# Office Hours

# CS-151

Define Activity Structure

- Description, Day-of-Week-
  Location

(define-type Calendar (Listof Activity))

Activity is a list

List of integers

(define my-list (list 2 3 4 5))

(: act1 : Activity)

```
(define act1 (Activity "class1" 'Monday
                       "online"))
```

(: act2 : Activity)

```
(define act2 (Activity "class2"
                       'Wednesday
                       "online"))
```

Create Point with these values

```
(define my-point (Point 1.0 2.0))
```

constructor

```
(define cs-151 (list act1 act2
                     act3 act4))
```

(define CS-IS) (list (Activity "class"

Problem 2:

T is a tree

max-tree-descandant height (T) = max (heigh-of T, max-cone-descendut height(C))

C is the pine cone of the tree T.

· P is my pine-cone

max-cone-descendant-height (P) = max-tree-descendant-height (TP)

TP is the tree contained in P.

Base case

Pine-Cone has Pine-Tree, it's height is 0.

```
(: max-tree-descendant-height :
   Pine-Tree → Real)
(define (max-tree-descendant-height
          z)
```

```
(cond
 [
(symbol? (Pine-Tree-seed t))
 (Pine-Tree-height t)]

[else (max (Pine-Tree-height t)
           (max-cone-descendant-height
            Pine-Tree-seed t))] )

(define (max-tree-descendant-height
         t) ✓
```

```
(match (Pine-Tree-seed t)
['nothing (Pine-Tree-height t)]
[(Pine-Cone _ _) (max (Pine-Tree-height t)
                     (max-cone-descendant-height
                       (Pine-Tree-seed t)))])
```

3.

n is odd if and only

n-2 is odd.

Base - 0 even: False

Base - 1 odd. True.

my-odd? (4) = my-odd? (2)

= my-odd? (0) ⇒ False

my-odd? (5) = my-odd? (3)

= my-odd? (1) ⇒ True.

Recursive formula

my-odd? (n) = my-odd? (n-2)

my-odd? (0) = false

my-odd? (1) = True.

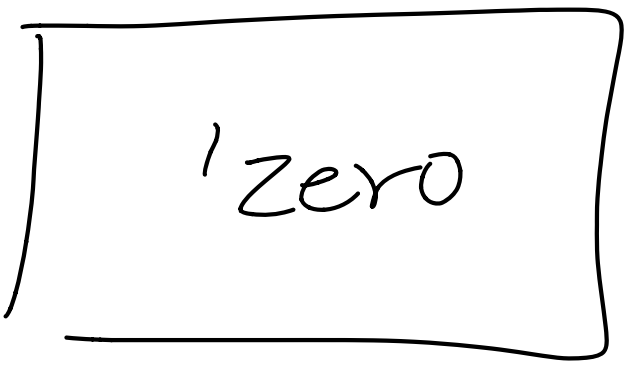
```
(pred (pred num))

(: my-odd? : Nat → Boolean)
(define (my-odd? n)
  (match n
    ['zero #f]
    [(Succ 'zero) #t]
    [(Succ (Succ m)) ]))
(define-type Nat (U 'zero Succ))
(define-struct Succ
  ([nat : Nat]))
```

(my-odd? 'zero) ⇒ #f

(my-odd? 'zero) ⇒ error

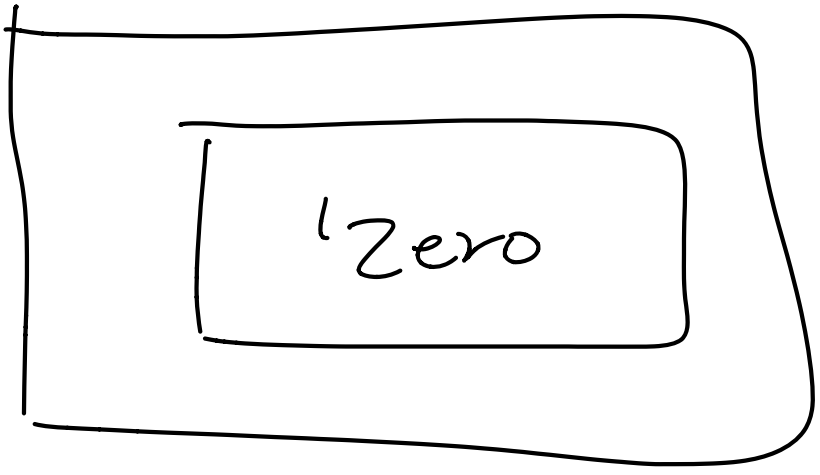
-message

(Succ 'zero)




One is a structure of type Succ which contains the symbol 'zero. lone

Two is structure of type
Succ which contains
One.




$\neq$ 'typ

$$(a > b) \iff (a-1 > b-1)$$

$$(4 > 3) \iff (3 > 2)$$

// true

$$\iff (2 > 1) \iff (1 > 0)$$

(: my-gte :

my-gte (a, b)
= my-gte (a-1, b-1)
if b == 0 (b 'zero)
then it is true.

my-gte (3, 4)
= my-gte (2, 3)
= my-gte (1, 2)
= my-gte (0, 1) ⇒ base case!
false

if n1 is 'zero
but n2 is not 'zero
then false

if n2 is 'zero
then true

my-gcd (4,4) = my-gcd (3,3)
= my-gcd (2,2)
= my-gcd (1,1) = my-gcd (0,0) #
⇒ true

a == b

if and only if

(a-1) == (b-1)

if a == 0 and b == 0

true

if a == 0 and b != 0

false

if a != 0 and b == 0

false

equal? (3,3)

= equal? (2,2)

= equal? (1,1) = equal? (0,0)

⇒ true.

equal? (2,3)

= equal? (1,2)

= equal? (0,1) ⇒ false

[ ]

(check-expect (predsubint

(Succ 'zero)) 1)