

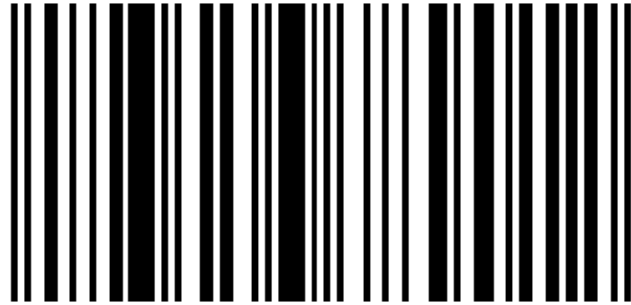
Variants of Barcodes

Prepared by Gabriel Baziramwabo, founder and CEO of Benax Technologies

Barcodes come in many forms, with each variant designed for specific applications.

Let's discuss the key types of 1D (linear) barcodes and their purposes

1) UPC (Universal Product Code)

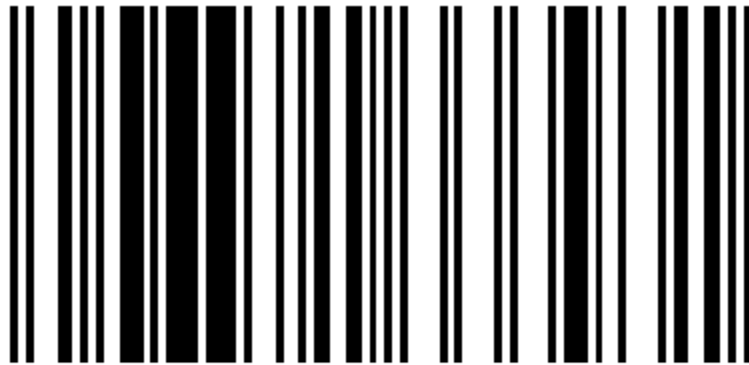


123456789012

- **Usage:** Retail items in the US and Canada.
- **Structure:** 12 digits, including a manufacturer code and a product code.
- Example: Found on groceries and retail goods.

2) EAN (European Article Number)

- Usage: International retail products.
- Structure: Variants include:
- EAN-13: 13 digits, used worldwide.

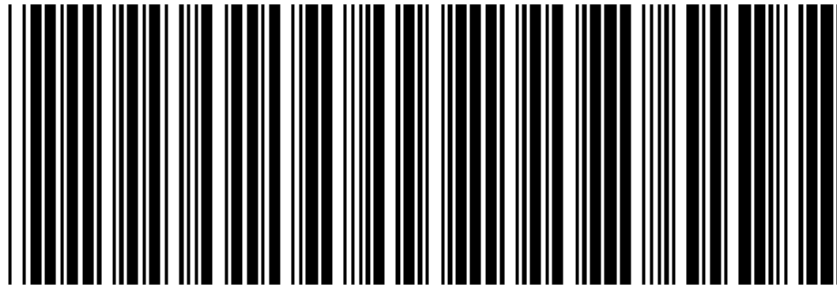


4006381333931

- **EAN-8:** 8 digits, for smaller packaging.
- **Example:** Found on books, cosmetics, and electronics.



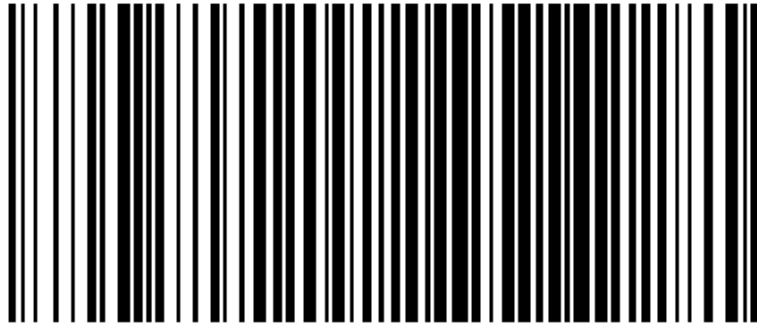
3) Code 39



CODE39 - 1234Z

- **Usage:** Inventory, automotive, and defense industries.
- **Structure:** Can encode numbers, uppercase letters, and some special characters.
- **Example:** Used for badges, labels, and industrial purposes.

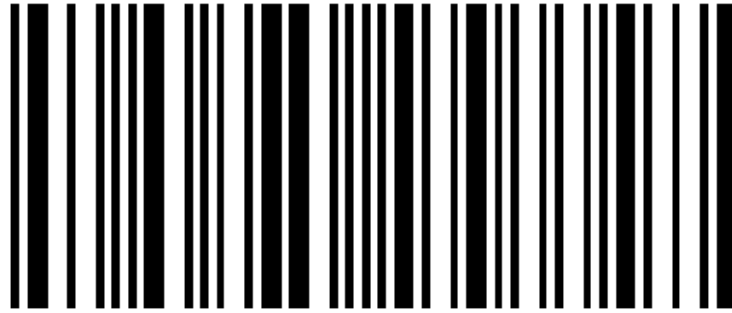
4) Code 128



CODE128 - 2023!

- **Usage:** Shipping and logistics.
- **Structure:** Encodes all ASCII characters (letters, numbers, and symbols).
- **Example:** Often used in shipping labels (e.g., FedEx, UPS).

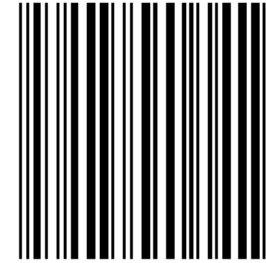
5. Codabar /KOH-duh-bar/



A123456B

- **Usage:** Libraries, blood banks, and parcel services.
- **Structure:** Encodes numbers and six special characters (A, B, C, D, -, \$).
- **Example:** Found on library books and lab specimens.

