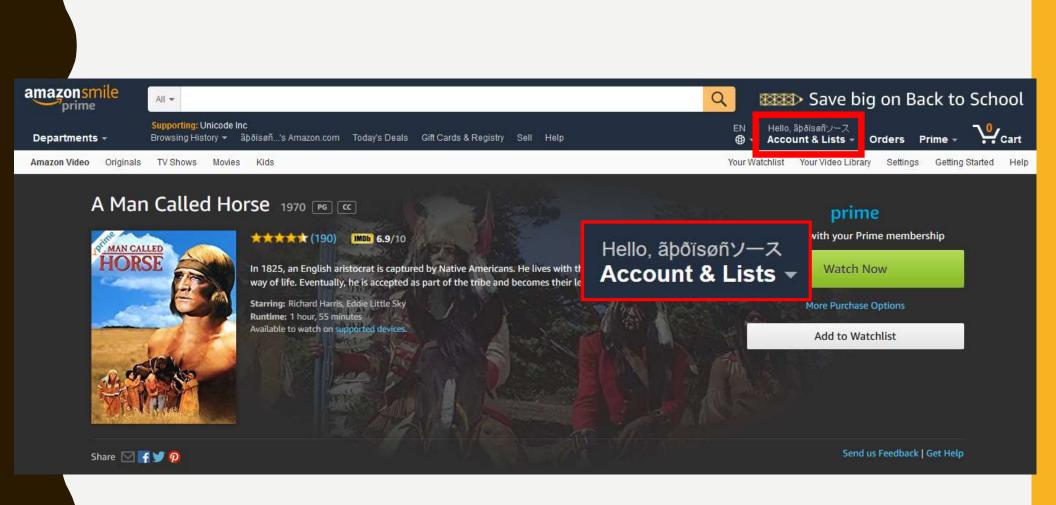
# A MAN CALLED



(%P) HORSE!

WORKING WITH USER GENERATED UNICODE CONTENT





### SMILE.AMAZON.COM SUPPORT FOR UNICODE



When millions of supporters shop at smile.amazon.com, charitable donations quickly add up.



You have generated

\$49.20

as of September 11, 2018



Your current charity

Unicode Inc has received \$93.55

as of August 2018



All charities have received

\$89,030,554.80

as of May 2018

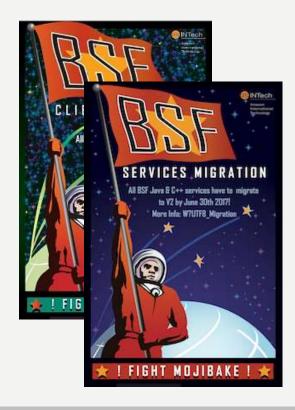
# PROJECT MOJIBAKE: AMAZON'S UNICODE MIGRATION



# IN 2017 WE COMPLETED OUR END-TO-END UNICODE MIGRATION

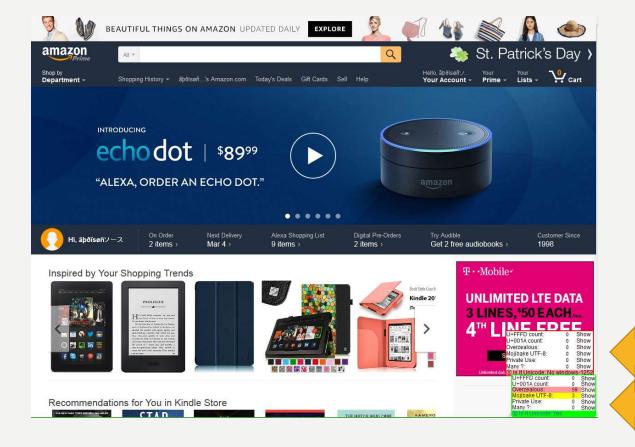








## UNIDETECTOR



Bad Better

## END-TO-END DEFECT DETECTION

- VIP service scanner
- Email scanner
- Print scanner
- Ordering system scanner
- RepairUtil
- Catalog quality tools







## **UNICODE IS A BIG PLACE**

- Unicode 11.0
  - **137,374 characters**
  - 146 scripts
  - 7 new scripts
  - 66 new emoji
  - 684 new characters including "copyleft" and "half star"





