

Prvi kolokvijum iz Operativnih sistema 1

Odsek za računarsku tehniku i informatiku

maj 2026.

1. (10 poena)

a)(5)

```
vsum:  xor    r0,r0,r0
      cmp    r2,r0
      je     l1

      push  r1
      load  r3,#4
      add   r1,r1,r3
      dec   r2
      call  vsum
      pop   r1
      load  r3,[r1]
      add   r0,r0,r3
l1:    rts
```

b)(5)

Deo virtuelnog adresnog prostora	Najniža adresa (hex)	Najviša adresa (hex)	Zauzete stranice
Instrukcije (vsum)	20EFFFFC	20F00037	20EFF, 20F00
Niz a	14CFFFF0	14D003EF	14CFF, 14D00
Stek	...	12001000	12001, 12000

2. (10 poena)

```
size_t FrameAllocator::alloc () {
    for (size_t i=0; i<BV_SIZE; i++)
        if (bits[i]!=(uint32_t)-1) {
            uint bit = getLSBZero(bits[i]);
            bits[i]|=((uint32_t)1<<bit);
            return i*32+bit;
        }
    return (size_t)-1;
}

void FrameAllocator::free (size_t frame) {
    size_t i = frame/32;
    unsigned short bit = frame%32;
    bits[i] &= ~((uint32_t)1<<bit);
}
```

3. (10 poena)

```
int getDLL (const char* dllName) {
    int dll = mapDLL(dllName);
    if (dll<=0) handleError("DLL cannot be mapped: %s.\n",dllName);
    return dll;
}

int f1 (int* arg0, int arg1) {
    static int (*pf) (int*, int) = 0;
    if (pf==0) {
        int dll = getDLL("mydll_1.dll");
        pf = (int(*) (int*, int))mapDLLSymbol(dll,"f1@int@int*@int");
        if (pf==0)
            handleError("DLL symbol cannot be mapped: %s.\n","int f1(int*,int)");
    }
    return pf(arg0,arg1);
}

double f2 (X* arg0) {
    static double (*pf) (X*) = 0;
    if (pf==0) {
        int dll = getDLL("mydll_1.dll");
        pf = (double(*) (X*))mapDLLSymbol(dll,"f2@double@X*");
        if (pf==0)
            handleError("DLL symbol cannot be mapped: %s.\n","double f2(X*)");
    }
    return pf(arg0);
}
```