

LISP ASQ

<blockquote>

Part 4

Define a predicate (ONE-EL), which evaluates to true if its argument (s-expression) is a list containing just one element

```
(DEFUN ONE-EL (SE)
  (AND _____
        _____)
  )
```

```
(DEFUN ONE-EL (SE)
  (AND (NOT (ATOM SE))
        (NULL (REST SE)) )
  )
```

Define a function (NUM-ONE-EL), which evaluates to the number of one element lists in a list on the top level

```
(DEFUN NUM-ONE-EL (LST)
  (COND ((NULL LST) 0)
        ((ONE-EL (FIRST LST)) (+ 1 (NUM-ONE-EL (REST LST))))
        (T (NUM-ONE-EL (REST LST)))) )
```

Doplnit modre

Test if no number is present in a list on arbitrary level

```
(DEFUN NO-NUM (SE)
  (COND ((NUMBERP SE) NIL)
        ((ATOM SE) T)
        (T (AND (NO-NUM (FIRST SE))
                 (NO-NUM (REST SE))))))
```

Doplnit modre, pricom v texte nech su dva riadky, aby vedeli, ze maju doplnit dve vetvy COND

Test if a list does not contain any symbol on arbitrary level

```
(DEFUN NO-SYMB (SE)
  (COND ((SYMBOLP SE) (EQ SE NIL))
        ((ATOM SE) T)
        (T (AND (NO-SYMB (FIRST SE))
                 (NO-SYMB (REST SE)))))) )
```

Doplnit modre – dve vetvy COND

Test if a list contains a number on arbitrary level in the list

```
(DEFUN SOME-NUMS (SE)
  (COND ((NUMBERP SE) T)
        ((ATOM SE) NIL)
        (T (OR (SOME-NUMS (FIRST SE))
                (SOME-NUMS (REST SE))))))
```

Dopl nit modre

Test if a list contains only numbers on arbitrary level in the list

```
(DEFUN ONLY-NUMS (SE)
  (COND ((NUMBERP SE) T)
        ((ATOM SE) (EQ SE NIL))
        (T (AND (ONLY-NUMS (FIRST SE))
                 (ONLY-NUMS (REST SE))))))
```

Doplnit modre – dve vetvy COND

Test if a list does not contain only numbers on arbitrary level in the list (i.e. it contains also something other than number)

```
(DEFUN NOT-ONLY-NUMS (SE)
  (COND ((NUMBERP SE) NIL)
        ((EQ SE NIL) NIL)
        ((ATOM SE) T)
        (T (OR (NOT-ONLY-NUMS (FIRST SE))
                (NOT-ONLY-NUMS (REST SE))))))  ))
```