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Assignment 4

1.

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```
(define (multiprint words)
  (display (car words))
  (if (not (null? (cdr words))) (multiprint (cdr words)) (display "")))

(define (echo input)
  (multiprint (list (car input) " " (car input) " "))
  (define rest (cdr input))
  (if (not (null? rest)) (echo rest) (display "")))
```

2.

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```
(define (nth i lst)
  (if (= i 0) (car lst) (nth (- i 1) (cdr lst))))
```

3.

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```
(define (deep-reverse l)
  (if (list? l) (reverse (map deep-reverse l)) l))
```

4.

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```
(define (find-val key a-list)
  (if (eq? key (car (car a-list))) (cadr (car a-list)) (find-val key (cdr a-list))))

(define (assoc-all keys a-list)
  (display "(")
  (helper keys a-list))

(define (helper keys a-list)
  (display (find-val (car keys) a-list)) (display " ")
  (if (pair? (cdr keys)) (helper (cdr keys) a-list) (display "))))
```

5.

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```
(define (filter fn lst)
  (if (not (pair? lst))
      (list)
      (if (fn (car lst)) (cons (car lst) (filter fn (cdr lst))) (filter fn (cdr lst))))
)
```