## **Optimizing Database Structures for Efficiency**

### Part 1: Office Roleplay Dialogue

**Scenario:** A Database Administrator, Yuki, is discussing database structure design and optimization with his colleague, Rachel, to ensure efficient data storage and retrieval.

**Rachel:** Hey Yuki, I was reviewing our database design, and I think we need to improve the structure for better performance.

**Yuki:** I agree. We should check if our **schemas** are properly designed to organize data efficiently.

**Rachel:** That makes sense. Also, have you considered **normalization?** We might need to break down some large tables to eliminate redundancy.

**Yuki:** Definitely. Normalizing the database will improve consistency, but we need to balance it with performance needs.

**Rachel:** Good point. What about **indexes**? If we add the right ones, it could speed up query execution significantly.

**Yuki:** Yes, I was thinking the same. Properly placed **indexes** can reduce search times, especially for frequently accessed data.

**Rachel:** And for relationships between tables, are we using **foreign keys** correctly? They help maintain data integrity.

**Yuki:** Yes, but we should verify that every **foreign key** links correctly to a **primary key** in another table. That prevents orphaned records.

**Rachel:** Got it. We also need to ensure that the **primary key** selections are optimized for indexing efficiency.

**Yuki:** Agreed. Let's review all the **schemas** and indexing strategies before finalizing the database structure.

**Rachel:** Sounds like a plan! I'll gather the performance reports, and we can make the necessary adjustments.

### **Part 2: Comprehension Questions**

### 1. Why does Yuki suggest reviewing schemas?

- (A) To delete unnecessary data
- (B) To change the database into a spreadsheet
- (C) To ensure the database is well-organized 🗹
- (D) To add more user accounts

### 2. How does normalization help in database design?

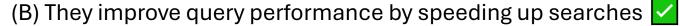
- (A) It eliminates redundancy and improves consistency 🔽
- (B) It increases database size
- (C) It slows down query performance
- (D) It removes all indexes from the database

#### 3. Why are foreign keys important?

- (A) They increase database storage space
- (B) They prevent users from accessing data
- (C) They automatically delete duplicate records
- (D) They link records between tables to maintain data integrity

## 4. What is the benefit of using indexes?

(A) They remove old data from tables





- (C) They increase the size of the database
- (D) They prevent unauthorized access to the database

### Part 3: Key Vocabulary Definitions in Japanese

- 1. Normalization (正規化) データの冗長性を減らし、一貫性を 保つためにデータベースを整理する手法。
- 2. Indexes (インデックス) データベースの検索速度を向上させ るための仕組み。
- 3. Schemas (スキーマ) データベースの構造や設計を定義するフ レームワーク。
- 4. Foreign Key (外部キー) 他のテーブルの主キーと関連付けられ たフィールドで、データの整合性を維持する役割を持つ。
- 5. Primary Key (主キー) 各レコードを一意に識別するためのフ ィールド。

## **Part 4: Questions & Correct Answers**

- 1. Why does Yuki suggest reviewing schemas?
  - (C) To ensure the database is well-organized

# 2. How does normalization help in database design?

(A) It eliminates redundancy and improves consistency

# 3. Why are foreign keys important?

(D) They link records between tables to maintain data integrity

# 4. What is the benefit of using indexes?

(B) They improve query performance by speeding up searches