20CYS312 -PPL -Lab Exercise 7 – Programming with RUST

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Date:21/02/25
Github Link:https://github.com/kpsan12/Haskell-Programming/tree/main/lab7

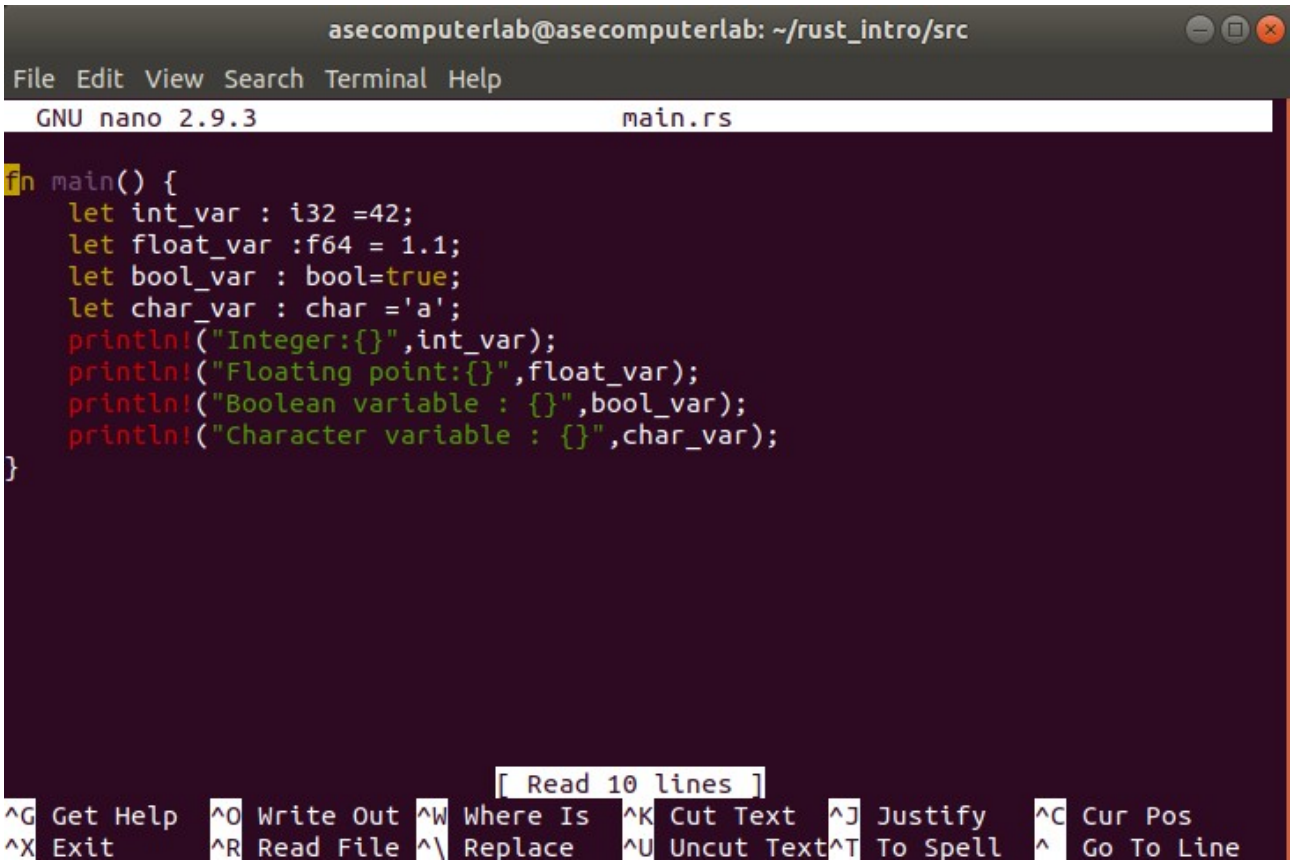
Task 1: Data Types and Variables

Qn1.Deckare variables of the following types : integer,floating point,boolean and character.Print the value of each variable.

