**Problem Statement**

**Product Dissection for top leading Platforms**

Welcome to this case study on dissecting and designing products for top leading platforms. In this case study, you will delve into the intriguing world of schema design for a prominent platform of your choice. Your task is to choose a top leading platform, research its features, and meticulously craft a schema design that encapsulates the essence of its functionality. By focusing on key entities, attributes, and relationships, you will gain invaluable insights into how data architecture drives the platform's effectiveness.

**Step 1: Choose a Leading Platform**

Select a leading platform of your choice, which could span various domains such as social media, e-commerce, finance, or any other industry. This choice will form the foundation of your exploration into its schema design.

**Step 2: Research:**

Thoroughly research the platform you have selected. Investigate its core features, functionalities, and user interactions. Identify the top features that define its user experience and contribute significantly to its popularity.

**Step 3: Product Dissection and Real World Problems solved by the platform**

In this step, you will meticulously analyse the platform's standout features and how they provide innovative solutions to real-world challenges. By identifying key functionalities that resonate with users, you'll unravel how the platform effectively addresses problems and enhances user experiences. This dissection will serve as the foundation for understanding how the schema design aligns with the platform's core objectives.

**Step 4: Case Study on the real world problems and approach to solving them**

In this pivotal step, you will expand on the real-world challenges uncovered in Step 3 through a comprehensive case study. Delve into specific instances where users encountered difficulties and showcase how the platform's unique features provided effective solutions. By dissecting the approach taken by the platform to overcome these challenges, you'll gain a deeper appreciation for the platform's user-centric design philosophy and how it shapes the schema design.

**Step 5: Schema Design Based on Top Features**

Based on the features you have identified, craft a schema design that reflects the platform's data structure. Focus on the key entities, attributes, and relationships that underpin the chosen features. Your schema should capture the essence of how the platform organises and utilises its data.

**Step 6: Rationale Behind the Design**

While creating the schema design, consider the rationale behind the platform's choices. Reflect on why certain entities and relationships were chosen and how they align with the platform's goals. This will help you understand the strategic decisions driving the schema's architecture.

**Step 7: Create an ER Diagram**

Utilise tools like the Miro platform or similar applications to create an illustrative Entity-Relationship (ER) diagram. This diagram should vividly depict the entities, attributes, and relationships present within your schema design. The ER diagram will serve as a visual representation of your insights.

**Step 8: Presentation of Findings**

Present your findings in a clear and concise manner. Showcase your understanding of how the schema design impacts the platform's functionality and user experience. Explain how your chosen features are integrated into the schema and how the schema's structure supports the platform's objectives.

**Task Details:**

1. **Answer Submission:** Your submission should include well-structured solutions for all provided questions related to product schema designs.
2. **Video Creation:** Create an informative and engaging video where you thoroughly explain the Case Study.
3. **Depth and Clarity:** Ensure your solutions are detailed and showcase your understanding of product schema design principles. Similarly, in the video, provide clear explanations that are easy to understand for a wide audience.
4. **Creativity Encouraged:** You are welcome to utilise visuals, diagrams, or creative elements to enhance the clarity and impact of your explanations.

**Note:**

1. Duplicate this document and proceed to write your solutions and prepare your video.
2. Include the video link in this document before final submission.

Best of luck in completing this project and showcasing your prowess in dissecting and designing product schema for leading platforms! **For reference, we have also conducted a case study on Instagram, which you can find below. This case study will provide you with valuable insights into how schema design plays a pivotal role in shaping the functionality and success of a prominent platform.**



**Product Dissection for Blinkit**

### **Company Overview:**

### Blinkit, formerly known as Grofers, is a pioneering instant delivery service based in India. Founded in 2013 by Albinder Dhindsa and Saurabh Kumar, the company originally functioned as an online grocery delivery platform. However, in 2021, Grofers rebranded to Blinkit to reflect its pivot towards quick commerce, promising deliveries within 10 minutes.

### Headquartered in Gurugram, Blinkit operates under the ownership of Zomato Ltd., which acquired the company in 2022 for around $570 million. Blinkit has since expanded its footprint in over 500 cities, offering not just groceries but also essentials such as household items, stationery, baby care, electronics accessories, and more.

