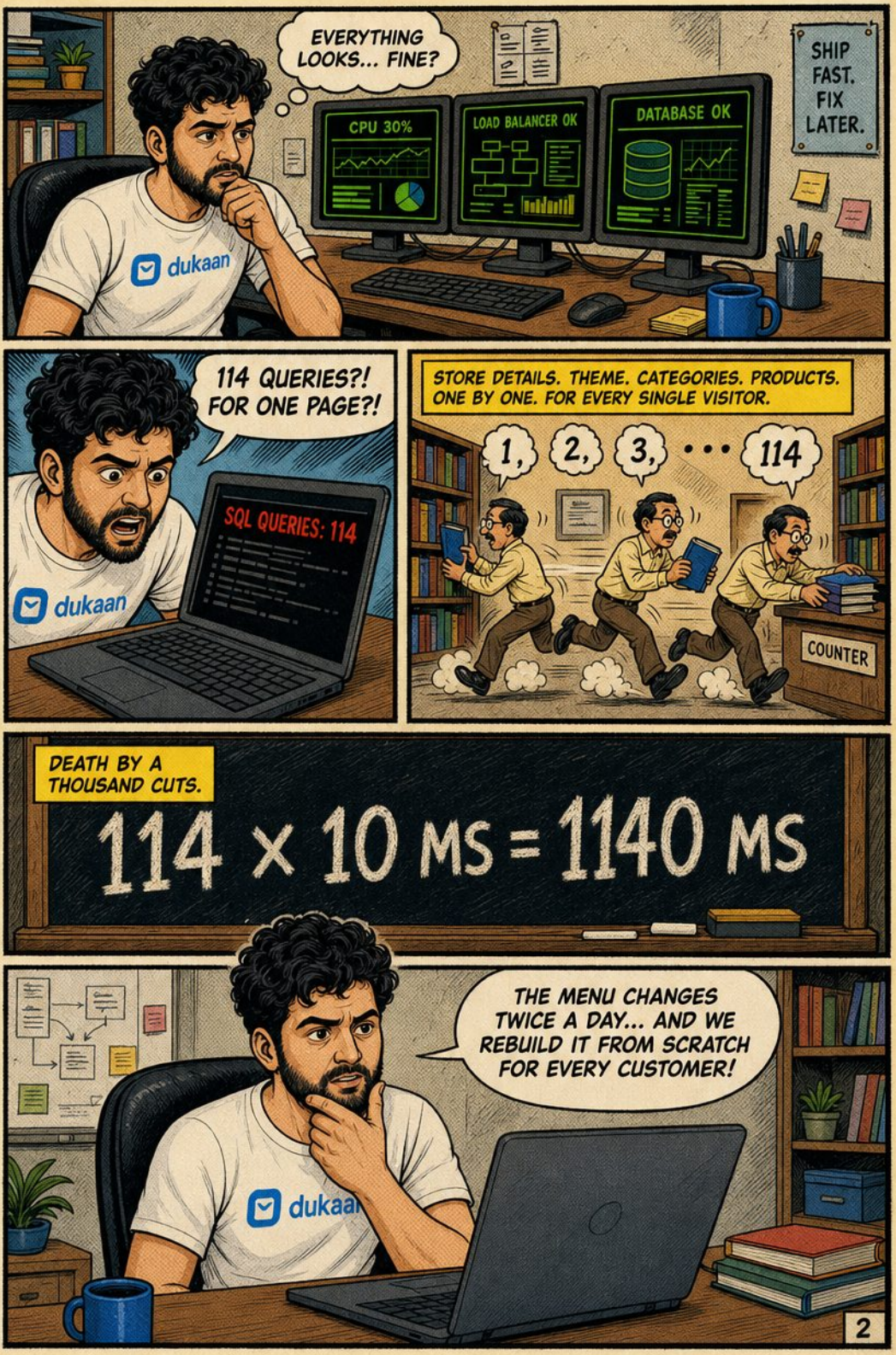
SPEED IS NOT A FEATURE. IT IS EVERYTHING!

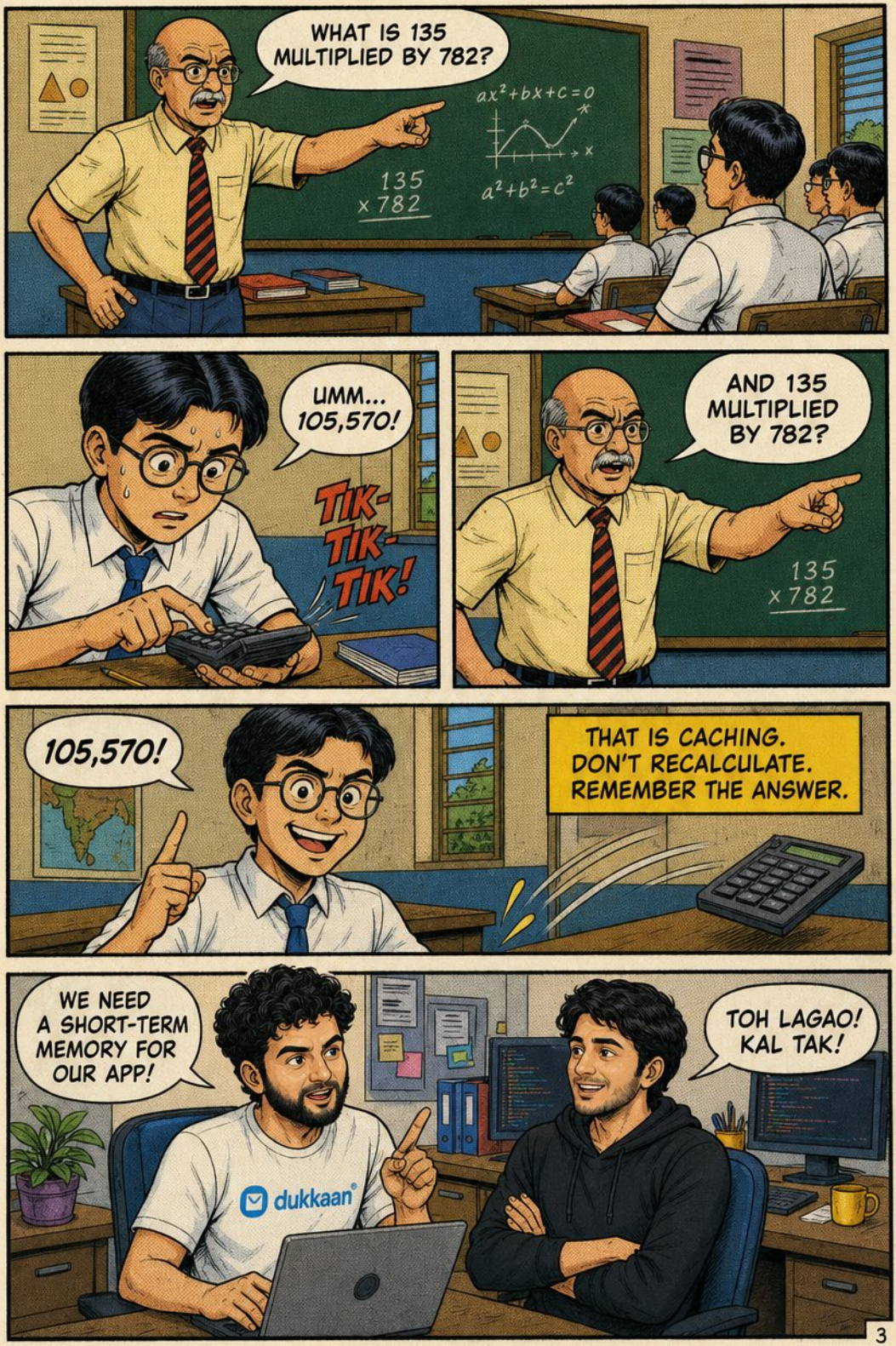
ALSO INSIDE: THE DAY SUBHASH LOST HIS TEAM!

8 906123 456789

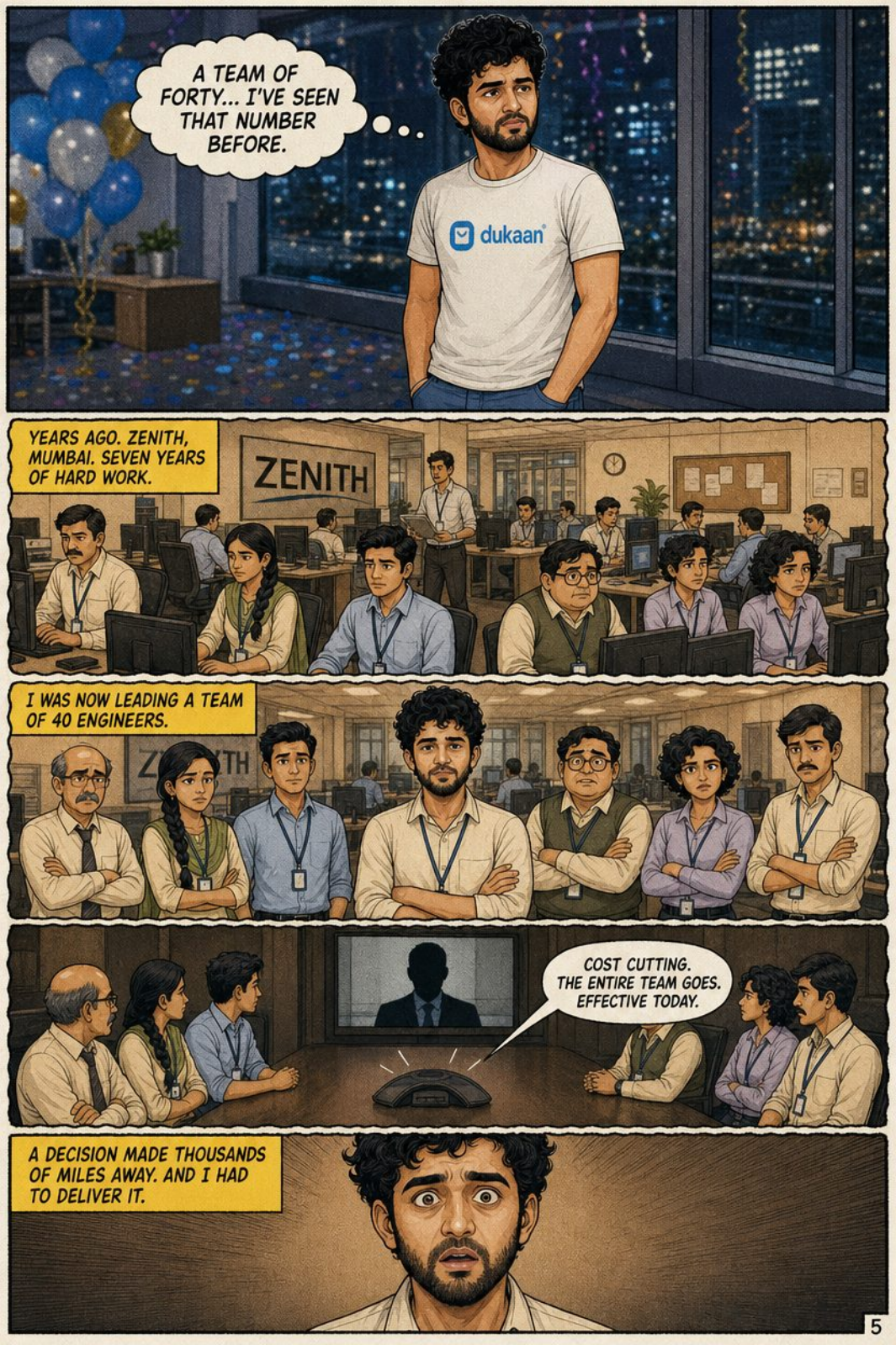
4


1 MILLION SELLERS. NO MORE CRASHES. BUT A NEW FIRE WAS SMOULDERING...
GAVRANMISAL
मिसळ पाव
तारी मिसळ
मटकी उसळ
दही मिसळ
कांदा लिंबू
MERE CUSTOMERS BOL RAHE HAIN STORE 6 SECOND LETA HAI!
जशी मिसळ तशी वरचढ!
CHHOD YAAR, KAHIN AUR SE MANGWATE HAIN.
मटकी उसळ
कांदा लिंबू
थंड ताक
खमंग
तिखट
झणझणीत!
PEOPLE ARE LEAVING BEFORE THEY CAN EVEN ORDER!
जशी मिसळ तशी वरचढ!
SUBHASH... GAVRANMISAL IS SLOW. REALLY SLOW.
1


EVERYTHING LOOKS... FINE?
CPU 30%
LOAD BALANCER OK
DATABASE OK
SHIP FAST. FIX LATER.
dukaan
114 QUERIES?! FOR ONE PAGE?!
SQL QUERIES: 114
dukaan
STORE DETAILS. THEME. CATEGORIES. PRODUCTS. ONE BY ONE. FOR EVERY SINGLE VISITOR.
1, 2, 3, ... 114
COUNTER
DEATH BY A THOUSAND CUTS.
114 × 10 MS = 1140 MS
THE MENU CHANGES TWICE A DAY... AND WE REBUILD IT FROM SCRATCH FOR EVERY CUSTOMER!
dukaan
2

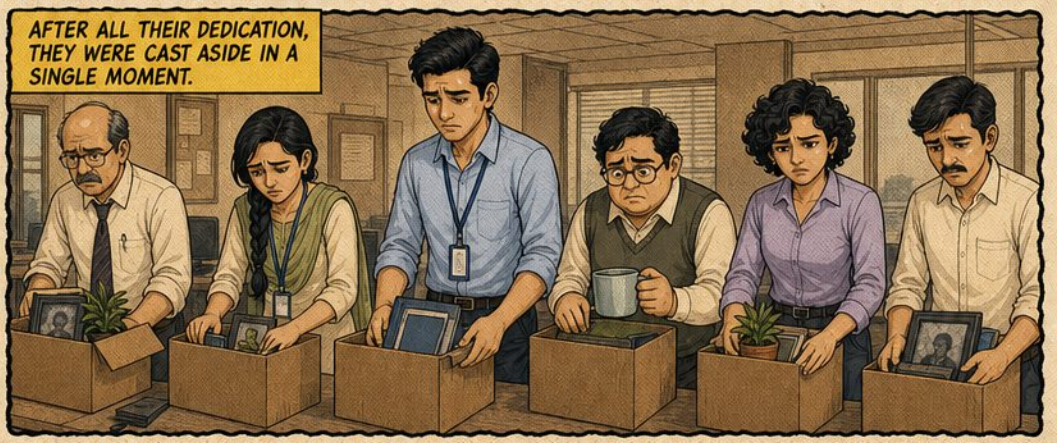

WHAT IS 135 MULTIPLIED BY 782?
135
x 782
$ax^2+bx+c=0$
$a^2+b^2=c^2$
UMM... 105,570!
TIK-TIK-TIK!
AND 135 MULTIPLIED BY 782?
135
x 782
105,570!
THAT IS CACHING. DON'T RECALCULATE. REMEMBER THE ANSWER.
WE NEED A SHORT-TERM MEMORY FOR OUR APP!
dukkaan
TOH LAGAO! KAL TAK!


THE LIBRARY IS FAR. THE WHITEBOARD IS RIGHT NEXT TO THE CHEF.
DATABASE (DISK)
REDIS (RAM)
dukaan
AUR WHITEBOARD MIT GAYA TOH?
TOH PHIR SE LIBRARY JAAYENGE. IT'S A CACHE, NOT THE TRUTH.
dukaan
CACHE MISS - FIRST VISITOR
CACHE HIT - EVERYONE ELSE
ZOOOM!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
CACHE HIT!
THE FIRST VISITOR WAITED. THE NEXT THOUSAND FLEW.
YAHOOO!
6 SEC → 200 MS!
dukaan
4


A TEAM OF FORTY... I'VE SEEN THAT NUMBER BEFORE.
dukaan
YEARS AGO. ZENITH, MUMBAI. SEVEN YEARS OF HARD WORK.
ZENITH
I WAS NOW LEADING A TEAM OF 40 ENGINEERS.
COST CUTTING. THE ENTIRE TEAM GOES. EFFECTIVE TODAY.
A DECISION MADE THOUSANDS OF MILES AWAY. AND I HAD TO DELIVER IT.


I'M SORRY... YOUR JOBS ARE GONE.


I WILL NEVER FORGET THE LOOK IN THEIR EYES.


AFTER ALL THEIR DEDICATION, THEY WERE CAST ASIDE IN A SINGLE MOMENT.


KYA POINT HI SALA JOB KA?
OFFICE COMPLEX MUMBAI
(WHAT'S THE DAMN POINT OF A JOB?)


KHUD KA KUCH KARENGE.
THAT DAY, THE ENTREPRENEUR INSIDE ME WAS BORN.