Objective:

To declare variables of the following types : integer,floating point,boolean and character and to print the value of each variable.

Program Code:



Explanation of the Code:

- Declares variables of integer (`i32`), floating-point (`f64`), boolean (`bool`), and character (`char`) types.
- `Prints their value using Println!`

Input/Output Example /Output Screenshot:

```
asecomputerlab@asecomputerlab:~/rust_intro/src$ cargo run
   Compiling rust_intro v0.1.0 (/home/asecomputerlab/rust_intro)
    Finished dev [unoptimized + debuginfo] target(s) in 0.17s
     Running `/home/asecomputerlab/rust_intro/target/debug/rust_intro`
Integer:42
Floating point:1.1
Boolean variable : true
Character variable : a
```

Conclusion:

- Successfully learnt how to declare variables and print them

Task 2: Simple Arithmetic Operations

Qn2.Declare two integer variables and perform the following operations:

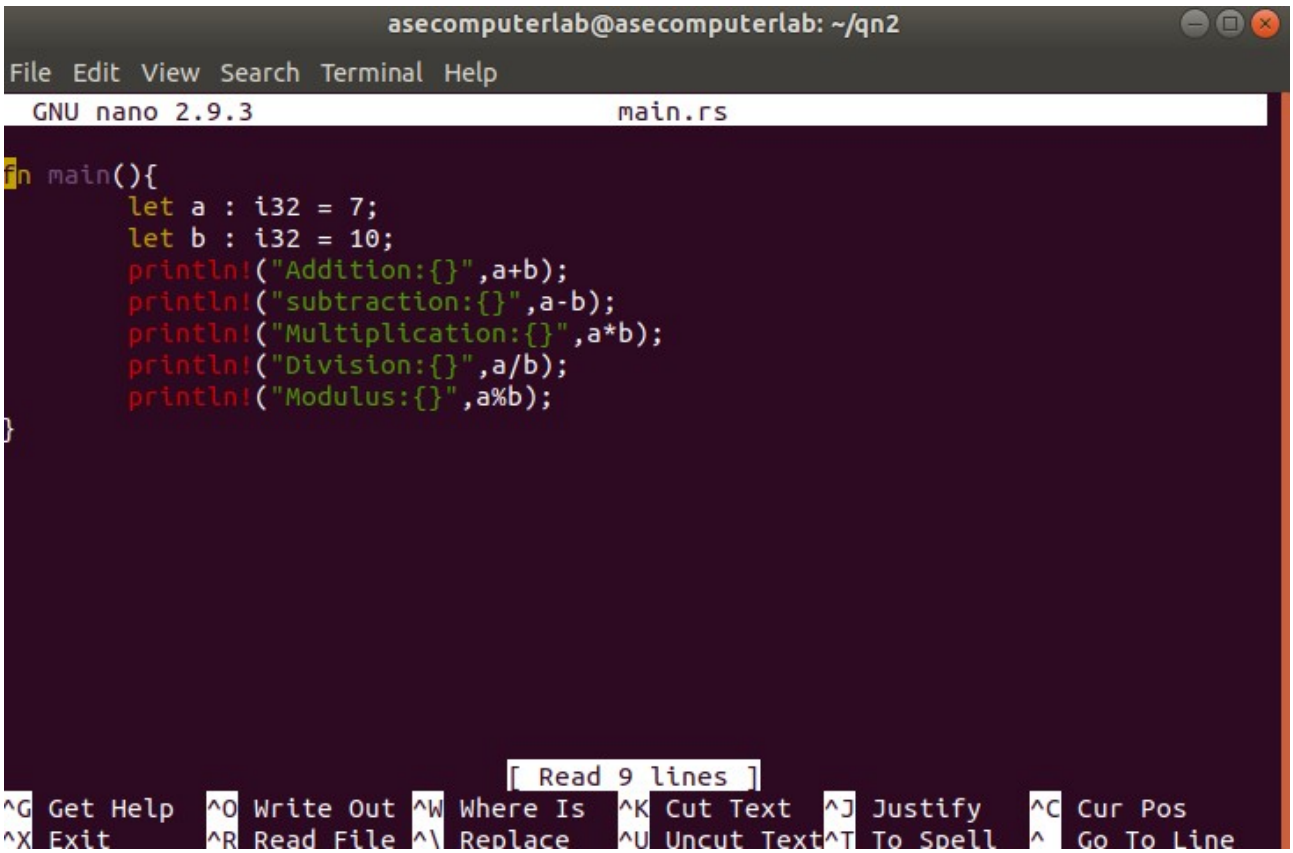
- •Addition
- •Subtraction
- •Multiplication
- •Division
- •Modulo

