**Algorithm – Unique 8-Character Booking Reference**

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Character Set

• A-Z (26) + 0-9 (10) = 36 characters

• 36⁸ ≈ 2.8 × 10¹² possible combinations (collisions highly unlikely)

Algorithm Steps

1. Fetch all existing references from the SQLite table into a Python set.

2. Randomly generate an 8-character string using random.choices(chars, k=8).

3. If the string is not in the set, accept it; otherwise repeat the loop.

Complexity

• Expected O(1) time per booking, because n ≪ 36⁸.

• Memory O(n) for the set of existing references.

Security Note

For production systems, a cryptographically secure RNG such as secrets.choice

is recommended.