**Algorithms and Data Structures**

**Exercise 1  
Inventory Management System**

Product.java:

**package** inventory;

**public** **class** product {

**private** String productId;

**private** String name;

**private** **double** price;

**private** **int** quantity;

**public** product(String productId, String name, **double** price, **int** quantity) {

**this**.productId = productId;

**this**.name = name;

**this**.price = price;

**this**.quantity = quantity;

}

**public** String getProductId() {

**return** productId;

}

**public** **void** setProductId(String productId) {

**this**.productId = productId;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

**public** **double** getPrice() {

**return** price;

}

**public** **void** setPrice(**double** price) {

**this**.price = price;

}

**public** **int** getQuantity() {

**return** quantity;

}

**public** **void** setQuantity(**int** quantity) {

**this**.quantity = quantity;

}

**public** String toString()

{

**return** productId+" | "+name+" | ₹"+price+" | Qty: "+quantity;

}

}

InventoryManager.java:

**package** inventory;

**import** java.util.HashMap;

**import** java.util.Map;

**public** **class** InventoryManager {

**private** Map<String,product>inventory=**new** HashMap<>();

**public** **void** addproduct(product Product)

{

inventory.put(Product.getProductId(), Product);

System.***out***.println(" Product added: "+Product.getName());

}

**public** **void** updateStock(String ProductId,**int** newQuantity)

{

product Product=inventory.get(ProductId);

**if**(Product!=**null**)

{

Product.setQuantity(newQuantity);

System.***out***.println(" Stock updated for: "+Product.getName());

}

**else**

{

System.***out***.println("Product not found!");

}

}

**public** **void** displayInventory()

{

System.***out***.println("Inventory List: ");

**for**(product Product: inventory.values()) {

System.***out***.println(Product);

}

}

}

InventoryTest.java:

**package** inventory;

**public** **class** InventoryTest {

**public** **static** **void** main(String[] args)

{

InventoryManager manager=**new** InventoryManager();

product p1=**new** product("1001","Laptop",50000.0,2);

product p2=**new** product("2001","Mobile",20000.0,4);

product p3=**new** product("30001","Book",500.0,5);

product p4=**new** product("4001","Mouse",600.0,1);

manager.addproduct(p1);

manager.addproduct(p2);

manager.addproduct(p3);

manager.addproduct(p4);

manager.displayInventory();

manager.updateStock("4001",2);

manager.displayInventory();

}

}

**Output:**