Qn3.Print the Result of each operation

Objective:

- To declare two integer variables and perform arithmetic operations and print the result of each

Program Code:



Explanation of the Code:

- Declared two variables of int and assigned values
- Printed the value of arithmetic operations

Output Screenshots:

```
asecomputerlab@asecomputerlab:~/qn2$ nano main.rs
asecomputerlab@asecomputerlab:~/qn2$ rustc main.rs
asecomputerlab@asecomputerlab:~/qn2$ ./main
Addition:17
subtraction:-3
Multiplication:70
Division:0
Modulus:7
asecomputerlab@asecomputerlab:~/qn2$ nano main.rs
asecomputerlab@asecomputerlab:~/qn2$
```

Conclusion:

- Successfully learnt how to do arithmetic operations and the ways to print them

Task 3: If-Else Decision Making

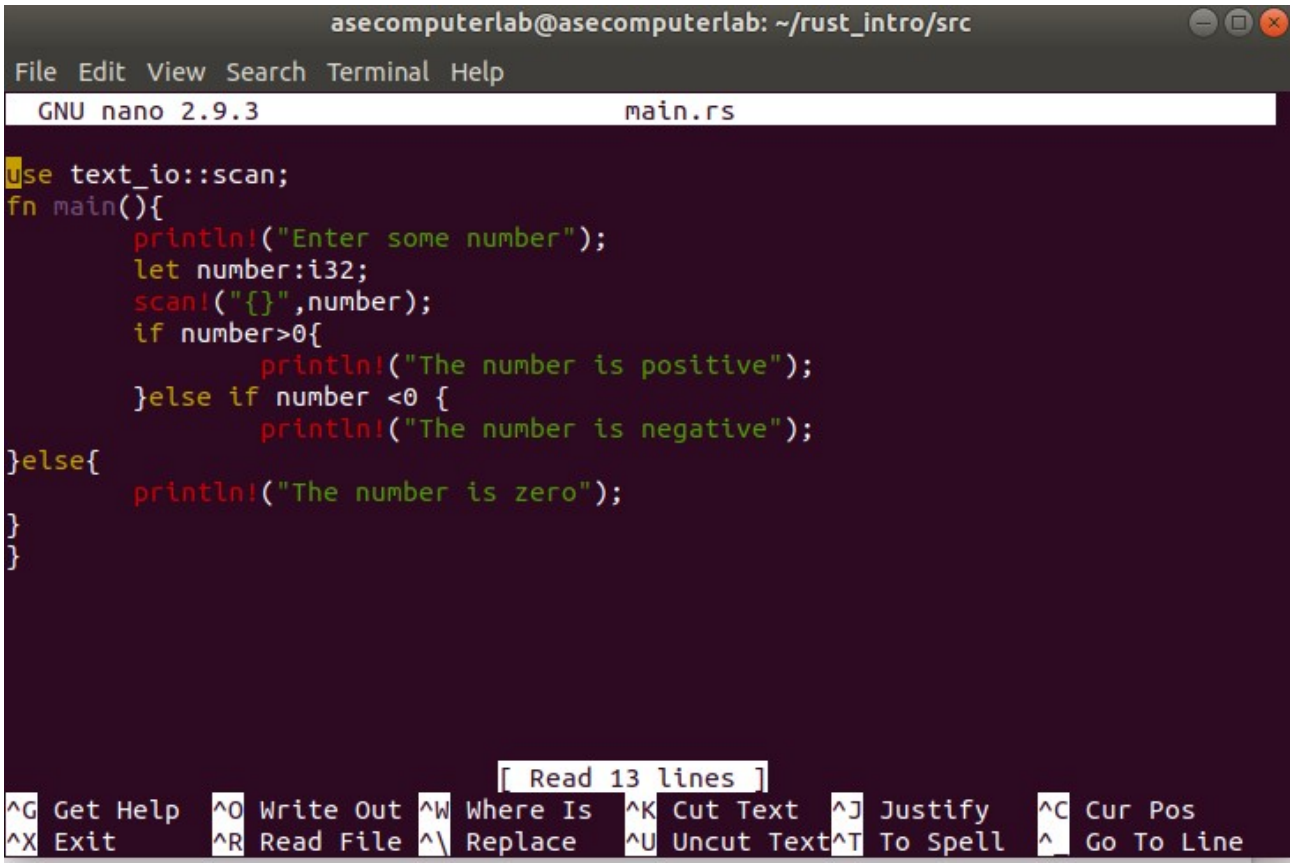
Qn1.Write a program that:

