Assignment 1

This assignment is worth 4 marks. Deadline 23nd February EOD.

General guidelines

You are not expected to optimize these algorithms. You may assume that the input provided is a valid input. For example, if the procedure expects two positive integers as input, you can assume that the input is always given in the correct form. These questions do not require more than 5-10 lines per question. Please do not request additional time for submission as I will be ignoring such email requests.

File Submission :- Submit a single .rkt file containing all the answers with the appropriate procedure names. The file name should be RollNo_AssignmentNo. If you roll number is B18088 and you are submitting the 3rd assignment, then the .rkt file should be named as B18088_3.

1. Write a procedure ('min-ip' which has an iterative process) to find the smallest integer among several integers provided as arguments. The number of arguments is arbitrary, however at least two integers are given as arguments. 1

2. Write a procedure ('binary-gcd' with an iterative process) which can compute the gcd of two positive integers using binary gcd algorithm. This algorithm requires one to figure out whether the operands are even or odd. Use "let" to capture two variables which store the oddness/evenness of the two integers. 1

3. Given a list l as input, flatten the list l, so that all the constituent items of l are not lists. The name of the procedure is 'flatten-list'

   For example, if the input is (4 6 8 (a 11 (12 camel)) 14), then the procedure flatten-list (with a recursive process) should give the output (4 6 8 a 11 12 camel 14). 1

4. Write a procedure which mimics a do-while loop in java.

   The procedure (do-while proc start limit inc) should take four arguments. The proc is a procedure which should print the value of start on a newline. Everytime proc is executed, the start should be incremented by a procedure called inc.

   As long as the value of start is less than or equal to limit, it should execute the body of the do-while procedure. Keep in mind that the do-while construct is expected to execute the procedure at least once, before it tests the condition for termination. 1