BUT SPEED CAME WITH A PRICE.
GAVRANMISAL.COM
DASHBOARD
EDIT ITEM PRICE
ITEM: MISAL PAV
MISAL PAV: Rs.150 → Rs.120
SAVE CHANGES
TODAY'S SPECIAL
MISAL PAV
GAVRANMISAL.COM
MISAL PAV
Rs.150
ADD TO CART
MAINE PRICE BADLA, PHIR BHI PURANA DIKH RAHA HAI!
TODAY'S SPECIAL
MISAL PAV
OUR WHITEBOARD WAS STILL SHOWING YESTERDAY'S ANSWER. A STALE CACHE.
CACHE STATUS
ITEM: MISAL PAV
PRICE: Rs.150
LAST UPDATED:
YESTERDAY, 09:15 PM
dukaan
WHAT IF WE JUST SET THE EXPIRY TO ONE MINUTE?
THAT'S SHUTTING THE MAIN WATER SUPPLY EVERY MINUTE TO FIX ONE LEAKY TAP! WE NEED A SCALPEL, NOT A SLEDGEHAMMER!

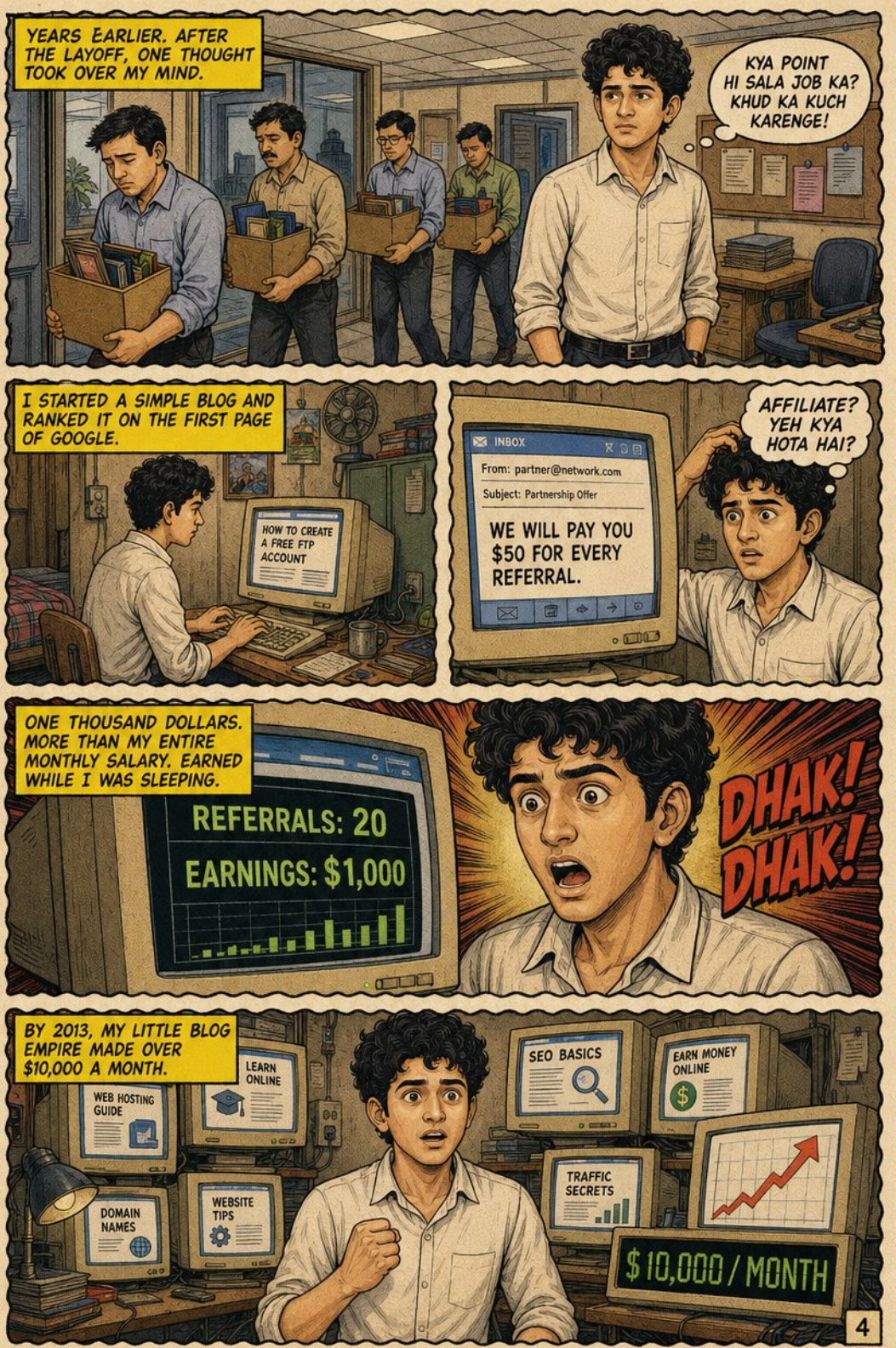

THE MOMENT DATA CHANGES, THE DATABASE SHOUTS. THE INVALIDATOR LISTENS. THE WHITEBOARD FORGETS.
TRIGGER
BEEP!
NOTIFY: PRODUCT_CHANGES
ZZZT!
CACHE INVALIDATOR
SWISH!
UPDATE PRICE
NECKLACE
Rs.800
SAVE
ARRE WAAH! AB SAHI DIKH RAHA HAI!
PRIYA JEWELS
GOLD NECKLACE
Rs.800
ADD TO CART
A GOOD MEMORY NEEDS AN EQUALLY GOOD ABILITY TO FORGET.
FAST BHI, SAHI BHI!
THWACK!
dukaan
BUT AS THE TEAM GREW, A NEW WAR WAS BREWING... INSIDE OUR OWN CODE.
@#!*!
%$#@!
#%*!
*@#%!
dukaan
8
TO BE CONTINUED... NEXT: EPISODE 5 - CIVIL WAR!


DUKAAN COMICS PRESENTS
ISSUE NO. 5
Rs. 5
HINDI-ENGLISH
THE ACCIDENTAL CTO
EPISODE 5: CIVIL WAR
TWO TEAMS. ONE CODEBASE. TOTAL CHAOS!
WHO PUSHED TO PROD?!
PAYMENT FAILED
STOP! THIS IS OUR OWN CODEBASE!
dukaan
MONOLITH
GROWTH SQUAD
OPERATIONS SQUAD
BASED ON A TRUE STORY!
WHEN YOUR OWN TEAM BREAKS PRODUCTION!
ALSO INSIDE: THE $1,000 BLOG!
8 906123 456789
05

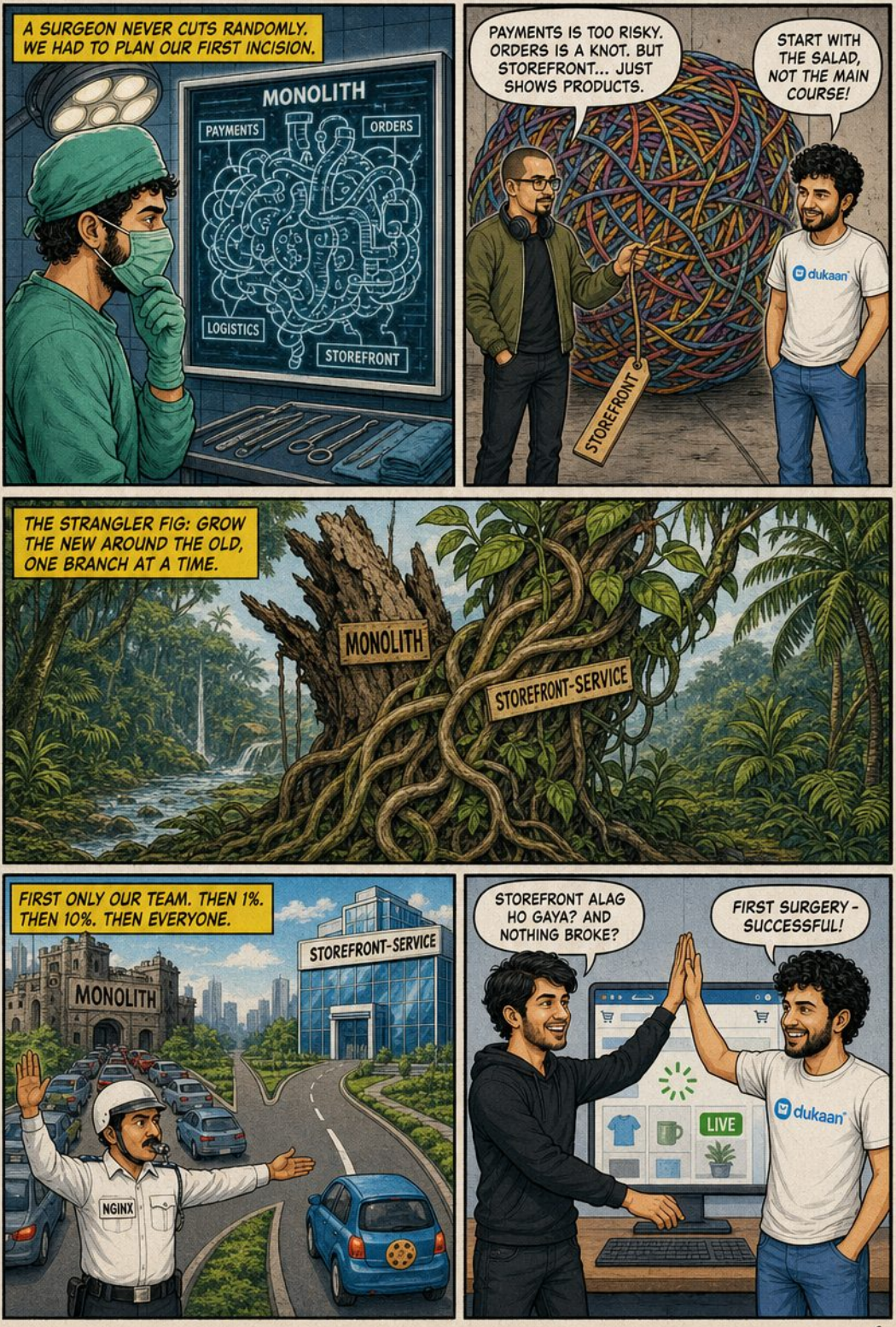

OUR TEAM HAD GROWN TO TEN PEOPLE. WE SPLIT THEM INTO TWO SQUADS.
GROWTH SQUAD
OPERATIONS SQUAD
BUT BOTH SQUADS WORKED IN THE SAME GIANT CODEBASE.
GROWTH SQUAD - SELLERS. OPERATIONS SQUAD - PAYMENTS AND LOGISTICS. SIMPLE!
dukaan
LOGISTICS INTEGRATION - DONE!
ORDER:
+ tracking_id
+ shipping_provider
SELLER DISCOUNTS - DONE!
ORDER:
+ discount_code
BOTH TESTED ON STAGING. EVERYTHING LOOKED FINE. ONE DEPLOYED. AN HOUR LATER, THE OTHER.
THUNK!
THUNK!
STAGING: PASSED
STAGING: PASSED
1


AND THEN... CHAOS.
ALERTS
!!!
PAYMENT WEBHOOK: FAILED
PAYMENT WEBHOOK: FAILED
PAYMENT WEBHOOK: FAILED
PAYMENT WEBHOOK: FAILED
PAYMENT WEBHOOK: FAILED
PAYMENT WEBHOOK: FAILED
WEE-OOO!
WEE-OOO!
MONEY WAS BEING CHARGED. BUT ORDERS WERE NEVER MARKED PAID.
Rs. 499 DEBITED
ORDERS: 0
SUBHASH! CUSTOMERS KE PAISE KAT RAHE HAIN AUR ORDERS GAAYAB HAIN! YEH SEEDHA PAISE KA MAMLA HAI!
CHECK LOGS!
dukaan
FOUND IT! THE DISCOUNT CODE CHANGED HOW AN ORDER GETS SAVED... AND IT BROKE THE PAYMENT LOGIC!
[ERROR] webhook_handler: exception
[ERROR] payment: save_order() failed
[WARN] discount_applied: TRUE
[INFO] order object: NULL
[ERROR] transaction_status: orphaned
if (discount_code_applied) {
order.save_partial();
} else {
order.save();
}
// PAYMENT LOGIC BREAKS HERE
IT WAS A CIVIL WAR INSIDE OUR OWN CODEBASE. TWO FRIENDLY TEAMS HAD ACCIDENTALLY SABOTAGED EACH OTHER.
REVERT EVERYTHING! NOW!
GROWTH
GROWTH
OPERATIONS
OPERATIONS
function saveOrder() {
applyDiscount();
savePartial();
// TODO
}
function handlePayment() {
chargeCustomer();
logTransaction();
markAsPaid();
}
01010101
10101010
2

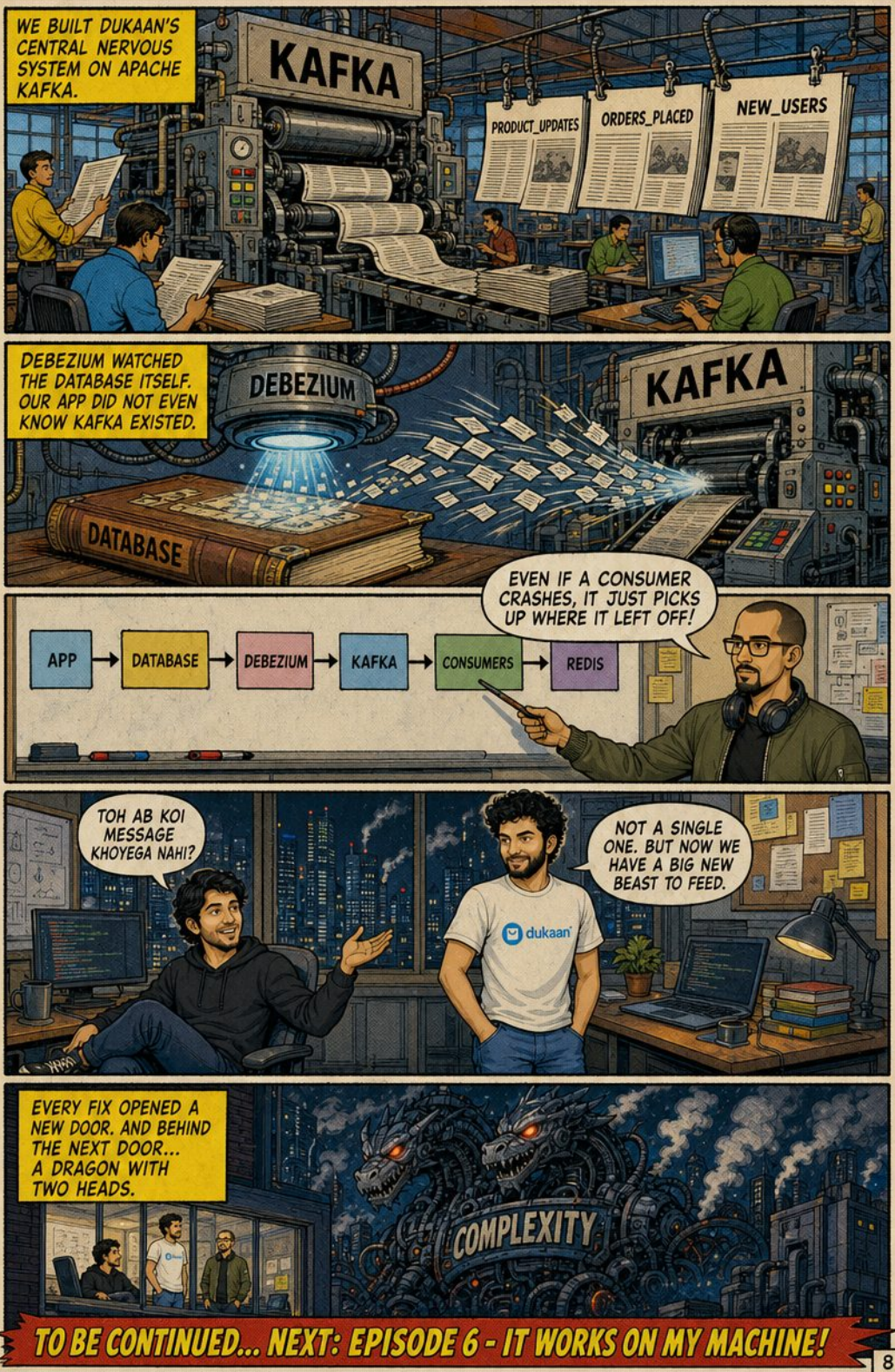

THE SERVERS WERE FINE. THE PIPELINE WAS FINE. SO WHAT BROKE?
POST-MORTEM
THE MONOLITH ITSELF.
dukaan
A MONOLITH IS ONE GIANT RESTAURANT. ONE KITCHEN MAKES EVERYTHING.
CLANG!
CRASH!
MICROSERVICES ARE A FOOD COURT. IF ONE STALL CATCHES FIRE, THE OTHERS KEEP SERVING.
PIZZA
TACOS
NOODLES
EVERY TEAM GETS ITS OWN STALL. NO MORE FIGHTING OVER ONE STOVE.
PIZZA
TACOS
NOODLES
dukaan
IT REMINDED ME OF THE FIRST MACHINE I EVER BUILT...
BREAKING THINGS APART... I HAVE DONE THIS BEFORE.
dukaan