- Takes a number as input.
- Checks whether the number is positive, negative, or zero using an if-else statement.
- Print a message based on the result.

Objective:

- To check if a number is positive or negative or zero

Program Code:



Explanation of the Code:

- First we are getting an input
- We are checking if the number is postivie and negativce or zero and printing it accordingly

Input/Output Examples:

INPUT: 1 OUTPUT: The number is positive
INPUT:-1 OUTPUT:The number is negative
INPUT:0 OUTPUT:The number is zero

Output Screenshots:

Task 4: Checking for Even or Odd

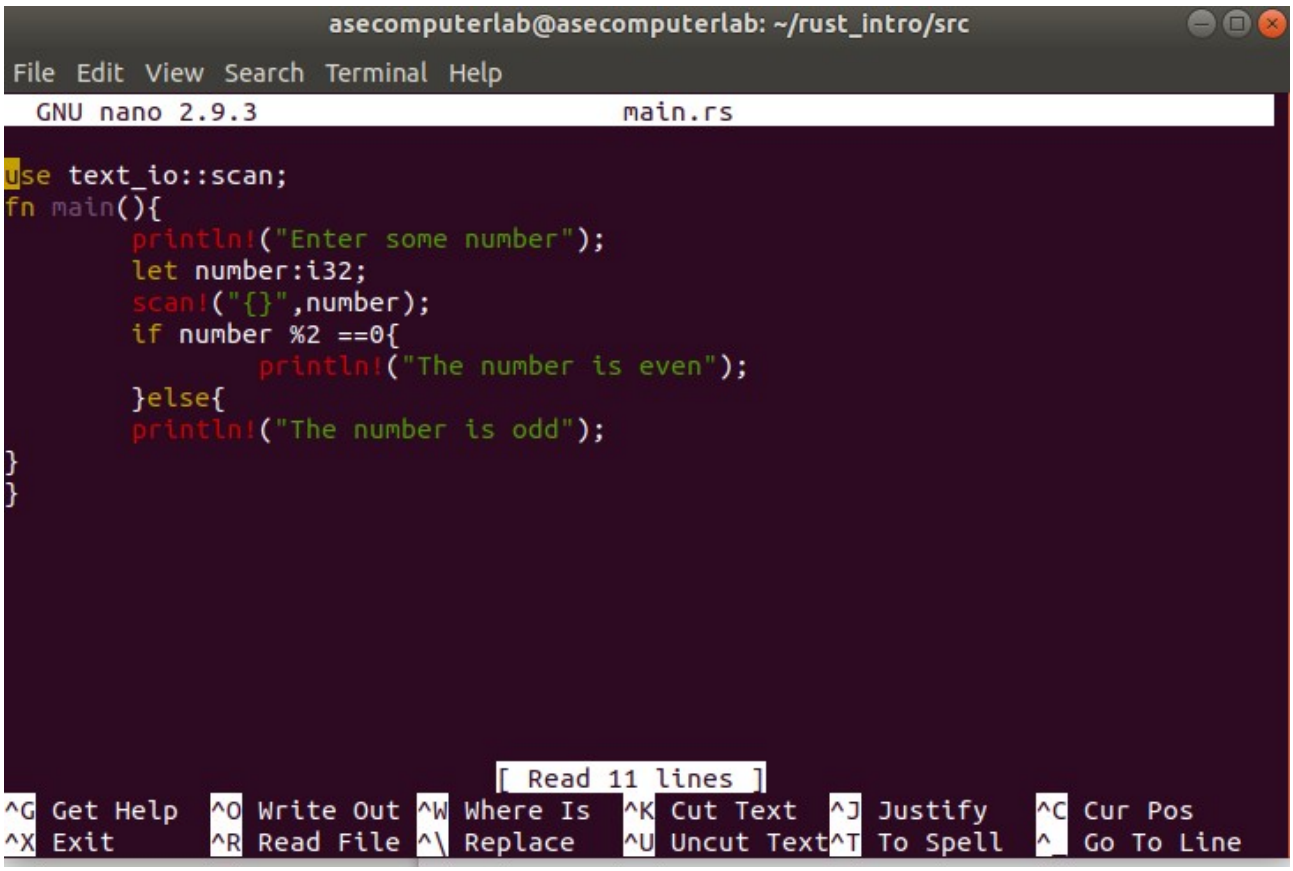
Qn1.Write a program that:

