Drugi kolokvijum iz Operativnih sistema 1
Maj 2026.

1. (10 poena)

```
inline void suspendRunning () {
    Task* oldRunning = getRunning();
    Task* newRunning = Scheduler::get();
    yield(oldRunning,newRunning);
}

inline void preemptRunning (Task* resumed) {
    Task* oldRunning = getRunning();
    Task* newRunning = Scheduler::select(oldRunning,resumed);
    if (newRunning!=oldRunning)
        yield(oldRunning,newRunning);
}

inline void preemptRunning () {
    Task* oldRunning = getRunning();
    Task* newRunning = Scheduler::putGet(oldRunning);
    if (newRunning!=oldRunning)
        yield(oldRunning,newRunning);
}
```

2. (10 poena)

```
const int N = ...;  // Capacity of the buffer
class Data;

class UnboundedBuffer {
public:
  UnboundedBuffer ();

  void  append (Data*);
  Data* take ();

private:
  Semaphore mutex, itemAvailable;
  Data* buffer[N];
  int head, tail, count;
};

UnboundedBuffer::UnboundedBuffer () : mutex(1), itemAvailable(0),
   head(0), tail(0), count(0) {}

void UnboundedBuffer::append (Data* d) {
  mutex.wait();
  buffer[tail] = d;
  tail = (tail+1)%N;
  if (count<N) {
    count++;
    itemAvailable.signal();
  } else {
    head = tail;
  }
  mutex.signal();
}
```

```
Data* UnboundedBuffer::take () {
  itemAvailable.wait();
  mutex.wait();
  Data* d = buffer[head];
  head = (head+1)%N;
  count--;
  mutex.signal();
  return d;
}
```