### **Workshop Explanation:**

This workshop is designed to give students a practical understanding of Generics in Java by implementing and working with various data structures (Hashmaps and Sets).

### **Flow:**

1. Introduce the concept of Generics (presentation)
2. Implement and use generic classes
3. Implement Set and a class that demonstrates the use of Hashmap.

### **Workshop Structure**

#### **1. Pair Class (Pair.java)**

* **Purpose:** Demonstrates how Generics can create versatile containers for related data.
* **Implementation:** Students implement a Pair<K, V> class that holds two related values (e.g., a coordinate pair or a student-grade pair).
* **Activity:**
  + Create pairs like Pair<String, Integer> and Pair<Double, Double>.
  + Extend functionality with methods like swapping key and value or working with nested pairs.

#### **2. Inventory Management (Inventory.java)**

* **Purpose:** Teaches students how to use HashMap<K, V> to build a real-world application.
* **Implementation:** Students create an Inventory class to manage store items and quantities.
* **Activity:**
  + Add, remove, and list items in the inventory.
  + Use HashMap methods like put, get, and containsKey.
  + Discuss possible extensions like sorting items or handling low stock alerts.

#### **3. Set Class (Set.java)**

* **Purpose:** Introduces a fundamental data structure that enforces unique elements.
* **Implementation:** Students create a generic Set<T> class using an ArrayList.
* **Activity:**
  + Implement methods for adding, removing, and checking elements.
  + Compare this implementation with Java’s built-in HashSet.