### Blinkit’s mission is simple yet powerful: “Instant commerce indistinguishable from magic.” With a focus on hyperlocal fulfillment and dark store technology, Blinkit is transforming how India shops for everyday needs.

### **Product Dissection and Real-World Problems Solved by Blinkit:**

Blinkit is built around the concept of **“dark stores”** and **micro-fulfillment centers**, which enables lightning-fast delivery in urban and semi-urban areas. Here's how the product ecosystem functions:

**1. Customer App Interface**

* A mobile-first platform (iOS & Android) and website offering a **user-friendly interface**.
* Features include:
  + Real-time inventory visibility
  + 10-minute delivery timer
  + One-tap reordering
  + Seamless search and filtering by brand, category, or dietary needs

**2. Hyperlocal Fulfillment Model**

* Blinkit relies on a network of **dark stores**—small warehouses stocked with high-demand products strategically placed close to neighborhoods.
* When an order is placed, the nearest dark store processes it instantly, and delivery partners (runners) pick it up and deliver within a **2-3 km radius**, often in under 10 minutes.

**3. Supply Chain & Logistics**

* Uses data analytics and AI to:
  + Predict demand
  + Optimize stock levels
  + Manage rider routes
  + Minimize out-of-stock rates

**4. Partner Network**

* Works with **local and national brands** for grocery, FMCG, and essentials.
* Also partners with **local kirana stores** in some cities to expand product availability.

**5. Rider App & Workforce**

* Delivery partners use a dedicated app that provides:
  + Live order dispatch
  + Navigation assistance
  + Real-time earnings tracking
* Riders are incentivized based on delivery volumes and speed.

### **Case Study: Real-World Problems and Blinkit's Innovative Solutions**

**Problem 1: Lack of Time and Convenience in Urban Life**

**Real World’s Challenge:** Urban consumers face time constraints and need quick solutions for daily groceries and essentials.

**Blinkit’s Solution:** Blinkit’s 10-minute delivery model eliminates the need for time-consuming grocery runs, offering on-demand convenience at the tap of a button.

**Problem 2: Emergency & Last-Minute Needs**

**Real World’s Challenge:** Traditional e-commerce and offline stores don’t support immediate, last-minute needs (e.g., baby food at night or medical items urgently).

**Blinkit’s Solution:** Blinkit’s inventory includes high-urgency items like baby care, first aid, over-the-counter medicines, and late-night essentials, fulfilling them instantly.

**Problem 3: Low Inventory Visibility in Local Stores**

**Real World Challenge:** Local kirana stores often don’t have digital catalogs or real-time inventory visibility, leading to frustration for customers.

**Blinkit’s Solution:** Blinkit provides real-time stock availability through its app, reducing friction and failed store visits.

**Problem 4: Traffic and Accessibility Issues**

**Real World Challenge:** Navigating crowded markets or commuting for daily essentials is difficult, especially for elderly or busy professionals.

**Blinkit’s Solution:** Blinkit eliminates the need to step out by offering home delivery within minutes, with cashless payment options and no minimum order pressure.

**Problem 5: Unorganized Retail and Poor Customer Experience**

**Real World’s Challenge:** Traditional kirana stores often lack organized product catalogs, fixed pricing, return policies, and customer service.

**Blinkit’s Solution:** Blinkit brings the structure of organized retail (clean UI, MRP pricing, digital invoices, refund policies) to the convenience of home delivery.

**Problem 6: Job Creation in the Gig Economy**

**Real world Challenge:** Rising unemployment and lack of flexible income sources for low-skilled workers.

**Blinkit’s Solution:** Blinkit’s delivery partner model offers gig-based employment with flexible work hours and performance-based income.

#### **Conclusion:**

Instagram's journey from a photo-sharing app to a global platform is a testament to its ability to identify real-world problems and provide innovative solutions. By fostering genuine connections, curating content, supporting creativity, and enabling personal branding, Instagram has addressed various challenges that users encounter in the digital landscape. This case study showcases how Instagram's user-centric approach and continuous innovation have positioned it as a leader in the social media domain, effectively shaping the way we engage and interact online.

