

CSI 4337
75 min.

Exam #1

Feb. 10, 2005
Five Pages

Name _____

All questions are worth 10 points. Maximum score: 80

1. When your program is running, what is the operating system doing?

2. Give the steps that must occur during a context switch.

3. The following are two processes that share a variable named S. Show how to protect the shared variable using the TestAndSet instruction. Show the declaration and initialization for any new variables you need.

P1

P2

S=S+10;

S=S-20;

4. Given the following processes with burst times and arrival times, show the Gantt chart for the three algorithms, Shortest Job First, First Come First Served, and Round Robin with a quantum of 3.

Process	Burst Time
P1	6
P2	9
P3	3
P4	4
P5	1

7. Suppose two processes A, and B share an integer variable Z without using any synchronization mechanisms. Z has an initial value of 2. After the following two statements execute, what are the possible values of Z, and how can they occur?

Process A

...

$Z = Z * 5;$

...

Process B

...

$Z = Z * 6;$

...

8. Explain bounded buffer problem and show how to solve it using semaphores.