- Takes an integer as input.
- Uses an if-else statement to check if the number is even or odd.
- Print "Even" if the number is even and "Odd" if the number is odd.

Objective of the Code:

- To get a number as input and check if it it even or odd and print accordingly

Program Code:



Explanation of the Code:

- Got input from user
- checked if it is odd or even using modulus functions
- Printed Accordingly

Input/Output Examples:

Input: 2 Output:The number is Even

Input:1 Output:The number is Odd

Output Screenshots:

```
asecomputerlab@asecomputerlab:~/rust_intro$ cargo run
   Compiling rust_intro v0.1.0 (/home/asecomputerlab/rust_intro)
    Finished dev [unoptimized + debuginfo] target(s) in 0.20s
     Running `target/debug/rust_intro`
Enter some number
2
The number is even
asecomputerlab@asecomputerlab:~/rust_intro$ cargo run
    Finished dev [unoptimized + debuginfo] target(s) in 0.00s
     Running `target/debug/rust_intro`
Enter some number
3
The number is odd
```

Conclusion:

- Implemented odd or even checker

Task 5: Using a Loop to Print Numbers

Qn1.Write a program that uses a for loop to print the even numbers from the range 1 to 20.

Objective

- To Write a program that uses a for loop to print the even numbers from the range 1 to 20.

Program Code:

