Oberon Ilano

Assignment 15

March 31, 2020

**1.**

;Programmer: Oberon Ilano

;Class: CS 410w

;Assignment: 15

;Due date: March 31, 2020

;Description: Find the sphere volume with the given diameter.

#lang racket

(define (sphere\_volume d)

(\* (/ 4 3) pi (/ (\* d d d) 8)))

(sphere\_volume 10.7)

Welcome to DrRacket, version 7.6 [3m].

Language: racket, with debugging; memory limit: 128 MB.

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**2.**

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;Class: CS 410w

;Assignment: 15

;Due date: March 31, 2020

;Description: Count the number of 0s in the list.

#lang racket

(define (count lst)

(cond

((null? lst) 0)

((eq? 0 (car lst))

(+ 1 (count (cdr lst))))

(else (count (cdr lst)))))

(count '(7 0 99 0 -8 44 0))

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**3.**

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;Assignment: 15

;Due date: March 31, 2020

;Description: Calculate the average of the scores after dropping

; the highest and lowest scores.

#lang racket

;find the highest value in the list

(define (highScore lst)

(cond

((null? lst) 0)

((null? (rest lst)) (first lst))

(else

(cond

((> (first lst) (highScore (rest lst))) (first lst))

(else (highScore (rest lst)))))))

;find the lowest value in the list

(define (lowScore lst)

(cond

((null? lst) 0)

((null? (rest lst)) (first lst))

(else

(cond

((< (first lst) (lowScore (rest lst))) (first lst))

(else (lowScore (rest lst)))))))

;drop the lowest and highest from the list

(define (dropLowHigh lst)

(define low (lowScore lst))

(define high (highScore lst))

(cond

(not (null? lst) (remove\* (list low high) lst))

(else (dropLowHigh (cdr lst)))))

;calculate the avg after dropping the highest and lowest

(define (avg lst)

(define afterDrop (dropLowHigh lst))

( / (apply + afterDrop) (length afterDrop)))

; test high, low, and drop

;(highScore '(7 6 3 10 9))

;(lowScore '(7 6 3 10 9))

;(dropLowHigh '(7 6 3 10 9))

(avg '(7 6 3 10 9))

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**4.**

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;Description: Returns a list identical to its parameter

; list except the given atom that has been deleted.

#lang racket

(define (remove atm lst)

(cond

(not (null? lst) (remove\* (list atm) lst))

(else (remove atm (cdr lst)))))

(remove '3 '(5 3 4 3 99 88 3))

Welcome to DrRacket, version 7.6 [3m].

Language: racket, with debugging; memory limit: 128 MB.

'(5 4 99 88)