**Provide an explanation, their purpose, classification and the notations used in representing them. Also, you're required to illustrate each UML diagram using the case study provided.**

1. **What is a Component Diagram?**
   * A **component diagram** provides a high-level view of a system by illustrating its **components** and their relationships.
   * Components can be:
     + **Software components**, such as databases, user interfaces, or modules.
     + **Hardware components**, like circuits, microchips, or devices.
     + **Business units**, including suppliers, payroll systems, or shipping services.
   * [The purpose of a component diagram is to show how these components fit together and interact within the system1](https://creately.com/blog/software-teams/component-diagram-tutorial/)[2](https://www.lucidchart.com/pages/uml-component-diagram).
2. **Classification and Purpose:**
   * **Component diagrams**:
     + Visualize the static structure of a system.
     + Focus on components and their interactions.
     + Support component-based development and service-oriented architecture.
     + Aid in communication with stakeholders about system functions.
     + [Help developers understand the system’s implementation](https://creately.com/blog/software-teams/component-diagram-tutorial/)
3. **Notations and Symbols:**
   * **Component Symbol**:
     + Represented as a **rectangle** with the component name inside.
     + Three common ways to depict it:
       1. Rectangle with the **component stereotype** (e.g., <<component>>) above the name.
       2. Rectangle with the **component icon** in the top right corner and the name.
       3. Rectangle with both the **component icon** and the stereotype.
   * **Provided Interface** and **Required Interface**:
     + Show how components interact with each other.
     + **Assembly connector** links a component’s required interface (semi-circle) to another component’s provided interface (circle).
     + Indicates that one component provides a service required by another.
   * **Port**:
     + Represented by a small square at the end of a required or provided interface.
     + Used when a component delegates interfaces to an internal class.
   * **Dependencies**:
     + Represented by a **dependency arrow**.
     + Shows the relationship between two components.
     + [Can be used instead of the ball-and-socket notation for interface relationships1](https://creately.com/blog/software-teams/component-diagram-tutorial/).
4. **Classification and Purpose:**
   * **Component diagrams**:
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     + Focus on components and their interactions.
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     + [Help developers understand the system’s implementation](https://creately.com/blog/software-teams/component-diagram-tutorial/)

I can describe the component diagram based on the case study you provided. In the system for the tailoring business, the main components could include:

1. Client Management Module:
   * Client Information (Client ID, Name, Contact Info, Address)
   * Measurements (Body Measurements)
   * Order History
   * Preferences (Style, Fabric, Colors)
   * Payment History
2. Catalog System:
   * Design and Fabric Catalog Entries (Catalogue ID, Name, Description, Fabric Details, Price, Images)
3. Haberdashery Inventory Module:
   * Inventory Items (Item ID, Name, Description, Quantity, Reorder Level, Supplier Info, Cost)
4. Portfolio Management Tool:
   * Portfolios (Portfolio ID, Project Name, Client ID, Description, Fabric Used, Date, Images, Feedback)
5. Appointment Scheduling:
   * Appointments (Appointment ID, Client ID, Date, Time, Purpose, Notes)
6. Order Tracking:
   * Orders (Order ID, Client ID, Design, Fabric, Completion Stage, Estimate Date, Status Updates)
7. Feedback Mechanism:
   * Feedback Entries (Feedback ID, Client ID, Order ID, Rating, Comments, Date)

These components interact with each other to streamline the operations of the tailoring business, enhance customer service, and improve efficiency. Each component plays a crucial role in managing different aspects of the business's operations and customer interactions.