**Step 3: Project Design**

**3.1 Major Components/Modules/Features**

1. **Mobile App Components**:
   * **User Interface (UI)**: This is the front-end part of the app where users interact. It includes the login interface, product catalog, product details, shopping cart, checkout, and order confirmation screens.
   * **User Authentication Module**: Manages user login, registration, and authentication processes.
   * **Product Catalog**: Displays the list of products available for purchase, fetched from the backend.
   * **Product Details**: Shows detailed information about selected products including name, price, description, and stock quantity.
   * **Shopping Cart**: Allows users to add, view, and manage products they intend to purchase.
   * **Checkout**: Manages the process of completing the purchase, including payment processing.
   * **Order Confirmation**: Displays a confirmation message and order details upon successful payment.
2. **Backend Server Components**:
   * **API Layer**: Exposes endpoints for mobile app interactions, handles HTTP requests, and interacts with the database.
   * **User Management**: Handles user data including registration, login, and profile management.
   * **Product Management**: Manages product data, including fetching product details and updating inventory.
   * **Order Management**: Manages order data, including order creation, tracking, and history.
   * **Payment Processing**: Handles payment transactions securely.
   * **Notification Service**: Sends notifications (email) to users regarding their order status.
3. **Database Components**:
   * **User Data**: Stores user information such as credentials, profile details, and order history.
   * **Product Data**: Stores product details including name, price, description, and stock quantity.
   * **Order Data**: Stores information about user orders, including product details, quantities, total cost, and order status.
4. **External Services**:
   * **Payment Gateway**: External service for processing payments securely.
   * **Email Notifications**: External services for sending notifications to users.

**3.2 Technologies and Tools**

1. **Mobile App Development**:
   * **Languages**: Java
   * **IDE**: Android Studio and Visual Studio
   * **Libraries**:
     + Standard imported libraries provide with the Java language.
   * **Design**: XML for layout design.
2. **Backend Development**:
   * **Languages**: Java
   * **Database**:
     + SQLite
   * **Libraries**:
     + **SQLite** For database interaction.
     + **SQLite and Java Libraries**: For user authentication.
3. **Database Management**:
   * **Relational Databases**:
     + **SQLite**: Widely used, robust, and scalable.
4. **External Services**:
   * **Payment Processing**:
     + Due to the nature of the project, external processing is unneeded, but features would be added to provide this service
   * **Email Notifications**:
     + Due to the nature of the project, external processing is unneeded, but features would be added to provide this service
   * **Inventory Stock Checks:**
     + Due to the nature of the project, external processing is unneeded, but features would be added to provide this service