asecomputerlab@asecomputerlab: ~/rust_intro/src

File Edit View Search Terminal Help

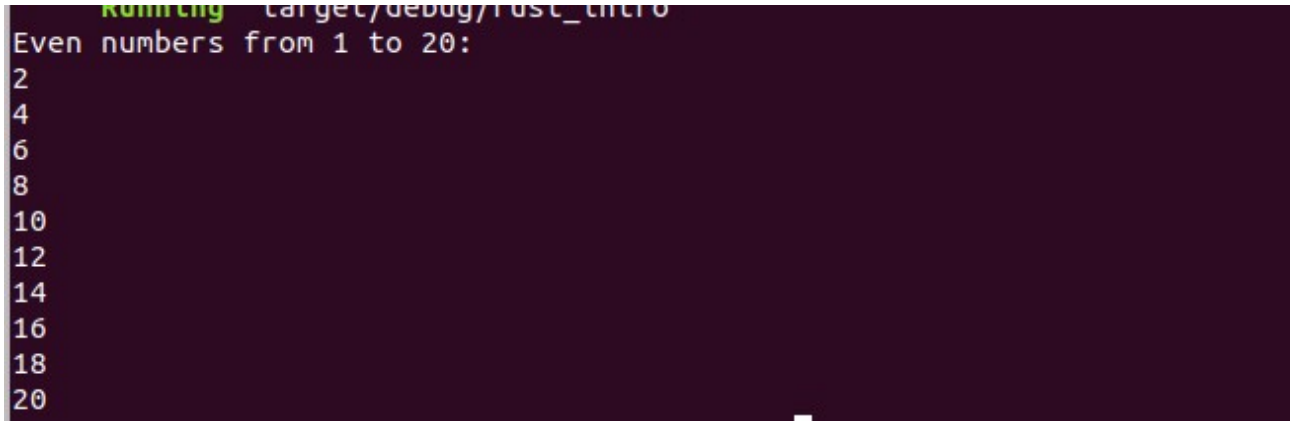
GNU nano 2.9.3 main.rs

```rust
use std::io;

fn main() {
    println!("Even numbers from 1 to 20:");

    for number in 1..=20 {
        if number % 2 == 0 {
            println!("{}", number);
        }
    }
}
```

Explanation of the Code:

- Used even checking
- Printed numbers which are even using loop

Input/Output Examples / Output Screenshots:



Conclusion:

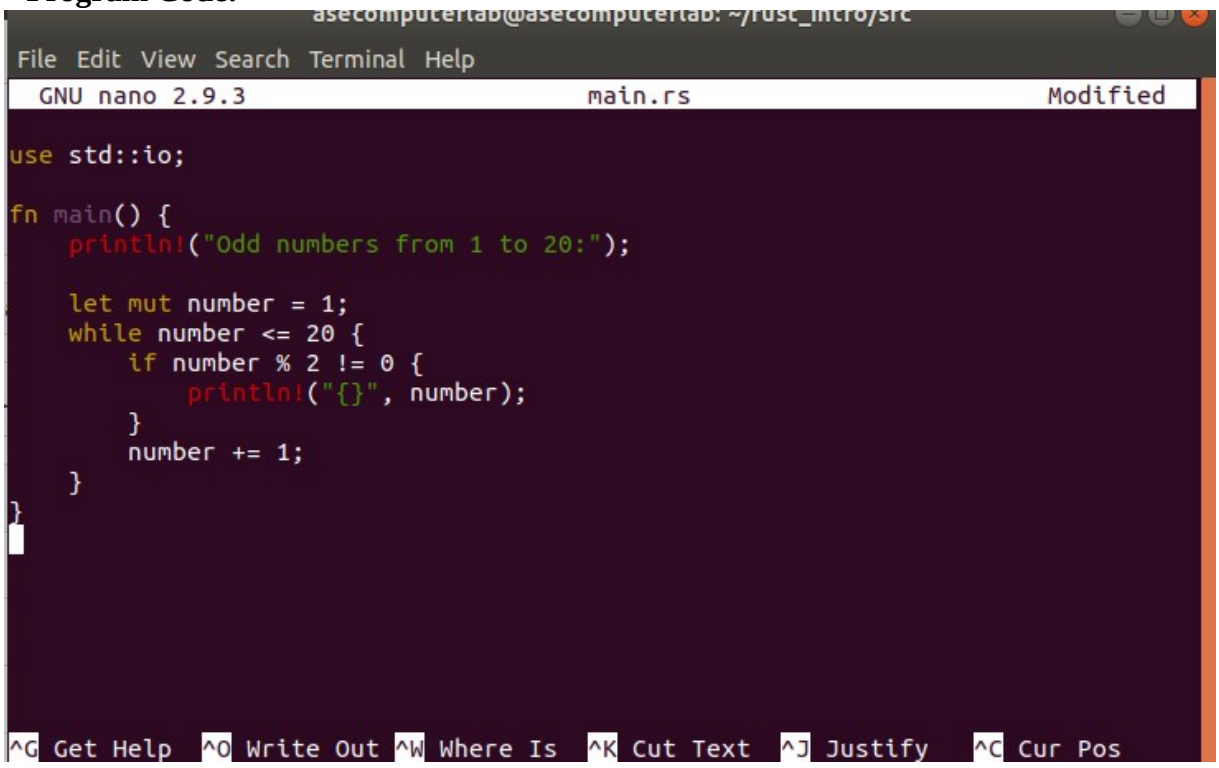
- Implemented a for loop to print even numbers

