Rešenja zadataka za kolokvijum iz Operativnih sistema 1 februar 2026.

1. (10 poena)

```
#include <fcntl.h>
#include <sys/stat.h>
#include <sys/mman.h>
#include <unistd.h>

const int N = 256;
const int SIZE = N*sizeof(int);
const char* name = "/shared_mem";

int main () {
  int fd = shm_open(name, O_CREAT|O_RDWR, 0b110110110);
  ftruncate(fd,SIZE);
  int* arr = (int*)mmap(0, SIZE, PROT_WRITE, MAP_SHARED, fd, 0);

  for (int i=0; i<N; i++) arr[i]=i;

  shm_unlink(fd);
  return 0;
}
```

2. (10 poena)

```
fp_mask     def   0b100

yield:      push  r0
            push  r1
            ...
            push  r31
            load  r0,fp_mask
            and   r0,psw,r0
            jz    skip0
            push  fp0
            push  fp1
            ...
            push  fp7
skip0:      push  psw
```

```
            load  r0,oldRunning
            store sp,[r0+offsSP]

            load  r0,newRunning
            load  sp,[r0+offsSP]

            pop   psw
            load  r0,fp_mask
            and   r0,psw,r0
            jz    skip1
            pop   fp7
            ...
            pop   fp0
skip1:      pop   r31
            ...
            pop   r1
            pop   r0
            pop   sp
            ret
```

3.

```
int BlockIOCache::getFreeEntry () {
  if (numOfBlocks<CACHESIZE) {
    int hand = numOfBlocks++;
    entries[hand].lruPrev = -1;
    entries[hand].lruNext = lruHead;
    if (lruHead!=-1) entries[lruHead].prev = hand;
    else lruTail = hand;
    lruHead = hand;
    return hand;
  } else
    for (int hand = lruTail; hand != -1; hand = entries[hand].lruPrev) {
      if (entries[hand].refCounter == 0) {
        ioWrite(dev,entries[hand].blkNo,entries[hand].buf);
        return hand;
      }
    }
  return -1;
}
```

4. (10 poena)

Nivo indeksa	Broj alociranih blokova za indekse	Broj alociranih blokova za sadržaj
Direct	1 (za sam FCB)	120
Single indirect	1	$128 = 2^7$
Double indirect	1+128 = 129	2^{14}
Ukupno	131	$2^{14}+2^7+120$