YEARS EARLIER. AFTER THE LAYOFF, ONE THOUGHT TOOK OVER MY MIND.
KYA POINT HI SALA JOB KA? KHUD KA KUCH KARENGE!
I STARTED A SIMPLE BLOG AND RANKED IT ON THE FIRST PAGE OF GOOGLE.
HOW TO CREATE A FREE FTP ACCOUNT
INBOX
From: partner@network.com
Subject: Partnership Offer
WE WILL PAY YOU $50 FOR EVERY REFERRAL.
AFFILIATE? YEH KYA HOTA HAI?
ONE THOUSAND DOLLARS. MORE THAN MY ENTIRE MONTHLY SALARY. EARNED WHILE I WAS SLEEPING.
REFERRALS: 20
EARNINGS: $1,000
DHAK! DHAK!
BY 2013, MY LITTLE BLOG EMPIRE MADE OVER $10,000 A MONTH.
WEB HOSTING GUIDE
LEARN ONLINE
SEO BASICS
EARN MONEY ONLINE
DOMAIN NAMES
WEBSITE TIPS
TRAFFIC SECRETS
$10,000 / MONTH


BUT I WAS A ONE-MAN ARMY. AND I WAS HITTING MY LIMITS.
IF I CAN'T WORK HARDER... I'LL WORK SMARTER.
I WROTE SCRIPTS TO RUN MY BLOGS. SOON I COMMANDED AN AUTOMATED ARMY OF 1,500 BLOGS.
CLICK-CLICK-CLICK!
IT GREW INTO A REAL PRODUCT - RANKZ - BUILT WITH MY FRIENDS KAUSTUB AND ANURAG MEENA.
RANKZ - SEO PLATFORM
ONE BIG MESSY MACHINE... BROKEN INTO SMALL MACHINES THAT EACH DO ONE JOB.
MONOLITH
TIME TO BREAK THE MONOLITH.
dukaan
KEEP BUILDING
FOCUS SHIP IMPACT


A SURGEON NEVER CUTS RANDOMLY. WE HAD TO PLAN OUR FIRST INCISION.
MONOLITH
PAYMENTS
ORDERS
LOGISTICS
STOREFRONT
PAYMENTS IS TOO RISKY. ORDERS IS A KNOT. BUT STOREFRONT... JUST SHOWS PRODUCTS.
START WITH THE SALAD, NOT THE MAIN COURSE!
STOREFRONT
dukaan
THE STRANGLER FIG: GROW THE NEW AROUND THE OLD, ONE BRANCH AT A TIME.
MONOLITH
STOREFRONT-SERVICE
FIRST ONLY OUR TEAM. THEN 1%. THEN 10%. THEN EVERYONE.
MONOLITH
STOREFRONT-SERVICE
NGINX
STOREFRONT ALAG HO GAYA? AND NOTHING BROKE?
FIRST SURGERY - SUCCESSFUL!
LIVE
dukaan


FLASH SALE
I KEEP CHANGING THE PRICE FOR AN HOUR! MY CUSTOMERS STILL SEE THE OLD PRICE!
OUR LITTLE LISTENER SCRIPT HAD CRASHED. SILENTLY DEAD FOR OVER AN HOUR.
ONE NETWORK HICCUR AND IT NEVER WOKE UP!
CACHE INVALIDATOR
dukaan
IF NOBODY WAS LISTENING, THE MESSAGE WAS LOST FOREVER.
THIS IS NOT ENGINEERING. THIS IS PRAYER.
PRICE CHANGED!
OPTION 1: A POSTAL SERVICE. ONE LETTER, ONE READER. ONCE READ, IT IS GONE.
OPTION 2: A NEWSPAPER. EVERYONE CAN READ IT. AND THE ARCHIVE NEVER DISAPPEARS.
KAFKA
PRICE CHANGED FOR STORE 456!
THAT'S IT. WE NEED A NEWSPAPER!
CACHE
SEARCH
ANALYTICS
7


WE BUILT DUKAAN'S CENTRAL NERVOUS SYSTEM ON APACHE KAFKA.
KAFKA
PRODUCT_UPDATES
ORDERS_PLACED
NEW_USERS
DEBEZIUM WATCHED THE DATABASE ITSELF. OUR APP DID NOT EVEN KNOW KAFKA EXISTED.
DEBEZIUM
KAFKA
DATABASE
EVEN IF A CONSUMER CRASHES, IT JUST PICKS UP WHERE IT LEFT OFF!
APP
DATABASE
DEBEZIUM
KAFKA
CONSUMERS
REDIS
TOH AB KOI MESSAGE KHOYEGA NAHI?
NOT A SINGLE ONE. BUT NOW WE HAVE A BIG NEW BEAST TO FEED.
dukaan
EVERY FIX OPENED A NEW DOOR. AND BEHIND THE NEXT DOOR... A DRAGON WITH TWO HEADS.
COMPLEXITY
TO BE CONTINUED... NEXT: EPISODE 6 - IT WORKS ON MY MACHINE!

DUKAAN COMICS PRESENTS

ISSUE NO. 6
Rs. 5
HINDI-ENGLISH

THE ACCIDENTAL CTO

EPISODE 6: IT WORKS ON MY MACHINE



IT WORKS ON MY MACHINE!

AWS BILL

dukaan

THE DRAGON HAS TWO HEADS!



BASED ON A TRUE STORY!

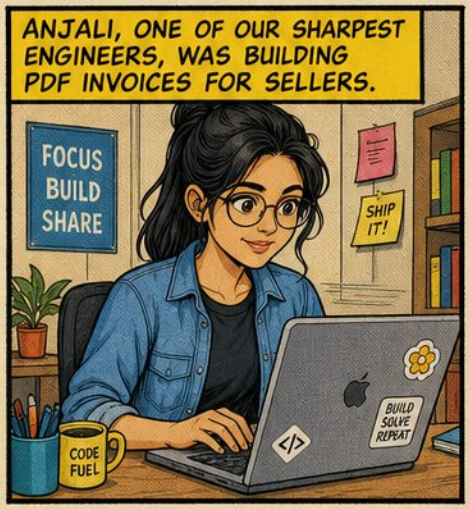
ONE BOX TO RULE THEM ALL!

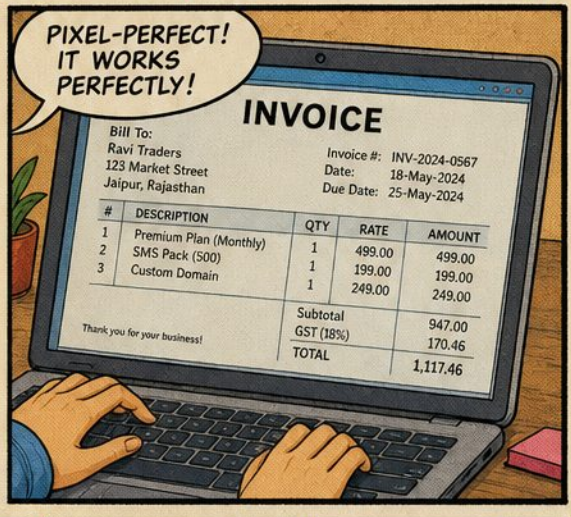
ALSO INSIDE: HOW SUBHASH MET SUUMIT!

890123 456789

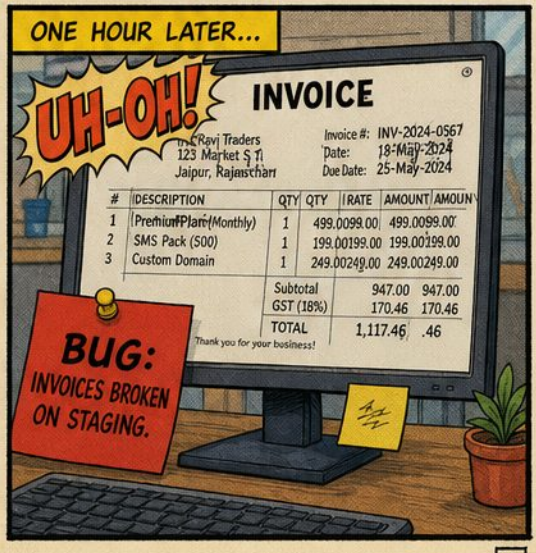
6


OUR TEAM WAS GROWING FAST. AND SO WERE OUR PROBLEMS.
FLOW
API
DATA
DB
BUILD
SHIP
REPEAT
CHAI FIRST

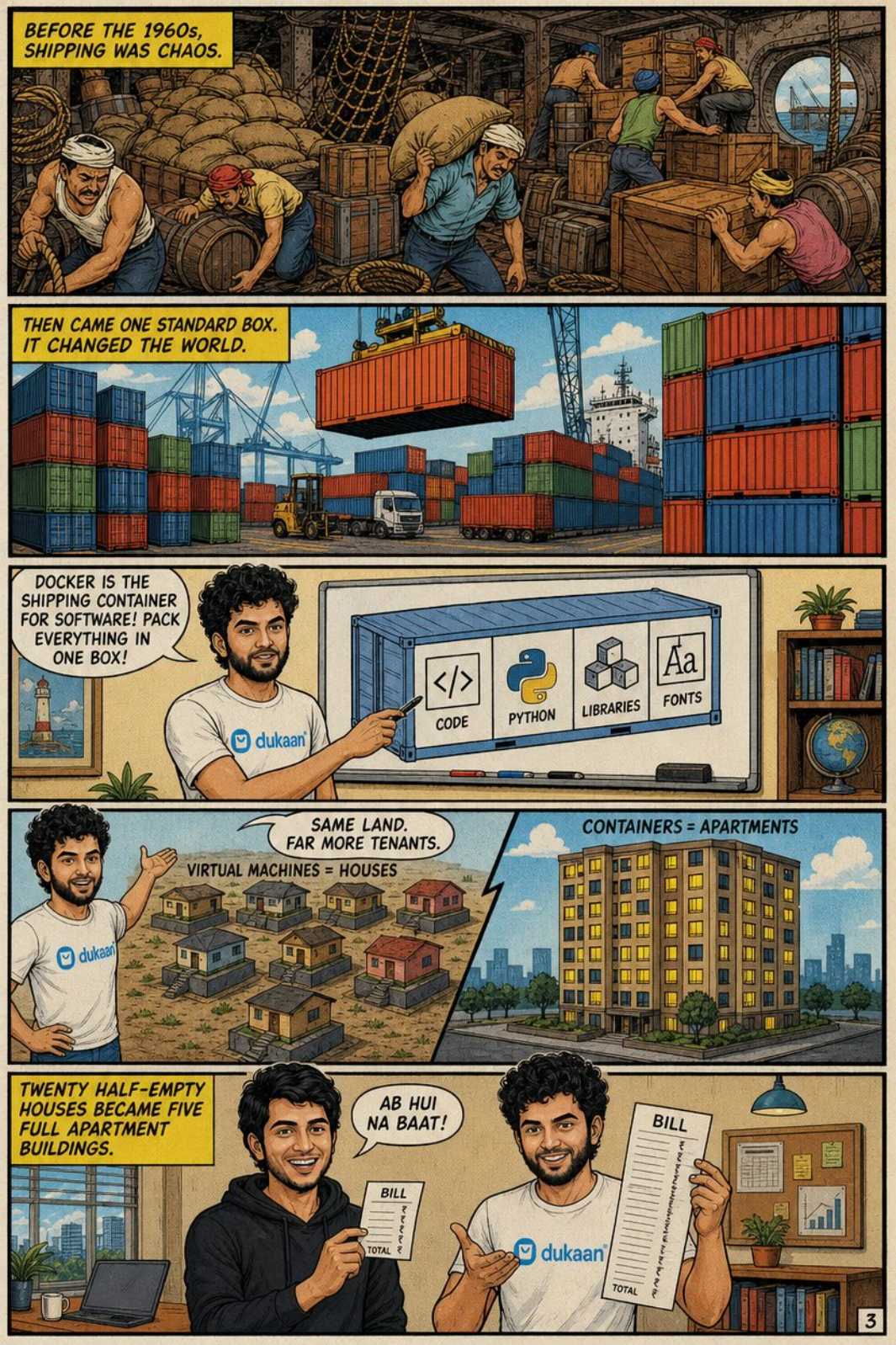

ANJALI, ONE OF OUR SHARPEST ENGINEERS, WAS BUILDING PDF INVOICES FOR SELLERS.
FOCUS
BUILD
SHARE
SHIP IT!
BUILD
SOLVE
REPEAT
CODE
FUEL

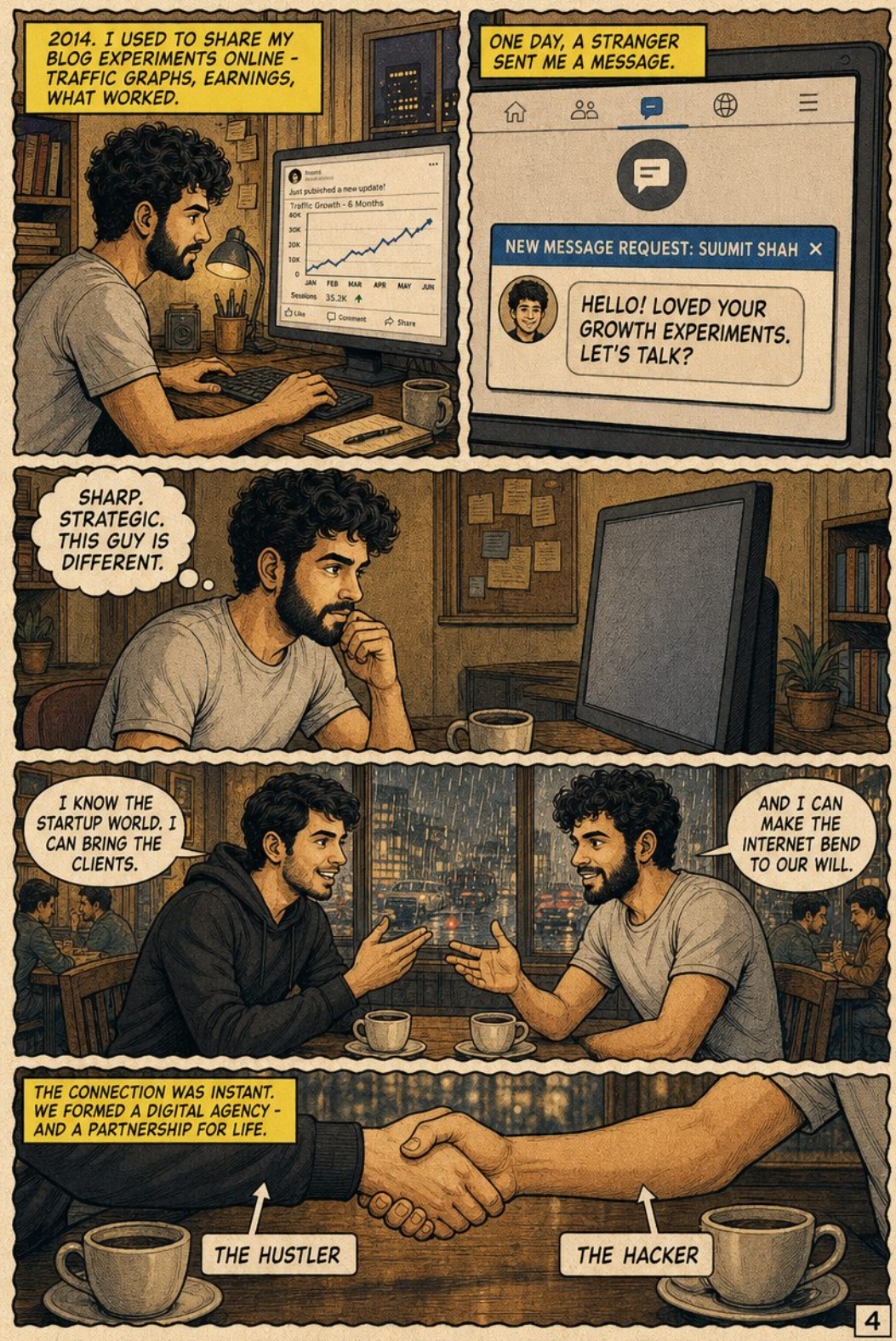

PIXEL-PERFECT! IT WORKS PERFECTLY!
INVOICE
Bill To:
Ravi Traders
123 Market Street
Jaipur, Rajasthan
Invoice #: INV-2024-0567
Date: 18-May-2024
Due Date: 25-May-2024
DESCRIPTION QTY RATE AMOUNT
1 Premium Plan (Monthly) 1 499.00 499.00
2 SMS Pack (500) 1 199.00 199.00
3 Custom Domain 1 249.00 249.00
Subtotal 947.00
GST (18%) 170.46
TOTAL 1,117.46
Thank you for your business!


CODE REVIEW DONE. SHIP IT TO STAGING!
PLAN ✓
CODE ✓
TEST ✓
SHIP ✓
dukaan
WHOOSH!


