

Rešenja zadatka za drugi kolokvijum iz Operativnih sistema 1 Septembar 2016.

1. (10 poena) U klasu `Thread` treba dodati sledeće članove:

```
char* Thread::message(0);
Semaphore msgEmpty(1), msgAvailable(0);

void Thread::send (char* msg) {
    this->msgEmpty.wait();
    this->message = msg;
    this->msgAvailable.signal();
}

char* Thread::receive () {
    Thread::running->msgAvailable.wait();
    char* msg = Thread::running->message;
    Thread::running->msgEmpty.signal();
    return msg;
}
```

2. (10 poena)

```
typedef unsigned long ulong;
const ulong OffsBinaryStartOffset = 0,
        OffsNumOfImportedSymbols = OffsBinaryStartOffset + sizeof(ulong),
        OffsImportedSymbols = OffsNumOfImportedSymbols + sizeof(ulong);

int resolveSymbols (char* inputObj, char* output) {
    ulong binaryStartOffs = *(ulong*)(inputObj + OffsBinaryStartOffset);
    char* binaryStart = inputObj + binaryStartOffs;
    ulong numOfSymbols = *(ulong*)(inputObj + OffsNumOfImportedSymbols);
    char* symbol = inputObj + OffsImportedSymbols;
    for (ulong i=0; i<numOfSymbols; i++) {
        ulong addr = SymbolTable::resolveSymbol(symbol);
        if (addr==0) return errorSymbolUndefined(symbol);
        ulong symbolLen = strlen(symbol)+1;
        ulong fieldOffs = *(ulong*)(symbol+symbolLen);
        for (; fieldOffs>0; fieldOffs=*(ulong*)(binaryStart+fieldOffs))
            *(ulong*)(output+fieldOffs) = addr;
        symbol = symbol+symbolLen+sizeof(fieldOffs);
    }
    return 0;
}
```

3. (10 poena) a)(3) VA(64): Page1(24):Page2(24):Offset(16).
PA(42): Frame(26):Offset(16).
b)(7)

```
const unsigned short pglw = 24, pg2w = 24, offsw = 16;
const unsigned pmt1size = 1<<pglw, pmt2size = 1<<pg2w;

void releasePMTEntry (unsigned* pmt1, unsigned long page) {
    unsigned pmt1entry = page>>(pg2w);
    unsigned* pmt2 = (unsigned*)((unsigned long)pmt1[pmt1entry]<<offsw);
    unsigned pmt2entry = (page) & ~(-1L<<pg2w);
    pmt2[pmt2entry] = 0;
    for (pmt2entry=0; pmt2entry<pmt2size; pmt2entry++)
        if (pmt2[pmt2entry]!=0) return;
    // PMT2 empty, release it:
    dealloc_pmt(pmt2);
    pmt1[pmt1entry] = 0;
}
```