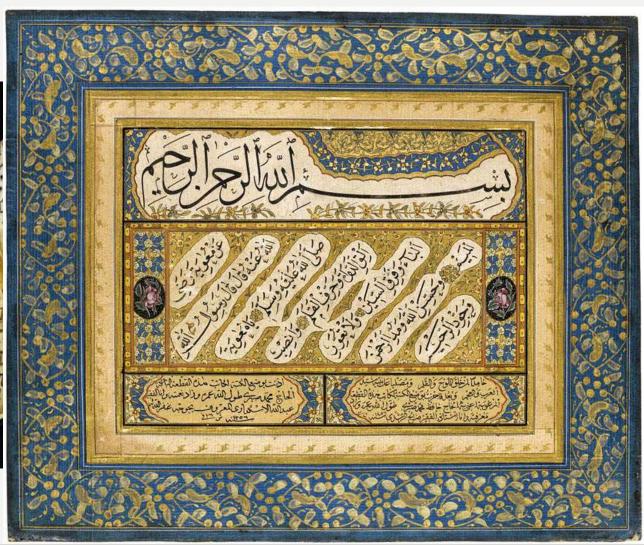
**LINEAR B IDEOGRAM BI05M STALLION** 











# EMOJI DICK;



O R



BUY THE SOFTCOVER (B&W) \$40



BY
HERMAN MELVILLE

EDITED AND COMPILED BY FRED BENENSON

TRANSLATED BY
AMAZON MECHANICAL TURK

BUY THE HARDCOVER (COLOR) \$200





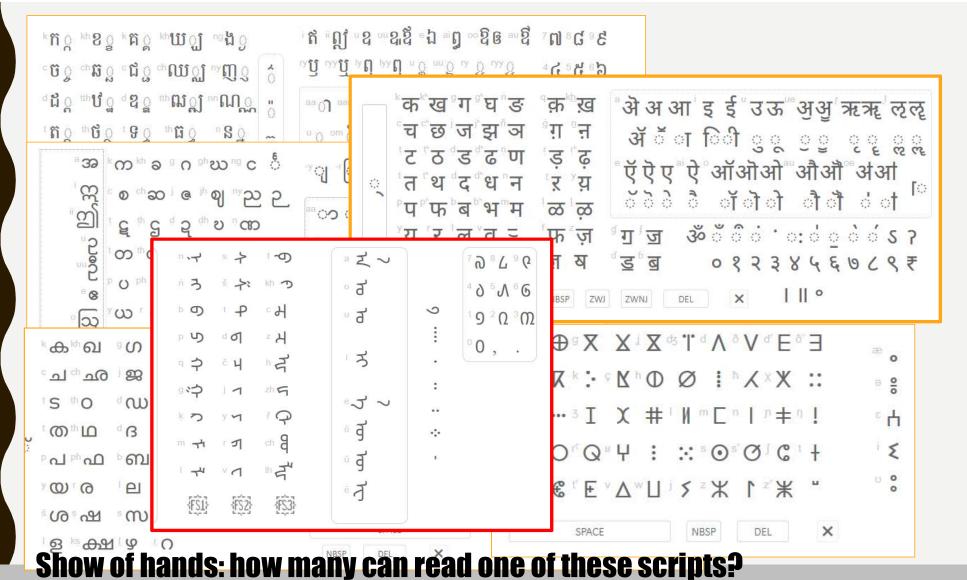


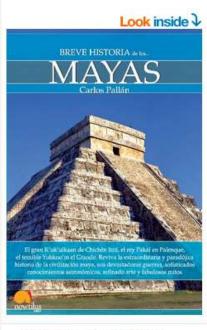




"That's astoundingly useless."

- Alex M, BoingBoing.net Commenter





#### Breve historia de los mayas (Spanish Edition) Kindle Edition

by Carlos Pallán \* (Author)

★★★★ \* 2 customer reviews

> See all 6 formats and editions

Audiobook \$0.00

Kindle \$0.00 kindleunlimited Paperback \$27.49

MP3 CD \$9.99

Free with your Audible trial

Get a 40% credit Read with Kindle Unlimited to also enjoy access to over 1 million more titles

8 Used from \$27.48 6 New from \$27.49

2 Used from \$35.56 5 New from \$6.85

\$6.15 to buy



#### kindle | Get a 40% credit

Buy the Kindle edition of this book, and get a 40% credit towards any Great on Kindle book. Details

#### Customer reviews

50% 5 star 50% 4 star 0% 3 star 2 star 0% 0%

See all 2 customer reviews >

Top customer reviews

en un resumen de la historia de los mayas. En él, omo tal, sino que más bien, había distintas poblaciones

o también."