6. Interleaved 2 of 5 (ITF)



12345678

- **Usage:** Carton-level packaging in warehouses.
- **Structure:** Encodes numeric data in pairs, making it compact.
- **Example:** Seen on shipping cartons and pallets.

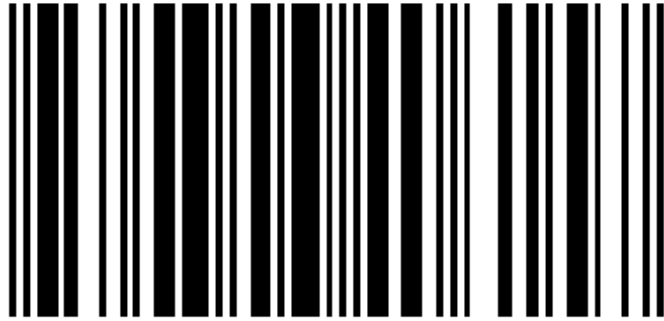
7. GS1 (Global Standards One) DataBar

Note: zint library



- **Usage:** Fresh food and healthcare.
- **Structure:** Encodes more data than UPC/EAN in a smaller size.
- **Example:** Found on small items like fruits and vegetables.

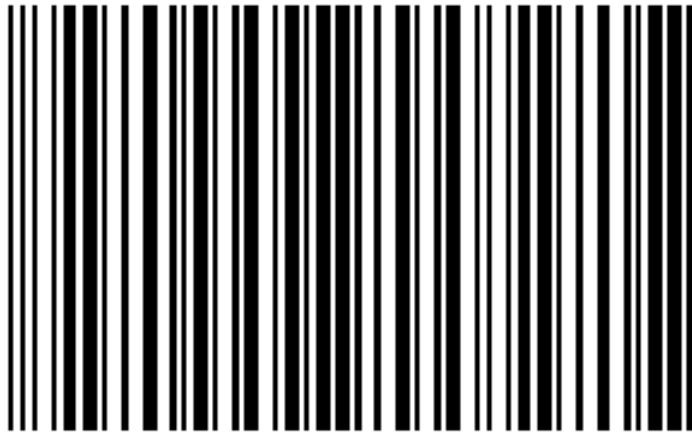
8) ISBN (International Standard Book Number)



9780306406157

- **Usage:** Books and publications.
- **Structure:** Typically encoded using EAN-13.
- **Example:** Found on book covers.

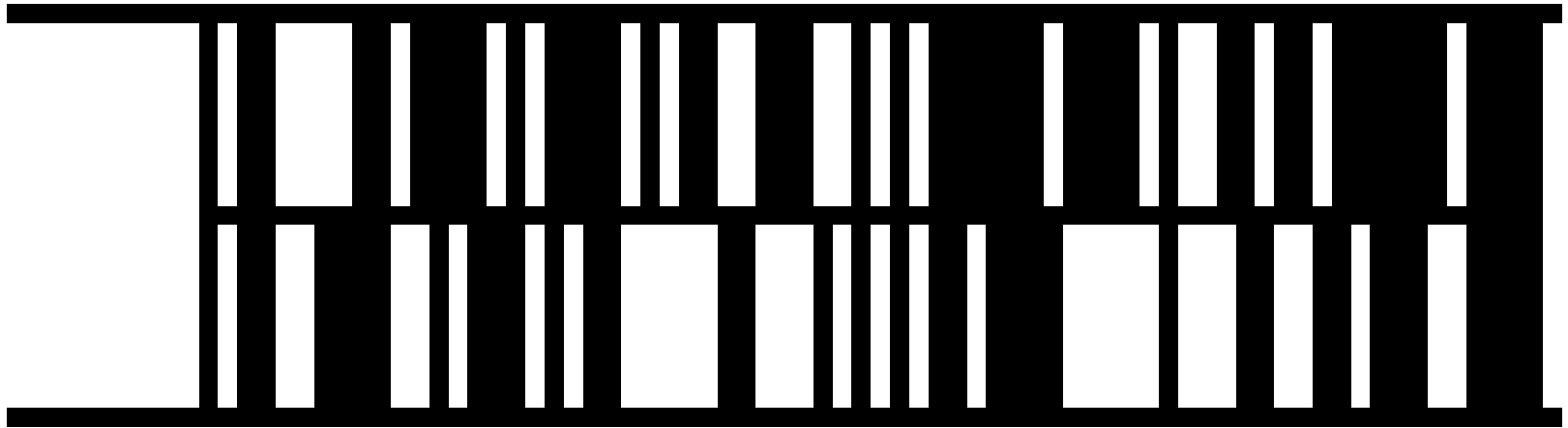
9) ITF-14



01234567890123

- **Usage:** Shipping containers and outer packaging.
- **Structure:** Encodes a 14-digit number.
- **Example:** Used in distribution systems.

10) POSTNET/IMB Intelligent Mail Barcode



- **Usage:** US Postal Service.
- **Structure:** Encodes ZIP codes and routing information.
- **Example:** Found on mail for sorting and tracking.

Why Variants Matter

- **Industry-Specific Needs:** Each variant is optimized for a particular use case, whether it's tracking books, managing inventory, or labeling retail items.
- **Data Capacity:** Some barcodes (e.g., Code 128) can encode complex data, while others (e.g., UPC) are simpler and faster to scan.
- **Size and Shape:** Smaller products may require compact barcodes like EAN-8 or GS1 DataBar