İstanbul Bilgi University

Department of Computer Engineering

SPRING, 2021
Campus: Santral

CMPE 312: OPERATING SYSTEMS

HW Bounded-Buffer Problem

(Duration: 60 minutes)

Name :

Student ID :

CONTINUED

1. {100 points} Various synchronization problems such as the bounded-buffer problem and the dining-philosophers problems are important mainly because they are examples of a large class of concurrency control problem.

(a) {5+5 points} Present the problem: write pseudo-code of the producer (P) process and the pseudo-code of the consumer (C) process

(b) {10 points} Make a possible simulation of the entire system considering a NON preemptive execution of the P and C processes[1]

(c) {20 points} Make a possible simulation of the entire system considering the preemptive execution of the P and C processes

(d) {10 points} Where is the problem? Explain

(e) {30 points} Modify the previous pseudo-code to solve the bounded-buffer problem using semaphores

(f) {20 points} Make a possible simulation of the entire system when using semaphores

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[1] Do NOT interrupt any process during the execution of its loop