Task 6: While Loop Example
Qn1.Write a program that uses a while loop to print odd numbers from the range 1 to 20.

Objective of the Code:

- To Write a program that uses a while loop to print odd numbers from the range 1 to 20.

Program Code:



Explanation of the Code:

- Created a number which is mutable using the let mut number=1;
- Used a while loop for numbers upto 20
- Printing the odd numbers alone

Input/Output Examples /Screenshots

```
warning: `rust_intro` (bin "rust_intro") generated 1 warning
    Finished dev [unoptimized + debuginfo] target(s) in 0.17s
     Running `target/debug/rust_intro`
Odd numbers from 1 to 20:
1
3
5
7
9
11
13
15
17
19
```

Conclusion:

- In a while loop printed all odd numbers upto 20

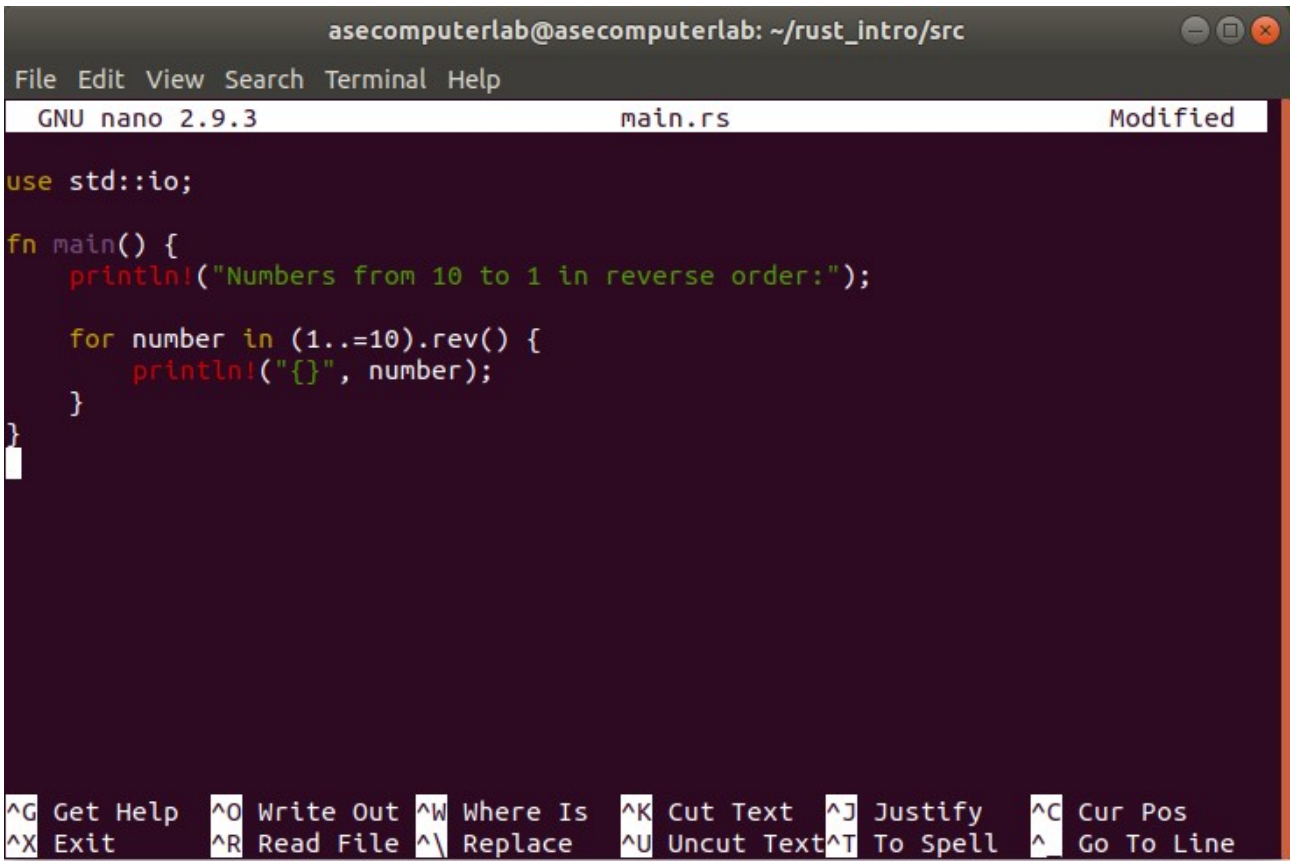
Task 7: Using a For Loop with a Range

Qn1.Write a program that uses a for loop to print the numbers from 10 to 1 in reverse order (10, 9, 8, ..., 1).

Objective of the Code:

- To write a program that uses a for loop to print the numbers from 10 to 1 in reverse order

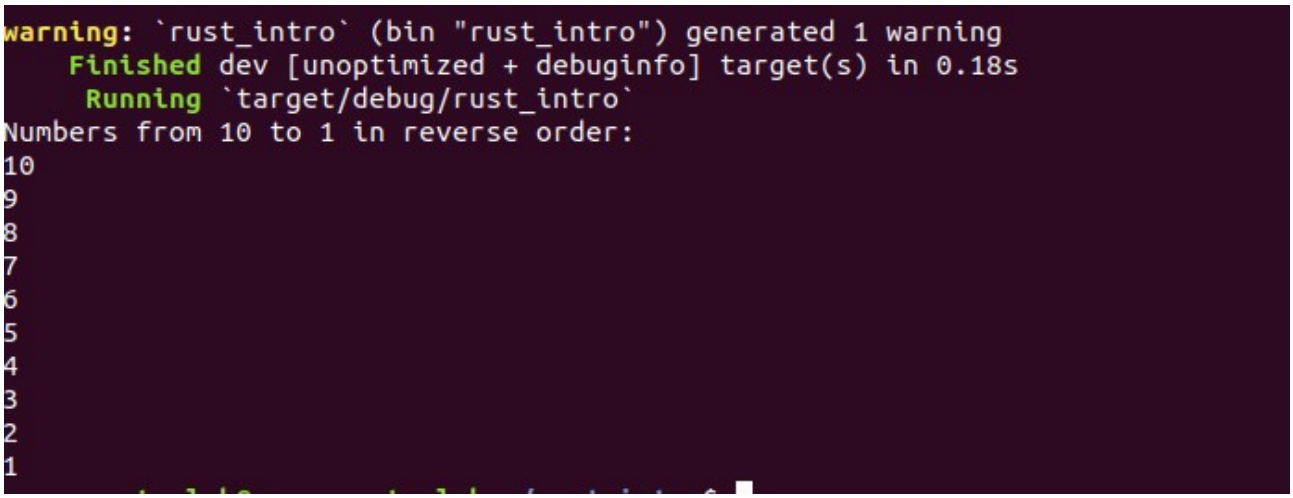
Program Code:



Explanation of the Code:

- Created a foor loop for numbers from 1 to 10 and used the function rev() to reverse it
- So printed the values from 10 to 1

Input/Output Examples/Screenshots:



Conclusion:

- Succesfully printed the values of 10 to 1 in reverse order using for loop