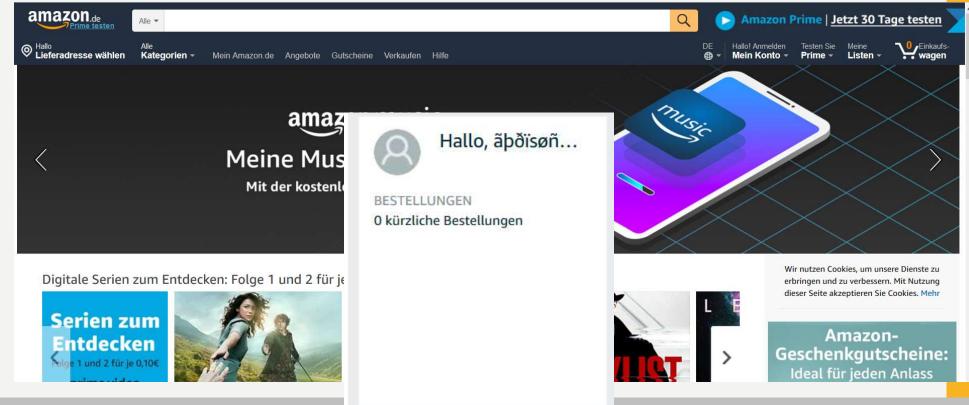




Share your thoughts with other customers

Write a customer review

### **AMAZON GERMANY**

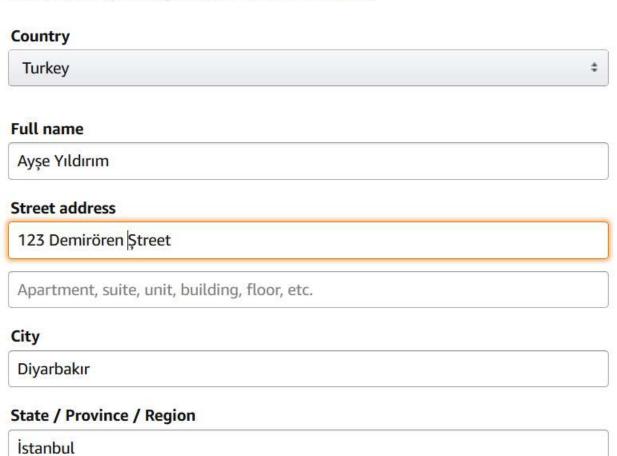


## ... NOW AVAILABLE IN TURKISH



#### Add a new address

Or pick up your packages at your convenience from our self-service locations. To add an Amazon Pickup Point or Locker, click here.



### **Full name** Ayşe Yıldırım ! Please remove invalid characters from name field ş,ı Street address 123 Demirören Ştreet ! Please remove invalid characters from address line field \$ Apartment, suite, unit, building, floor, etc. City Diyarbakır ! Please remove invalid characters from city field I State / Province / Region İstanbul ! Please remove invalid characters from state field i

#### ilçe/Şehir

Diyarbakır

! Lütfen şehir alanından geçersiz karakterleri kaldırın ı

#### **Add Address**

Default: amazon

Testtest 💒 🙈

بورين أفي أمازون داوسون Wa 98109 سياتل United States

Edit | Delete

Default: fresh

Ankur

207 Boren Ave N 499 Seattle, Wa 98109-5304 United States

Phone number: 4254401009

Manage Fresh Address Book

Edit | Delete | Set as Default

test master card

345 Boren Ave N Seattle, Wa 98019 United States

Phone number: 4252332901

vankav mojibake test us

345 Boren Ave N Seattle, Wa 98109 United States Phone number: +14252332901

अल्फियो एक्विएन

अमेज़ॅन डेवलपमेंट स, टॉरस बिल्डिंग 79, 7 वें क्रॉस आरडी, फर्न्स सिटी,डोड्डा बैंगलोर, Ka 560037 India

