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Номер по списку: 21

Лабораторная работа N8
Тема: Диалекты языка МИКРОЛИСП.

Вариант грамматики: j21

Распечатка файла GrammaFeatures.rtf

Особенности диалекта j21

1. Форма or.
   1.1 Один и более операндов.
    (or x? y? z?)

2. Форма and.
   2.1 Один и более операндов.
    (and x? y? z?)

3. Форма not.
   3.2 Отсутствует.

4. Оператор сравнения.
   4.1 Есть.
    (= x y)

5. Оператор отношения.
   5.1 (< x y)

6. Легкий let.
   6.2 Отсутствует.

7. Числовой if.
   7.2 Отсутствует.

8. Строковый if.
   8.1 Есть.
    (if x? "Yes""No")

9. Строковый COND.
   9.2 Отсутствует.

10. Числовой COND.
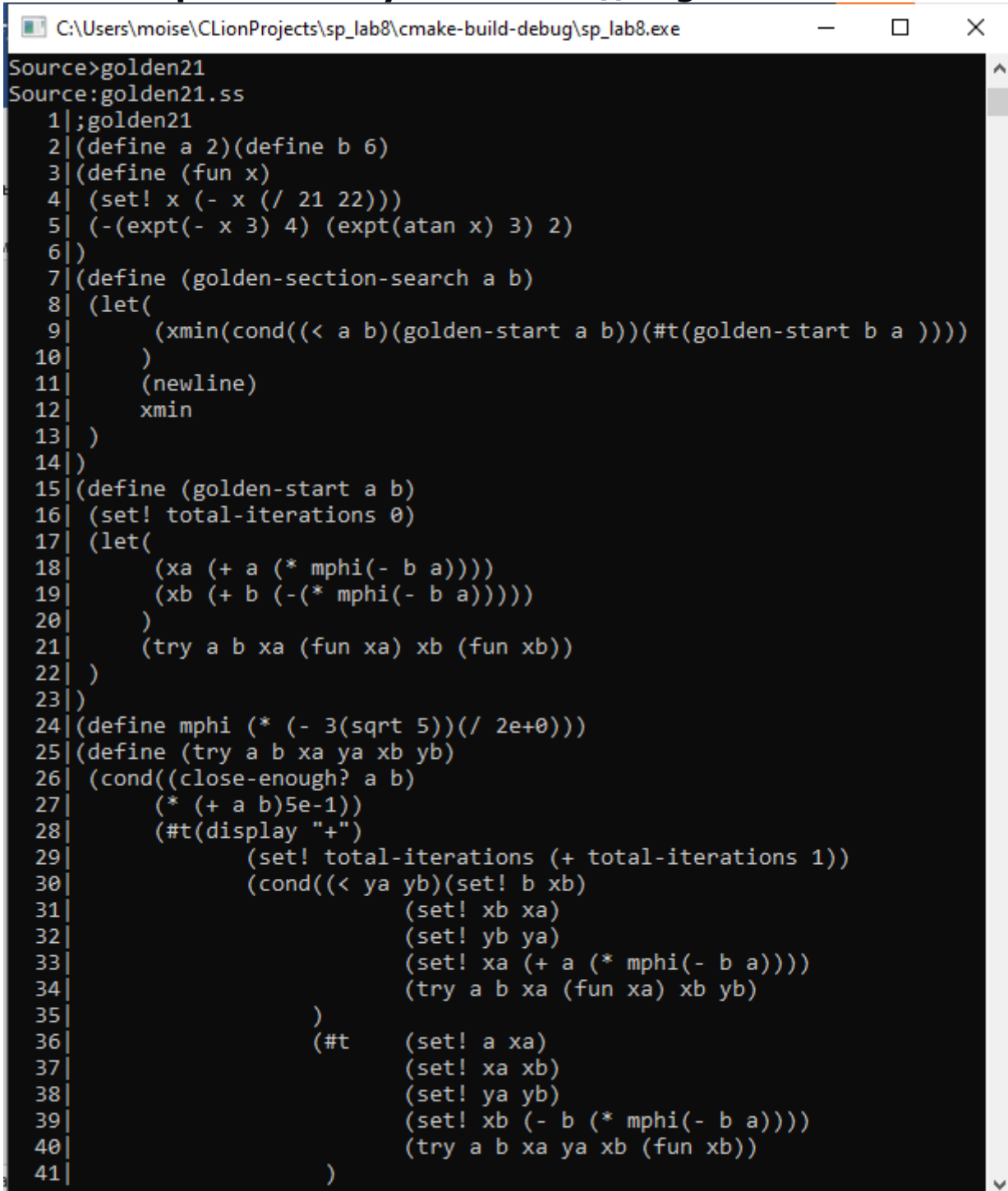## 10.2 Несколько составных клауз без ветви ELSE.
(cond(x? 1 2)(y? 3 4)(#t 5 6))

