question

1. Some problems can be solved through recursion only. True or False?
2. Besides recursion, what other approach can you use to solve a problem that is repetitive in nature?

Coding:

1. Recursive Lines

Write a recursive function that accepts an integer argument, n. The function should display n

lines of asterisks on the screen, with the first line showing 1 asterisk, the second line showing 2

asterisks, up to the nth line which shows n asterisks.

2. Largest List Item

Design a function that accepts a list as an argument and returns the largest value in the list. The

function should use recursion to find the largest item.

3. Sum of Numbers

Design a function that accepts an integer argument and returns the sum of all the integers from 1 up to the number passed as an argument. For example, if 50 is passed as an argument, the

function will return the sum of 1, 2, 3, 4, . . . 50. Use recursion to calculate the sum.

4. Ackermann’s Function

Ackermann’s Function is a recursive mathematical algorithm that can be used to test how well a

system optimizes its performance of recursion. Design a function ackermann(m, n), which

solves Ackermann’s function. Use the following logic in your function:

If m = 0 then return n + 1

If n = 0 then return ackermann(m – 1, 1)

Otherwise, return ackermann(m – 1, ackermann(m, n – 1))

Once you’ve designed your function, test it by calling it with small values for m and n.