Edit | Delete | Set as Default

Edit | Delete | Set as Default

अल्फियो एक्विएन

अमेज़ॅन डेवलपमेंट सेंटर, टॉरस बिल्डिंग 79, 7 वें क्रॉस आरडी, फर्न्स सिटी,डोड्डा बैंगलोर, Ka 560037 India

Edit | Delete | Set as Default

Edit | Delete | Set as Default

विजया Test Amazon İ ı Ş ş Ğ ğ ™

345 Boren Ave N Amazon Dawson Seattle, Wa 98052 United States

Edit | Delete | Set as Default

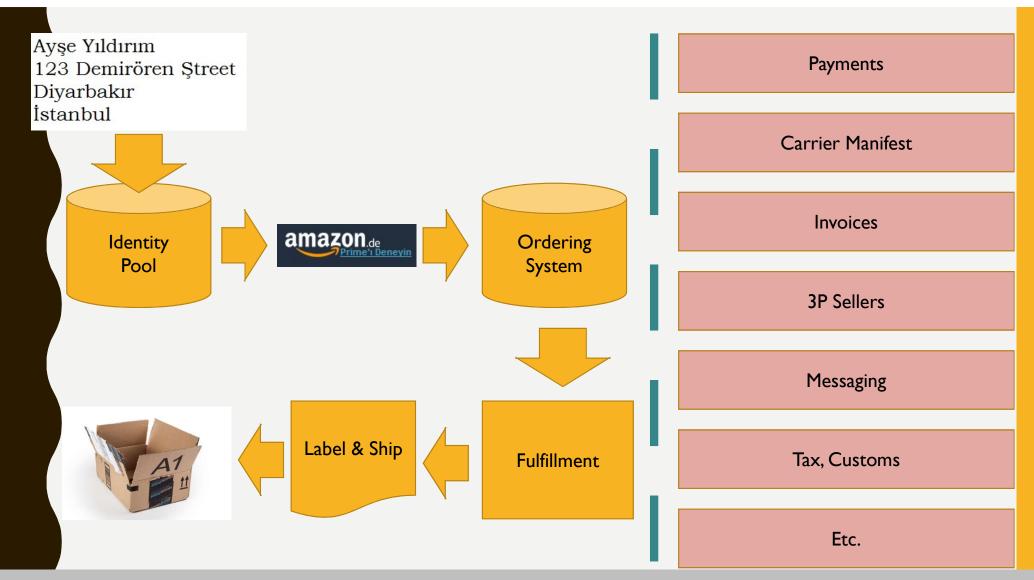
**ಅಮెజాన్ డెవలప్మెంట్ సెంటర్ 🔉** कोई 199, 2 जी, 1 बी क्रॉस

