Assignment: Practice Exercise on Iterators, Lifetimes, and Closures

**Questions for this assignment**

1. Find the sum of natural numbers below number N (where N is provide by user) that are multiples of either 3 or 5. For example, if the user enters a number N = 20 then

multiples of 3 = 3,6,9,12,15,18

multiples of 5 = 5, 10, 15

Sum = 3 + 6 + 9 + 12 + **15**+ 18 (Please note that value of 15 will be counted once since it is multiple of both 3 and 5).

**Note: Implement the above program using iterators and not loops.**

1. Write a program that will compute the intersection and union of the numbers given in the form of two vectors. The program will have one function for intersection and another function for union. The program will define two input vectors such as

    let mut vec\_1: Vec<u32> = vec![5,4,3,6,9];

    let mut vec\_2: Vec<u32> = vec![5,8,6,4,10,15,20,21];

and will pass it to the functions for computing the intersection and union.

1. What is wrong with the code segment below

fn main() {

    let s1 = String::from("hello");

    let s2 = &s1;

    let s3 = s1;

    println!("The length of {}.", s2);

}

1. For the code below, write a stqtement using iterators to grab all the ages of the different persons in a single vector.

struct Person {

    pub first\_name: String,

    pub last\_name: Option<String>,

    pub age: i32,

}

fn main() {

    let mut persons: Vec<Person> = Vec::new();

    persons.push(Person {

        first\_name: "Nouman".to\_string(),

        last\_name: Some("Azam".to\_string()),

        age: 1,

    });

    persons.push(Person {

        first\_name: "Kamran".to\_string(),

        last\_name: Some("Khan".to\_string()),

        age: 2,

    });

    persons.push(Person {

        first\_name: "Rahul".to\_string(),

        last\_name: None,

        age: 6,

    });

    persons.push(Person {

        first\_name: "Imran".to\_string(),

        last\_name: Some("Rehman".to\_string()),

        age: 6,

    });

}**ext**