```java
//1. Write a program using HashMap to store student names and their marks.
package Map_Interface;
import java.util.HashMap;
import java.util.Scanner;
public class Challenge1 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
	HashMap<String, Integer> studentMarks = new HashMap<>();
	System.out.print("Enter number of students: ");
	int n = sc.nextInt();
	for (int i = 0; i < n; i++) {
	   System.out.print("Enter student name: ");
	   String name = sc.next();
	   System.out.print("Enter marks for " + name + ": ");
	   int marks = sc.nextInt();
	   studentMarks.put(name, marks);
	}
	System.out.println("\nStudent Marks:");
	for (String name : studentMarks.keySet()) {
	   System.out.println(name + ": " + studentMarks.get(name));
	}
	sc.close();
	    }
}


//2. Demonstrate how to iterate over a Map using entrySet().
package Map_Interface;
import java.util.HashMap;
import java.util.Map;
public class Challenge2 {
	public static void main(String[] args) {
		Map<String, Integer> studentMarks = new HashMap<>();
	studentMarks.put("Alice", 85);
	studentMarks.put("Bob", 92);
	studentMarks.put("Charlie", 78);
	System.out.println("Student Marks:");
	for (Map.Entry<String, Integer> entry : studentMarks.entrySet()) {
	   String name = entry.getKey();
	   int marks = entry.getValue();
	   System.out.println(name + ": " + marks);
	}
	    }
}


//3. Show how to update the value associated with a key in a Map.
package Map_Interface;
import java.util.HashMap;
```

```java
import java.util.Map;
public class Challenge3 {
	public static void main(String[] args) {
		Map<String, Integer> studentMarks = new HashMap<>();
	studentMarks.put("Alice", 85);
	studentMarks.put("Bob", 90);
	studentMarks.put("Charlie", 78);
	System.out.println("Original Marks: " + studentMarks);
	studentMarks.put("Bob", 75);

	System.out.println("Updated Marks: " + studentMarks);
	}
}


//4. Build a phone directory where names are keys and phone numbers are values.
package Map_Interface;
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;
public class Challenge4 {
	public static void main(String[] args) {
		Map<String, String> phoneDirectory = new HashMap<>();
	Scanner sc = new Scanner(System.in);
	System.out.print("Enter number of contacts: ");
	int n = sc.nextInt();
	sc.nextLine();
	for (int i = 0; i < n; i++) {
	   System.out.print("Enter name: ");
	   String name = sc.nextLine();
	   System.out.print("Enter phone number: ");
	   String phoneNumber = sc.nextLine();
	   phoneDirectory.put(name, phoneNumber);
	}
	System.out.println("\nPhone Directory:");
	for (Map.Entry<String, String> entry : phoneDirectory.entrySet()) {
	   System.out.println(entry.getKey() + ": " + entry.getValue());
	}
	sc.close();
	}
}


//5. Create a frequency counter for words in a sentence using a Map.
package Map_Interface;
import java.util.HashMap;
import java.util.Map;
public class Challenge5 {
	public static void main(String[] args) {
```

```
        String sentence = "Hello this is John and this is java programming";
        String sentenceIs = sentence.toLowerCase();
        String[] words = sentenceIs.split("\\s+");
        Map<String, Integer> frequencyMap = new HashMap<>();
        for (String word : words) {
            frequencyMap.put(word, frequencyMap.getOrDefault(word, 0) + 1);
        }
        System.out.println("Word Frequencies:");
        for (Map.Entry<String, Integer> entry : frequencyMap.entrySet()) {
            System.out.println(entry.getKey() + ": " + entry.getValue());
        }
             }
}
```