कोई 199, 2 जी, 1 बी क्रॉ पै लेआउ बैंगलोर, Ka 560016 India

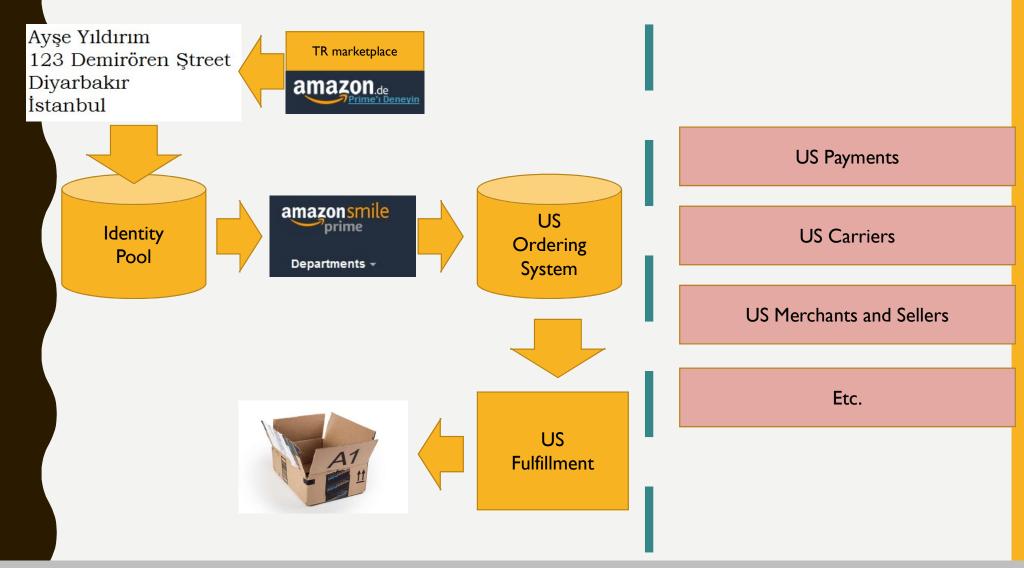
Edit | Delete | Set as Default

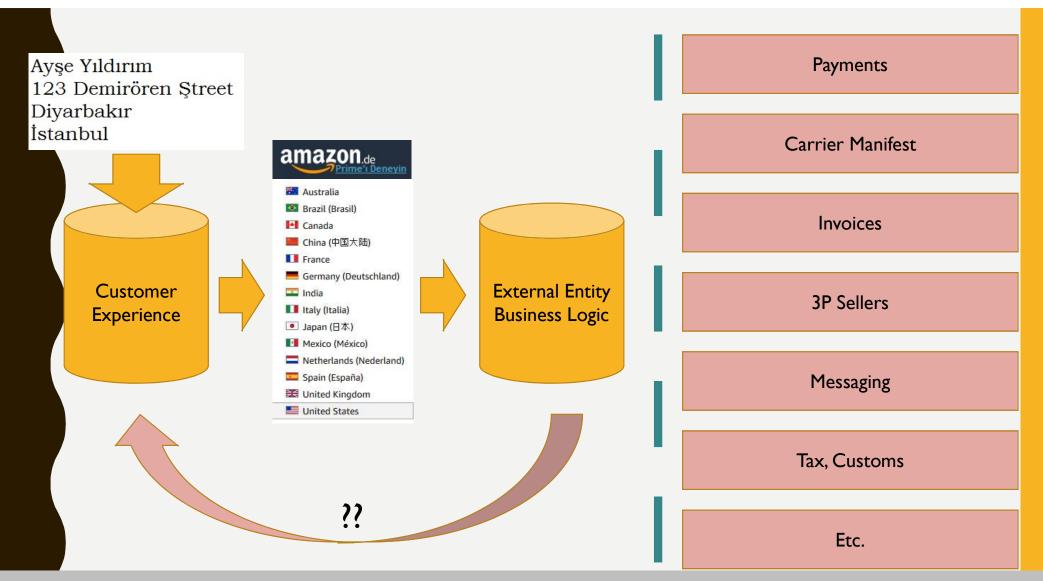
# **ARABIC HOUSE NUMBER SIGN**







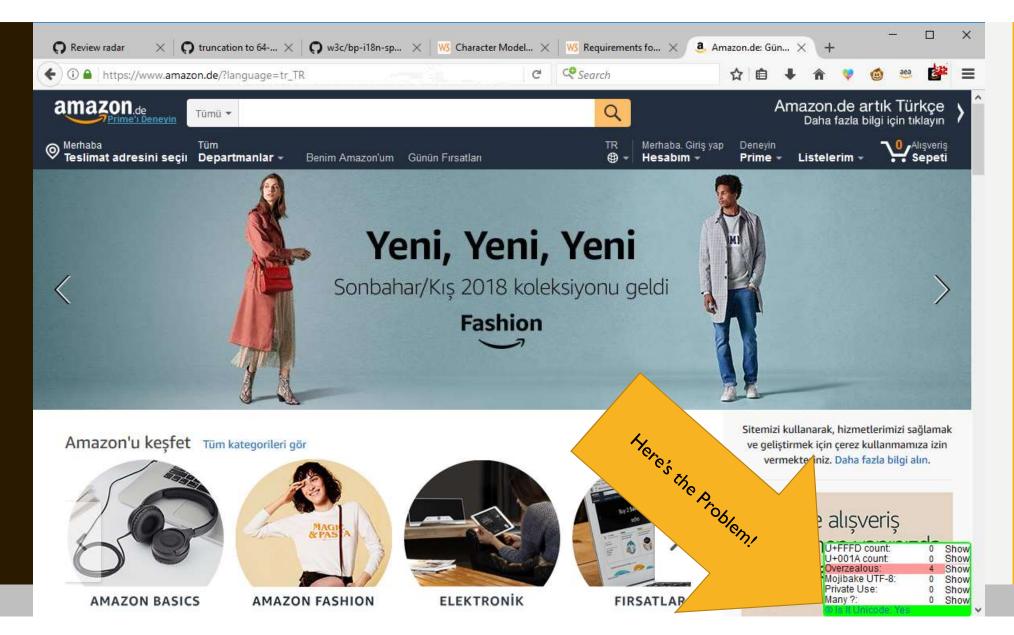




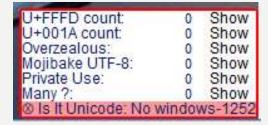


Alexa, what's on my calendar?