ONE HOUR LATER...
UH-OH!
INVOICE
Bill To:
Ravi Traders
123 Market St
Jaipur, Rajasthan
Invoice #: INV-2024-0567
Date: 18-May-2024
Due Date: 25-May-2024
DESCRIPTION QTY RATE AMOUNT
1 Premium Plan (Monthly) 1 499.00 499.00
2 SMS Pack (500) 1 199.00 199.00
3 Custom Domain 1 249.00 249.00
Subtotal 947.00
GST (18%) 170.46
TOTAL 1,117.46
Thank you for your business!
BUG: INVOICES BROKEN ON STAGING.


SAME CODE! SAME FILE! HOW?!
MY LAPTOP
INVOICE
Invoice # INV-10047
Date 15/05/2024
Bill To: ABC Traders
Item | Qty | Rate | Amount
Widget A | 2 | 500 | 1000
Widget B | 1 | 750 | 750
Widget C | 3 | 300 | 900
TOTAL ₹ 2650
STAGING
INVOICE
Invoice # INV-10047
Date 15/05/2024
Bill To: ABC Traders
Item | Amount | Qty | Rate
Widget A | 1000 | 2 | 500
Widget B | | 1 | 750
Widget C | 900 | 3 | 300
TOTAL ₹ 2650
I DON'T UNDERSTAND... IT WORKS ON MY MACHINE!
FOUND IT! THE SERVER HAS DIFFERENT FONT LIBRARIES THAN YOUR LAPTOP.
MY LAPTOP FONTS
01-Inter-Regular.ttf
02-Inter-Bold.ttf
03-Roboto-Regular.ttf
04-Roboto-Medium.ttf
05-OpenSans-Regular.ttf
06-OpenSans-Bold.ttf
07-Lato-Regular.ttf
08-Lato-Bold.ttf
09-Merriweather.ttf
10-Poppins-Regular.ttf
SERVER FONTS
01-Inter-Regular.ttf
02-Inter-Bold.ttf
03-Roboto-Regular.ttf
04-Roboto-Medium.ttf
05-OpenSans-Regular.ttf
06-OpenSans-Light.ttf
07-Lato-Regular.ttf
08-Lato-Bold.ttf
09-Merriweather.ttf
10-Poppins-Regular.ttf
dukaan
TINY DIFFERENCES. HOURS WASTED. EVERY WEEK.
SUBHASH, THE AWS BILL SAYS TWENTY SERVERS. BUT ONLY HALF ARE BUSY. WHAT ARE THE OTHER TEN DOING?!
WE WERE FIGHTING A TWO-HEADED DRAGON.
IT WORKS ON MY MACHINE!
WASTED SERVERS
₹ 50
₹ 500
₹ 500
2


BEFORE THE 1960s, SHIPPING WAS CHAOS.
THEN CAME ONE STANDARD BOX. IT CHANGED THE WORLD.
DOCKER IS THE SHIPPING CONTAINER FOR SOFTWARE! PACK EVERYTHING IN ONE BOX!
dukaan
CODE
PYTHON
LIBRARIES
FONTS
SAME LAND. FAR MORE TENANTS.
VIRTUAL MACHINES = HOUSES
CONTAINERS = APARTMENTS
TWENTY HALF-EMPTY HOUSES BECAME FIVE FULL APARTMENT BUILDINGS.
AB HUI NA BAAT!
BILL
TOTAL
3

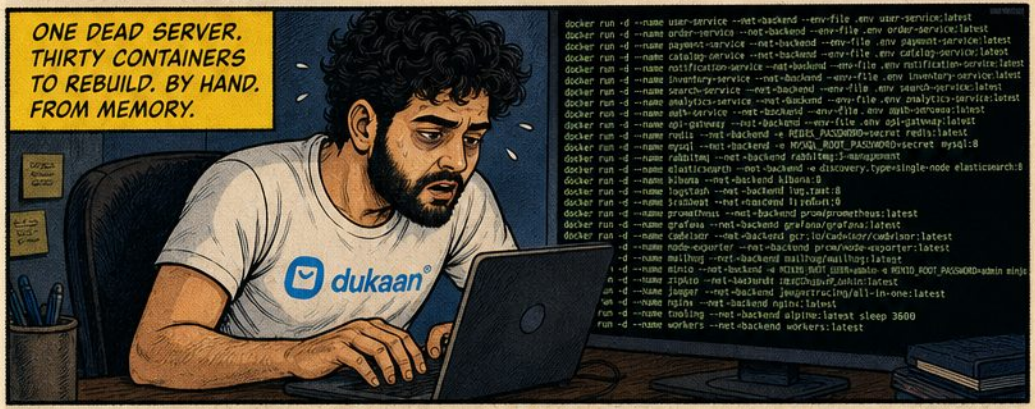

2014. I USED TO SHARE MY BLOG EXPERIMENTS ONLINE - TRAFFIC GRAPHS, EARNINGS, WHAT WORKED.
Just published a new update!
Traffic Growth - 6 Months
40K
30K
20K
10K
0
JAN FEB MAR APR MAY JUN
Sessions 35.2K
Like
Comment
Share
ONE DAY, A STRANGER SENT ME A MESSAGE.
NEW MESSAGE REQUEST: SUUMIT SHAH
HELLO! LOVED YOUR GROWTH EXPERIMENTS. LET'S TALK?
SHARP. STRATEGIC. THIS GUY IS DIFFERENT.
I KNOW THE STARTUP WORLD. I CAN BRING THE CLIENTS.
AND I CAN MAKE THE INTERNET BEND TO OUR WILL.
THE CONNECTION WAS INSTANT. WE FORMED A DIGITAL AGENCY - AND A PARTNERSHIP FOR LIFE.
THE HUSTLER
THE HACKER


DIWALI SALE. A BIG SELLER WAS FURIOUS.
To: cto@company.com
Subject: URGENT!!! SEARCH PROBLEM
CUSTOMERS SEARCH RUNNING SHOES AND GET ZERO RESULTS! I HAVE 200 RUNNING SHOES!
PEOPLE WHO USE OUR SEARCH BAR BARELY BUY ANYTHING. IT'S KILLING SALES!
SEARCH
BROWSE
ANY SNEAKERS?
NO BOOK IS TITLED EXACTLY SNEAKERS. NEXT!
ANIMAL STORIES
TRAVEL GUIDE
COOKING RECIPES
HISTORY
SCIENCE FACTS
GARDENING
PHILOSOPHY
CHILDREN BOOKS
SQL LIKE
WE CAN'T TRAIN THE DUMB CLERK. WE HAVE TO HIRE A GENIUS.
dukaan
• NO TYPOS ALLOWED
• NO SYNONYMS
• NO RANKING
• SLOW!
5

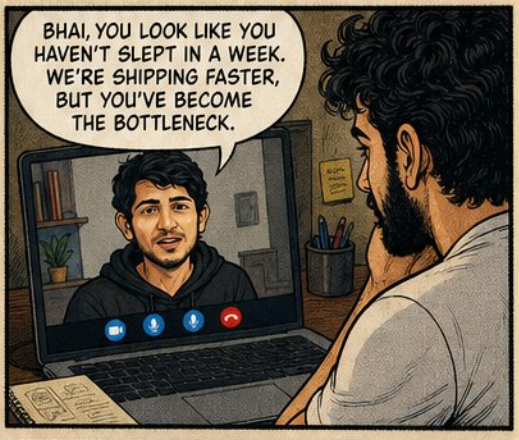

1
MEET THE GENIUS CLERK. SHE HAS READ EVERY BOOK.
ELASTICSEARCH
2
RUNING SHOES
TYPOS? FORGIVEN.
SNEAKERS = TRAINERS = RUNNING SHOES
SYNONYMS? UNDERSTOOD.
1
2
3
BEST MATCH FIRST.
ONE EVENT. TWO WORKERS. ZERO EXTRA PLUMBING.
PRODUCT UPDATED
KAFKA
CACHE INVALIDATOR
SEARCH SERVICE
4
RESULTS IN TWELVE MILLISECONDS!
AND THE MONOLITH DOESN'T EVEN KNOW SEARCH EXISTS!
dukaan
12 MS
5
ORDERS ARE POURING IN! HAPPY DIWALI, DUKAAN!
TING!
TING!
TING!
6

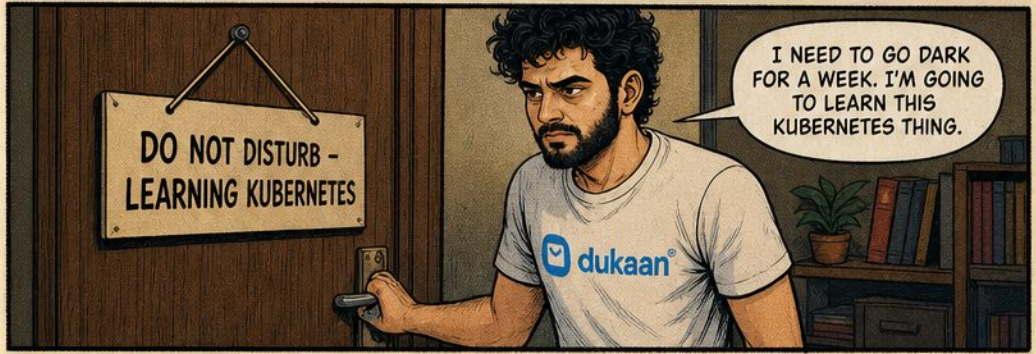

SAO PAULO, BRAZIL.
YOUR PLATFORM IS WONDERFUL... BUT MY STORE IS SO SLOW HERE!
WHY IS THIS LINE GROWING FASTER THAN OUR SERVERS?!
BANDWIDTH BILL
DATA TRANSFER IN $ 1,250.00
DATA TRANSFER OUT $ 9,875.00
STORAGE $ 1,120.00
REQUESTS $ 860.00
TOTAL $13,105.00
EVERY IMAGE TRAVELLED 14,000 KM. EVERY SINGLE TIME. AND WE PAID POSTAGE.
2MB IMAGE
SAO PAULO
MUMBAI
14,000 KM
A CDN! KEEP A COPY OF EVERY PHOTO IN A LOCAL BRANCH NEAR THE CUSTOMER!
dukaan
LONDON
TOKYO
SINGAPORE
SAO PAULO
PAGE LOAD: 6 SECONDS TO UNDER 1!
BANDWIDTH BILL CUT BY SEVENTY PERCENT!
BANDWIDTH BILL
DATA TRANSFER IN $ 1,250.00
DATA TRANSFER OUT $ 2,962.50
STORAGE $ 1,120.00
REQUESTS $ 860.00
TOTAL $ 6,192.50
-70%


BEEP!
BEEP!
BEEP!
HOST UNREACHABLE:
APP-SERVER-07
2:00 AM SAT


ONE DEAD SERVER.
THIRTY CONTAINERS
TO REBUILD. BY HAND.
FROM MEMORY.
dukaan


WAS IT
PORT 8080
OR 8081...?
dukaan


BHAI, YOU LOOK LIKE YOU
HAVEN'T SLEPT IN A WEEK.
WE'RE SHIPPING FASTER,
BUT YOU'VE BECOME
THE BOTTLENECK.

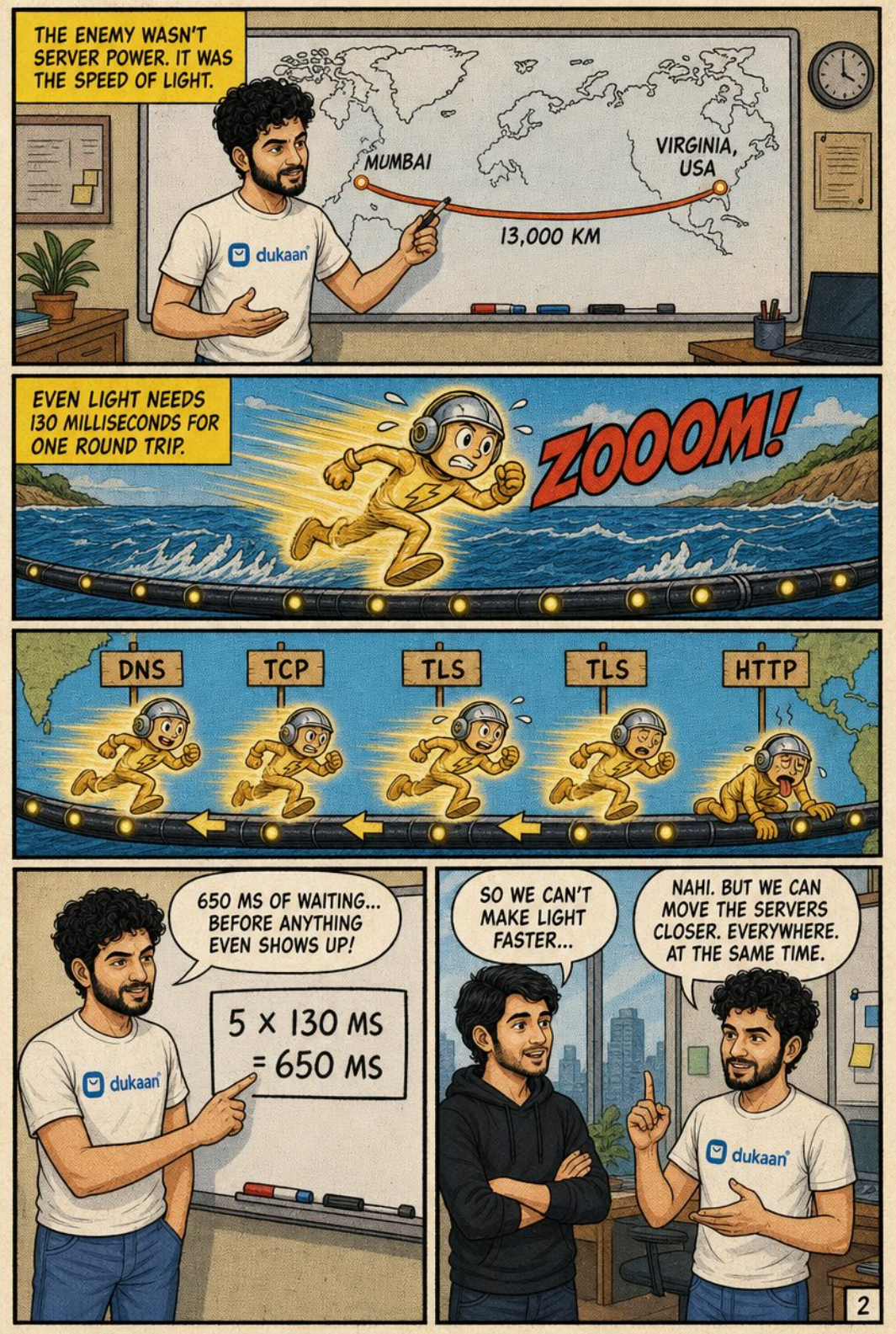

DO NOT DISTURB -
LEARNING KUBERNETES
I NEED TO GO DARK
FOR A WEEK. I'M GOING
TO LEARN THIS
KUBERNETES THING.
dukaan


A HUNDRED CONTAINERS WITH NO ONE IN CHARGE.
CACOPHONY!
PODS
IT FEELS LIKE LEARNING AN ALIEN LANGUAGE...
DEPLOYMENTS
SERVICES
INGRESS
dukaan
KUBERNETES: THE CONDUCTOR OF OUR CONTAINER ORCHESTRA.
KUBERNETES
A CONTAINER CRASHES? THE CONDUCTOR REPLACES IT INSTANTLY.
TWANG!
I JUST WRITE THE SHEET MUSIC. KUBERNETES MAKES SURE IT PLAYS.
replicas: 50
50/50 PODS RUNNING

