

БГУИР

Кафедра ЭВМ

Отчет по лабораторной работе

Тема: «Случайные методы доступа к моноканалу»

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## Постановка задачи:

Реализовать облегченный алгоритм CSMA/CD:

Облегченность:

1. Прослушивание канала (если канал свободен, передаем)
2. Проверка коллизий (если произошла коллизия, мы ее определяем, ждем случайное время и повтор отправки)
3. Случайная задержка

Случайная задержка по формуле из стандартов.

## Листинг программы:

Функция пересылки данных.

```
void CSMA::transmit(CSMA* station) {  
    while (station->running) {  
        Sleep(station->delay);  
        unsigned msg;  
        generateMsg(msg);  
        int try_counter = 0;  
        while (true) {  
            if (!try_counter && CSMA::trans_msg == JAM_SIGNAL)  
                break;  
  
            CSMA::trans_msg |= msg;  
            Sleep(COLISION_DELAY);  
  
            if (CSMA::trans_msg == msg) {  
                changeClr(green);  
                cout << "Success transmission from "  
                    << station->name  
                    << ": 0x"  
                    << setfill('0')  
                    << setw(8)  
                    << std::hex  
                    << std::uppercase  
                    << trans_msg << endl;  
                CSMA::trans_msg = 0;  
                break;  
            }  
            else {  
                CSMA::trans_msg = JAM_SIGNAL;  
                changeClr(red);  
                try_counter++;  
                cout << "Collision detected from " << station->name << ", try  
to resolve: " << try_counter << endl;  
                cout << "Transmitting JAM SIGNAL from " << station->name <<  
endl;  
  
                if (try_counter == MAX_TRIES) {  
                    cout << "Unable to resolve, skipping" << endl;  
                    break;  
                }  
            }  
        }  
    }  
}
```

```

        int time_slot = rand() % ((int)pow(2, try_counter) + 1);
        Sleep(time_slot * 100);
        CSMA::trans_msg = 0;
    }
}
};

```

## Тестовые примеры:

```

Collision detected from Station_1, try to resolve: 1
Transmitting JAM SIGNAL from Station_1
Collision detected from Station_1, try to resolve: 2
Transmitting JAM SIGNAL from Station_1
Collision detected from Station_2, try to resolve: 1
Transmitting JAM SIGNAL from Station_2
Success transmission from Station_2: 0x52914575
Success transmission from Station_3: 0x761E5C55
Success transmission from Station_2: 0x558E18F6
Success transmission from Station_1: 0x026422D4
Success transmission from Station_2: 0x58C150A6
Success transmission from Station_1: 0x0BF84E49
Success transmission from Station_1: 0x0D947885
Success transmission from Station_2: 0x58C72F52
Success transmission from Station_1: 0x0F2C78C3
Success transmission from Station_3: 0x7ECB62CA
Success transmission from Station_1: 0x10C47902
Success transmission from Station_2: 0x5EC96402
Success transmission from Station_1: 0x12594F45
Success transmission from Station_1: 0x13F47980
Success transmission from Station_2: 0x61CC1882
Success transmission from Station_1: 0x158D79BF
Success transmission from Station_1: 0x172823FA
Station_1stopped.
Success transmission from Station_2: 0x64CF4D62
Station_2stopped.
Success transmission from Station_3: 0x0777693E
Station_3stopped.
Для продолжения нажмите любую клавишу . . .

```

```

Success transmission from Station_1: 0x751F116E
Success transmission from Station_1: 0x76B811AC
Collision detected from Station_2, try to resolve: 1
Transmitting JAM SIGNAL from Station_2
Success transmission from Station_2: 0x799D4C7D
Success transmission from Station_1: 0x784D67EF
Success transmission from Station_3: 0x65D96761
Collision detected from Station_1, try to resolve: 1
Transmitting JAM SIGNAL from Station_1
Collision detected from Station_2, try to resolve: 1
Transmitting JAM SIGNAL from Station_2
Success transmission from Station_2: 0x7CCA22FE
Success transmission from Station_1: 0x79EB3C26
Success transmission from Station_1: 0x7E487D56
Success transmission from Station_2: 0x01480809
Success transmission from Station_1: 0x7FE47D95
Collision detected from Station_1, try to resolve: 1Collision detected from
Station_3, try to resolve: 1Transmitting JAM SIGNAL from
Station_1
Transmitting JAM SIGNAL from Collision detected from Station_3Station_2
, try to resolve: 1
Transmitting JAM SIGNAL from Station_2
Success transmission from Station_3: 0x6E8917D2

Collision detected from Station_1, try to resolve: 2
Transmitting JAM SIGNAL from Station_1
Collision detected from Station_2, try to resolve: 2
Transmitting JAM SIGNAL from Station_2
Success transmission from Station_2: 0x044E3CB9
Success transmission from Station_2: 0x0BA060AA
Success transmission from Station_1: 0x017953D7
Station_1stopped.
Success transmission from Station_3: 0x77743C02
Success transmission from Station_2: 0x0EA63F57
Station_2stopped.
Success transmission from Station_3: 0x00204276
Station_3stopped.
Для продолжения нажмите любую клавишу . . .

```

**Заключение:**

В данной лабораторной работе разработан модуль облегченного алгоритма CSMA/CD.