**Data, Information and Knowledge**

**1. Data**

**Definition**:  
Data consists of raw, unprocessed facts or figures. It does not carry any meaning by itself and cannot be used to make decisions without further context or analysis.

**Examples**:

* Numbers: 45, 72, 88, 95
* Text entries: "John", "Sales Department", "Completed"
* Dates: 2025-01-15, 2025-05-10
* Sensor readings: Temperature: 29.5°C, Humidity: 80%
* Transaction logs: ID2345, $450, 2025-05-01

In isolation, these examples don’t tell us what they represent. Are the numbers exam scores, product prices, or something else?

**2. Information**

**Definition**:  
Information is data that has been processed, structured, or organized in a way that provides meaning. It gives answers to basic questions such as what, where, when, and who.

**Examples**:

* "The temperature in Room A at 2:00 PM was 29.5°C."  
  (Provides context: what the number refers to and when.)
* "John from the Sales Department completed the annual report on 2025-01-15."  
  (Structured text with names, departments, tasks, and dates.)
* "Product ID2345 was sold for $450 on 2025-05-01."  
  (Explains what happened, when, and for how much.)
* "Student scores in Math Test: Alice: 72, Bob: 88, Charlie: 95."  
  (Gives the test type, students, and scores.)

Information allows users to understand what the data actually represents and begin drawing basic conclusions.

**3. Knowledge**

**Definition**:  
Knowledge is gained by analyzing information, identifying patterns, drawing conclusions, and applying experience and judgment. It helps in making informed decisions and taking action.

**Examples**:

* "Temperatures consistently above 29°C in Room A cause equipment to overheat. Cooling needs to be improved."  
  (A conclusion drawn from analyzing temperature data over time.)
* "John consistently meets all his deadlines in the Sales Department. He is a strong candidate for promotion."  
  (Derived from ongoing performance information and experience.)
* "Most products sold above $400 in May had a 20% discount. This pricing strategy increases revenue."  
  (Interpreting sales data to adjust business strategies.)
* "Charlie consistently scores above 90 in math tests. He should be placed in an advanced learning program."  
  (Understanding based on repeated test information and educational knowledge.)

Knowledge supports reasoning, strategy, and decision-making.

**Extended Summary Table**

| **Level** | **Description** | **Examples** |
| --- | --- | --- |
| Data | Raw, unprocessed facts | 95, "John", 2025-01-15, Room A, Temperature: 29.5°C |
| Information | Data with context and meaning | "John from Sales completed report on 2025-01-15" |
| Knowledge | Analyzed information used to decide | "John meets deadlines consistently; consider for promotion" |

**Real-World Use Case Example: Online Retail**

* **Data**:  
  OrderID: 12345, Customer: Alice, Amount: $250, Date: 2025-05-10
* **Information**:  
  Alice purchased items worth $250 on 2025-05-10 via credit card.
* **Knowledge**:  
  Alice has made 5 purchases over $200 in the last month. She is a high-value customer and should be enrolled in the loyalty program.