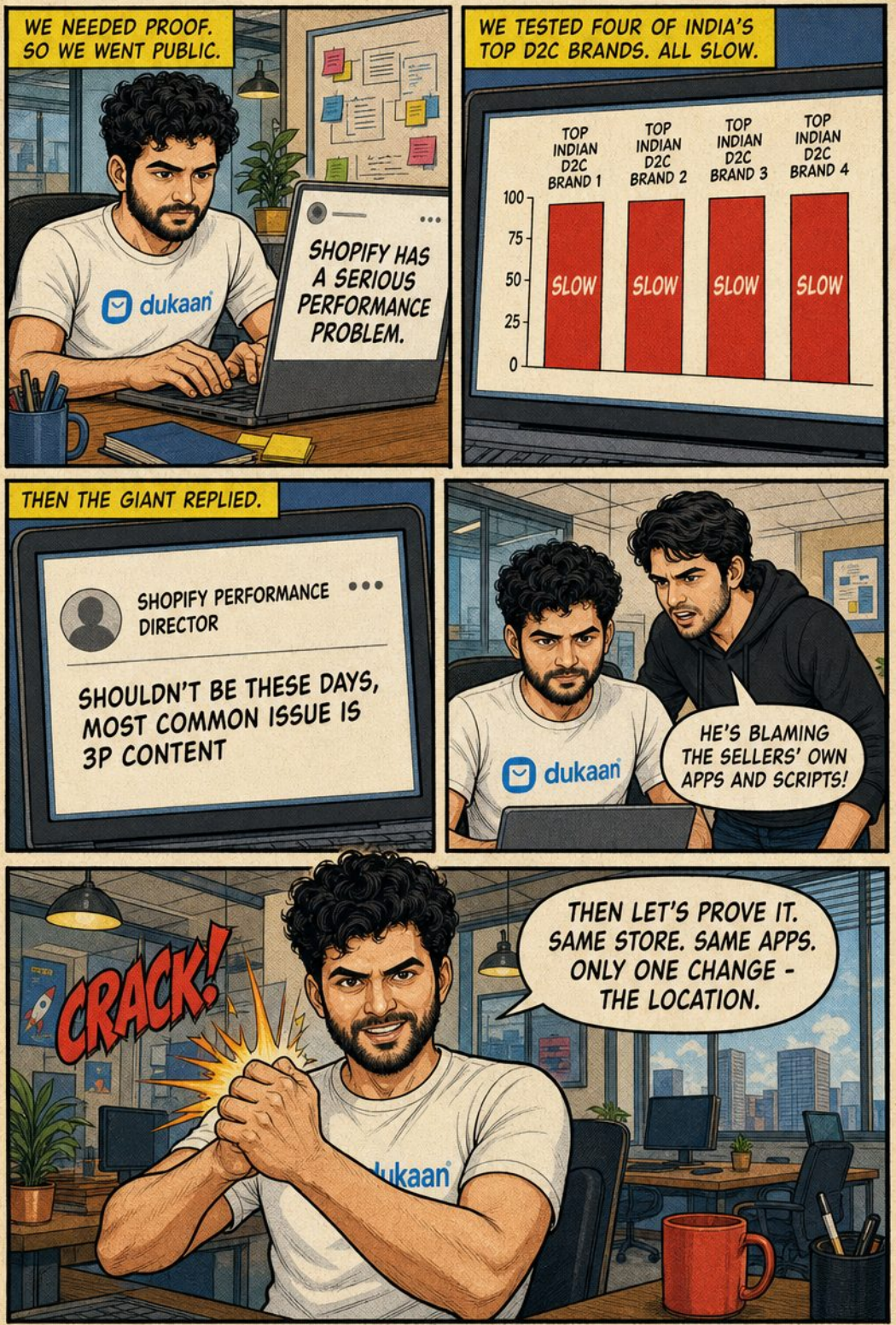

ONE PROBLEM: OUR ORCHESTRA WAS PLAYING IN A SOUNDPROOF ROOM.
OPEN THE DOORS!
INGRESS
INGRESS
dukaan
KA-CHUNK!
NO MORE 2 AM DOCKER COMMANDS. THE SYSTEM HEALED ITSELF.
ALL SYSTEMS HEALTHY
SUBHASH... I'VE BEEN TESTING SHOPIFY STORES. IN INDIA THEY TAKE FOUR SECONDS TO LOAD.
THEN LET'S BE THE FASTEST ON THE PLANET.
dukaan
TO BE CONTINUED... NEXT: EPISODE 7 - THE WAR ON SHOPIFY!

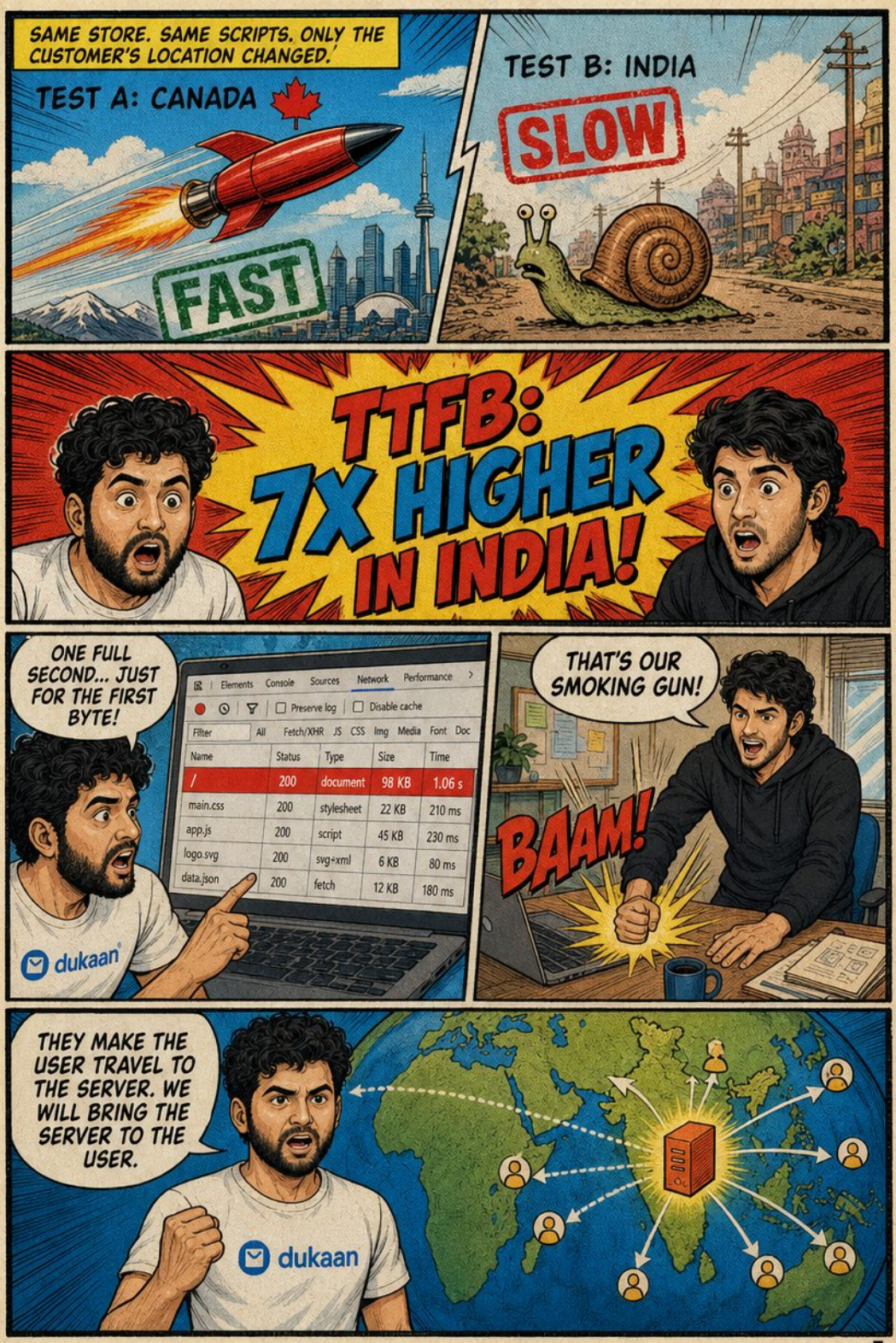

DUKAAN COMICS PRESENTS
ISSUE NO. 7
Rs. 5
HINDI-ENGLISH
THE ACCIDENTAL CTO
EPISODE 7: THE WAR ON SHOPIFY
BASED ON A TRUE STORY!
3 SECONDS VS 50 MILLISECONDS!
THE GLOBAL GIANT
dukaan
00:00:00.050
DAVID VS GOLIATH - DESI STYLE!
ALSO INSIDE: THE AGENCY YEARS!
07
9 772345 678907

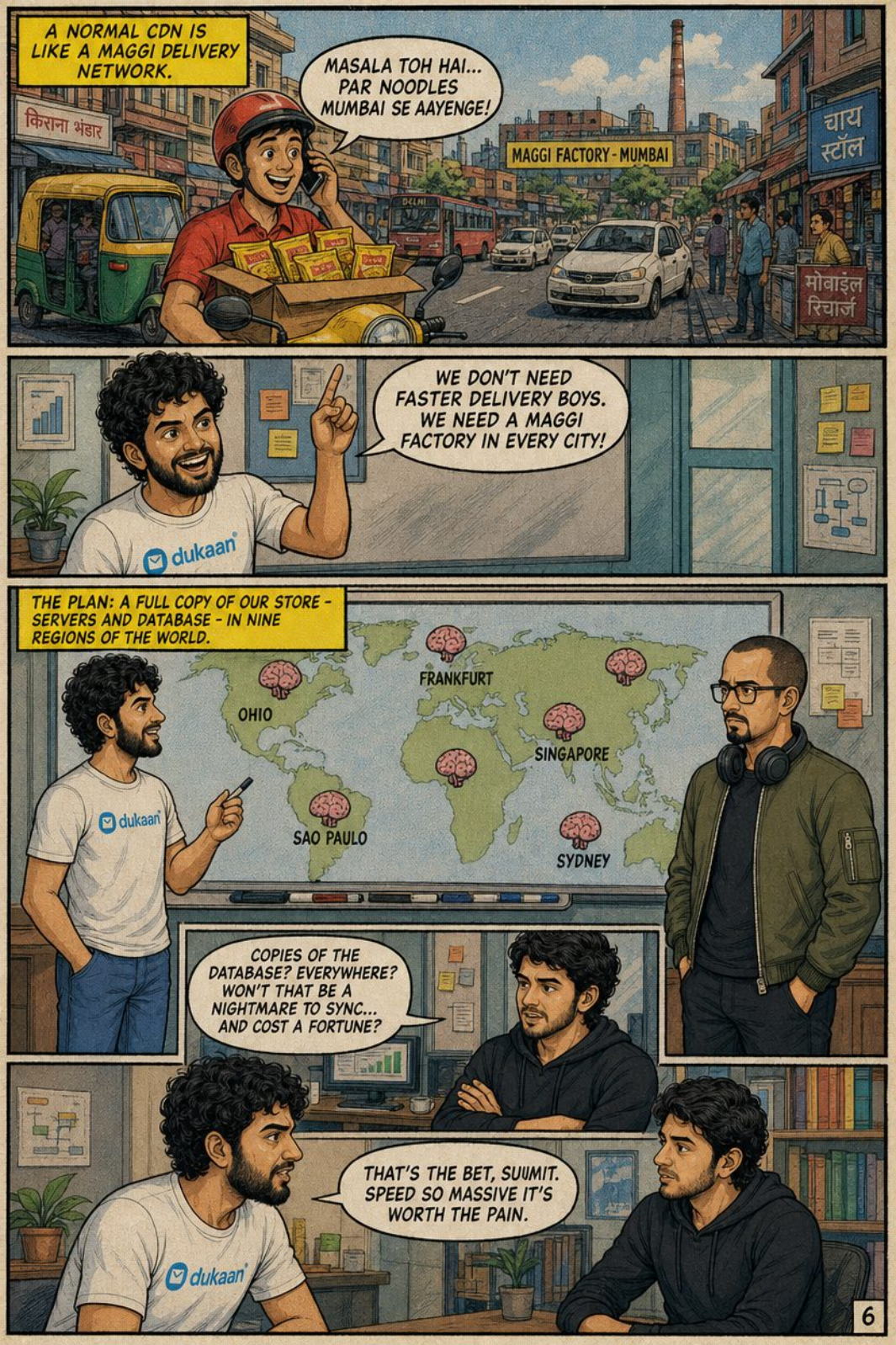

DUKAAN WAS GROWING FAST. BUT EVERYONE MEASURED US AGAINST ONE GIANT: SHOPIFY.
SHIP FAST
SHOPIFY TRIAL
SHOPIFY TRIAL
SHOPIFY TRIAL
CHAI (COLD)
THREE... FOUR SECONDS?! FOR ONE PAGE?
3.8 SEC
TIK... TIK... TIK...
SUBHASH, I'VE FOUND IT. I KNOW HOW WE CAN WIN.
BOL...
dukaan
THEIR STORES ARE SLOW HERE. REALLY SLOW. THREE, SOMETIMES FOUR SECONDS IN INDIA!
CHAI
WE CAN'T OUT-FEATURE THEM. BUT WE CAN BE FASTER. INSTANTLY FAST - EVERYWHERE!
THAT CALL CHANGED OUR MISSION.


THE ENEMY WASN'T SERVER POWER. IT WAS THE SPEED OF LIGHT.
MUMBAI
VIRGINIA, USA
13,000 KM
dukaan
EVEN LIGHT NEEDS 130 MILLISECONDS FOR ONE ROUND TRIP.
ZOOOM!
DNS
TCP
TLS
TLS
HTTP
650 MS OF WAITING... BEFORE ANYTHING EVEN SHOWS UP!
5 x 130 MS = 650 MS
dukaan
SO WE CAN'T MAKE LIGHT FASTER...
NAHI. BUT WE CAN MOVE THE SERVERS CLOSER. EVERYWHERE. AT THE SAME TIME.
dukaan
2


FLASHBACK. WE STOPPED BEING SOLO OPERATORS AND FORMED A DIGITAL AGENCY.
I HAVE THE CONTACTS.
AND I HAVE THE TECH.
dukaan
OUR FIRST CLIENT... TWO CRORE!
CONTRACT SIGNED
KYA?!
PFFT!
dukaan
WE RECRUITED 40 NINJAS - THE SHARPEST GROWTH EXPERTS AND ENGINEERS WE COULD FIND.
TEST ITERATE GROW
HIGH-GROWTH STARTUPS. LISTED COMPANIES. EVEN THREE FORTUNE 500 GIANTS.
TOP GROWTH PARTNER
STRATEGIC EXCELLENCE
IMPACT CHAMPION
REVENUE GROWTH
USER GROWTH
MARKET IMPACT
IT WAS OUR REAL-WORLD MBA. WE LEARNED HOW GIANTS WIN... AND HOW THEY LOSE.
dukaan


WE NEEDED PROOF.
SO WE WENT PUBLIC.
dukaan
SHOPIFY HAS A SERIOUS PERFORMANCE PROBLEM.
WE TESTED FOUR OF INDIA'S TOP D2C BRANDS. ALL SLOW.
TOP INDIAN D2C BRAND 1
TOP INDIAN D2C BRAND 2
TOP INDIAN D2C BRAND 3
TOP INDIAN D2C BRAND 4
100
75
50
25
0
SLOW
SLOW
SLOW
SLOW
THEN THE GIANT REPLIED.
SHOPIFY PERFORMANCE DIRECTOR
SHOULDN'T BE THESE DAYS, MOST COMMON ISSUE IS 3P CONTENT
dukaan
HE'S BLAMING THE SELLERS' OWN APPS AND SCRIPTS!
CRACK!
THEN LET'S PROVE IT. SAME STORE. SAME APPS. ONLY ONE CHANGE - THE LOCATION.


SAME STORE. SAME SCRIPTS. ONLY THE CUSTOMER'S LOCATION CHANGED.
TEST A: CANADA
FAST
TEST B: INDIA
SLOW
TTFB: 7X HIGHER IN INDIA!
ONE FULL SECOND... JUST FOR THE FIRST BYTE!
Elements Console Sources Network Performance
Preserve log Disable cache
Filter All Fetch/XHR JS CSS Img Media Font Doc
Name Status Type Size Time
/ 200 document 98 KB 1.06 s
main.css 200 stylesheet 22 KB 210 ms
app.js 200 script 45 KB 230 ms
logo.svg 200 svg+xml 6 KB 80 ms
data.json 200 fetch 12 KB 180 ms
dukaan
THAT'S OUR SMOKING GUN!
BAAM!
THEY MAKE THE USER TRAVEL TO THE SERVER. WE WILL BRING THE SERVER TO THE USER.
dukaan


A NORMAL CDN IS LIKE A MAGGI DELIVERY NETWORK.
MASALA TOH HAI... PAR NOODLES MUMBAI SE AAYENGE!
किराना भंडार
MAGGI FACTORY - MUMBAI
चाय स्टॉल
मोबाइल रिचार्ज
WE DON'T NEED FASTER DELIVERY BOYS. WE NEED A MAGGI FACTORY IN EVERY CITY!
dukaan
THE PLAN: A FULL COPY OF OUR STORE - SERVERS AND DATABASE - IN NINE REGIONS OF THE WORLD.
OHIO
FRANKFURT
SINGAPORE
SAO PAULO
SYDNEY
dukaan
COPIES OF THE DATABASE? EVERYWHERE? WON'T THAT BE A NIGHTMARE TO SYNC... AND COST A FORTUNE?
THAT'S THE BET, SUUMIT. SPEED SO MASSIVE IT'S WORTH THE PAIN.
dukaan
6


THE MAGIC TRICK: ONE ADDRESS FOR THE WHOLE PLANET - ANYCAST.
1-800-PIZZA
SAME NUMBER. THE NETWORK CONNECTS YOU TO THE NEAREST CENTER.
MUMBAI
dukaan
FRANKFURT
ONE IP. NINE FRONT DOORS!
ONE MAGIC IP
MUMBAI
FRANKFURT
NINE REGIONAL BRAINS - EACH WITH ITS OWN KITCHEN AND ITS OWN COPY OF THE RECIPE BOOK.
AND KAFKA - OUR GLOBAL NEWS WIRE - KEPT EVERY BRAIN IN SYNC WITHIN SECONDS.
BEEP-BEEP-BEEP!
PRICE UPDATED!
dukaan

