User Acceptance Testing (UAT):

This focuses on ensuring the app meets the business needs and user requirements.

UAT Test Cases:

1. **Sale Module:**
    - **Test Case: Create Sale**
        - Verify the ability to create a new sale.
        - Add discount by percentage and amount and ensure proper calculation.
    - **Test Case: Sales History**
        - Ensure sales history can be filtered by date.
        - Confirm edit and delete functionalities for past sales.
        - Verify that an invoice is generated after the sale.
    - **Test Case: Add Products**
        - Validate item names can be added.
        - Confirm that product images can be uploaded for the logo.
        - Check item price input functionality and ensure price is editable during billing.
    - **Test Case: Report Generation**
        - Verify total sale and income reports can be filtered by date.
        - Ensure the system calculates total discounts and payment modes (UPI and Cash).
        - Validate stock count and sales tracking.
    - **Test Case: Random Income History**
        - Test history creation for random income.
        - Ensure proper filtering by date and accurate totals.
2. **Discount Management:**
    - Validate that discounts are applied both as percentages and as fixed amounts.
    - Check whether the applied discounts reflect correctly on the final invoice.
3. **Payment Handling:**
    - Verify that users can select UPI or Cash as payment modes.
    - Ensure payment details are recorded properly in the reports.
4. **Stock Management:**
    - Check that sold products reduce from the available stock.
    - Validate that reports provide accurate stock levels.

Acceptance Testing (AT)

This verifies that the overall system works correctly based on system specifications.

AT Test Cases:

1. **System Functionality:**
    - **Sale Module:** Ensure that creating a sale works without issues, and the system performs smoothly with discounts, sales history, and invoice generation.
    - **Add Products:** Test adding and editing products, along with uploading images and entering pricing details.
2. **UI/UX Testing:**
    - Verify the ease of navigating between sale, product addition, and report generation sections.
    - Ensure the layout is optimised for the intended device (tablet, mobile, etc.).
3. **Report Generation:**
    - Validate that the total sale, income, and discount reports are generated correctly, with accurate filtering by date.
4. **Data Validation:**
    - Verify that incorrect or incomplete data entries (e.g., empty fields in product addition or invalid discounts) show appropriate error messages.
5. **Performance Testing:**
    - Measure the system's performance under various loads, particularly when processing multiple sales at once or generating long historical reports.
6. **Security Testing:**
    - Ensure payment modes (UPI, Cash) are securely processed, with proper encryption in place for sensitive data (e.g., transaction history).

Wireframe for Billing App

1. Home Screen (Dashboard)

- **Header:**
    - App logo on the top left.
    - Title: "Billing Dashboard"
    - Menu icon (Hamburger menu) on the top right for navigating to modules (Sale, Purchase, Reports).
- **Main Section:**
    - **Create New Sale** (Prominent button in the center)
    - Quick links:
        - View Sales History
        - Reports
        - Add Products
    - A summary view at the bottom with statistics:
        - Total Sales (Today)
        - Total Income
        - Available Stock

2. Create Sale Screen

- **Header:**
    - "Create New Sale" title
    - Back button on the top left.
- **Main Section:**
    - **Product Search Bar** (Search for products by name or barcode).
    - **Product List** (Products displayed with small images, name, and price):
        - Tap to select and add to cart.
- **Cart Section (Right or Bottom, depending on device):**
    - **Selected Products List** (Product name, quantity, price, and discount option).
    - Add/Edit discount (Percentage or fixed amount).
    - Option to remove products from the cart.
    - **Total Amount Calculation** (Updates dynamically as products are added/removed).
- **Footer (Sticky):**
    - Button: **Generate Invoice**
    - Button: **Cancel**

3. Sales History Screen

- **Header:**

    - "Sales History" title.
    - Filter icon on the top right for filtering by date.
- **Main Section:**
    - **List of past sales**:
        - Each entry shows:
            - Date, Time
            - Total amount
            - Payment method (UPI/Cash)
            - Edit/Delete buttons for each sale.
- **Footer:**
    - **Add new sale** (Shortcut button).