### **Top Features of Blinkit:**

**1. 10-Minute Delivery Promise**

* Blinkit's core value proposition.
* Delivers groceries, daily essentials, and household items within 10 minutes in most serviceable locations.

**2. Hyperlocal Dark Stores**

* Uses dark stores (small, local warehouses) located close to customer hubs.
* Ensures instant order fulfillment with real-time inventory.

**3. Intuitive Mobile App & Website**

* Clean, fast, and user-friendly interface.
* Features:
  + Smart search and filters
  + Real-time stock availability
  + Saved addresses and order history
  + Instant reorder option

**4. Wide Product Range**

* Offers 5,000+ SKUs across:
  + Fresh fruits & vegetables
  + Dairy & bakery
  + Snacks, beverages, and packaged foods
  + Personal care & household cleaning
  + OTC medicines, baby care, and stationery

**5. Multiple Payment Options**

* Supports:
  + UPI (Google Pay, PhonePe, etc.)
  + Credit/Debit Cards
  + Net banking
  + Cash on Delivery (COD)

**6. Easy Returns & Refunds**

* Simple, no-questions-asked return policy for most items.
* Refunds are processed quickly and transparently through the app.

**7. Smart Inventory & Order Management**

* Uses AI and demand prediction to stock top-selling items locally.
* Ensures high fill rates and minimal order cancellations.

**8. Real-Time Order Tracking**

* Track your order from packing to delivery.
* Live ETA updates and rider location map.

**9. Personalized Recommendations**

* Offers product suggestions based on:
  + Past purchases
  + Regional trends
  + Time of day or season (e.g., mangoes in summer, pooja items during festivals)

**10. Late-Night & Early-Morning Delivery**

* Available in many locations until midnight or even 24x7.
* Covers emergency and off-hour needs like baby food, OTC meds, or snacks.

**11. In-App Customer Support**

* Quick help via live chat, FAQs, and ticketing.
* Transparent complaint and refund handling

**12. Subscription Plans (Limited Cities)**

* Pilot in some areas for "Blinkit Pass" or zero delivery charges on minimum orders.
* Early access to deals or promos for subscribed users.

**13. Eco-Friendly Packaging**

* Focus on minimalist & recyclable packaging.
* Reduces plastic use where possible.

**14. Delivery Partner App & Optimization**

* Delivery agents have a separate app with:
  + Route optimization
  + Delivery targets
  + Incentive tracking

### **Schema Description:**

The schema for Blinkit involves multiple entities that represent different aspects of the platform. These entities include Users, Address, Products, Category, Orders, OrderItems, Payment, Delivery Agent and Delivery. Each entity has specific attributes that describe its properties and relationships with other entities.

### 1. **User Entity**

Represents customers using the Blinkit app.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| UserID | INT (PK) | Unique identifier for the user |
| FullName | VARCHAR | User's full name |
| Email | VARCHAR | User's email address |
| PhoneNumber | VARCHAR | User's phone number |
| PasswordHash | TEXT | Encrypted password |
| DefaultAddressID | INT (FK) | Default delivery address (optional) |
| CreatedAt | DATETIME | Timestamp of user registration |
| LastLogin | DATETIME | Last login time of the user |
| IsActive | BOOLEAN | Account status |

### 2. **Address Entity**

Stores one or more delivery addresses for each user.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| AddressID | INT (PK) | Unique address ID |
| UserID | INT (FK) | Refers to the user who owns the address |
| StreetAddress | TEXT | Street and building number |
| Landmark | VARCHAR | Nearby landmark for easy identification |
| City | VARCHAR | City name |
| State | VARCHAR | State name |
| Pincode | VARCHAR | Postal code |
| Latitude | DECIMAL | Geo-location latitude |
| Longitude | DECIMAL | Geo-location longitude |