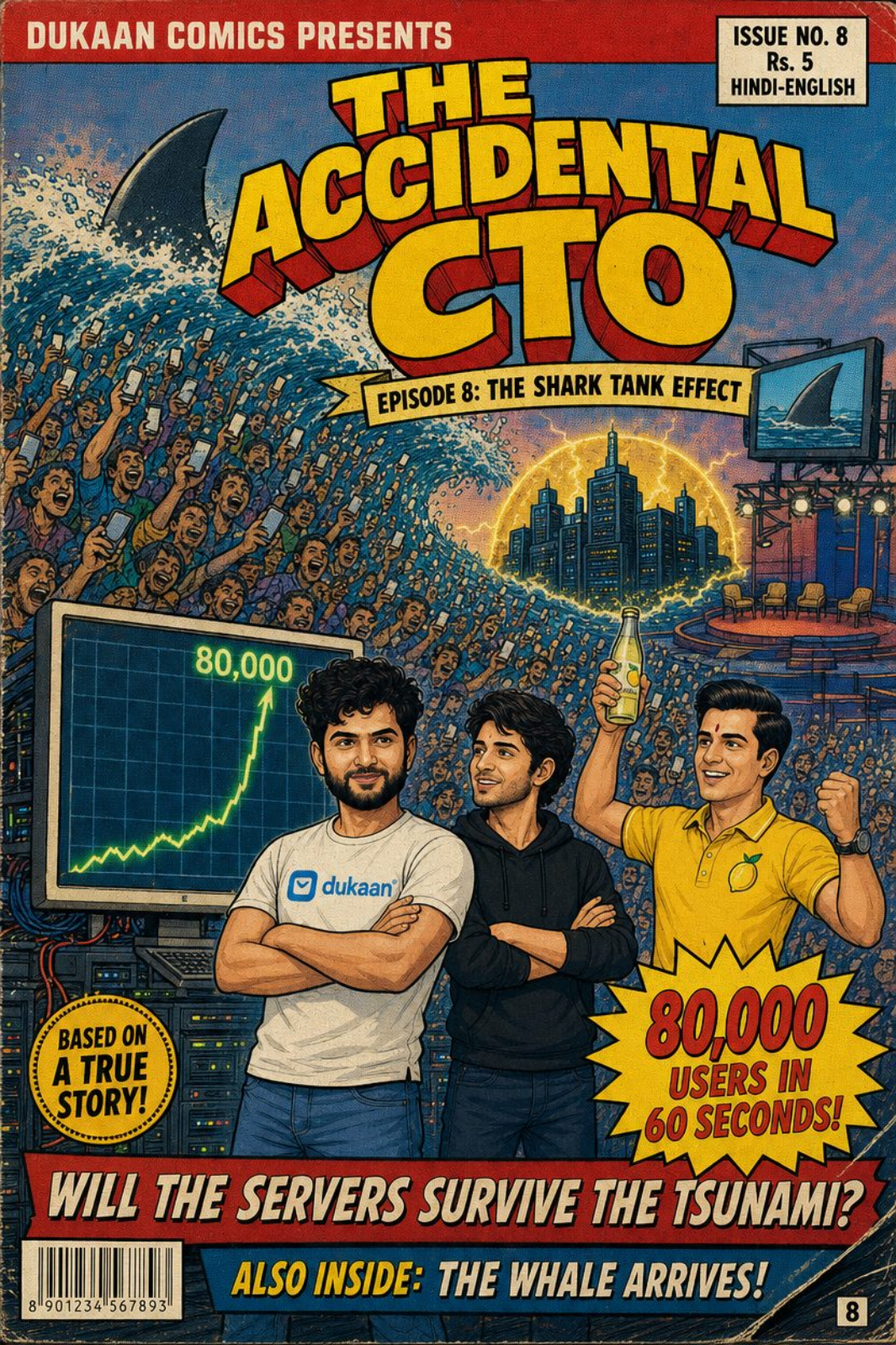

TTFB: UNDER 50 MS
0
20
30
40
50
VROOOM!
FIFTY MILLISECONDS?! BHAI, YEH TOH JAADU HAI!
THEY HAD A 10-YEAR HEAD START. WE HAD PHYSICS ON OUR SIDE.
SPEED ISN'T A NUMBER. IT'S THE FEATURE!
dukaani
BUT WE DIDN'T KNOW YET... OUR NEW NETWORK WAS ABOUT TO FACE A TSUNAMI.
TO BE CONTINUED... NEXT: EPISODE 8 – THE SHARK TANK EFFECT!

DUKAAN COMICS PRESENTS

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HINDI-ENGLISH

THE ACCIDENTAL CTO

EPISODE 8: THE SHARK TANK EFFECT

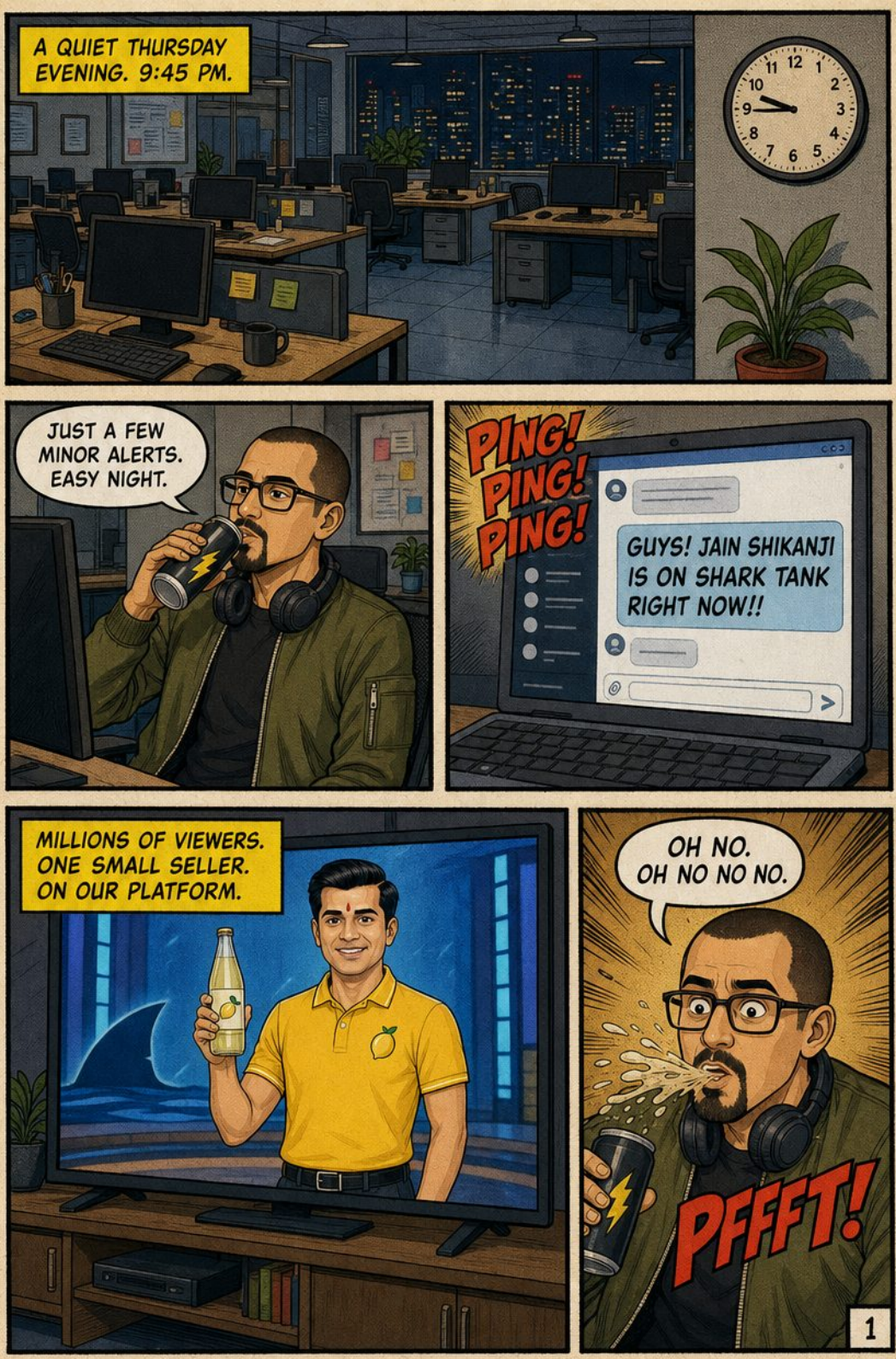


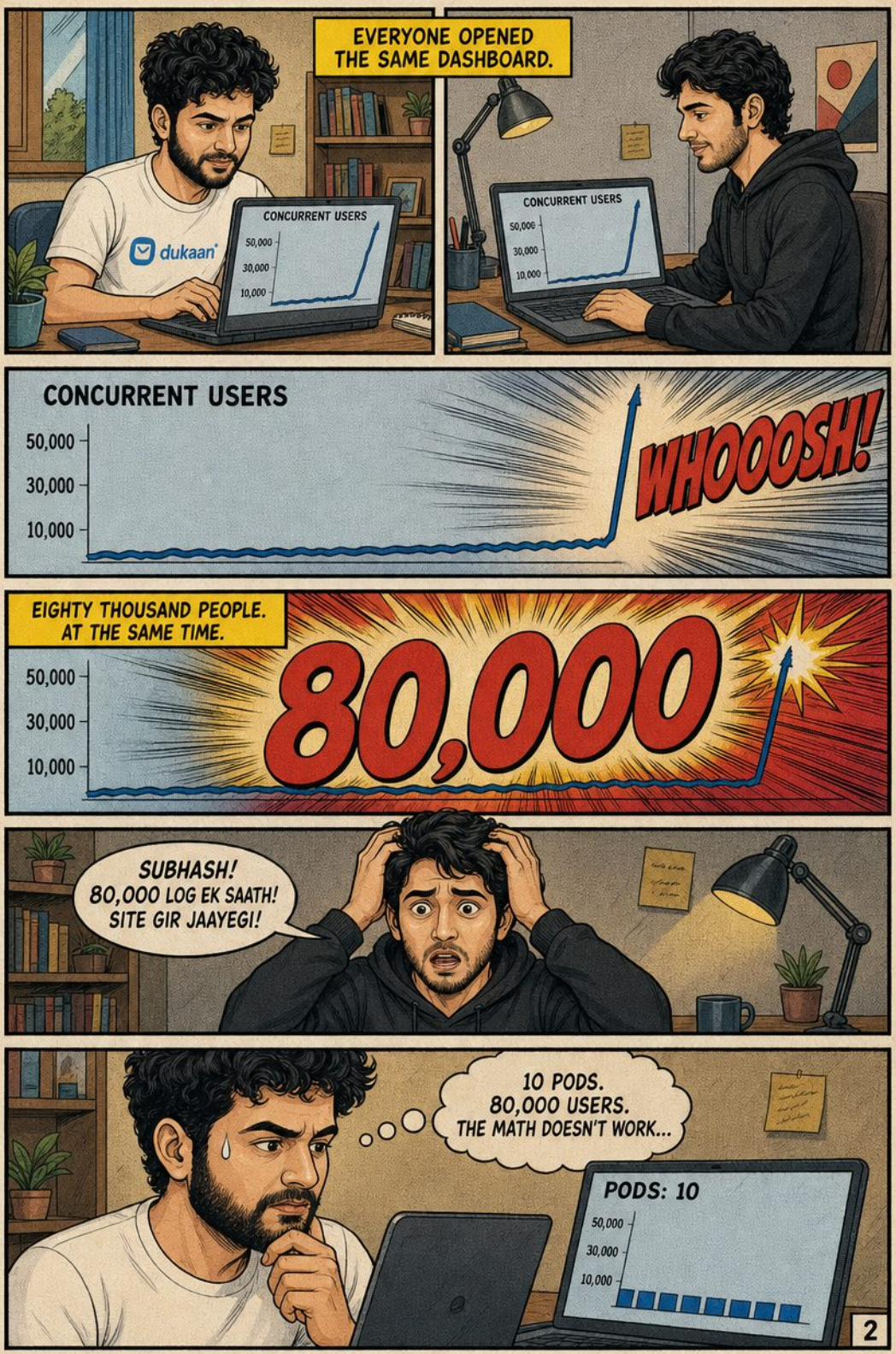
WILL THE SERVERS SURVIVE THE TSUNAMI?

ALSO INSIDE: THE WHALE ARRIVES!

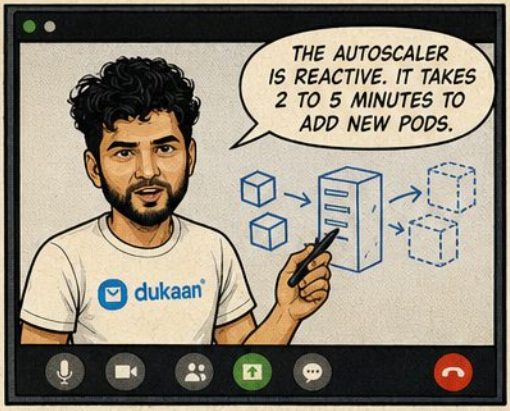
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8

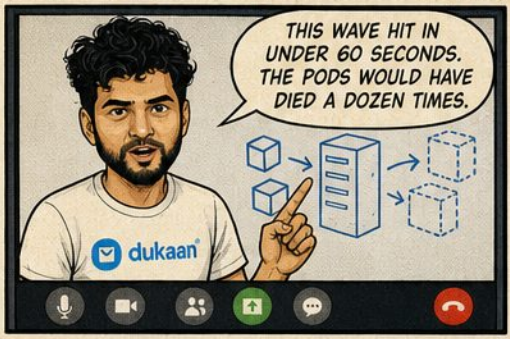

A QUIET THURSDAY EVENING. 9:45 PM.
JUST A FEW MINOR ALERTS. EASY NIGHT.
PING! PING! PING!
GUYS! JAIN SHIKANJI IS ON SHARK TANK RIGHT NOW!!
MILLIONS OF VIEWERS. ONE SMALL SELLER. ON OUR PLATFORM.
OH NO. OH NO NO NO.
PFFFT!
1


EVERYONE OPENED THE SAME DASHBOARD.
dukaan
CONCURRENT USERS
50,000
30,000
10,000
CONCURRENT USERS
50,000
30,000
10,000
CONCURRENT USERS
50,000
30,000
10,000
WHOOOSH!
EIGHTY THOUSAND PEOPLE. AT THE SAME TIME.
50,000
30,000
10,000
80,000
SUBHASH! 80,000 LOG EK SAATH! SITE GIR JAAYEGI!
10 PODS. 80,000 USERS. THE MATH DOESN'T WORK...
PODS: 10
50,000
30,000
10,000
2


A NERVOUS SILENCE FELL OVER THE CHAT.
dukaan
WE WAITED FOR THE AUTOSCALER TO SAVE US. IT BARELY MOVED.
POD COUNT
50
40
30
20
10
0
10:00
10:10
10:20
10:30
10:40
10:50
11:00
CPU
30%
WAIT... STORE TOH ROCKET KI TARAH KHUL RAHA HAI!
ZIP!
JAIN SHIKANJI
STORE LOADING...
I DON'T UNDERSTAND. HOW ARE 10 PODS SERVING 80,000 USERS WITHOUT MELTING?
BECAUSE THEY'RE NOT HITTING MUMBAI AT ALL.
dukaan
3


THE AUTOSCALER IS REACTIVE. IT TAKES 2 TO 5 MINUTES TO ADD NEW PODS.
dukaan


BUILDING AN EXTENSION ON YOUR HOUSE... DURING A FLASH FLOOD.
SPLOOSH!


THIS WAVE HIT IN UNDER 60 SECONDS. THE PODS WOULD HAVE DIED A DOZEN TIMES.
dukaan

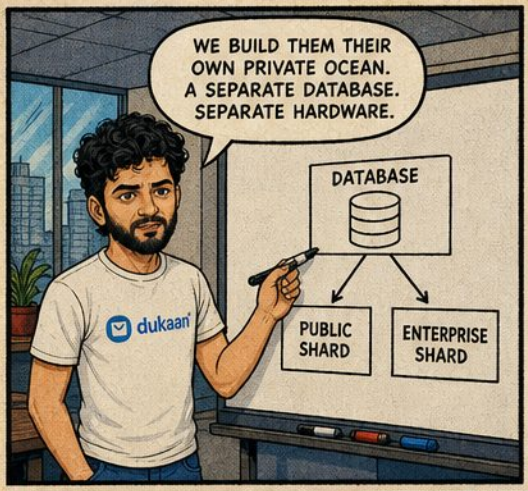

OUR EDGE NETWORK WAS A GLOBAL SHOCK ABSORBER. MOST OF THE WAVE NEVER REACHED MUMBAI.
FRANKFURT
OHIO
DELHI
MUMBAI
SINGAPORE
USERS
MUMBAI CLUSTER

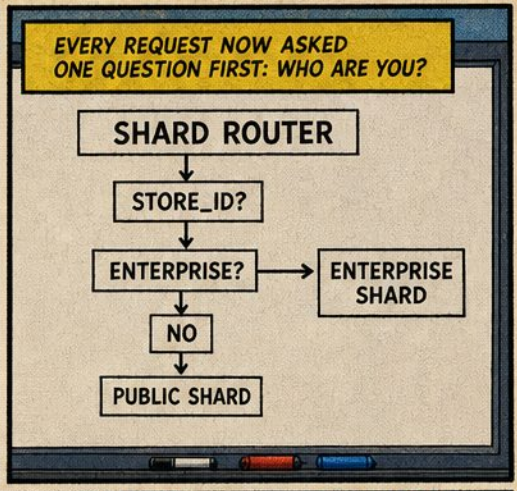

WE BUILT IT FOR SPEED... AND IT BECAME OUR SHIELD!

