CPSC 335 Spring 2023
Homework 1

Due on 03/01 by 11:59 PM on Canvas

Q1. (30): Each of the following snippets of pseudocode fails to live up to all of the clarity, correctness, and termination requirements of algorithms. In each case, describe the problem, and then rewrite the pseudocode as a proper algorithm.

(a) for list:
    total = total + i

(b) def long_division(num, denom):
  quotient = num // denom
  remainder = num % denom

(c)
```
def keep_positives(S):
    if len(S) == 0:
        return 0
    else:
        result = []
        for x in S:
            if x > 0:
                result.add(x)
        return result
```

Q2. Exercise (40): Write a problem definition and pseudocode for each of the following problems.
(a) computing a square root
(b) determining whether an integer is even or odd
(c) determining whether every element in a sequence is identical
(d) determining whether two strings are identical

Q3 (30). Consider the following algorithm:

Algorithm Calc(*a*, *n*):
    Input: two integers, *a* and *n*
    Output: ?
    $k \leftarrow 0$
    $b \leftarrow 1$
    while $k < n$ do
        $k \leftarrow k + 1$
        $b \leftarrow b * a$
    return *b*

(a) What does the algorithm calculate?

(b) .Analyze its worst-case running time and express using Big-Oh notation.