Скриншот запуска Pars08 для zeller.ss

```
C:\Users\moise\CLionProjects\sp_lab8\cmake-build-debug\sp_la...    —    □    ×

Input gramma name>j21
Gramma:j21.txt
Source>zeller
Source:zeller.ss
   1|;zeller.ss
   2|(define (day-of-week)
   3|  (zeller dd
   4|      (cond((< mm 3)(+ mm 10))(#t(- mm 2)))
   5|      (remainder (cond((< mm 3)(- yyyy 1))(#t yyyy))100)
   6|      (quotient (cond((< mm 3)(- yyyy 1))(#t yyyy))100)
   7|  )
   8|)
   9|(define (zeller d m y c)
  10|  (neg-to-pos (remainder (+ d y
  11|                            (quotient (-(* 26 m)2) 10)
  12|                            (quotient y 4)
  13|                            (quotient c 4)
  14|                            (* 2(- c))
  15|                         )
  16|              7)
  17|  )
  18|)
  19|(define (neg-to-pos d)
  20|  (cond((< d 0)(+ d 7))
  21|       (#t d)
  22|  )
  23|)
  24|(define (birthday dw)
  25|;                   ^{0,...,6}
  26|  (display "Your were born on ")
  27|    (display
  28|     (if(= dw 1)"Monday "
  29|          (if (= dw 2)"Tuesday "
  30|          (if (= dw 3)"Wednesday "
  31|          (if (= dw 4)"Thursday "
  32|          (if (= dw 5)"Friday "
  33|          (if (= dw 6)"Saturday "
  34|          "Sunday" )))))))
  35|  (display dd)(display ".")
  36|  (display mm)(display ".")
  37|  yyyy
  38|)
  39|(define dd 31)
```

```
40|(define mm 03)
41|(define yyyy 2001)
42|(birthday (day-of-week))
43|
  _____
Good source!
  _____
```

Скриншот запуска Pars08 для golden21.ss

```
C:\Users\moise\CLionProjects\sp_lab8\cmake-build-debug\sp_lab8.exe          —    □    ×

Source>golden21
Source:golden21.ss
  1|;golden21
  2|(define a 2)(define b 6)
  3|(define (fun x)
  4|  (set! x (- x (/ 21 22)))
  5|  (-(expt(- x 3) 4) (expt(atan x) 3) 2)
  6|)
  7|(define (golden-section-search a b)
  8|  (let(
  9|       (xmin(cond((< a b)(golden-start a b))(#t(golden-start b a ))))
 10|       )
 11|       (newline)
 12|       xmin
 13|  )
 14|)
 15|(define (golden-start a b)
 16|  (set! total-iterations 0)
 17|  (let(
 18|       (xa (+ a (* mphi(- b a))))
 19|       (xb (+ b (-(* mphi(- b a)))))
 20|       )
 21|       (try a b xa (fun xa) xb (fun xb))
 22|  )
 23|)
 24|(define mphi (* (- 3(sqrt 5))(/ 2e+0)))
 25|(define (try a b xa ya xb yb)
 26|  (cond((close-enough? a b)
 27|       (* (+ a b)5e-1))
 28|       (#t(display "+")
 29|              (set! total-iterations (+ total-iterations 1))
 30|              (cond((< ya yb)(set! b xb)
 31|                             (set! xb xa)
 32|                             (set! yb ya)
 33|                             (set! xa (+ a (* mphi(- b a))))
 34|                             (try a b xa (fun xa) xb yb)
 35|                   )
 36|                   (#t    (set! a xa)
 37|                          (set! xa xb)
 38|                          (set! ya yb)
 39|                          (set! xb (- b (* mphi(- b a))))
 40|                          (try a b xa ya xb (fun xb))
 41|                   )
```

```
 42|            );cond...
 43|         )
 44| )
 45|)
 46|(define (close-enough? x y)
 47|  (<(abs (- x y))tolerance))
 48|(define tolerance 1e-3)
 49|(define total-iterations 0)
 50|(define xmin 0)
 51|(set! xmin(golden-section-search a b))
 52|  (display"Interval=\t[")
 53|  (display a)
 54|  (display" , ")
 55|  (display b)
 56|  (display"]\n")
 57|  (display"Total number of iteranions=")
 58|total-iterations
 59|  (display"xmin=\t\t")
 60|xmin
 61|  (display"f(xmin)=\t")
 62|(fun xmin)
 63|
_____
Good source!
_____
```

