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Группа: М8О-208Б-19  
Номер по списку: 11

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

### Лабораторная работа N3

Распечатка файла coin21.ss

```
>
(define VARIANT 11)
(define LAST-DIGIT-OF-GROUP-NUMBER 8)
(define KINDS-OF-COINS 5)

(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) 10)
    ((= kinds-of-coins 5) 15)
    (else 0)
  )
)

(define (count-change amount)
  (display"_____\n amount: ")
  (display amount)
  (newline)
  (display"KINDS-OF-COINS: ")
  (display KINDS-OF-COINS)
  (newline)
  (let((largest-coin (first-denomination KINDS-OF-COINS)))
    (display"largest-coin: ")
    (display largest-coin)
    (newline)
    (cond((and (> 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))
    (else
     (display"Improper parameter value!\ncount-
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)
  (cond((= kinds-of-coins 0) (newline) 0)
        (else (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) Ivenkova L.V. 2021\n")
```

Распечатка файла coin21. cpp

>

```
//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();
```

```
// вариант - номер в писке группы
```

```
double VARIANT=11.;
```

```
// последняя цифра номера группы
```

```
double LAST__DIGIT__OF__GROUP__NUMBER=8.;
```

```
//количество имеющихся номиналов монет
```

```
double KINDS__OF__COINS=5.;
```

```
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. ? 10.
      : kinds__of__coins == 5. ? 15.
      : 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){
// стрелка Пирса
    return !(x_Q || y_Q);
}

double cc(double amount, double kinds__of__coins){
    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) Ivenkova L.V. 2021\n");

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

```

**Скриншот запуска в C++**

**>**

```
parsifal@DESKTOP-3G70RV4:~/SP/Lab3$ ./coin21
Variant 11

-----
  amount: 100
KINDS-OF-COINS: 5
largest-coin: 15
List of coin denominations: 15 10 3 2 1
count-change= 8136

-----
  amount: 118
KINDS-OF-COINS: 5
largest-coin: 15
List of coin denominations: 15 10 3 2 1
count-change= 14566

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

**Скриншот запуска в DrRacket.**

```
(define VARIANT 11)
(define LAST-DIGIT-OF-GROUP-NUMBER 8)
(define KINDS-OF-COINS 5)
```

Добро пожаловать в [DrRacket](#), версия 8.0 [cs].

Язык: **Pretty Big**; memory limit: 128 MB.

Variant 11

```
amount: 100
KINDS-OF-COINS: 5
largest-coin: 15
List of coin denominations: 15 10 3 2 1
count-change= 8136
```

```
amount: 118
KINDS-OF-COINS: 5
largest-coin: 15
List of coin denominations: 15 10 3 2 1
count-change= 14566
```

```
amount: 100
KINDS-OF-COINS: 13
largest-coin: 0
Improper parameter value!
count-change= -1
```

(c) Ivenkova L.V. 2021

>