At 2 PM today you have an appointment, "Meeting with Mr. \*\*



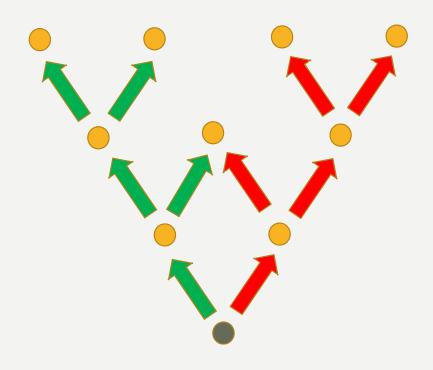
# UNICODE CREATED THIS PROBLEM!





No non-Latin data entering from upstream means you can assume that all the data downstream is Latin-1.

# **PROPAGATION**



# WORKAROUND: DENIAL (AKA INPUT BLOCKING)

İlçe/Şehir

Diyarbakır

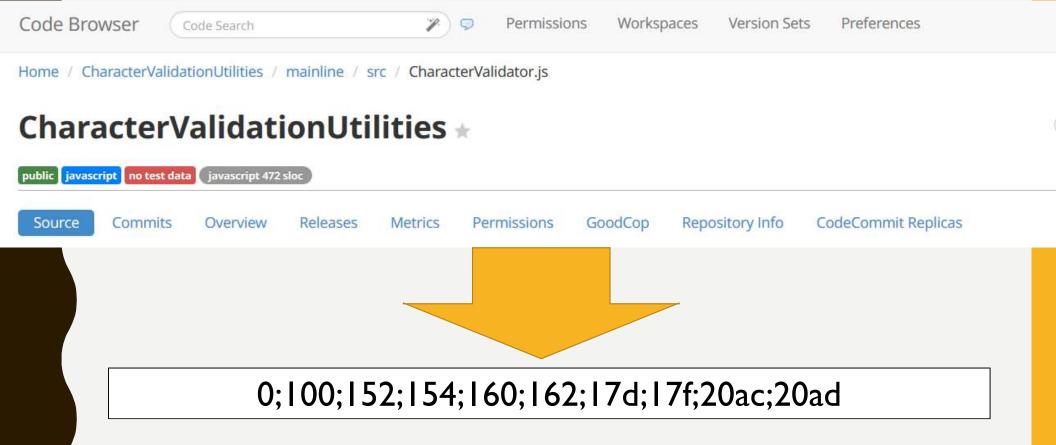
Lütfen şehir alanından geçersiz karakterleri kaldırın ı

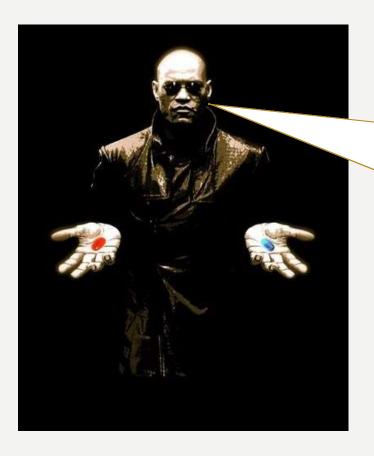
# WORKAROUNDS: DENIAL (AKA INPUT BLOCKING)

Insert: Customer dreams of using their own language to write their name, address, gift card, wishlist item, notes, reviews, play lists, photo albums, vendor feedback, etc. here



## **INVERSION LIST**





You take the red pill—you stay in Wonderland, and I show you how deep the rabbit hole goes. Remember: all I'm offering is the truth. Nothing more.

