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Fi||rst Racket Homework

Rodrigo Benavente García

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#lang racket

(define (is-triangle a b c);We recieve three sides

(cond

[(or (<= a 0) (<= b 0) (<= c 0) ) #f];We check if at least one lenght is less or equal to 0

[(and

(> (+ a b) c);first condition

(> (+ b c) a);second condition

(> (+ c a) b);third condition

) #t];We check all the other conditions to see if it's a triangle

[else #f]

)

);end of my first exercise

(define (triangle-type a b c);second exercise, we recieve three sides

(cond ;This condition helps me check if the sides belong to a triangle

[(is-triangle a b c);Runs function to check if it's a triangle

(cond

[(= a b c)'EQUILATERAL];Checks if it's an equilateral triangle

[(or (= a b) (= b c) (= c a)) 'ISOSCELES];Checks if it's an isosceles triangle

[else 'SCALENE];Checks if it's a scalene triangle

);End of my second condition

]

[else 'INVALID];Sides don't belong to a triangle

);End of my condition

);end of my second exercise

(define (point-quadrant x y);Third exercise, we recieve the coordinates of a point in 2d

(if (and (> x 0) (> y 0)); Checks if x and y belong to the first quadrant

'I

(if (and (< x 0) (> y 0));Checks if x and y are in the second quadrant

'II

(if (and (< x 0) (< y 0));Checks if x and y are in the third quadrant

'III

(if (and (> x 0) (< y 0));Checks if x and y are in the fourth quadrant

'IV

(if (and (> x 0) (= y 0));Checks if x and y are in the x axis

'X\_AXIS

(if (and (> y 0) (= x 0));Checks if x and y are in the y axis

'Y\_AXIS

'ORIGIN

);End of 6th if

); End of 5th if

);End of 4th if

);End of third if

);End of second if

)

);End of my third exercise

(define (parking-ticket hours minutes status);Fourth exercise, we recieve #hours #mins and the status of the ticket

(cond ;Cond to check the status of the ticket

[(equal? status 'LOST) 100];If the user lost the ticket then we charge 100

[(equal? status 'STAMPED)

(cond ;Condition created to see how much to charge if the ticket is stampted

[(and (= hours 0) (= minutes 0) ) 0];Charge 0 if the car didn't park there

[(or (and (<= hours 2)(< minutes 1)) (< hours 2)) 5];If the ticket is stampted and is parked for less than 2 hours

[(or (and (= hours 2)(> minutes 1)) (and (<= hours 3)(< minutes 1))) (+ 5 12)];Less than 3 hours and 2 hours with a fraction

[(and (>= hours 3) (< minutes 1)) (+ (\* (- hours 2) 12) 5 )];There are 3 or more hours and no minutes

[(and (>= hours 3) (and (>= minutes 1) (<= minutes 15))) (+ (\* (- hours 2) 12) 5 5)];There are 3 or more hours and less or 15 mins

[(and (>= hours 3) (and (>= minutes 1) (<= minutes 30))) (+ (\* (- hours 2) 12) 5 5 3)];There are 3 or more hours and less or 30 mins and more than 15 mins

[(and (>= hours 3) (and (>= minutes 1) (<= minutes 45))) (+ (\* (- hours 2) 12) 5 5 3 2)];There are 3 or more hours and less or 45 mins and more than 30 mins

[(and (>= hours 3) (and (>= minutes 1) (<= minutes 59))) (+ (\* (- hours 2) 12) 5 5 3 2 2)];There are 3 or more hours and less or 60 mins and more than 45 mins

)];End of STAMPTED status

[(equal? status 'UNSTAMPED)

(cond ;Condition created to see how much to charge if the ticket is unstampted

[(and (= hours 0) (= minutes 0) ) 12];Charge 12 because the ticket is unstamped

[ (or (and (<= hours 1)(< minutes 1)) (and (= hours 0)(> minutes 1))) 12];Charge 12 for an hour or less

[(and (>= hours 1) (< minutes 1)) (+ (\* hours 12))];There are 1 or more hours and no minutes

[(and (>= hours 1) (and (>= minutes 1) (<= minutes 15))) (+ (\* hours 12) 5)];There are 1 or more hours and less or 15 mins

[(and (>= hours 1) (and (>= minutes 1) (<= minutes 30))) (+ (\* hours 12) 5 3)];There are 1 or more hours and less or 30 mins

[(and (>= hours 1) (and (>= minutes 1) (<= minutes 45))) (+ (\* hours 12) 5 3 2)];There are 1 or more hours and less or 45 mins

[(and (>= hours 1) (and (>= minutes 1) (<= minutes 59))) (+ (\* hours 12) 5 3 2 2)];There are 1 or more hours and less or 60 mins

)];End of UNSTAMPTED status

)

);End of my fourth exercise