

CS314-Fall-2018-Assign6-Solution

1 Problem I

1.1

```
(cons
  (cons 'c
    (cons
      (cons 'e (cons 'f
        (cons (cons 'b '()) '())
      )
    ) '()))
  (cons 'g (cons 'b '())))
)
```

1.2

```
(cons
  (cons 'g '())
  (cons
    (cons
      (cons
        (cons (cons 'h '()) (cons 'i '()))
        '()
      )
      (cons
        (cons 'a (cons 'f '()))
        '()
      )
    )
    (cons 'd '())
  )
)
```

1.3

```
(cons 'g (cons / (cons 6 '())))
```

2 Problem II

2.1

```
(define getnthdigit
  (lambda (m n)
    (if (equal? 1 n)
        (modulo m 10)
        (getnthdigit (floor (/ m 10)) (- n 1)))
    )
)
```

2.2

```
(define rev
  (lambda (l)
    (cond
      ((null? l) '())
      ((list? (car l)) (append (rev (cdr l))
                                (cons (rev (car l)) '())))
      (else (append (rev (cdr l)) (cons (car l) '()))))
    )
)
```

2.3

```
(define positionofhelp
  (lambda (k lst m)
    (if (null? lst) 0
        (if (equal? k (car lst)) m
            (positionofhelp k (cdr lst) (+ 1 m)))
    )
  )

(define positionof
  (lambda (k lst)
    (positionofhelp k lst 1)
  )
)
```