Студент: Епанешников В. С.
Группа: М80-206Б-19
Номер по списку: 9

Тема: Знакомство с языком МИКРОЛИСП.
   Отображение программ из МИКРОЛИСПа в С++.

   Лабораторная работа N3

Распечатка файла coin21.ss

```
>
; coin21
; Епанешников М80-206Б-19

(define VARIANT 9)
(define LAST-DIGIT-OF-GROUP-NUMBER 6)
(define KINDS-OF-COINS 7)

(define (first-denomination kinds-of-coins)
  (cond((= kinds-of-coins 1) 1)
     ((= kinds-of-coins 2) 2)
     ((= kinds-of-coins 3) 3)
     ((= kinds-of-coins 4) 5)
     ((= kinds-of-coins 5) 10)
     ((= kinds-of-coins 6) 15)
     ((= kinds-of-coins 7) 20)
     (else 0))
)

(define (count-change amount)
  (display "_____")
  (newline)
  (display " amount: ")
  (newline)
  (display "KINDS-OF-COINS: ")
  (display KINDS-OF-COINS)
  (newline)
  (let(
     (largest-coin (first-denomination KINDS-OF-COINS))
     )
     (display "largest-coin: ")
```

```scheme
      (display largest-coin)
      (newline)
      (if(and (> amount 0) (> KINDS-OF-COINS 0) (> largest-
coin 0))
         (let()
           (display "List of coin denominations: ")
           (denomination-list KINDS-OF-COINS)
           (display "count-change= ")
           (cc amount KINDS-OF-COINS)
         )
         (let()
           (display "Improrer parametr value!")
           (newline)
           (display "count-change =") -1)
     )
   )
)

(define (pier? x? y?)
  (not (or x? y?))
)

(define (cc amount kinds-of-coins)
  (cond((= amount 0) 1)
       ((pier? (< amount 0) (= kinds-of-coins 0))
        (+ (cc amount (- kinds-of-coins 1))
           (cc (- amount (first-denomination kinds-of-coins))
kinds-of-coins)))
       (else 0))
)

(define (denomination-list kinds-of-coins)
  (if(= kinds-of-coins 0) (let() (newline) 0)
    (let()
      (display (first-denomination kinds-of-coins))
      (display " ")
      (denomination-list (- kinds-of-coins 1))
    )
  )
)

(define (GR-AMOUNT)
```

```
  (remainder (+ (* 100 LAST-DIGIT-OF-GROUP-NUMBER)
VARIANT) 231)
)

(display "Variant ")
(display VARIANT)
(newline)
(newline)
(display (count-change 100))
(newline)
(display (count-change (GR-AMOUNT)))
(newline)
(set! KINDS-OF-COINS 13)
(display (count-change 100))
(newline)
(display "(c) Epaneshnikov V.S. 2021")
(newline)
```

Распечатка файла coin21. cpp
>
```cpp
// Епанешников 206
// coin21.cpp
#include "mlisp.h"

extern double VARIANT;
extern double LAST__DIGIT__OF__GROUP__NUMBER;
extern double KINDS__OF__COINS;
double first__denomination(double kinds__of__coins);
double count__change(double amount);
bool pier_Q(bool x_Q, bool y_Q);
double cc(double amount, double kinds__of__coins);
double denomination__list(double  kinds__of__coins);
double GR__AMOUNT();

double VARIANT = 9.;
double LAST__DIGIT__OF__GROUP__NUMBER = 6.;
double KINDS__OF__COINS = 7.;

double first__denomination(double kinds__of__coins){
  return
     ( kinds__of__coins == 1. ? 1.
  : kinds__of__coins == 2. ? 2.
```

```
      : kinds__of__coins == 3. ? 3.
      : kinds__of__coins == 4. ? 5.
  : kinds__of__coins == 5. ? 10.
  : kinds__of__coins == 6. ? 15.
  : kinds__of__coins == 7. ? 20.
      : 0.
      );
}

double count__change(double amount){
     display( "_____\n amount: ");
     display( amount);
      newline();
     display( "KINDS-OF-COINS: ");
     display( KINDS__OF__COINS);
      newline();
  {
   double largest__coin (first__denomination(
KINDS__OF__COINS));
    display( "largest-coin: ");
    display( largest__coin);
    newline();
    return
      ( amount > 0. &&
        KINDS__OF__COINS > 0. &&
        largest__coin > 0. ?
           ( display( "List of coin denominations: "),
             denomination__list( KINDS__OF__COINS),
             display( "count-change= "),
             cc(amount, KINDS__OF__COINS)
            )
      : (display("Improper parameter value!\ncount-
change= "), -1.)
      );
  }
}

bool pier_Q(bool x_Q, bool y_Q){
  return !(x_Q || y_Q);
}

double cc(double amount, double kinds__of__coins){
```

```cpp
  return
      ( amount == 0. ? 1.
      : pier_Q(amount < 0., kinds__of__coins == 0.) ?
        cc(amount, kinds__of__coins - 1.) +
        cc(amount - first__denomination(kinds__of__coins),
         kinds__of__coins)
       : 0.
      );
}

double denomination__list(double  kinds__of__coins){
     return ( kinds__of__coins== 0 ? (newline() , 0.)
            :
(display(first__denomination(kinds__of__coins)),
           display(" "),
           denomination__list(kinds__of__coins - 1.)
          )
        );
}

double GR__AMOUNT(){
  return
   remainder(100. * LAST__DIGIT__OF__GROUP__NUMBER
+ VARIANT,
       231);
}

int main(){
 display ("Variant ");
 display (VARIANT);
 newline();
 newline();
 display (count__change(100.) ); newline();
 display (count__change(GR__AMOUNT()) ); newline();
 KINDS__OF__COINS=13.;
 display (count__change(100.) ); newline();
 display ("(c) Epaneshnikov V.S. 2021\n");

 std::cin.get();
 return 0;
}
```

Скриншот запуска в С++
>

```
MacBook:Lab 3 vladislove$ g++ coin21.cpp
MacBook:Lab 3 vladislove$ ./a.out
Variant 9


 _____
 amount: 100
KINDS-OF-COINS: 7
largest-coin: 20
List of coin denominations: 20 15 10 5 3 2 1
count-change= 63992

 _____
 amount: 147
KINDS-OF-COINS: 7
largest-coin: 20
List of coin denominations: 20 15 10 5 3 2 1
count-change= 429530

 _____
 amount: 100
KINDS-OF-COINS: 13
largest-coin: 0
Improper parameter value!
count-change= -1
(c) Epaneshnikov V.S. 2021

MacBook:Lab 3 vladislove$ ▊
```

Скриншот запуска в DrRacket.

```
>
```

Welcome to DrRacket, version 8.0 [cs].
Language: Pretty Big; memory limit: 128 MB.
Variant 9

_____
 amount:
KINDS-OF-COINS: 7
largest-coin: 20
List of coin denominations: count-change= 63992

_____
 amount:
KINDS-OF-COINS: 7
largest-coin: 20
List of coin denominations: count-change= 429530

_____
 amount:
KINDS-OF-COINS: 13
largest-coin: 0
Improrer parametr value!
count-change =-1
(c) Epaneshnikov V.S. 2021
>