Scripts

Notational Systems	Numbers & Digits	Emoji & Pictographs	Specials
Braille Patterns	(see also specific scripts)	Dingbats	Controls: C0, C1
Musical Symbols	ASCII Digits	Ornamental Dingbats	Layout Controls
Ancient Greek Musical Notation	Fullwidth ASCII Digits	Emoticons	Invisible Operators
Byzantine Musical Symbols	Common Indic Number Forms	Miscellaneous Symbols	Specials
Duployan	Coptic Epact Numbers	Miscellaneous Symbols And Pictographs	Tags
Shorthand Format Controls	Counting Rod Numerals	Supplemental Symbols and Pictographs	Variation Selectors
Sutton SignWriting	Cuneiform Numbers and Punctuation	Transport and Map Symbols	Variation Selectors Supplement
Punctuation	Indic Siyaq Numbers	Other Symbols	Private Use
General Punctuation	Mayan Numerals	Alchemical Symbols	Private Use Area
ASCII Punctuation	Number Forms	Ancient Symbols	Supplementary Private Use Area-A
Latin-1 Punctuation	Rumi Numeral Symbols	Currency Symbols	Supplementary Private Use Area-B
Supplemental Punctuation	Sinhala Archaic Numbers	(see also specific scripts)	Surrogates
CJK Symbols and Punctuation	Super and Subscripts	Dollar Sign, Euro Sign	High Surrogates
Ideographic Symbols and Punctuation	Mathematical Symbols	Yen, Pound and Cent	Low Surrogates
CJK Compatibility Forms	Arrows	Fullwidth Currency Symbols	
Halfwidth and Fullwidth Forms	Supplemental Arrows-A	Rial Sign	Noncharacters in Charts
Small Form Variants	Supplemental Arrows-B	Game Symbols	Noncharacters in blocks
Vertical Forms	Supplemental Arrows-C	Chess, Checkers/Draughts	Range in Arabic Presentation Forms-A
Alphanumeric Symbols	Additional Arrows	Chess Symbols	Range in Specials
Letterlike Symbols	Miscellaneous Symbols and Arrows	Domino Tiles	Noncharacters at end of
Roman Symbols	Mathematical Alphanumeric Symbols	Japanese Chess	BMP, Plane 1, Plane 2, Plane 3, Plane 4, Pl
Mathematical Alphanumeric Symbols	Arabic Mathematical Alphabetic Symbols	Mahjong Tiles	Plane 6, Plane 7, Plane 8, Plane 9, Plane 1 Plane 11, Plane 12, Plane 13, Plane 14, Pla Plane 16
Arabic Mathematical Alphabetic Symbols	Letterlike Symbols	Playing Cards	
Enclosed Alphanumerics	Mathematical Operators	Card suits	
Enclosed Alphanumeric Supplement	Basic operators: Plus, Factorial, Division, Multiplication Supplemental Mathematical Operators Miscellaneous Mathematical Symbols-A	Miscellaneous Symbols and Arrows	_
Enclosed CJK Letters and Months		Yijing Symbols	
Enclosed Ideographic Supplement		Yijing Mono-, Di- and Trigrams	
CJK Compatibility		Yijing Hexagram Symbols	
Additional Sourced Symbols	Miscellaneous Mathematical Symbols-B	Tai Xuan Jing Symbols	

## **WORKAROUNDS: SUBSTITUTION**

Ayşe Yıldırım ⇒ Ayse Yildirim / Ayse Yildirim

Солижон Шарипов  $\Rightarrow$  ???

### **WORKAROUNDS: TRANSLITERATION**

Солижон Шарипов ⇒ Solizhon Sharipov 北京市朝阳区东四环中路58号 ⇒ běi jīng shì cháo yáng qū dōng sì huán zhōng lù58hào

