Exercise 3

Functions I: Fibonacci Reciprocals

Introduction:

The Fibonacci sequence named after the 12th century mathematician Leonardo Fibonacci is characterized by the sum of the two previous integers with seed values 0 and 1. For example

1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144

In recurrence relation form it can be is expressed in:

$$f(n) = f\ (n-1) + f(n-2)$$

With seed values:

$$f(0) = 0, f(1) = 1$$

Fibonacci series is so popular that it is used on algorithms such as Fibonacci search technique, Fibonacci cubes for distributed systems interconnection, Fibonacci heap etc.

Learning Outcomes:

- Implement a function that determine if a natural number is a Fibonacci number or not
- Implement a sum of and display of Fibonacci reciprocals in range of natural numbers.

Problem Description:

```
/* determines if x is a Fibonacci sequence or not using iterative structure.
Return 1 if x is Fibonacci 0 if otherwise*/
bool isFib(int x);

/* Displays the list of Fibonacci numbers in range with default values 1 to
10 using isFib(int x) function.*/
void dispFibsInRange(int s, int e);

/* Displays the list of Fibonacci numbers reciprocal 1/fib (in decimal format
i.e. real number) in range with default values 1 to 10 using isFib(int x)
function.*/
void dispFibsReciprocalInRange (int s, int e);

/* Returns the sum of Fibonacci reciprocal 1/(fib) in range with default
values 0 to 10 using isFib(int x) function*/
double FibsReciprocalSumInRange (int s, int e);

//Call all functions on function main according to your preferred parameters
```