Скриншот запуска Pars08 для coin21.ss

```
C:\Users\moise\CLionProjects\sp_lab8\cmake-build-debug\sp_lab8.exe          —    □    ×
Source>coin21
Source:coin21.ss
  1|;coin21.ss
  2|(define VARIANT 21)
  3|(define LAST-DIGIT-OF-GROUP-NUMBER 8)
  4|(define KINDS-OF-COINS 5)
  5|
  6|(define (first-denomination kinds-of-coins)
  7|  (cond((= kinds-of-coins 1) 1)
  8|       ((= kinds-of-coins 2) 3)
  9|       ((= kinds-of-coins 3) 10)
 10|       ((= kinds-of-coins 4) 20)
 11|       ((= kinds-of-coins 5) 50)
 12|       (#t 0)
 13|  )
 14|)
 15|
 16|(define (count-change amount)
 17|  (display "_____\n amount: ")
 18|  (display amount)
 19|  (newline)
 20|  (display "KINDS-OF-COINS: ")
 21|  (display KINDS-OF-COINS)
 22|  (newline)
 23|  (let(
 24|      (largest-coin (first-denomination KINDS-OF-COINS))
 25|      )
 26|    (display "largest-coin: ")
 27|    (display largest-coin)
 28|    (newline)
```

```scheme
29|      (cond((and (< 0 amount)(< 0 KINDS-OF-COINS)(< 0 largest-coin))
30|            (display "List of coin denominations: ")
31|              (denomination-list KINDS-OF-COINS)
32|              (display "count-change= ")
33|              (cc amount KINDS-OF-COINS)
34|              )
35|            (#t (display "Improper parameter value!\ncount-change= ") -1)
36|      )
37|   )
38|)
39|
40|(define(NOT? x?)(= 0(cond(x? 1)(#t 0))))
41|
42|(define (pier? x? y?)
43|   (NOT? (or x? y?))
44|)
45|
46|(define (cc amount kinds-of-coins)
47|   (cond((= amount 0) 1)
48|        ((pier? (< amount 0)(= kinds-of-coins 0))
49|         (+ (cc amount (- kinds-of-coins 1))
50|            (cc (- amount (first-denomination kinds-of-coins)) kinds-of-coins))
51|        )
52|        (#t 0)
53|   )
54|)
55|
56|(define (denomination-list kinds-of-coins)
57|   (cond((= kinds-of-coins 0) (newline) 0)
58|        (#t (display (first-denomination kinds-of-coins))
59|            (display " ")
60|            (denomination-list (- kinds-of-coins 1))
61|        )
62|   )
63|)
64|
65|(define (GR-AMOUNT)
66|   (remainder (+ (* 100 LAST-DIGIT-OF-GROUP-NUMBER) VARIANT) 231)
67|)
68|
69|(display "Variant ")
70|(display VARIANT)
71|(newline)
72|(newline)
73|(display (count-change 100)) (newline)
74|(display (count-change(GR-AMOUNT))) (newline)
75|(set! KINDS-OF-COINS 13)
76|(display (count-change 100)) (newline)
77|(display "(c) Moiseenkov I.P. 2021\n")
78|
79|
80|
81|
```

Good source!