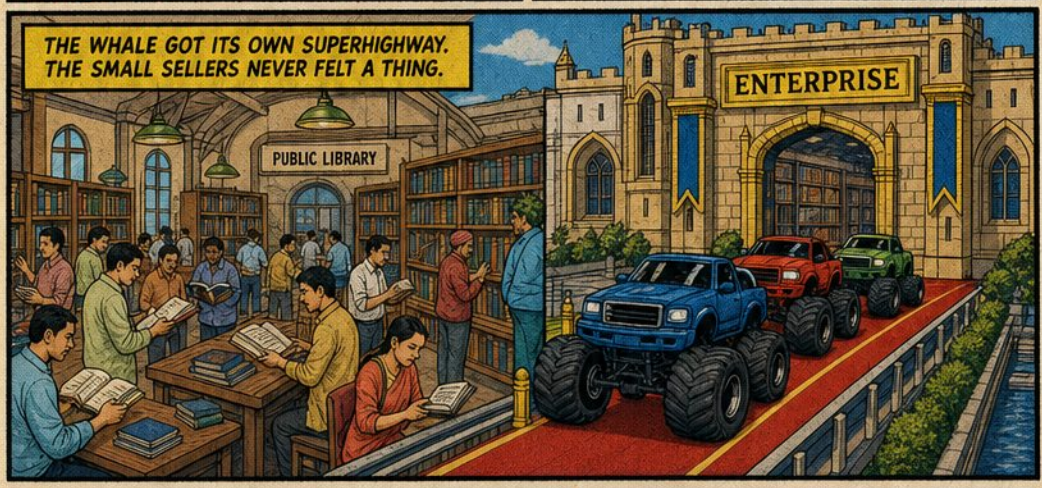

ORDERS PE ORDERS! SITE EK SECOND KE LIYE BHI NAHI RUKI!
TING! TING! TING!
FRESH SHIKANJI NIMBU PANI MASALA SODA
ZERO DOWNTIME! ZERO ALERTS!
FOCUS BUILD SCALE REPEAT
SHIP FAST WIN BIG
IT WAS AN ACCIDENTAL DISCOVERY OF OUR PLATFORM'S HIDDEN POWER.
dukaan
WORD SPREAD ACROSS INDIA'S D2C WORLD.
DUKAAN FASTER THAN SHOPIFY?
Dukaan
SURVIVED THE SHARK TANK SPIKE!
AND THEN... A WHALE CALLED.
WOW SKIN SCIENCE
BRRRING!
5

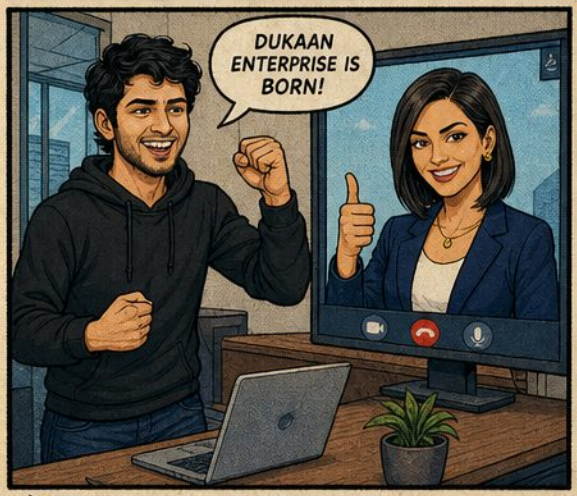

WOW SKIN SCIENCE.
A 1000-CRORE-A-YEAR GIANT.
dukaan
EVERYONE CLAIMS TO BE FAST.
PROVE IT.
GIVE US ONE WEEK.
ONE CAMPAIGN.
YOUR REAL TRAFFIC.
7 DAYS
MON TUE WED THU FRI SAT SUN
FOR ONE WEEK,
THE WHOLE TEAM WAS
ON HIGH ALERT.
EVERY PAGE LOADED
IN A BLINK.
dukaan
WE'RE CONVINCED.
WE WANT TO MOVE OUR
ENTIRE 1000-CRORE
BUSINESS TO DUKAAN.
dukaan
6

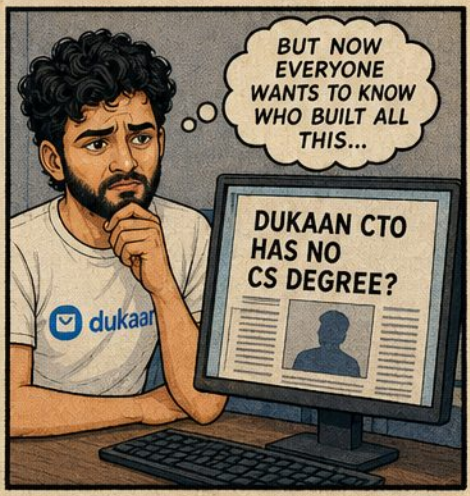

YAHOOO!
dukaan
THEN THE EUPHORIA TURNED INTO TERROR.
PROJECTED ORDERS: 20X ALL STORES COMBINED
OH SHIT...
EK LAUNCH = SHARK TANK SE ZYADA TRAFFIC?!
THE NOISY NEIGHBOR PROBLEM: ONE GIANT COULD JAM THE ROAD FOR MILLIONS.
HONK! HONK!
WHALE
WHALE
WHALE
SMALL SELLERS
WE CAN'T PUT A WHALE IN THE SAME FISH TANK AS EVERYONE ELSE.
dukaan
7











TO BE CONTINUED... NEXT: EPISODE 9 - THE IMPOSTOR!

DUKAAN COMICS PRESENTS

ISSUE NO. 9
Rs. 5
HINDI-ENGLISH

THE ACCIDENTAL CTO

EPISODE 9: THE IMPOSTOR



8 904123 456789

NO DEGREE. THREE HOURS. ONE MICROPHONE.

ALSO INSIDE: ESCAPE FROM THE GOLDEN CAGE!

9


A TUESDAY AFTERNOON.
ONE EMAIL.
dukaan
PING!
INVITATION: PODCAST WITH ARNAV GUPTA
DHAK-DHAK-DHAK
PREVIOUS GUESTS
?
CTO, FLIPKART
CTO, CARS24
CTO, GROFERS
THE FOUNDING FATHERS OF INDIAN TECH. IITIANS.
AUR CHAUTHA GUEST... MAIN?
MY FIRST REACTION WASN'T EXCITEMENT. I WAS SHIT SCARED.

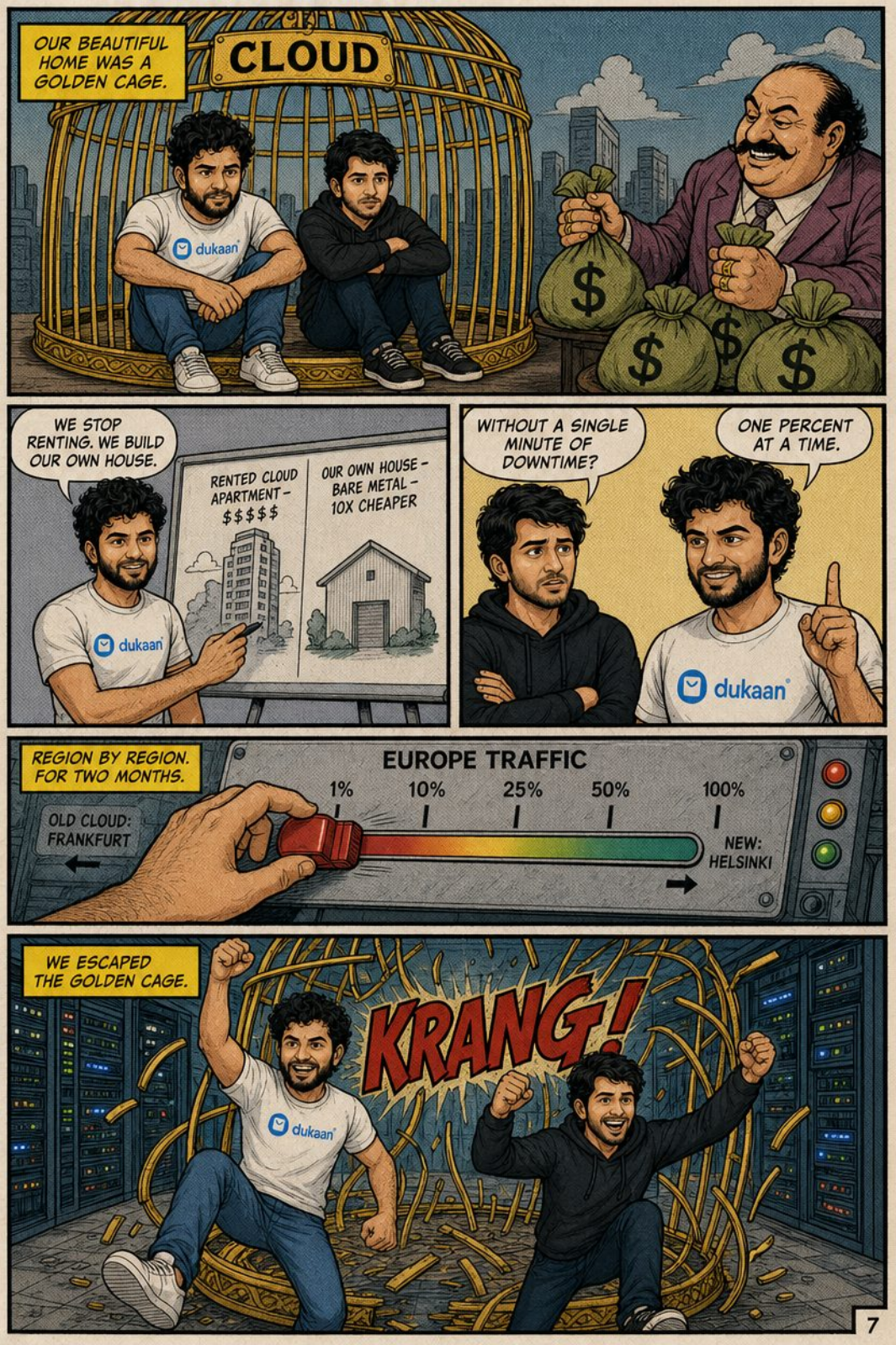

WHO ARE YOU TO SIT IN THAT CHAIR?
IMPOSTOR SYNDROME
dukaan
THE COMMERCE KID FROM BIHAR. SELF-TAUGHT. NO DEGREE.
CAP THEOREM?
BIG O?
I WOULD FREEZE. I WOULD BE EXPOSED.
dukaan
BUT THIS WASN'T ABOUT ME. IT WAS ABOUT MY TEAM. ABOUT DUKAAN.
HEART IN MY THROAT, I HIT SEND.
I'D BE HONORED TO.
SEND!
2


THE STUDIO.
BRIGHT LIGHTS. NO ESCAPE.
PODCAST
ON AIR
dukaan
TELL ME ABOUT THE 512MB SERVER.
HE WASN'T QUIZZING ME.
HE WAS A BUILDER TALKING TO A BUILDER.
AH, THAT POOR LITTLE DROPLET!
THE FIRST CUSTOMER WAITS TWO MINUTES FOR THE WATER TO BOIL. EVERYONE AFTER GETS THEIR NOODLES INSTANTLY!
THREE HOURS LATER...
I HAD SURVIVED.
I CAN GOOGLE A SORTING ALGORITHM. I CAN'T GOOGLE THE GRIT TO FIX A DATABASE CRASH AT 3 AM.


A FEW WEEKS LATER. THE AIRPORT.
GATE 12
DELHI → BENGALURU
BOARDING SOON
dukaan
EXCUSE ME, SIR... ARE YOU SUBHASH CHOUDHARY?
12
HAAN... YES?
SIR, I SAW YOUR PODCAST! THE WAY YOU EXPLAINED THE EDGE NETWORK... THANK YOU!
RECOGNISED NOT AS A FOUNDER. AS AN ENGINEER. THE BOY FROM BIHAR HAD ARRIVED.
4


THE PODCAST HAD LIT A BEACON.
dukaan
APPLICATIONS: 2,431
WHOOSH!
RAW, KNOWLEDGEABLE, STREET SMART CTO
ENGINEER IN TRUE SENSE
WHO WOULDN'T WANT TO WORK WITH SUCH A CTO.
THE IMPOSTOR SYNDROME I HAD CARRIED FOR YEARS... BEGAN TO DISSOLVE.
dukaan
5

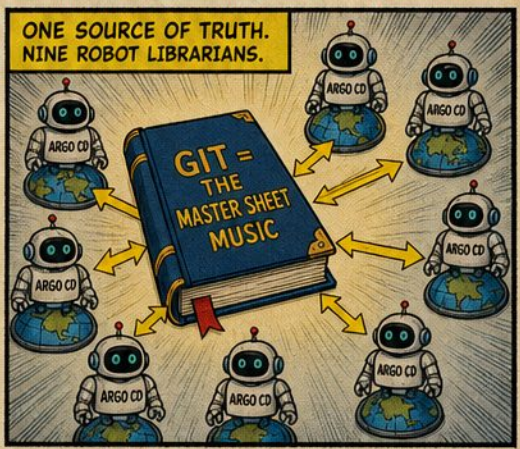

END OF THE MONTH. THE CALL CAME.
TASKS
GROWTH
USERS
SCALE
REPEAT
FOCUS BUILD GROW
dukaan
RING RING!
SUBHASH... THE CLOUD BILL JUST CAME IN. IT'S EIGHTY THOUSAND DOLLARS.
EIGHTY THOUSAND?! FOR THE MONTH?
dukaan
FOR ONE MONTH. EIGHTY THOUSAND US DOLLARS.
Users Love it!
Keep Scaling!
MONTHLY CLOUD COST
$100K
$80K
$60K
$40K
$20K
$0
JAN
FEB
MAR
APR
MAY
JUN
WHOOOSH!
THINK BIG EXECUTE SMART
OUR SUCCESS WAS LITERALLY COSTING US A FORTUNE.
6


OUR BEAUTIFUL HOME WAS A GOLDEN CAGE.
CLOUD
dukaan
$
WE STOP RENTING. WE BUILD OUR OWN HOUSE.
RENTED CLOUD APARTMENT – $$$$$
OUR OWN HOUSE – BARE METAL – 10X CHEAPER
WITHOUT A SINGLE MINUTE OF DOWNTIME?
ONE PERCENT AT A TIME.
REGION BY REGION. FOR TWO MONTHS.
EUROPE TRAFFIC
1%
10%
25%
50%
100%
OLD CLOUD: FRANKFURT
NEW: HELSINKI
WE ESCAPED THE GOLDEN CAGE.
KRANG!