### 3. **Product Entity**

Represents all available items on the platform.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| ProductID | INT (PK) | Unique identifier for the product |
| Name | VARCHAR | Product name |
| Description | TEXT | Product description |
| CategoryID | INT (FK) | Product category |
| Brand | VARCHAR | Brand name |
| Unit | VARCHAR | Measurement unit (e.g., 1kg, 500ml) |
| Price | DECIMAL | Current price per unit |
| Discount | DECIMAL | Discount percentage or value |
| StockQuantity | INT | Available stock |
| ImageURL | TEXT | Product image |
| IsActive | BOOLEAN | Visibility status |
| CreatedAt | DATETIME | Timestamp of when the product was added |

### 4. **Category Entity**

Helps group products.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| CategoryID | INT (PK) | Unique category identifier |
| Name | VARCHAR | Name of the category |
| Description | TEXT | Brief about category |

### 5. **Order Entity**

Captures all customer orders.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| OrderID | INT (PK) | Unique order ID |
| UserID | INT (FK) | Who placed the order |
| AddressID | INT (FK) | Delivery address |
| TotalAmount | DECIMAL | Final bill amount |
| DeliveryCharge | DECIMAL | Delivery fee (if applicable) |
| PaymentID | INT (FK) | Associated payment |
| Status | VARCHAR | Order status (Pending, Delivered, etc.) |
| CreatedAt | DATETIME | When the order was placed |
| EstimatedDelivery | DATETIME | Expected delivery time |

### 6. **OrderItem Entity**

Each item included in an order.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| OrderItemID | INT (PK) | Unique ID for this item in an order |
| OrderID | INT (FK) | Associated order |
| ProductID | INT (FK) | Product included in the order |
| Quantity | INT | Number of units ordered |
| PriceAtPurchase | DECIMAL | Price of the product when ordered |

### 7. **Payment Entity**

Captures payment information.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| PaymentID | INT (PK) | Unique payment ID |
| UserID | INT (FK) | Who made the payment |
| OrderID | INT (FK) | Order linked to payment |
| PaymentMethod | VARCHAR | Method used (UPI, Card, Wallet, COD) |
| PaymentStatus | VARCHAR | (Success, Failed, Pending) |
| TransactionRef | VARCHAR | Payment gateway reference |
| Amount | DECIMAL | Amount paid |
| PaidAt | DATETIME | Time of transaction |

### 8. **DeliveryAgent Entity**

Delivery personnel assigned to fulfill orders.

| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| AgentID | INT (PK) | Unique delivery agent ID |
| FullName | VARCHAR | Agent name |
| PhoneNumber | VARCHAR | Agent contact |
| VehicleNumber | VARCHAR | Vehicle registration number |
| AssignedArea | VARCHAR | Serviceable area/zone |
| Status | VARCHAR | (Active, Inactive, On-Leave) |

### 9. **Delivery Entity**

Captures delivery activity for orders.

