

CS 471 Fall 2021, Homework 4

Due: November 1, Monday 11:59pm Mountain Time

You will write 4 Racket functions

When writing your solution, feel free to refer to the library functions.

1. Write a function ***powerfour*** that given an integer n , returns true if n is a power of four, else returns false. An integer n is a power of four, if there exists an integer x such that $n == 4^x$.

Not included in this assignment, but a frequent followup question in interviews:
Could you solve it without loops/recursion? Probably a good idea to at least look at solutions that solve the above question without loops/recursion.

2. Write a function ***insert-at*** that inserts an element at a given position into a list. Your solution must use recursion.
3. Write a function ***palindrome?*** that is given a list and returns 1 if the list has the same sequence of elements when read left to right as when read right to left. It should return 0 otherwise.
4. Write a function ***ifPrime*** that determines whether a given integer number is prime or not. Return 0 if it is prime, 1 if it is not prime.

Assessment

Solutions should be:

Correct

Written using features discussed in class aka recursion.

Turn-in Instructions

Put all your solutions in a properly commented file named `hw4_lastname_firstname.rkt`, then submit it via Canvas.