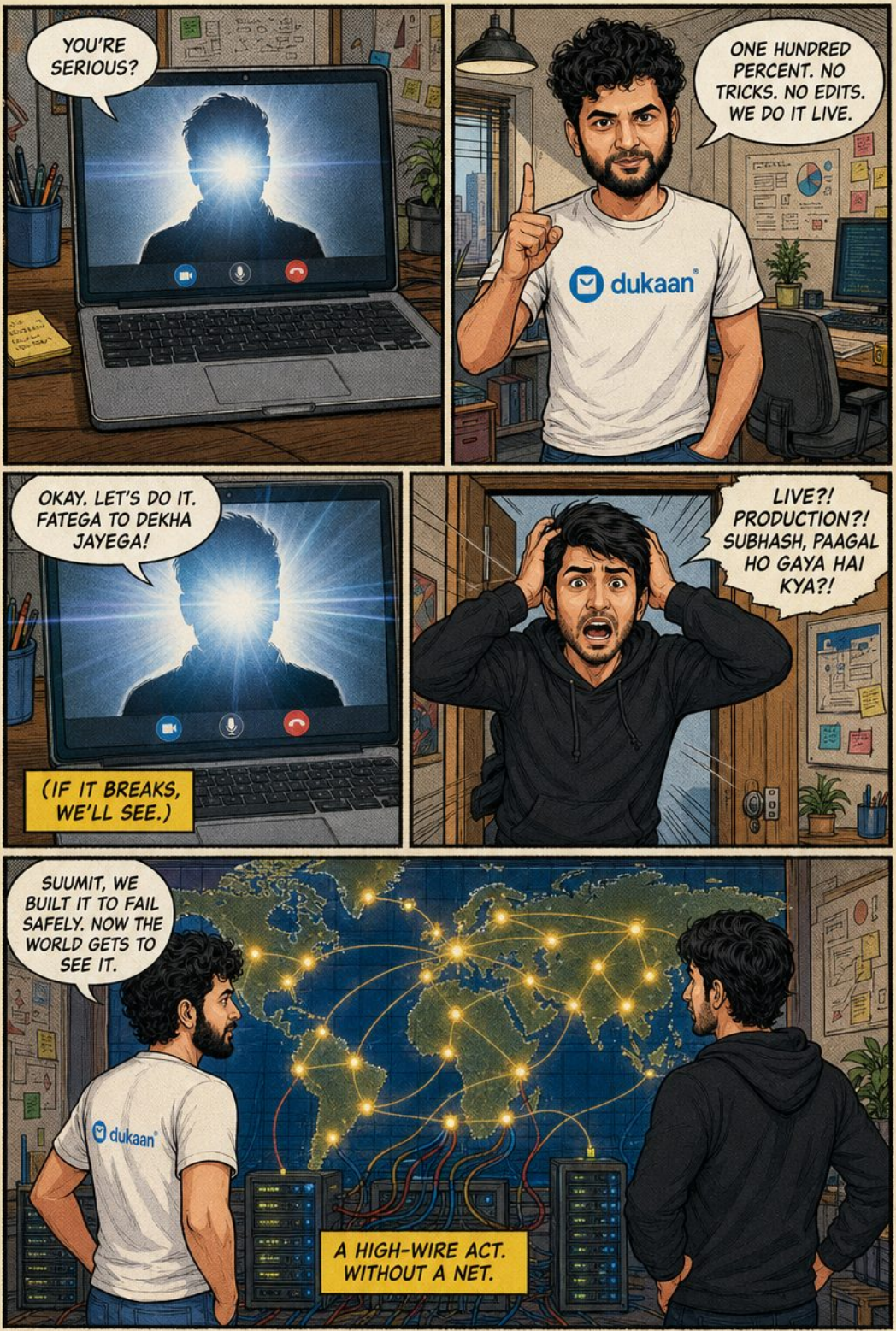


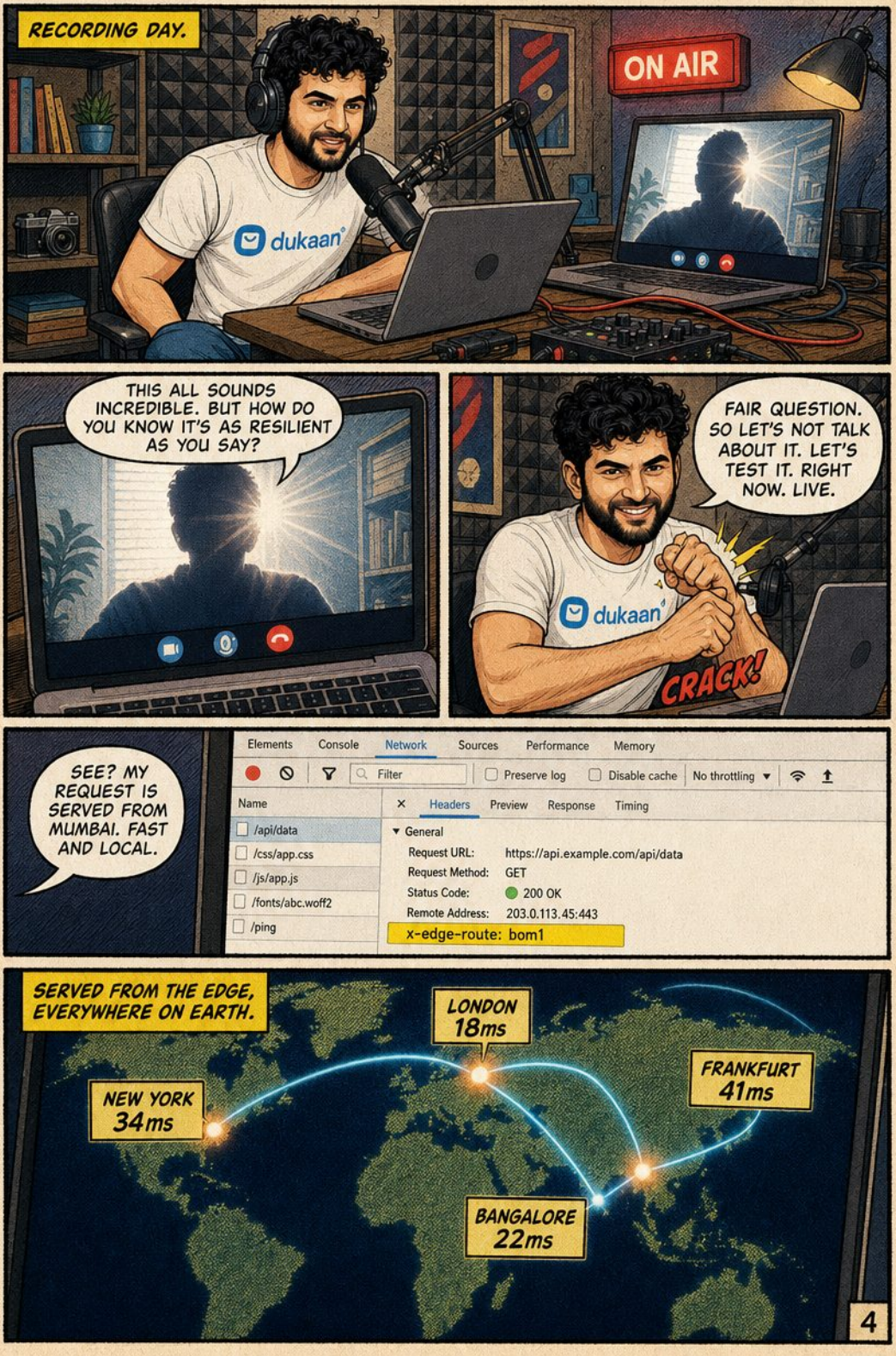
TO BE CONTINUED... NEXT: EPISODE 10 - ASLI ENGINEERING! (SEASON FINALE)


DUKAAN COMICS PRESENTS
ISSUE NO. 10
Rs. 5
HINDI-ENGLISH
ON AIR
THE ACCIDENTAL CTO
SEASON FINALE!
EPISODE 10: ASLI ENGINEERING
NEW YORK
LOS ANGELES
SHIP BUILD ITERATE REPEAT
dukaan
sudo shutdown -h now
LIVE ON AIR!
ENTER
TRUST THE PROCESS
Scale ✓
Resilience ✓
Ownership ✓
BASED ON A TRUE STORY!
HE SHUT DOWN PRODUCTION... ON PURPOSE!
ALSO INSIDE: THE BIRTH OF THIS BOOK!
10
9 771234 567898 10>


AFTER WE MOVED TO BARE METAL AND CUT OUR BILL BY 95%, THE INTERNET LOST ITS MIND.
IT'S IMPOSSIBLE TO SAVE THAT MUCH.
BLOG POST
THEIR RELIABILITY MUST BE TERRIBLE.
FORUM THREAD
COMMENT
BHAI, LOG BOL RAHE HAIN YEH SAB FAKE HAI!
dukaan
LET THEM TALK. WE KNOW WHAT WE BUILT.
dukaan
FROM: ARPIT BHAYANI
SUBJECT: INVITATION - ASLI ENGINEERING
PING!
dukaan
ASLI ENGINEERING.
REAL ENGINEERING.
NOT A FRIENDLY CHAT -
A PUBLIC TECHNICAL AUDIT.
1


BEFORE MY LAST PODCAST, I WAS SHIT SCARED.
ON AIR
dukaan
THIS TIME, THE IMPOSTOR WAS GONE.
TALK IS CHEAP. I NEED TO SHOW THEM.
dukaan
THE PREP CALL.
ARPIT, ANYONE CAN SHOW A COST CHART. I WANT TO SHOW THEM THE RESILIENCE.
dukaan
WHAT DO YOU HAVE IN MIND?
LET'S DO A LIVE FAILOVER. ON AIR, I'LL SSH INTO A PRODUCTION SERVER... AND SHUT IT DOWN.
2

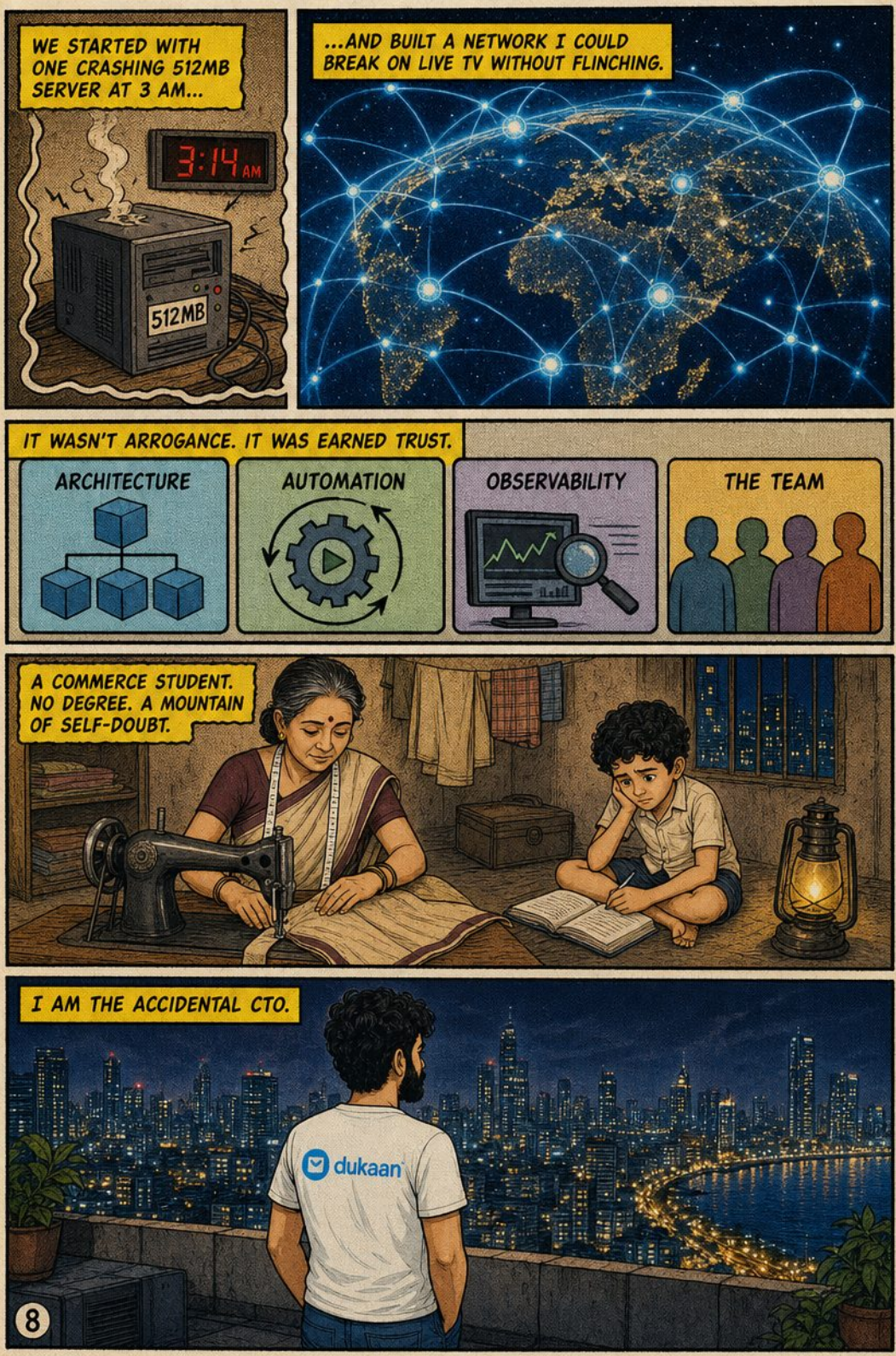

YOU'RE SERIOUS?
ONE HUNDRED PERCENT. NO TRICKS. NO EDITS. WE DO IT LIVE.
dukaan
OKAY. LET'S DO IT. FATEGA TO DEKHA JAYEGA!
(IF IT BREAKS, WE'LL SEE.)
LIVE?! PRODUCTION?! SUBHASH, PAAGAL HO GAYA HAI KYA?!
SUUMIT, WE BUILT IT TO FAIL SAFELY. NOW THE WORLD GETS TO SEE IT.
dukaan
A HIGH-WIRE ACT. WITHOUT A NET.


RECORDING DAY.
ON AIR
dukaan
THIS ALL SOUNDS INCREDIBLE. BUT HOW DO YOU KNOW IT'S AS RESILIENT AS YOU SAY?
FAIR QUESTION. SO LET'S NOT TALK ABOUT IT. LET'S TEST IT. RIGHT NOW. LIVE.
dukaan
CRACK!
SEE? MY REQUEST IS SERVED FROM MUMBAI. FAST AND LOCAL.
Elements
Console
Network
Sources
Performance
Memory
Filter
Preserve log
Disable cache
No throttling
Name
Headers
Preview
Response
Timing
/api/data
/css/app.css
/js/app.js
/fonts/abc.woff2
/ping
General
Request URL: https://api.example.com/api/data
Request Method: GET
Status Code: 200 OK
Remote Address: 203.0.113.45:443
x-edge-route: bom1
SERVED FROM THE EDGE, EVERYWHERE ON EARTH.
LONDON 18ms
NEW YORK 34ms
FRANKFURT 41ms
BANGALORE 22ms
4

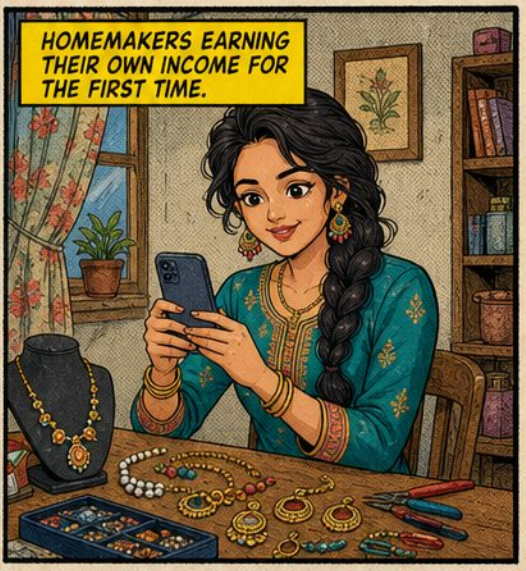

NOW FOR. THE FUN PART. LET'S BREAK SOMETHING.
dukaan
A LIVE PRODUCTION NODE IN NEW YORK. SERVING REAL USERS. RIGHT NOW.
$ ssh root@ny-prod-01
HE'S ACTUALLY DOING IT...
SLOWLY. DELIBERATELY.
$ ssh root@ny-prod-01
sudo shutdown -h now
THUMP... THUMP...
ENTER
BHAGWAN BACHAYE...


KLAK!
ENTER
Connection to ny-prod-01 closed.
THE NEW YORK SERVER WAS DEAD.
NEW YORK
VRRRRMMMMM...
NEW YORK - 200 OK - 231ms.
NEW YORK
LOS ANGELES
LOOK AT THE HEADER. x-edge-route: la. TRAFFIC MOVED TO LOS ANGELES BY ITSELF.
THE SITE NEVER WENT DOWN. NOT A SINGLE PACKET DROPPED.
dukaan
THAT IS INSANE. YOU JUST DID THAT LIVE. THAT IS ASLI ENGINEERING!
YAAAHOOO!


THE ECHO WAS LOUDER THAN WE EVER IMAGINED.
HE LITERALLY SHUT DOWN THE ACTUAL SERVER FOR THE DEMO.
SUBHASH BHAI IS ASLI ENGINEER. HE IS LIVING SYSTEM DESIGN.
THIS IS TRULY ASLI ENGINEERING.
BHAI, YEH DEKH. LOG ISSE BAAR BAAR DEKH RAHE HAIN!
dukaan
HARIDARSHAN CHOUDHARY
...ONE CAN CREATE A SYSTEM DESIGN BOOK OUT OF THE TOPICS COVERED.
A BOOK...
DING!
dukaan
THE ACCIDENTAL CTO WRITES A BOOK? I'M IN!
dukaan
AND THAT IS HOW THE BOOK IN YOUR HANDS WAS BORN.


WE STARTED WITH ONE CRASHING 512MB SERVER AT 3 AM...
3:14 AM
512MB
...AND BUILT A NETWORK I COULD BREAK ON LIVE TV WITHOUT FLINCHING.
IT WASN'T ARROGANCE. IT WAS EARNED TRUST.
ARCHITECTURE
AUTOMATION
OBSERVABILITY
THE TEAM
A COMMERCE STUDENT. NO DEGREE. A MOUNTAIN OF SELF-DOUBT.
I AM THE ACCIDENTAL CTO.
dukaan
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TIER-3 GROCERS SERVING WHOLE NEIGHBOURHOODS.


HOMEMAKERS EARNING THEIR OWN INCOME FOR THE FIRST TIME.


OUR MISSION: HELP THE NEXT 70 MILLION MERCHANTS IN INDIA GO TRULY DIGITAL.


2014. A MESSAGE REQUEST FROM A STRANGER.
HELLO


AND TO THINK... IT ALL STARTED WITH A SINGLE HELLO.
HELLO


THIRTEEN SAAL, BHAI. KYA SAFAR THA.
ABHI TOH SHURUAAT HAI.
dukaan
YOU WERE ALWAYS THE SPARK TO MY CODE, THE VISION TO MY ARCHITECTURE.
TO MY CO-FOUNDER, MY BROTHER.
HELLO.
THE END - SEASON 1
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