**Lab 3: Lisp**

3)

(defun fourth-item (x)

(car(cdr(cdr(cdr x)))))

(write(fourth-item '(a b c d e)))

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4)

(defun check-comparison (item1 item2)

(if (> item1 item2)

item1

item2))

(write(check-comparison 22 53))Text

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7)

(defun is-list (lst)

(if lst

(or (listp (car lst))

(is-list (cdr lst)))))

(print(is-list '(a b s list '() b c)))

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8)

a. Iterative:

(defun iter-dot (x)

(do ((i 0 (+ i 1))) ((= i x))

(format t ".")))

(iter-dot 10)

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Recursive:

(defun recur-dot (x)

(if (plusp x)

(progn

(format t ".")

(recur-dot(- x 1)))))

(recur-dot 10)

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b. Iterative:

(defun iter-list-a (ls)

(do ((ls1 ls (cdr ls1))

(n 0 (+ n (if (eq (car ls1) 'a)

1

0 ))))

((not ls1) n)))

(write(iter-list-a '(a b b a c)))

Text

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Recursive:

(defun recur-list-a (ls)

(if ls

(+ (if (eql (car ls) 'a) 1 0)(recur-list-a (cdr ls)))

0))

(write(recur-list-a '(a b b a c)))Text

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9)

a. (defun summit (lst)

(apply #'+ (remove nil lst)))

(write(summit '(2 5 6 nil 8)))

Text

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b.

(defun summit (lst)

(if lst

(+ (or (car lst) 0) (summit (cdr lst)))

0))

(write(summit '(2 5 6 nil 8)))

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10)

(defun list-of-num (n)

(do ((i 1 (+ i 1))) ((> i n))

(format t "~A " i)))

(list-of-num 5)

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11)

(defun remove-multiples (k lst)

(dolist (obj lst)

(setf i (if (/= (mod obj k) 0)

obj

"\_")) (format t "~A " i)))

(remove-multiples 5 '( 10 6 8 5 3 4 25 68 95 22 46))

Text

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12)

(defun sieve (up)

(loop for i from 1 to up

do (print (loop for j from 2 to i

do (print (if (/= (mod j i) 0)

j

nil))))))

(write(sieve 15))

Text

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