CS3513
Programming Languages
HomeWork 2 (Individual Assignment)

Consider the following RPAL program which returns first 5 numbers in Fibonacci Sequence.

```
let rec f n = n eq 1 -> 0 | n eq 2 -> 1 | f (n-1) + f (n-2) in
let rec fib n = n eq 0 -> nil | (fib (n-1) aug f (n)) in
Print ( fib 5 )
```

(a) Construct the Abstract Syntax Tree (AST) for the above Fibonacci Program.

[10 marks]

(b) Construct the Standardize Tree (ST) for the above Fibonacci Program using the AST constructed in above (a).1. Transformational Rules are provided in the appendix. [10 marks]

(c) List down the Control Structures of the above program. [10 marks]

(d) Show the Control Stack Environment (CSE) machine evaluation for the above program. [20 marks]