4. Add Products Screen

- **Header:**
    - "Add New Product" title.
- **Main Section:**
    - **Product Image Upload Section** (Placeholder for image upload).
    - **Product Details Form:**
        - Name (Text input)
        - Price (Number input)
        - Stock count (Number input)
- **Footer:**
    - **Save Product** button
    - **Cancel** button

5. Report Screen

- **Header:**
    - "Reports" title.
- **Main Section:**
    - **Date Filter** (Dropdown for date range selection).
    - **Report Details**:
        - Total sales, income, discounts
        - Payment methods breakdown (UPI, Cash)
        - Stock sold
- **Footer:**
    - Button to export report (PDF/CSV).

6. Payment Mode Selection Screen

- **Header:**

    - "Select Payment Mode"
- **Main Section:**
    - **Payment Methods**:
        - UPI (Option to enter UPI details)
        - Cash (Option to enter the cash amount)
- **Footer:**
    - **Complete Payment** button.

General UI Notes:

- Consistent layout across screens with clear headers and navigation buttons.
- Use simple, clean fonts and buttons to enhance usability, especially for a billing app.
- All forms should include proper validation with appropriate error messages for missing or invalid fields.

flowchart TD

A[Home Screen] --> B[Header]
A --> C[Main Section]
A --> D[Summary View]

B --> B1[App Logo]
B --> B2[Title: Billing Dashboard]
B --> B3[Menu Icon]

C --> C1[Create New Sale Button]
C --> C2[Quick Links]
C2 --> C2a[View Sales History]
C2 --> C2b[Reports]
C2 --> C2c[Add Products]

D --> D1[Total Sales Today]
D --> D2[Total Income]
D --> D3[Available Stock]

A --> E[Create Sale Screen]
E --> F[Header]
E --> G[Main Section]
E --> H[Cart Section]

F --> F1[Create New Sale Title]
F --> F2[Back Button]

G --> G1[Product Search Bar]
G --> G2[Product List]

H --> H1[Selected Products]
H --> H2[Total Amount]
H --> H3[Checkout Button]

UI/UX Suggestions for the Billing Application

User Interface (UI) Suggestions:

1. **Visual Hierarchy**:
   - Use contrasting colors for key elements like buttons, KPIs, and alerts.
   - Ensure uniform typography with consistent font sizes for headers, sub-headers, and body text.
2. **Clean and Minimalist Layout**:
   - Implement whitespace effectively to separate different sections.
   - Use grid layouts to align content, providing structure and clarity.
3. **Intuitive Navigation**:
   - Use a sidebar menu with collapsible sub-menus for modules (e.g., Sales, Expenses, Inventory).
   - Include a top bar for quick actions and notifications.
4. **Form Design**:
   - Utilize dropdowns, radio buttons, and checkboxes to simplify data input.
   - Incorporate auto-complete and suggestions in form fields to reduce typing effort.
5. **Visual Feedback**:
   - Add loading indicators, success messages, and error warnings for user actions like creating a sale or generating a report.

User Experience (UX) Suggestions:

1. **Smooth User Flow**:
   - Ensure common actions (e.g., creating a sale or adding an expense) are accessible within 2-3 clicks.
   - Use modals or drawers instead of new pages for quick edits or additions.
2. **Enhanced Accessibility**:
   - Ensure that all text is legible, using sufficient color contrast and larger text for crucial information.
   - Include keyboard shortcuts and support for screen readers for improved accessibility.
3. **Data Visualization**:
   - Use graphs and charts in reports to show sales and expense trends.
   - Incorporate color coding for different payment modes (e.g., green for cash, blue for UPI).
4. **Error Prevention**:
   - Include validation prompts and confirmation dialogs before critical actions (e.g., deleting an invoice).
5. **Responsive Design**:
   - Make the interface adaptable for various devices, including desktops, tablets, and mobiles.
   - Use scalable design patterns to ensure functionality and aesthetics are preserved on all screen sizes.