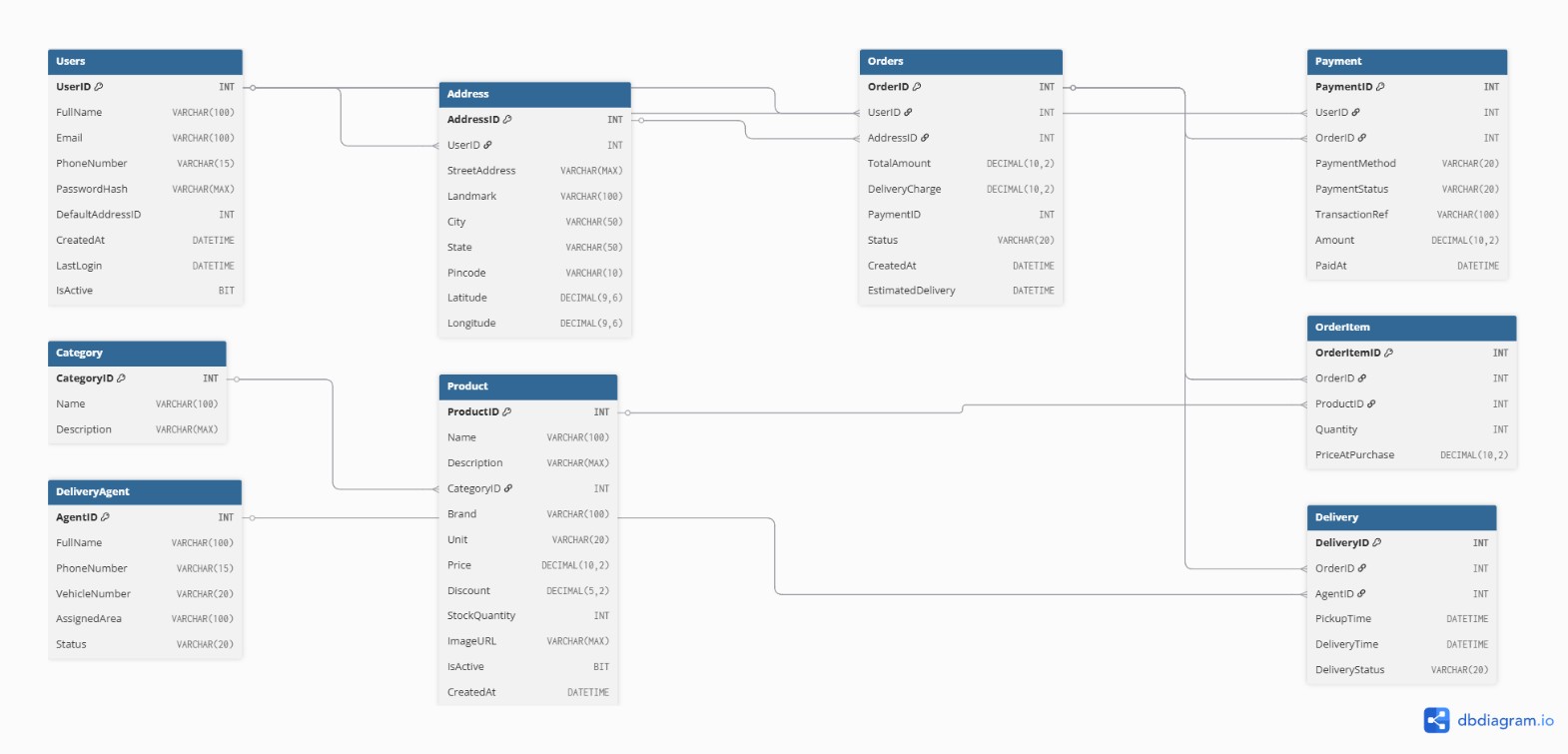
| **Field Name** | **Data Type** | **Description** |
| --- | --- | --- |
| DeliveryID | INT (PK) | Unique delivery instance |
| OrderID | INT (FK) | Related order |
| AgentID | INT (FK) | Delivery agent assigned |
| PickupTime | DATETIME | Time product was picked from store |
| DeliveryTime | DATETIME | Time delivered to customer |
| DeliveryStatus | VARCHAR | (Pending, In-Transit, Delivered, Failed) |

**Relationships are:**

* A User can have multiple Addresses
* A User can place multiple Orders
* Each Order can have multiple OrderItems
* Each OrderItem refers to a Product
* A Product belongs to one Category
* An Order is fulfilled by one Payment
* An Order is assigned to a DeliveryAgent through Delivery
* A DeliveryAgent can deliver multiple Orders

**ER Diagram:**

Let's construct an ER diagram that vividly portrays the relationships and attributes of the entities within the Blinkit schema. This ER diagram will serve as a visual representation, shedding light on the pivotal components of Instagram's data model. By employing this diagram, you'll gain a clearer grasp of the intricate interactions and connections that define the platform's dynamics.



### **Conclusion**

In conclusion, Blinkit's product ecosystem is a seamless integration of hyperlocal logistics, real-time inventory, and user-centric design, all optimized for speed. By leveraging dark stores, predictive analytics, and a highly responsive app interface, Blinkit has redefined convenience for urban consumers. Its ability to deliver a wide range of products within minutes solves critical everyday challenges, from emergencies to routine shopping. The simplicity, speed, and reliability of the platform reflect a well-orchestrated backend that aligns with Blinkit's promise of “instant commerce.” As a result, Blinkit stands out as a benchmark in the rapidly evolving quick commerce industry.