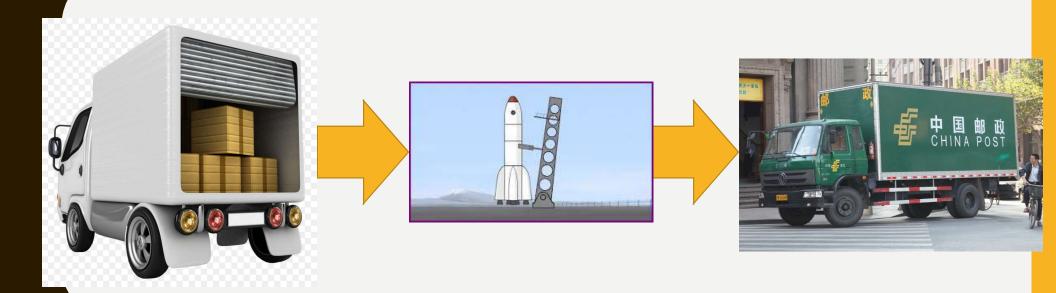
bdal hlym hafz ⇒ bdal hlym hafz

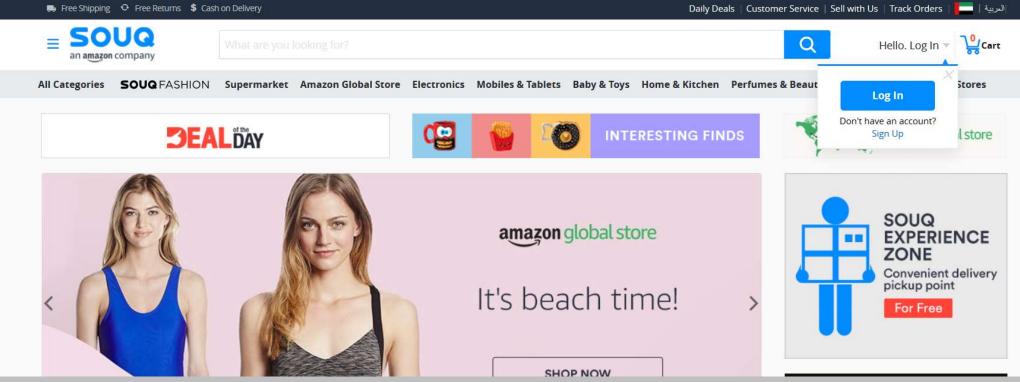


Abdel Halim Hafez



# FIRST, MIDDLE, LAST





# CAN THIS BUSINESS SUPPORT ARABIC?



### **WORKAROUNDS: DOUBLE-ENTRY**

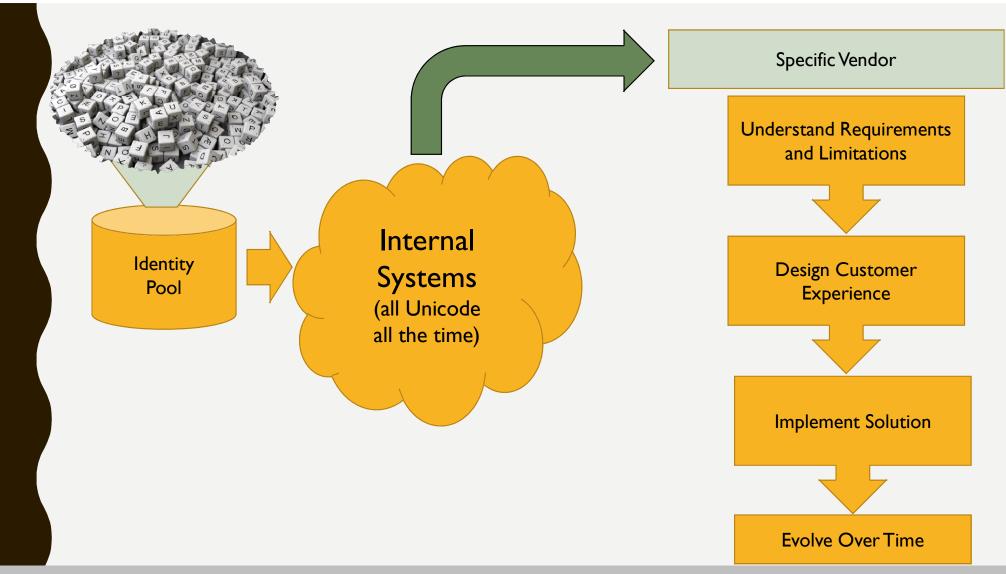
e Enter your address: کام ان شمالیکوچهی گلافشان، پلاک ۱۲ شبقهی

Add delivery instructions

Do we need additional instructions to find this address?

Provide details such as building description, a nearby landmark, or other navigation instructions

edghi



### **SUMMARY**

- Your problems won't end with your Unicode migration.
- Each interaction may have different requirements.
- Work around strategies generally involve degrading the customer experience.

# QUESTIONSP