### **Lab 5:** **Collection in Rust**

**Exercise: Student Records using Collection**

In this exercise, we will create a Rust program to manage student records. We will use a HashMap to store student information, and a HashSet to store the courses each student is enrolled in.

1. Create a new Rust project using cargo:
2. Open your terminal/command prompt and run the following command:

cargo new student\_records

cd student\_records

1. Open the main.rs file in the src directory of your project. You can use any code editor for this.
2. Import the necessary modules for HashMap and HashSet:

use std::collections::{HashMap, HashSet};

Create a function called print\_student\_records that takes a HashMap and a HashSet as parameters and prints the student records:

fn print\_student\_records(students: &HashMap<String, HashSet<String>>) {

for (name, courses) in students {

println!("Student: {}", name);

println!("Courses Enrolled: {:?}", courses);

println!("-------------------------------------");

}

}

In the main function, create a HashMap to store student records. Each student's name will be the key, and the value will be a HashSet containing the courses they are enrolled in:

fn main() {

let mut student\_records: HashMap<String, HashSet<String>> = HashMap::new();

// Add student records

let alice\_courses: HashSet<String> = ["Math", "Physics"].iter().map(|&s| s.to\_string()).collect();

student\_records.insert("Alice".to\_string(), alice\_courses);

let bob\_courses: HashSet<String> = ["Computer Science", "History"].iter().map(|&s| s.to\_string()).collect();

student\_records.insert("Bob".to\_string(), bob\_courses);

let charlie\_courses: HashSet<String> = ["Biology", "Chemistry"].iter().map(|&s| s.to\_string()).collect();

student\_records.insert("Charlie".to\_string(), charlie\_courses);

// Print student records

print\_student\_records(&student\_records);

}

1. Save the file and return to your terminal/command prompt.
2. Build and run your program using cargo run:

cargo run

The program will display the student records with their names and the courses they are enrolled in.

Example Output:

Student: Alice

Courses Enrolled: ["Math", "Physics"]

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Student: Bob

Courses Enrolled: ["Computer Science", "History"]

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Student: Charlie

Courses Enrolled: ["Biology", "Chemistry"]

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We have now successfully completed the lab exercise on collections in Rust, working with HashMap and HashSet to manage student records!

**Happy coding!**